

2002



NEXT MEETING
THURSDAY, 20th April 2017
THE ASTRONOMICAL SOCIETY OF HARINGEY
VOLUME 45 : ISSUE 6 : April 2017
www.ashastro.co.uk

SOCIETY NEWS

MEETING VENUE

Music and Drama Block, Ashmole School, Southgate, London N14 5RJ.

The day for meetings is usually the third Thursday of each month. The exceptions are August, when we do not hold a meeting, and this now currently applies to the July and December meetings, though that may alter in the future.

However, in case of changes it is always advisable to double-check the dates below.

Doors open - 7.30pm : Main speaker - 8.00pm : Finish - 10.00pm sharp!

For more on this, and general meeting information, also check the website page:
www.ashastro.co.uk. Last minute changes will be on the Facebook page



OBSERVING EVENINGS

Regarding any changes to Observing Evening meetings, this is a continuing message to let Observing Officers : Jim Webb, Alister Innes or Kyri Voskou know your mobile phone number. Last minute changes will be notified via text messaging. The Facebook page will also be used, but we realise not all have (or want!) Facebook access, so it will be secondary to texting. And if you do not have a computer or cell phone, you can be phoned on your landline.

2017

April 20th : Michael Franks : "News From The Cape"

May 18th: TBA

June 15th: TBA

July & August : no meetings these months

September 21st: TBA

October 5th : AGM & Space Week – Michael Franks

BUT this will be rather close to the September date, as it's the latest it can possibly be in that month. Consequently the September meeting *may* move to the week before or become an Observing Evening

November 16th. TBA

December : no meeting this month

COVER

What the Kennedy Space Center will look like in years to come. Combining elements of both the Apollo and Space Shuttle Programs, an artist impression of the new SLS (Space Launch System) sitting on the modified Shuttle launch pad, itself modified from the original Apollo Saturn pads, ready to launch the Orion spacecraft. Catch up with 'News From The Cape with Michael Franks at the next meeting

Image : NASA

SOCIETY NEWS



Find us on
Facebook

For up-to-date information, we are using that 'necessary evil' - Facebook. Go to : www.facebook.com/groups/ASHastro/

However although originally you could view 'Public' Facebook pages (which ASHastro is), and read posts, without being a

member, it now seems you have to be a member of FB to even read them. So, sorry, you'll have to join - *BUT* this does not mean you need to give away information you don't want to give. Although Facebook doesn't go out of its way to tell you, any individual's home page can be blank (as your Editor's is) it does not have to have any information. Even your birth date need not be correct.

However, once a member, if you want to 'interact' - ie post messages – on the ASH Group you will need to ask to join, and you will get 'signed up' by your Chairman or Editor.

The more the merrier!



MEETING ROOM

We currently meet at Ashmole School, Cecil Road, Southgate N14 5RJ, on the first floor of the Music and Drama Block. This is the two-storey building, (left) with the entrance marked with the red arrow.

We hope the first floor will be suitable for all, as there isn't a convenient lift. If anyone feels they will have difficulty, please let the Chairman know.

Contact details on the back page.

For historical reference the X in the photo was our original meeting room, the original Music Studio. This is now demolished, and the site now has a new building.

MEETING PREVIEW

April 20th : Michael Franks : "News from the Cape"

Michael will be expanding on his recent two-part article in 2002, and a recent visit to the Kennedy Space Center. He'll report on recent developments in manned spaceflight with SLS and Orion and take a look at the latest displays. This will include a close up look at Space Shuttle Atlantis and the newly renovated Astronaut Hall of Fame. Below Michael with astronaut Rick Searfoss



MEETING REVIEW

April 1st : Wayne Johnson :
OBSERVING EVENING at The Gunpowder Mills



It turned out to be a fair observing session between the cloud banks that were rolling across the sky with good viewing of the Pleiades, Orion and other usual sights of the spring sky. We also had a good view of Jupiter with all four Jovian moons along with comet 41P/Tuttle-Giacobini-Kresak,

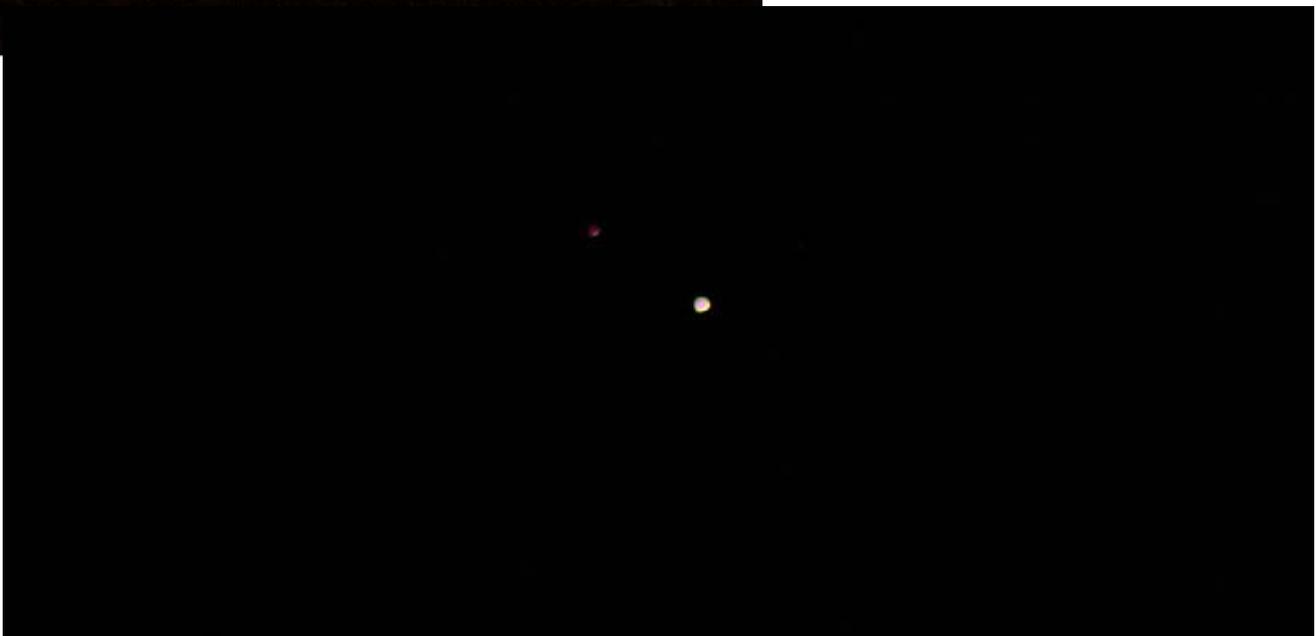
Jovian system (left) and the Comet (faint red smudge (below) as shown in these excellent images by Wayne

It was a shame that we only had four attendees, Wayne, Dale, Liz (the site manager) and myself.

Hopefully we can do it again with more attending as facilities are quite good.

But, all told, we had a very good evening

Alister Innes



THUMBPRINT THEORY SUGGESTS MASSIVE MARS TSUNAMI

A new study has revitalised previous theories that Mars may have experienced a massive tsunami. It's an old theory but new analysis may result in the idea being taken more seriously than it was in the past.

It's not just an interesting idea because it furthers our understanding of the red planet, but because if it's true then it proves that Mars did once have surface water – a vast amount of it. An important pointer is the existence of areas of 'Thumbprint Terrain' – a landscape feature so called because it looks like the ridges on a fingerprint.



By analysing the positions of the Thumbprint Terrain researchers were able to suggest a single impact site that may have been the cause. The suspect is a 90-mile wide crater called the Lomonosov Crater (pictured) which was created about three billion years ago thanks to an asteroid impact. The initial surge caused by the impact would have been 1000 feet high, followed by waves 300 feet high.

If the theory is true it will help us understand more about the processes underway at that time in the Solar System and how developed Earth may have been at the time. The tsunami theory looks set to overtake theories of glacial movement or mudslides as the cause of the Thumbprint Terrain. They were ideas that looked weak but even so, they too would have required large amounts of surface water to exist.

RIVER GANGES GRANTED HUMAN LEGAL RIGHTS

India has taken a major step to try and protect the Ganges from pollution – granting the river the same legal rights as a human. The river is already so polluted in places that it is considered dangerous to swim in, let alone drink from, and large stretches are devoid of fish and many other creatures and plants. The image shows a familiar scene in a number of places along the Ganges

After being accused of not doing enough to protect the river, the government of Uttarakhand State gave the waterway human legal rights. This follows a similar ruling made a few weeks ago in New Zealand, where the Whanganui River was given special status because of its significance to the Maori people. In addition to the Ganges, the Yamuna River has also been given the same status. This means that if anybody pollutes the river they will be dealt with in the same way that they would be treated if they had harmed a human.



ELON MUSK WANTS TO COMPUTERISE THE BRAIN

Always the man of action, Elon Musk has set off on adventure even more ambitious than getting to Mars – merging the human brain with a computer. His new company Neuralink wants to implant tiny electrodes into the brain and, using a technology called neural lace, allow people to import knowledge and download memories. Neural lace is effectively like a mesh of electronic sensors that would interact with the host brain. The idea has been mooted before as has the term 'neural lace' – used by science fiction writer Iain M Banks.

This is not just an SF story though. Musk already plans to build on techniques currently being used to treat Parkinson's Disease and has begun building a team of neuroscience specialists. Existing American and Chinese efforts to computerise a human brain are in their very early stages but if Musk progresses at his usual rate he is likely to be leading the pack within a few years.

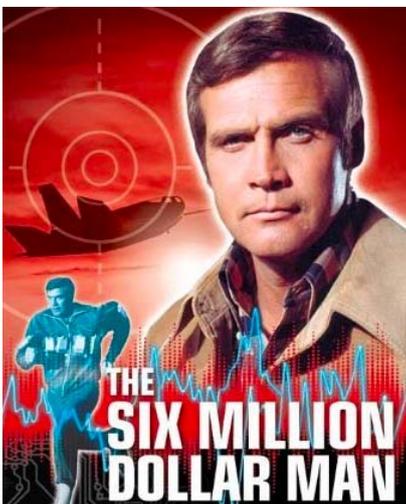


THE RETURN OF STEVE AUSTIN

The Six Million Dollar Man will soon be back. After over 20 years of deliberation, Hollywood has finally committed to resurrect the 1970's superhero. The movie will star Mark Wahlberg and will be released in December 2017, although the finances involved have changed a bit.

The character Steve Austin will now be the Six *Billion* Dollar Man. The theme will be the same though – an astronaut will be left barely alive after crashing an experimental aircraft, so the latest technology will be used to rebuild him as a cyborg with incredible powers.

Anybody who enjoyed the Bionic Man series' will recall how the producers got around the tricky problem of presenting his speed and strength by showing him in slow motion. It will be interesting to see if the new movie sticks to CGI and the latest special effects, or if it pays tribute to the original at any point in the movie by using the same slo-mo idea – just as the film *Doom* had an extended Maze-Hunt sequence which was taken directly from the video game of the same name.



The old...



...and the new

SCIENCE PLANET

Could mankind really be wiped out by a meteor?

We have always known that Earth was a sitting target for any stray comets or meteors in the area, but it is only over the past few years that the risk of major impact damage has been seriously considered.

If you thought that meteors reaching Earth were a rare and strange event you would probably be very surprised to learn the truth. Thousands of meteors strike our atmosphere every day. In fact, millions of tons of meteorite debris and Moon dust are already on Earth, increasing by thousands of tons each year.

These meteors are normally tiny specks. Larger meteors are rarer - the bigger the meteor, the rarer it is. Consequently, really huge meteors are very rare. The largest single meteorite ever found weighed sixty tonnes and was the size of a car.

The type of meteorite which would cause real damage would have to be even bigger than this. One of the largest meteor craters still easily viewed on our planet is the Meteor Crater in Arizona. It measures three quarters of a mile / 1.2 km across and is some 700 feet / 215m deep. The rock which blasted this crater fifty thousand years ago was around 130 feet / 40m wide and would have caused severe local damage - an atom bomb sized explosion easily big enough to destroy a city and kill hundreds of thousands of people.

Nasty as this might sound it's not really that bad on a worldwide scale. If such a strike happened now life for most of us would continue relatively unchanged. To provide damage of global proportions a meteor would need to be much bigger. Imagine a meteor several hundred metres wide and weighing billions of tonnes. The damage caused by one of these meteors could kill millions, and severely disrupt a continent.

Then we come to the type of meteor that they make Hollywood movies about - several kilometres across and weighing trillions of tons. Now we're talking about some real damage. At this size we'd be looking at something more like a comet or large asteroid. It would enter the atmosphere at over 50,000 miles an hour and hit the surface of Earth between just 5 and

On any clear night an observer is almost guaranteed to see several meteors an hour. Photographing them isn't very difficult but does involve some work.

It's impossible to point a camera at a meteor and take a photograph. Most of them are only visible for a fraction of a second - more than enough time for a human eye to spot them but not enough time to aim a camera and take a picture. The way to get an image is by using a long exposure. This means that the camera is aimed at the sky and the shutter is kept open for several seconds, minutes, perhaps even hours. The result can be an image like this one showing the path of a meteor across the sky.



Often images like these show the background stars as lines rather than points. This is caused by the movement of the night sky. The position of the stars is constantly recorded by the long exposure on the camera and the path of the stars through the sky shows up as a trail.

The famous Meteor Crater in Arizona, USA, is correctly called the Barringer Crater. It is one of the best examples of a meteor crater on Earth.



Craters like this one can be eroded by wind and rain or overgrown with vegetation. In this case the crater is superbly preserved.

The iron meteorite, which caused this crater, weighed several hundred thousand tons and struck with an explosive force of over 20 million tons of TNT.

50 seconds later, depending on the angle of approach. The resulting explosion would be the equivalent of 100,000 atom bombs. The whole planet would shake, waves hundreds of feet high would circle the globe (thousands of feet high in the likely event that the impact was in the ocean). The air at the point of impact would burn at two thousand Celsius, generating worldwide hurricane force winds.

The force of the initial explosion would level any city within a thousand miles, ripping up buildings and trees, even scouring the surface right down to bedrock. Severe damage would be caused over a far wider area. The air temperature around the world would rise to 300 Celsius, rapidly killing any creature not already in hiding and igniting anything that would burn.

The dust and debris thrown up by the impact along with the soot and ash of the burning forests would circle the planet within a day. This would be exacerbated by volcanic activity triggered by the impact. All the light from the Sun would be blotted out and plants would start dying within a few days. After a few weeks any creature able to navigate through the pitch blackness

would find its food sources running out. As plants and animals died a few scavengers would stay alive on what pickings they could find.

The creatures of the sea would also suffer terribly as the lack of sunlight would also disrupt their food chain - first the plants of the sea would die followed soon afterwards by the creatures which fed on them. This blackness would last for six months before the debris in the air started to settle enough to let the sunlight start to get through.

By then the surface temperature would have dropped to below freezing. Acid rains and snows would poison virtually everything that was left. Any creatures lucky enough to have survived this would still face a very long wait for sources of fresh water to appear and for seeds underground to germinate and grow.

It would take plant life decades to recover properly. Atmospheric and ocean currents would take years to return to some normality while animal life would have to slowly begin diversifying and establishing itself. Apart from the few creatures which survived the initial catastrophe, we would see new creatures developing and evolving.

Could mankind survive this? A good strategy and plenty of planning would give mankind a fighting chance. Storage of food, water and other necessities by governments, along with adequate underground shelters

There are many asteroids the size of Gaspra, which measures over 10 miles / 16 km at its longest axis.



Impact with an object only half the size would result in an explosion 100,000 times that of a nuclear bomb.

would allow mankind to survive but there would be no more easily available food and luxuries available in the local shops. All infrastructures like roads, rail, power supplies and industry would be gone. It would take years for men to rebuild the mines, factories and machines that were needed to make life easier.

Even a Tsunami wave a few feet high can cause enormous coastal damage as it inundates the land. These waves are extremely powerful and can destroy anything in their path as they power their way forward.



A meteor strike could easily generate a Tsunami hundreds of feet high - in the worst case several kilometres high. Such a wave would wash many miles inland and utterly destroy everything it came across.

It isn't an inviting prospect - so how likely is this to happen?

At present we are aware of a hundred or so objects large enough to be of some concern, which venture relatively close to the Earth. There are at least ten times that many out there but they are very hard to detect. Add to this the amount of other objects which circle the Sun in the asteroid belt or in the Oort Cloud and we can see that there is plenty to be worried about. It would take the influence of only a single wayward comet or asteroid to disrupt these objects and send a number of them hurtling in towards the Sun - and ourselves. On average one of these super-sized objects hits our planet every 100 million years so by the time it next happens we would hope to have developed technology advanced enough to help us find a way of preventing an impact. If we assumed that the 100 million year estimate is accurate then we have

30 million years to wait for the next big strike – however in reality it could easily happen before you finish reading this page.

Smaller impacts which can cause damage are more frequent. Every few hundred years a meteor big enough to destroy a city will reach us. The last 100 years has seen a comet explode in the air above Tunguska in Siberia with the force of a nuclear bomb. There has also been a major meteor event over the South American rain forests. We can expect something smaller but still significant a couple of times a century.

Governments around the world are only now looking at the serious possibility of a major strike. The search for strike candidates is underway and growing, albeit with the knowledge that we will never be able to find every threat.

We now have credible theories on how to prevent an incoming lump of rock hitting the planet – assuming we spot it early enough. These range from simply blowing it up (and therefore facing millions of smaller threats instead of one huge one) to using explosions or rockets to nudge the asteroid off course. It could well be that in a few decades from now the current residents of Earth will be the first to have a fighting chance of avoiding this terrible fate, but if the big one comes tomorrow then it's game over.

And if you think that's all too dramatic then take note of the words of Lembit Opik. As an MP he was the major driving force behind the decision to take this type of threat seriously at governmental level and his comments, provided especially for this piece, are as follows:



Are you sitting down - because I have some scary news for you! The chances of Earth being hit by a space rock, something like an asteroid or comet, large enough to wipe out the human race are about One Hundred Percent. Yes, it's DEFINITELY going to happen. We just don't know when. We know that they do crash into Earth because there's a lot of evidence that it's happened before. A 10 kilometre wide object probably wiped out the dinosaurs long ago. And, less than 100 years ago, a comet exploded in the atmosphere above Siberia and incinerated an area the size of London.

The good news is that it's a problem with a solution. We could track and whack these objects so they don't hit us. Don't worry too much because we're probably alright for the moment. But do read more about it, because, as well as being important, it's also a very interesting subject, and a great introduction to astronomy.

Thank you Lembit. Sweet dreams everybody.

R.R. (Rudimentus Redux)

QUESTION TIME...

If you correctly insert answers to these questions in the spaces below, the boxes reading downwards will reveal something you need for a rocket to take off.

- | | | | |
|---|--|---|-----------------------|
| 1 | Temperature measurement unit | 2 | First man in space |
| 3 | Type of telescope mount | 4 | Space entrepreneur |
| 5 | 3.26 light years | 6 | Type of variable star |
| 7 | A number only divisible by itself and 1 | | |
| 8 | Apparent shift in star position if viewed from a different point | | |
| 9 | Time taken for a planet to rotate once on its axis | | |

1. _ _ _ _ _
2. _ _ _ _ _ _ _ _ _
3. _ _ _ _ _ _ _
4. _ _ _ _ _ _ _
5. _ _ _ _ _ _
6. _ _ _ _ _ _
7. _ _ _ _
8. _ _ _ _ _ _
9. _ _

Answers next month

Last month's answers:

PERIHELION, CONJUNCTION, PROTON, ISAAC NEWTON, CIRCUMPOLAR, HARRY HARRISON, DENSITY, REDSHIFT, EARTHSHINE.

Hidden answer: ECOSPHERE

CHAIRMAN'S QUARTERS



It looks like we are getting our very bent bananas back – and all the apples, pears, potatoes and other produce that became illegal when we entered the, then EEC, plus the ability to remove VAT from items which should never have had it in the first place. We might even start getting back all the wonderful Indian clothing and silks that got tariffed out of existence for us, and heaven knows how many other things most of us have probably forgotten about. It also means less grants for this that and the other and probably less European cars on the road. Regardless of what side of the fence one stands on the, now, EU (ex EEC and EC) will have to accept the change that is happening, as must we.

People don't like too much change but change is inevitable. Yet some forms are more 'palatable' and some are not. Some are fast, some are slow and some even make us wonder why! We are comfortable with 'predictable' change – for example day and night, seasons and phases of the Moon. 'Unpredictable' change tends to worry us - often for good reason, as in the cases of events which cause major destruction. Earthquakes are a classic example. The ground shakes violently and buildings fall – well, actually the modern heavy ones; older straw or clay huts couldn't do that much damage to the occupants who could easily rush out and watch the ground doing the boogaloo. Volcanoes are much nastier, as is evidenced by the town of Pompeii where the occupants were overwhelmed by the sheer speed of it all. We can even go back to Santorini where the sheer violence of the exploding island demolished half of it and the resulting tidal wave all but wiped out the Minoan civilization in Crete.

As far as 'out of the blue' goes, the Chicxulub asteroid / comet strike (assuming the interpretation of the data is correct) altered the direction of animal evolution on a global scale. Even further back, there is strong evidence that some major event happened that tore the Moon out of the Earth. All these, and many more, have been 'chance' and 'unpredictable' events, but they all shaped and determined what our planet is, and what we are today. And that is just the earthbound events. If we go right back to the Big Bang, that event must rate as the ultimate 'catastrophe'! Of course, it depends on what one calls a "catastrophe". Funny old word really – from its Greek origin, it means 'a turn back onto itself'. Anyway, whatever substrate there was, before our beginning, the Big Bang was certainly a whopper. Or, even, maybe not, as we have no idea of what that substrate may have been – for all we know it could have been just a hiccup. That said, to us the Big Bang was certainly monumental. From it arose time, space and lots of hydrogen. All this hydrogen started collecting into clumps which started condensing. The general theory is that it formed myriads of stars which collected together into galaxies. It is also feasible that that the gas collected into galactic scale lumps which condensed so quickly that they formed black holes but then blew back out with the remaining gas condensing into stars within that space and forming the galaxies we see today.

These early stars would have formed with diverse sizes, some of the more massive ones exploding and filling the galactic space with debris consisting of a multitude of elements. This debris would collect into clouds, themselves giving rise to yet more star formation and more cataclysmic explosions to form even more debris. It is very likely that the earliest stars were different from the stars we have today as they would have only had very light elements. The heavier elements contained in later stars would affect the way their energy is produced and result in more 'tame stars'. Without this multi-elemental dust, rocky planetary systems, a bit like ours, would probably not have formed. It is as a result of all these catastrophic events that the possibility of the large number of solar systems, that we have now found, to form has arisen. In fact, without all this stellar carnage we probably would not have been around to appreciate the magnificence of it all. Change is inevitable and, despite the apparent 'severity' of it, good things seem to emerge.

See you in May

JIM

THE NIGHT SKY : THE PLANETS : April - May 2017

MERCURY : In the evening skies, visible for the first week or so of April, but disappeared by 10th. At inferior conjunction on April 20th, appearing in the predawn skies by the end of the month.

VENUS : Having spent so long as an evening object, now in the morning skies, in the constellation of Pisces, magnitude -4.2. Rises about an hour before the Sun, and reaching maximum magnitude – 4.7 by the end of April, but still low down and difficult for viewing in the Northern Hemisphere. Could be bright enough to be viewed in daylight, with suitable filters and if you know where to look

MARS : Still in the evening skies, but rapidly receding from Earth. The brightness falls slightly from magnitude +1.3 to +1.6 by the end of April. Moves from Aries to Taurus on April 12th. Very close to Pleiades on April 21st, and passes between Pleiades and Hyades clusters on 25th. Passes close to Aldebaran May 5th

JUPITER : Still rising early in the morning skies, at magnitude -2.3 in Virgo. Due south and highest in the sky at an elevation of 35 degrees, around 02.00hrs. The planet was at opposition on April 7th and the closest approach to Earth was on April 8th with an apparent size of 44.25 arc-seconds. Close to Spica, brightest star in Virgo. Moon was to the north on April 10th, within 1.5 degrees. Close conjunction again on May 7th.

SATURN : Rises around midnight (UTC) and best seen in the morning skies. Magnitude increases slight from +0.4 to +0.3, and the ring system spanning some 38 arc-seconds. The ring system is open out to some 27 degrees - which is about as open as they get as viewed from Earth, and this should get better as the year progresses. (Although there's better viewing in the Southern Hemisphere!) A last-quarter Moon will be close April 17th and May 14th. Moves from Sagittarius into Ophiuchus on May 18th.

URANUS : In conjunction with the Sun on April 14th, so not visible this month. Becomes a morning object in May, close to Venus, so the far brighter planet could act as a pointer. Uranus is still at magnitude +5.9, so *just* on the theoretical edge of naked-eye visibility...

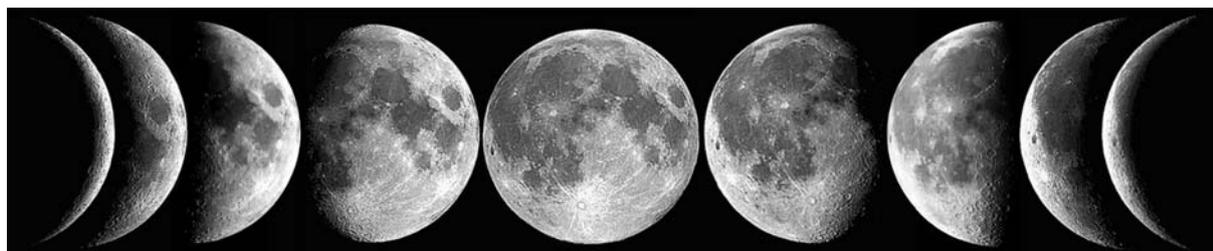
NEPTUNE : On the far side of the Sun having reached conjunction on March 2nd. Visible again in the morning skies in Aquarius at magnitude +7.9. Moon occults Neptune on May 20th, but only visible from the Southern Hemisphere.

METEORS

Lyrids peak on April 22nd. This is only four days before a New Moon, so the skies should be dark.

Eta Aquariids peak May 6th, though this shower is during an 80% lit Moon.

THE MOON



New 28th March
New 26th

First 3rd April
First 3rd May

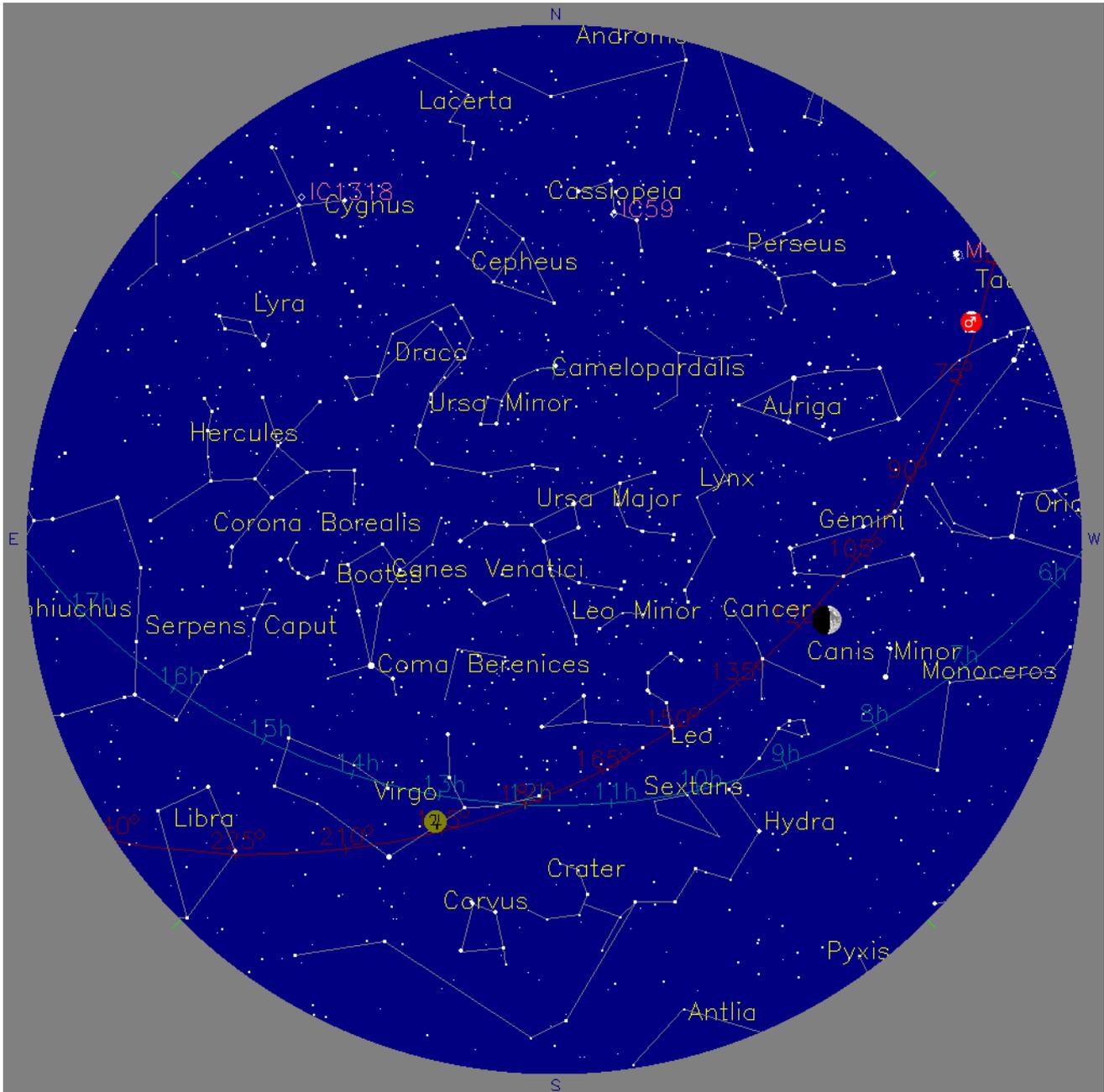
Full 11th
Full 10th

Last 19th
Last 19th

New 26th
New 25th

THE NIGHT SKY : MAP

1st May 2017, 21.00hrs UTC-GMT / 22.00hrs BST



KEY	
 MERCURY	 SATURN
 VENUS	 URANUS
 MARS	 NEPTUNE
 JUPITER	 PLUTO



Astronomical Society of Haringey

Patron: *Sir Arthur C. Clarke, C.B.E., B.Sc., F.R.A.S., F.B.I.S.*

President : *Frederick W. Clarke, F.Ph.S.(Eng), F.B.I.S.*

Vice President : *Walter T. Baker*

ASH COMMITTEE MEMBERS : 2014 – 2015

CHAIRMAN : Jim Webb : email chairman@ashastro.co.uk [www.glservices.org]

SECRETARY: Charles Towler : email secretary@ashastro.co.uk

TREASURER : Kyriakos Voskou : email treasurer@ashastro.co.uk

MEMBERSHIP SECRETARY: Alister Innes : email memsec@ashastro.co.uk

EDITOR, P.R.O. and VICE-CHAIRMAN (and current WEBMASTER) : Mat Irvine
: email editor@ashastro.co.uk [www.smallspace.demon.co.uk]

GENERAL MEMBER : Mitchell Sandler

GENERAL MEMBER : Nicholas Lucas

GENERAL MEMBER AT LARGE : Gary Marriott

GENERAL INFORMATION : info@ashastro.co.uk

OBSERVING INFORMATION : observing@ashastro.co.uk



Astronomical Society of Haringey