

In our early evening skies the unmistakable red planet Mars shines brightly in the east, although now past the close opposition of October 2020 the planet still shows a white polar cap and hints of the famous dark surface features as seen telescopically- catch it in early November . By month end the apparent diameter reduces from 22 arc sec down to around 15 arc sec. The use of filtering (ND neutral density and Wratten No 21 filters / contrast boost filter) may enhance the visual features. Mars however remains a challenging planet to observe visually as well as to image, although this opposition the planet is well placed at an elevation of some 40° in the constellation of Pisces.

Late autumn skies herald the constellations of Taurus, Auriga, Orion and Gemini. The Milky Way stretches from the constellation of Aquila [The Eagle] in the west up through the 'W' shaped constellation of Cassiopeia, on through Perseus high overhead down through Auriga and down into Gemini low in the east. On clear moonless evenings the Milky Way appears as a faint misty band of light, binoculars however reveal rich star clouds and dark lanes of obscuring dust, especially in the constellation of Cygnus [The Swan], a summer constellation now seen low in the west early evening.

The constellation of Taurus [The Bull] can be seen rising in the east by early evening has the red star Aldebaran a foreground star in line of sight with the V shaped Hyades star cluster [The name *al debaran* meaning 'the follower' follows the seven sisters star cluster across the night sky]. The famous Pleiades (M45) (Seven Sisters) star cluster is easy to spot low in the east early evening, some people with acute eyesight may see perhaps up to 13 stars unaided, binoculars show many more of the 400 stars in the cluster located at a distance of around 380 light years.

Auriga has the bright star Capella and can be seen to the east and slightly above Taurus. The rich background of stars of the Milky Way is best seen on moonless evenings from outside the light from the town and the three fine star clusters M36, M37 and M38 can all be seen using binoculars. Late evening, the constellation of Gemini, noted for two stars Castor and Pollux rises by late evening but can be seen throughout the late autumn, winter and spring. Gemini contains some nice star fields and the star cluster M35.

In the south east the familiar constellation of Orion can be seen rising late evening, noted by the three stars of Orion's belt, the red giant star Betelgeuse (top left), the white star Rigel (bottom right) and the misty patch of the Orion Nebula (M42) of the sword, just below the belt stars. M42 is a fine object when viewed with binoculars or a telescope, the hot young stars known as 'The Trapezium' light up the surrounding clouds of gas and dust that form the nebula. Also note the smaller 'apostrophe shaped' nebula M43 near to the dark 'V' shaped nebula within M42 a feature known as 'the fishes mouth'. Visual observers may also benefit by using a UHC/LPR type filter to darken the background field.

In the south west the large box shaped constellation of Pegasus can be a useful signpost to finding the constellation of Andromeda, a chain of several stars just east of Pegasus and is famed for the Andromeda Galaxy (M31). Visible to the unaided eye from dark skies on moonless evenings as a faint misty patch, the galaxy can best be seen in binoculars the spiral arms extending to an apparent size being around six Full Moon diameters at 3° apparent diameter.

In the west the familiar stars of Vega (in the constellation Lyra), Deneb (in Cygnus, or The northern Cross) and Altair (in Aquila) form the asterism 'The Summer Triangle' and now heads into the early evening twilight.

Jupiter is visible low in the southwest in evening twilight and to the east of Jupiter the fainter planet Saturn, the two planets are seen close together over the coming weeks and have a very close conjunction in late December.

In the north Ursa Major, The Plough asterism or The Great Bear, can be seen low down. 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.

Two more planets Uranus and Neptune are located in our autumn evening skies, visible in binoculars, telescopes however show each planet as a tiny disk. Each notable by the characteristic blue/green colour and in contrast to the background stars appearing sharper points of light.

The Leonid meteor shower maxima occur around Nov 18th, however the rates predicted are low around 15/ hour. Increased activity is associated with perihelion passage of the parent comet 55P Temple-Tuttle, every 33 years and it may be towards the end of the decade before activity is enhanced by the parent comet.

The Taurid meteor shower(s) peak around Nov 5th and Nov 12th (more favourable) both peaks have low rates ZHR just 5/hour. UK observers around Nov 5th in town may also have to contend with fireworks etc, COVID 19 restrictions permitting.

Comet interest this month is provided by C/2020 M3 ATLAS which reached perihelion in late October and is reported at 8.5m (binocular). The comet moves northward into UK evening skies early in November. The path is to the west of Orion and in favourable moonless condition around November 15th, the comet is positioned close to the star Bellatrix (γ Orionis) [the top right corner star of Orion [as a faint fuzzy round coma]. Watch the comet change position relative to the background stars - evening to evening – see notes. (LAS Newsletter No 258).

Asteroid (No 8) Flora reaches opposition on November 1st and is a faint 8m star like point seen telescopically moving night to night against the background stars of Cetus (LAS Newsletter No 261).

Planets in November 2020

Mercury reaches greatest elongation on Nov 10th and is well placed in dawn skies mid month.

Venus is visible low in dawn twilight skies shines brightly low in east, phase increases to 87% in November.

Mars is visible all night, unmistakably red and bright in the east early evening, telescopes may show some detail such as the white polar cap and the main dark features. Observe early in November to get the best views of Mars which is now just past opposition and reducing in apparent size as the distance from Earth increases throughout the month.

Jupiter is now heading in twilight skies after sunset with conjunction with Saturn in late December.

Saturn is positioned very low in evening twilight, to the east of Jupiter

Uranus is located in the constellation of Aries. (See notes Binocular / Telescope required)

Neptune in the constellation of Aquarius (see notes Binocular / Telescope required)

Moons phases in November 2020

New Moon	Nov 15th	Moonless, best time for deep sky observing and Comets
First Quarter	Nov 22nd	Best days to see shadow details in lunar craters (early evening)
Full Moon	Nov 30th	Best days to see bright ray craters like Copernicus / Tycho.
Last Quarter	Nov 8 th	Moon visible in daytime skies. Do not look directly at the Sun

Meteor Showers in November

Taurids maxima Nov 5th (unfavourable) and Nov 12th, ZHR 10 / hour – slow meteors, fireballs possible.

Leonids range from Nov 15th to Nov 20th, peak around 05:00 UT Nov 18th. Very favourable, rates remain low ZHR 15 / hour in 2020.

Highlights of the month

Star clouds of the Milky Way high overhead in the constellations Cassiopeia and Perseus, noted for the famous double cluster (NGC 884, NGC 869) a superb sight telescopically at low magnification.

Constellation of Taurus with the Hyades star cluster [Mel 25] and Seven Sisters star cluster (M45)

Constellation of Orion with super giant orange star Betelgeuse and the famous Orion Nebula (M42), plus Comet C/2020 M3 ATLAS close to the star Bellatrix (Gamma Orionis) (mid month).

Constellation of Andromeda and the famous Andromeda Galaxy (M31) a misty patch visible to the unaided eye on clear, moonless evenings when viewed from a dark site (away from lights).

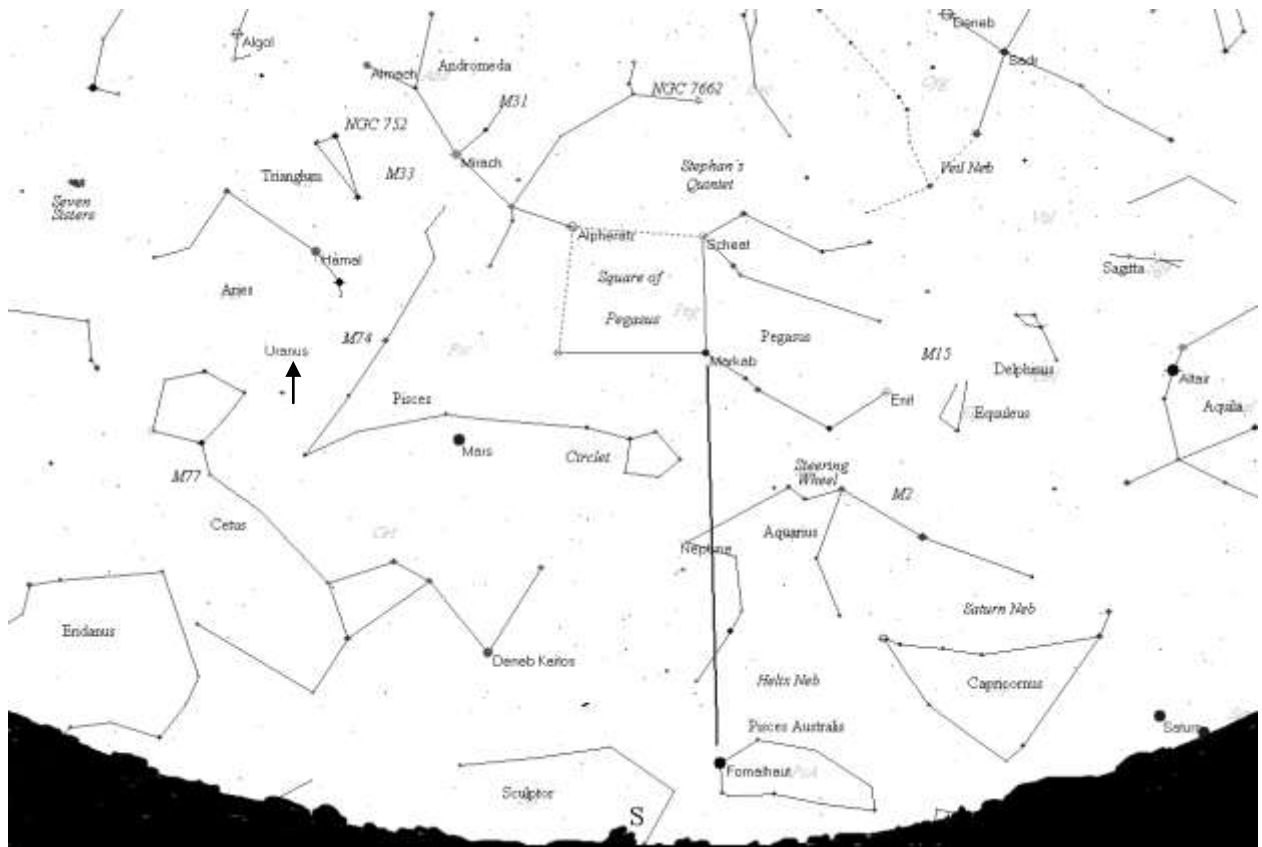
Crescent Moon visibility. November 16th A 3.1% waxing crescent Moon is visible very low in the west **look only after sun has completely set** until moonset at 17:06 (5:06pm).

Binoculars show the unlit part of the Moon made faintly visible by reflected sunlight from Earth (Earthshine) .

Caution Do NOT look directly at the Sun with the unaided eye or any form of optical aid.

More detailed sky notes and LAS Newsletters / finder charts are available to members

View looking south 8pm in mid November 2020

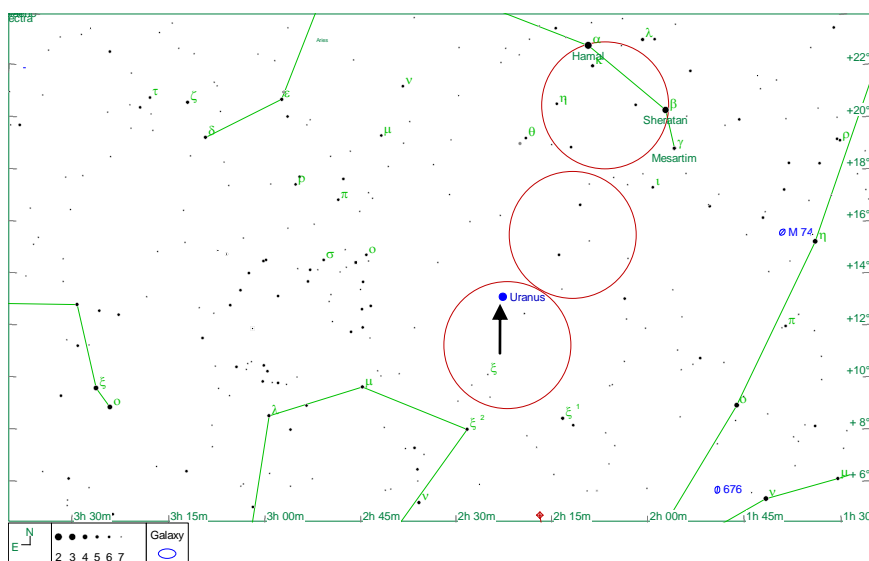


Looking south the 'signpost' asterism of the Square of Pegasus lies on the meridian mid evening.

Mars shines brightly in the constellation of Pisces and Uranus (shown arrowed / below) is a binocular object in Aries.

The square points to the bright star Fomalhaut in the constellation of the Southern Fishes (Pisces Australis) – at UK latitude (52° N) this constellation is glimpsed low on the southern aspect.

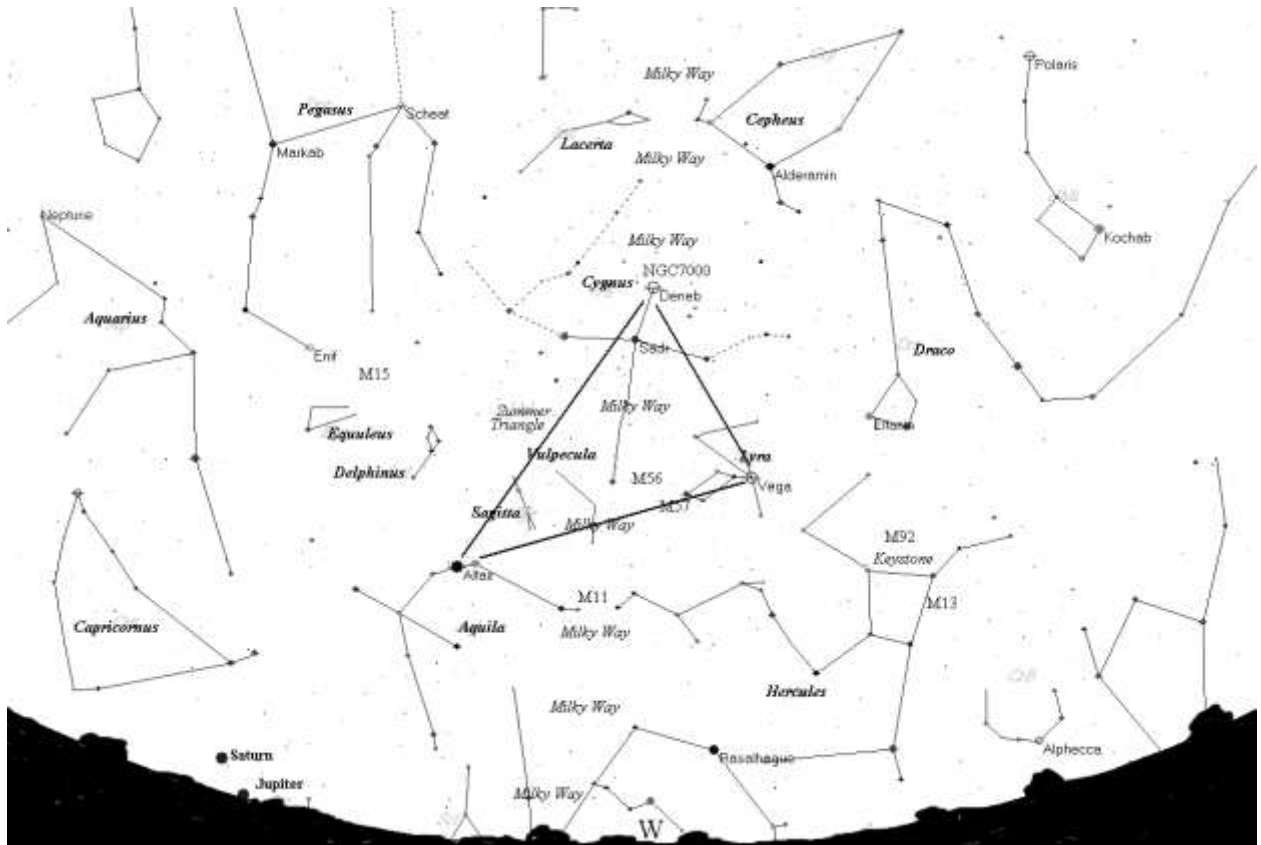
Finder chart for planet Uranus (binocular / telescope required).



Circles represent FOV of 10x50 binoculars / finder scope

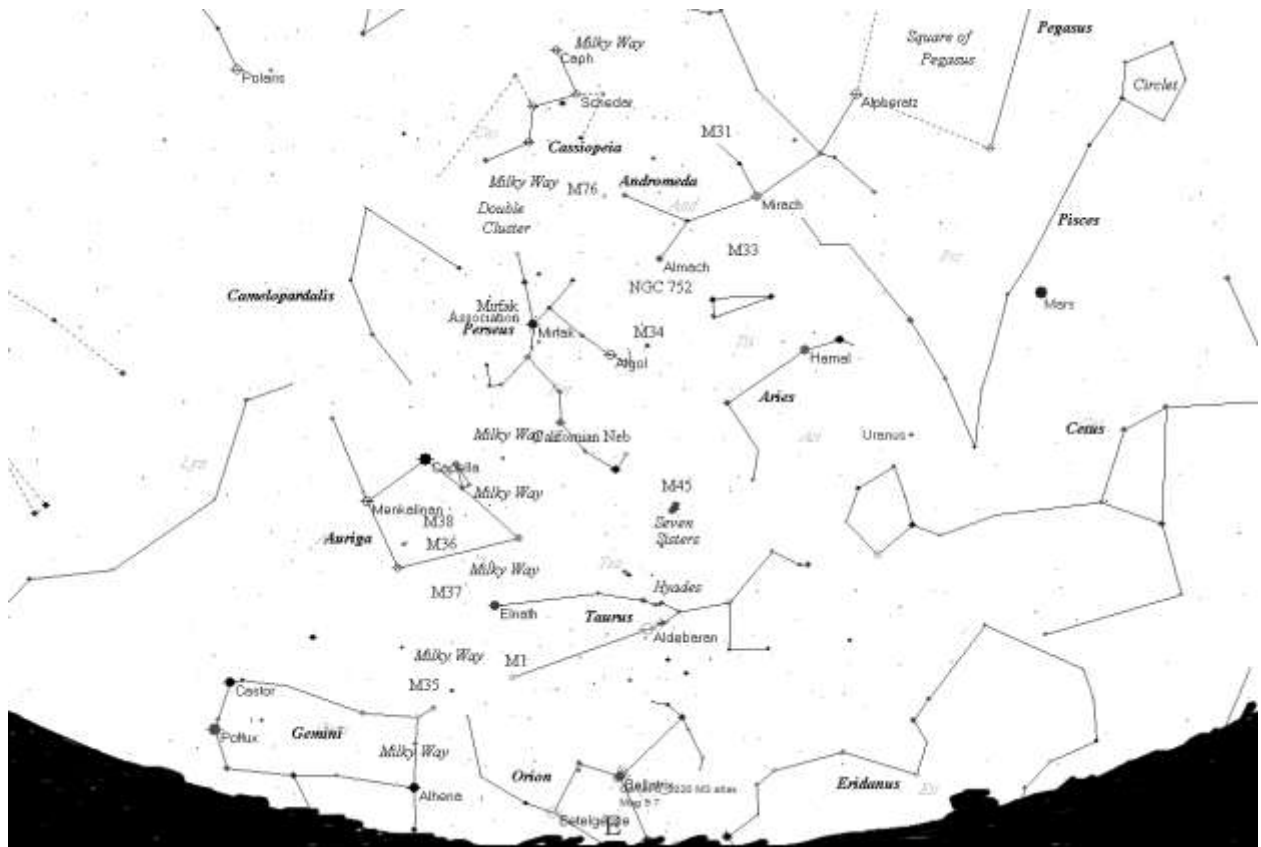
Finder chart for Neptune – refer to additional finder chart section of these notes.

View looking west 8pm in mid November 2020



Looking west the summer constellations of Cygnus, Lyra and Aquila head into evening twilight.

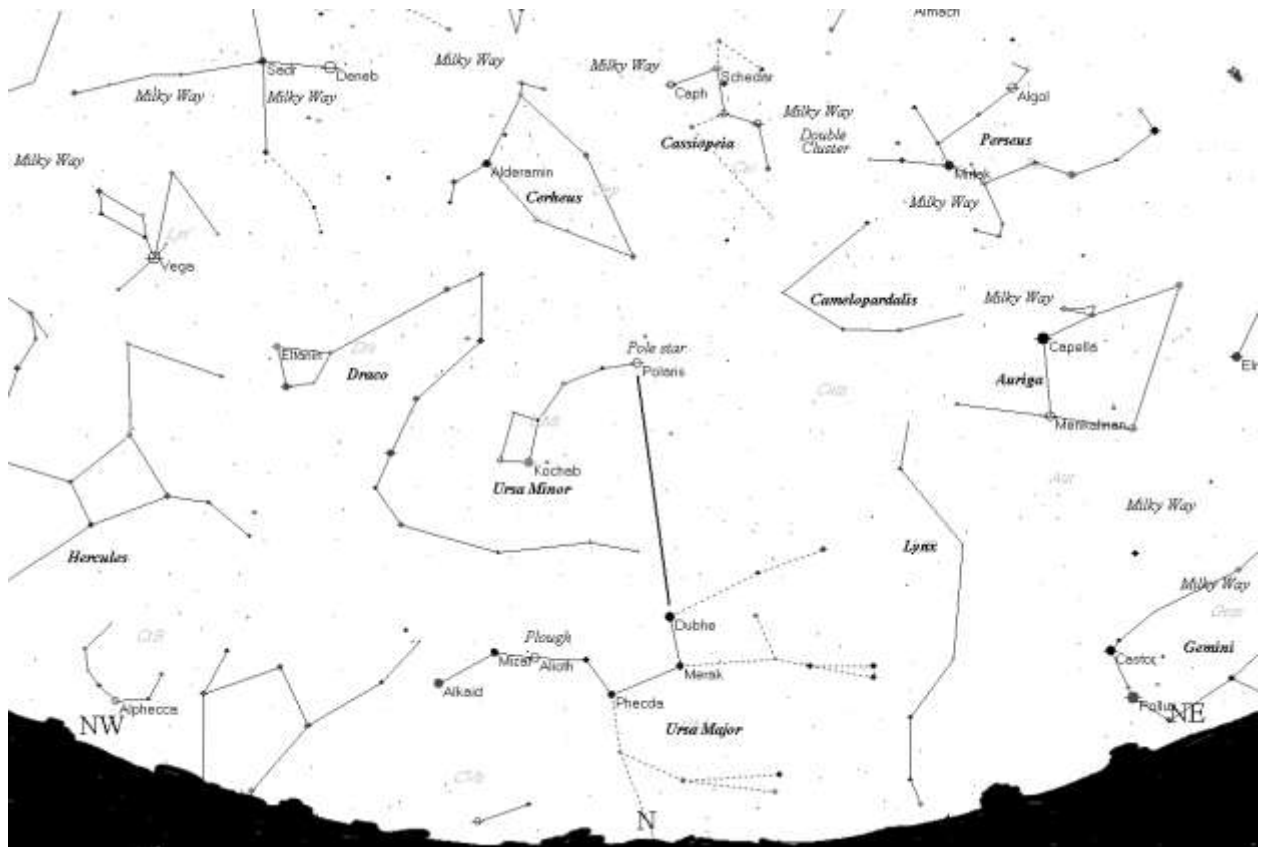
View looking east 8pm in mid November 2020



The Milky Way stretches up from the north east horizon through the constellations of Gemini, Auriga, Perseus and Cassiopeia – use binoculars on crisp clear moonless evenings from a dark site to see some very nice rich star fields.

Refer to finder charts for Comet C/2020 M3 ATLAS in the additional finder chart section of these notes.

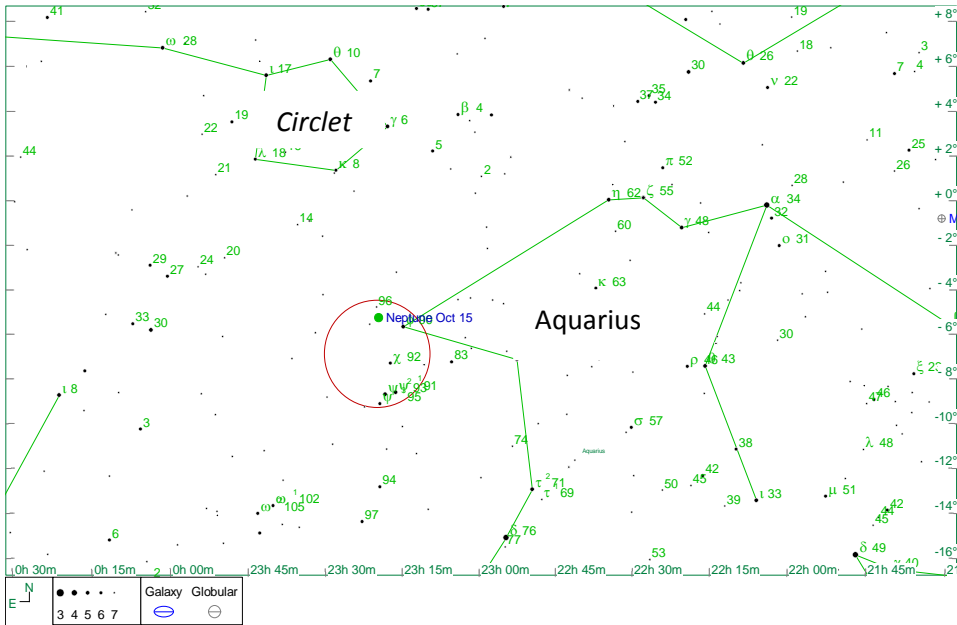
View looking north 8pm in late November 2020



Low in the northern aspect the constellation of Ursa Major is easily recognisable as `the Plough` star asterism. Locate Polaris the pole star using the pointers (Merek and Dubhe, 5 times the spacing)

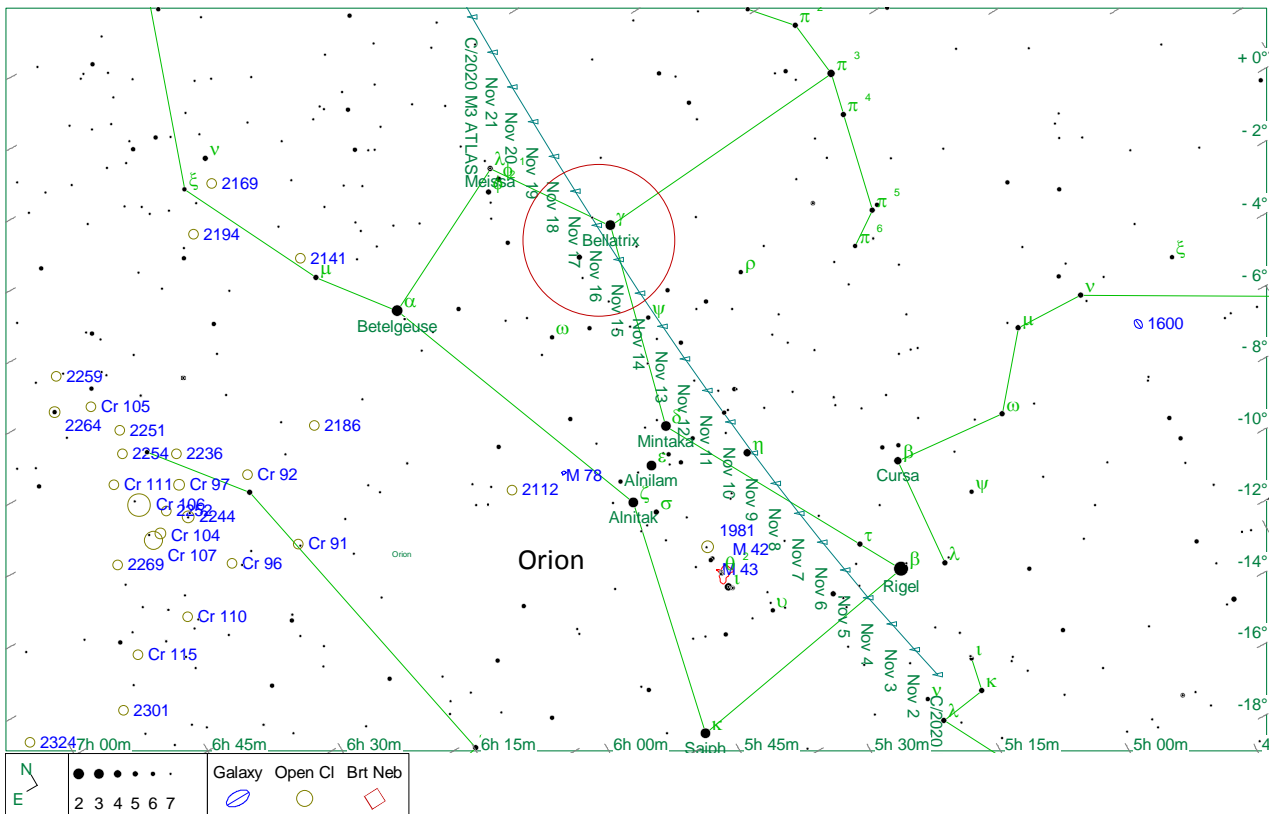
Additional finder charts for November 2020

Neptune (Finder chart) - Circles represent the FOV of a 10x50 binocular / finderscope.



Binoculars show Neptune as a blue coloured star, telescopes only show very tiny disks in comparison with pin sharp stars. Nearest finder star is Phi Aquarii
 Detailed finder chart (LAS Newsletter No 229) is available to Luton Astronomical Society members.

Finder chart for telescopic / binocular comet C/2020 M3 ATLAS in moonless conditions mid month
 Currently the comet is an 8.5m magnitude (brightening) faint fuzzy coma – look for a misty patch close to the positions / date shown. Circle represents the FOV of 10x50 binocular / finderscope.



Clear skies, there is a lot to see in our November night sky.