NEWBURY ASTRONOMICAL SOCIETY
MONTHLY MAGAZINE – MAY 2023
This is the last magazine until September

NEWBURY ASTRONOMICAL SOCIETY OUTREACH

Newbury Astronomical Society Display Stall

The Newbury Astronomical Society has a policy to further the knowledge about astronomy and the exploration of space to the local community. This is done by providing astronomy presentations and practical observing to local organisations such as schools, scouts and guides and any other groups who invite us to their meetings.

Outreach is not just something we do it is enshrined in the Society's constitution, when the Newbury Astronomical Society was founded in 1981. The introduction to the Objectives of the Society states:

The object of the Society ***shall be to advance public education in astronomy and subjects related thereto including space research****. In the furtherance of the above object but not further or otherwise the Society shall have the following powers:*

a) to promote research in all branches of astronomy and to publish the results of such research;

b) ***to hold meetings, seminars, lectures, exhibitions and training courses****;*

c) ***to organise educational outings****;*

d) to raise funds and to invite and receive contributions from any person or persons whatsoever by way of subscriptions and otherwise provided that the Society shall not undertake any permanent trading activities in raising such funds;

e) to do all such other lawful things as shall further the above object.

With all the problems and restrictions imposed by the COVID epidemic outreach had become difficult at times. However things are now getting better and life is returning to something more normal so the opportunities for outreach visits should improve.

At the April Newbury Astronomical Society Committee Meeting the subject of outreach was discussed and it was decided to renew the emphasis for Society Outreach. To this end it was decided to increase our efforts to promote outreach to the local committee.

It was also noted that the members who provide support to outreach are predominantly drawn from the more mature (older) members. It was also mentioned that a number of relatively new members have expressed an interest is helping with outreach events so we try to expand the team. Those who have supported outreach had said that they do actually get a lot of pleasure in these activities especially with outdoor observing.

So when the new session begins in September it is intended to effectively re-launch our outreach programme and invite members to join the team. We have one more event this session: The Thatcham Family Fun Day on 25th June at Henwick Field, Thatcham, see page 2.

NEWBURY ASTRONOMICAL SOCIETY MEETING

5th May — Latest Results from Gaia

Website: www.newburyastro.org.uk

NEXT NEWBURY BEGINNERS MEETING

17th May — Space Telescopes

Website: www.naasbeginners.co.uk

THATCHAM FAMILY FUN DAY 25th JUNE 2023

Pictures from the 2022 Family Fun Day

Thatcham Family Fun Day is a well-established, annual event held on the last Sunday of June. It boasts the following: Funfair, Stage Entertainment, Classic Car Show, Fun Dog Show, Dance Zone, Children's Zone and many more attractions.

Set in Henwick Worthy Sports Fields, the event is growing in scale and popularity every year with visitor numbers reaching over 10,000 in 2022. There is room for over 100 charity, commercial and gift stalls as well as catering stalls in our two catering areas which surround the main stage and Dance Zone.

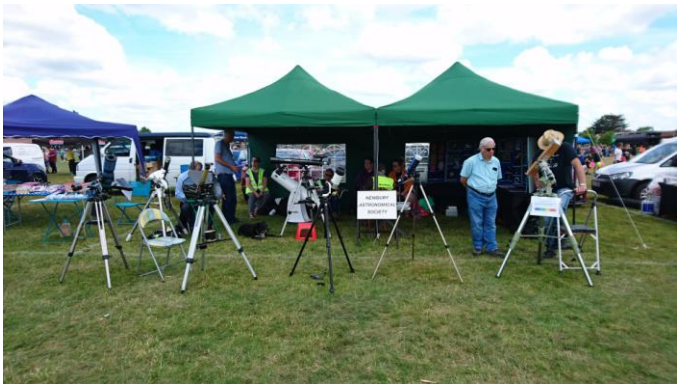
View across the Fun Day 2022

The Newbury Astronomical Society has booked a double plot (8m x 4m) for the recent events where we have a double (6m x 3m) gazebo for our displays. We normally have display boards with photographs taken by our members. We also have a range of telescopes for visitors to look at and use outside if it is a fine day. It is great fun talking about our Society with the visitors to our stall.

We set up filtered telescopes for solar observing. These include white light solar filters and dedicated Hydrogen Alpha (Hα) telescopes. We also set up telescopes for visitors to use and look at features around the field. These set ups do need to be supervised by our members to ensure they are used properly and most of all safely.

Setting up telescopes for visitors to use

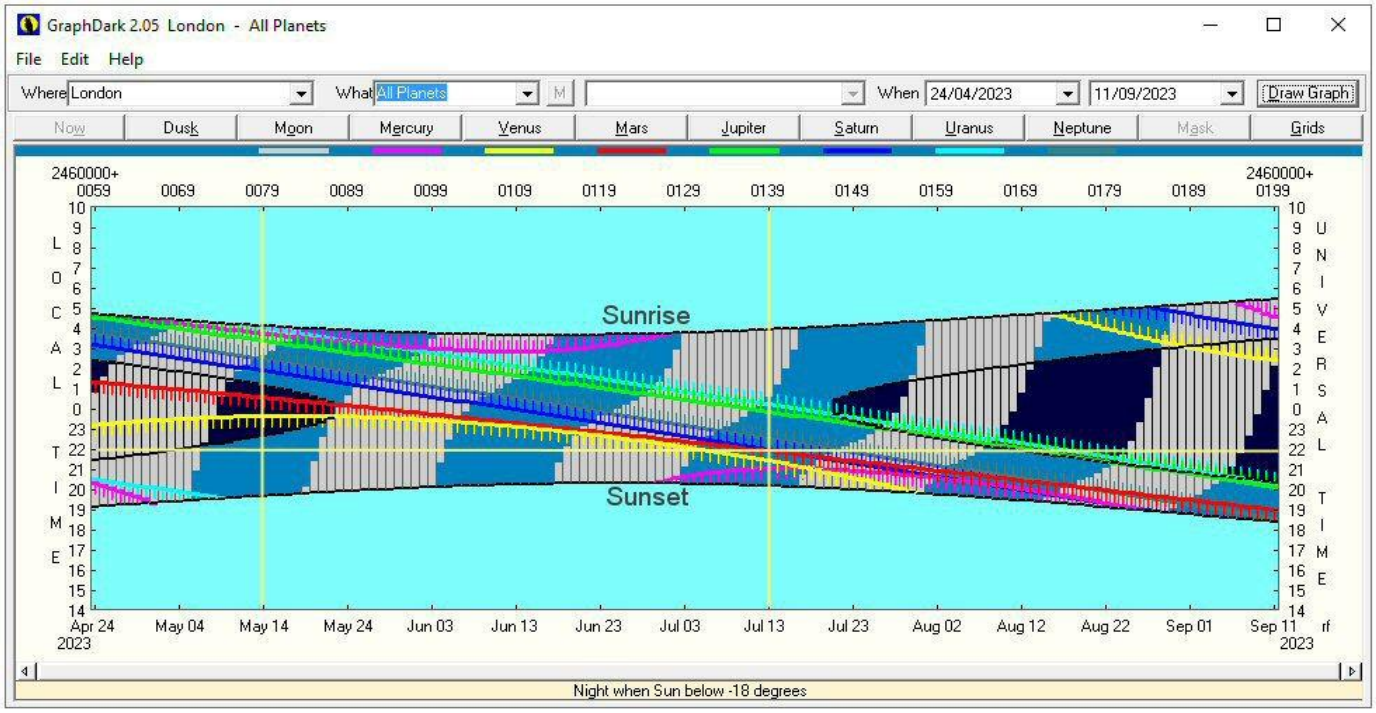
These events are great fun and our stall attracts lots of visitors. This gives us some publicity for the Society and may even attract new members. It is also gives us an opportunity to tell members of the public, who may not be aware that there is an Astronomy Club in Newbury, about our meetings and what we do.



Our gazebo and telescope display

If anyone would like to come along to the Thatcham Family Fun Day to help on the stall please notify George Sallit or Steve Harris. There are quieter periods when the main attractions are on when there will be time for our helpers to have a look around the other stalls.

OBSERVING DURING THE SUMMER



A Graphdark chart showing observing opportunities during the summer

Graphdark is an astronomical application developed by Richard Fleet who is the current vice chairman of the Newbury Astronomical Society. The application can be downloaded free from GraphDark (dewbow.co.uk) (ignore trial period warning).

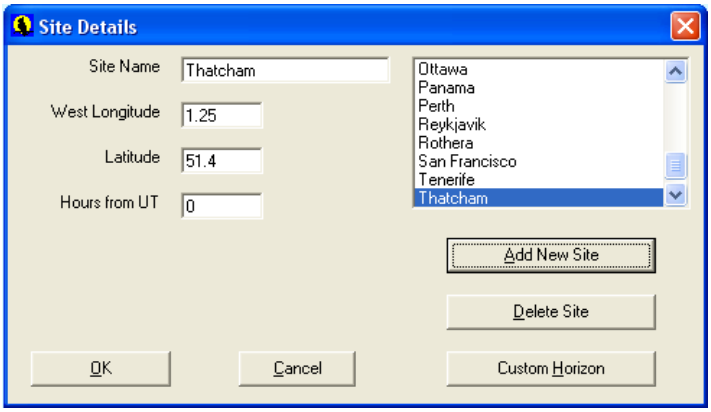
Graphdark displays 'graphically' the location of the planets for observing and information about the viewing conditions for any specified observing period. The screen-shot above shows the opening screen when the application is first started. There are many functions included in Graphdark that make it an extremely useful tool for any astronomer. This article is a brief introduction to some of the basic features of the application to enable the new user to get started. Once the basics are mastered the many other features can be tried out and the full application used to explore the night sky and plan any observing sessions.

YOUR OBSERVING SITE

To use Graphdark you need to tell the application where you are going to observe from. For local sites around the Newbury area it will generally be good enough to just select 'London' from the drop down box at the top left of the window by clicking on the down arrow. A selection of worldwide sites is preloaded into the drop down box. Your exact location or any other can be added to the location database by selecting 'Site Details' from 'Edit' in the menu bar at the top of the window.

An input box will be displayed. Click on 'Add new site' and enter the name of your site. For example: 'Thatcham' and click on 'ok'. The latitude and longitude boxes will be cleared. Enter your position in degrees and decimal parts of a degree for example West Longitude 1.25 and Latitude 51.4. In the 'Hours from UT' box enter '0' (zero). Click on 'ok' to close the box. If the new site name is not displayed in the 'where' box, click to pull down the list and select it.

The site selection box is shown in the opposite column.



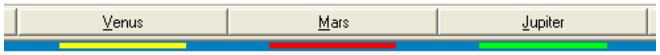
The Site Details box

The dates and time span of the graph are shown along the bottom of the graph in Month and year format. The start and finish date can be changed by clicking on the small arrows on the two drop down boxes at the upper right corner of the screen. Clicking the arrow displays a drop down small calendar month window. The month can be change by clicking on the right / left arrows at the top of the box and the day of the month selected by clicking on the date. With the start and finish date selected a click on the box labelled 'Draw Graph' will display the graph for the time between the selected dates.

The graph will be redrawn with the new date span along the bottom of the graph in the conventional 'Jun 23' (Month / day) date display marking the beginning each week. Julian day numbers are the full 7 digit astronomical dates. For example June 21st 2023 will be displayed at the top of the graph as 2460000+0119 = 2460119.

Graphdark can be used to display a number of different graphical representations of the sky selected from the second box marked 'What' at the top of the window. The window shown above is the 'All Planets' display.

In this display the planets are represented by coloured trace lines drawn across the graph. The colour key is shown as the coloured boxes across the top of the graph with the name of each planet above it.



Part of the planet colour key

Each planet trace line has a series of bars either above or below the line.

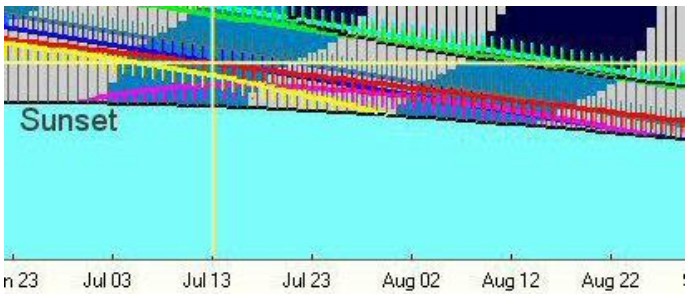
Part of the 'Mars and Venus trace' lines

These bars on the trace line indicate when during the night the planet will be observable. Bars below the line indicate that the planet is in view from sunset and up to the time determined by the coloured line. Bars above the line indicate that the planet is observable from the time determined by the coloured line until sunrise.

The time of the day or night at the observing site is shown on the left vertical axis with 24:00 / 0:00 (midnight) half way up the graph. 14:00 (afternoon) at the bottom and up to 10:00 (morning) at the top. The vertical axis on the right shows Universal Time (UT) which is in effect Greenwich Mean Time (GMT). In the UK UT and Local Time will be the same but with +1 hour for British Summer Time (BST). The vertical lines tracing up through the graph denote the days in 10 day increments.

USING GRAPHDARK

It is now time to use the Graphdark chart for the first time. We must first select the date of the night that we wish to observe. We could select 14th May on the bottom date axis, this is indicated by the vertical yellow line and 22:00 is the planned start time. Yellow lines have been drawn on the chart on page 3 to demonstrate the time and date coordinates. However at this intersection there are no planets to observe. Later in the summer on 13th July before 21:00 Mercury, Venus, Mars can be observed. Saturn, Neptune, Jupiter, and Uranus will rise a little later. See the enlarged section of the chart below.



Extract from the Graphdark chart shown on Page 3

The yellow line depicting Venus has bars below the line thus indicating that Venus is observable from sunset until the yellow line when it sets over the western horizon.

To determine when Venus will start to become visible, look down the graph. There are changes in colour on the graph indicating when darkness falls. The light blue area indicates daylight and the darker blue indicates dusk (the darkening of the sky). Venus will be visible in the twilight just above the western horizon in the early evening. See the Zenith All Sky chart in the next column.

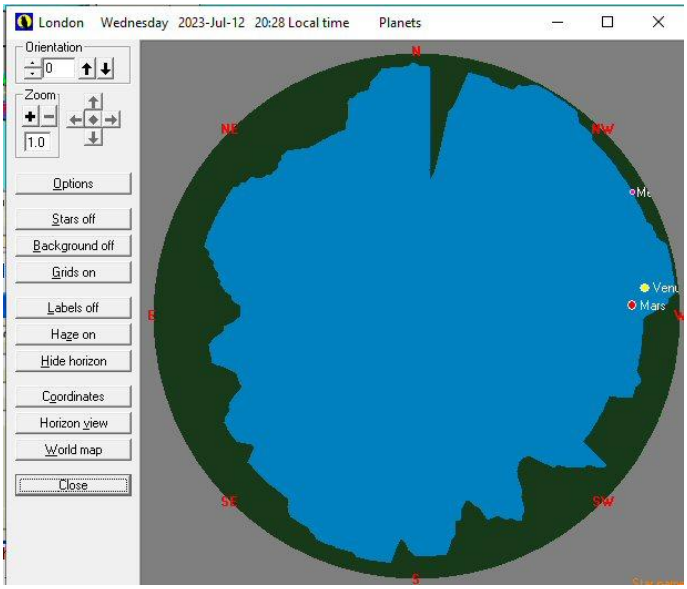
The black area shows that the sky has become dark and it is night. Therefore as Venus is a very bright object it will become visible soon after it rises at 16:00. If the yellow lines are in the black area it rises in darkness.

The vertical black and white bands on the graph show if the Moon will be in the sky. When the Moon band is black the Moon will not be in the sky and the sky will be fully dark. White bands show the Moon is in the sky and blue Moon bands show the sky is not completely dark.

On the extract from Graphdark, shown in the previous column, planet lines cross the 13th July vertical column. These represent Mercury (purple), Venus yellow, Mars (red), Jupiter (green) Saturn (dark blue), Uranus (light blue), Neptune (Grey/blue). Some lines of these planets are in the twilight zone therefore will not be visible when they rise. The lines of Mercury, Venus and Mars have the bars below the line. This means that on 13th July they would, in theory, be visible from sunset until about 21:00. The lines of the other planets have bars above their line. This means they will become visible later in the night at the time indicated by their trace line and until sunrise.

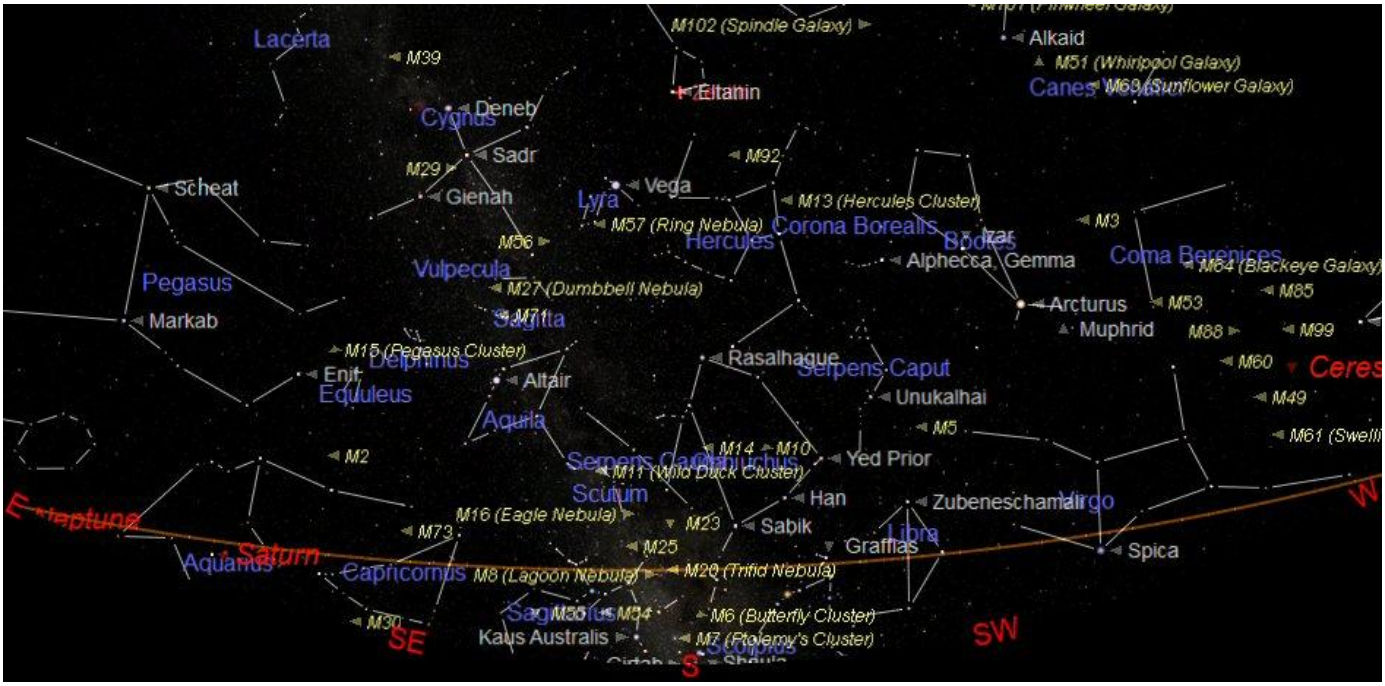
Looking back to the chart on page 3, when the line representing Mercury appears in the dark blue area at the top of the chart that shows it is in the dawn sky. With the exception of Venus and Jupiter the other planets would not be bright enough to be observable. Jupiter and Venus are bright so can be seen but would be very badly affected by the dirty and turbulent air close to the eastern horizon.

A new user of Graphdark may initially find it difficult to visualise the relative positions of the planets in the sky from the 'All Planets' graph. However there is a very simple way to get a visual representation of the sky showing the positions of the planets. By simply left clicking with the mouse pointer positioned at the desired date and time the Zenith All Sky window is displayed.



The 'Zenith All Sky' display chart for 13th July

The Zenith All Sky chart is extremely useful in that it shows objects in their correct positions in the sky. By clicking on the centre button of the three at the top right of the window  the window can be expanded to fill the full screen. The Zenith is the centre of the chart and the cardinal points of the compass are marked on the chart. Mars and Venus are shown in their true positions.



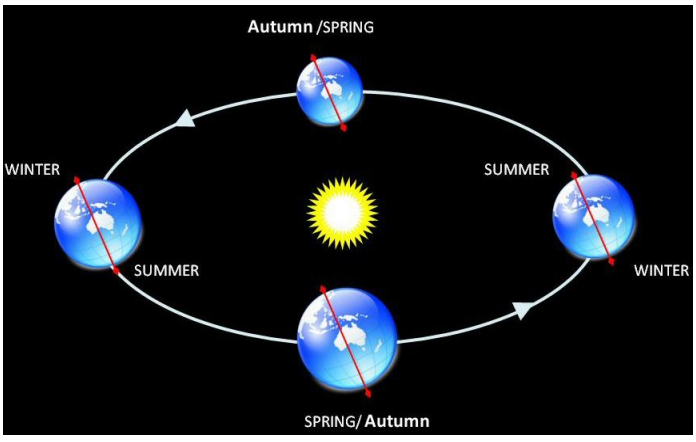
Midnight at midsummer 21st June (the Summer Solstice)

As astronomers we have a rather confusing view of the sky around us due to the 23.4º tilt of Earth's axis. There are some very noticeable effects that we take for granted. The first is: how much the position of the Sun in the sky changes from summer to winter.

The chart above shows the southern night sky at midnight on Midsummer Day. This is 01:00 BST (00.00 GMT). The Zenith is the point directly overhead from Newbury, England and is marked as a red cross towards the top of the chart above.

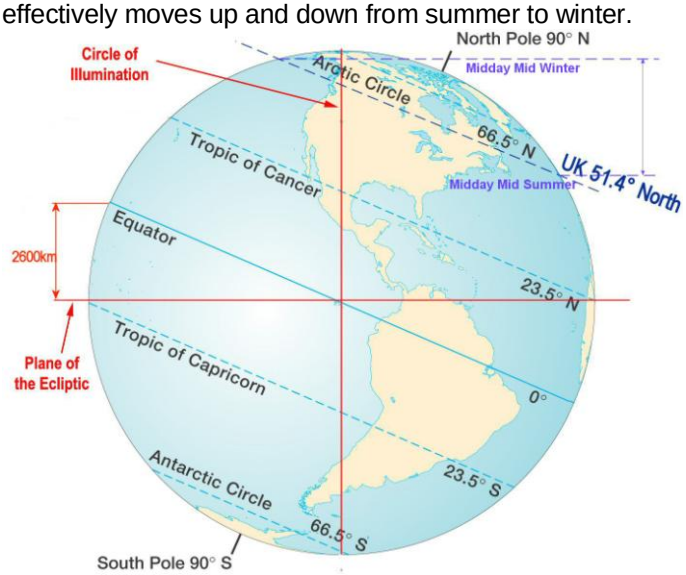
The Ecliptic (brown arc at bottom of the chart) is the imaginary line that represents the equator of the Solar System. The Sun, Moon and planets appear to move along this imaginary line as Earth moves around its orbit about the Sun. As the tilt of Earth's axis always points to the same direction and towards the same point in the sky, the Ecliptic appears to rise and fall, from our tilted point of view on Earth, during Earth's one year orbit.

On Midsummer Day, the UK (the right side of the diagram below) will be tilted towards the Sun so the Sun will appear high in the sky. At this same time the point on the opposite side of Earth will be at midnight on midwinter day so the Ecliptic will appear very low at midnight. During the summer the Moon and planets appear low in the night sky so are not well placed for observing.



Earth is always tilted in the same direction

Another affect caused by the tilted Earth is that our sky appears to move up and down as Earth's Equator effectively moves up and down from summer to winter.



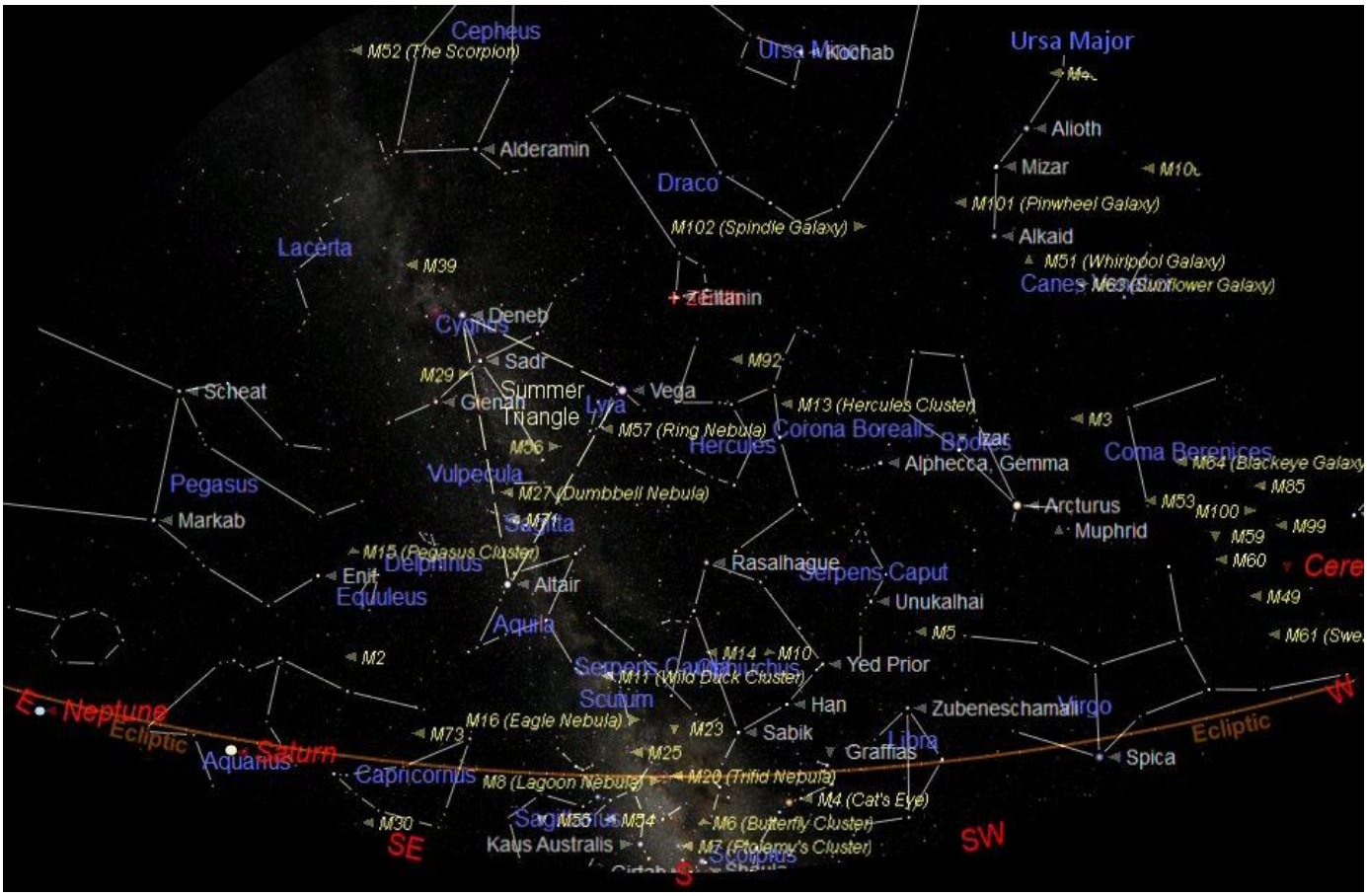
The movement of Earth's Equator

Our summer occurs when the Equator moves up to the Tropic of Cancer position or down to The Tropic of Capricorn for winter. Britain will be closest to the Equator of the Solar System (the Ecliptic) on 21st June so the Sun will appear at its highest point in the sky at midday on 21st June this called the Summer Solstice.

We are familiar with the Sun being very high at midday at midsummer so at this time the opposite side of Earth will be at midnight and the Ecliptic will be low.

The other very noticeable effect of the Earth tilt is its effect on the length of the day. At midwinter the day will be only eight hours but the night will be sixteen hours long. Conversely at midsummer our day is sixteen hours long and the night is just eight hours long. On the Graphdark chart on page 3 we can see how the night is shorter by how the sunrise and sunset lines are closer together. At this time the sky does not become completely dark as the Sun is only just over the northern horizon indicated by the blue and white Moon bands.

A TOUR OF THE NIGHT SKY - Midsummer 2023



The chart above shows the night sky looking south at about 01:00 BST (00:00 GMT) on 21st June (Midsummer Night). 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'.

Constellations through which the ecliptic passes are: Virgo (the Virgin), Libra (the Scales), Scorpius (the Scorpion), Sagittarius (the Archer), Capricornus (the Goat, Aquarius (the Water Carrier) and Pisces (the Fishes).

Moving over the south western horizon is the winter constellation of Leo (the Lion) follows Cancer along the Ecliptic and was the constellation of the month last month. It does actually look a little like a lion or the Sphinx in Egypt. Around and between Leo and the neighboring constellation of Virgo is a cluster of galaxies.

To the north of Virgo is the constellation of Boötes with its bright orange coloured star called Arcturus. The stars in Boötes form the shape of an old fashioned diamond shaped kite with Arcturus located where the string of the tail would be attached. Arcturus is one of just a few stars that do actually appear to be coloured and is noticeably orange to the 'naked eye'.

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 tiny White Dwarf Star.

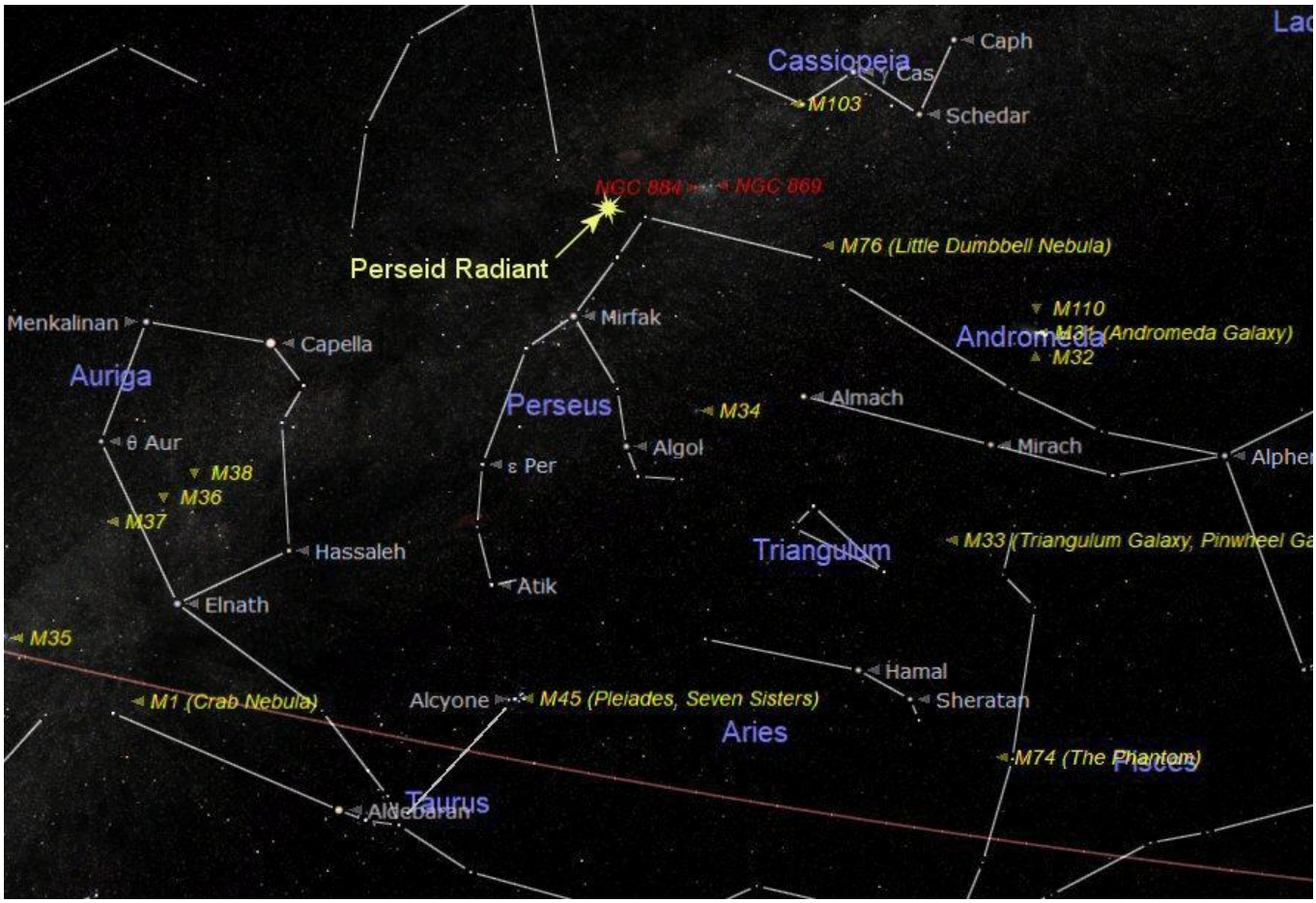
Following Leo is the less obvious constellation of Virgo but it does have one fairly bright star called Spica. Virgo gives its name to a large cluster of Galaxies that is also spread over into the neighbouring constellations of Coma Berenices (Berenices' Hair) and into Leo.

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. 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 spherical cluster, of about a million stars that can be seen using a 90mm *f*10 telescope but will look even more impressive when using a larger telescope.

Prominent in the southern sky is the Summer Triangle that dominates the Summer Sky. The triangle is defined by three obvious bright stars: Deneb in the constellation of Cygnus, Vega in Lyra, and Altair in Aquila. The Milky Way (our Galaxy) flows through the Summer Triangle and passes through Aquila and Cygnus.

The Ecliptic is low in the sky during the summer months so the Moon and planets at appear close to the southern horizon. Saturn and Jupiter are starting enter the night sky but due to their low altitude will not be at their best for observation this year. The thick, murky and turbulent air will cause the planets to appear quite unsteady. However the Full Moon can be very spectacular during the summer. With the Moon being very low it appears to us to be much larger so we call it a 'Super Moon'. This is just an optical illusion when our brain tries to relate the size of the Moon to objects on the horizon.

The constellation of Perseus



Perseus is our constellation of special interest this month because it is host to the Radiant of the Perseid Meteor shower. The other articles in the magazine this month give the details of the Perseid Meteor shower but the constellation of Perseus has interesting things to see as well.

The asterism (stick figure shape) looks rather like a horse riding stirrup. The two brightest stars Algol and Mirfak along with the fainter star Atik mark out the 'V' main shape with another line of stars pointing from Mirfak towards the very obvious 'W' shape of Cassiopeia.

Other constellations around Perseus are: Cassiopeia to the north, Andromeda to the west (right) Auriga to the east (left) and Taurus to the south (below). Continuing the line of stars from Mirfak to Atik the beautiful Open Cluster of stars Messier 45 (M45) the Pleiades also called the Seven Sisters can be found in the constellation of Taurus (the Bull).

During the summer months Perseus is located in the north close the horizon so that is where it can be found this month. During the winter it is located almost overhead and during November and December is actually host to the Zenith (the point in the sky directly over head).

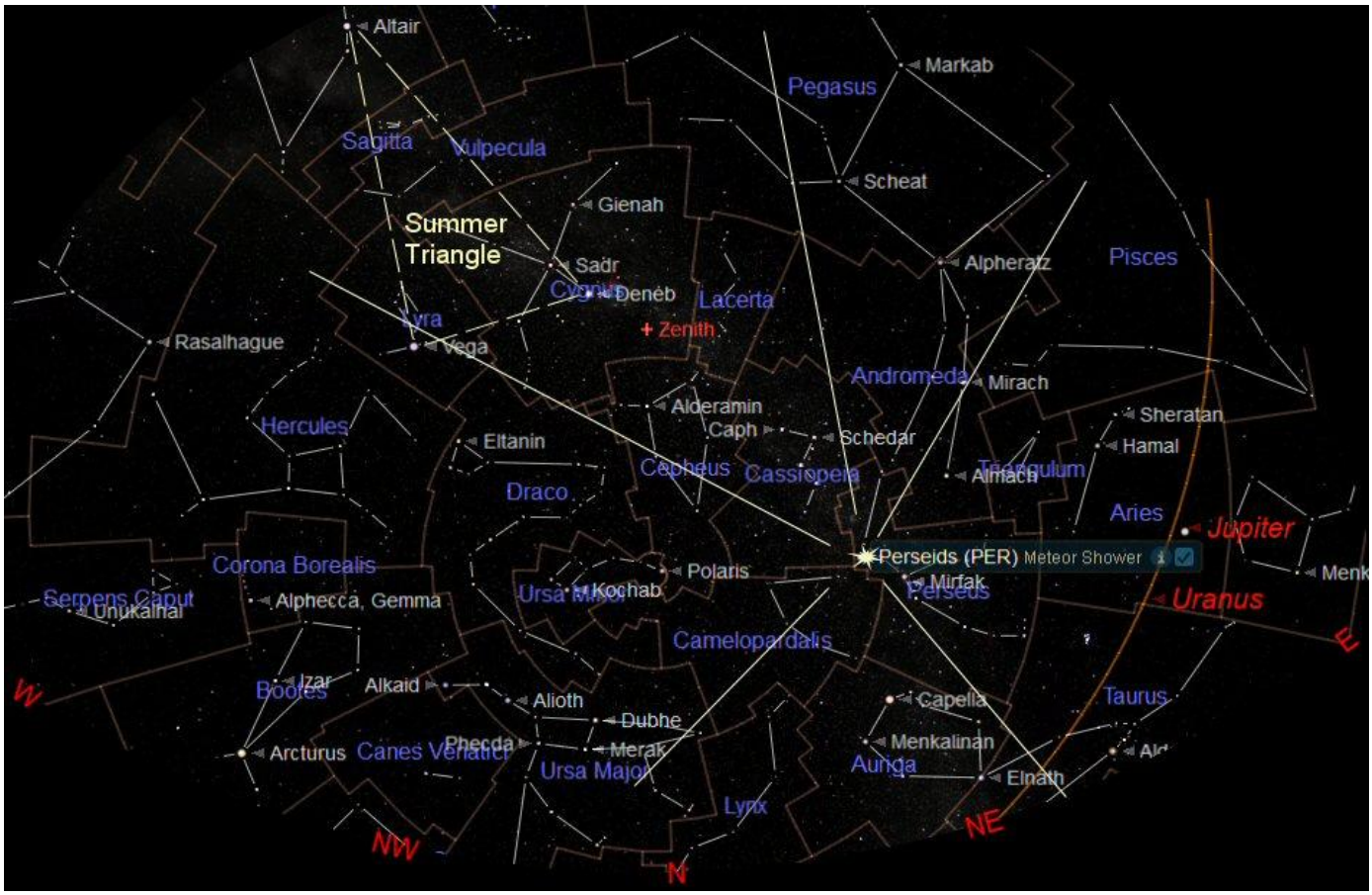
Perseus is also host to two Messier 'deep sky' objects Messier 34 (M34) and Messier 76 (M76). M76 is a rather nice Planetary Nebula which is sometimes called the Little Dumbbell. This is a star similar to our Sun that has collapsed to become a White Dwarf and has developed a 'bubble' of gas around it. It does need a medium sized telescope to see.

Messier 34 is a fairly bright Open Cluster comprised of about 80 stars. It can be seen as a small 'fuzzy' patch of light using binoculars but does need a telescope to see as a cluster of stars. However there is another Open Cluster or rather two clusters called the Double Cluster that are listed in the New General Catalogue as NGC 869 and NGC 884 and shown in the image below.

NGC 869 and NGC 884 the Double Cluster

The Double Cluster can be seen on a clear dark night with the 'Naked Eye' as a 'fuzzy patch of light in the line of stars leading from the star Mirfak up towards the constellation of Cassiopeia. It is best seen using binoculars or a small telescope fitted with a low power eyepiece (25mm or 32mm). It is not clear whether this is a true associated double cluster or just a 'line of sight' coincidence.

THE PERSEID METEOR SHOWER THIS MONTH



The night sky looking towards the northern horizon

Meteor showers are notoriously unpredictable. The exact time of any spectacular increase in numbers or if the meteors will be bright is difficult to predict as is the clear weather needed to see them. However every year on the evening of the 12th and morning of 13th August there is a spectacular display from the Perseid Meteor Shower.

The Persied meteors originate from the comet Swift-Tuttle and are named after the constellation Perseus. This is because they appear to radiant from a point in the sky located in Perseus. It may be possible to see up to 60 or even 100 meteors an hour from a very dark place.

Fortunately this year the Moon will not be in the sky so even the fainter meteors may be seen in the dark sky away from street lights. The meteors of a shower appear to radiate from a point in the sky that is called the 'Radiant'. The meteors of this particular shower appear to originate from a 'Radiant' point in the constellation of Perseus. See the chart above.

If the trail of any meteor that is seen can be tracked back and found to have originated from this radiant point it will be a Perseid. A few meteors might appear to originate from other directions so these are the meteors that might be seen randomly and not part of any named shower. These are known as Sporadic Meteors.

From a clear dark site, the constellation of Perseus can be clearly seen as a line of stars stretching from the very distinctive 'W' shape of Cassiopeia and down towards the bright star Capella. The brighter stars of Perseus appear to mark out the rough shape of a horse riding spur.

If the sky is clear the Milky Way (our galaxy) can be seen rising up from the northern horizon passing through Perseus, Cassiopeia and right across the sky though Cygnus and the Summer Triangle. The bright star Capella in the constellation Auriga will be twinkling noticeably close to the northern horizon.

Observing can start as soon as it is dark but there is likely to be more meteors after midnight. Position a lounger chair so the northern horizon can be seen. Look at about 45º above the horizon and anywhere between west, through north and to the east. Meteors will appear as a fast streak of light flashing across the sky. One or two meteors every five to ten minutes may be seen.

Some might be faint and difficult to see from a well-lit area in the towns. Any bright meteors will be seen even from fairly light polluted skies. These may appear anywhere in the sky from close to the radiant in the north to directly overhead. With a clear sky it may be possible to follow the tracks back through the constellations they passed through to the radiant point in Perseus.

PERIOD	SHOWER NAME	MAXIMUM
28 Dec – 12 Jan	Quadrantids	3 Jan
14 April – 30 Apr	Lyrids	April 22
19 Apr – 28 May	Eta Aquarids	6 May
3 July – 15 Aug	Alpha Capricrnids	30 July
12 July – 23 Aug	Delta Aquarids	30 July
17 July – 24 Aug	**Perseids**	**12 Aug**
6 Oct – 10 Oct	Draconids	8 Oct
2 Oct – 7 Nov	Orionids	21 Oct
Oct 20 - Dec 10	Taurids	Nov 3
6 Nov – 30 Nov	**Leonids**	**17 Nov**
4 Dec – 20 Dec	Geminids	14 Dec
17 Dec – 26 Dec	Ursids	22 Dec

WHAT IS A METEOR?

Driving into a snowstorm


A meteor shower radiant

On any clear night if you sit back and look up into the night sky for a while you will more than likely see a streak of light speed across the sky - this will be a METEOR also called a 'shooting star'. It is not a star at all it is just a small speck of dust known as a METEOROID entering the Earth's atmosphere at very high speed.

We all know how a space capsule or other space craft become very hot as they re-enter the atmosphere at about 27,000 km/h. However these meteoroid dust particles get even hotter at their re-entry speed of up to 270,000 km/h. At this speed the dust is vaporised by the heat and the surrounding air is also heated until it glows in a similar way to a fluorescent light.

There are two types of Meteor, the first is thought to originate from the large lumps of rock and iron left over when the planets formed and are known as ASTEROIDS. Most asteroids orbit the Sun in a belt between Mars and Jupiter. The huge gravitational forces exerted by Jupiter may have pulled the rocks apart before they could accumulate into a planet.

Very rarely two asteroids may collide but when they do, chips of rock and Iron are thrown off and occasionally may head towards Earth. These can be a few millimetres across or up to tens or even hundreds of metres across. They are quite rare and are seen as individual 'fireballs'. Large ones can sometimes impact the ground as METEORITES and may even cause craters.

The second type of meteor originates from a comet and is much more common. Comets are large lumps of ice, typically between five and thirty kilometres across that reside beyond the orbits of the outer planets. There are millions of these objects just sitting there quietly orbiting around the Sun at enormous distances.

Occasionally one of these objects may be nudged out of its orbit by a close encounter with another object and may begin to move in towards the Sun. A comet can be thought of as being like a giant dirty snowball. As it approaches the Sun, the water ice and frozen gases begin to boil off and are blown away by the radiation from the Sun. This gas and dust will form the familiar twin tails associate with comets.

Dust particles released by the melt are heavier and therefore continue more or less on the same orbit. These particles spread out along the orbital path and may eventually form a complete ring around the orbit.


Comet Hale Bopp 1998

Once or twice a year Earth may pass through this stream of particles that then collide with the atmosphere as Meteors. Meteoroid dust particles are usually small and very light and generally have the consistency of cigarette ash but are travelling very fast (>50 km/sec.). As Earth ploughs into the stream of meteoroids they appear to enter the atmosphere at a single point in the sky. This point is in the direction that Earth is travelling along its orbital path. The meteors will appear to radiate out in all direction from this point, very much like driving a car into a snow storm, see the images above.

The clarity of the sky will make a significant difference to the number of meteors that can be seen. Any mist or hazy cloud will severely reduce the chance of seeing the fainter meteors especially if observing from a light polluted area. If it is cloudy there is of course less chance of seeing any meteors at all. It is never possible to predict meteor showers because the dust from the comet that produces the meteors moves through space in wisps and filaments. All depends on whether Earth passes through a filament and how thick that filament is.

With a combined impact velocity between 11 and 76 km per second meteors have a lot of kinetic energy (energy due to velocity) and burn up in the atmosphere at a height of about 100 km. Only the largest rocky or metal meteors from asteroids reach the ground. So all the meteors originating from comets burn up in the upper atmosphere and present no danger to us.

THE SOLAR SYSTEM - MAY 2023

The location of all the planets at midday on 15th May

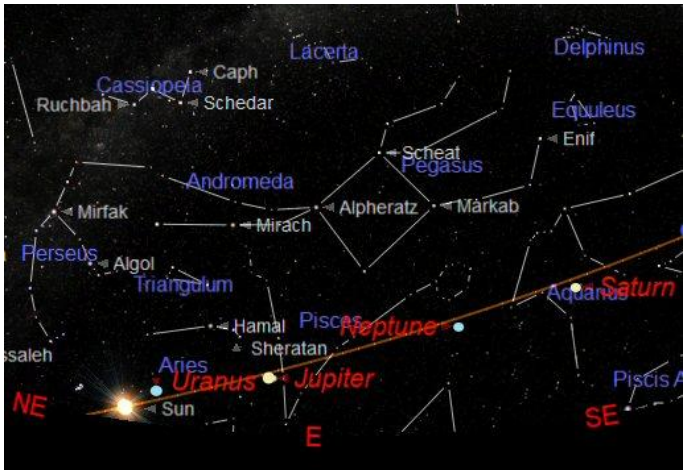
Over the last few months we have been treated to good views of all the planets in the night sky. The chart above shows the location of all the planets this month.

MERCURY was at its very best on 11th April this year but will not be observable this month.

VENUS is moving into its apparent furthest point from the Sun from our point of view this is called 'Greatest Easterly Elongation'. It will be the same distance as the Sun from our point of view and will be approaching the point on its orbit where it will appear to be half illuminated on 4th June. It is brightest of all the planets but it will still appear with a rather small diameter (for Venus) and will be and just over half illuminated. A telescope will allow the phase development to be followed from 'full but smaller diameter' to 'a larger diameter but with a narrowing crescent'.

MARS can be seen high in the evening sky as soon as the Sun has set and the sky darkens. It is looking small at about 5" (arc-seconds). Mars is past its best and is now falling behind Earth and will appear to be getting smaller as it moves further away from us.

JUPITER is in now in the bright early morning sky and is not observable, see the chart below.



Jupiter, Saturn, Uranus and Neptune at sunrise

SATURN has now moved into the bright morning sky and is not observable. See the chart above

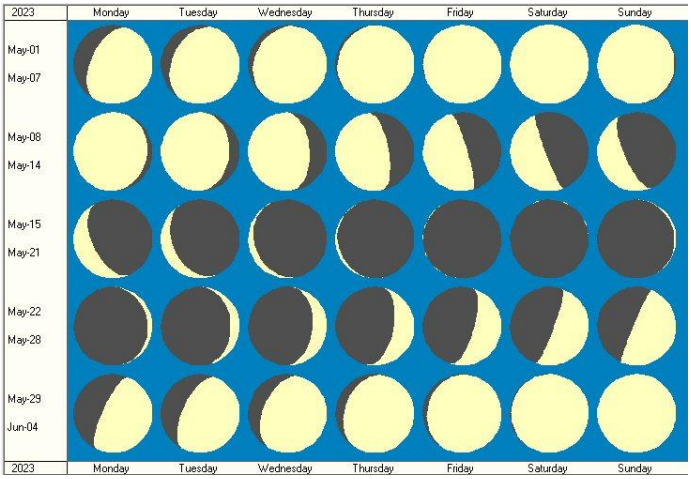
URANUS is now in the morning sky and is very close to the Sun so it will not be observable. See the chart in the previous column.

NEPTUNE is also in the morning sky and is very close to the Sun so it will not be observable. See the chart in the previous column.

THE SUN

The Sun rises at about 05:20 at the beginning of the month and 04:55 at the end. It sets at 20:25 at the beginning of the month and 21:0 at the end. There have been some very nice Sunspots recently and an aurora seen from the UK on 26th & 27th February. There has been some nice Sunspot activity over the last few months.

THE MOON PHASES DURING MAY



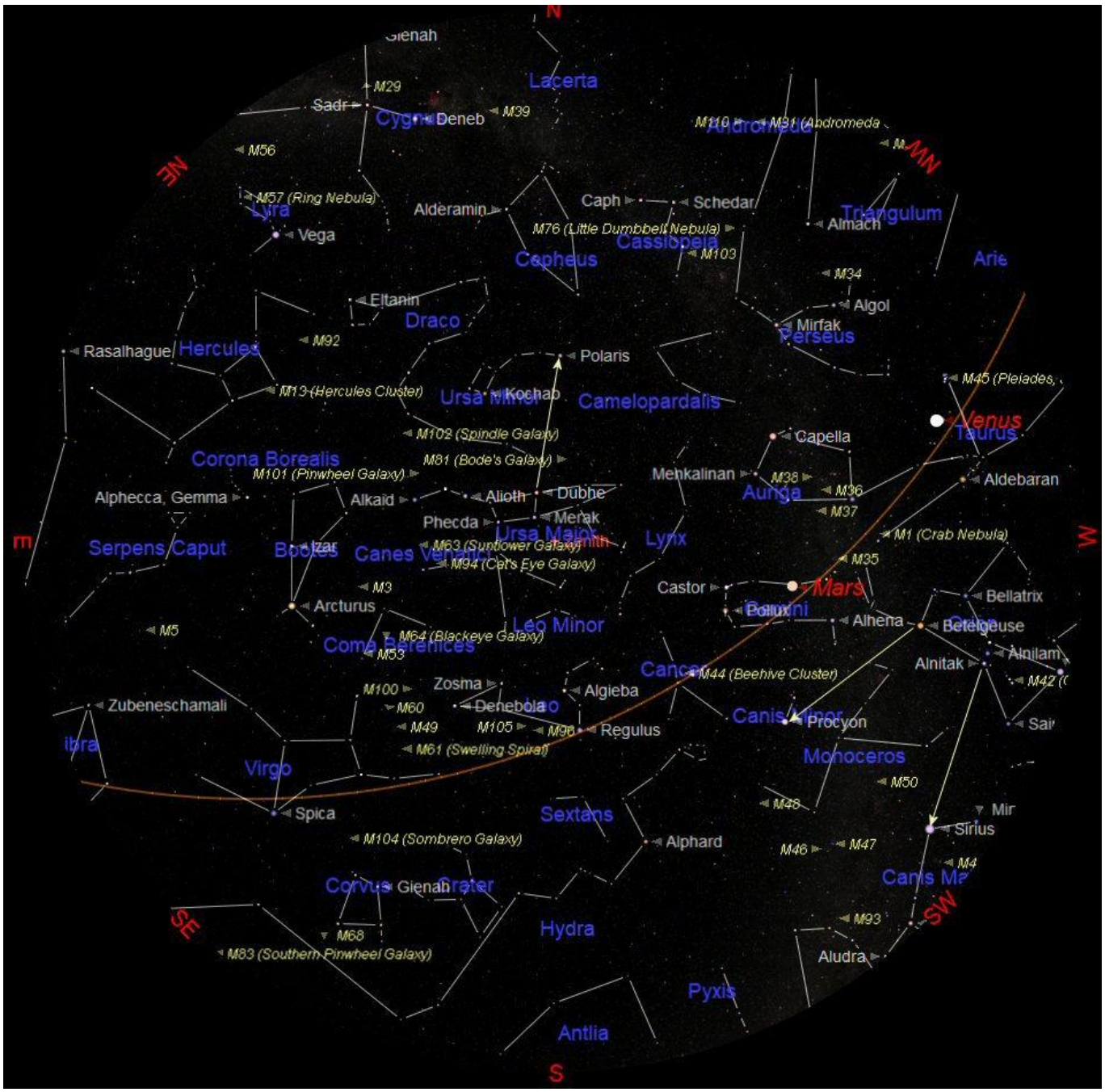
Full Moon will be on 5th May

Last Quarter will be on 12th May

New Moon will be on 19th May

First Quarter will be on 27th May

THE NIGHT SKY – MAY 2023



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

The centre of the chart will be the position in the sky directly overhead, called the Zenith. First we need to find some familiar objects so we can get our bearings. The Pole Star **Polaris** can be easily found by first finding the familiar shape of the Great Bear 'Ursa Major' that is also sometimes called the Plough or even the Big Dipper by the Americans. Ursa Major is visible throughout the year from Britain and is always quite easy to find. This month it is directly overhead. Look for the distinctive saucepan shape, four stars forming the bowl and three stars forming the handle. Follow an imaginary line, up from the two stars in the bowl furthest from the handle. These will point the way to Polaris which will be to the north of overhead at about 50º above the northern horizon. Polaris is the only moderately bright star in a fairly empty patch of sky. When you have found Polaris turn completely around and you will be facing south. To use this chart, position yourself looking south and hold the chart above your eyes.

Planets observable in the evening sky: Mars, Venus all the other planets are in the bright daytime sky.

This is the last magazine for this Session. The next magazine will be in September, the start of the new Session.