NEWBURY ASTRONOMICAL SOCIETY
MONTHLY MAGAZINE – MARCH 2020

CHARLES MESSIER AND HIS CATALOGUE

Two contemporary portraits of Charles Messier born 1730 – died 1817

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 was born in Badonviller in the Lorraine region of France, the tenth of twelve children of Françoise B. Grandblaise and Nicolas Messier, a Court usher. Six of his brothers and sisters died while young and his father died in 1741. Charles' interest in astronomy was stimulated by the appearance of the great six-tailed comet in 1744 and by an annular solar eclipse visible from his hometown on 25th July 1748. Charles died in Paris on 12th April 1817 at the ripe old age of 86 and is buried in the Père Lachaise Cemetery, Paris, in Section 11.

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.

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 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. However 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?

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

NEWBURY ASTRONOMICAL SOCIETY MEETING

1st May	Observing Venus
Website:	**www.newburyastro.org.uk**

NEXT NEWBURY BEGINNERS MEETING

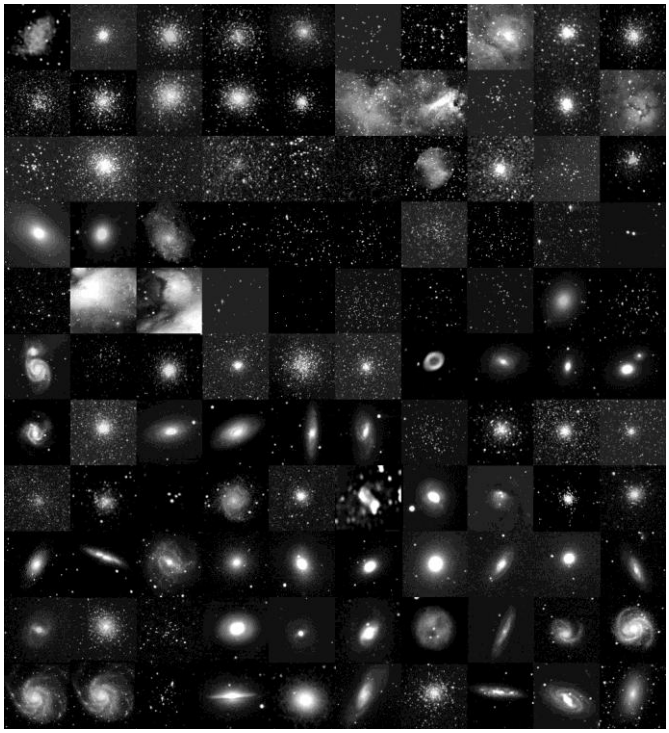
20th May	Light Pollution
Website:	**www.naasbeginners.co.uk**

COMPLETE LIST OF ALL 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 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	May 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

MESSIER MINI MARATHON

The Messier Marathon is a term describing the attempt by amateur astronomers to find as many Messier objects as possible in one night. Depending on the location of the observer and the season there are a different number of them visible, as they are not evenly distributed in the celestial sphere. The best latitudes to attempt the marathon are around 25 degrees North but from the UK it is still possible to observe all 110 Messier objects in one night. This opportunity occurs once every year, around the middle to end of March and the best time to try is of course when the Moon is near its new phase.



A chart with all the 110 Messier objects

To achieve the goal of finding all the Messier objects it is necessary to start as soon as it is dark enough to see the most westerly objects. These objects will soon disappear over the western horizon so it is essential to catch them before they move out of view.

The observer must then start searching for the objects very much in the order they appear in the sky moving from west to east. This is to take advantage of the precession of the sky as the stars and objects appear to move east to west due to the rotation of Earth. This precession ensures new objects appear over the eastern horizon as the most westerly objects disappear over the western horizon.

It is essential to have a sequence list ready for the attempt so it can be conducted methodically. There should also be notes to help find each object and a time by which each object must be found before it becomes too difficult to find.

Some objects are easier to find than others and many are very familiar to amateur astronomers so these may take just a few seconds to find and tick off. However some are much more difficult and may take some considerable time. The Messier Marathon is just for fun so it is most important to enjoy the attempt rather than just to complete the marathon.

All this sounds very ambitious for the beginner to astronomy but there is an easier marathon. This is called the Mini Messier Marathon and has just 25 objects to find. The objects are the better known members of the Messier catalogue so they are brighter and easier to find. The mini marathon can be divided into four sessions from dusk to dawn. Here is a list of the Mini Marathon Objects:

Session 1 From dusk until about 21:00 (9 o'clock)

M31 The Andromeda Galaxy
M34 An Open Star Cluster near M31
M45 The Pleiades Cluster in Taurus
M42 The Great Nebula in Orion's Belt
M35 In the neighbouring cluster in Gemini
M36 The second in the line of clusters in Auriga
M37 The first in the line of clusters in Auriga
M38 The third in the line of clusters in Auriga
M41 An Open Cluster near to Sirius the Dog Star

Session 2 From 22:00 (10 o'clock) until Midnight

M44 The 'Beehive' cluster in Cancer
M81 A bright Galaxy in Ursa Major
M82 A second bright Galaxy close to M81
M65 A bright Galaxy below Leo
M66 A second bright Galaxy close to M65
M104 The 'Sombrero' Galaxy in Virgo

Session 3 From 02:00 until about 04:00

M13 The Great Globular Cluster in Hercules
M92 A smaller and fainter Globular in Hercules
M57 The Ring Nebula (planetary) in Lyra
M27 The Dumbbell Nebula (planetary) in Vulpecula

Session 4 From 05:00 until dawn

M4 Globular Cluster close to Antares in Scorpio
M22 Globular Custer in Sagittarius
M11 The Wild Duck Cluster in Scutum
M5 Globular Cluster in Pegasus
M15 Globular Cluster in Virgo
M71 Open Cluster in Sagitta

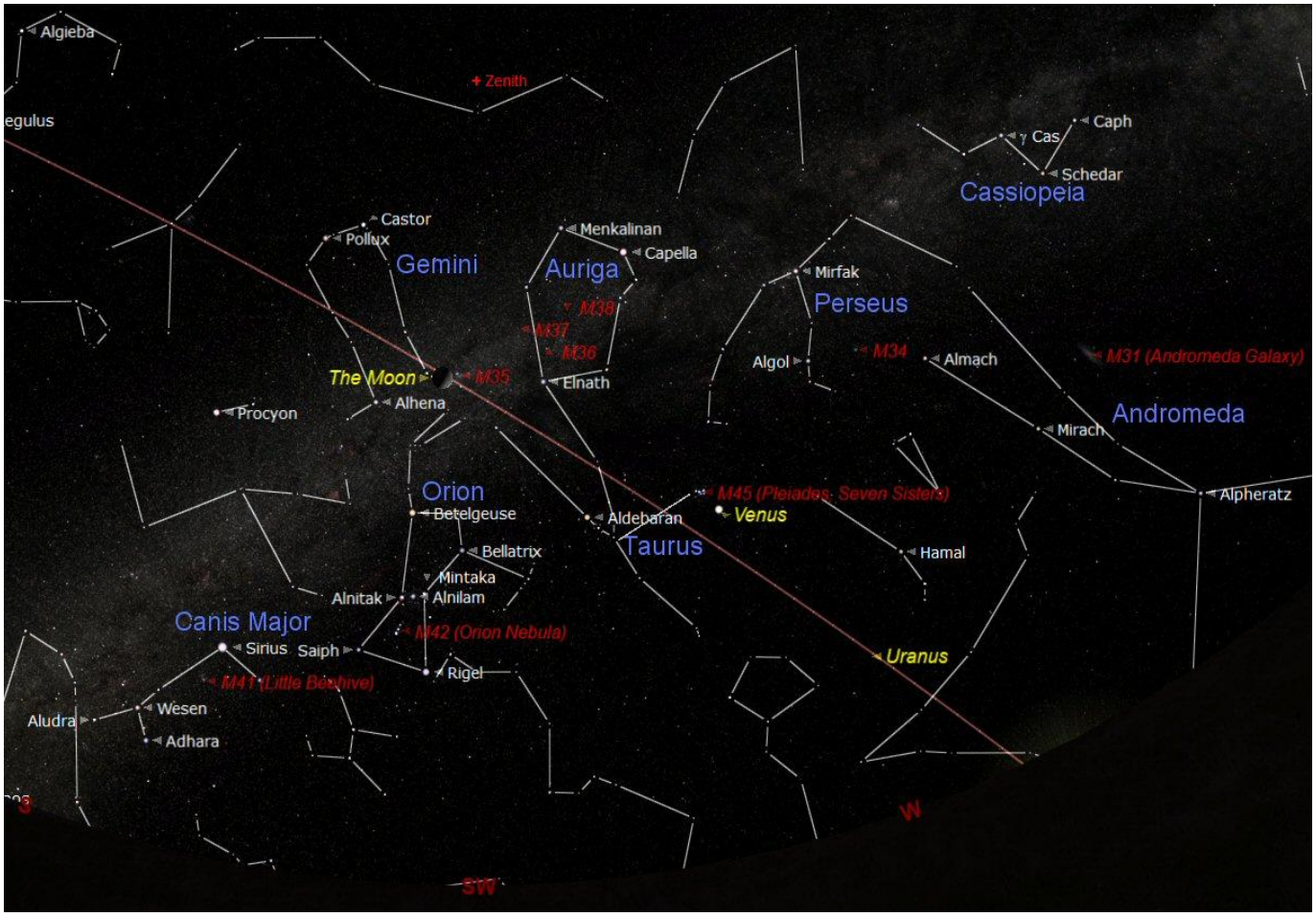
Some of the final session objects may be difficult to find if it is too close to dawn and the sky is beginning to brighten.

Unfortunately the whole marathon does take the whole night to complete so is not a task to be undertaken lightly, especially if the observer needs to go to work or school the next day. Having said that, although the main challenge is to complete the whole marathon in one night, it is not really necessary to do it all on the one night. The main object is to be able to find the objects on the list and 'tick' them off.

The following pages have charts and some guidance to help find the Mini Marathon objects listed above.

Full sized charts and a detailed location guides to use for the Mini Marathon can be found on the Beginners website at: www.naasbeginners.co.uk.

THE MINI MESSIER MARATHON – Session 1 (early evening)



The chart above shows the first nine Messier Objects to find in the first session. We need to start as soon as it is dark to make sure we have set everything up and we have plenty of time for the search. Remember if it does cloud over we can start where we left off when the sky clears or on the next clear night.

Some of the Mini Messier Objects can be seen using just binoculars but the fainter objects will need a telescope and a dark unpolluted night sky.

The chart above shows the very early evening sky as the Sun sets over the western horizon and the sky is beginning to darken. If the Moon is in the sky it will be the first night sky object to be seen and the second will be the planet Venus. It will be high in the south west and is so bright it can't be missed.

1. **M31** The Andromeda Galaxy

   This is the best Galaxy and it can just be seen using binoculars but is best using a telescope. Start at the top left star in the Square of Pegasus Alpheratz. Hop two stars along Andromeda to Mirach then two stars up.

2. **M34** An Open Star Cluster near Algol

   Look for M34 about half way between Almak in Andromeda and Algol in Perseus.

3. **M45** The Pleiades Cluster in Taurus

   The Seven Sisters is a naked eye Open Cluster in Taurus so it is no problem to find. It is best seen using binoculars. The seven brightest stars can be counted with the naked eye.

4. **M42** The Great Nebula in Orion's Belt

   The Orion Nebula can be found in Orion's sword just below the three stars of his belt.

5. **M35** An open cluster in Gemini

   This Open Cluster appears to be in almost the same line as M36, M37 and M38 but it is in the neighbouring constellation of Gemini close to the star at the end of the line of stars emanating from Castor. It can be seen using binoculars but does need a telescope to see it well.

6. **M36** The first of the clusters in Auriga.

   This Open Cluster can be found inside the misshapen pentagon shape of Auriga.

7. **M37** The second cluster in Auriga

   An Open Cluster that can be seen using binoculars as a small smudge of light in Auriga. First find the bright star Capella which is almost directly over head close to the Zenith. Then identify the misshapen pentagon shape of Auriga. M37 is just to the left of the Pentagon.

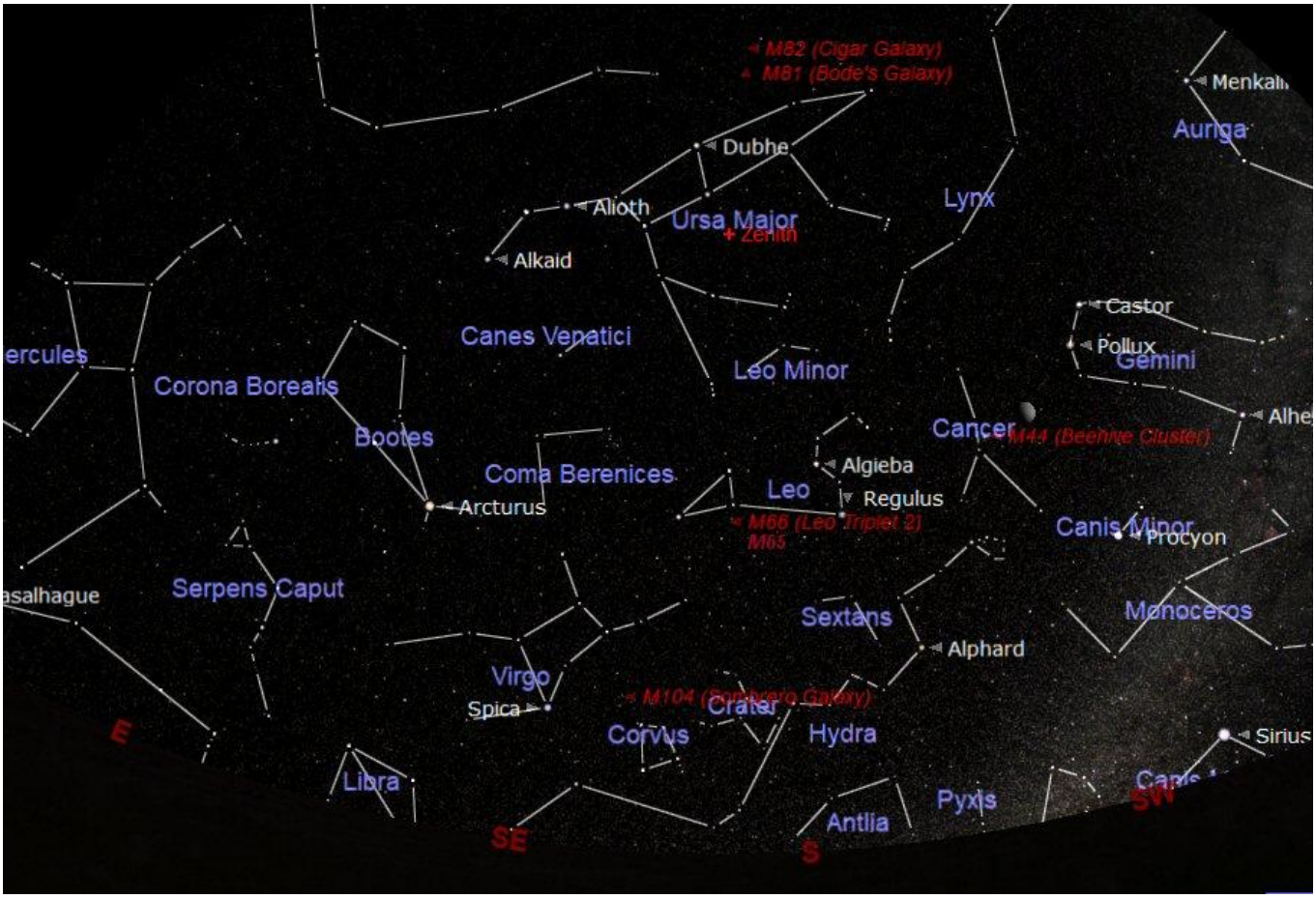
8. **M38** The third in the line of clusters in Auriga

   This Open Cluster can also be found inside the misshapen pentagon shape of Auriga.

9. **M41** An Open Cluster close to Sirius.

   Follow the line of stars in Orion's belt down to find Sirius. This is a bright and fairly large Open Cluster and should be easy to find south of Sirius.

Session 2 (midnight)



The chart above shows the next six Messier Objects to find in this 'midnight' session. We can start observing around 10 o'clock to make sure we have enough time to find everything. Remember if it does cloud over we can resume where we left off when the sky clears or on the next clear night.

In this session one of the Mini Messier Objects 'M44' can be seen using just binoculars, in fact binoculars are best. However the other fainter objects will need a telescope and a dark unpolluted night sky.

The chart above shows the sky at about midnight. The early evening objects have moved towards and over the western horizon. If the Moon is in the sky the fainter objects may be more difficult to find. If the Moon is close to a target it may have to be postponed until another night when the Moon has moved on.

1. **M44** The Beehive Cluster in Cancer

   This is the second best open cluster and is best seen using binoculars. Within the cluster is a group of stars that looks a little like an old straw beehive and the other stars look like the bees around the hive.

2. **M81** A Galaxy in Ursa Major

   M81 is one of a pair of fairly bright galaxies with M82 but will need a telescope to see. It will need a dark sky and a good view directly overhead. It can be found to the north of the saucepan shape of Ursa Major so is also north of the Zenith (the point directly overhead. It is also called Bode's Galaxy.

3. **M82** Another Galaxy in Ursa Major

   This object is quite bright for a galaxy but will need a telescope to see. It will need a dark sky and a good view directly overhead. M81 is seen side on and tilted towards us so appears elliptical. It is also called the Cigar Galaxy because it has the elliptical shape of a cigar. See the image on page 8.

4. **M65** One of a pair of Galaxies in Leo

   M65 is one of a pair of fairly bright galaxies with M66 but again will need a telescope to see. It will need a dark sky with little to no light pollution. It can be found to the south of the Lion (or Sphinx) shape of Leo. It is located below what would be the lion's hind quarters.

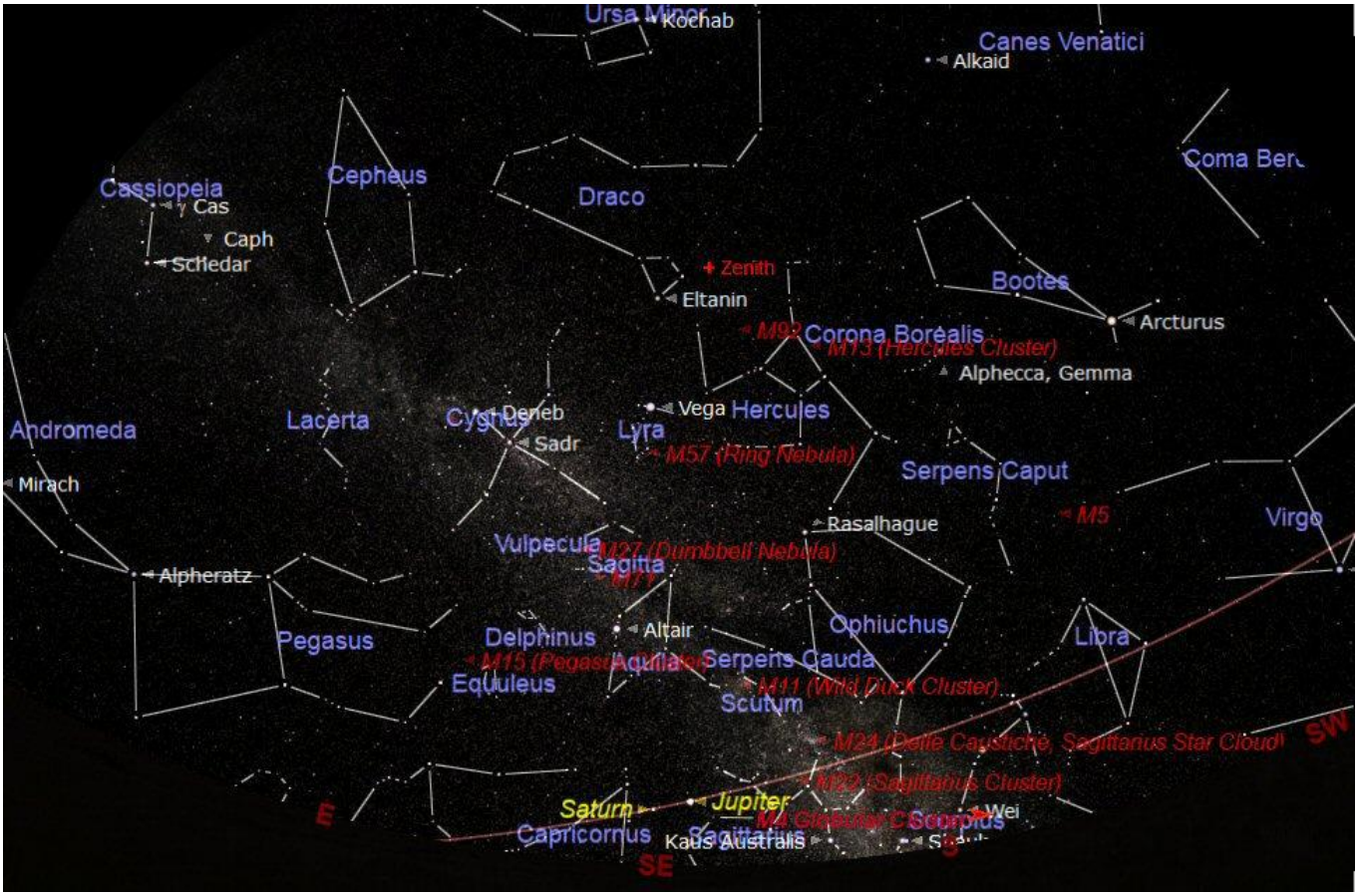
5. **M66** A second Galaxy in Leo

   This Galaxy appears close to M65 in Leo and is about the same brightness. The M65 and M66 pair is shown together in the image on page 8. They do need a telescope and a clear dark sky to see. There is another pair M95 and M96 that can be found beneath the lion's tummy.

6. **M104** An spectacular Galaxy in Virgo

   M104 is also known as the Sombrero Galaxy because of its resemblance to a Mexican Sombrero Hat. The galaxy has a bright core halo and has a beautiful gas disc surrounding it. It may also be said to look like a 'Flying Saucer'. A larger telescope and a dark sky will be needed to see it well. See page 8.

Session 3 and 4 (after midnight to dawn)



The chart above shows the final 10 Messier Objects to find in this 'midnight' session to dawn. We can start observing around midnight to make sure we have enough time to find everything. Remember we do not really need to do it all in one night. We can resume where we left off on the next clear night.

1. **M13** Globular Cluster in Hercules

   This is the closest and best Globular Cluster, located in Hercules. It is a cluster of about a million stars and is one of about 90 globular clusters orbiting the centre of our Galaxy. They may be the dense cores of a small galaxies that has ventured too close to our Milky Way Galaxy and been stripped of its outer stars.

2. **M92** Globular Cluster in Hercules

   This is a more distant Globular Cluster than M13. It looks smaller than M13 and like a ball of stars but does need a telescope.

3. **M57** A Planetary Nebula in Lyra

   This is a star like our Sun that has ended its life as a normal star. It has collapsed to become a White Dwarf Star that is surrounded by a beautiful bubble of gas and dust.

4. **M27** A Planetary Nebula in Vulpecular

   This is a star like our Sun that has ended its life as a normal star. It has collapsed to become a White Dwarf Star that is surrounded by a bubble of gas and dust. It is larger than M57 and has two lobes of gas that give it the appearance of a faint Butterfly.

5. **M4** Globular Cluster in Scorpius

   This is one of the closest and best Globular Clusters but is located low down in Scorpius. It is a cluster of about a million stars and is one of about 90 globular clusters orbiting the centre of our Galaxy.

6. **M22** Globular Cluster in Sagittarius

   This is a lovely bright Globular Cluster located in Sagittarius. It is a cluster of about a million stars similar to M13 but is slightly flattened.

7. **M11** Wild Duck Open Cluster in Scutum

   This is a very beautiful Open Cluster in Scutum. It can be seen using binoculars but looks beautiful when seen using a telescope. It is also sometimes called the 'Jewel box'.

8. **M5** Globular Cluster in Serpens

   M5 This is a lovely bright Globular Cluster located in Serpens. It is a cluster of about a million stars similar to M13 but slightly flattened.

9. **M15** Globular Cluster in Pegasus

   This is one of the best Globular Clusters and is located in Pegasus. It is quite easy to find as a small 'fuzzy' patch using binoculars but a telescope is needed to see it as a cluster.

10. **M71** Small Globular Cluster in Sagitta

    M71 is a rather small and sparse Globular Cluster in Sagitta. It is a little difficult to discern against the Milky Way behind.

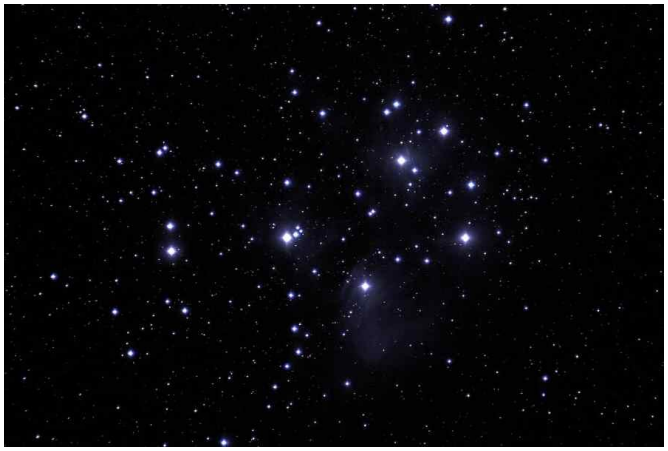
Objects in the Messier Mini Marathon

Messier 31 The Great Galaxy in Andromeda

Messier 41 Open Cluster in Canis Major

Messier 34 Open Cluster in Perseus

Messier 35 Open Cluster in Gemini



Messier 45 The Pleiades (Seven Sisters) in Taurus

Messier 36 Open Cluster in Auriga

Messier 42 The Great Orion Nebula

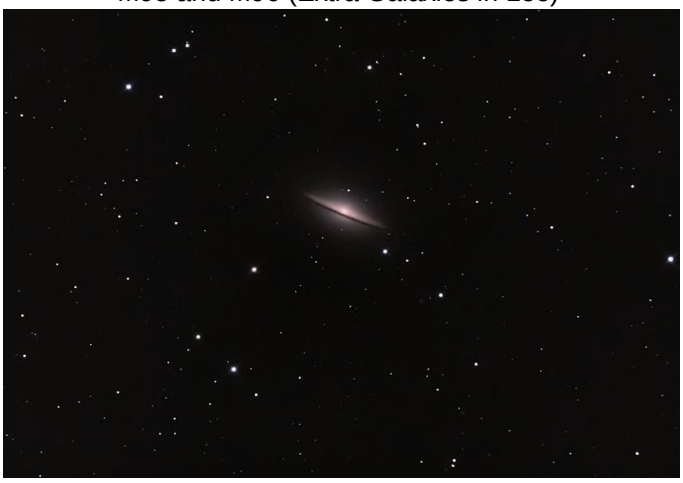
Messier 37 Open Cluster in Auriga

Objects in the Messier Mini Marathon

Messier 38 Open Cluster in Auriga

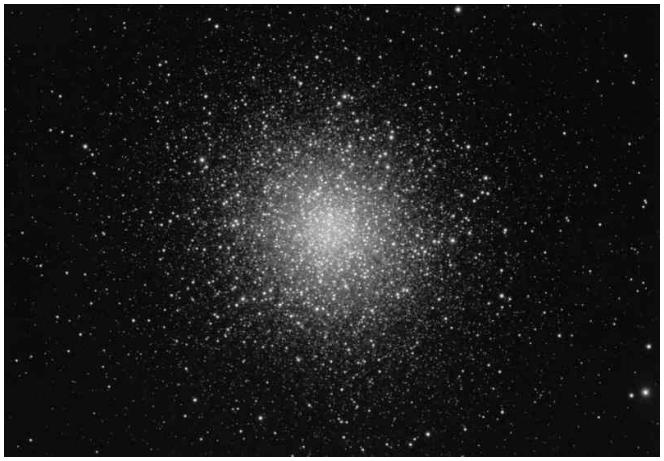
M95 and M96 (Extra Galaxies in Leo)

Messier 44 Beehive Cluster in Cancer



Messier 104 the Sombrero Galaxy in Virgo

Messier 81 and 82 Galaxy pair in Ursa Major



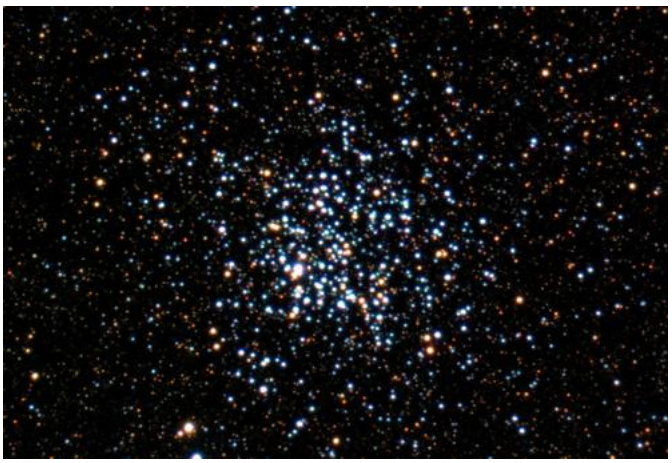
Messier 13 Great Globular Cluster in Hercules

Messier 65 and 66 Galaxy pair in Leo

Messier 92 Globular Cluster in Hercules

Objects in the Messier Mini Marathon

Messier 57 Ring Nebula in Lyra



Messier 11 Wild Duck Cluster (Jewel Box) in Scutum

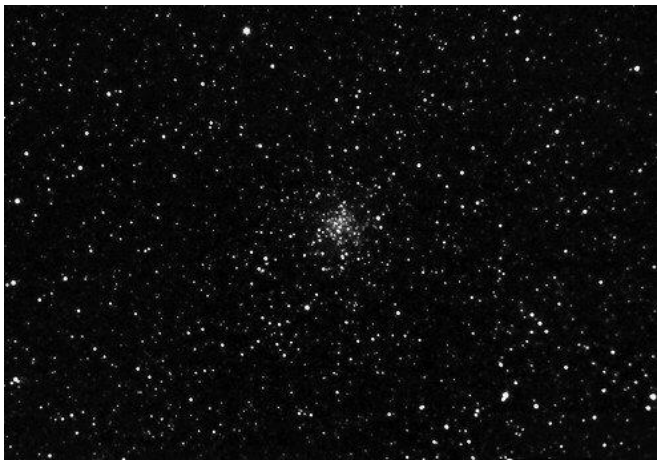
Messier 27 the Dumbbell Nebula in Vulpecula

Messier 5 Globular Cluster in Serpens

Messier 4 Globular Cluster in Scorpius

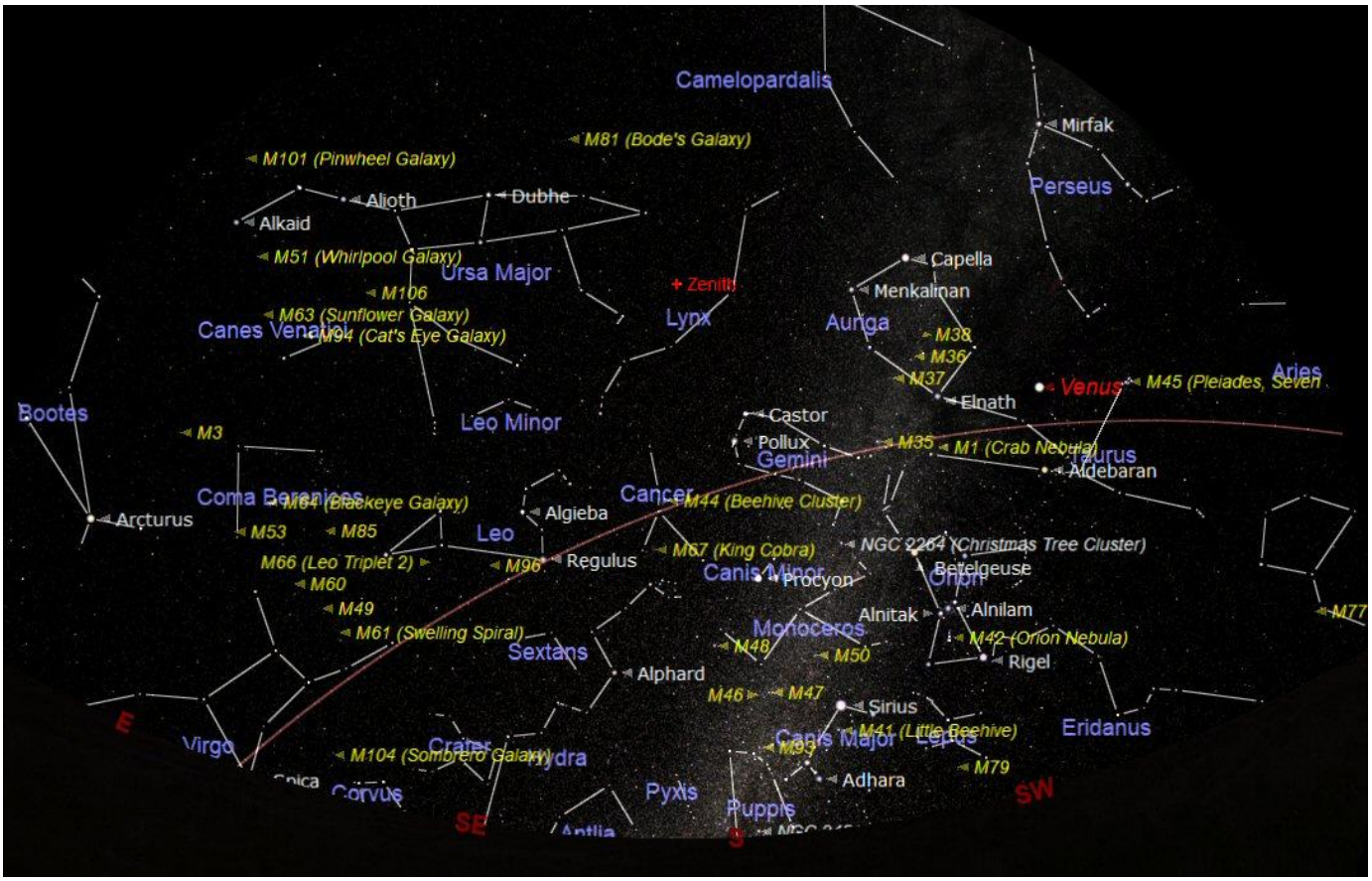
Messier 15 Globular Cluster in Pegasus

1. Messier 22 Globular Cluster in Sagittarius



Messier 71 Small Globular Cluster in Sagitta

A TOUR OF THE NIGHT SKY - APRIL 2020



The chart above shows the night sky looking south at about 19:00 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 (in red) 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 brightest stars often appear to form a group or recognisable pattern; we call these 'Constellations'. Shown (in yellow) are the 'Deep Sky' Messier Objects [Galaxies, Clusters and Nebulae].

Constellations through which the ecliptic passes this month are: Aries (the Ram) just moving over the western horizon, Taurus (the Bull), Gemini (the Twins), Cancer (the Crab), Leo (the Lion), Virgo (the Virgin) and Libra (the Scales) rising over the eastern horizon.

Still prominent in the south west is the constellation of Taurus (the Bull). It sits on the Ecliptic and looks like a squashed cross 'X'. The most obvious star in Taurus is the lovely Red Giant Star called Aldebaran. It appears slightly orange to the 'naked eye' but it is very obviously orange when seen using binoculars or a telescope. Aldebaran is located at the centre of the 'flattened' X shape formed by the brightest stars in Taurus.

At the end of the top right (upper west) arm of the 'X' is the beautiful 'naked eye' Open Star Cluster Messier 45 (M45) known as the Pleiades (or the Seven Sisters). It really does look magnificent using binoculars. Venus is shining very brightly in the constellation of Taurus this month. Venus will pass through the bright and 'naked eye' open star cluster Messier 45 the Pleiades (Seven Sisters) on 3rd April. This will be a special event to see and for those interested in astro-imaging to possibly take a picture. See page 11.

Following Taurus along the Ecliptic is the constellation of Gemini (the Twins). The two brightest stars in Gemini are Castor and Pollux that are named after mythological twins and they are so alike they do look like twins. There are lines of fainter stars linked to Pollux and Castor and extending to the south west (down to the right). There is a lovely Open Cluster called Messier 35 (M35) just off the end and above the upper line of stars emanating from the star Castor. M35 will need a telescope to see well.

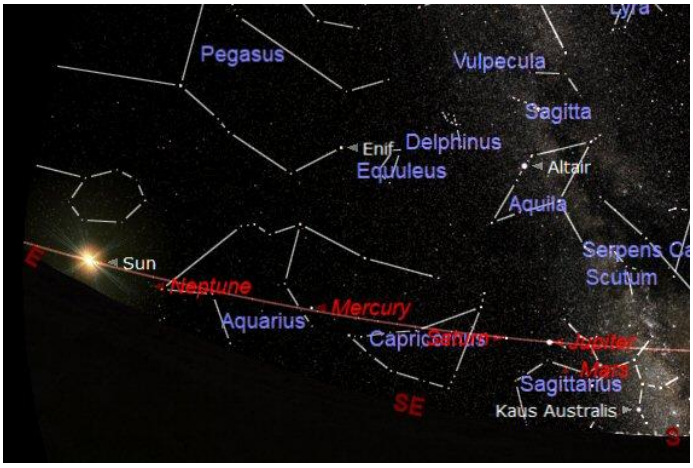
Following Gemini along the Ecliptic is the rather faint constellation of Cancer (the Crab). It does need a dark and unpolluted sky to see with the naked eye. In a good sky the faint stars can be seen with a nice Open Cluster of stars at its centre. The cluster is called Messier 44 (M44) or 'the Beehive Cluster' because of its resemblance to an old straw built beehive with a swarm of stars looking like bees around it. It looks best using binoculars.

Following Cancer along the Ecliptic is the constellation of Leo (the Lion). It does actually look a little like a resting male African lion but perhaps more like the Sphinx in Egypt. Below Leo are some relatively bright galaxies M65, M66, M95 and M96, see page 8 but they do need a telescope to see them. The sky around Leo and particularly between Leo and Virgo hosts a cluster of nearby galaxies. Our Galaxy (the Milky Way) is actually a member of a small 'Local Group' of galaxies that forms part of this larger cluster of galaxies.

To the south of Taurus and Gemini is the spectacular constellation of Orion (the Hunter). Orion dominates the southern sky and is one of the best known constellations. It also hosts some of the most interesting objects for us to seek out. See the January Magazine.

THE SOLAR SYSTEM THIS MONTH

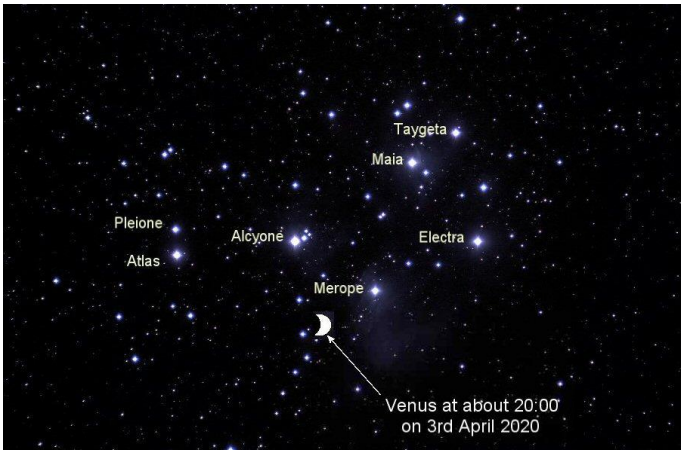
MERCURY will just be observable this month but it will be very close to the horizon in the east before the Sun rises at 06:15. The innermost planet wa at Greatest Western Elongation (furthest position from the Sun) on 24th March. Mercury is small but quite bright although its brightness is rather overwhelmed by the brightness in the sky from the rising Sun. It is best seen using binoculars or telescope but we must make sure the Sun is below the horizon before sweeping the sky using binoculars to find Mercury. See the chart below.



Neptune, Mercury, Saturn, Jupiter and Mars at sunrise

VENUS has been moving out from behind the Sun and will reached its Greatest Eastern Elongation (appearing furthest from the Sun on 24th March, see the March issue of this Magazine). Venus will achieve its maximum brightness on 28th April. See the chart opposite.

On 3rd April Venus will pass through Messier 45 (M45) the Pleiades Star Cluster (Seven Sisters). The image below shows the position of Venus at about 20:00 on 3rd April. Venus will appear to move slowly through M45 towards the stars Atlas and Pleione but the movement will not be detectable in real time but Venus will been seen to have moved over a period of a few hours.



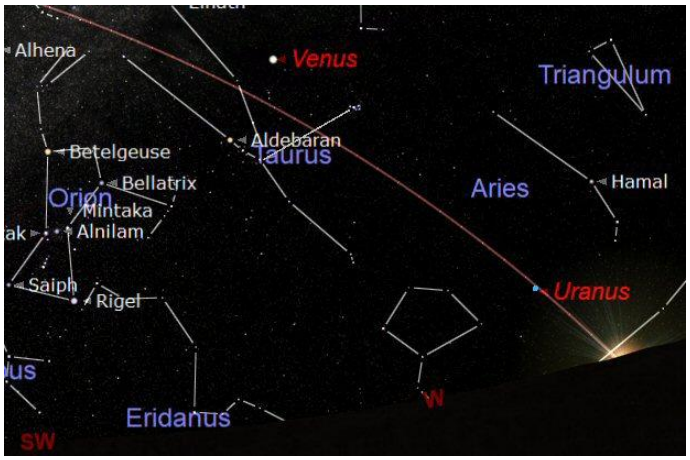
Venus in Messier 45 (M45) on 3rd April

MARS will be observable (with difficulty) this month, low in the east before sunrise. Mars is still a long way from us on the other side of the Solar System so it looks small at just 7.0" (arc seconds). See the chart above.

JUPITER is moving away from the Sun in the early morning sky in the east. It will be very low in the sky and looking large, (40.0") but disappointing in the dirty and turbulent air close to the horizon. See the chart above.

SATURN will be low in the south east as the sky brightens before the Sun rises over the eastern horizon. Saturn is very low and in the murky and turbulent air close to the southern horizon. It will be in the bright dawn sky and will require a clear view to the eastern horizon. It may still just be possible to see the ring system although it will appear unstable due to the air movement close to the horizon. See the chart opposite.

URANUS will not be visible this month as it is moving into conjunction with the Sun on 26th April (appearing to pass behind the Sun). See the chart below.



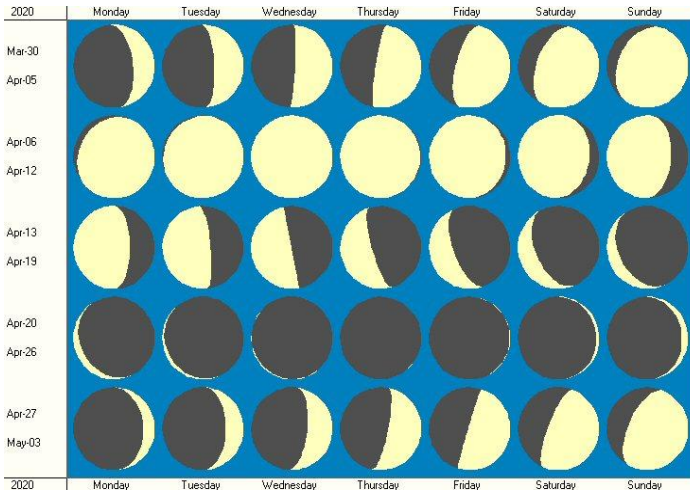
Uranus and Venus at Sunset on 15th April

NEPTUNE was in conjunction with the Sun on 8th March (appearing to pass behind the Sun). It will not be observable this month. See the chart opposite.

THE SUN

The Sun rises at 06:30 BST at the beginning of the month and at 05:45 BST by the end of the month. It will be setting at 19:40 BST at the beginning and 20:30 BST by the end of the month. Sunspots and other activity on the Sun can be followed live with day to day images of the Sun by visiting the very good SOHO website at: http://sohowww.nascom.nasa.gov/.

THE MOON PHASES IN APRIL



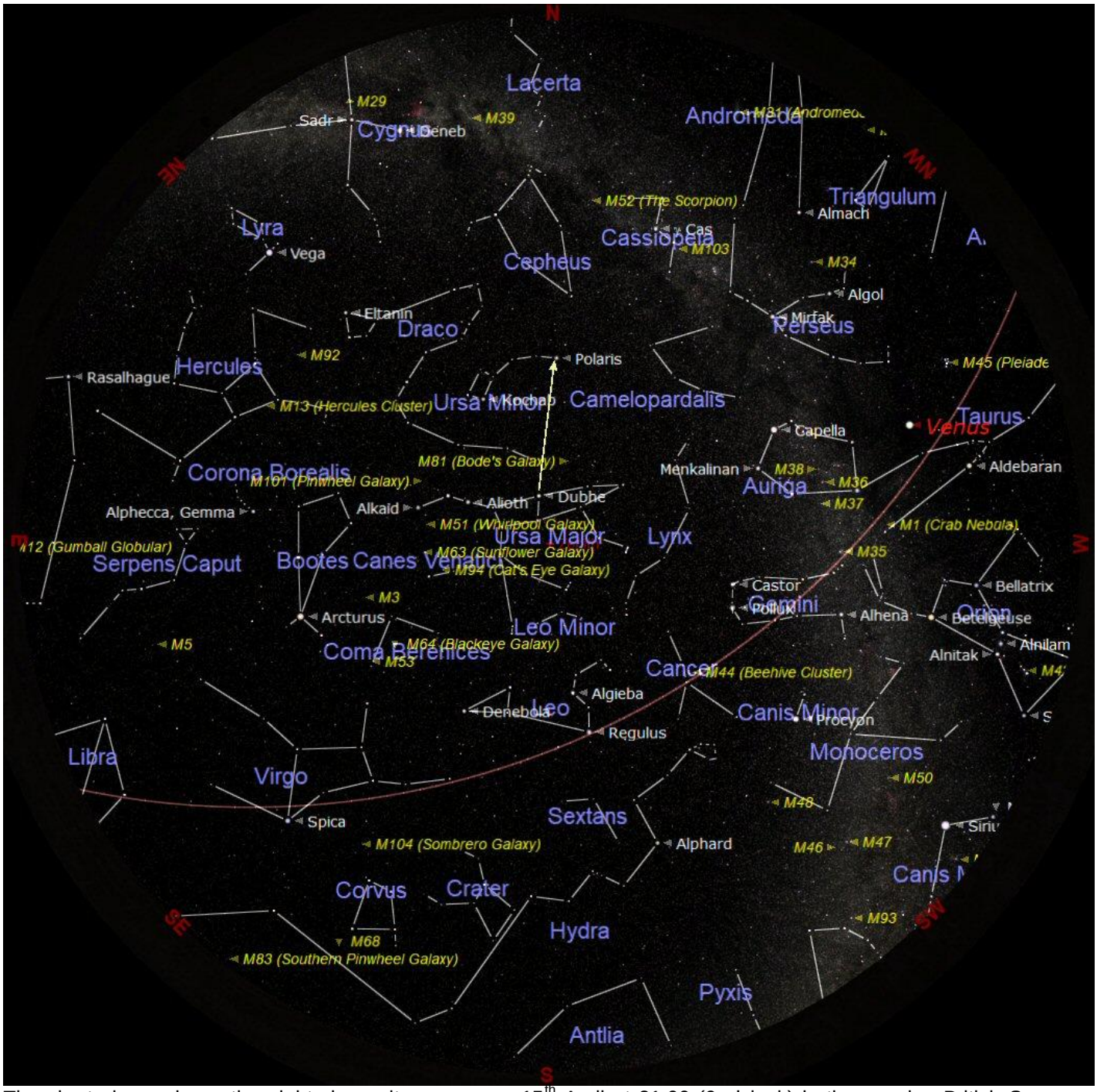
First Quarter will be on 1st April

Full Moon will be a Super Moon on 8th April

Last Quarter will be on 14th April

New Moon will be on the 23rd April

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: Uranus and Venus in the early evening with Mars, Saturn and Jupiter early morning.