

Getting started with naked-eye observation in the UK

Ten Top Tips

1. **Observe whenever you can!** If you can see a star, you have an opportunity to stargaze. Can you identify it? Do you know which constellation it is in? If not, note where you were, what time it was and which way you were facing, and see if you can work it out when you get home, using your charts or planetarium software. You can observe on your walk home from school/work, when you're visiting family in other parts of the country, on holiday, anywhere there is a clear sky. It takes no time to set up, so you can observe for a few minutes if that's all the time you have available. And you don't have to wait until your night vision develops; night vision always helps, but you can do without it when looking at naked-eye stars and planets.
2. **Know what to expect.** Before you go out for a planned stargazing session, have a rough idea of what you might see. Which planets will be up? Will the moon be visible? Which constellations or asterisms will you see, in which part of the sky?
3. **Have a hitlist** of objects you would like to be able to recognise for yourself. Each time you go out, pick three or four to work on from your list, based on whether they're in view and your plan on how you will locate them. You won't necessarily have time for all four, but hopefully you'll find one or two. Once you've found something, continue to "check in" with it whenever you go out; this will help you remember it, and will teach you its movement over the seasons. Thus, each session consists of revisiting things you already know and adding in a small number of new ones. And keep adding to your hitlist!
4. **Use planetarium software** for planning, looking up objects you hear about and generally developing your understanding of the sky. Planetarium software is brilliant for planning a session – just a quick look before you go out to identify what might be waiting for you – and for reviewing what you have seen, which also helps reinforce your learning. You can fast forward or go back in time to watch the movements of your favourite objects. And you can of course use it to explore the skies while the clouds are keeping you indoors.

There are several phone apps that you can use to point at the sky and they'll tell you what you're looking at. This is handy and lots of astronomers use their phone in this way to double-check what they're doing. Be careful though: the apps rely on GPS which is not always accurate from second to second, and in the field, they work best when combined with your knowledge and sense-checking.

5. **"Star-hop"** – use what you know to find your way to new things. Orion is a major pointer to several objects, but you can use anything you know to plot a course to another item on your hitlist. Planetarium software is ideal for this, but you can do it with charts and diagrams in books as well.
6. Learn some **seasonal markers**. Orion dominates the winter and early spring. The Summer Triangle takes over the sky for the high summer months and early autumn. The Leo constellation has long been associated with Spring, its bright star Denebola was said by the Arabs to mark the separation between warmth and cold. During the day, look for the approach of the equinox – the sky will change colour.

7. Try to remember some **history or mythology** about some of the objects. The Arabs graded their eyesight “from Capella to Mizar” – Capella is one of the brightest objects in the sky (easy to see), and Mizar is a double-star which you can just about split with good sky and good eyesight. Don’t fret trying to make constellation stars look like their names – quite often they are named for phenomena on Earth, particularly the animals – Leo, for example, was high in the sky when the lions came to the Nile to drink in the very hot weather. These snippets help you remember them and distinguish them from similar objects. And you will impress your friends!
8. **Keep a journal.** It doesn’t have to be elaborate, and it should be in whichever format is comfortable and easy for you: a small notebook, a spreadsheet, a word-processed document, one or more notes in Evernote or OneNote – whatever works. Some people make notes on their phone as they nearly always have it with them. Include the object, the date, time and location, and anything else you think relevant, for example could you see colours in a star, did you split a binary star? It not only reinforces your learning but will be pleasing to revisit in years to come.
9. **Go online** – you don’t have to contribute unless you feel ready to, but “listen” to chatter on discussion boards, you’ll hear about objects that are new to you, interesting phenomena that might be available only for a day or two, and seasonal events such as meteor showers, all alongside existing members’ questions and answers. YouTube has lots of astronomy channels too.
10. **Find other astronomers.** Beginners like yourself, a good supplier, a local club, a friendly expert. Go out with them (it’s safer for one thing). Don’t be afraid to ask questions - the only silly question is the one you wish you’d asked.

Things to start with

Don’t forget you can Google all these, particularly for images...

Big Dipper/Plough

In the UK the Plough is “circumpolar” – meaning it is always above the horizon, which makes it a very useful asterism to recognize – once you find it, you know you are facing north-ish. From its pointers you can identify North exactly by locating Polaris (North Star). If you go the other way, following the curve from its handle you’ll find Arcturus, the Guardian of the Great Bear. A big bright star of magnitude -0.05 - most cultures noted it, for example the Aborigines of Australia knew certain food was in season when they could see Arcturus.

The star second from the end of the handle is Mizar, a double-star – congratulations if you can see its companion (Alcor) with your own eyes!

Cassiopeia

Another useful constellation to recognize, its characteristic W shape (or M, when it is the other way up!) is also circumpolar and when the Plough is not visible for some reason (perhaps behind a tree or building), you can use Cassiopeia to find Polaris.

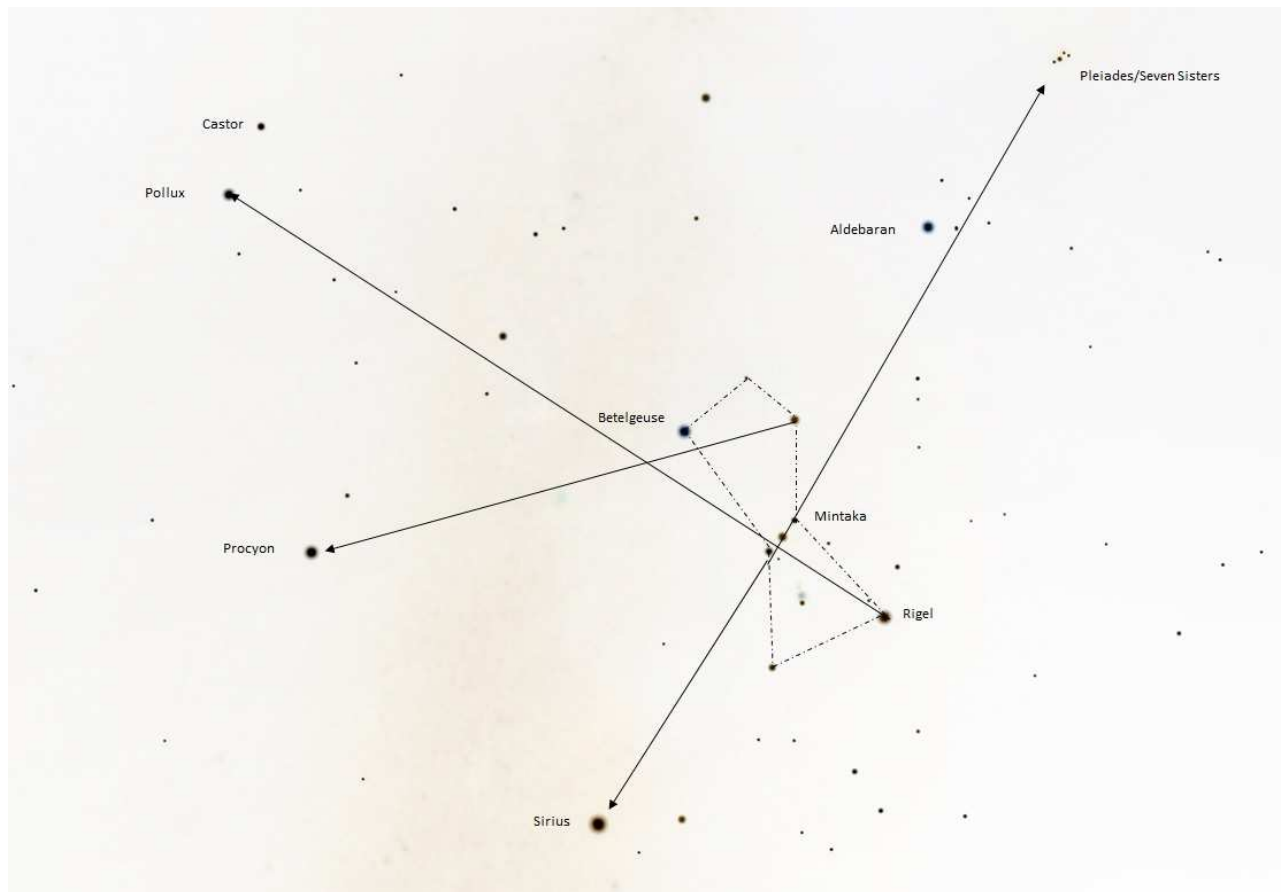
The Moon

By far the brightest object in the sky (when full) apart from our sun, the Moon is fascinating and many astronomers focus exclusively on the Moon. It is easier to study its features when it is less than full, as it is very bright when at its most complete. Even if it does not hold your interest particularly, it is useful to be aware of its phases as this will affect what you can see – its brightness,

again, might obscure objects around it, including planets. Further, it follows the ecliptic so it can help you locate the path of the planets.

Orion

A major constellation visible throughout the winter, very noticeable and once seen, never forgotten. The highly distinctive Belt of three stars is recognized by most if not all cultures worldwide. Betelgeuse (his right shoulder, left as we look at it) is glorious on its own, never mind with its companions. You can find lots from Orion!



Summer Triangle

Deneb, in Cygnus, Altair, in Aquila and Vega, in Lyra, form the Summer Triangle. Despite its name, it is visible most of the year in these latitudes, in January it can be found in the early evening twilight. In late summer and autumn it comes to the fore. Vega is a beautiful blue star, you will hopefully see its blueness even without equipment. The Cygnus constellation is one of the few that looks (a bit) like its name – a swan flying across the sky. Before it reaches its zenith, Deneb and Altair point more or less due south, and after, as it descends to where it will set, Vega and Altair point southwards.

Spring Triangle

You know spring is on the way when you start to see this before midnight! Arcturus in Boötes, Denebola in Leo and Spica in Virgo form an almost equilateral triangle, visible in the UK from early February before midnight. Denebola for the Arabs marked when the cold part of the year was over. Instead of Denebola, Regulus is sometimes used as the third star in the triangle, it is in any case a good star to know as it sits almost directly on the ecliptic and will therefore help you find it. Spica is also on the ecliptic so if you can see them both, you will have a good perspective on its trajectory over the sky.

Glossary

You can Google these terms for a more complete explanation; this is merely to jog your memory

Asterism	A group of stars in a recognizable shape. Stars may all be within a single constellation , or may come from several. Examples: the Big Dipper/Plough, Orion's Belt, the Summer Triangle, the Winter Hexagon...
Bayer notation	A system of naming stars within their constellation, using Greek letters according to visual brightness. Universally used, you will come across this method of referring to stars, but its given name is equally acceptable, if it has one.
Circumpolar	We use this phrase a little wrongly. All stars are circumpolar, around either the north or south celestial pole. Usually, however, we use this word to indicate stars that do not set at your latitude. For the whole of Europe, for example, the Plough and Cassiopeia are circumpolar. From the Midlands northwards, Deneb and Capella just about stay above the horizon.
Constellation	An area of the sky. Constellations are not regularly shaped, they have been drawn around selections of stars that have traditionally been viewed as a group. Thus we can speak of a comet, for example, being "in" a constellation – simply in which patch of sky you'll find it.
Ecliptic	The path the sun appears to take across the sky. The planets and moon are also to be found very close to or on this path. So are some stars!
Equinox	The point at which the sun enters the celestial northern or celestial southern hemisphere, and the halfway point between the solstices . The daylight sky will change colour over the few days around the equinox, from greeny-blue in the winter half to purpley-blue in the summer months.
Magnitude	The apparent brightness of an object. The lower the number, the brighter the object, and both positive and negative numbers are used. Vega (in Lyra) has a magnitude of 0. Betelgeuse is 0.45, Sirius is -1.45. As a rule of thumb, anything with a magnitude of 4 or less should be visible to the naked eye.
Solstice	The highest or lowest point the sun reaches in the year. The height of the ecliptic is lower or higher each day as we move from one solstice to the other. Often called "Longest Day" or "Shortest Day" in popular calendars. See equinox
Zodiac	Normally a term reserved for astrology, but occasionally pops up in astronomy in phrases such as "Sagittarius is a zodiacal constellation." The Zodiac is the circle in the sky around the Earth, drawn by the Sun's rising points each day for a year. The Zodiac "starts" on the day of the spring equinox and "zodiacal constellations" are those through which the

circle passes. The “signs of the zodiac” are strictly an astrological concept and are not the same as the zodiacal constellations.

Resources

There are a lot of resources available – plenty of books, clubs, online groups, websites, videos and courses. The trick is to find something that makes sense to you but also challenges you to learn more. You will find your favourite resources in time that you’ll use for specific purposes.

Wikipedia	Despite all the jokes about Wikipedia, its astronomical information is sound – there are too many astronomers correcting it for it to show errors for long! You can usually search by the English name of an object (eg Mizar) as well as its Bayer name (Zeta Ursae Majoris) and most articles have technical information, any mythology and history associated with it, diagrams/images and links to related objects.
Facebook groups	If you use Facebook, there are several astronomy-themed groups. Here are a few: UK Astronomy – chatter and sharing of observations UK and Ireland Astronomy Buy and Sell UK Astronomy Groups linking local groups and promoting their events Astronomy for fun - worldwide astronomy chat
Local clubs	Everywhere is served by an astronomy club of some sort, often affiliated to the British Astronomy Society. Some are very informal, others have monthly meetings with a speaker. Astronomy is great on your own, and also great, but different, in a group. A club is a great way to learn and you have someone to share the misery of cloudy weather with! - Milton Keynes Deaf Astronomical Society (Derek Rowley) - The Open University has a club and a scope on their grounds - Milton Keynes Astronomy Society for the more advanced astronomer
Books	Too many to count! There is no substitute for browsing through the Astronomy section in a quality bookshop and finding a writer whose style you like. A yearbook/almanac is handy while you’re learning as it will highlight different things to do each month.
Magazines	As with books, there are so many, you may need to try a few before you find one that suits your particular style. The great thing about a magazine, especially if you subscribe, is its monthly arrival with something new to think about.
Youtube	Plenty of self-help videos covering every topic under the sun. Sometimes it helps just to see someone else doing it! The “Astronomy and Nature TV” channel can be helpful although is geared towards telescope users. “Eyes on the Sky” is another useful one.
Apps and software	Increasingly more and more of these are becoming available. The two main types worth considering are planetarium software and weather-prediction.

Planetaria: Stellarium is excellent and available for every platform from

your phone, through laptops and desktops to mainframe computers. Google Sky Map works with Android phones, Sky Safari for iPhone users, and there are others. Phone apps usually allow you to choose a roaming mode whereby you raise your phone up to an object in the sky and the map locates what it is (but be careful – if one of the GPS satellites is missing, you'll get the wrong answer, so check it a few times over several minutes). SkyChart III from Southern Stars is another excellent free planetarium for your laptop/desktop, but no phone apps as yet.

Weather: We all know how accurate weather prediction is(n't), so it is best to have several sources. Some come with apps too, and some are configured for astronomers (eg ClearOutside).

A short selection of apps follows: Some may be for iOS only, Android only, or both:

- Moon Globe HD: shows named terrain, landing sites and phase of moon
- Moon calendar: dates of phases of moon
- Phases of the Moon: Android wallpaper showing the current phase
- Jupiter's Moons: helps you figure out which moon(s) you are looking at
- Magnetology: shows likelihood of aurora
- Nightcap pro: astrophotography app for low light conditions
- The Astronomical Year: Richard J Bartlett's daily guide
- Clear outside: weather app
- Scope nights: weather app
- MetOffice: weather app
- Stellarium: planetarium
- Heavens Above: great website with masses of data. App focusses on satellite data

Websites

There are so many, you are bound to find one that suits you. Try

<http://stargazerslounge.com/>

<http://www.britastro.org>

<http://www.popastro.com/>

and see where they take you!

Happy stargazing!!

and to quote Eyes on the Sky

(YouTube), keep your lights facing down, so we can see what's up! We look forward to seeing you at <https://www.facebook.com/groups/UKastronomy/>