

As we move into Summer don't forget to keep an eye out for some of the perennial favourites in the night sky, The Summer Triangle, Ursa Major, Leo, Cassiopeia and not forgetting Andromeda.

Plenty to look out for although it will mean plenty of late nights and early mornings. Remember that at about 90 minutes after sunset and 90 minutes before sunrise to look for NLC's, you might just catch a sight of this elusive phenomena.

Distinguished Dundonian Malcolm Longair was born in Dundee in 1941. In 1971 he completed a PhD at the University of Cambridge going on to have a distinguished career in the field of radio astronomy. He was head of the famous Cavendish Laboratory in Cambridge from 1997 to 2005, as well as being Astronomer Royal for Scotland from 1980 until 1990, not a man to stand still. Another claim to fame was presenting a series of lectures in 1990 for children in the long running Christmas Lectures from the Royal Institution on the subject of "Origins", prefacing the first lecture by saying "we're about to embark on a quest to find out where everything in the cosmos came from", no small ambition. Malcolm was awarded the CBE in the 2000 New Years Honours List and was elected a Fellow of the Royal Society in 2004.



The Planets

Mercury	Moving into the night sky and setting about 90 minutes after the Sun by the months end.
Venus	a very bright object in our evening sky, a 13% waxing Moon appears close to Venus on the 16 th .
Mars	Showing a good disc early morning around 02:00 UT but low in the sky to the South.
Jupiter	A bright evening object (mag -2.4) low in the South. Starting to lose altitude towards the end of the month.
Saturn	Quite low in the southern sky reaching opposition on the 27 th .
Uranus	Not visible this month.
Neptune	Not visible this month.

The Moon

Ken's Moon in June

Long days and short nights in June make any sort of observing difficult (with the exception of noctilucent clouds) but the Moon is one object that can be looked at, even if the sky isn't completely dark.

Phases of the Moon near to new are best at this time of year as the near full Moon is low in the summer sky. New Moon in June falls on the 13th of the month and observation of the Moon will be best a few days after this and probably up until first quarter. The Moon will be well placed fairly high in the western sky after sunset and observations may be assisted until the sky darkens a bit by using an orange or red filter as this will increase contrast.

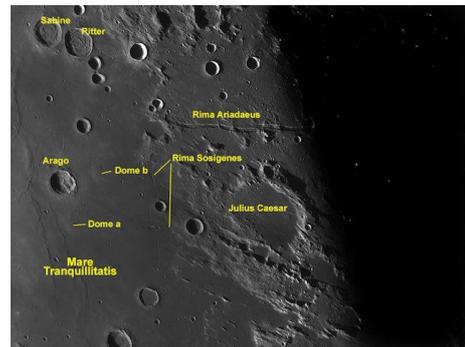
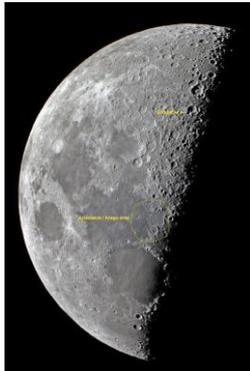
For objects to look for this month I have chosen the 19th June at, and after, 9pm. At this time the terminator is to the west of the rather ragged, open ended crater, Julius Caesar. Julius Caesar can be found on the west side of Mare Tranquillitatis just a bit north of centre. It is thought that the crater was originally better defined but was quite extensively damaged by ejecta from the formation of Mare Imbrium. Look at Julius Caesar carefully and see if you can detect patterns of 'grooves' which are radial to Mare Imbrium.

One of the main features in this area is the easterly end of Rima Ariadaeus. This feature is easily seen with a small telescope and is a graben fault with a flat bottom, forked at the eastern end. Just south of Julius Caesar it can clearly be seen that there is a 'fracture' in the rille where it seems to have been displaced, possibly by another less obvious fault. On this day it disappears over the terminator towards the west but the entire rille is about 220 km long. Talking of rilles, Rima Sosigenes runs from near to the end of Rima Ariadaeus northwards for about 150 km. This rille is much narrower and will require a larger telescope to see the wider parts of the complex of several smaller rilles. It is most likely that both Rima Ariadaeus and the Rima Sosigenes complex were formed as a result of cooling basalt which created faults of different sizes. These rilles look very different to the winding sinuous rilles caused by hot lava cutting into previously laid down basalt.

A little eastward of Julius Caesar, actually within Mare Tranquillitatis is the 26 km wide crater Arago. This is a fairly ordinary crater but, if observed when the terminator is quite close to Arago, two low lunar domes can be seen, one to the north (α) and a second an equal distance to the west (β). The domes are about 24 km in diameter but only about 300 m in elevation and this is the reason that they can only be seen when close to the terminator. They have been compared to terrestrial shield volcanoes and they were probably formed by low viscosity lava flowing from a vent which can sometimes be made out near the centre of a dome. The lava gradually builds up forming the classic shape. The Arago domes do not have well defined vents. These two domes are not well seen on the image which accompanies this article but, if the terminator is close to them, they are quite obvious visually and can easily be imaged. We will encounter domes again in other parts of the Moon as they are remarkably widespread and numerous but because of their low elevation, conditions must be just right to observe them.

While at this particular phase and thinking about the association of DAS with Mills Observatory, look southwards close to the terminator and into the heavily cratered area of the Moon. Using the illustration, see if you can find Goodacre, named for Walter Goodacre who owned and used the 10-inch Cooke housed at Mills. Goodacre adjoins the larger and rather worn Gemma Frisius. Goodacre is about 46 km in diameter but is not of particular note except, for us, for its connection to Mills Observatory.

Remember that all images used show south at the top and east to the left as seen in a refractor without diagonal.



Third Quarter	6 th June
New Moon	13 th June
First Quarter	20 th June
Full Moon	28 th June

NLC's

We are now into the full swing of NLC season. These are the highest clouds on our planet being 76 – 85km high. They can typically can be seen 90 – 120 minutes after sunset in the northwest or a similar time in the northeast before sunrise. If you observe some NLC's, please send details and any images you might capture to Ken Kennedy giving date, location, direction and time stating whether local or UT.

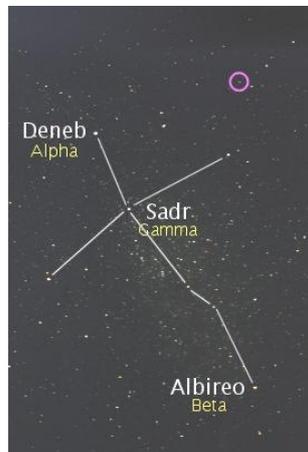
Jim's Focus of the Month

As it's bordering on summer, let's look at The Summer Triangle. Named by Patrick Moore, this is a nice and easy "asterisms" to find in the night sky and contains many nice objects to observe but let's not concentrate on the well-known ones.

The first object for you is NGC 6826. NGC 6826, the Blinking Planetary Nebula and at a magnitude of +8.8 will probably need a pair of binoculars or a small to medium scope. How come it got the name of The Blinking Star Nebula? Well, the Nebula shows itself very well using averted vision, but when you look directly at the Nebula it seems to disappear and the central stars appear, so there it is – there its gone, hence the name.



What's next? Let's look for the Star 16 Cygni. Lying very close to NGC 6826 but a little to its west lies this lovely double star and at magnitude of +5.9 should be easy to find and observe. Have a go and let us know of the outcome.



Did You Know?

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| 6 th Jun 1971 | Soyuz 11 carries Soviet Cosmonauts to Salyut 1 the first manned orbital station. |
| 13 th June 1983 | Pioneer 10 becomes the first spacecraft to exit the solar system. |
| 16 th June 1963 | Valentina Tereshkova, Soviet Cosmonaut becomes the first woman launched into space. |
| 20 th June 2016 | Summer Solstice (longest day). |
| 21 st June 2004 | First private manned mission to space taken on SpaceShipOne. |

Jim Barber

Director of Observations

Dundee Astronomical Society