NEWBURY ASTRONOMICAL SOCIETY
MONTHLY MAGAZINE – MAY 2020

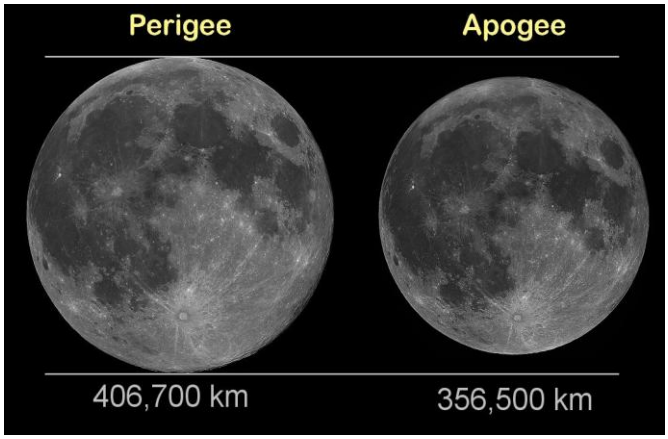
The Super Moon on 8th April 2020

The Moon imaged 8th April 2020 at 22:13

The Moon imaged 8th April 2020 at 22:16

On the 8th April we were able to witness the much publicised event of a Super Full Moon, when the full Moon appears particularly large. The Moon cannot, of course, physically change its size so what was all the fuss about and was it worth seeing.

There are two factors that produce the effect we call the Super Moon. One is a physical effect and the other is illusionary. The first effect is to do with the orbit of the Moon around Earth. Like most orbiting bodies the orbit of the Moon is elliptical and not circular. This means the Moon will be closer to Earth at one point that we call 'Perigee' and furthest away at the point we call 'Apogee'. At Apogee the Moon can be up to 406,700 km away from Earth but at Perigee can be as close as only 356,500 km.



Comparison of size Perigee to Apogee

With this change in distance the Moon will actually look larger at Perigee (closest) and smaller at Apogee (furthest away). The difference in apparent diameter is up to 14% and the difference in the Moon's reflective area is about 30% so this does make a difference.

The second Super Moon effect is an optical illusion and is most noticeable during the summer months. It is caused by the Moon appearing low in the summer night sky. The 23.4º tilt in Earth's axis of rotation results in our view of the sky appearing to be tilted by the same amount. So during the summer the Sun appears higher in the daytime sky but the Moon and planets appear low in the night sky.

A full Moon always rises in the east as the Sun is setting in the west. So as the Moon rises over the horizon our eyes try to compare the size of the very distant Moon to the nearer features on the horizon. Our eyes are confused and try to relate the apparent size of the Moon to the features near the horizon and an optical illusion causes the Moon look larger.

The images above (and a lot more) were taken by the author using a regular Digital Single Reflex Camera (DSLR) from the pavement outside his house in Thatcham. The images are just as they came out of the camera but have been cropped to fit the column.

To take these pictures the camera was mounted on a tripod and fitted with the 50 – 200 zoom lens that was supplied with the camera package. A remote camera shutter button was used to operate the camera to avoid camera shake. A 2x internal camera zoom was also selected to increase the size of the image.

NEWBURY ASTRONOMICAL SOCIETY MEETING

1st May Meeting Cancelled
Website: **www.newburyastro.org.uk**

NEXT NEWBURY BEGINNERS MEETING

20th May Meeting Cancelled
Website: **www.naasbeginners.co.uk**

FULL MOON NAMES (used in USA) AND TERMS WE USE

JANUARY: WOLF MOON

January's full moon is named after the howling of hungry wolves lamenting the scarcity of food in midwinter. Other names for this month's full moon include old moon and ice moon.

FEBRUARY: SNOW MOON

February's typically cold, snowy weather in North America earned its full moon the name snow moon. Storm moon and hunger moon are other common names.

MARCH: WORM MOON

Native Americans called this last full moon of winter the worm moon after the worm trails that would appear in the newly thawed ground. Other names include chaste moon, death moon, crust moon and sap moon, after the tapping of the maple trees.

APRIL: PINK MOON

Northern Native Americans call April's full moon the pink moon after a species of early blooming wildflower. In other cultures, this moon is called the sprouting grass moon, the egg moon, and the fish moon.

MAY: FLOWER MOON

Many cultures refer to May's full moon as the flower moon thanks to the abundant blooming that occurs as spring gets going properly. Other names include the hare moon, the corn planting moon, and the milk moon.

JUNE: STRAWBERRY MOON

In North America, the harvesting of strawberries in June gives that month's full moon its name. Europeans have dubbed it the rose moon, while other cultures named it the hot moon for the beginning of the summer heat.

JULY: BUCK MOON

Male deer, which shed their antlers every year, begin to re-grow them in July, hence the Native American name for July's full moon. Some refer to this moon as the thunder moon, due to the summer storms in this month. Other names include the hay moon, after the July hay harvest.

AUGUST: STURGEON MOON

North American fishing tribes called the August full moon the sturgeon moon since the species appeared in number during this month. It's also been called the green corn moon, the grain moon, and the red moon for the reddish hue it often takes on in the summer haze.

SEPTEMBER: FULL CORN MOON

September's full corn moon is so called because this is when crops are gathered at the end of the summer season. At this time, the Moon appears particularly bright and rises early, letting farmers continue harvesting into the night. This moon is also sometimes named the barley moon, and it is often the nearest full moon to the autumnal equinox, earning the title of 'Harvest Moon'.

OCTOBER: HUNTER'S MOON

After the harvest moon comes the hunter's moon, in the preferred month to hunt summer-fattened deer and fox unable to hide in bare fields. Like the harvest moon, the hunter's moon is also particularly bright and long in the sky, giving hunters the opportunity to stalk prey at night. Other names include the travel moon and the dying grass moon.

NOVEMBER: BEAVER MOON

There is disagreement over the origin of November's beaver moon name. Some say it comes from Native Americans setting beaver traps during this month, while others say the name comes from the heavy activity of beavers building their winter dams. Another name is the frost moon.

DECEMBER: COLD MOON

The coming of winter earned December's full moon the name cold moon. Other names include the long night moon and the oak moon

WHAT IS A BLUE MOON?

The Moon completes 12 full cycles of its phases in about 354 days – which is 11 days short of a calendar year. Every two and a half years or so the difference adds up to an extra, 13th full moon occurring during the year and this relatively rare occurrence is sometimes referred to as a 'blue moon'.

However, the precise origins of the term are uncertain: it was originally the name given to the third full moon of a season containing four full moons. A more modern interpretation for 'Blue Moon' is often applied to a second full moon occurring within a single calendar month.

PHASES OF THE MOON

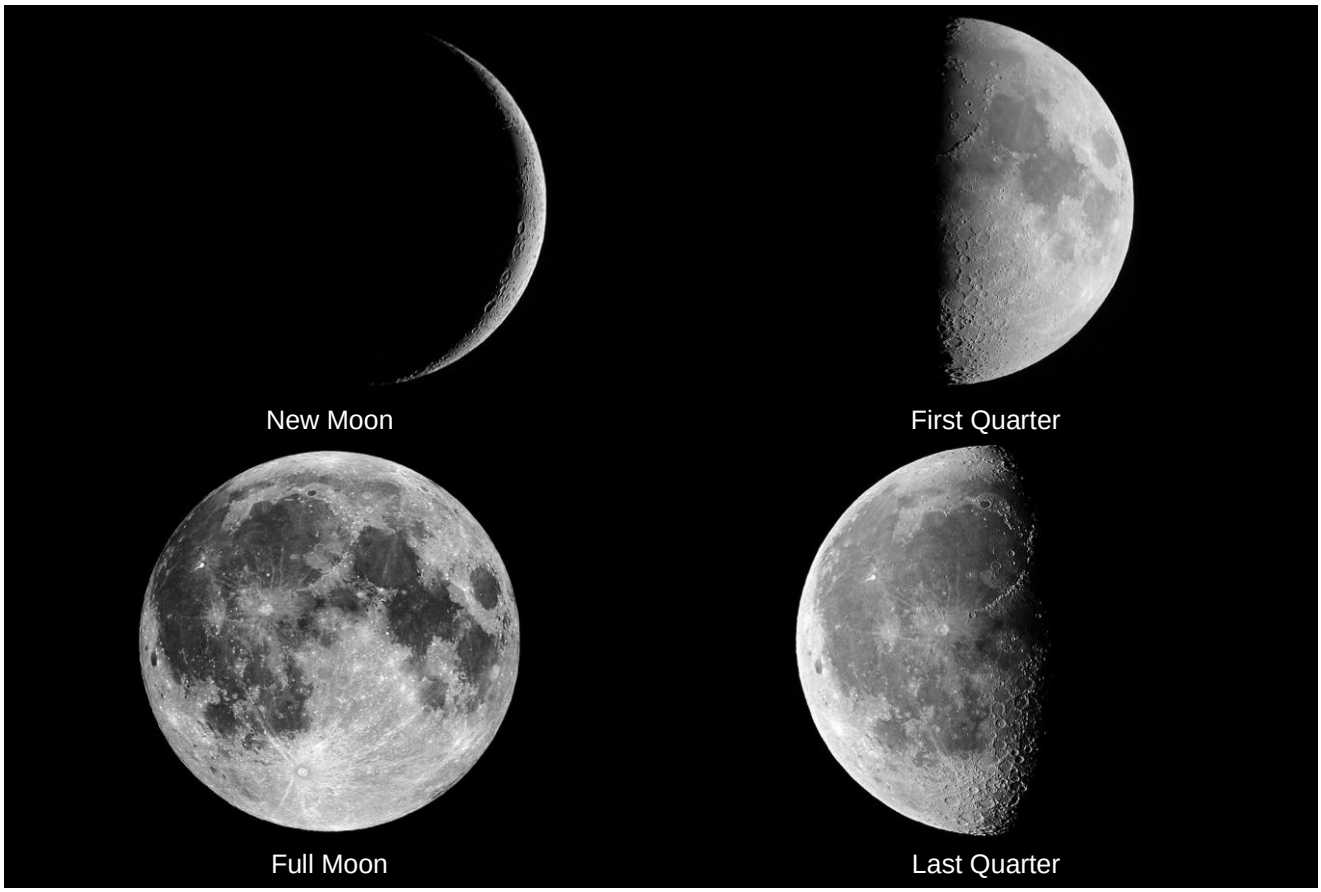
The New Moon would normally not be visible until the 2nd or 3rd day after conjunction with the Sun. This is because the Moon is too close to the setting Sun in the west and the sky is too bright.

As the Moon continues to move from west to east around its orbit, more of the bright (day) side is revealed and the illuminated side appears as a wider 'Crescent' shape. When the Moon has reached approximately a quarter of the way around its orbit, in 7 days, it will appear as the 'Half Moon' or 'First Quarter'. The Half Moon will be located in the south as the Sun sets in the west.

After the first quarter, the 'Waxing' (widening) crescent shape gives way to the shape known as the 'Waxing Gibbous' phase. After 14 days the Moon is positioned directly opposite to the Sun the whole of the sunlit side is visible and we see the 'Full Moon'. The Full Moon will rise in the east as the Sun sets in the west. As the Moon continues on its orbit around Earth, the dark half of the Moon begins to appear and the sunlit side begins to move out of view. This is called the 'Waning Gibbous' phase.

After 21 days, only half of the Moon appears illuminated and is called the 'Last Quarter' (the opposite side to First Quarter). The final phase is the 'Waning Crescent' as less and less of the sunlit side is visible from Earth. Finally after ~29 days the Moon moves back into direct line with the Sun and none of the sunlit side is visible.

THE PHASES OF THE MOON



The four phases of the Moon

The images above show the four 'cardinal' phases of the Moon, known as: 'Quarters'. Each of the four quarters appears approximately seven days after the previous phase. So 'First Quarter' appears seven days after 'New Moon'. The Second Quarter known as 'Full Moon' appears another seven days later and 'Last Quarter' seven days after Full Moon. The final quarter occurs seven days later when the Moon is in the same direction as the Sun and cannot be seen. This final phase is so close to the Sun it is considered to be the next New Moon Phase.

It is no coincidence that the phase cycle of the Moon takes about one month to complete and there are twelve months in a year. This time period was named after the ancient term 'moonth' obviously referring to the time the Moon takes to orbit Earth. We will discuss different terms used for a number of aspects of the actual orbit.

Some keen Moon observers like to spot the New Moon at its very earliest appearance when it is a very narrow crescent. So this begs the question, Why do we get a New Moon?

For a start let's clear up one obvious point, the Moon is never new, it is over 4 billion years old and we see the same Moon every month. When the Moon is in direct line with the Sun in the sky we cannot see it. This is firstly because the sky close to the Sun is so bright we would not be able to see the Moon anyway. Also the side of the Moon facing the Sun is illuminated so the side facing us on Earth is in shadow and dark. Therefore we could not see it even if the sky around the Sun was not so bright.

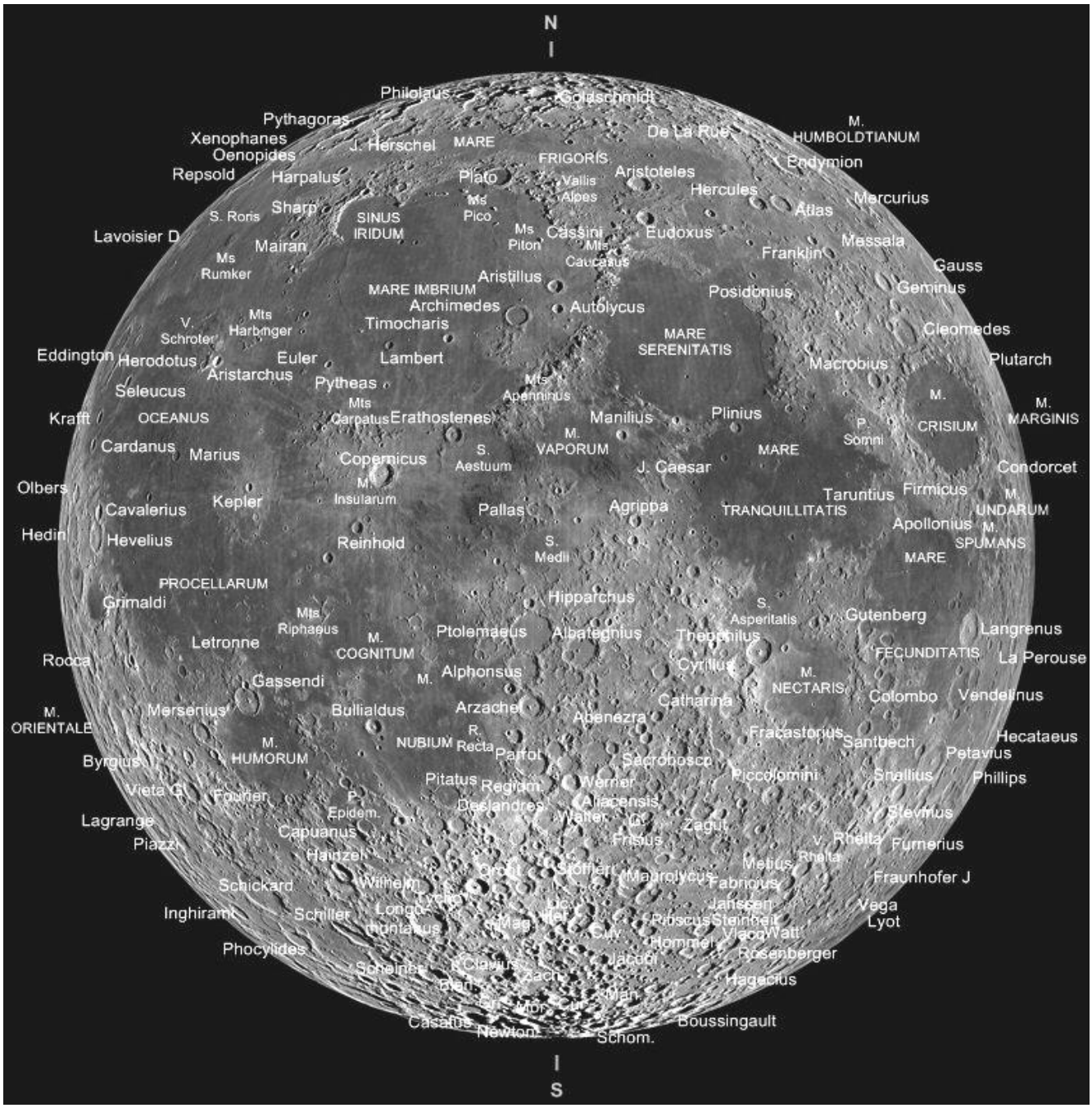
As the Moon moves away from its conjunction (alignment) with the Sun it appears to be moving eastwards when viewed from the surface of Earth. It appears to move from west to east (to the left) about 12° each day. Therefore one day (24 hours) after conjunction with the Sun the Moon will have moved 12° east (left) of the Sun. The New Moon would normally not be visible until at least the 2nd evening after conjunction with the Sun. This is because the Moon is too close to the Sun and the sky is too bright.

As the Moon continues from west to east around its orbit, more of the illuminated (day) side is revealed and appears as a wider 'Crescent' shape. When the Moon has reached approximately a quarter of its orbit, in 7 days, it will appear as the 'Half Moon' or 'First Quarter'. The Half Moon is always located in the south as the Sun is setting in the west.

After the first quarter, the 'Waxing' (widening) crescent shape gives way to the shape known as the 'Waxing Gibbous' phase. After 14 days the Moon is positioned directly opposite to the Sun and the whole of the sunlit side is visible so we see the 'Full Moon'. The Full Moon will rise in the east as the Sun sets in the west. As the Moon continues its orbit, the dark half of the Moon begins to appear and the sunlit side moves out of view in its 'Waning (narrowing) Gibbous' phase.

After 21 days, only half of the Moon appears illuminated and is called the 'Last Quarter' (the opposite side to First Quarter). The final phase is the 'Waning Crescent' as less of the sunlit side is visible from Earth. Finally after ~29 days the Moon moves into direct line with the Sun and the next New Moon begins.

FEATURES ON THE MOON



A map of the Moon with Maria (Seas) and Craters labelled

With our unaided (naked) eyes we can see darker patches on the surface of the Moon. These are called 'Maria' (Mare single) the Latin word for Sea because they were mistakenly thought to be seas on the Moon. The Maria are particularly obvious on the Full Moon and are marked on the map above as Mare Serenitatis (Sea of Serenity) for example. Using binoculars will show the shapes of the Maria in more detail and also reveal the smaller dark areas that may be parts of larger seas or separate areas.

A telescope will reveal the Moon in a completely different view. Probably the most noticeable feature will be the thousands of large and small craters. It is interesting to distinguish the different types of craters and how they appear. Some large craters have a central mountain and often have terraced walls. Some have smaller craters inside their walls that help to work out the sequence of how they were formed.

Some areas of the Moon are more cratered than others. There are large areas that have so many craters that there appear to be no smooth areas at all. Other areas, particularly Maria, have almost no craters.

There are also mountain ranges that are often named after mountain ranges on Earth. Most of these mountain ranges appear to be the walls of vast craters that have all but disappeared under ancient lava flows and the effect of later impacts. There are however some that do appear to be natural mountain ranges.

There are features known as 'Rills' that appear to be gullies and creases or cliff faces caused by cracking of the surface as the Moon cooled billions of years ago.

Craters, Mountains and rills are best viewed when they are close to the 'Terminator', the line between night and day. Here the shadows cast by the setting Sun cause long shadows that give relief and clarity to the view.

ATTACHING A CAMERA TO A TELESCOPE

There are three alternative ways to attach and use a camera with a telescope and its mounting. The first is to simply use the telescope to support and direct the camera to the object to be imaged. The image below shows a DSLR mounted 'piggy back' on a small refracting telescope. It does not matter that the camera is on its side, the image can be rotated on a computer.

A DSLR 'piggy backed' on a telescope mount

The image above shows the DSLR secured to a screw thread on the telescope mount. This allows the camera to be pointed to the object in the sky using the main telescope and finder scope. The telescope mount can also provide tracking for longer exposure images.

A mobile phone or a compact digital camera can also be mounted to take pictures of an object as seen through the telescope eyepiece. This can be achieved (mainly when taking a picture of the Moon) by just holding the camera lens in front of the eyepiece and using the image on the camera screen to centralise it. Obviously this can be made a lot easier by mounting the camera (or mobile phone) over the eyepiece as shown below.

A compact camera mounted over a telescope eyepiece

Many good images have been taken particularly of the Moon using this method. However this process is rather limited but it can also be used with a mobile phone and a suitable mounting device. The shop bought fixture shown above has a mounting platform with a screw to fit the camera. It has a screw adjuster to move the platform left and right, with a knob positioned to the right hand side of the platform. The extension arm below has an up and down adjustment and there is a locking knob to the front.

The more versatile DSLR camera has the advantage that it can be mounted on a telescope to use the telescope as its primary optical device (lens [or mirror]). This can be done by removing the camera lens and fitting an adaptor that will fit directly into the telescope focuser.

A DSLR with a focuser adapter fitted

The picture above shows a DSLR with the camera lens removed and a telescope focuser adaptor fitted. This is a very easy task, the camera has a lens release button that when pressed allows the lens to be twisted and released from the camera body. The adaptor is simply clicked in and twisted until it is engaged and clamped in position. The adaptor above is shown with an inferred / ultraviolet filter fitted to prevent these unwanted rays reaching the imaging chip to spoil the image.

The camera above also has a 'video out' outlet that allows the image that the camera is waiting to expose, to be displayed on a larger screen such as a TV monitor. This feature is a great improvement over trying to focus the image on the camera's small 'built in' screen.

All we need to do now is fit the camera to the telescope focuser and we are ready to start imaging.

A DSLR mounted for imaging with remote button

The image above shows the DSLR fitted to the focuser of a 120mm Skywatcher refracting telescope. It also shows the remote shutter operating button that is a really good accessory to reduce vibration when shooting images. It is worth pointing out the camera strap is looped around the finder scope mounting. This is in case the pinch screws holding the camera should slip and drop the camera. Focusing the image is done using the telescope focuser.

SOME IMAGES OF THE MOON BY THE AUTHOR

The image above was taken on 11th April 2019 using a DSLR camera mounted to the focuser in place of the eyepiece. The telescope used was the 120mm aperture 1000mm focal length refracting telescope shown on page 5. The exposure was 1/3000 second. The only processing was to change to grayscale and the contrast and brightness slightly enhanced using Paintshop.

The image above was taken on 13th April 2019 using the same DSLR camera and telescope and slightly enhanced using Paintshop as above.

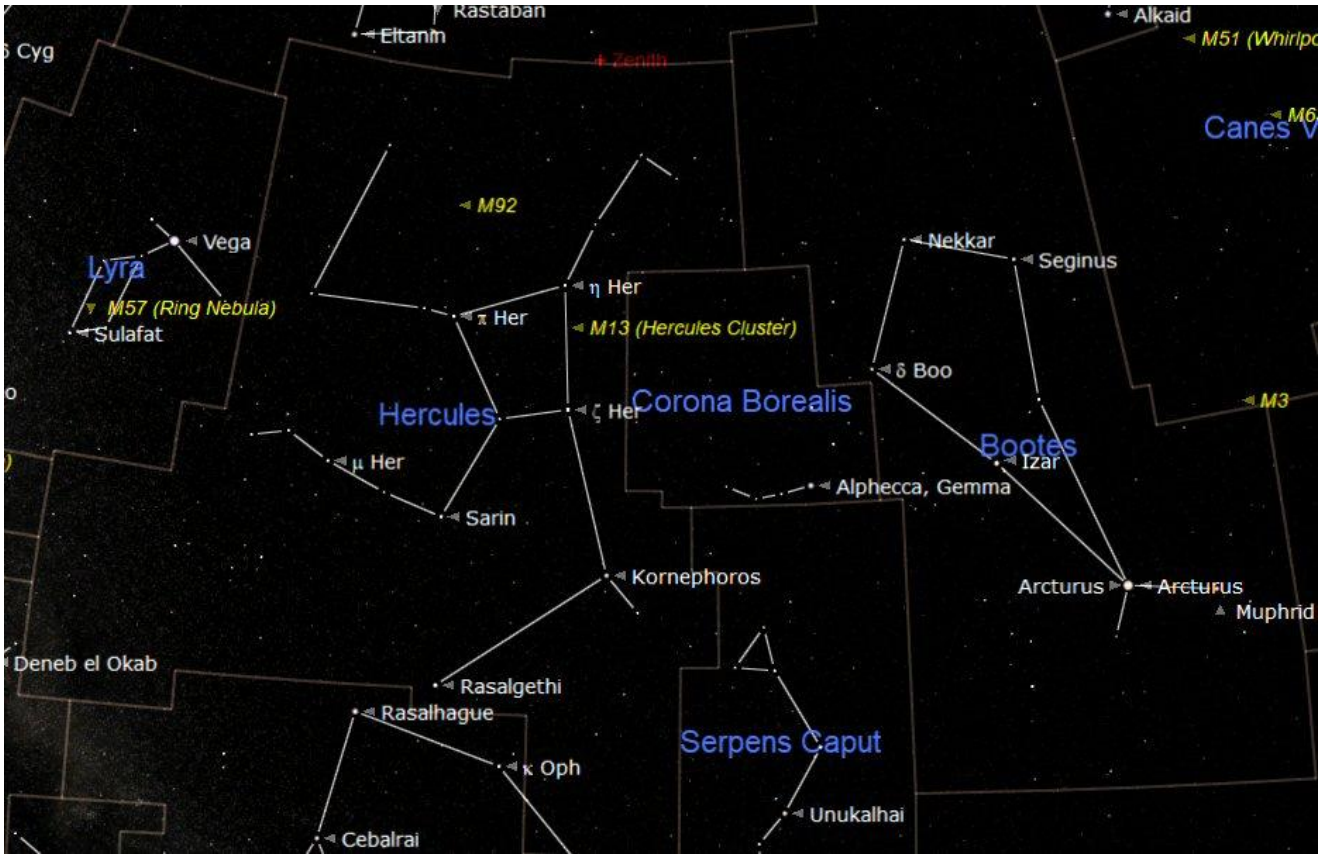
The image of the Full Moon above was taken on 19th April 2019 using the same DSLR camera and telescope and slightly enhanced using Paintshop as above.

The image above was taken on 13th April 2019 using the same DSLR camera mounted to the focuser in place of the eyepiece. The telescope used was a 300mm aperture 3000mm focal length Meade LX200. The exposure was 1/3000 second.

The image above was taken on 13th April 2019 using a DSLR camera mounted to the focuser in place of the eyepiece using the same telescope as above.

The image above was created by combining the two images above to produce this image of the complete Moon as it appeared in the sky. The combining was done using Paintshop but with no enhancement.

THE CONSTELLATIONS OF HERCULES AND BOÖTES



The constellations of Hercules and Boötes

The chart above shows the constellation of Hercules and its location to the west (right) of the bright star Vega in the Summer Triangle. Hercules is the great strongman from Greek mythology. He is illustrated in the picture below (up-side-down), as he appears in the sky, with a club held above his head. The 'Keystone' asterism (shape) can be a little difficult to identify in a light polluted sky but easy to find again.

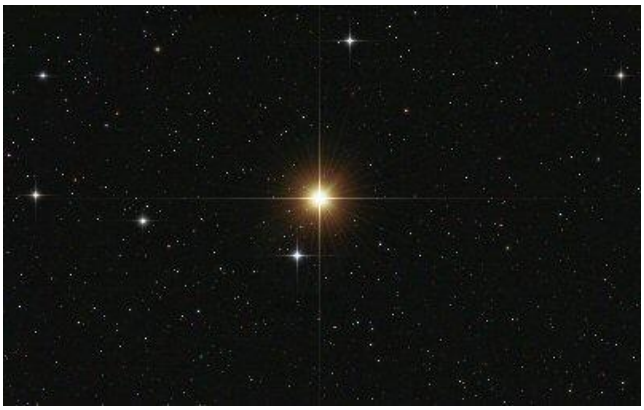
The jewel of Hercules is without doubt is the Great Globular Cluster, Messier 13 (M13). M13 can be found in the western (right) vertical imaginary line of the 'Keystone'. It is just visible using a good pair of 9 x 50 binoculars. The cluster, of about a million stars, can be seen using a 90mm *f*10 telescope but will look even more impressive when using a larger telescope.

The Great Globular Cluster in Hercules

Globular clusters are thought to be the cores of small galaxies that have ventured too close to a Giant Spiral Galaxy like our Milky Way. The outer stars of these smaller galaxies have been stripped away, by the gravity of the giant spiral. This process has left the dense cores as clusters of between 100,000 and a million stars. There are about 100 Globular Clusters in a halo around the Milky Way. There is another Globular Cluster in Hercules M92 but it is further away and needs a telescope to see.

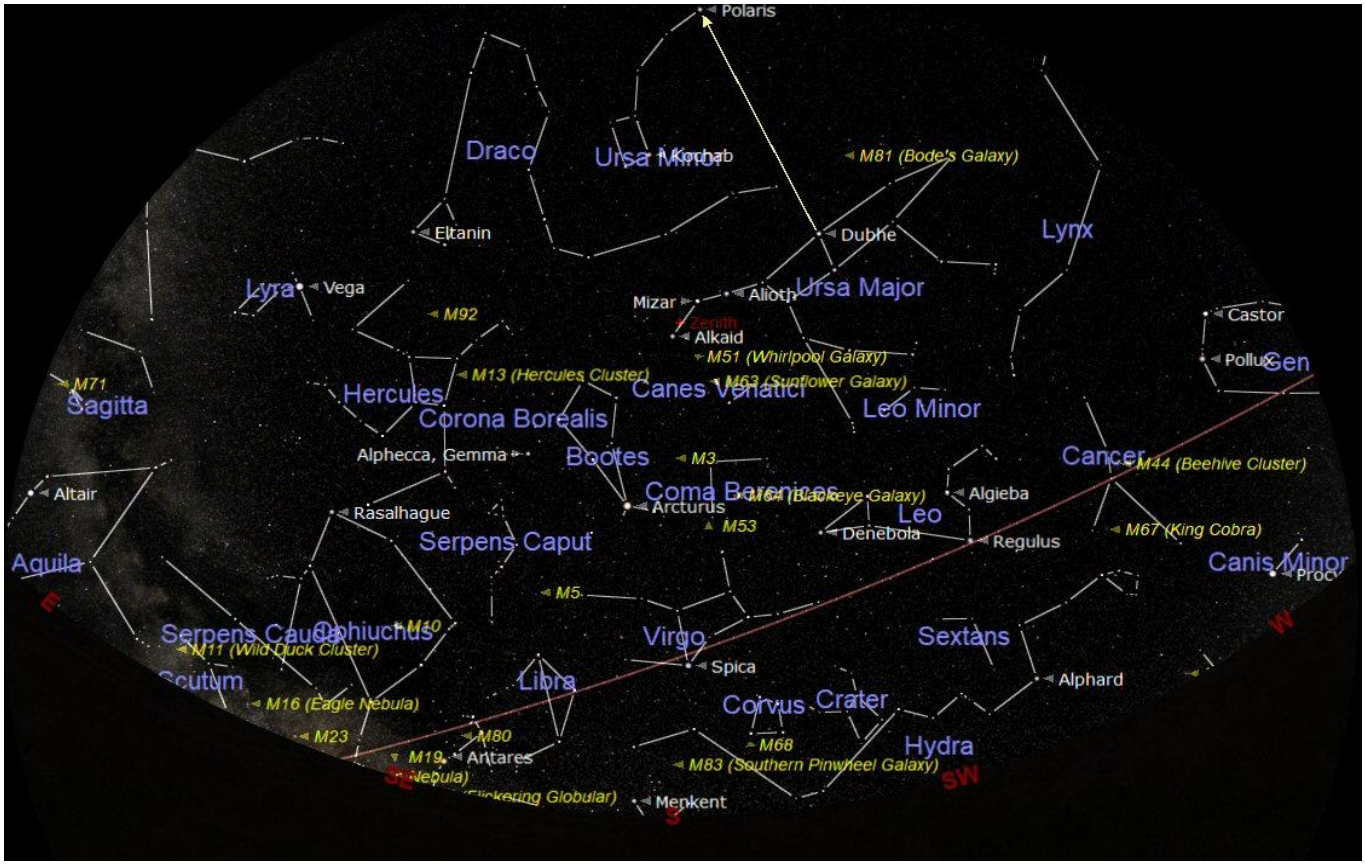
To the west of Hercules is the bright orange coloured star called Arctaurus in the constellation of Boötes the Herdsman. Arctaurus is the only bright star in Boötes, the other stars are fainter and form the shape of an old fashioned diamond shaped kite with Arctaurus located where the string of the tail would be attached.

Arctaurus is a Red Giant star that is slightly larger than our Sun and more advanced. It has used almost all of its Hydrogen fuel and has expanded in diameter to around 25 times that of our Sun. At the moment it shines 115 times brighter than our Sun but it is destined to collapse to become a White Dwarf.



The beautiful red star Arctaurus in Boötes

A TOUR OF THE NIGHT SKY - MAY 2020



The chart above shows the night sky looking south at about 22:00 BST on 15th May. 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 Gemini (the Twins), Cancer (the Crab), Leo (the Lion), Virgo (the Virgin) and Libra (the Scales) rising over the eastern horizon. The constellation of Sagittarius will rise in the east later in the evening.

Jupiter will be in the south in the early morning close to the southern horizon before the Sun rises. It is quite prominent in the constellation of Sagittarius. Saturn is to the east (left) of Jupiter in the constellation of Capricornus with Mars following a little further to the east. The view of the planets will not be good because they will be in the dirty and turbulent air close to the horizon.

Mars is just about visible in the bright sky, just above the eastern horizon, before sunrise but is still looking small. Earth is approaching Mars and in a few months will overtake it as Earth moves faster along its smaller orbit inside the orbit of Mars.

In the west and sitting astride of the Ecliptic is the constellation of Gemini (the Twins). The twin stars Castor and Pollux are easy to identify. For those that have a telescope, Castor can be seen as a double star. By increasing the magnification, Castor itself will be seen as a pair of stars. It will push a small telescope to its limits to see but this lovely triple star system it is worth the effort.

To the east of Gemini is the constellation of Cancer with its lovely Open Cluster Messier 44 (M44) also known as Praesepe or the Beehive Cluster. This is a lovely Cluster that is best seen using binoculars or a small telescope using a low power eyepiece. The cluster is about twice the diameter of the Full Moon and contains about 200 stars. It is located about 577 light years away and its stars are estimated to be around 400 million years old.

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 (?).

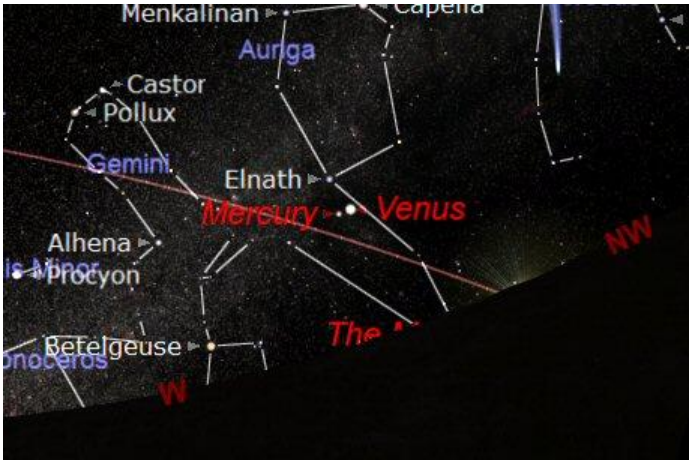
Following Leo is the less obvious constellation of Virgo but it does have one fairly bright star called Spica. Virgo gives its name to a large cluster of Galaxies that is also spread over into the neighbouring constellations of Coma Berenices (Berenices' Hair) and into Leo.

To the north of Virgo is the bright orange coloured star called Arcturus in the constellation of Boötes (see the previous page). Arctaurus is a Red Giant star that is nearing the end of its 'life' as a normal star. It has used almost all of its Hydrogen fuel and has expanded to become a Red Giant 25 times the diameter of our Sun. At the moment it shines 115 times brighter than our Sun but it is destined to collapse and become a White Dwarf.

Higher in the south east is the constellation of Hercules (the Strong Man). Hercules has a rather distinctive distorted square shape, at its centre, called the 'Keystone'. This is due to its resemblance to the centre stone of an arch or bridge. See the previous page.

THE SOLAR SYSTEM THIS MONTH

MERCURY will be observable, low in the west, at the end of the month. Mercury will be in close 'Conjunction' with Venus on 21st and 22nd May.

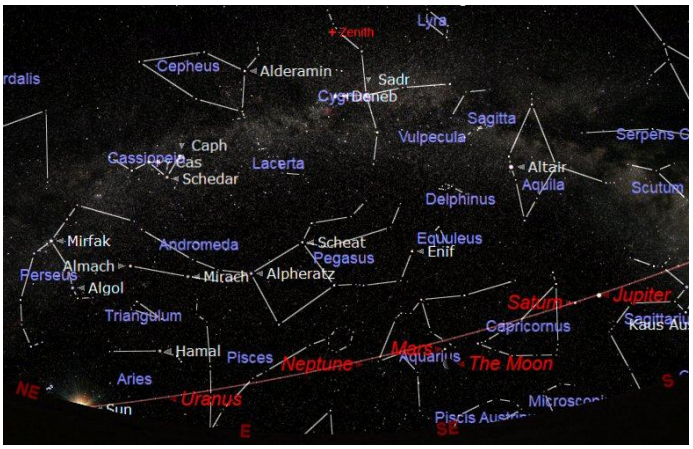


Mercury and Venus at sunset on 22nd May

VENUS is appearing to moving towards the Sun and will reach Inferior Conjunction (passing between Earth and the Sun) on 3rd June. Venus appears as a narrower crescent shape but larger in diameter as it moves closer to us. It will become more difficult to see as it moves closer towards the Sun at the end of the month.

Venus close to the Moon on 25th April Pauline Phillips

MARS will be observable this month, low in the south before sunrise. Mars is still a long way from us on the other side of the Solar System so it looks small at just 8.5" (arc seconds). See the chart below.



The planets visible before sunrise in May

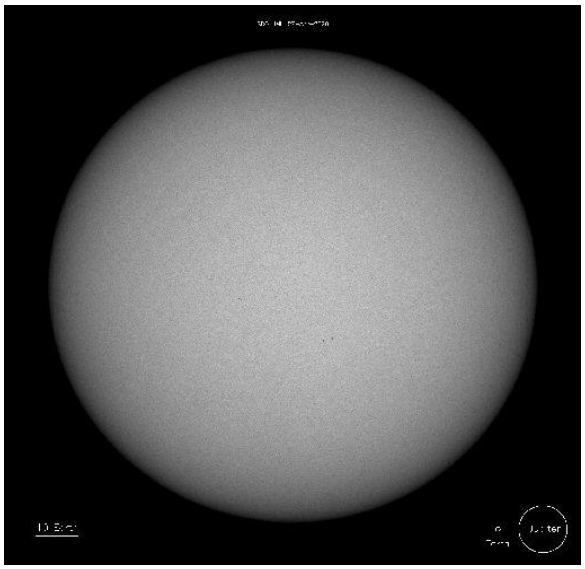
JUPITER will be observable in the south east after 02:30 and until sunrise during May. It will however be very low and in the dense, murky and turbulent air close to the horizon. Consequently it will be unstable and details will be difficult to see.

SATURN will rise in the south east at about 03:00 and be observable until 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. See the Mars chart.

URANUS will be rising in the east just before sunrise and will be very difficult to see. See the Mars chart.

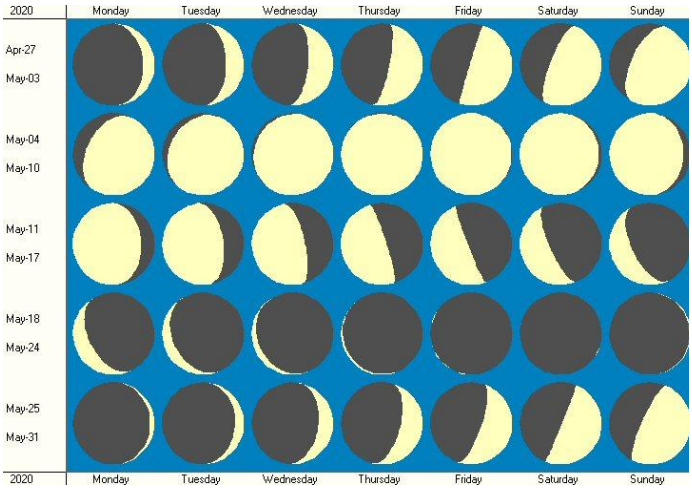
NEPTUNE will be rising in the east at about 03:00 and will be very difficult to see. See the Mars chart.

THE SUN



There have been no significant sunspots for months. This is not necessarily worrying but it may be a bit unusual. 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 MAY



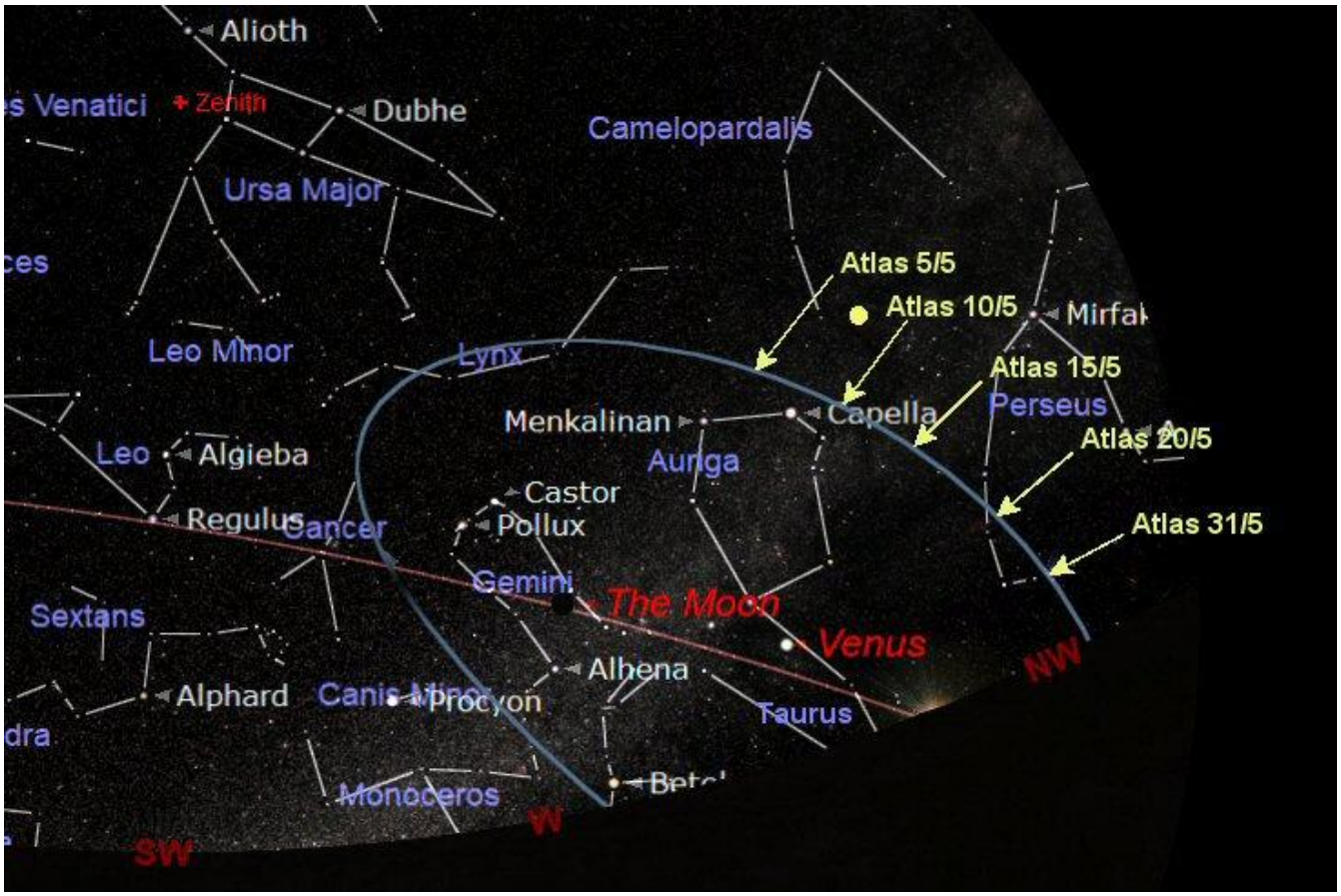
Full Moon will be on 7th May

Last Quarter will be on 14th May

New Moon will be on the 22nd May

First Quarter will be on 30th May

COMET 2019 Y4 (ATLAS) THIS MONTH

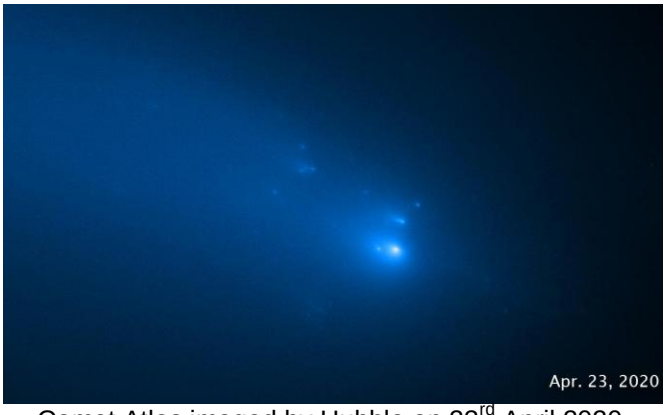


The approximate positions of Atlas during May at sunset (also see the next page)

There is a chance that we may be able to see a 'naked eye' comet during May this year. This comet is called 2019 Y4 (Atlas) and it is heading for its closest approach to the Sun (Perihelion) on 31st May when it should be at its brightest.

The chart above has been included to show how (in reality) the comet will be further from the bright sky at sunset as Atlas approaches Perihelion. After 15th May the comet is going to be in the bright sky after sunset and close to the horizon at 21:00 BST (9 o'clock).

NOTE: The position of Atlas shown is approximately correct on 31st May. The earlier positions have been superimposed on the orbit for 31st May so the locations relative to the surrounding stars must be checked against other charts. For example on 10/5 Atlas will actually be located closer to where the yellow circle is positioned, due to Earth moving along its orbit. See the chart on the next page.



Comet Atlas imaged by Hubble on 23rd April 2020.

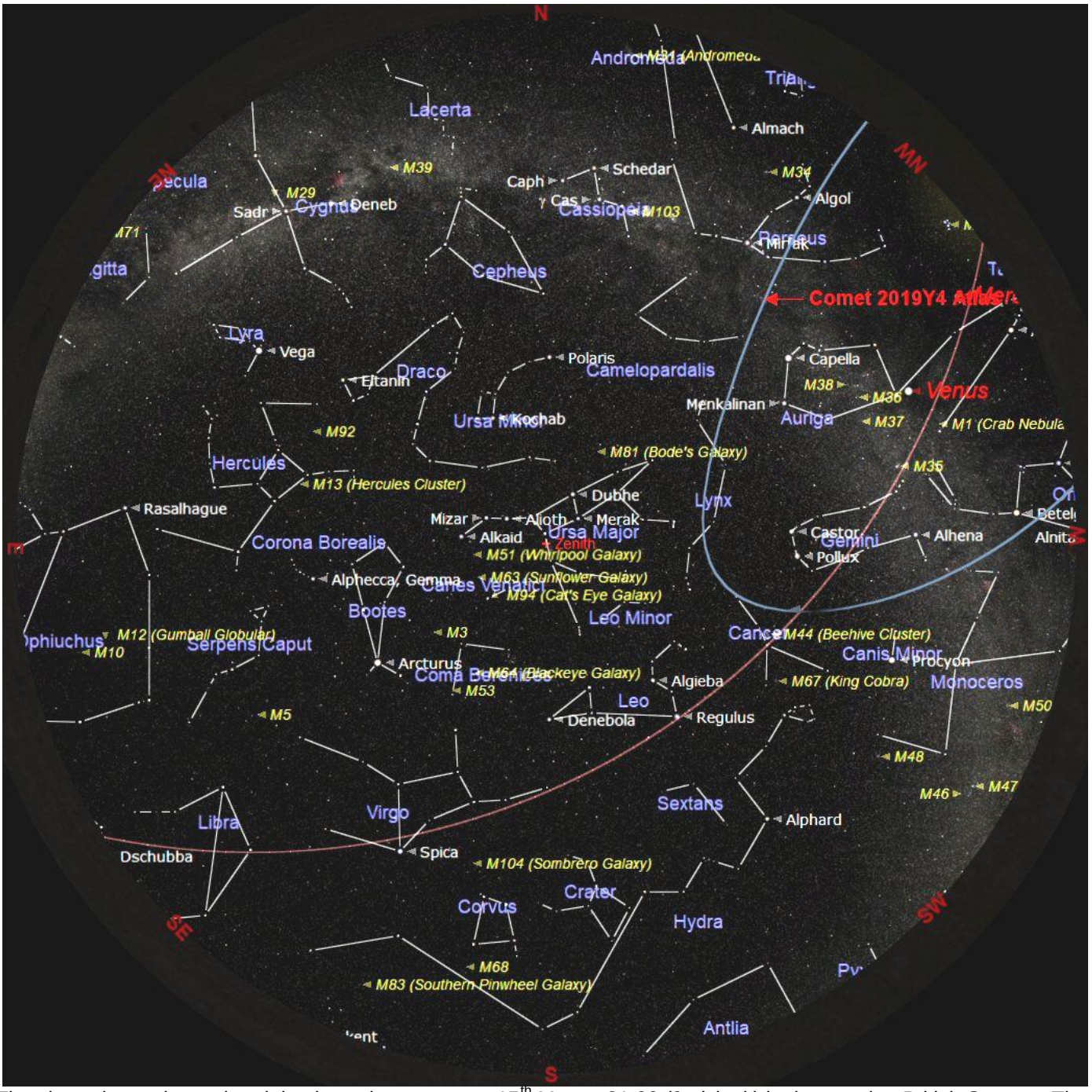
At the end of March comet C/2019 Y4 was at 8th magnitude making the object easily visible in a modest-sized amateur telescope as a fuzzy ball. In good conditions and dark skies, the comet should also be visible in supported binoculars. Recent observations have surprised astronomers as the comet has rapidly increased in brightness since its discovery in December. The latest pictures taken by Hubble show the comet's nucleus has fragmented with four large pieces broken off along with many smaller pieces. This has caused the comet to brighten significantly.

Back in December the object was at a very faint magnitude +20 in the constellation of Ursa Major, at a distance of 273 million miles Originally, predictions were that Comet Atlas would peak at somewhere around magnitude +9. This would mean yet another mediocre comet to be noticed only by telescope owners but it could now be much brighter.

Things changed when astronomers realised the incredible rate of brightness increase due to the fragmentation. Almost day-by-day rapid changes have been observed and are now at a stage where the comet is 600 times brighter than it was predicted to be at this point. Currently, Atlas is around 20 arcminutes wide (the full Moon is 30 arcminutes). This means that the comet already has a very large coma.

The orbit of Atlas is shown on the chart above. As the comet approaches its Perihelion it moves closer to the Sun in the sky. Despite it getting brighter it will become more difficult to see in the bright sky close to the Sun. There is more information in What's up on the Beginners website at: **www.naasbeginners.co.uk**.

THE NIGHT SKY THIS MONTH



The chart above shows the night sky as it appears on 15th May 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 high and 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: Venus and Mercury in the early evening with Mars, Saturn and Jupiter in the early morning.

The location of Comet 2019 Y4 (Atlas) at 21:00 GMT (sunset) is shown marked in RED.