

# Stargazing Guide: October 2015

What to look out for...

## Constellations (star pictures) and interesting stars:

**1 The Plough**: always the easiest place to start! Find it to the north-west. The last two stars point to the North Star, **Polaris**. Polaris is always seen to the North as it is above the North Pole.



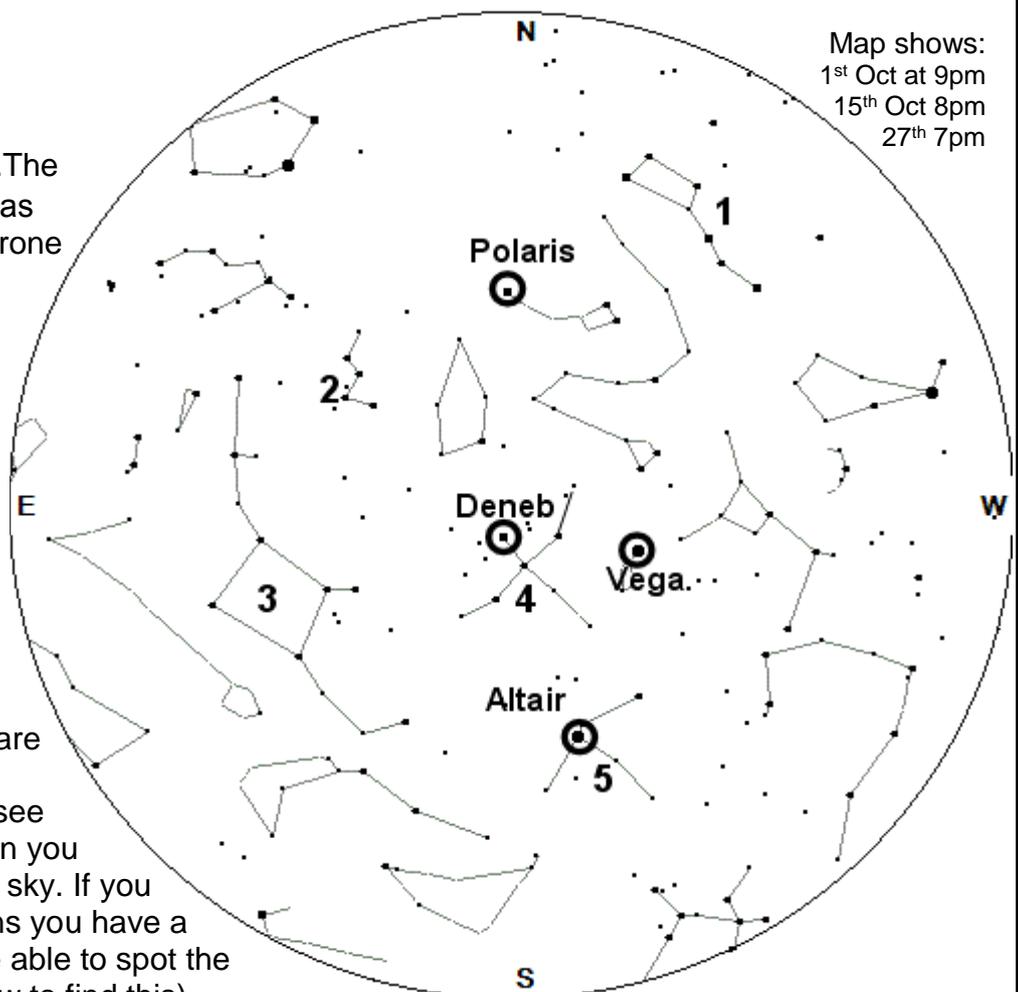
**2 Cassiopeia**, the Queen. The Greeks saw the 'W' shape as Cassiopeia nailed to her throne as punishment for her boastfulness! Cassiopeia is seen higher in the sky in winter and lower during summer.



**3 Pegasus** the winged horse contains a large square of stars - can you spot any fainter stars inside? If you see four stars in the square then you know you have a nice dark sky. If you can see even more it means you have a very dark sky and might be able to spot the Milky Way (see over for how to find this).

**4 Cygnus** the flying swan. It really does look like a swan with outstretched wings! The bright (and giant) star **Deneb** in the swan's tail forms "The Summer Triangle" with the other bright stars **Altair** (in constellation **5, Aquila**) and **Vega**. Vega is a hot young star which may have planets forming around it.

**5 Aquila** the Eagle is best seen at this time of year. If you have binoculars then this is a great area of the sky to explore, containing beautiful star clusters.



**How to use this chart**: Imagine the chart flat & upside-down above your head. The circle around the outside shows the horizon all around you. Turn the chart to have North (N), South (S), East or West at the front depending on which direction you are looking.

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Other things to see ...

## The Moon

Best seen early evening around the 20<sup>th</sup> of the month, or early morning at the start of the month, when the Sun will be lighting it from the side, casting long shadows from the mountains and crater walls.



## Planets

**Jupiter, Mars and Venus:** all can be seen throughout October, quite close together in the sky before dawn. Look up and right from where the Sun will rise. Venus is by far the brightest of the three, Mars is a salmon-pink dot, and Jupiter is a bright white dot. Also look for the bright star Regulus nearby. (Not shown on star map as this part of the sky is not visible in the evening).

On 1<sup>st</sup> October, the planets will make a line with Regulus. Watch through the month as their positions change against the stars, until they come together for a spectacular triple conjunction in the last week of the month. These planets are different distances from us, but will be lined up from our viewpoint here on Earth. Sunrise is about 7am by then, well worth the early start.

## The Milky Way

If you are somewhere very dark on a very clear night, you might see a faint milky band of light reaching across the sky from below Cassiopeia, through Cygnus and down to the southern horizon, looking almost like a faint cloud. This is the light of millions of distant stars.

There are more stars in this direction because we live in a flat galaxy (a galaxy is a huge group of billions of stars). Looking in this direction, you are looking through the flat plane of our galaxy where most of its stars lie. This line we see is how we know our galaxy is flat.

## Using Binoculars

Stars are not evenly spread through our galaxy. There are some dense clusters of stars and also more open clusters which are worth trying to find with binoculars or telescopes. Try looking near Cygnus the Swan's head, a quarter of the distance to the bright star Vega, to find Globular Cluster M56; or just enjoy exploring this part of the sky which is full of interest.

## Tip of the Month

Almost all stars look white, but really they are a multitude of colours. The colour tells you how hot the surface of the star is: red is cooler (about 3,000°C) and blue is the hottest (about 30,000°C). If you have binoculars or a telescope, you can see the colour of stars by using them out of focus. The blurred image will look bigger, making it easier to see the colour.

Download this star guide and those for other months from:

<http://www.winchestersciencecentre.org/starguides>

# Stargazing Guide: General Information



## What might I see?

Stars! In a city you might see only a few stars because the city lights light the sky so much. But in dark countryside it's possible to pick out thousands of stars against a truly black sky.

You might also see the Moon or planets; these are lit by the Sun and reflect its light to us. Planets look just like stars and can be very bright. Also look for 'shooting stars' (trails left by tiny rocks falling from space) or slower-moving satellites.

If you're lucky enough to be somewhere very dark you could also try to spot nebulae (huge clouds of gas and dust) or even other galaxies. Both look like very faint smudges of light.

## Why do I see different stars at different times?

As the Earth spins every 24 hours, carrying us with it, our view of space spins too. We see new objects come into view to the east, whilst others go out of view to the west. The best example of this is the rising and setting of our closest star, the Sun.

Because the Sun is relatively close (millions of times closer than the night-time stars), it looks incredibly bright. This means we can't see much else while it's in the sky and we are unable to see the other stars in that direction.

However, as the Earth carries us on our yearly orbit around the Sun, we get to see the Sun from different angles. This means different stars will be 'hidden' behind it. So you'll be able to see different stars depending on the time of the year.

## Where will the Moon and planets be?

The Moon and planets are always moving (the Moon orbits around the Earth, the planets orbit the Sun). This means we see them against a different background of stars at different times, although they move across the stars too slowly for us to watch this motion by eye.

The Moon orbits the Earth every 27(ish) days, keeping the same side facing towards us. As it travels, it's lit from different angles by the Sun; this gives a clue as to when you'll see it:

If the near side is fully lit (Full Moon) it'll be up all night. If it's lit from the left you see it more in the morning, and if it's lit from the right you see it more in the afternoon. When only the far side is lit (New Moon) it'll be up all day.

Planets are more complicated as our view of them depends not only on where *they* are but also where *we* are as we orbit the Sun! You'll need a current sky guide to know where to look.

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