

SKYMATTERS

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November 2018

Things to watch out for

November 6

The planet Mercury reaches its greatest eastern elongation on this date. This means it is at its furthest from the Sun in the evening sky. Unfortunately, due to the Earth's tilt, this elongation is difficult to view for those of us towards the north of the planet. If you are holidaying further south for the winter then you'll have a better chance of seeing it.

November 5/6

The Northern Taurids meteor shower, which runs from the 20th of October to the 10th of September, is expected to peak on these nights this year. Caused by comet 2P Encke, this shower is expected to peak at 5 meteors an hour. This is a low peak but may persist for a few nights either side of the peak itself. These meteors are known for moving slowly across the sky so they are a good target for photography.

November 7

The New Moon is one of the best times of the month to observe faint objects such as nebulae and our Milky Way. The Moon will be between the Earth and Sun so its light won't interfere with attempts to view dimmer astronomical targets.

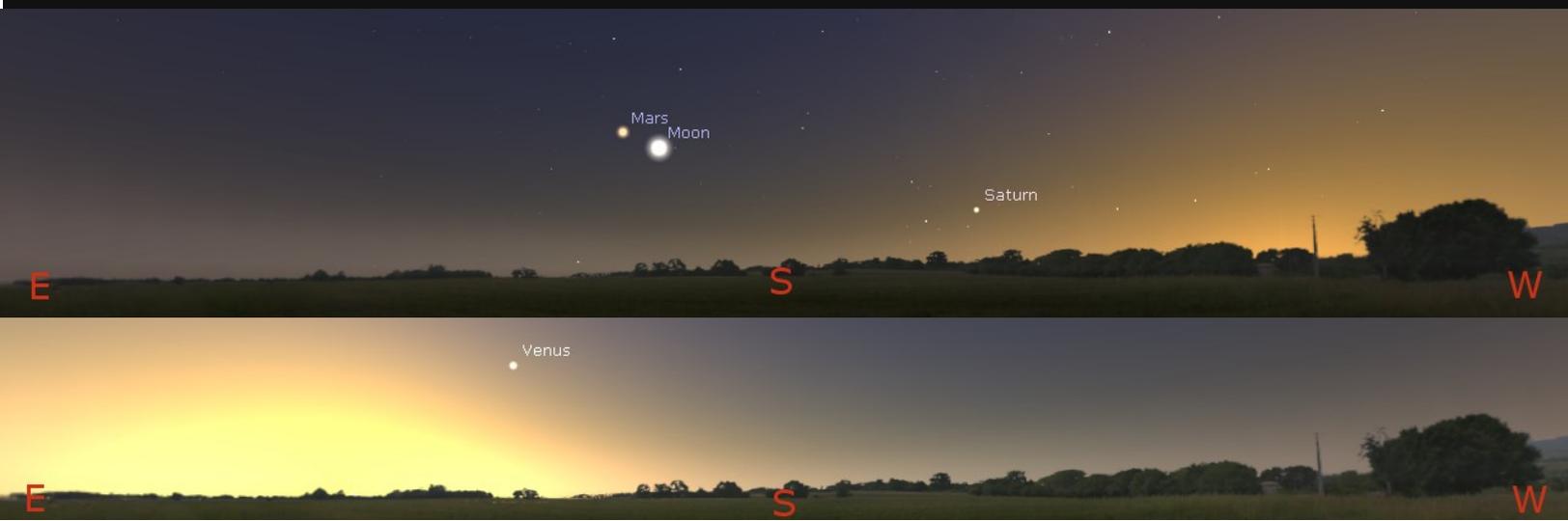
November 17/18

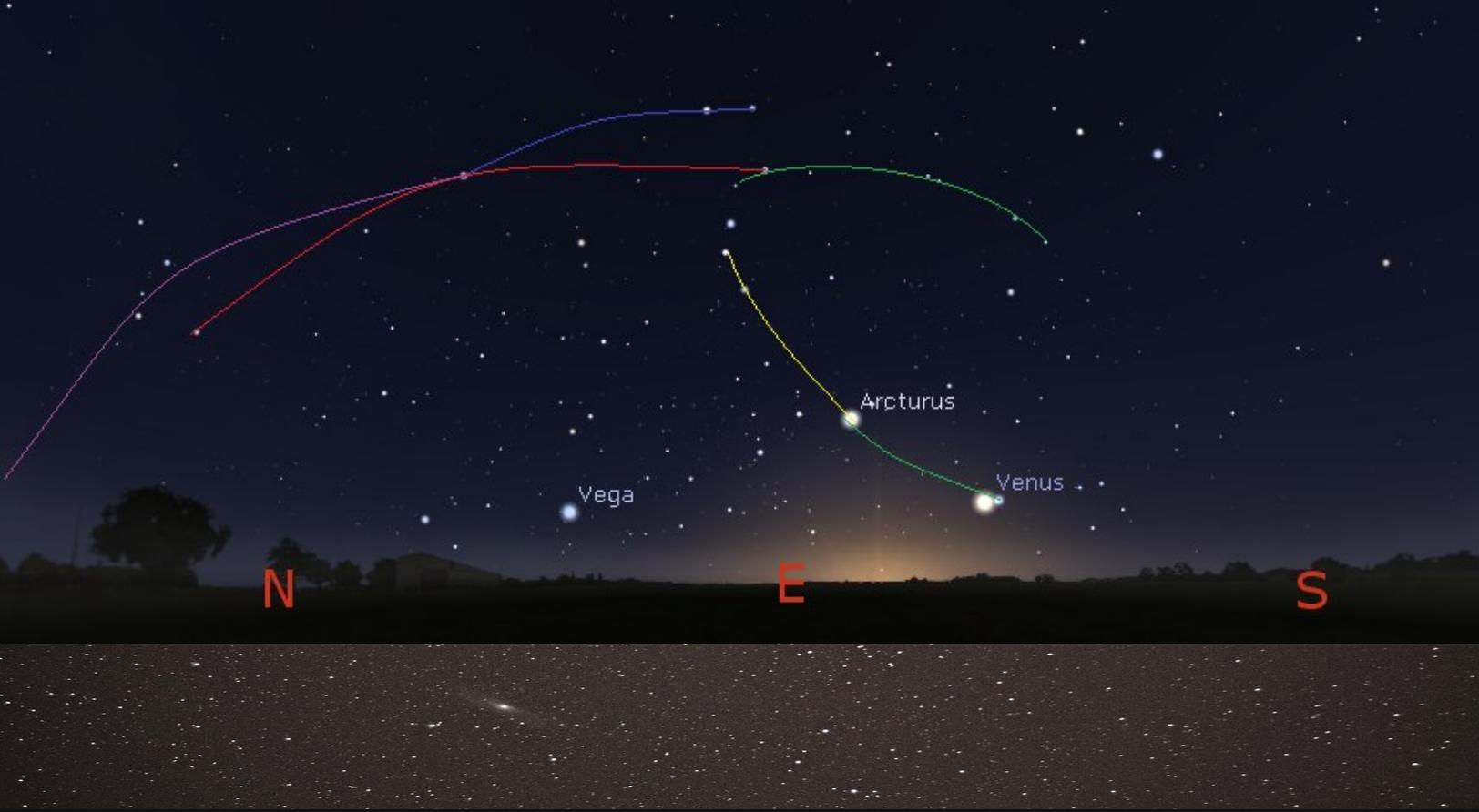
The Leonids meteor shower, which runs from the 6th to the 30th of November is expected to peak on this date with 10-20 meteors an hour. The last passage of this meteor shower's parent comet, 55P Temple-Tuttle, was in 1988, but there were other passes further in the past which may have left enough dust behind to cause more meteors closer to the end of the month.

November 23

The Full Moon will fall toward the end of November, bringing extra light into the sky. This makes fainter objects harder to see. The Moon is in the sky from sunset to sunrise, so this is one of the best nights for lunar observations given good weather.

Directly below is an image of the sunset on the 15th of November. As we are getting back towards winter time, sunset is getting earlier with this one at 5:30pm. The Moon is between Mars and Saturn and is a Half-Moon. This is a great evening for stargazing as the three objects in the sky make an easy to follow slope up from the sunset. Bottom of the page is the following sunrise, November 16th, at 7:45am. Venus is hanging lonely to the South-East, all the other objects have vanished thanks to the rising Sun. Venus will be our morning star for the majority of November, though it is tricky to spot on the first two mornings of the month, it gets easier to see as the month progresses.





Top Image shows some of the Star-hopping paths that you can take across the sky, helping to find specific constellations and even other objects such as galaxies. The image directly above this box shows the Andromeda galaxy as viewed through a low power device such as binoculars or a small telescope. Andromeda is just beyond the limits of human vision at sunrise, it is located at the end of the purple line in the image above.

What is Star Hopping?

Star hopping isn't quite the same as island hopping, at least not yet. Star hopping is an observational practice where bright stars and recognisable shapes are used to find less obvious features of the sky. One of the best known examples is using part of Ursa Major, known as the Plough or Big Dipper, to find the North Star. Finding an individual star in the sky can be tricky, especially in dark skies full of stars, but finding a group of seven with a distinct shape is easier. Once you've found the distinct shape you can use it as a guide and suddenly the individual star is a lot more obvious. Not only are there more examples besides the Plough, even the Plough itself has more uses than just finding the North Star.

The top image shows some of the more useful star hopping paths. The image shows the early morning sky, 6:55am, on the morning of the 22nd. Although many of these paths can be used at any time of the night in the northern hemisphere, some of them can only be used at certain times which change with the time of year. Although the lines in the image appear curved, this is due to using a flat image to represent a curved sky, the lines will be straight on the actual sky.

The first and most famous is using the front two stars of the Plough (in this image they are the top stars) to connect to the North Star, shown as a short blue line. Once you've found the North Star, you can use it and another part of the Plough to find the constellation of Cassiopeia. Start with the first star in the "body" of the Plough, in this image it is the bottom left star in the rectangular section of the Plough. From that star, move your view towards the north star and keep going about the same distance on the other side of the North Star. This brings you to the "W" shape of Cassiopeia. This is the long red path in the image. Sticking with that area of the Plough, the base of the rectangle, you can use the two base stars to find another constellation. Move away from the north, the opposite of the first path, you will come to a pair of bright stars which mark the constellation of Leo (this is the green path in the image). The handle or tail of the Plough is also useful, as you can follow the arc to Arcturus and then continue on to Spica, which is just next to the planet Venus at the moment. Arcturus is in the constellation of Boötes while Spica is in the constellation Virgo. So if you arc to Arcturus and speed on to Spica you can find two constellations (shown as the yellow line in the image)

Moving away from the Plough, you can use the North Star and Cassiopeia to find our closest large neighbouring galaxy, Andromeda. Begin at the north star and head through the sharper Point of Cassiopeia's W shape, here that is the bottom point. Keep going past that point and you will reach Andromeda. (path shown in this image as the purple line). The Andromeda galaxy is visible to the bare eye in dark country skies, but can be spotted through binoculars or a small telescope in other conditions. If you don't spot Andromeda with your eye's alone, try following the path with assistance. Paths like these are a great way to find objects that you can't see with just your eyes, helping you to find the right area before you bring out the magnification.



Above are some of the better objects for binocular astronomy and how to find them. This image is a view to the South-East at 10:30pm on the 7th. You can use the paths in the above image to find some objects that are not visible to the eye. The green line leads to the area of Messier 37, a globular cluster shown in the top right. The yellow line leads to the area of Triangulum containing the Triangulum Galaxy, shown at low magnification on the bottom right. The 7th of this month is a New Moon which makes some of these faint objects easier to spot.

Objects for Binoculars

Binoculars and telescopes both exist to this day, because they both have different uses and limitations. While telescopes are used almost exclusively for astronomy, binoculars are often used for birdwatching and other pursuits as well. Telescopes will often show an inverted close-up of their target, flipping the object upside-down. Binoculars on the other hand usually keep things the right way up. Although this makes little difference in astronomy, it can make a big difference if you are looking at ground-based targets. Also, most binoculars are designed to be handheld, whereas almost all telescopes require a mount. This makes binoculars a little more flexible, you can grab them and start observing right away without having to carry and erect a tripod or other mounting system.

Of course, binoculars have limitations as well. Bigger binoculars will give you greater magnification, but also greater weight. Once the binoculars become too heavy to hold easily, and mounts need to be employed, their benefits over telescopes are reduced. For this reason, it is usually better to get a small binoculars over a small telescope, but medium and large telescopes will win out over most large binoculars. Binoculars are also perfect for beginners due to their ease of use, and when you are ready to invest in a telescope, hold on to the binoculars! Using a binoculars and a telescope in tandem can make astronomy a little easier. Find the object you want with the binoculars and once you've found it you can line up the telescope to get a closer look.

I recommend starting with smaller binoculars. The back page of this supplement has some tips for what sizes are good and where to look. To figure out which objects to look at, I would start with the Moon and planets. If you can already see the object with your eyes then finding it is easier, and the jump in magnification can be impressive even with just binoculars. This goes for other objects as well, such as the Pleiades or M45 in Taurus (circled in blue in the above image) and the star forming region of Orion's Sword or M42 in Orion (circled in red in the above image).

Binoculars can also bring some objects not visible to the human eye into view. For example Uranus is just beyond the limits of human vision, but you can see the spot of the planet through binoculars. As planets change position over time, it's best to use visible planets, such as Mars and Saturn to find the path of the planets across the sky. Other objects beyond the range of our vision include globular clusters such as Messier 37 which move along the outskirts of our galaxy. There are globular clusters all over the sky, but to find M37 you can follow a line (green in the above image) from Rigel in Orion, through Bellatrix, the star opposite Betelgeuse, until you find a patch of sky with more stars (circled in green in the above image). The Triangulum galaxy is much further away, but can also be made visible with binoculars.. Start at Betelgeuse and head through the space between Aldebaran in Taurus and the Pleiades. This will bring you to Triangulum (marked by a blue box in the above image), just under the Andromeda galaxy. It will look faint and its spirals may not be obvious, but seeing something 3 million light-years away with just binoculars is a pretty good achievement by itself.

Tips for Picking Binoculars

Binoculars can suit beginner astronomers more than telescopes as they are versatile and easy to use. There are many types of binoculars, even monocular versions that resemble small compact telescopes. Which one is best for you?

- First, have a look around your house! Many of us have binoculars lying around thanks to an older sibling's brief foray into birdwatching or a parent's long forgotten passion for trainspotting. It's often worth asking family members if they've seen one around.
- If you can't get a binocular for free, check local shops. A small plastic pair of binoculars will only offer meagre magnification but can be much easier to acquire as many discount stores and brick-a-brack shops stock smaller models. Failing that, many hobby shops also stock them, as do most hunting and fishing supply stores.
- Binoculars come in a range of magnifications just like telescopes, usually expressed as "A x B" where A is magnification and B is aperture. Binoculars with between 7 and 10 times magnification, with apertures between 25 and 50 are some of the most common and lightest. Many people recommend a 7x50 or 10x50 for beginners, with 7x25 being good for younger astronomers and 8x40 being a good middle ground.
- Before you buy, try! Pick up the binoculars, and pick a point about 45 degrees up in the sky. Can you comfortably hold the binoculars without shaking? If not, go smaller. Ease of use is a binocular's biggest benefit, if you want more power, go with a telescope

Website of the month

<http://www.sfi.ie/engagement/science-week/>

The Science Foundation Ireland Provides funding for many of Ireland's researchers and education centers. In November they will be funding events all around the country for Science Week, running from the 11th to the 18th. Take a look at the link above to find your closest event and see how you can get involved.

Quote of the month

"Astronomy compels the soul to look upwards and leads us from this world to another."

From Plato's "*the Republic*", written 360 B.C.E.

Some Upcoming Events at CIT Blackrock Castle Observatory

Skeptics at the Castle: Destiny and Chance – How the Wiring of Our Brains Shapes Who We Are.

Join Cork Skeptics at CIT Blackrock Castle Observatory for a talk by Kevin J. Mitchell on how the wiring of our brains shapes who we are. Kevin Mitchell is an Associate Professor of Genetics and Neuroscience at Trinity College Dublin.

Date: Friday 16th November, 2018

Time 20:00 - 22:00

Venue: CIT Blackrock Castle Observatory, Castle Road, Blackrock

PUBLIC OPENING Hours: 10am—5pm (Mon-Sun)

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Blackrock Castle Observatory is operated by Cork Institute of Technology and is a partnership with Cork City Council.

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Collated by Caoimhín de Bhailís and
the Blackrock Castle Observatory team

