

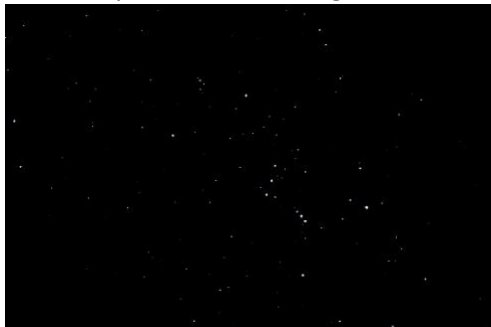
Looking to the stars: how to get started with stargazing

In our modern age, with how busy our lives are, sometimes looking up at the night sky can be a nice way to relax and appreciate our place in the universe. As president of Durham University Astronomical Society (DU AstroSoc) this year, I've gained a lot of experience in stargazing and want to share this with you, so more people can enjoy this great hobby!

Getting started

You don't need any fancy equipment or years of training to enjoy the night sky – there is a lot you can see with just your eyes on a clear night. Obviously having a clear night is the most difficult part of this (English weather is notoriously an enemy for stargazers) but with patience and planning even the weather can't hold you back!

In terms of where to stargaze, anywhere with minimal light pollution from streetlights and buildings is usually a good choice. You can still stargaze even in the middle of a city, although you will be limited to the brighter objects like the Moon and comets. Luckily in Durham, there are lots of places to stargaze like Observatory Hill, James Hill, Whinney Hill, Wharton Park, Aykley Heads or even down at Maiden Castle if you fancy dodging the late-night Team Durham training sessions going on there. Keep in mind, what you're able to see on any given night depends on where and when you are looking, as the sky changes due to the rotation and orbit of the Earth – it's often worth a quick search online to see what will actually be visible that night.



The constellation of Orion as seen from Sicily in 2014. Image credits: Davide Simonetti

In terms of finding objects in the night sky, there are lots of ways to go about this. The traditional way of stargazing is using stars and constellations as way markers in the night sky. This might be finding Orion's belt to find the constellation of Orion or using the Plough to find the North Star, for example. This often comes with experience since you often need to remember where objects are in the night sky so don't worry if you struggle with this at first. An alternative to this, is using an app on your phone like *Stellarium*, which will tell you where objects are in the night sky at that time so you can just use the app like a map to find what you're looking for.

What to look for

The Moon is probably the easiest object to find at the night, but it is still fascinating to look at, especially when comparing the various phases of the Moon! The phases of the Moon change depending on the how much of the lit side (the side of the Moon that sunlight is reflected off) we can see, which changes as the Moon orbits the Earth.



The Moon in its half-moon phase photographed through my telescope. Image Credits: David Black

Constellations are a fun way of flexing your knowledge of the night sky, but it may take a bit of practice to find and identify them consistently. Some constellations that are easier to find are Orion (look for Orion's belt, which is 3 equally bright stars that form a short straight line), the Plough (look for the signature trapezium shape) and Taurus (look just above Orion or look for the star cluster Pleiades that looks like a patch of fuzzy sky to the naked eye)

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The planets of our Solar System are also fun to find and look at. Not all of the planets will be visible in the night sky at any given time and some planets like Neptune can only be seen with a telescope. This Winter you can see Mars, Jupiter, Venus and Saturn in the sky with just your eyes – look to the East for Mars (it will appear to be a bright orange dot), Jupiter will be high in the sky and both Saturn and Venus can be found in the southwest part of the sky. January 22nd is a day to keep an eye out for as this is when there is a conjunction between Venus and Saturn (when the two planets will appear to be especially close in the sky).

Meteors (i.e. shooting stars) are small pieces of interplanetary matter burning up as they enter the atmosphere and are fantastic to see with your own eyes. The best time to try to spot meteors is during meteor showers, which is when Earth encounters many meteors as material breaks off from comets as they get close to the Sun and can enter Earth's orbit. The Quadrantid meteor shower is set to peak around January 3rd-4th so keep your eyes peeled on the sky as there will be a much higher chance of seeing shooting stars then! If you're looking for meteors later on in the year, take a look at the Royal Observatory website, which has a calendar of the various meteor showers throughout the year along with when they are expected to peak.



*The Perseid meteor shower in West Virginia.
Image credits: NASA/Bill Ingalls*

What to do next

If you want to explore the night sky even further and see objects like planets in greater detail, you may want to invest in some astronomy kit. If you're just starting off, I'd invest in either a pair of binoculars or if you really want a telescope, go for a "dobsonian" as this will give you the most value for money. An even better idea is to go along to an Astronomy Society like DU AstroSoc and use their telescopes for free and get advice on astronomy kit before you buy it!

By David Black