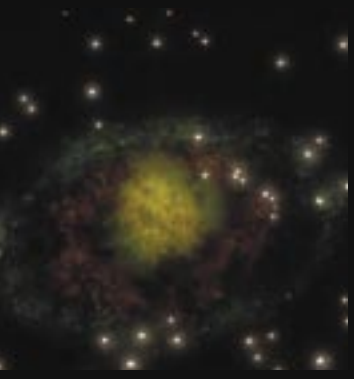
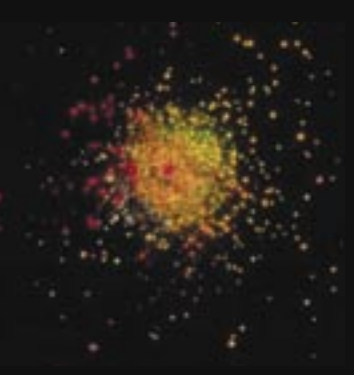
Activity Idea

Twinkle Twinkle Little Star....

by Stuart Lynn





The UK is sitting on an untapped resource that has the potential to wake our kids up to Science, invigorate areas of the tourism industry, make people more aware of their environmental impact and simply get people outside in the open air. It is a resource which is quickly disappearing from the rest of Europe and one which most people don't even realise is here. What is it that has such wide-ranging potential?

The night sky of course!

In major cities like Edinburgh, Glasgow or London it is rare to find anyone looking up at the sky, especially not in the middle of a cold winter night. Why should they? There is little to see, perhaps a handful of stars set against a sickly orange backdrop. The night sky is being lost in these cities much as it is throughout the rest of Europe. Fewer and fewer people are able to stare up at a sky full of stars, to see our own galaxy stretching away from them as the majestic Milky Way or see the planets as they move slowly across the sky.

Light pollution is a pretty big problem... but not everywhere is begin effected equally. The UK still has a lot of areas with fantastic dark skies, many of which are accessible to a lot of people. Take a look at the map of the UK on this page. It shows the amount of light pollution in different areas. The Lake District, the Highlands and Islands of Scotland and parts of Wales all appear to be conspicuously missing. These areas are some of the darkest in Western Europe and the night sky there is simply stunning.

It's not just the lack of light pollution that makes the UK such an amazing place to think about and take part in astronomy. Up and down the country at universities and laboratories, researchers work at the very forefront of research, studying our amazing

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It's not just the lack of light pollution that makes some areas of the UK such amazing places to think about and take part in astronomy....

universe. Right here on our doorsteps we have people working to understand how planets are formed, searching for new planets orbiting other stars, the origin of the Universe and how it is changing on unbelievably large scales.

So are you convinced yet? Do you want to see for yourself exactly what the UK has to offer eager stargazers? In this article and the following three you can learn how to get the most out of the night sky.

Dark Sky Scotland

The Dark Sky Scotland project aims to take advantage of Scotland's areas of dark skies and its rich research base to increase awareness in astronomy, science, the environment and outdoor activities. It is a collaboration of a number of organizations including the Forestry Commission, the Science and Technology Facilities Council, Careers Scotland, Glasgow Science Centre, The Institute of Physics, The Scottish Executive and Highlands & Island Enterprise and is led by the Royal Observatory Edinburgh Visitor Centre.

The project is, possibly, the world's first coordinated national programme of astronomy events lead by professional and amateur astronomers, professional science communicators and teachers. Over the past nine months the Dark Sky team have visited many parts of Scotland taking part in local events including the recent Outsider Festival in Aviemore.

What happens at a Dark Sky Scotland Event?

At the project's core is a series of weekend events consisting of a combination of public activities and training workshops.

Training workshops at each event are aimed at outdoor education workers and teachers who want to do something a little different with their groups, tourism operators who want to take advantage of the dark skies in their area and interested members of the community. The aim of each workshop is to teach the basics of naked eye astronomy and what to consider when taking people out into the cold night air. Participants are taught a little about how and why the night sky changes, the best things to look for at different times of the year, how to find planets and even how to spot the International Space Station.

After the training workshops participants get to see these skills in action as members of the Dark Sky team hold an observing session with the public. During the day the public can participate in a number of activities including seeing the surface of the Sun through a solar telescope, building rockets, handling and learning about meteorites, watching a comet being made before their eyes and even witnessing the night sky, if they are brave enough to crawl into the inflatable Starlab Planetarium.

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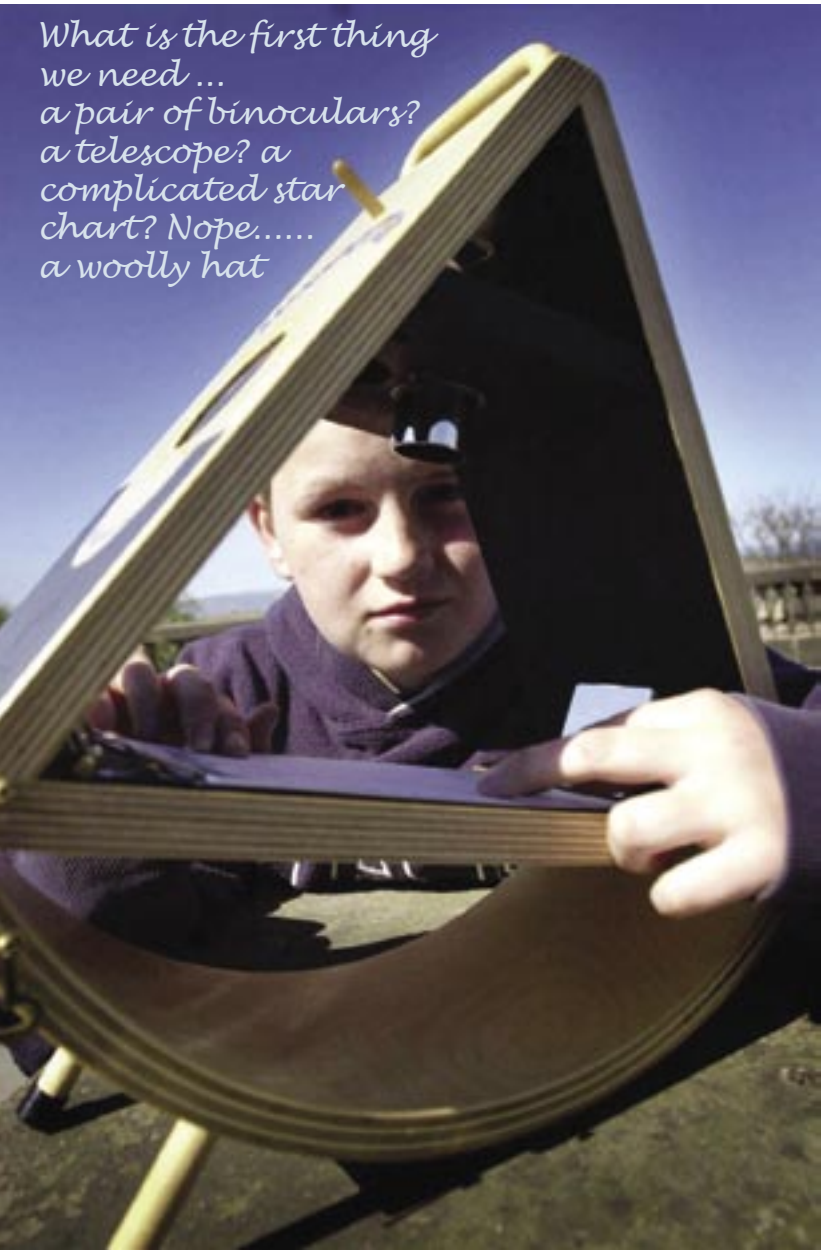


Essential Equipment

What is the first thing we need to be able to enjoy the night sky... a pair of binoculars? a telescope? a complicated star chart? Nope. The most important piece of equipment is a woolly hat - well it doesn't have to be woolly, just warm. The nights in the UK can get pretty cold especially in the winter (annoyingly when the nights are longest and darkest). If you want to get to know the sky it is going to take time outside. Getting dressed up warmly and having something warm to drink can make all the difference to how you enjoy the experience.

Once you are nice and wrapped up that's about it.

A lot of people when they first get into astronomy rush out to buy an expensive telescope which after a few cold frustrating nights ends up gathering dust in the garage. Telescopes are complicated devices which (even for experienced astronomers) take time to set up and operate.

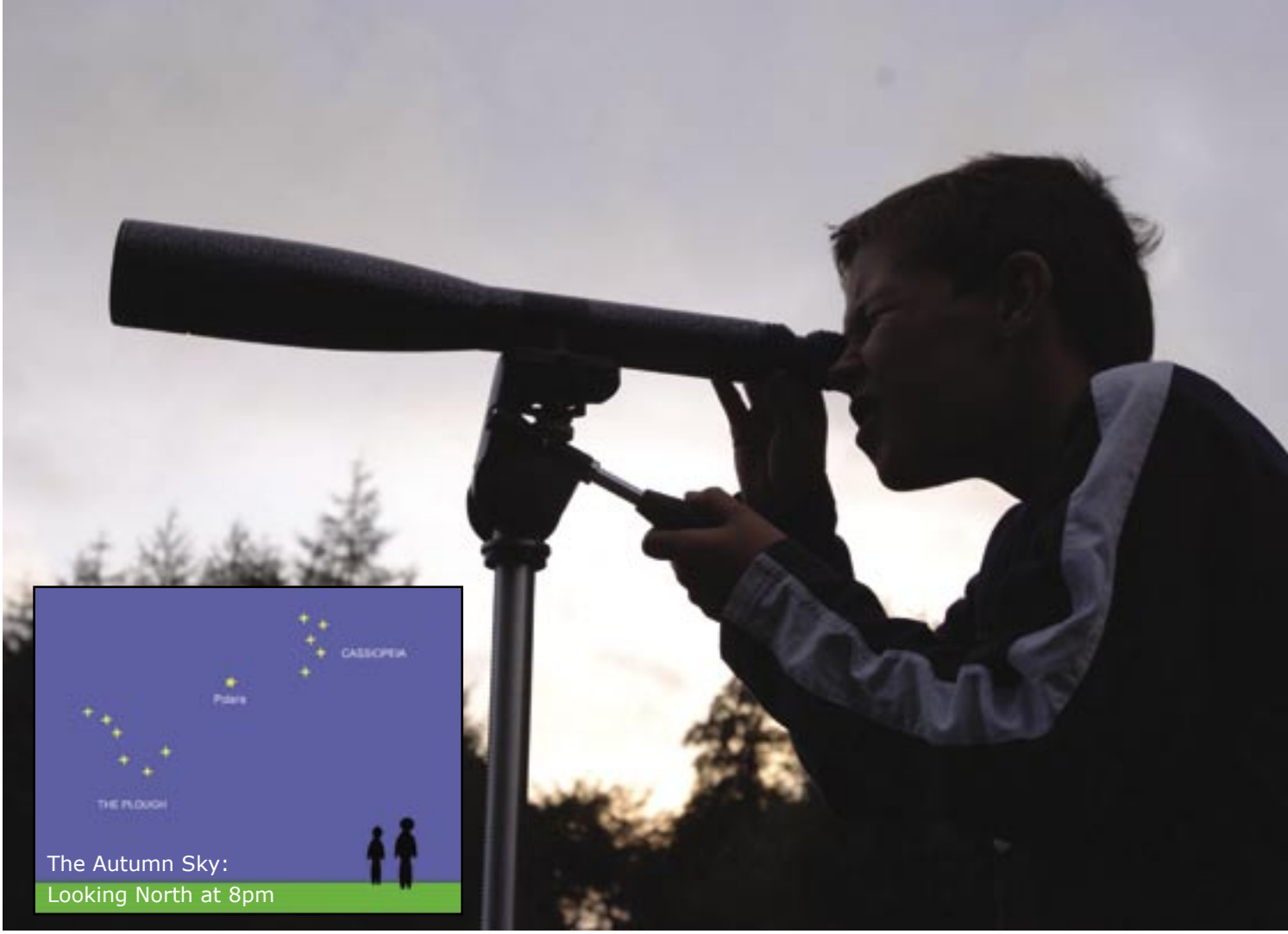
A dark night sky is full of things you can see and explore simply with the eyes in your head. The constellations offer a celestial treasure hunt of patterns in the sky. Planets are bright lights which seem to move from night to night. Shooting stars (or meteors to give them their proper name) are tiny grains of dust burning up in our atmosphere and are visible every night as sudden flashes of light in the sky. Man-made satellites (including the International Space Station) are visible as quickly moving points of light. All these are visible without any specialist equipment.

Your Guide to the Night Sky - Part 1 The Northern Sky

The sky is full of stars; literally billions of them are visible from a good dark location. To make matters more complicated they appear to move over the course of the night as the Earth rotates and even over the course of the year as the Earth goes round the Sun. This can make becoming familiar with the night sky a daunting task.

To help, we are going to start by looking at the northern sky. This is going to be your friend in the cold nights ahead, it will become like a familiar companion. The northern sky contains a very special group of stars known as the circumpolar stars. These stars never set below the horizon, and are visible in the northern sky ever night of every year. Once you are familiar with these stars you will always have a starting point to exploring the rest of the sky.

The plough (or big dipper as it's known in America) is one of the most easily recognized constellations in the sky. Made up of 7 bright stars that look like a sauce pan (3 in a handle and 4 in a box shape), the plough jumps out at you as one of the first patterns you notice in the sky after it gets dark.



The plough is a great jumping off point to explore the rest of the northern sky. The two stars at the edge of the box are known as the pointers. If you draw an imaginary line in the sky between these two stars up out of the pan, the first star you will come to is the North Star which is also known as the Pole Star or Polaris. Not particularly bright or special looking, the North Star is important as it is the only star in the sky which will be always in the same place. In fact, it is the North Star which all the other stars appear to rotate about over the course of a night. Try it yourself, use the plough to find the North Star in the early evening then compare this to their positions later on. The plough and all the other stars will have moved but the North Star will be in the same place.

If we continue our imaginary line past the North Star we come to a second easy to spot constellation: Cassiopeia. Cassiopeia is shaped as a large W in the sky and is supposed to look like an ancient queen, proving that the Greeks had a much more vivid imagination than we do today.

While you are out finding these constellations look out for satellites and meteors. Just pick a patch of sky and keep watching it for a while until you see some movement.

In the next few articles we will use these constellations to explore the rest of the sky and talk about how to use simple resources to find planets and other interesting things to see in the sky.

Until then, happy stargazing. ■

Over the coming winter about twenty Dark Sky Scotland events are planned. The first few include venues in Dundee, Mull, Loch Ness and the Black Isle. For a full list and to find out more about Dark Sky Scotland go to our website:
www.darkskyscotland.org.uk

Author's Notes

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Photos:

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