

NEWBURY ASTRONOMICAL SOCIETY

MONTHLY MAGAZINE – MARCH 2017

DUST IN SPACE



The Zodiacal Light

Zodiacal light is a faint, roughly triangular, diffuse white glow seen in the night sky that appears to extend up from the vicinity of the Sun along the Zodiac (Ecliptic). It is caused by sunlight scattered by space dust in the zodiacal cloud. It is best seen just after sunset in spring and just before sunrise in autumn. This is when the zodiac is at a steep angle to the horizon but it is so faint that either moonlight or light pollution renders it invisible. As a consequence this mysterious phenomenon is rarely seen.

The zodiacal light decreases in intensity with distance from the Sun but on very dark nights it has been observed in a band completely around the ecliptic. In fact, the zodiacal light covers the entire sky and is responsible in large part for the total skylight on a moonless night.

Zodiacal light is produced by sunlight reflecting off dust particles in the Solar System known as cosmic dust. Consequently its spectrum is the same as the solar spectrum. The material producing the zodiacal light is located in a lens-shaped volume of space centered on the sun and extending well out beyond the orbit of Earth. This material is also known as the interplanetary dust cloud.

Since most of the material is located near the plane of the Solar System, the zodiacal light is seen along the ecliptic (also called the Zodiac). The amount of material needed to produce the observed zodiacal light is quite small. If it were in the form of 1 mm particles, each with the same albedo (reflecting power) as Earth's moon, each particle would be 8 km from its nearest neighbours.

Until recently, it was thought that the dust originated from the tails of active comets and from collisions between asteroids in the asteroid belt but many of our meteor showers have no known active comet parent bodies. Over 85 percent of the dust is attributed to occasional fragmentations of Jupiter-family comets that are nearly dormant. Jupiter-family comets have orbital periods of less than 20 years and are considered dormant when not actively out-gassing but may become active in the future.

When the dust grains are as small as about 150 micrometres in size, they will hit the Earth at an average speed of 14.5 km/s, many as slowly as 12 km/s. This comet dust can survive entry accounting for the unusual attributes of the micrometeorites collected in Antarctica. These do not resemble the larger meteorites known to originate from asteroids. In recent years, observations by a variety of spacecraft have shown significant structure in the zodiacal light including dust bands associated with debris from particular asteroid families and comet trails.

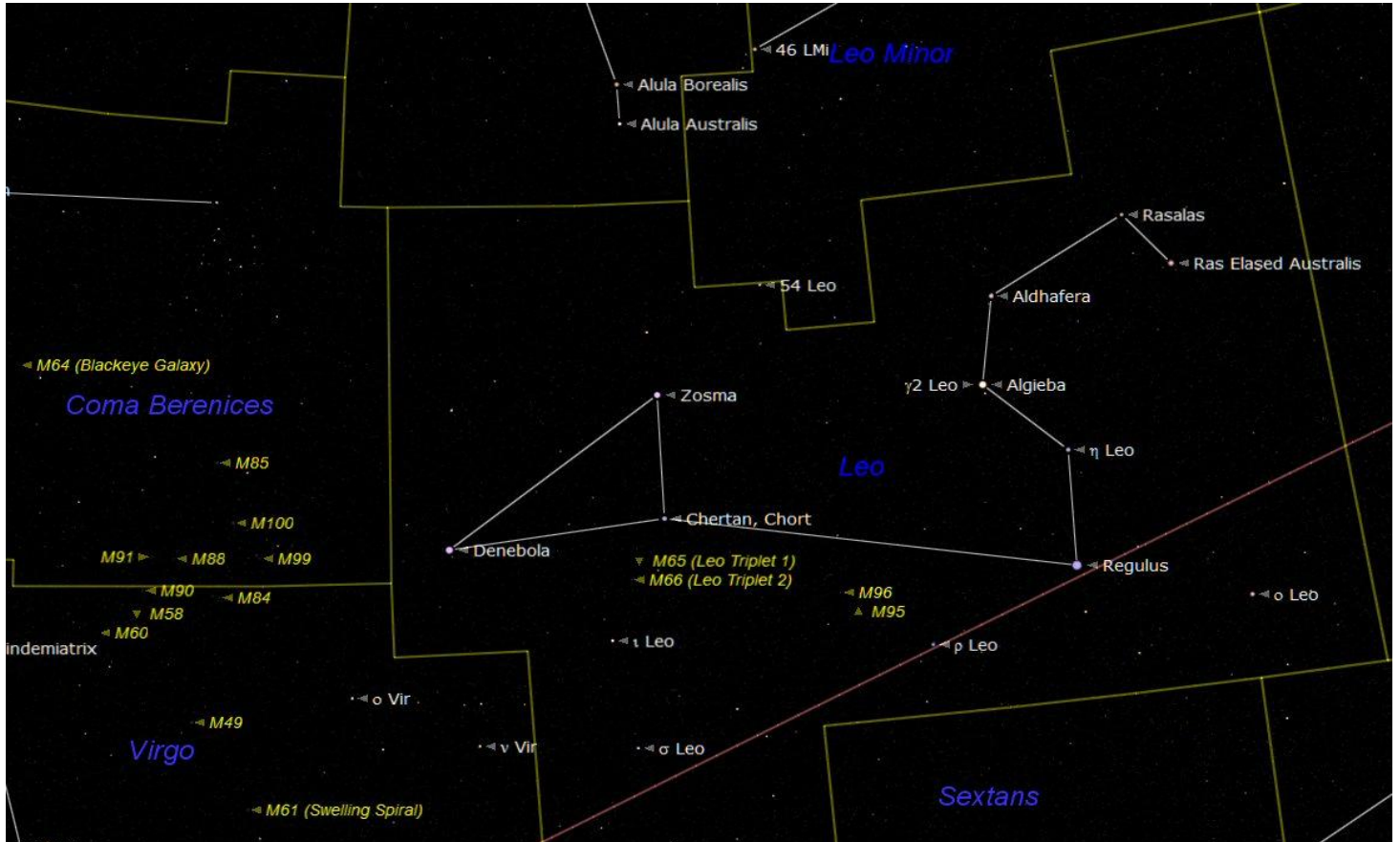
NEWBURY ASTRONOMICAL SOCIETY MEETINGS

3rd March Twinkle, Twinkle little star - Members
Website: www.newburyastro.org.uk

NEXT NEWBURY BEGINNERS MEETING

15th March Compact Objects - White Dwarfs
Website: www.naasbeginners.co.uk

CONSTELLATION OF THE MONTH – LEO (the Lion)



The constellation of Leo (the Lion)

Leo is quite distinctive with the 'Sickle' shaped pattern of stars looking much like the head of the lion that Leo represents. In fact the traditional 'stick figure' shape of Leo as shown on the chart above does look rather like the lion's body or the Sphinx in Egypt. The 'Sickle' is also described as looking like a backwards question mark (?).

Leo does look unexpectedly large in the sky and may be a little difficult to find for the first time but once found it is easy to recognise and find again.

Regulus is a large blue / white star approximately 160 times brighter than our Sun and lying at a distance of 69 light years.

When viewed through a small telescope a smaller companion star can be seen close by making Regulus a double star. Regulus sits virtually on the ecliptic line (the brown line shown on the chart above). This is the imaginary line along which the Sun, Moon and planets appear to move across the sky. Leo is therefore one of the twelve constellations of the Zodiac. Every eighteen years Regulus is 'occulted' by the Moon every month for a period of eighteen months. An occultation occurs when the Moon passes in front of the star so the star disappears behind the Moon. The last series of occultations occurred around 2007 and the next series will be around 2024. The Moon does however pass close to Regulus every month. This month it will occult Regulus on the 10th March at 22:45.

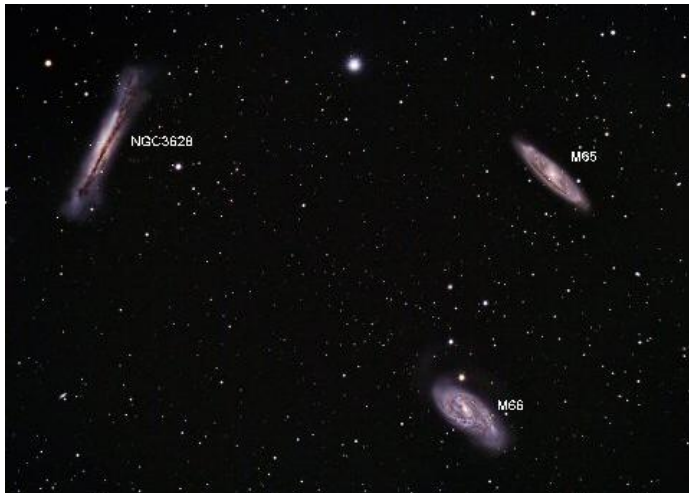
The star Algieba, located above Regulus on the 'Sickle', is a very nice double star about 75 light years from us. The two stars orbit each other around their common centre of gravity every 620 years and have magnitudes of +2.2 and +3.5 which give them a combined magnitude of +1.98.

Spring time is regarded as the season of galaxies and Leo is on the edge of a large group of galaxies. The main group is located in the neighbouring constellations of Virgo and Coma Berenices to the east (left) of Leo. However Leo does have four lovely bright galaxies of its own, these are known as: M65, M66, M95 and M96. They are marked in yellow on the chart above just below the 'lion'.



A classical illustration of Leo (the Lion)

The galaxies on the previous chart are shown in detail below. A 100mm to 150mm aperture telescope will be required to see the faint 'misty' outline of these galaxies. There is a third galaxy close to M65 and M66 called NGC3628 these three are known as the Leo Triplet.



The Leo Triplet M65, M66 and NGC 3628.

Messier 66 (also known as NGC 3627) is a barred spiral galaxy about 36 million light-years away in the constellation Leo. M66 has an apparent magnitude of +8.9. It was discovered by Charles Messier in 1780. M66 is about 95 thousand light-years across with striking dust lanes and bright star clusters along sweeping spiral arms.



M66 showing the Spiral Arms at the end of a bar

Messier 65 (also known as NGC 3623) is a spiral galaxy about 35 million light-years away in the constellation Leo. We see it slightly tilted away from us. It was also discovered by Charles Messier in 1780.



M65 showing a dust lane in the Spiral Arms

There is another beautiful pair of galaxies M95 and M96 further to the west (right) of M65 and M66 below Leo.



Galaxies M96 and M95 in Leo

Messier 96 (also known as M96 or NGC 3368) is a spiral galaxy about 31 million light-years away in the constellation Leo. M95 and M96 were discovered by Pierre Méchain in 1781 and catalogued by Charles Messier four days later.



M96 has a deformed arm (top)

Messier 95 (also known as M95 or NGC 3351) is a barred spiral galaxy about 38 million light-years away in the constellation Leo.

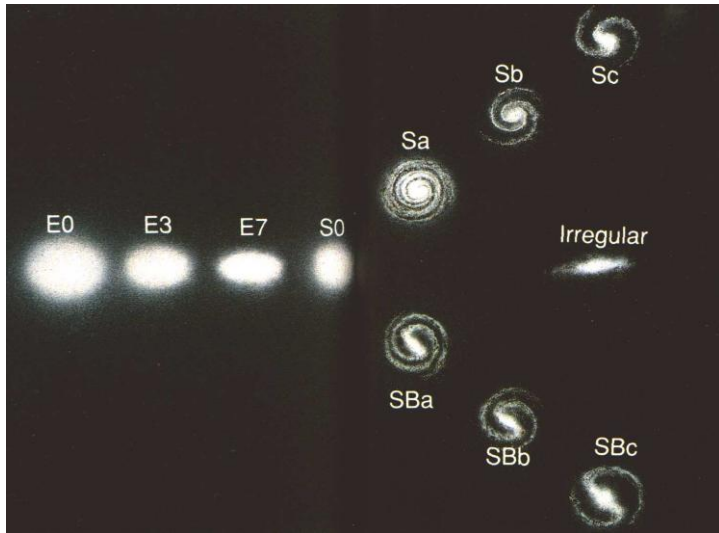


M95 is seen almost 'face on' to us

WHAT ARE GALAXIES?

The galaxies mentioned on page 3 are all spiral galaxies but there are other types. The first galaxies to form were closer together than galaxies we see around us today and they were subtly different. The theories of galaxy formation that we use at the moment suggest that galaxies were smaller when they first formed but larger galaxies may have grown through the merging of smaller ones into larger ones.

Galaxies are classified into four types, these are: Elliptical, Spiral, Barred Spiral, and Irregular. Elliptical galaxies are generally the largest and Irregulars the smallest. The great American astronomer Edwin Hubble (whom the Hubble Space Telescope is named after) devised a theory about how galaxies formed. The 'Y' shaped diagram that Hubble produced to demonstrate his theory is still used today to classify galaxies and is shown below.



Edwin Hubble's classification of galaxies

ELLIPTICAL GALAXIES

These are huge balls of stars that do not have spiral arms and are elliptical (egg shaped). Many of these Elliptical Galaxies are the largest of all star groups with some having thousands of billions (trillions) of stars. Elliptical Galaxies are classified according to how flattened they are, nearly round ones are known as E0 and sausage shaped ones E7. Most Elliptical Galaxies are far away and therefore appear very faint and need a telescope to see them. There are many indications that the giant elliptical galaxies grew from the collision of two or more smaller galaxies. There are indeed some galaxies which can be seen to be in the process of colliding and combining.

IRREGULAR GALAXIES

These galaxies are, as the name implies, large groups of stars but with no classifiable shape, in other words they may be any shape. Our spiral galaxy and the other close large spiral known as M31, or The Great Andromeda Galaxy, have smaller irregular galaxies associated with them as satellite galaxies. Two of the irregular galaxies associated with our galaxy can be seen from the southern hemisphere as islands broken off the Milky Way. These are known as the Large and Small Magellanic Clouds. There are other small galaxies within our spiral galaxy that have been pulled in by gravity and are in the process of being absorbed by our giant spiral galaxy. We can also see the same process occurring in M31 the Great Spiral Galaxy in Andromeda.

SPIRAL GALAXIES

Like our galaxy the Milky Way, many galaxies, are disc shaped with spiral arms. Some have arms like curved spokes in a wheel, some gently curved, some tightly wrapped around the central 'bulge'. The class is preceded by 'S' for Spiral and 'SB' for Spiral Barred. Spiral and Barred Spiral galaxies are further divided into three subdivisions a, b and c depending on how tightly the arms are wound. They are therefore referred to as Sa, Sb and Sc or SBa, SBb and SBc. The Great Andromeda Galaxy is our closest spiral neighbour and can even be seen with the naked eye on a very clear night and from a dark location.

BARRED SPIRAL GALAXIES

Some Spiral Galaxies have what looks like a straight bar of stars extending out from the central bulge with the spiral arms attached to ends of the bar, these are called Barred Spiral Galaxies. It was originally thought that the 'Bar' naturally formed as normal spiral galaxies matured. However this theory is now in question and it has been suggested that the bar is formed by gravitational forces in some spiral galaxies. It is now thought that our own galaxy, the Milky Way, is a Barred Spiral Galaxy.



An artist's impression of how the Milky Way may look

Spiral Galaxies generally have star formation in the spiral arms and this can be seen as blue and pink colours in the arms of our galaxy in the image above. Spiral galaxies rotate as a solid disc and not faster towards the centre due to the influence of huge amounts of dark matter. The spiral arms are actually more like shock waves moving through the disc. As the shock wave passes through the disc, gas is compressed and stars are formed. The star formation then adds to the shock wave. The cores of Spiral Galaxies and the whole of Elliptical Galaxies have little or no current star formation.

Our Milky Way has more than 200 billion stars and the Andromeda Galaxy may be up to twice the size with up to 400 billion stars. All the other members of our 'Local Group' are smaller with many of them located like satellites around the two large spiral galaxies.

The good news for the beginner to astronomy is: some of the brighter galaxies are within the grasp of amateur telescopes. The bad news is they do need a moderate sized telescope to see most of them. There are four naked eye galaxies including our own Milky Way. The others are M31 the Great Spiral Galaxy in Andromeda and our two irregular satellite galaxies, the Large and Small Magellanic Clouds that can only be seen from southern latitudes.

M31 can be seen from the UK as a small fuzzy patch of light but does need a dark clear sky. It is quite easy to find using binoculars and is well placed at this time of year. The easiest way to find M31 is to first locate the Great Square of Pegasus. Once the square is found the pointer to Andromeda is the top left star of the square which is named Sirrah. Strangely Sirrah is officially not part of Pegasus but is designated as Alpha (α) Andromedae. From Sirrah follow the fairly obvious line of stars to the left (east). Locate the second star, known as Mirach, in the line as shown on the chart below. From Mirach follow a slightly fainter short line of stars to the north (above) Mirach to the second star. Just to the right of this star is the faint fuzzy patch of light that is M31 the Great Andromeda Galaxy.



The position of M31 in Andromeda

The chart above gives an approximate naked eye view of M31 in Andromeda although somewhat clearer than can be hoped to be seen with the naked eye. However a pair of binoculars will enable the galaxy to be seen easily. A small telescope will show a cigar shaped hazy patch with a brighter spot in the middle. Larger telescopes will show it more clearly but photographic imaging is required to reveal its true nature as shown in the image below.



M31 The Great Spiral Galaxy in Andromeda

M31 is positioned almost edge on to our point of view but even at this angle the spiral arms can be seen in photographic images. Our Milky Way galaxy is estimated to be around 100,000 light years in diameter but M31 is larger at about 170,000 light years across. M31 is so far away that its light takes approximately 2¼ million years to reach us. This makes it the most distant object that can be seen with the naked eye. It is also speeding towards us and will collide with the Milky Way in about five billion years.

M31 and our galaxy are the largest in our local group but there are 30 or so other smaller members. One of these smaller galaxies is the beautiful face-on spiral M33 known as the Triangulum Galaxy.



M33 in the constellation of Triangulum

We would expect that the curving nature of spiral arms is caused by the rotation of the disc and governed by the laws of motion. The simple mechanics of rotation would dictate that the inner parts of the galaxy should rotate faster than the outer parts causing the outer parts to trail behind but this is not the case. Mysteriously the whole disc rotates almost as if it was a solid body. This indicates that there is an enormous amount of invisible mass within the rotating disc. This is now thought to be an unknown form of material that we call 'Dark Matter'. There appears to be around five times as much invisible Dark Matter as there is 'Baryonic' or normal matter (that we see around us) in the discs of spiral galaxies.

The curving spiral arms are actually caused by a shock wave of star formation. As gas in the disc collapses under the influence of gravity, stars form and burst into life. Star formation sends shock waves through the disc promoting further star formation and more shock waves. The shock waves take longer to move around the greater distance of the outer regions so the shock wave becomes curved. The blue and red regions in the image of M33 show where star formation is taking place.

There are other galaxies that can be seen using a modestly sized telescope of 100 to 150mm. The best are: M65, M66, M95 and M96 in the constellation of Leo. These galaxies are shown on page 3 in the article about the constellation of Leo. These do not look as big and bright as M31 but are well worth searching out. Another face-on galaxy is M51 located in Canis Venatica but easier to find following the handle of Ursa Major. This is a face-on galaxy that has been in collision with another smaller galaxy. Over the next few hundred million years the two galaxies will probably loop around each other and eventually merge. M51 does need a larger telescope and a dark sky to see it in detail.

THE KING OF THE PLANETS IS COMING INTO VIEW



Jupiter imaged by John Napper (Newbury Astronomical Society)

Jupiter is now moving into view in the late evening and will be in perfect position for observing. Jupiter will reach Opposition on 7th April when it will be at its very best. Opposition is the exact time that Earth will be overtaking Jupiter on the respective orbits of the two planets. Earth's angular speed is much greater so travels faster on its smaller orbit around the Sun so it catches up and overtakes Jupiter about every 13 months.

At this time of year the 'Ecliptic' (the imaginary line along which the Sun, Moon and planets appear to move across the sky) is high in the sky during the night due to the 23° tilt of Earth's axis. The ecliptic is low during the day which makes the Sun appear very low in the winter sky. With the ecliptic high at night Jupiter appears high in the sky and in relatively clean and stable air away from the murky and turbulent air closer to the horizon.

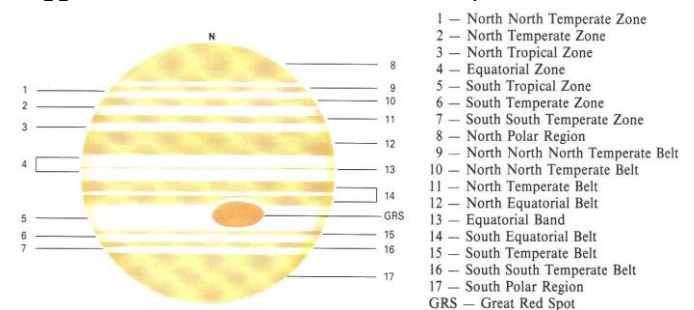
Jupiter is visible most of the night, rising in the east at about 20:30. It will be observable in the east about an hour or so later at around 21:30 when it is higher in the sky. Jupiter is easy to find as it is very bright, in fact it is the third brightest object in the night sky after the Moon and Venus. By about 22:30 Jupiter will have risen high enough in the south east to be in a good position for observing in the constellation of Virgo (the Virgin).

A good pair of 9 x 50 binoculars will just about show the four bright moons known as the Galilean Moons. These four bright moons are called the 'Galilean Moons' after Galileo who first recorded seeing them.



Jupiter and the Galilean Moons

The surface of the planet has many bands or 'belts' of different colours two of which can be seen even using a small telescope. A larger telescope is required to see the detailed markings on the surface. The North and South Equatorial Belts are located, as the names suggest, above and below the white Equatorial Zone.



The cloud markings on Jupiter

These belts are mainly different shades of browns with variations from yellow through orange to chocolate brown. There are even reds especially the famous Great Red Spot although it is in fact more pink than red. The Great Red Spot is a massive storm much larger than the size of the Earth. It has been raging since before the invention of telescopes and was observed by using primitive telescopes nearly 350 years ago.

For those who are lucky enough to have a larger telescope a closer study of the features in Jupiter's cloud system can be achieved. The darker bands on the clouds are known as 'Belts' and the lighter ones known as 'Zones'. The belts are numbered 9 to 16 on the diagram above and the most prominent (North and South Equatorial Belts) 12 and 14 can be seen using a small telescope. A larger telescope is required to make out the details of the other less prominent belts.

The Belts and Zones are regions of higher and lower atmospheric pressure. The lighter coloured 'Zones' are regions of rising gas caused by convection of heat from the core of Jupiter. The darker 'Belts' are regions of falling gas and are approximately 20 kilometres lower in altitude than the Zones. In the regions where the belts and zones meet huge storms are created as the belts and zones move at different speeds and directions. A larger telescope will allow some of detail of the storm patterns to be seen.

The most famous feature in the cloud system is the 'Great Red Spot' (GRS). This huge storm has been raging for over 350 years. We know this because it was recorded by astronomers in 1664 using some of the earliest telescopes. The GRS does change colour and shape but it is always there. Its colour may fade from its pink to nearly white when it may almost disappear. The colour is thought to be caused by Phosphorus welling up from deep in Jupiter's atmosphere.



The Great Red Spot lower left of Jupiter

The GRS is not the only storm feature to be seen. There are white spots and even mini red spots. These tend to be transient and last from just a few days or weeks but others may persist for up to fifty years. Spots can combine with other spots as they move along the boundaries between the belts and zones. Some larger spots have even been swallowed up by the GRS. Over the last few years there was a lot of turbulence around the GRS with eddies running along the South Tropical Zone and around the GRS.

As Jupiter is so large (for a planet) it is the easiest planet to image through a telescope. The cheapest way to do this is to use a modified computer web camera. By removing the lens of the webcam and replacing it with a special adaptor (available from astronomy shops for about £20) the webcam can be mounted in place of the eyepiece. With the webcam connected to a computer via a USB port a short video of Jupiter (1 to 2 minutes) can be recorded on to the hard drive.

It is then necessary to download a free piece of software from the internet called 'registax'. This application can automatically align each frame of the video then stack all the images on each frame on top of each other. The result is all the features on the surface of the planet that are in the same place on the images are added and the features become clearer on the finished single image. The final image can even be enhanced using the built in processing screen in registax. The image below was taken using a webcam on 14th November 2012 and shows some of the turbulence around the Great Red Spot in the South Tropical Belt. The Tropical Belts are mentioned on the previous page (South is at the top of the image). The moon Ganymede can also be seen to the upper right of Jupiter.



Jupiter imaged on 14th November 2012 by Steve Harris

Another computer application that can be downloaded free from the internet is a computer planetarium application. The events happening around Jupiter can be predicted using these applications and then followed using a telescope. One of the best and most popular computer planetarium applications to download is 'Stellarium'. This and other applications can be used to predict what is going to happen around Jupiter during any clear night before observing is started.

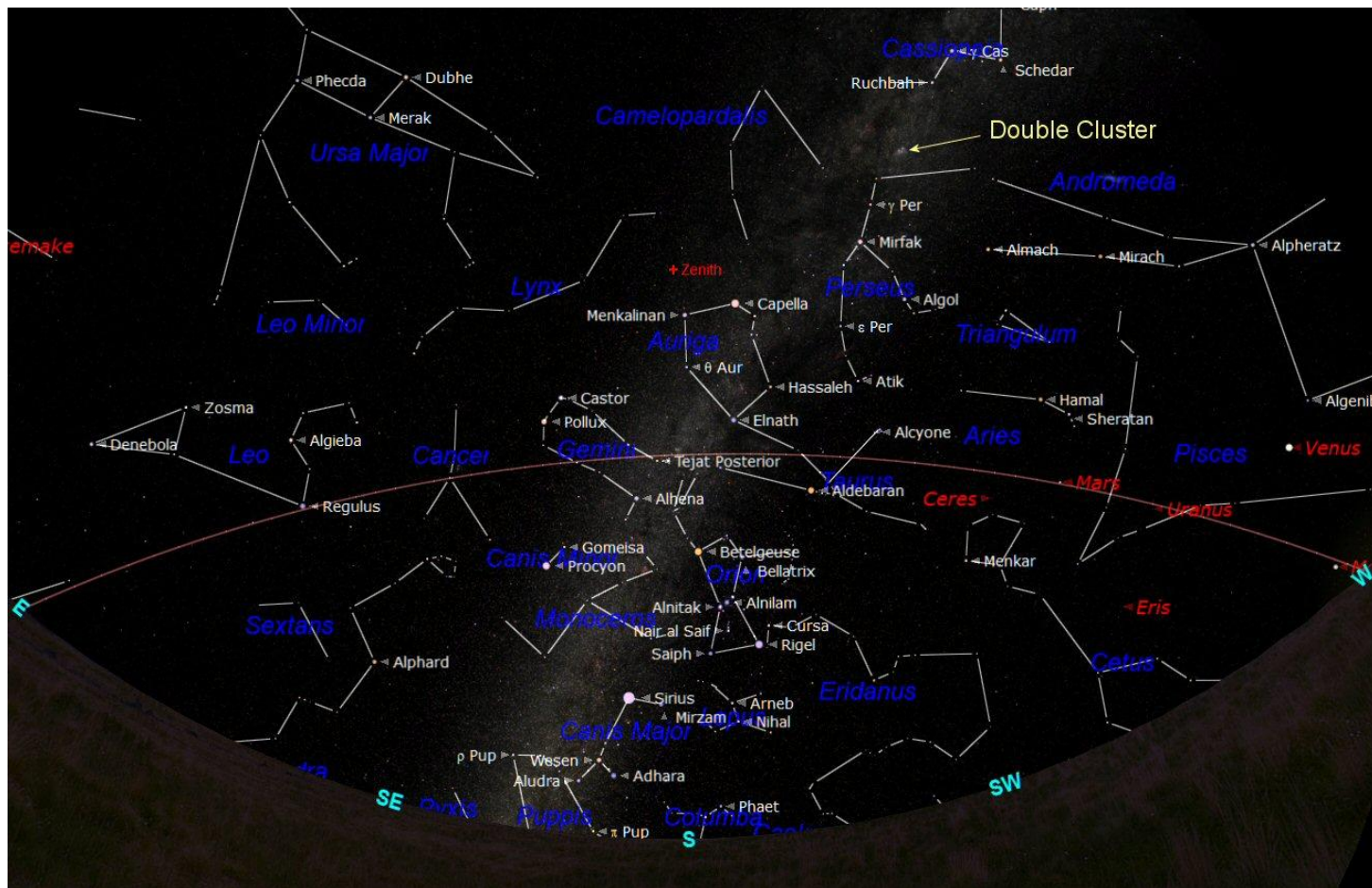
Sometimes we can see the moons pass in front or behind Jupiter on every orbit and not above or below as they do for a lot of the time. This makes observing Jupiter very interesting. We can watch the moons approach the planet to disappear behind or in front of Jupiter and then watch them reappear an hour or two later. We can also see their shadows as they pass in front and project their shadow on to the planet. These events can be predicted using a planetarium application and the events can then be followed and timed using a fairly modest telescope.

Eclipses occur when a moon casts its shadow on to Jupiter. It is quite easy to see because the eclipse shadow looks like a black full stop on the planet. Moons can also be eclipsed as they pass through the very large shadow cast by Jupiter.

Transits occur when a moon passes in front of Jupiter. The moon is actually very difficult to see while it is in front of the planet as it is lost in the glare from the surface.

Occultations occur when a moon passes behind the planet. Occultations and Transits are easy to follow with a telescope as the moon approaches Jupiter.

THE NIGHT SKY - MARCH 2017



The night Sky March 2017 at 18:30 (6:30 pm)

The chart above shows the night sky looking south at about 18:30 GMT on 15th March. West is to the right and east to the left. The point in the sky directly overhead is known as the Zenith and is shown at the upper centre of the chart. The curved brown line across the sky at the bottom 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: Pisces (the Fishes), Aries (the Ram), Taurus (the Bull), Gemini (the Twins), Cancer (the Crab), Leo (the Lion) and Virgo (the Virgin) just appearing over the eastern horizon.

The Milky Way (our Galaxy) appears to rise up from the south eastern horizon. It continues up through the constellations of Monoceros, Orion, Gemini, Auriga, Perseus and into Cassiopeia at the top right of the chart.

Venus is in the constellation of Pisces and is very bright and high in the west in the evening as the Sun sets. Mercury is just visible very low in the west just after the Sun has set. Mars (the Red Planet) has moved from Pisces into Aries and is still visible in the south west in the evening twilight. Neptune has now moved over the western horizon and is no longer observable. Uranus is in Pisces and still in a good position for telescopic observation in the west early in the evening. Saturn is now in a good position for observation close to the eastern horizon in the early morning before the Sun rises. Jupiter rises in the east later in the evening. It is very bright and easy to find in the south until the sky brightens at about 6 o'clock.

Orion is still dominating the evening sky and is easy to find in the south western sky. The familiar shape of Orion the Hunter is followed across the sky by his hunting dogs Sirius and Procyon.

To the north of Orion are the fairly obvious constellations of Taurus and Gemini. To the north west and sitting astride the ecliptic is the constellation of Taurus (the Bull). The Taurus asterism (shape) looks like a squashed cross 'X'. At the centre of the cross is a large, faint Open Cluster called the Hyades. It has the bright Red Giant star Aldebaran in the centre. The real beauty of Taurus is the naked eye Open Cluster M45 the Pleiades.

To the north of M45 (the Pleiades cluster in Taurus) is a line of stars defining the constellation of Perseus. The whole asterism (shape) of Perseus looks like a horse rider's stirrup. At the top of the line of stars is the beautiful object 'the Double Cluster' best seen using binoculars.

Following Taurus along the ecliptic is Gemini (the Twins). The twin stars Pollux and Castor are easy to find. There is a lovely Messier Open Cluster M35 in Gemini just off the end of the line of stars emanating from the bright star Castor. Castor is a double star when seen in a telescope.

To the east of Gemini is the faint and rather indistinct constellation of Cancer (the Crab). The asterism (shape) of Cancer looks quite uninteresting but the Open Cluster Messier 44 (M44) Praesepe or the Beehive Cluster looks beautiful and like a swarm of bees around an old style hive when seen using binoculars. Following Cancer is Leo (the Lion) the constellation of the month this month.

THE SOLAR SYSTEM MARCH 2017

MERCURY will be in superior conjunction on 7th March but will rapidly move away from the Sun through the month. The smallest planet will be at its elusive best on 23rd March but will still be low over the western horizon after sunset.



Mercury, Venus and Mars in the west soon after sunset

VENUS is very well positioned in the south west as the Sun sets and very bright at magnitude -4.3. The telescopic view is now very good because Venus getting closer to us and appearing larger. The crescent is getting noticeably bigger but narrower. It still requires a Moon filter to reduce the dazzling effect and improve the view. See the chart above.

MARS will be in the south west as the Sun is setting and the sky begins to darken. The Red Planet appears small at just 4.5 arc-seconds in diameter and is fading to magnitude +1.4. Mars is getting low in the turbulent air near the horizon and will set at 21:45. Mars is now on the opposite side of the Sun to us on Earth. See the Mercury and Venus chart above.

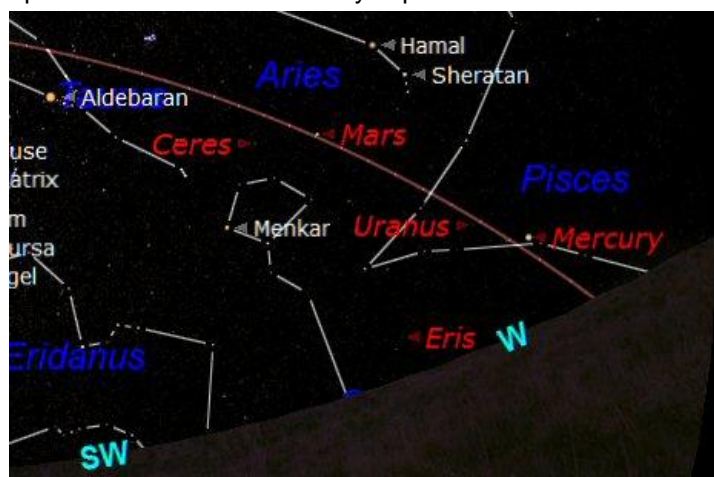
JUPITER is now a good late evening object. It rises over the eastern horizon at 20:30 and will be observable mid evening towards the end of the month. A pair of binoculars will reveal the four brightest of Jupiter's moons, Io, Europa, Ganymede and Callisto. Even a small telescope will allow the moons to be seen very clearly. See pages 6 and 10.



Saturn in the south east at about 04:00

SATURN will be visible in the brightening dawn sky close to the south eastern horizon. The ringed planet rises at about 02:00 this month, this about 4 hours before the Sun. The view of Saturn will not be good as it is still quite close to the Sun and rather low. It is observable in the south east from 04:00 until the sky begins to brighten before sunrise.

It will also be close to the south eastern horizon in turbulent and dirty air. Saturn will remain low in the sky this year so the views will not be perfect but the rings are nearly wide open and should still look very impressive.



Uranus close to Mars and Mercury in the west at 19:00

URANUS will still be observable this month. It will be moving towards the south western horizon as the sky darkens. Uranus may just be visible using a good pair of binoculars but a telescope at a magnification of 100x or higher will be needed to see it as a small blue/green disc. See the chart above.

NEPTUNE will not be visible as it has now moved over the western horizon.

THE SUN

There are still occasional sunspots to see even though the active phase of the Solar Cycle is all but over.

The Sun rises at 06:40 at the beginning of the month and at 05:45 by the end of the month. It will be setting at 17:45 at the beginning and 18:30 at 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 MARCH

2017	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Feb-27							
Mar-05							
Mar-06							
Mar-12							
Mar-13							
Mar-19							
Mar-20							
Mar-26							
Mar-27							
Apr-02							
2017	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

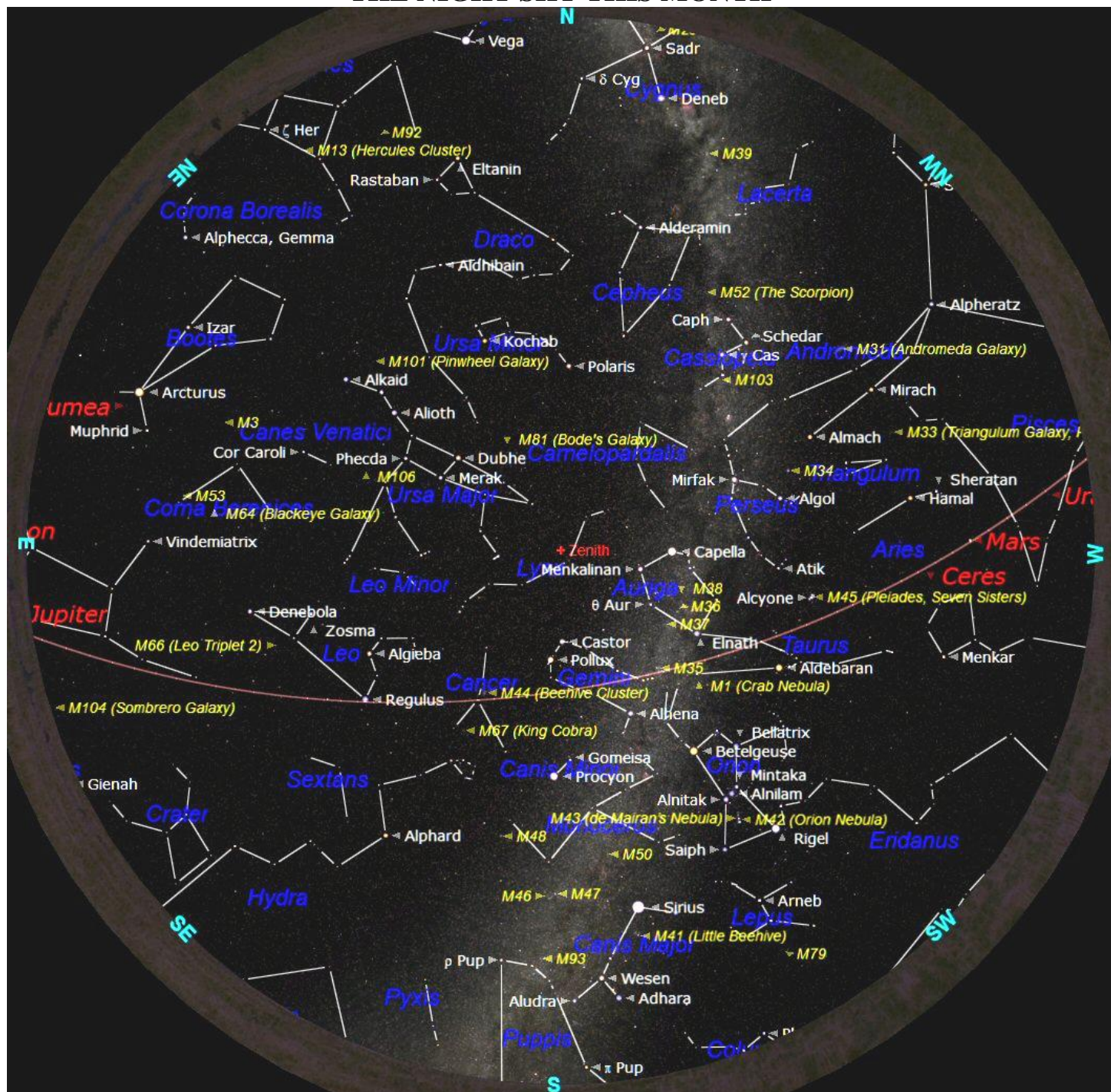
First Quarter will be on 5th March

Full Moon will be on 12th March

Last Quarter will be on 20th March

New Moon will be on 28th March

THE NIGHT SKY THIS MONTH



The chart above shows the whole night sky as it appears on 15th March at 21:00 (9 o'clock) in the evening Greenwich Mean Time (GMT). 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 GMT at the beginning of the month and at 8 o'clock GMT at the end of the month. The stars also appear to move 15° (360° 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 high in the north east. 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 50° 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 evening sky: Uranus, Mars, Venus and Jupiter (later in the evening until dawn).