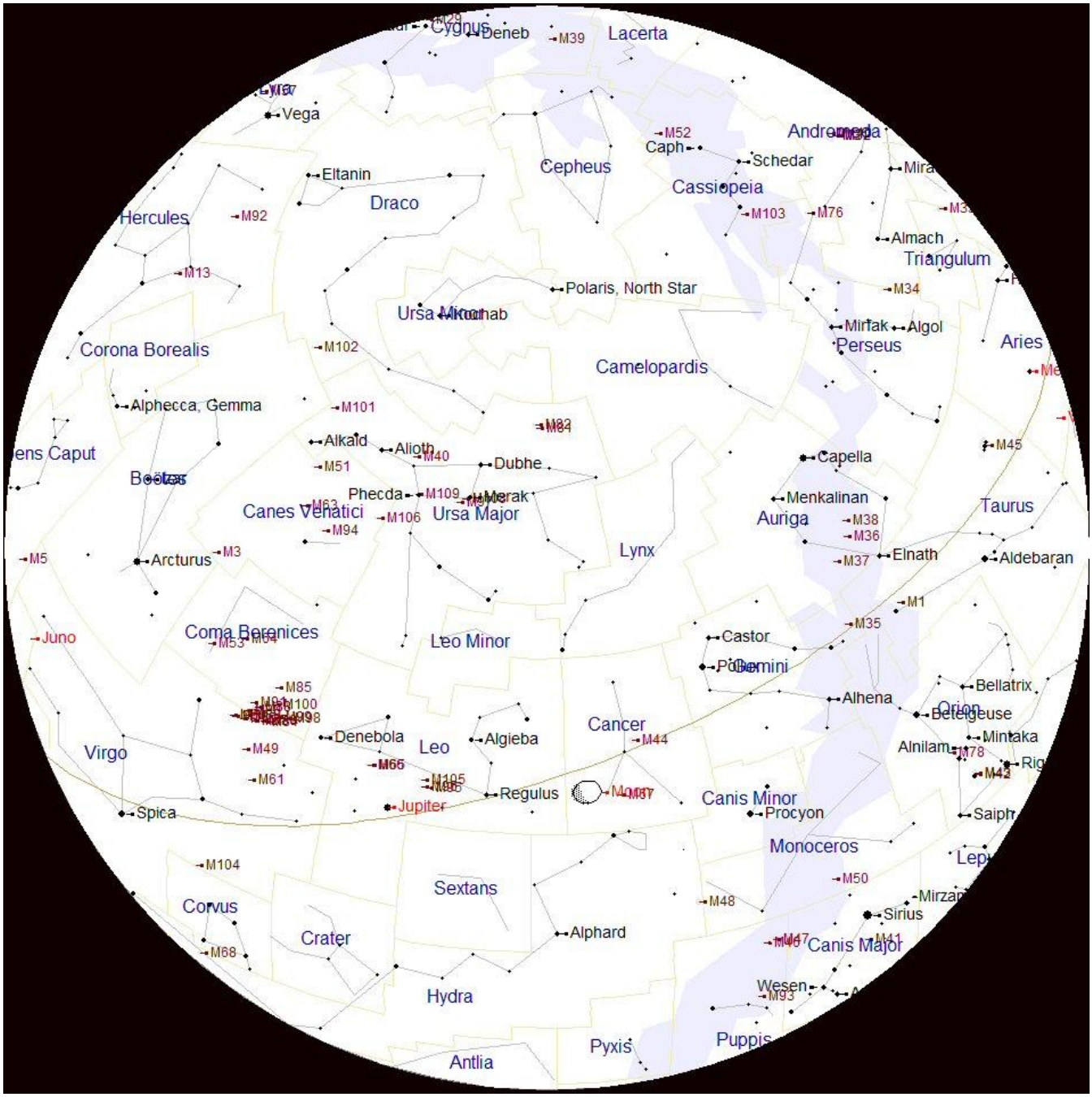
WHAT'S UP THIS MONTH – APRIL 2016

THESE PAGES ARE INTENDED TO HELP YOU FIND YOUR WAY AROUND THE SKY



The chart above shows the night sky as it appears on 15th April at 21:00 (9 o'clock) in the evening British Summer Time (BST). As the Earth orbits the Sun and we look out into space each night the stars will appear to have moved across the sky by a small amount. Every month Earth moves one twelfth of its circuit around the Sun, this amounts to 30 degrees each month. There are about 30 days in each month so each night the stars appear to move about 1 degree. The sky will therefore appear the same as shown on the chart above at 10 o'clock BST at the beginning of the month and at 8 o'clock BST at the end of the month. The stars also appear to move 15º (360º divided by 24) each hour from east to west, due to the Earth rotating once every 24 hours.

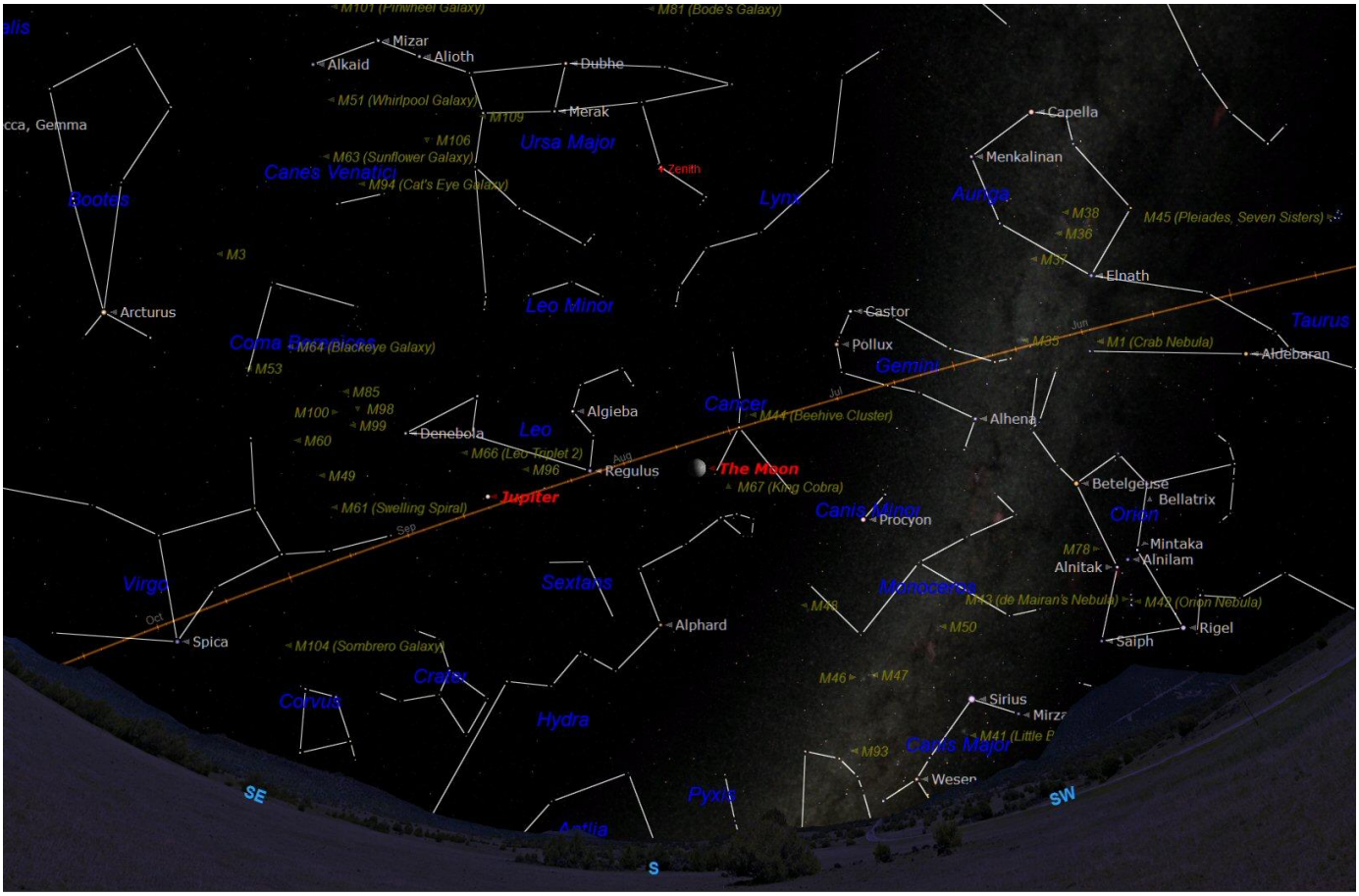
The centre of the chart will be the position in the sky directly overhead, called the Zenith. First we need to find some familiar objects so we can get our bearings. The Pole Star **Polaris** can be easily found by first finding the familiar shape of the Great Bear 'Ursa Major' that is also sometimes called the Plough or even the Big Dipper by the Americans. Ursa Major is visible throughout the year from Britain and is always quite easy to find. This month it is almost overhead. Look for the distinctive saucepan shape, four stars forming the bowl and three stars

forming the handle. Follow an imaginary line, up from the two stars in the bowl furthest from the handle. These will point the way to Polaris which will be to the north of overhead at about 50º above the northern horizon. Polaris is the only moderately bright star in a fairly empty patch of sky. When you have found Polaris turn completely around and you will be facing south. To use this chart, position yourself looking south and hold the chart above your eyes.

Planets observable in the night sky: Jupiter, Mars and Saturn.

Remember British Summer Time (BST) began on 27th March.

EXPLORING THE NIGHT SKY THIS MONTH



The night sky looking south on 15th April

The chart above shows the night sky looking south at about 21:00 BST on 15th April. West is to the right and east to the left. The point in the sky directly overhead is known as the Zenith or Nadir and is shown on the chart at the upper centre of the chart. The curved brown line across the sky is the Ecliptic or Zodiac. This is the imaginary line along which the Sun, Moon and planets appear to move across the sky. The constellations through which the ecliptic passes are known as the constellations of the 'Zodiac'.

Constellations through which the ecliptic passes this month are (west to east): Aries (the Ram, off the chart on the right), Taurus (the Bull), Gemini (the Twins), Cancer (the Crab), Leo (the Lion) and Virgo (the virgin).

The Milky Way can be seen reaching up from the bottom of the chart and passing through Puppis (on the southern horizon), Monoceros, Canis Major, Orion, Gemini, Taurus Auriga and Cassiopeia. This is the galaxy in which we live and our Sun is just one of the 200 billion stars that reside in this large spiral galaxy.

The beautiful constellation of Orion is moving to the west but it is still in a good position as soon as it is dark. Orion (with a little imagination) does look like the hunter after who it is named. The most obvious feature is the line of three stars that make up Orion's belt. Within the belt is the Great nebula Messier 42 (M42). Here we can see stars in the process of forming from the gas

and dust of the nebula. A small telescope or even a pair of binoculars will show the nebula and the four stars of the trapezium.

In mythology Orion the hunter has two hunting dogs and his representation in the sky also has two dogs Sirius and Procyon seen to the east of Orion on the chart.

By following the line of his belt down to the south east the bright star Sirius in the constellation of Canis Major (the Large Dog). Following an imaginary line through Bellatrix and Betelgeuse to the east the star Procyon in the constellation of Canis Minor (the Little Dog) can be found.

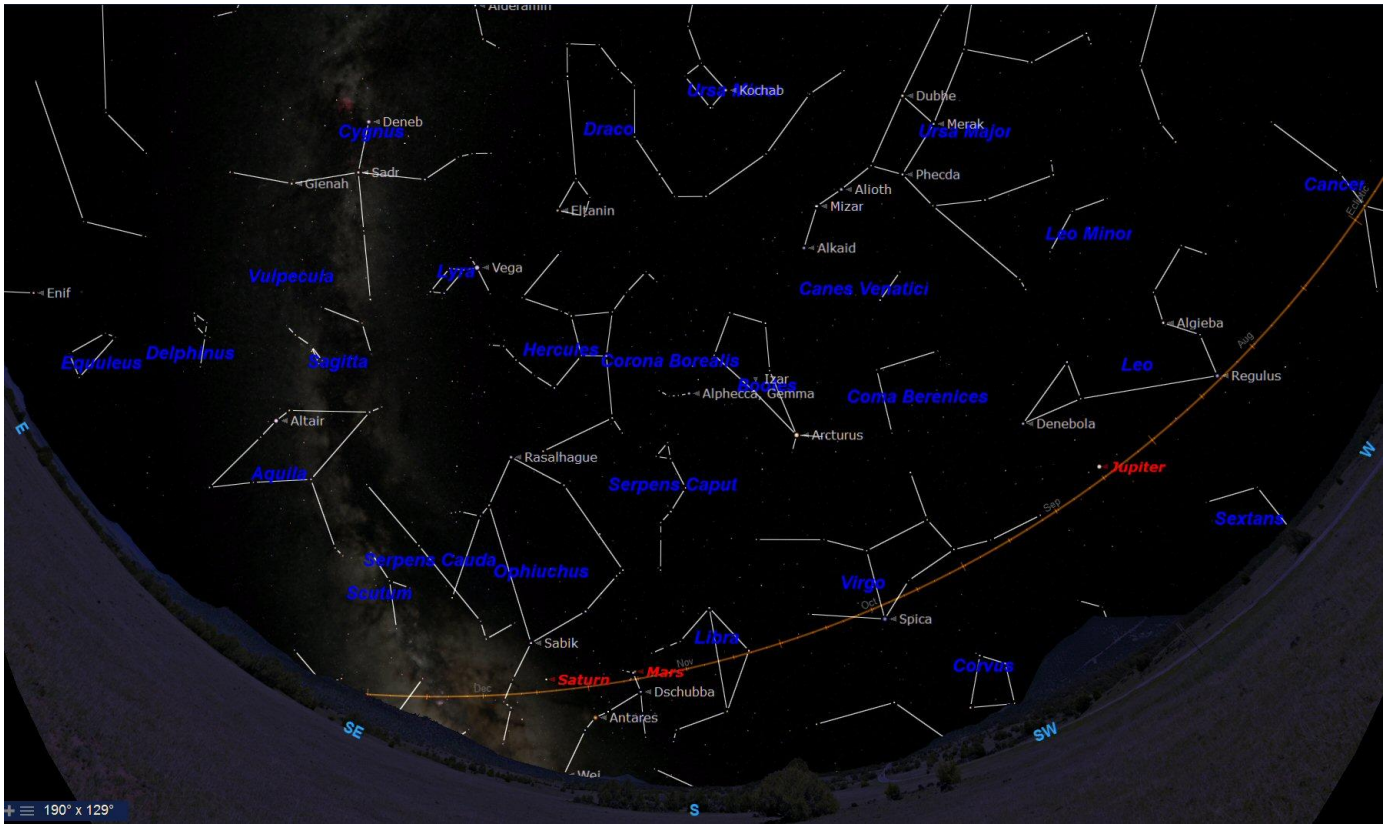
Above Orion's head is Taurus with the bright red star Aldebaran located at the centre of a cross shape of stars that defines Taurus. Up to the right is the beautiful Open Cluster M45 known as the Pleiades or the Seven Sisters. The cluster looks like a fuzzy patch of light at first glance with the 'naked eye' but after a good hard look, up to seven stars can be made out.

To the east (left) of Taurus is Gemini with the stars Pollux and Castor as the Twins. At the end of the line of stars leading from Castor is a lovely Open Cluster M35. It can be seen using binoculars as a small 'fuzzy' patch but a telescope will show it as a ball of stars.

There are another three open clusters known as M36, M37 and M38 in the neighbouring constellation of Auriga that appear to be almost in a line with M35.

To the east of Cancer is the magnificent constellation of Leo the Lion. It is one of the few constellations that do look like what it is supposed to represent. Leo has five bright galaxies of its own, these are known as: M65, M66, M95, M96 and NGC 3628. They are marked in yellow on the chart above, below Leo. A medium sized telescope and a dark sky will be required to see even the brightest of the galaxies. See the February What's Up.

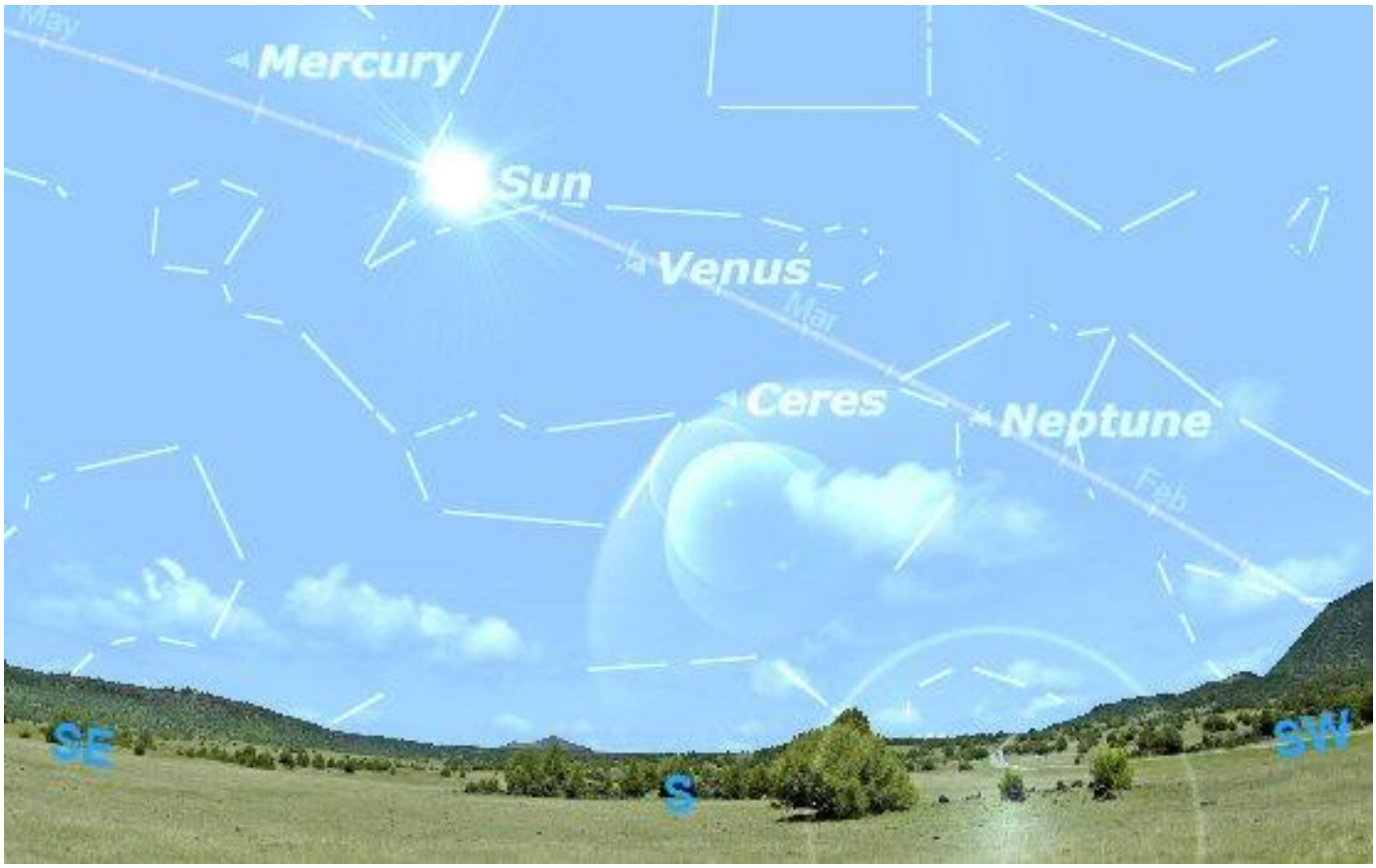
Jupiter the King of the Planets is located just below the figure of Leo and is in the perfect position for observing this month. See the chart above.



The planets Saturn, Mars and Jupiter in the morning before sunrise

For those early rising observers most of the planets can be found in the southern sky before sunrise. Mercury is in conjunction with the Sun and will not be visible. Venus is just visible but is very close to the Sun. Uranus and Neptune are close to the Sun and not observable. Jupiter is visible all night and Saturn is visible from midnight until dawn.

THE PLANETS THIS MONTH



The planets in the south at midday during April

MERCURY is located to the east and very close to the Sun and is not observable this month. It was in conjunction with the Sun on 23rd March and will be at greatest elongation on 9th May. See the chart below.

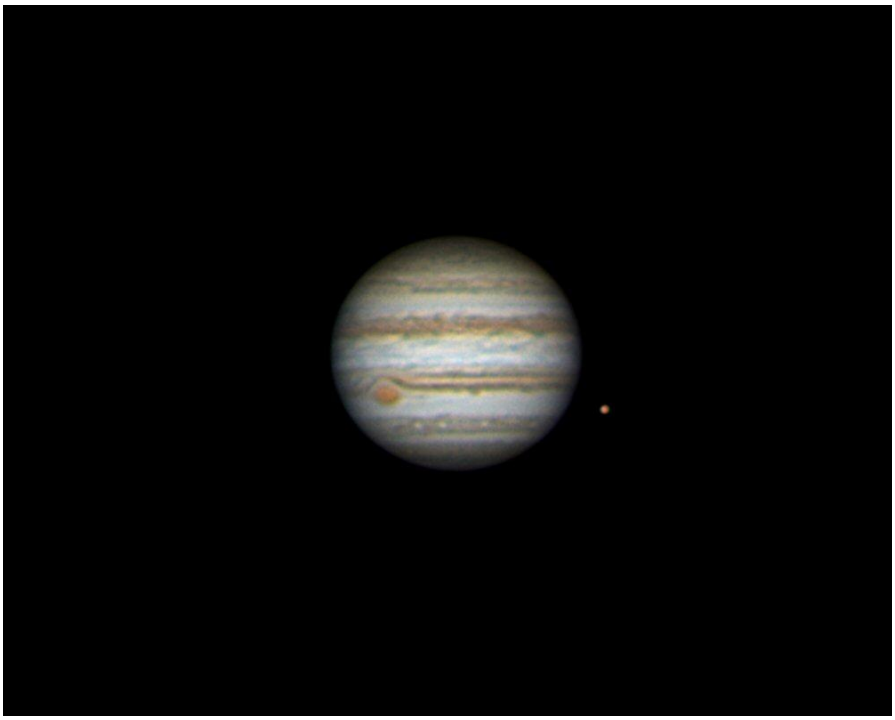
VENUS is just west of the Sun and very close to the eastern horizon as the Sun rises. It will be very difficult to see even though it is very bright at magnitude -3.8. See the chart above.

MARS rises over the eastern horizon at about 23:00 and will be observable until the sky begins to brighten at dawn. The Red Planet is moving towards opposition on 22nd May when it will be at its closest approach to Earth. However it still appears small at just 14 arc-seconds in diameter. A medium sized telescope will show the darker areas and one of the polar ice caps.

JUPITER is now at its best and was at opposition with the Sun on 8th March. That means it was due south and at its highest point in the sky at midnight. It rises in the east at 15:30 at the beginning of the month and at 14:00 by the end of the month. It will be in a good position for observing as the sky darkens and will still be around as the Sun rises. The 'King of the Planets' will appear quite large at 42 arc-seconds in diameter and bright at magnitude -2.4. See the night sky charts above.

Jupiter is easily seen even when using a small telescope. Two brown cloud belts can be seen on the surface and the four largest moons can be seen changing position from night to night. Sometimes the moons pass in front or behind the planet and then reappear about an hour later.

When using a larger telescope some of the detail in the cloud structure on Jupiter can be made out.



Jupiter and its moon Ganymede imaged by John Napper on 6th March 2016

SATURN rises at midnight at the beginning of the month and at 22:30 by the end of the month. It will be in its best position for observing at about 03:30. Unfortunately it will only rise to about 17º above the horizon so will be low and in quite turbulent air. It is 17 arc-seconds in diameter and the rings are just starting to close up now.

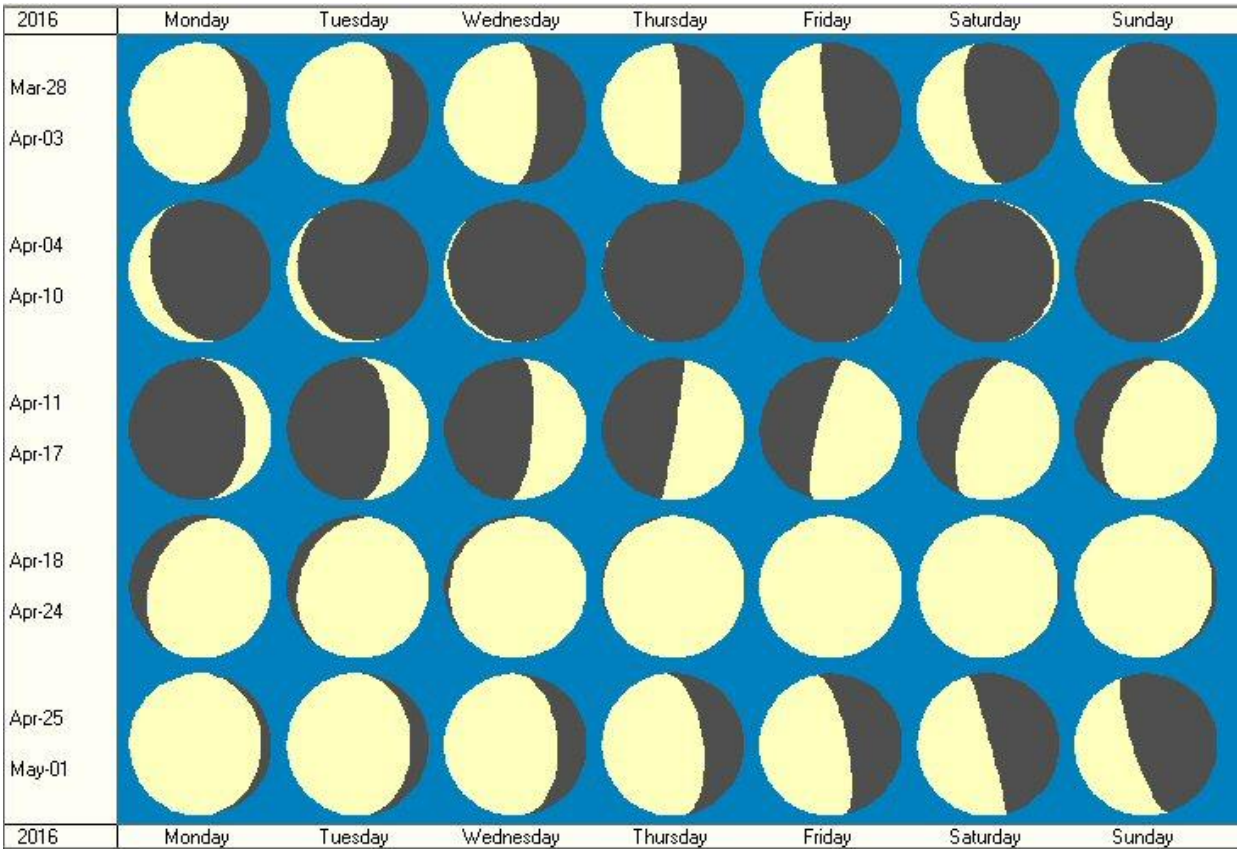
URANUS will be in conjunction with the Sun on 10th April. See the upper chart in the opposite column.

NEPTUNE was in conjunction with the Sun on 28th February and is still not be observable as it is in daylight. See the chart in the opposite column.

THE SUN

The Sun rises at 05:30 at the beginning of the month and at 04:40 by the end of the month. It will be setting at 18:40 at the beginning and 19:20 by the end of the month. Sunspots and other activity on the Sun can be followed live and day to day by visiting the SOHO website at: http://sohowww.nascom.nasa.gov/ .

THE MOON PHASES IN APRIL



New Moon will be on the 7th April

First Quarter will be on 14th April

Full Moon will be on 22nd April

Last Quarter will be on 30th April

The Moon is the easiest astronomical object to image and would normally the first target for anyone wanting to use a camera with a telescope. A standard DSLR camera can be used to take some spectacular pictures especially of the Moon. The image below was taken on 28th September 2015 just before the Moon was eclipsed by Earth's shadow for the Lunar Eclipse.

The image was taken using a Sony DSLR with the lens removed and replaced with and adaptor for mounting it to a 120mm (5") refracting telescope. The adaptor replaced the camera lens enabling it to be fitted to the focuser in place of the eyepiece. The camera was focused using the focuser of the telescope because it is not possible to use the camera focusing system with the lens removed. This was the first attempt by the author to image a night sky object using a DSLR camera. So anyone can do it.

The Moon imaged on 28th September 2015