Observing Notes - September 2020

Focus on Cassiopeia

This constellation was named after the queen and wife of Cepheus in Greek mythology, who according to the legend, boasted of her beauty. This angered the god Poseidon, who sent the sea monster Cetus, to destroy their kingdom.

Cassiopeia tied her daughter Andromeda to a rock in the sea as a sacrifice to the monster and save the kingdom. But she was saved by Perseus who happened to be flying past on Pegasus, the winged Horse (or maybe not depending which story you believe), swooped down rescuing Andromeda.

All the characters from this story form constellations in the same part of the sky, although Cetus is a little way away with some of the other watery constellations such as Aquarius, Pisces and Eridanus. But more interestingly, these main constellations lay close to the line of the Milky Way and are rich in deep sky objects for the amateur astronomer to test their locating skills.

The constellation can be seen in the northern part of sky all year around (called circumpolar) in the UK skies. At this time of the year, it is rising from its low horizon hugging position of the summer months and continues to climb higher throughout September.

At the beginning of the month at about 23:00, it is easily found halfway to the zenith in the North East and is easily spotted by the well-defined group of five stars in the form a 'W' asterism. The remaining stars of the full constellation are less obvious and so in the majority of cases we will use these to guide our way to our observable target this month.

Reading from left to right of the 'W' in order we have the following stars:

Episilon Cassiopeiae, known as Segin

is a magnitude 3.3. rapidly spinning star located about 400 light-years from Earth.

Delta Cassiopeiae also known as Ruchbah or "knee", is thought to be an eclipsing binary, a 100 light-years away, making it a variable star with a with a maximum brightness of 2.7 magnitude.

Gamma Cassiopeiae or Navi is another binary variable star with a maginitude that changes from 1.6 down to 3.0.

Schedar (meaning the "the breast") or Alpha Cassiopeiae is seen a four star system (by line of sight) and is magnitude 2,2 and around 228 light-years away

Finally, Beta Cassiopeiae or Caph (meaning "hand"), is a magnitude 2.3 star 55 light-years from Earth.

DSO's for September

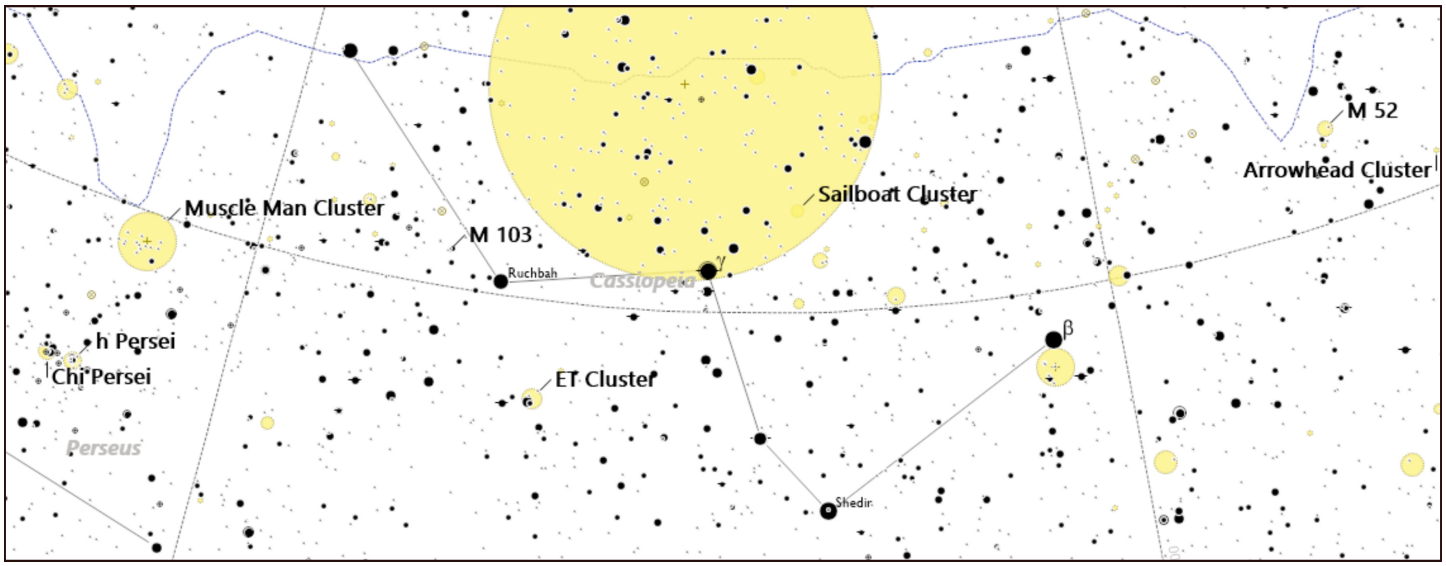
As previously mentioned, Cassiopeia contains several notable deep sky objects, among them the open clusters M52 and M103, the Heart Nebula and the Soul Nebula and the star-forming cloud popularly known as the Pacman Nebula.

Unfortunately the moon spoils are view of deep sky objects at the beginning and end of the month, so these are probably best viewed outside of this period.

Salt and Pepper Cluster M52 (NGC 7654)

Messier 52 is a richly populated open star cluster, approximately 5,000 light years distant. Its magnitude of 5.0 and being located away from the main Milky way means can be easily seen with binoculars or small telescope.

To find it extend a line from Shedar (alpha) to Caph (beta)



the same distance and a gentle swirling motion in the eyepiece should pick up the lovely cluster.

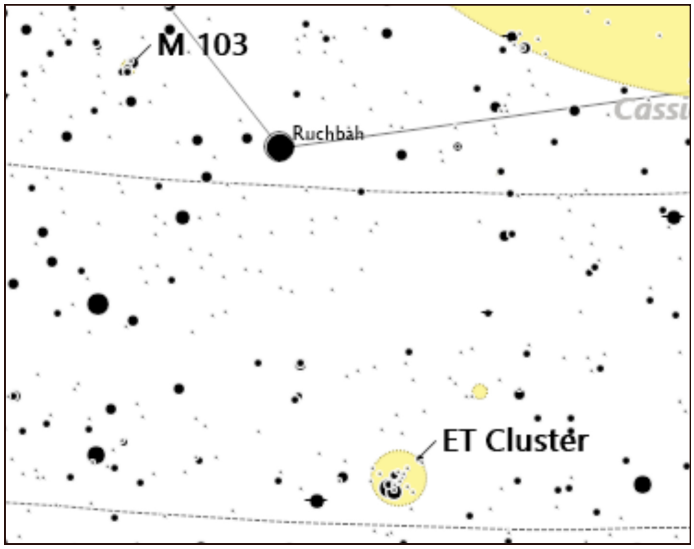
Open Cluster M103 (NGC 581)

This is a small open cluster about 10,000 light-years away with a mixed colour of stars and well worth looking for.

Messier 103 is easy to locate near to Ruchbah, (delta) Cassiopeiae, and just off the line between Ruchbah and Segin, (epsilon) Cassiopeiae. Start at Ruchbah for about a degree then drop the scope or binoculars down very slightly (this time of the year) and this small but bright cluster should pop in to view.

Owl Cluster NGC457 (Caldwell 13)

This is another Open Cluster, discovered by William Herschel in 1787, and lies nearly 8000 light-years from our planet. Its magnitude is about 6.4 so its lights just outside the limits of normal vision but can easily be seen in binoculars

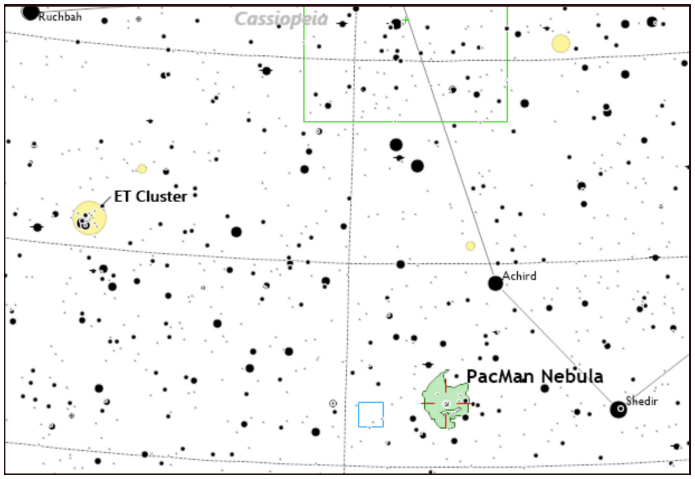


or small telescopes. The brightest stars in the cluster form lines and curves that resemble an Owl shape, hence the popular name "The Owl Cluster".

It is fairly easy to find located just off an extending line from about half the distance between Segin to Ruchbah.

Pacman Nebula (NGC 281)

This nebula is a good autumn challenge and should be visible in a smaller telescope and larger binoculars.

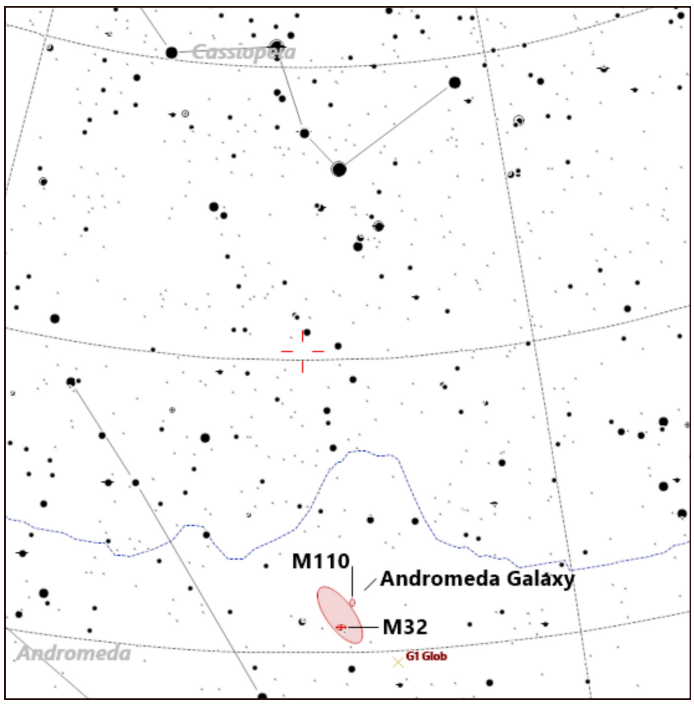


Located about 2.5º east of the Schedar. Draw a line from Schedar to Ruchbah and about a quarter of the way along drop down away from the 'W' and the emission nebula, NGC 281 will be in that region. This is a very large but also faint nebula often referred to as the "Pacman Nebula" due to its similarity to the video game character. However, if you have one, an O-III filter is useful to pull out the shapes and features. There is also a small open star cluster at its heart that may be visible to the keen eye but definitely a bit of a challenge.

So what else can we look for in September?

The Great Nebula in Andromeda (M31)

If you use the right hand three stars of Cassiopeia's W, Caph, Navi and Schedar, as a pointer (Schedar being the pointy end) and follow a perpendicular line towards, but not directly at, Mirach in the constellation of Andromeda using a short sweeping motion as you go, should find a faint fuzzy blob close to the faint star Nu (ν) Andromedae.



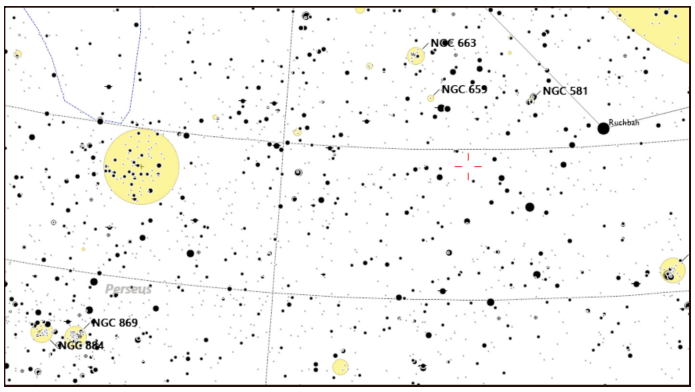
This is M31 the Andromeda Galaxy and is the brightest object outside our own galaxy even though it is 2.5 million light-years away. Up until around the early part of the last century this was thought to be a nebulous cloud within our own galaxy until proven otherwise by Edwin Hubble in 1925 through observation of certain types variable stars called Cepheid Variables.

If you look carefully you may also be able to make out another fuzzy blob near to M31. This is M110 a small satellite galaxy of Andromeda.

I always like to view M31 after the short summer nights as it is a sign that autumn is close, and the nights will draw in very soon so I can get back to earlier observing sessions in the week.

The Perseus Double Cluster – NGC 869 and 884

No observation session in this part of the sky would be complete without checking out these two star clusters making up the Double Cluster are called NGC 869 and NGC 884

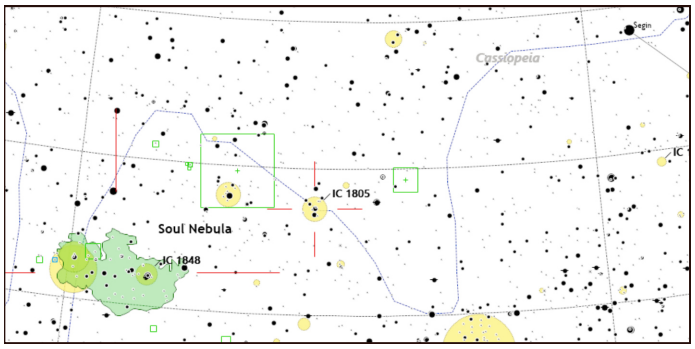


Like M31, this double cluster is a naked eye object and magnificent to see through binoculars or wider field telescope. It was never catalogued by Messier and therefore does not have an 'M' number

To locate this cluster, extend a line from the star Navi through Ruchbah about 3 times the distance to locate the double cluster. Sweeping the area in this star rich part of the Milky Way should reveal this lovely double object

Heart and Soul Astrophotography

A challenge for the astrophotographer this month is the Heart and the Soul nebula IC1848 and IC 1805. These two nebulae are very difficult to see visually without a very large light bucket telescope, but long exposures with a 200mm lens



on a driven mount with a UHC or O-lll filter can bring out good images.

To find them, draw the line used for the double cluster in Perseus as described above but now draw another line in parallel with it the same

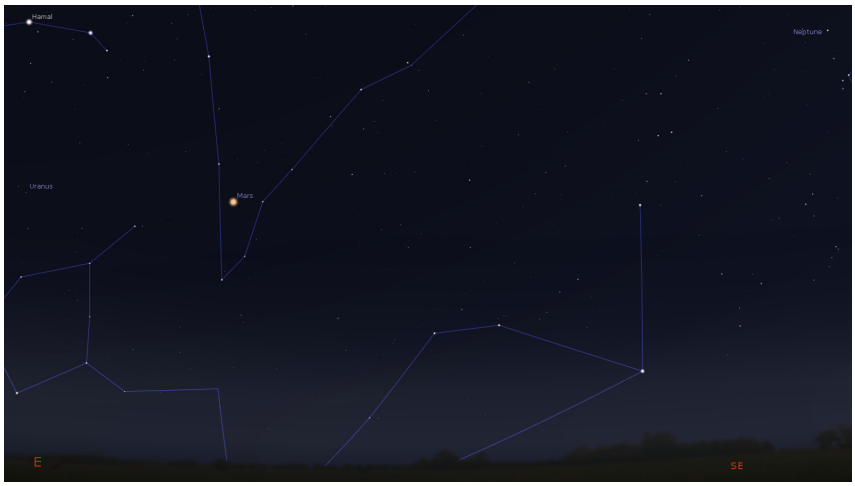
distance from Segin, the left-hand star in the W of Cassiopeia. This is where you will need to point the camera with a reasonable wide field but the darker the skies the better.

The Solar System Objects this month

Venus is viewable in the morning skies before sunrise throughout the month.

Mars rises in the East a little while after sunset throughout the month as do Jupiter and Saturn which are all easily visible towards the south at this time. But these two giants are starting get lower to the west as the month moves on so worth catching them now before we lose them for a while.

This month Uranus and Neptune are just about visible in a small scope and worth looking for on either side of the planet Mars throughout the month



Mercury sets after the Sun but its angle means it is not easily viewable from the UK.

Similar to last month, the moon is close full at the beginning and end of the month so lunar observation is probably more ideal the first and last week of the month.

Chris Brooks
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