NEWBURY ASTRONOMICAL SOCIETY
MONTHLY MAGAZINE – APRIL 2019

NASA's MARS EXPLORER – OPPORTUNITY R.I.P.

An artists' impression of Opportunity exploring the surface of Mars

NASA's Mars Rover named Opportunity landed on Mars in January 2004 shortly after its twin, another rover called Spirit. Together, the pair was part of NASA's Mars Exploration Rover programme. However, Spirit became stuck in the sandy soil and was declared defunct in 2011.

By contrast, Opportunity has continued to explore the surface of Mars and send back data to Earth, acting as a sort of remote geologist.

Over the 15 years it has spent on Mars, Opportunity has clocked up more than 45km despite being designed to travel only 1,006 metres and to last just 90 Martian days.

The Martian dust was expected to accumulate on the solar panels and eventually stop them producing power. What was not expected was that the wind would come along periodically and blow the dust off the solar panels. This allowed Opportunity to survive not just the first winter but all the winters it experienced on Mars until this February. Opportunity was finally beaten by a huge dust storm that was so powerful it turned the sky so dark that Opportunity could not see the Sun and the solar panels couldn't recharge the battery.

Opportunity was put into an induced sleep to wait and see if the dust would be blown off the solar panels as had happened in the past. Month followed month and the wind blew but this time the dust was so thick and stubborn that it could not be blown off.

Contact with Opportunity was lost eight months but the mission was not officially declared lost until Tuesday 12th February when NASA tried one last attempt to contact the stricken explorer. Thomas Zurbuchen, the associate administrator of the Science Mission Directorate at NASA, said the rover had "remained silent" and declared the 15 year mission to explore Mars was concluded.

Despite the loss, the mood at the press conference at NASA's Jet Propulsion Laboratory in Pasadena, California, was one of celebration on Wednesday 13th February. "I'm standing here with a sense of deep appreciation and gratitude to declare the Opportunity mission as complete," Zurbuchen said.

The mission has transformed our understanding of Mars and from that our understanding of own planet has also been increased. The mission has been a great success and exceeded all the expectations.

NEWBURY ASTRONOMICAL SOCIETY MEETING

3rd May When Galaxies Collide
Website: **www.newburyastro.org.uk**

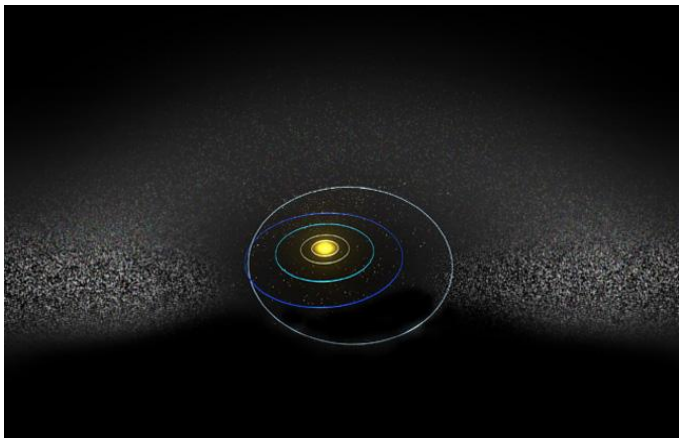
NEXT NEWBURY BEGINNERS MEETING

17th April Picture this (Astro-imaging)
Website: **www.naasbeginners.co.uk**

THE COSMIC ZOO (What is out there?)

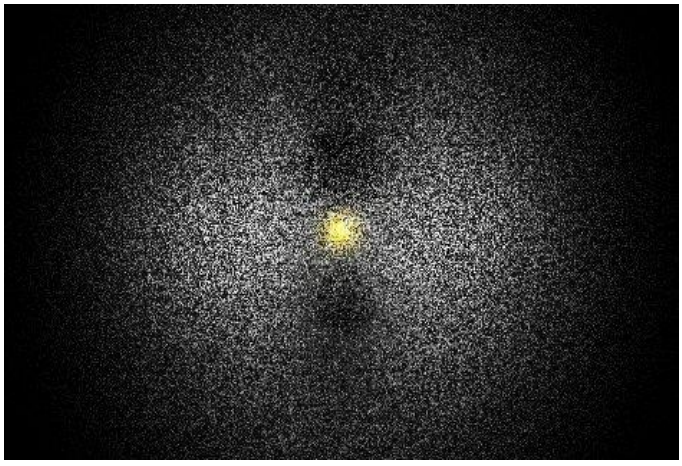
Deep space

Astronomers tend to divide space into two areas the first is our own space in the immediate area surrounding our star that we call 'the Sun'. This local area stretches out about two light years from the Sun to the very edge of the gravitational influence of the Sun.



The Kuiper Belt surrounding our planetary system

Beyond the orbits of the main planets in our Solar System is a vast torus (doughnut shape) of icy minor planets called the Kuiper Belt. There are millions of objects ranging in size from the size of Pluto down to a few metres across. These are the source of the comets that sometimes sweep in to visit our Sun.



The Oort Cloud forms a halo around the Solar System

Beyond the Kuiper Belt there is believed to be an enormous halo of very remote icy objects of various sizes. These objects have not been detected yet and are only just held in orbit around the Sun. This halo is called the Oort Cloud and is thought to extend out to about two light years from the Sun. This is about half the distance to our nearest stellar neighbour, the star Alpha Centauri which is about four light years from our Sun.

At this distance it is thought to be possible that the remotest Oort Cloud type objects may be exchanged between our Solar System and any similar objects that may be held by the Alpha Centauri System.

Beyond this outer limit of our Sun's gravitational influence is the rest of the Universe stretching out into infinity. We call the space beyond our Solar System 'Deep Space' and any objects residing in Deep Space are known as 'Deep Space Objects'.

Charles Messier

Astronomers are always talking about 'M' number this and 'M' number that so what are these 'M' numbers?

The 'M' is short for Messier and refers to in an object from the Messier Catalogue of 'fuzzy' objects. Charles Messier was a French comet hunter who spent much of his life searching for and studying comets. While scanning the night sky, Messier kept finding 'fuzzy' objects that were not stars, looked like comets but did not appear to move like comets. To avoid confusion Messier made a list of these 'fuzzy' objects so he could avoid them when he was searching for new comets.

Charles Messier 1730 - 1817

Telescopes in the time of Messier were not as good as the telescopes of today and even telescopes used by many amateurs today are far better than the best telescopes available in the late 1700's. We now know these objects are galaxies, star clusters, nebulae, planetary nebulae and super nova remnants. To Messier these objects were just 'a nuisance' but they are 'the things to see' for us.

We now know that these objects, that we so annoying to Charles Messier, are Deep Space Objects (also called Deep Sky Objects). They are objects that reside beyond the furthest reaches of our Solar System and out to the most distant parts of the Universe.

Deep Sky objects may have been a nuisance to Charles Messier but to the modern amateur astronomer they are the things to look for. We now know use Charles Messier's Catalogue to search out the brightest of the interesting objects to look at through our telescopes.

Messier's first catalogue [of these mysterious fuzzy objects] was published in 1774 and listed 45 objects. There are now many other catalogues of deep sky objects such as the New General Catalogue (NGC Numbers) with thousands of objects listed but the 110 Messier objects are still the things most amateur astronomers start off looking for. So what are these objects that astronomers search out with their telescopes?

See the table of Messier objects on the next page.

TABLE OF THE MESSIER OBJECTS

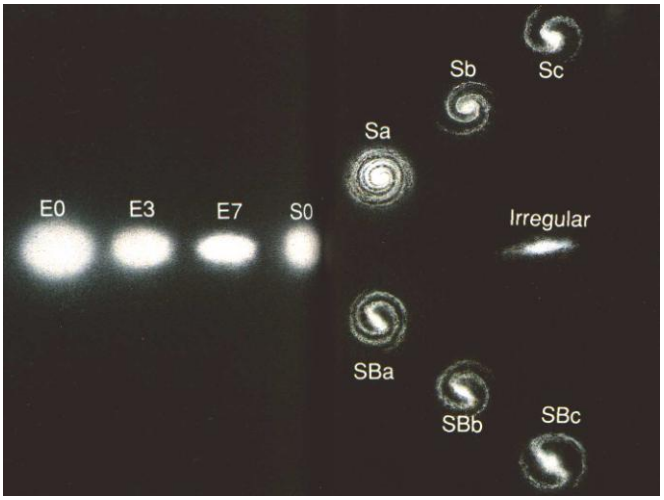
NUM	CONSTELLATION	Object and Remarks	NUM	CONSTELLATION	Object and Remarks
M.01	Taurus	Supernova remnant	M.56	Lyra	Globular cluster
M.02	Aquarius	Globular cluster	M.57	Lyra	Planetary Ring Nebula
M.03	Canes Venatici	Globular cluster	M.58	Virgo	Galaxy type Sb
M.04	Scorpio	Globular cluster	M.59	Virgo	Galaxy type E3
M.05	Serpens	Globular	M.60	Virgo	Galaxy type E1
M.06	Scorpio	Open cluster naked-eye	M.61	Virgo	Galaxy type Sc
M.07	Scorpio	Open cluster	M.62	Ophiuchus	Globular cluster
M.08	Sagittarius	Lagoon Nebula	M.63	Canes Venatici	Spiral galaxy
M.09	Ophiuchus	Globular cluster	M.64	Coma Berenices	Galaxy Black-Eye
M.10	Ophiuchus	Globular cluster	M.65	Leo	Galaxy type Sa
M.11	Scutum	Open cluster Wild Duck	M.66	Leo	Galaxy type Sb
M.12	Ophiuchus	Globular cluster	M.67	Cancer	Open cluster
M.13	Hercules	Naked-eye Globular	M.68	Hydra	Globular cluster
M.14	Ophiuchus	Globular cluster	M.69	Sagittarius	Globular cluster
M.15	Pegasus	Globular cluster	M.70	Sagittarius	Globular cluster
M.16	Serpens	Nebula + cluster	M.71	Sagitta	Open cluster
M.17	Sagittarius	Nebula Omega	M.72	Aquarius	Globular cluster
M.18	Sagittarius	Open cluster	M 73	Aquarius	Asterism of stars
M.19	Ophiuchus	Globular cluster	M.74	Pisces	Galaxy
M.20	Sagittarius	Nebula Triffid Nebula	M.75	Sagittarius	Globular cluster
M.21	Sagittarius	Open cluster	M.76	Perseus	Planetary
M.22	Sagittarius	Globular cluster	M.77	Cetus	Galaxy
M.23	Sagittarius	Open cluster	M.78	Orion	Nebula
M.24	Sagittarius	Open cluster	M.79	Lepus	Globular cluster
M.25	Sagittarius	Open cluster	M.80	Scorpio	Globular cluster
M.26	Scutum	Open cluster	M.81	Ursa major	Galaxy type Sb
M.27	Vulpecula	Planetary Dumb-Bell	M.82	Ursa major	Galaxy irregular
M.28	Sagittarius	Globular cluster	M.83	Hydra	Galaxy type Sc
M.29	Cygnus	Open cluster	M.84	Virgo	Galaxy type E1
M.30	Capricornus	Globular cluster	M.85	Coma Berenices	Galaxy type Ep
M.31	Andromeda	Great Spiral Galaxy	M.86	Virgo	Galaxy type E3
M.32	Andromeda	Galaxy M31 companion	M.87	Virgo	Galaxy type Eo
M.33	Triangulum	Galaxy type Sc..	M.88	Coma Berenices	Galaxy type Sb
M.34	Perseus	Open cluster	M.89	Virgo	Galaxy type So
M.35	Gemini	Open cluster naked eye	M.90	Virgo	Galaxy type Sc
M.36	Auriga	Open cluster	M.91	Coma Berenices	Galaxy
M.37	Auriga	Open cluster	M.92	Hercules	Globular cluster
M.38	Auriga	Open cluster cruciform	M.93	Puppis	Open cluster
M.39	Cygnus	Open cluster	M.94	Canes Venatici	Spiral Galaxy
M.40	Ursa Major	Double star	M.95	Leo	Galaxy type SBb
M.41	Canis Major	Open cluster naked eye	M.96	Leo	Galaxy type Sa
M.42	Orion	Nebula the Great nebula	M.97	Ursa major	Planetary Owl Nebula
M.43	Orion	Nebula part of M42	M.98	Coma Berenices	Galaxy type Sb
M.44	Cancer	Open cluster Praesepe.	M.99	Coma Berenices	Galaxy type Sc
M.45	Taurus	Open cluster Pleiades	M.100	Coma Berenices	Galaxy
M.46	Puppis	Open cluster	M.101	Ursa Major	Spiral galaxy
M.47	Puppis	Open cluster naked-eye	M.102	Not confirmed might	be NGC 5866
M.48	Hydra	Open cluster	M.103	Cassiopeia	Star cluster
M.49	Virgo	Galaxy type E4	M.104	Virgo	Galaxy
M.50	Monoceros	Open cluster none	M.105	Leo	Galaxy
M.51	Canes Benatici	Spiral galaxy Whirlpool	M.106	Canes Venatici	Galaxy
M.52	Cassiopeia	Open cluster	M.107	Ophiuchus	Star cluster
M.53	Coma Berenices	Globular cluster	M.108	Ursa Major	Galaxy
M.54	Sagittarius	Globular cluster	M.109	Ursa Major	Galaxy
M.55	Sagittarius	Globular cluster	M.110	Andromeda	Galaxy

DEEP SKY OBJECTS

GALAXIES

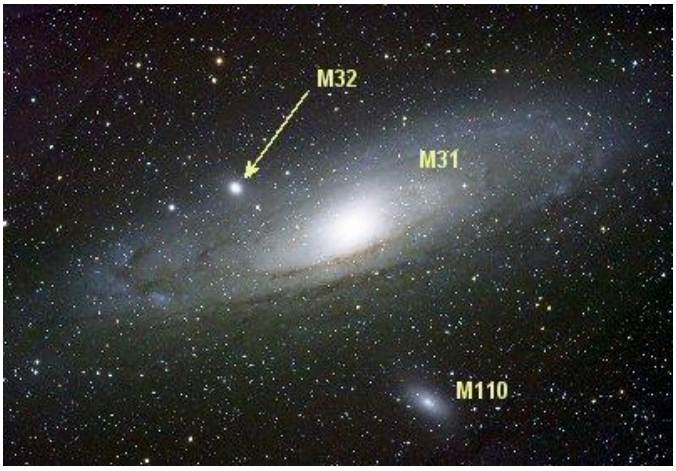
Galaxies are huge conglomerations containing billions of stars. All stars that we know about are located or were formed within galaxies. Some stars could be found outside galaxies but they are likely to have been ejected from a galaxy. All the stars we see in our night sky are in our own galaxy that we call 'The Milky Way'.

There are many different types of galaxy but they are divided into four main classes based on their apparent shape. The shapes are grouped as Elliptical, Spiral, Barred Spiral and Irregular. 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. Elliptical galaxies have seven subdivisions ranging from E0 for those that appear spherical to E7 for those that are rather cigar shaped.



The classes of galaxies

Spiral galaxies are usually large and have a bright central ball of stars with curved arms spreading out from the ball to form a flat disc. Some of the brighter Messier galaxies are M31 in Andromeda and M65, M66, M95 and M96 in Leo. M110 is a small spiral and M32 is a rare Dwarf Elliptical, both are gravitationally associated with M31. See the image of M31 below.

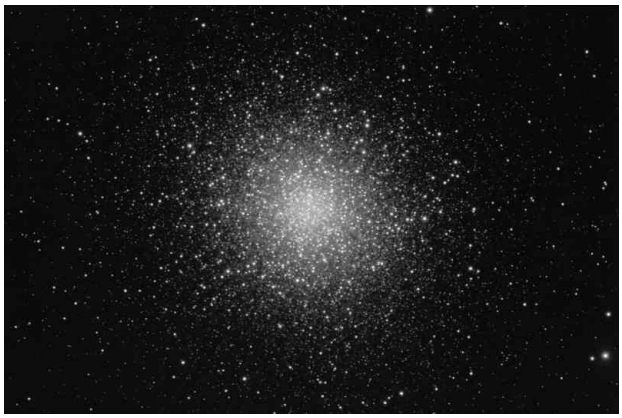


M31 the Andromeda galaxy

Some Elliptical galaxies are the largest of all galaxies and the Irregular galaxies tend to be the smallest with the very smallest being called Dwarf Galaxies.

GLOBULAR STAR CLUSTERS

Globular Clusters are spherical clusters of stars that appear as a tight spherical ball of between about ten thousand and a million stars. These clusters are found in spiral galaxies but are not situated in the main disc of the spiral arms. They form a halo above and below the main disc of the galaxy orbiting around the central nucleus and even pass through the spiral arms. M13 in Hercules is the brightest example in our northern hemisphere sky.



The Great Globular Cluster M13 in Hercules

Globular clusters are comprised of very old stars with some appearing to be even older than the galaxy they are found in. There are about 100 in our galaxy and about 200 have been found in the Andromeda Galaxy M31.

OPEN STAR CLUSTERS

Open Star Clusters are groups of between a few tens to a few thousand stars that have formed together from a collapsing cloud of gas and dust called a Nebula. When stars form in a nebula they start their life as very active stars with a powerful wind of radiation blasting out into the surrounding space. This 'Solar Wind' eventually pushes the remaining gas and dust away to reveal a cluster of new stars. As millions of years pass the stars that formed the cluster, from the nebula, gradually move further apart until the cluster is dispersed. M45 'The Pleiades' (Seven Sisters) in Taurus is one of our closest and most beautiful open clusters. It is a relatively young cluster at about 100 million years old and contains approximately 1000 stars.

M45 The Pleiades (Seven Sisters) in Taurus

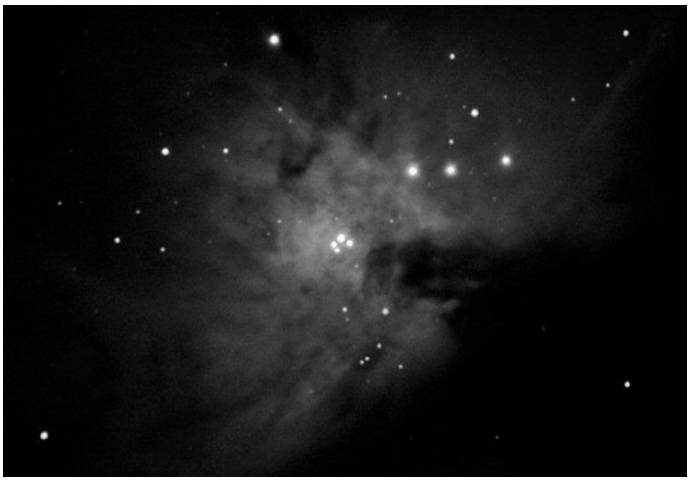
It is almost certain that our own star, the Sun, was formed in a nebula. It was also a member of an open cluster but over the past 4.3 billion years the stars have drifted so far apart we cannot tell which stars were our Sun's siblings.

NEBULAE

Nebulae (plural, the singular is Nebula) are huge clouds of gas and dust mainly found in the arms of spiral galaxies. Most of the gas in these clouds is Hydrogen but there are often traces of other elements. There are two main types of nebula these are called Reflection Nebulae and Emission Nebulae. As the names suggest they either reflect light from neighbouring stars or emit light from the gas within them. In the picture of M42 below, light from the stars is being reflected off the nebulosity around the stars. The excited Hydrogen gas in the nebula is also emitting its own light.

Messier 42 (M42) The Great Orion Nebula

Light is emitted by the gas in the cloud when it has been hit by the radiation from the four large powerful and very active stars called the Trapezium. The image below shows the Trapezium superimposed on M42. Photons of mainly ultraviolet radiation from the stars of the Trapezium are absorbed by the atoms of the nebula.

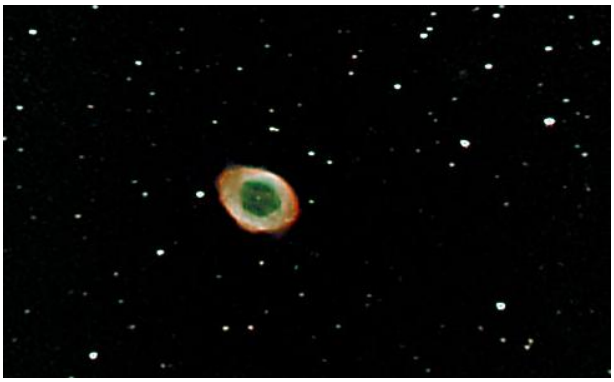


M42 showing the four stars of the Trapezium

To absorb this additional energy an electron jumps from its normal orbit around the nucleus to a higher orbit. The atom will become unstable so the electron will quickly jump back to its original orbit. To enable this to happen, the atom must release the excess energy it has absorbed. It does this by radiating a flash of light photons. Light is always emitted at the same wavelength (colour) from an atom of a particular element. For example Hydrogen always emits a red light photon as can be seen above in the upper coloured image of M42.

PLANETARY NEBULAE

A Planetary Nebula is the remains of a star of about the same size as our Sun and nothing to do with planets at all. After about ten billion years the Hydrogen that has powered the star would have run out. The outer parts of the star then became inflated like a giant balloon. Eventually the outer parts of the star drifted off into space and formed a huge bubble. As we look through the bubble we see more material through the edge so it appears more like a ring. The Ring Nebula M57 in Lyra is the most famous.



Messier 57 (M57) the Ring Nebula in Lyra

Many planetary nebulae look like a smoke ring but others may have very beautiful and intricate shapes. It is common for some planetary nebulae to have two lobes and look like an hourglass or a butterfly. M27 in the constellation of Vulpecula is the nearest and brightest of this type of planetary nebula and can be seen using a good pair of binoculars.

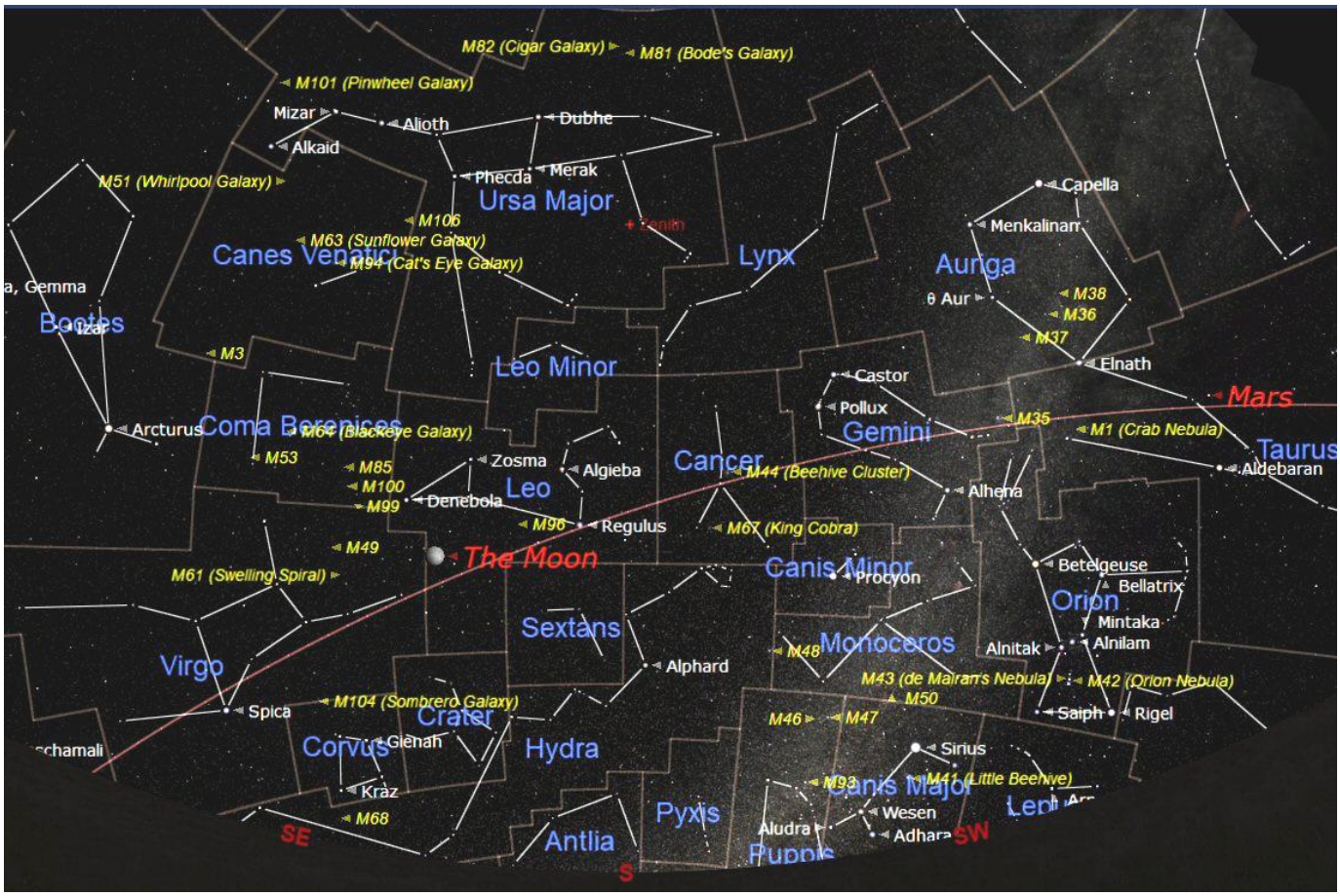
SUPERNOVA REMNANTS

One particular type of dying star called a Super Nova produces a different fuzzy patch. This is created when a giant star about 5 times the mass of our Sun reaches the end of its existence. The star becomes very unstable until it eventually explodes and completely destroys itself. The super nova remnant known as the Crab Nebula, in Taurus, is the first in Messier's list and is therefore designated as Messier 1 (M1).

Messier 01 (M01) The Crab Nebula

With the passage of time over the course of many thousands of years the expansion of the gas and dust blasted into space by the explosion dissipates. The filaments that can be seen in M1 will become long faint wisps spread across vast distances of space. The Veil Nebula in the constellation of Cygnus is one such ancient super nova remnant.

A TOUR OF THE NIGHT SKY - April 2019



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 and is shown, marked in red' at the top and 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 brightest stars often appear to form a group or recognisable pattern; we call these 'Constellations'.

Constellations through which the ecliptic passes this month are Taurus (the Bull), Gemini (the Twins), Cancer (the Crab), Leo (the Lion) and Virgo (the Virgin) rising over the eastern horizon.

The Milky Way (our Galaxy) flows up from the south horizon in Puppis, through Orion and Gemini. It continues up through Perseus and Cassiopea and on to Cygnus which is on the northern horizon.

Mars is still in a reasonable position, for observing during the early evening but is looking small now, in the constellation of Taurus. Earth overtook Mars a few months ago as it moved faster along its smaller orbit inside the orbit of Mars. Mars in now being left behind Earth and appears smaller as it becomes further away. Although it is looking smaller it still appears bright.

Taurus is easy to find thanks to Mars and its location on the Ecliptic. The stick figure representation of Taurus resembles a squashed 'X' with the bright orange coloured Red Giant star Aldebaran at its centre. This is a lovely star to look at especially using binoculars or a telescope and is noticeably orange.

Following the North western (upper right) arm of the 'X' shape of Taurus guides us to the beautiful Pleiades 'naked eye' Open Star Cluster. This bright Open Cluster with its seven brightest stars is known as Messier 45 (M45), the Pleiades or 'Seven Sisters'.

Attached to the upper left star of Taurus called 'Elnath' is the constellation of Auriga the Charioteer. Auriga appears like a distorted pentagon with the beautiful bright white star Capella on the opposite side to Elnath.

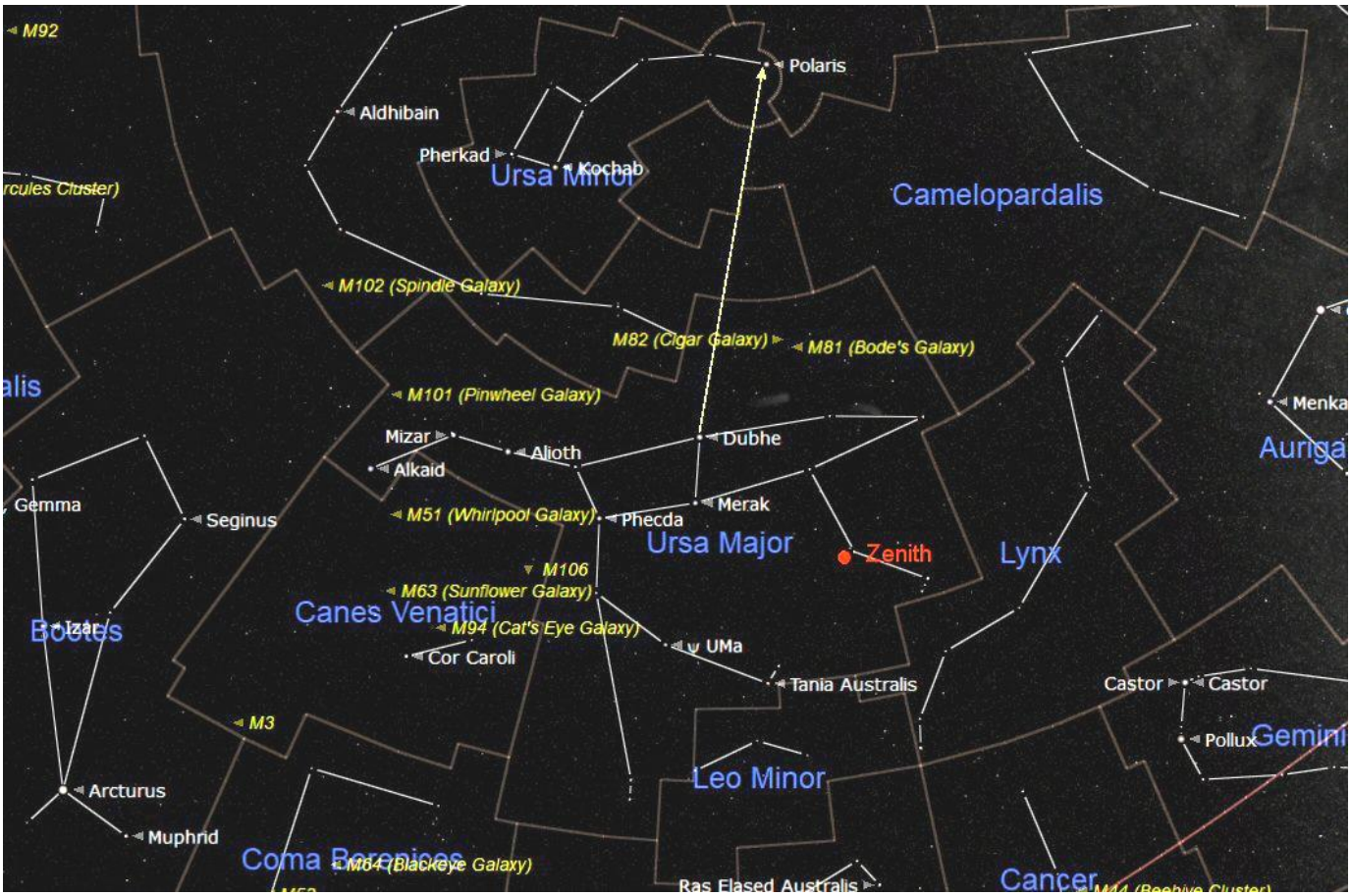
To the east of Taurus along the Ecliptic is the constellation of Gemini (the Twins). The twin stars Castor and Pollux are easy to identify. To the east is the constellation of Cancer with a lovely cluster M44.

Below Taurus and Gemini is Orion the second most recognisable constellation. Orion is depicted as a hunter with two hunting dogs called Sirius and Procyon. The two stars that represent Orion's hunting dogs are also called Sirius and Procyon. Sirius and Procyon are the brightest stars in the constellations of Canis Major (the great dog) and Canis Minor (the little dog). Sirius is the closest and brightest star visible from the UK.

Further to the east (left) of Gemini is 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' shape is also described as looking like a backwards question mark (?).

Following Leo is the less obvious constellation of Virgo but it does have one fairly bright star called Spica.

THE CONSTELLATIONS OF URSA MAJOR AND URSA MINOR



The constellations of Ursa Major (the Great Bear) and Ursa Minor (the Little Bear)

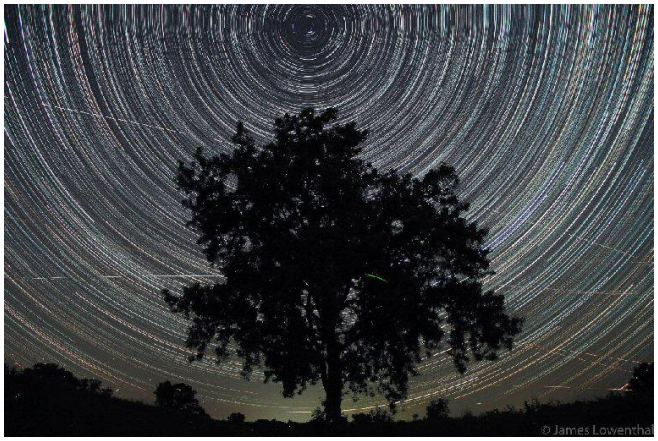
The Constellation of the Month, this month, is probably the best known of all the constellations and is certainly the most recognisable. It is Ursa Major (the Great Bear) also known as the 'Plough' or 'the Big Dipper' in the USA. However it has very little resemblance to a bear and looks very much like a 'Saucepan'.

Ursa Major is directly overhead at this time of the year as can be seen by the chart above. The point in the sky directly overhead of the observer is called the 'ZENITH' and is shown in red on the chart. The chart shows the sky as it will appear at 21:00 on 15th April.

Ursa Major is a circumpolar constellation, this means it never disappears below the horizon from the UK and so is always visible somewhere in the night sky throughout the year. All the stars in the night sky appear to rotate around a point in the sky that we call the 'North Celestial Pole'. This point is located very close to the star Polaris in the constellation of Ursa Minor (the Little Bear). Polaris can be found by following the two stars opposite the handle of the 'saucepan shape', up out of the pan and about five times the distance between the pointer stars. See the arrow on the chart above.

Our planet Earth rotates around the North Celestial Pole once a day (24 hours). As Earth rotates the sky appears to rotate above us. As the sky appears to rotate Ursa Major and the other constellations will appear to move around the North Celestial Pole in an east to west direction. It will appear to move left as shown on the chart above (handle to the front). The movement is slow and not perceivable in real time.

However a long exposure using a camera will show the stars as trails as they rotate around the Pole Star.



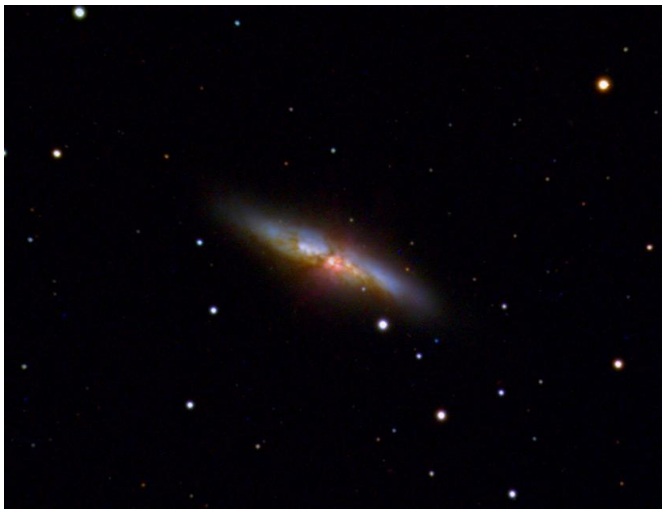
Star trails imaged by James Lowenthol

The axis of rotation of our Earth is tilted over at 23.4º to the axis of rotation of our Solar System. So we see our axis of rotation 23.4º to the north of our Zenith (the point directly overhead). We do not normally notice that we have a slightly odd view of the sky due to this tilt of Earth. Astronomers are acutely aware of this strange perspective we have of the sky as we need to take account of it when we are observing the moving sky.

So the two bears in our sky are quite important constellations. Ursa Minor because it hosts the North Celestial Pole and Ursa Major because it is used to help us to find Polaris and the North Celestial Pole close by.

GALAXIES IN URSA MAJOR

Messier 81 (M81)



Messier 82 (M82)

Messier 101 (M101)

Messier 51 (M51)

Ursa Major is host to some lovely galaxies for those who are fortunate to have access to a larger telescope. These are shown above as M81, M82, M101 and M51 which is not strictly in Ursa Major but close by.

Messier 81 (M81) is a beautiful giant spiral galaxy similar to our Milky Way Galaxy. It is 11.7 light years away from us and slightly smaller in diameter than our Galaxy at about 90,000 light years (Milky Way 100,000ly).

Messier 82 (N82) and M81 appear close together in the sky and are gravitationally associated. M82 is seen edge on but slightly tilted from our vantage point. It appears to be 'Cigar' shaped and is sometimes called the Cigar Galaxy. M82 has a very active core at its centre. There is an intense area of a starburst (star creation) in the core that is causing powerful radiation to stream out from the core. There is thought to be a rare Intermediate Mass Black Hole orbiting only 600 light years away from the Super Massive Black Hole at the centre that may be causing the Starburst.

Messier 101 (M101) is a beautiful 'face on' Spiral Galaxy also known as the 'Pin Wheel Galaxy'. It is larger than our Milky Way with a diameter of 170,000ly compared to the Milky Way at 100,000ly. It is thought to contain up to a trillion stars, the Milky Way is thought to have 200 billion or maybe more.

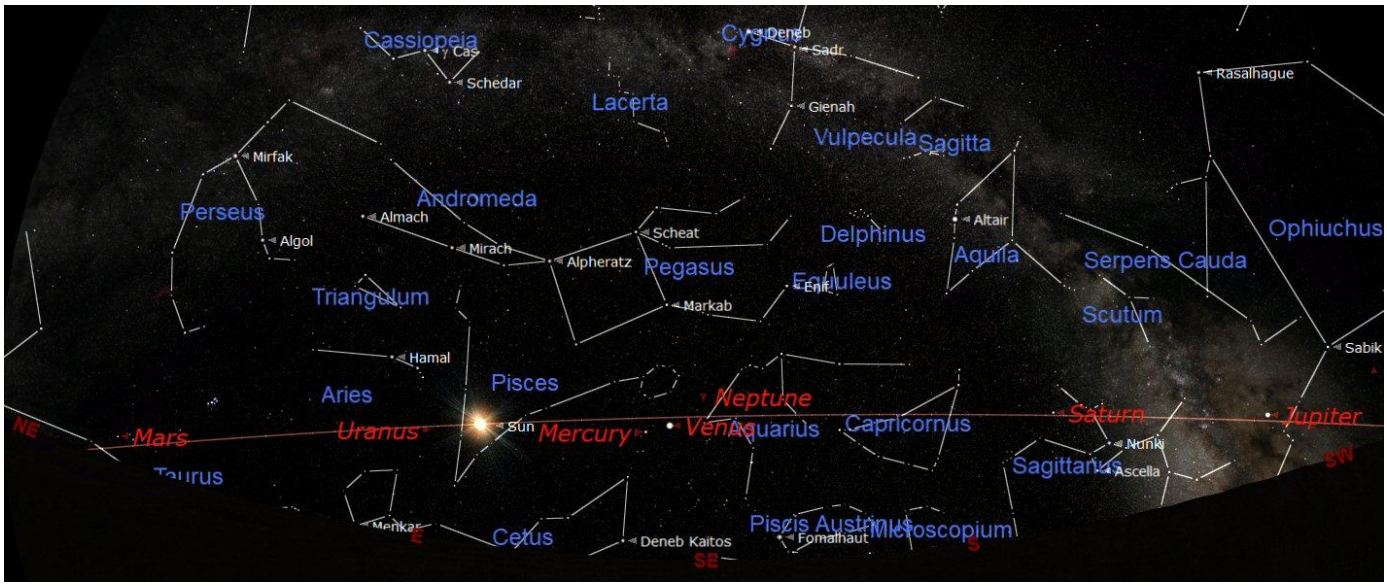
Messier 51 (M51) is not actually in Ursa Major, it is in the neighbouring constellation of Canes Venatici (the Hunting Dogs). However the easiest way to finding it is to follow the handle of the saucepan shape of Ursa Major to the star Alkaid at the end of the handle. M51 can then be found just below the star Alkaid.

Messier 51 is also called the Whirlpool Galaxy and was the first Galaxy (or any other object) to be proved to reside outside our Galaxy. Until this discovery by William Parsons the 3rd Earl of Rosse in 1845 it was generally accepted that the Milky Way might be the total extent of the Universe. So with this discovery the Universe became unimaginable larger than it had ever been thought to be and stretches out for billions of light years.

There is another special feature of Messier 51 that can give us an insight into how galaxies formed. M51 has had a close encounter with another galaxy and we can see the affect it had on the two galaxies. The image above shows that the larger spiral galaxy has had gas, dust and even stars pulled off by the smaller galaxy as it brushed past. The spiral arms have been pulled off and dragged along behind the smaller galaxy.

It is now thought the combined gravity of the two galaxies will pull them back together for further encounters. They will pirouette around each other and eventually combine into one larger galaxy. In the process very few stars will actually collide due to the vast distances between stars.

THE SOLAR SYSTEM THIS MONTH



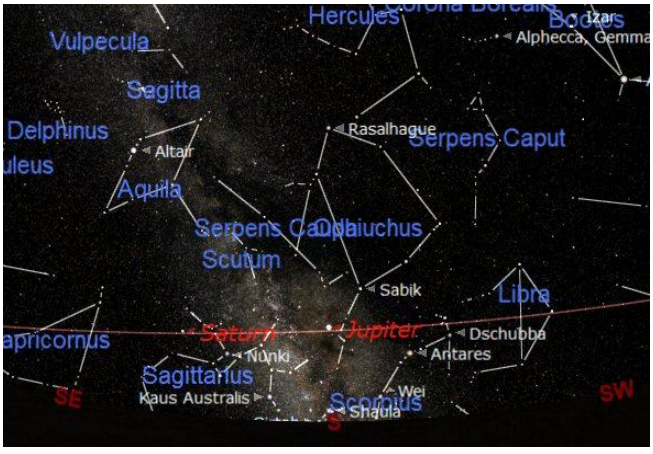
The positions of the planets at 08:00 in the middle of the month (the sky has been darkened)

MERCURY will be at greatest elongation from the Sun on 11th April but will be close to the eastern horizon before dawn and very difficult to see.

VENUS rises over the eastern horizon at about 05:20 and will be very bright in the south as the sky brightens at dawn. Venus is very bright at magnitude -4.0 but is moving back towards the Sun. It will move into Superior Conjunction (pass behind the Sun) on 14th August. See the chart above.

MARS is still observable in the early evening but is lower now and getting close to the southern western horizon in turbulent and smoggy air. The Red Planet is moving away from Earth and looking smaller at 4.4 arc-seconds in diameter but still quite bright at magnitude +1.5. See the chart on page 6.

JUPITER is moving further away from the Sun before sunrise. It now rises over the eastern horizon around 01:00 nearly 5 hours before sunrise. It is well worth getting up early to see. See the chart below.



Saturn and Jupiter at 05:00

SATURN is moving steadily away from the Sun before sunrise and is becoming easier to see before the sky brightens. It will be observable in the south east until the Sun rises in the east. A telescope will show the ring system quite well. See the chart above.

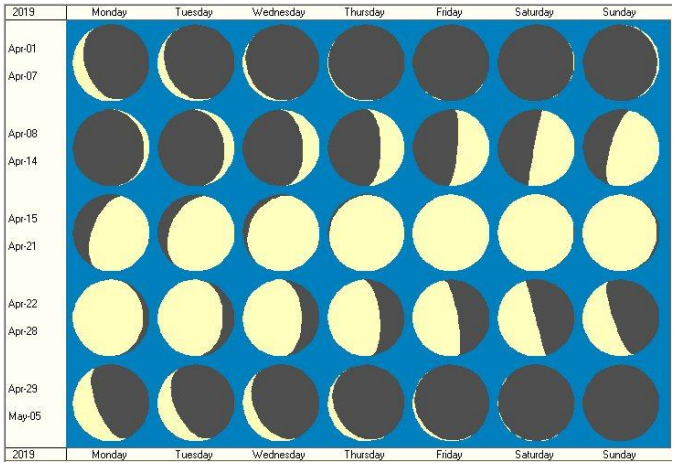
URANUS will not be observable this month as it will be in conjunction (appearing to pass behind the Sun) with the Sun on 22nd April.

NEPTUNE is still close to the Sun after passing through conjunction last month and not visible.

THE SUN

The Sun rises at 06:27 at the beginning of the month and at 05:44 by the end of the month. It will be setting at 19:40 at the beginning and 20:15 at the end of the month. There has been no activity for some months.

THE MOON PHASES IN APRIL

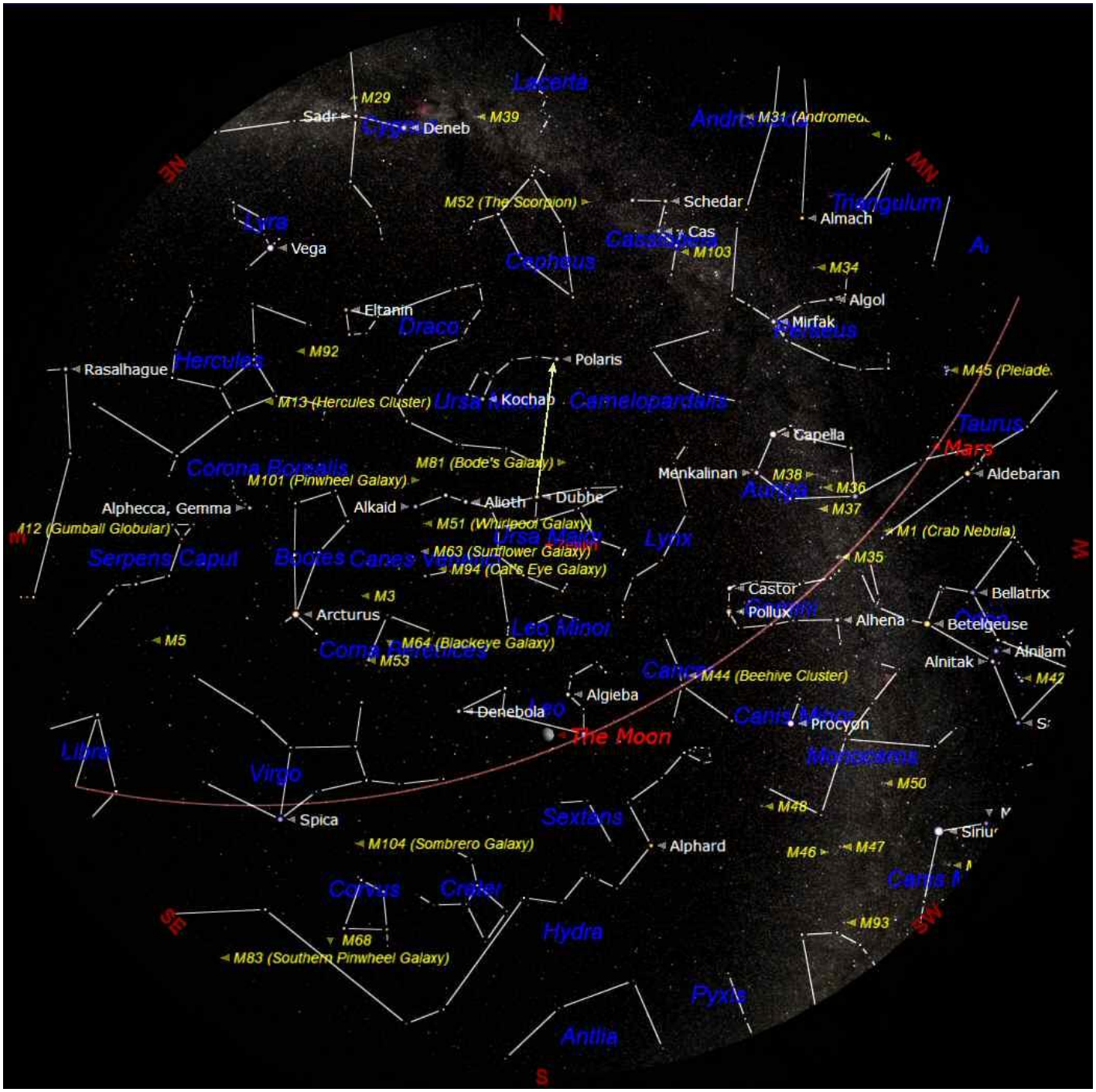


New Moon will be on the 5th April
First Quarter will be on 12th April
Full Moon will be on 19th April
Last Quarter will be on 26th April

LYRID METEOR SHOWER

There will be a meteor shower during the night of 22nd and 23rd April with a peak of activity around 1 o'clock BST (00:00 GMT). This is a minor shower (with just 10 meteors per hour) but does sometimes produce the occasional bright meteor known as a fireball. To observe the shower look high towards the north east.

THE NIGHT SKY THIS MONTH



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 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: Mars. Venus, Saturn and Jupiter are observable in the early morning.