

The September night sky perhaps offers some of the best observing conditions. With the autumn equinox for northern hemisphere observers on September 22nd the mix of summer and autumn contains many fine objects to view with both binocular and small telescopes. In our early evening skies the planet Jupiter shines brightly low in the south / south west aspect with Saturn a fainter star like object located to the east of Jupiter. By mid evening the planet Mars can be seen low in the east, very bright and unmistakably red in colour – Mars is approaching a favourable perihelic opposition in mid October and is well placed in the constellation of Pisces throughout the autumn /winter.

The constellations of Cygnus, Lyra and Aquila can be seen high overhead and into the south; these are noted for the bright stars of Deneb, Vega and Altair respectively forming the `Summer Triangle` asterism. The Milky Way stretches from Perseus rising in the north east, through the `W` shaped constellation of Cassiopeia in the north east, along the cross shaped constellation of Cygnus. This faint band of stars best seen on moonless evenings from a dark site continues down through the obscure constellation of Scutum and on in the direction of the centre of the Milky Way (not visible from the UK) low on the horizon.

Look early evening low in the south/ southwest aspect towards the constellations of Sagittarius. To the west of the `spout` of the Teapot Asterism the star fields of the Milky Way rise upward (best seen with binoculars). The bright star above the handle of the teapot is in fact the planet Jupiter in Jupiter is noted telescopically for the four Galilean moons and the planets characteristic equatorial cloud belts. Larger telescopes (20 cm OG) show the shadow transits of Galilean moons as tiny dark spots crossing the disk at predicted dates and times.

Look to the east of the handle of the `Teapot` asterism in Sagittarius to find a yellow coloured star, this is the planet Saturn, the gem of the solar system. Telescopes show the planets ring system which currently is wide open. Moderate magnification shows the dark line within the rings known as Cassini's division as well subtle pastel shades of the equatorial belts on the planets disk. Post opposition (July 2020) look closely at the ring adjacent to the planet to see the shadow of the planet cast onto the rings, i.e. a dark feature on one side of the disk.

The faint band of light of the Milky Way is seen stretching high overhead and low into the south. Use binoculars to reveal the rich star clouds that show a myriad of stars and some of the dark rifts, regions of the Milky Way spiral arm obscured by dust clouds on clear moonless evenings. Auriga has the bright star Capella and can be seen low in the north east early evening, Capella is circumpolar from UK latitudes and so is always visible.

In the east 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 star Fomalhaut in the constellation of Pisces Australis (The Southern Fishes), visible very low on the southern horizon late evening at the end of the month.

Low in the east the Red Planet Mars rises by mid evening – Mars is taking centre stage in the night sky over the next months with opposition in mid October. Telescopes show the distinctive red colour and depending on the latitude of the central meridian some notable dark features [Details LAS Newsletter No 252 – see Notes]. Also visible is the white polar cap in striking contrast to the planets characteristic red colour. The use of filters (Wratten # 21) or a contrast boost filter can enhance some visible surface features.

Neptune reaches opposition on September 11th in the constellation of Aquarius and Uranus in the constellation of Aries both visible by late evening and are objects that can be located using binoculars and a suitable finder chart. [LAS Newsletter No 253 and No 254- see notes] A good starting point is to locate the Square of Pegasus and the ring of stars below the Square known as the `Circler` in the constellation of Pisces (The Fishes), then star hop using the finder chart. Uranus and Neptune are notable due to the blue and green colour, Telescopes show a tiny disc rather than the sharp pinpoints of stars in the field of view.

In the North West Ursa Major, The Plough or The Great Bear is seen low with its handle or tail parallel to the horizon late 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. Follow the curve of Ursa Major's tail to the orange star Arcturus in the constellation Bootes (The Herdsman) low in the west. To the east of Bootes find the 'horse shoe' shaped constellation of Corona Borealis (Northern Crown) and the 'Keystone asterism' in the constellation of Hercules also noted for the globular cluster M13 containing around 750,000 stars, a good view with modest telescopes.

In the east mid evening the seven sisters' (Pleiades, M45) star cluster and constellation Taurus heralds the forthcoming autumn skies of a new observing season..

Small telescopes show many of the moons craters, observing around first quarter shows fine shadow detail within craters located along the terminator where the low angle of the rising sun casts long shadows from crater rims and central peaks. Also of interest is a Clair obscur event on September 25th 22:00 BST, when a pair of craters associated with the dimly lit crater Clavius have the crater rims illuminated by the rising Sun to show – The Eyes of Clavius`.

Planets in September 2020

Mercury is not visible to northern hemisphere observers this month, located low in evening twilight.

Venus shines brightly low in the east pre dawn increasing to around 70% phase by month end.

Mars rises by mid evening low in the east, telescopic apparent diameter increasing as opposition approaches.

Jupiter is now low in the south / southwest early evening in Sagittarius – heading into evening twilight.

Saturn visible low in the south west early evening, rings is wide open in the constellation of Sagittarius.

Uranus rises late evening in the constellation of Aries. (Binocular / Telescope required) (See notes)

Neptune in Aquarius close to the star phi Aquarii rises early evening (Binocular / Telescope required). The constellation of Aquarius is positioned low in the south east by mid evening Neptune is at opposition on September 11th (See notes).

Moons phases in September 2020

New Moon	Sept 17th	Moonless, best time for deep sky observing and Comets .
First Quarter	Sept 24th	Best days to see shadow details in lunar craters (early evening)
Full Moon	Sept 2 nd	Best days to see bright ray craters like Copernicus / Tycho.
Last Quarter	Sept 10 th	Moon visible in daytime skies. Do not look directly at the Sun.

Autumnal Equinox occurs on September 22nd 14:31 BST, Day and night being equal length

Meteor shower's

Piscids, range September to October, maxima September 9th and 21st – rather low rates.(<5 / hour)

Epsilon Perseid also peaks on September 9th rather low rates, unfavourable.

The highlights of the month 2020

September skies, Milky Way visible high over head on moonless evenings in darker skies.

Look at the Moon illusion effect at moonrise around Full Moon i.e. the Corn Moon rising

Mars – small telescopes show colour, polar cap and possibly some dark features.

Uranus and Neptune, binocular objects to find using suitable finder charts

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

Albireo, the star Beta Cygnii is a nice blue/ yellow double star seen telescopically

Waxing crescent Moon visibility . **Caution. Do NOT look at the Sun directly with or without optical aid.**

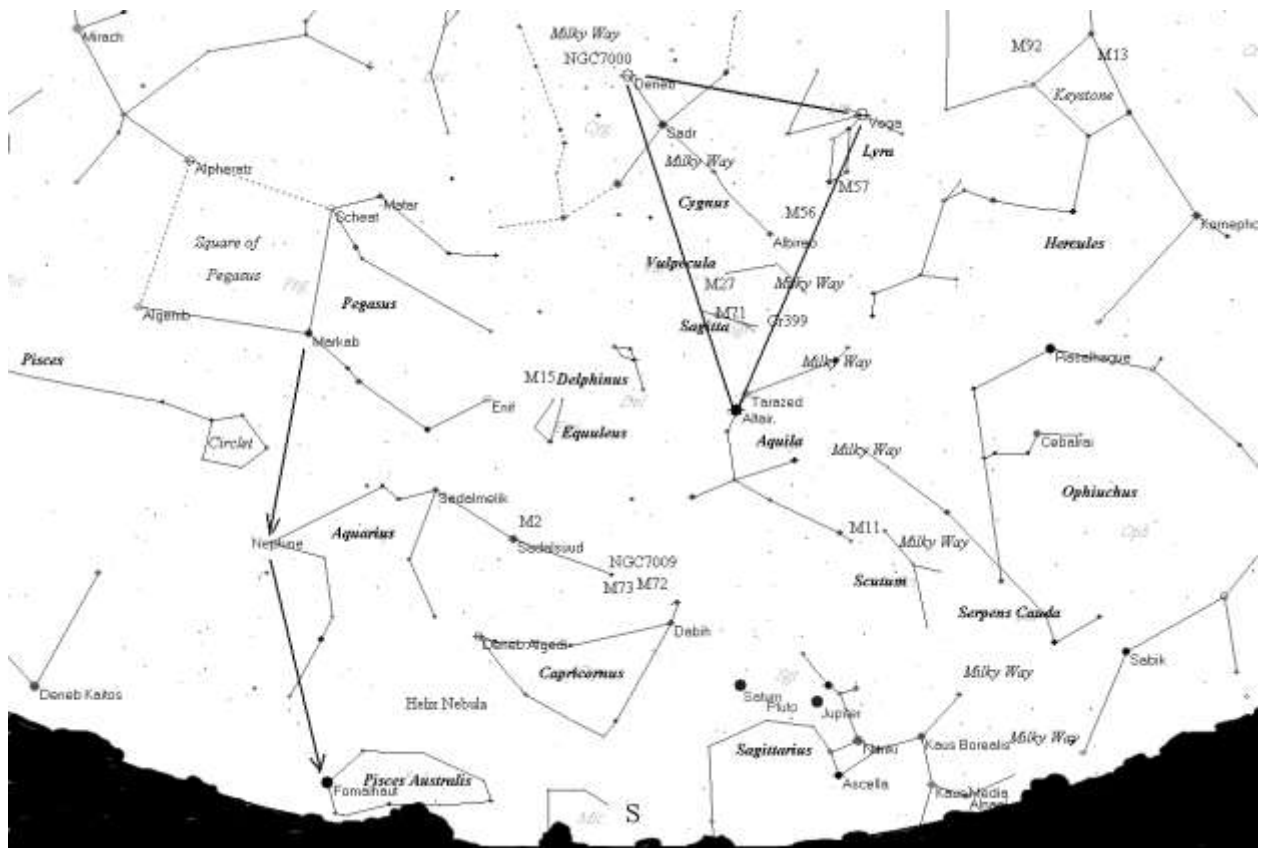
September 18th a 2.5% waxing crescent Moon sets 54 minutes after Sunset .**Only look for the crescent Moon after the sun has completely set.**

DSLR astrophotography - Sky photography on moonless evening – 28mm /50mm lens – manual focus to infinity. Set ISO / ASA 1600, exposure 10s up to 30s, remote cable release, tripod mounted – Have a go at capturing some of the star fields through Cygnus around Deneb (NGC 7000 N.American Nebula) and Scutum

More detailed sky notes and LAS Newsletters, Finder charts are available to LAS members via the Members` page on the LAS Website www.lutonastrolink.org.uk

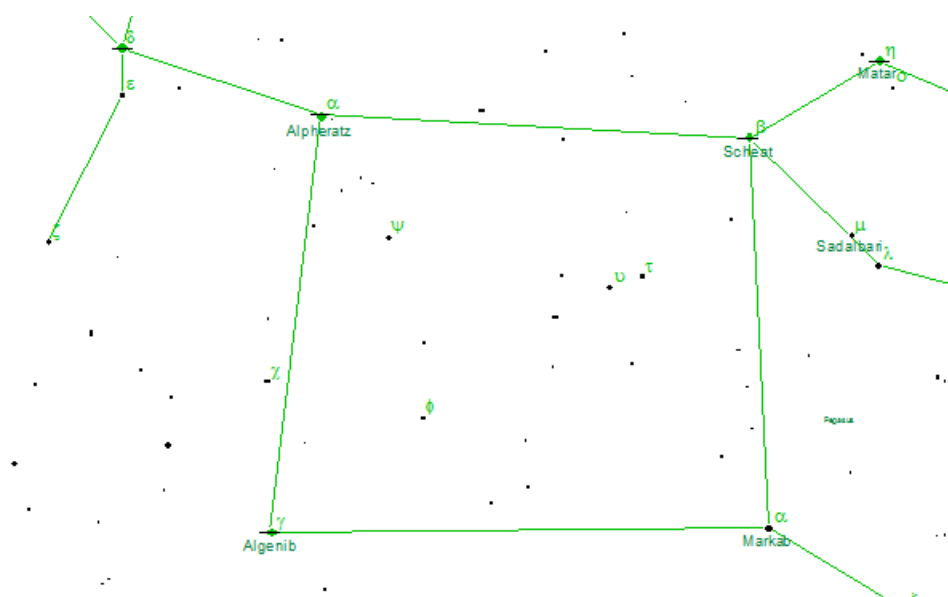
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Sky looking south in late September 2020 at 10pm BST



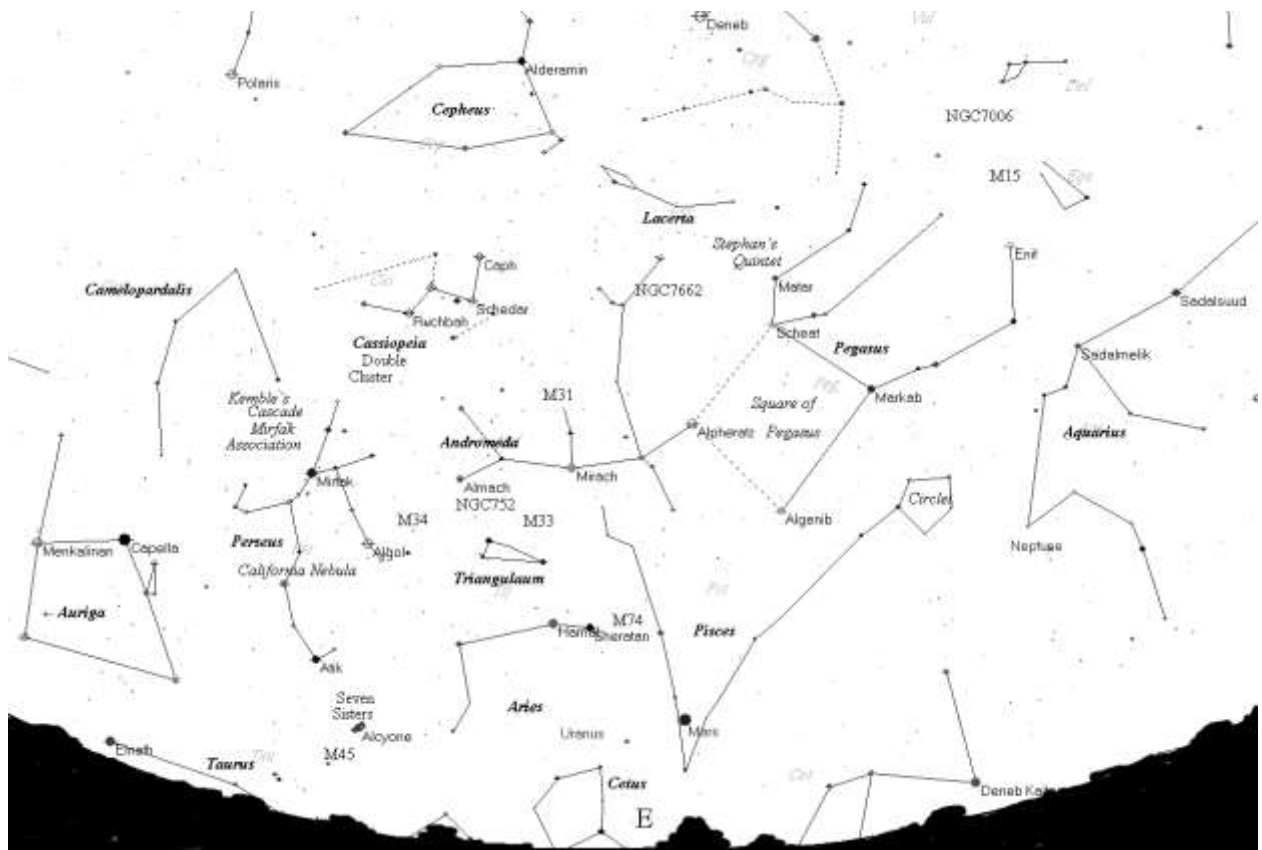
Low in the south / south west Jupiter and Saturn in Sagittarius

The number of stars visible inside the Square of Pegasus in dark moonless conditions is an indication of your sky conditions.



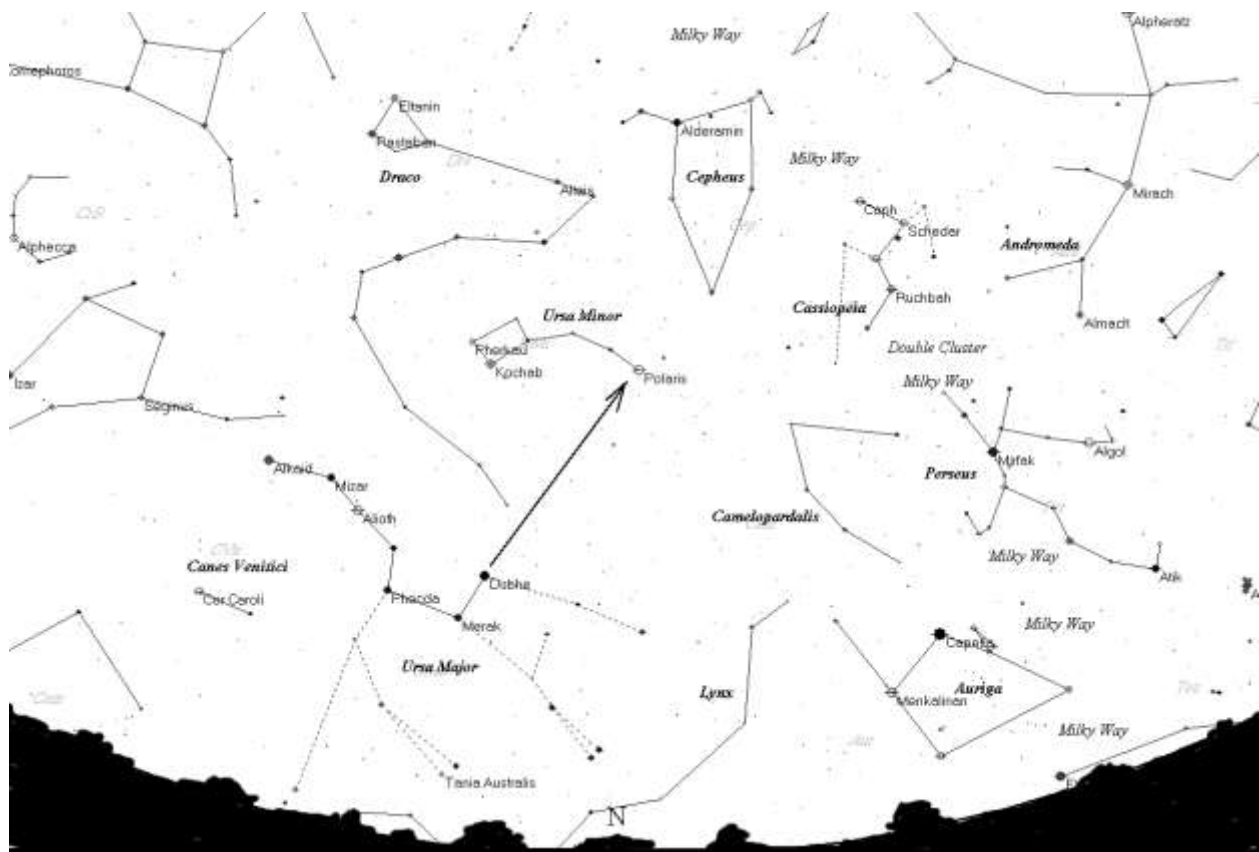
Stars shown to unaided eye limit 6th magnitude equivalent to a good dark moonless site

Sky looking east at 10pm BST mid September 2020

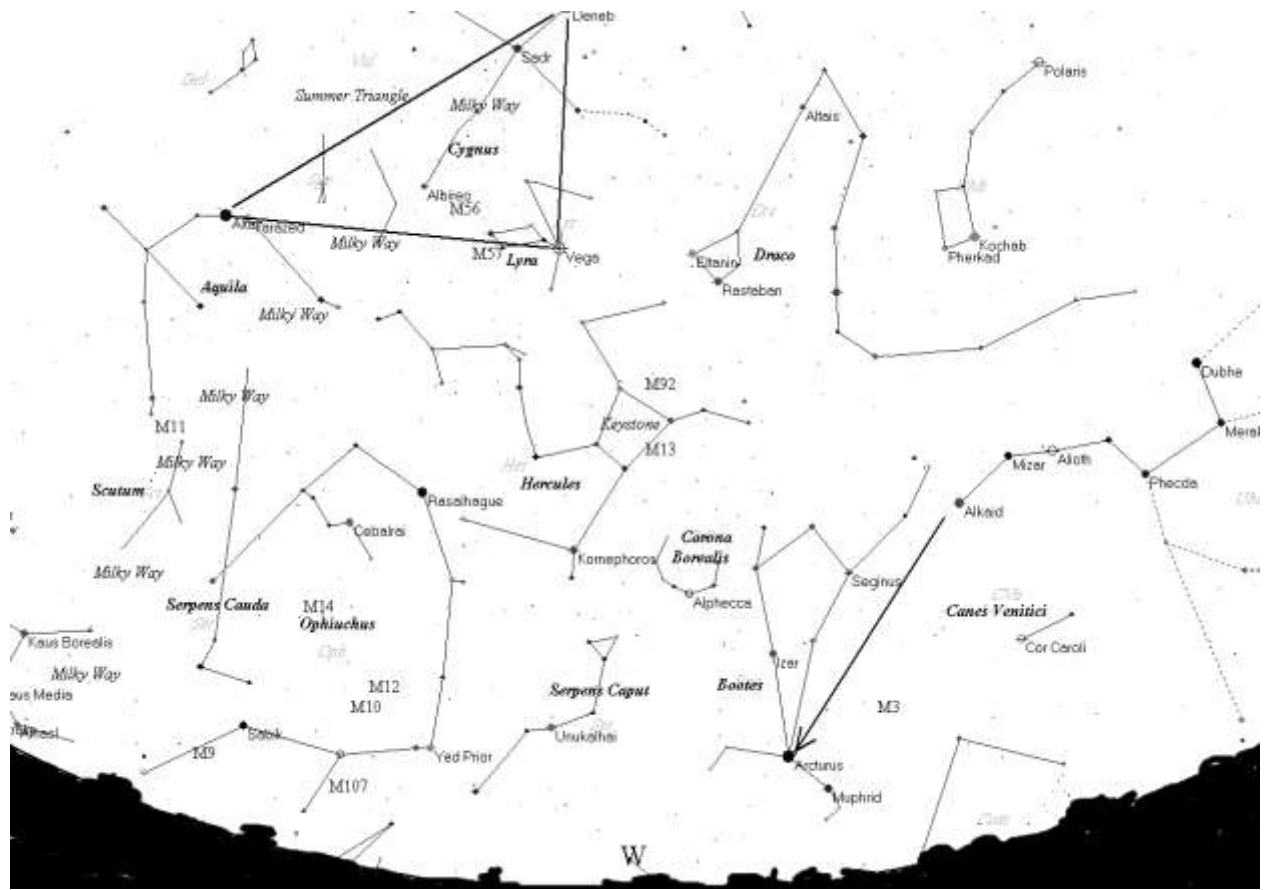


Refer to finder charts for location of Uranus and Neptune.

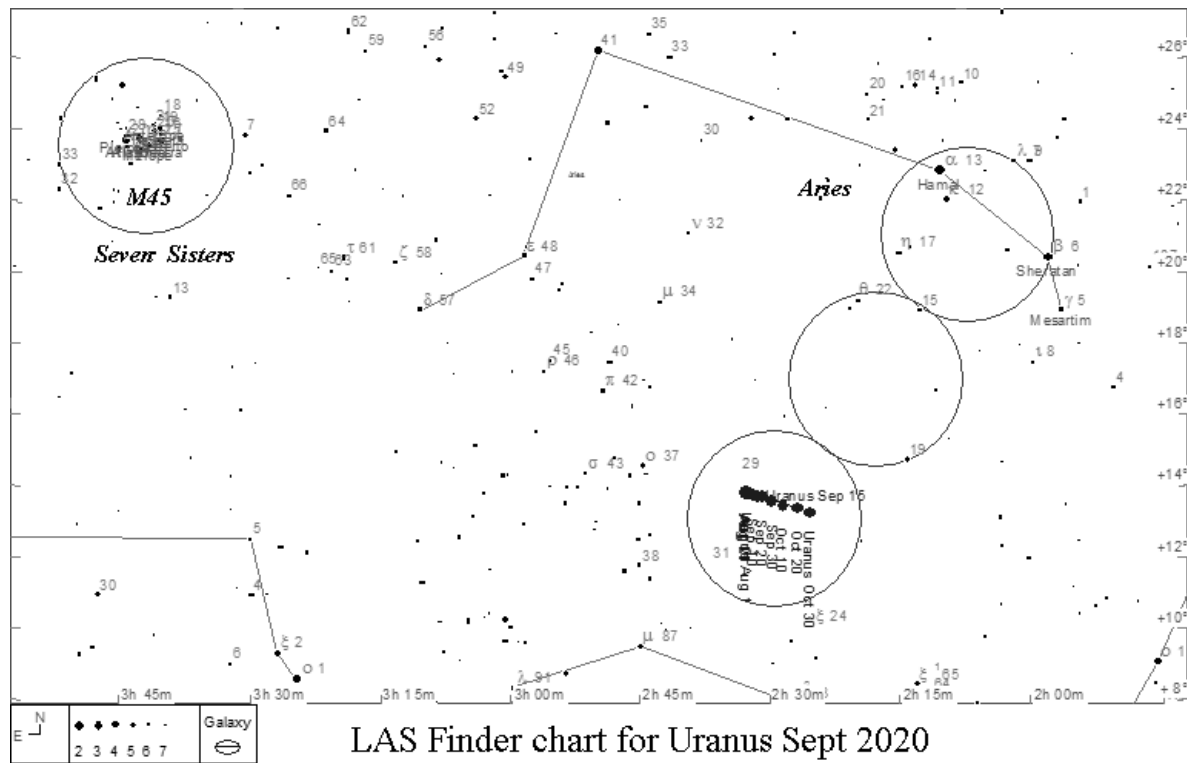
Sky looking north at 10pm mid September 2020



Sky looking west at 10pm mid September 2020



General finder chart for locating planet Uranus (Binocular / small telescope)

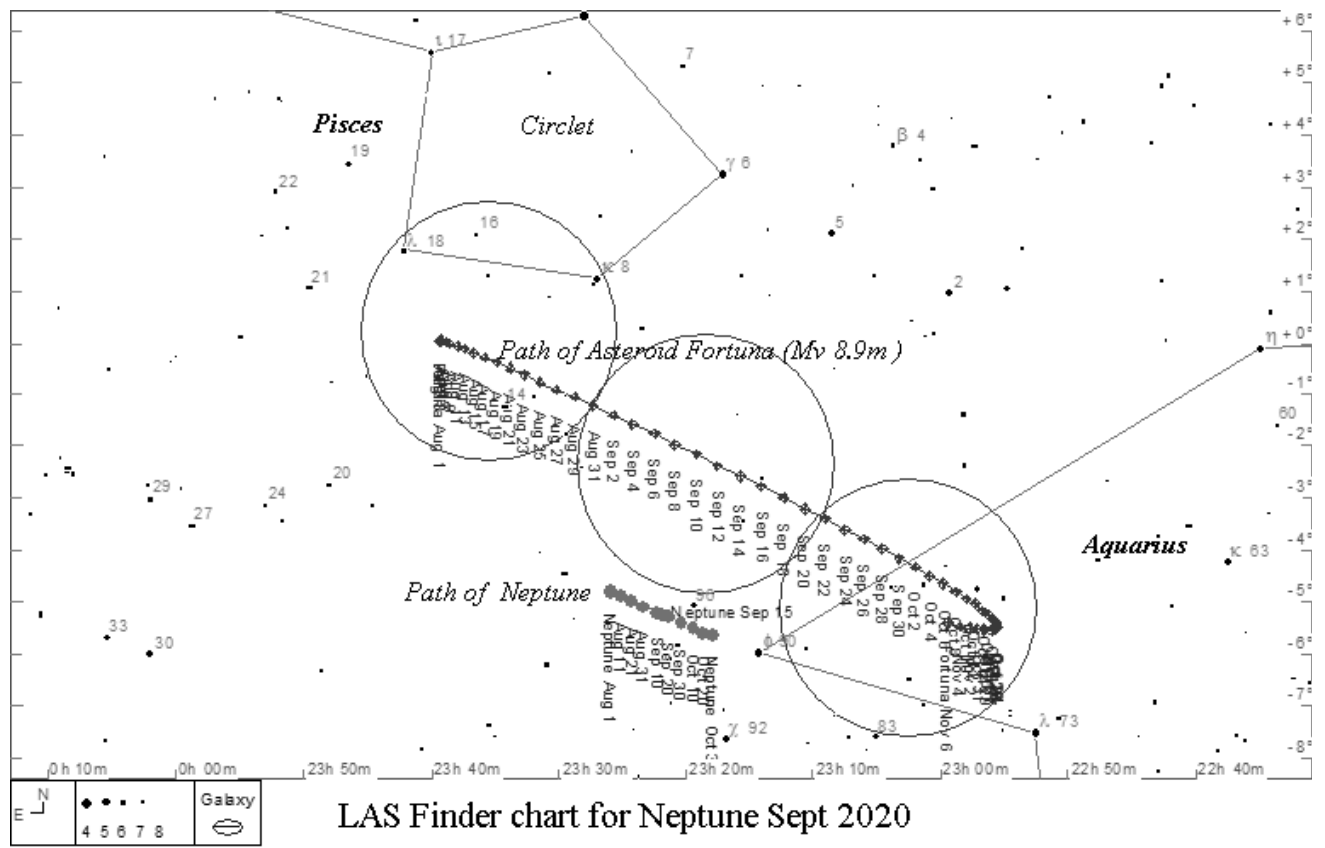


LAS general finder chart for Uranus for September / October 2020, positions shown at 5 day intervals

Note – Circles show the field of view of typical 10x50 binoculars Uranus at opposition October 24th 2018

Uranus is located in the constellation of Aries and rises in the east late evening in September. Telescopes show a tiny blue disk (magnitude 5.8m) .

LAS general finder chart for Neptune for September / October 2020, positions shown at 5 day intervals



Neptune is visible using 10x50 binocular at magnitude 7.8m at opposition September 11th 2020

Located in the constellation of Aquarius, telescopes show a tiny greenish disk.

Note – Circles show the field of view of typical 10x50 binoculars

Asteroid (19) Fortuna at opposition in September 2020 (Faint) mag 8.7m – 10m (LAS Newsletter No 256)

More detailed finder charts and newsletters are available to LAS members on the member's page