

2002



NEXT MEETING
THURSDAY, 15th September 2016
THE ASTRONOMICAL SOCIETY OF HARINGEY
VOLUME 44 : ISSUE 9/10 : July/August 2016
www.ashastro.co.uk

SOCIETY NEWS

MEETING VENUE

Music 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



Find us on
Facebook

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. And, if not already on the list, your email address - emailed to observing@ashastro.co.uk - reaches all three. The Facebook page will also be used.

2016

September 15th : Jim Webb : Observing Evening at the Observing Site
The talk by Jerry Stone has been moved to the November meeting

October 6th : **NOTE CHANGE OF DATE to coincide with SPACE WEEK**
: Michael Franks: Asteroid Mining : Gold Rush or Going Bust?
: this meeting will start with the AGM

November 7th : Jerry Stone : "Nell, Esther and Aunt Effie"
- the explanation as to the title nearer the time!! (*Moved from September*)
December : no meeting this month

REPEAT OF THE MESSAGE FROM THE TREASURER

Dear members, it is subscription renewal time for many of you and emails have been sent out to remind you, so please renew at the next meeting or by payment direct to the Society bank account.

Many thanks, Kyri Voskou – Treasurer ASH

COVER

Following on from Michael Frank's talk in July, A SpaceX Falcon 9 lands back on Earth, showing the main rocket stages can be recovered for reuse.

Photo: SpaceX

SOCIETY NEWS



Find us on
Facebook

For up-to-date information, we are using that 'necessary evil' - Facebook. Note as this is an Open Group you do not have to be a member of Facebook to read posts and messages, you just need some form of Internet access.

Go to : www.facebook.com/groups/ASHastro/

However if you want to 'interact' (ie post messages), you have firstly to join Facebook, then, on the ASH Facebook page, ask to join our Group, and you will get 'signed up'.
The more the merrier!

MEETING ROOM



We currently meet on the first floor of the Main Music Block at the School.

This is the two-storey building, (left) with the entrance marked with the 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 on left was our original meeting room, the original Music Studio. This is now demolished, and the site has been redeveloped with a new structure.

MEETING PREVIEW

15th September 2016 : Jim Webb : "Observing Evening"

With evenings getting darker, but still (relatively) mild, this is an ideal time for observing. Unfortunately the Moon is near full, but this itself gives viewing opportunities, and planets such as Mars and Saturn should still be visible, along with bright stars such as Antares. The location details and maps are on the website, but if you do not have Internet access, contact one of the Committee – details on the back page.

MEETING REVIEW

June 16th : Michael Franks : "SpaceX and the Way to Mars"



Michael gave us one of his meticulously researched talks for the July meeting, this time on that enigmatic character Elon Musk. Born in South Africa, Musk moved to Canada in 1988, and later to the States, becoming an American citizen. Having gained degrees in economics and physics, with his brother he co-founded his first





company Zip-2 with \$22,000 finance from their father. This was later sold for \$307M, earning Elon himself \$22M! He later co-founded X-Com, joined forces with another company that had started PayPal, which when sold to eBay for £1.5 Billion, Musk himself garnered a cool \$165M.

He had joined the Mars Society in 2001 and decided getting into space was his next step. For this he needed rocket launchers, and having failed to buy a Russian Dnepr rocket, decided to build his own, forming the company SpaceX.

The first rocket was developed over 2002 to 2006 and the fourth launch successfully orbited a Malaysian satellite. Then enter NASA, looking for contractors to take over supplies to the ISS, the space Shuttle having been decommissioned. SpaceX was commissioned to develop the Falcon launchers and Dragon spacecraft. The first Dragon spacecraft was launched 8th December 2010, and the second launch, 22 May 2012, travelled to the ISS. Tests have shown that it is possible to recover the Falcon rocket, with four successful landings out of five tests, which is a



pretty good average in early space development. Future plans include larger Falcon rockets, one with 27 engines; the manned version of the Dragon spacecraft, currently planned for June 2017. Then there's Red Dragon using a Heavy Falcon launcher but using new Raptor engines powered by LOX (liquid oxygen) and methane and aimed at Mars. The Mars Colonial Transporter would be taller than a Saturn V, and the current schedule has a first launch in 2022 and a manned flight in 2024. Colonies on Mars would then be serviced by a cargo service every 26 months.

Elon Musk obviously has grandiose plans.

Images – Top: Musk with a Falcon 9 rocket
Centre: Artist impression of a Heavy Falcon, with 27 engines
Bottom: Artist impression of a SpaceX craft landing on Mars

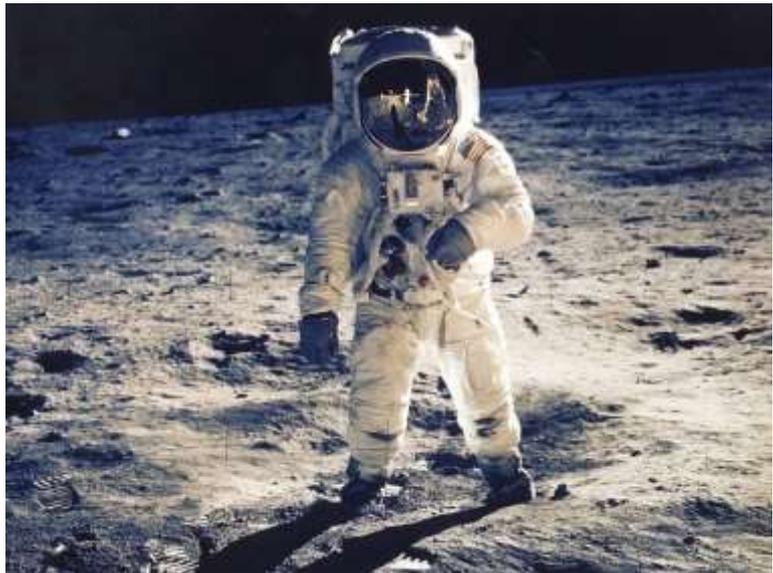


SPACE NEWS - compiled by Kyri Voskou

It really is heart-breaking to be an astronaut

Researchers from Florida State University have found evidence that distant space travel is particularly bad for the heart.

The Apollo astronauts who either orbited or landed on the Moon are the only people who have ever travelled into 'deep space' – a term in this case referring to the area of space beyond the immediate orbit of Earth. Analysis has found that these astronauts are over four times more likely to die of cardiovascular disease than their colleagues.



Studies were made of seven of the eight Apollo deaths that have so far occurred, three of which were cardiovascular related. At a level of 43% this is far higher than the 10% rate suffered by Astronauts who never went beyond low Earth orbit.

This information has been a long time in surfacing because previous comparisons were made between the Apollo crews and the public, but as the astronauts were so fit there was no obvious link made to cardiovascular disease. When the Apollo crews were compared to other astronauts however, the results became very clear.

Although we already know that space travel has adverse effects on the human body such a dramatic increase in heart issues was not expected because the astronauts spent only a few days beyond low Earth orbit. It is now clearer than ever that the protection provided by Earth's atmosphere and magnetosphere are even more valuable than previously thought and puts into question the possibility of effectively shielding astronauts on long term missions to Mars and beyond.

\$20 million dollar space-prize set to be claimed

Google's Lunar X-Prize – a \$20 million reward for the first private organisation to reach the Moon, may soon be claimed.

Project Moon Express has been given permission by the US Federal Aviation Administration to carry out an unmanned lunar landing. Moon Express is the



first private company approved by the FAA to carry out such an endeavour and co-founder Naveen Jain is delighted. *"We envision bringing precious resources, metals, and Moon rocks back to Earth,"* he said, albeit that might take a while to achieve. In the first instance a lander the size of a suitcase will be sent to the Lunar surface and will beam images back to Earth. Unless another organisation makes a big push to claim the prize, Moon Express will

remain in the box seat and claim that it will be able to produce a profit thanks to sponsorships, advertising and payload fees.

Moon Express will use Los Angeles company, Rocket Lab, to carry out the launch and have promised that any landings will be well away from any Apollo landing sites.

Quarter-finished radio telescope produces fantastic data

South Africa's newest radio telescope is already producing amazing results despite being only a quarter finished.



MeerKAT will be the world's most powerful radio telescope when completed thanks to its array of 64 dishes but initial trials using just 16 dishes have been spectacular.

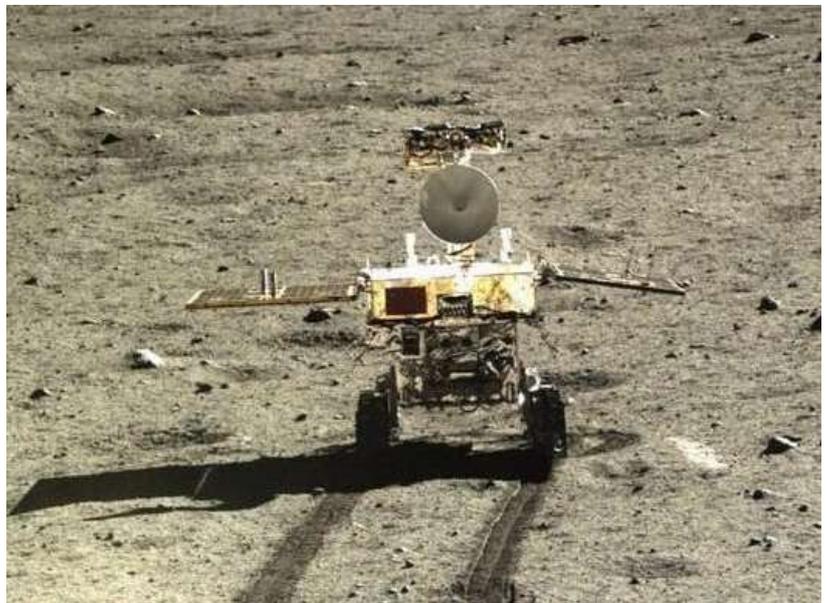
Its first image, focussing on a small area of the sky previously known to contain 70 galaxies, revealed a further 1,300 unknown galaxies. Other images include star-forming regions of distant galaxies and a black hole ejecting electrons out into space.

South Africa's science minister Naledi Pandor told reporters that the quality of images was so good it looked as if they'd been captured by 32 dishes rather than 16 and when full capacity is reached the array will have a discovery potential 10,000 times better than any instruments currently in use. MeerKAT will be used in a wide range of projects including the exploration of black holes, locating dark energy and analysing the earliest moments of the universe.

Jade Rabbit dies again – this time for real

China's Jade Rabbit has said a final farewell after a mission lasting over two and a half years.

Originally planned to last just three months, the lander was part of the Chang'e-3 project which made China only the third country to reach the Moon after Soviet Union/Russia and the USA, and has had the longest successful period of operation for any lunar rover.



Jade Rabbit has already died once – uttering the immortal words *“Goodnight Earth. Goodnight humanity”* after early teething troubles looked to have prematurely ended the lander's mission. Jade Rabbit recovered however and the knowledge picked up during the project will help the Chinese achieve their goal of landing another unmanned craft on the Moon – one capable of returning samples to Earth. Although the craft ended up immobile it was still able to send back valuable data and accumulated a huge fan base of over half a million followers on social media.

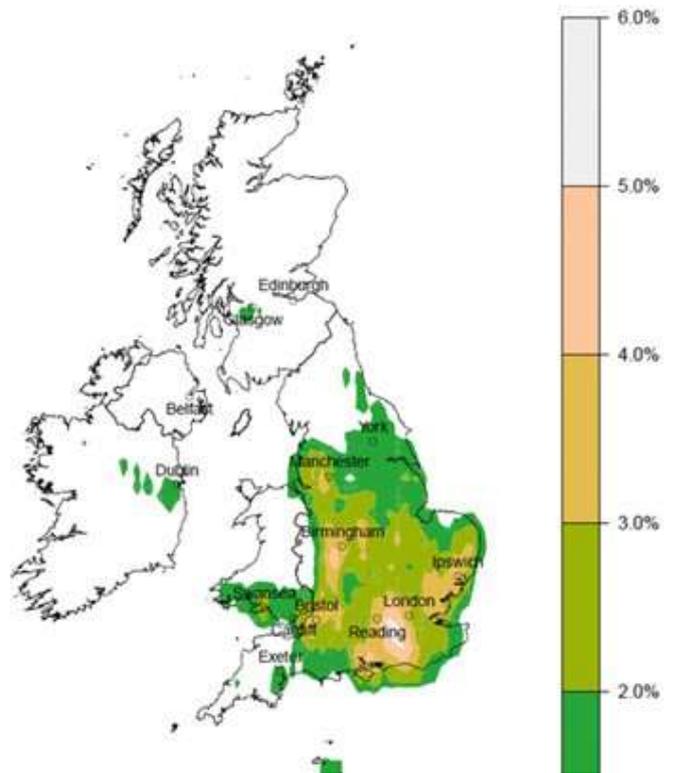
Jade Rabbit regularly provided updates and cartoons to its fans but at the end of July finally announced *“The Moon has prepared a long dream for me. There are still many questions I would like answers to, but I'm the rabbit that has seen the most stars. This time it really is goodnight”*

UK has its own Tornado Alley

The University of Manchester has discovered that the USA isn't the only place with a tornado hotspot – the UK also has its very own "Tornado Alley" – and surprisingly enough it's actually quite close to London.

Researchers found that between 1980 and 2012 there were an average of 34 tornadoes in the UK each year. The most likely location was between London and Reading with an annual rate of 6% - proportionally one of the highest tornado rates in the world.

Most instances were low category ones however, classified as low wind-speed F0 or F1 type tornadoes. Only 5% of tornadoes reached category F2, where wind-speeds can reach over 150mph. Category F5 tornadoes produce wind-speeds of over 300mph but such an event has never been recorded in the UK, unlike the (relatively) frequent occurrence of such tornadoes in the more famous American Tornado Alley.



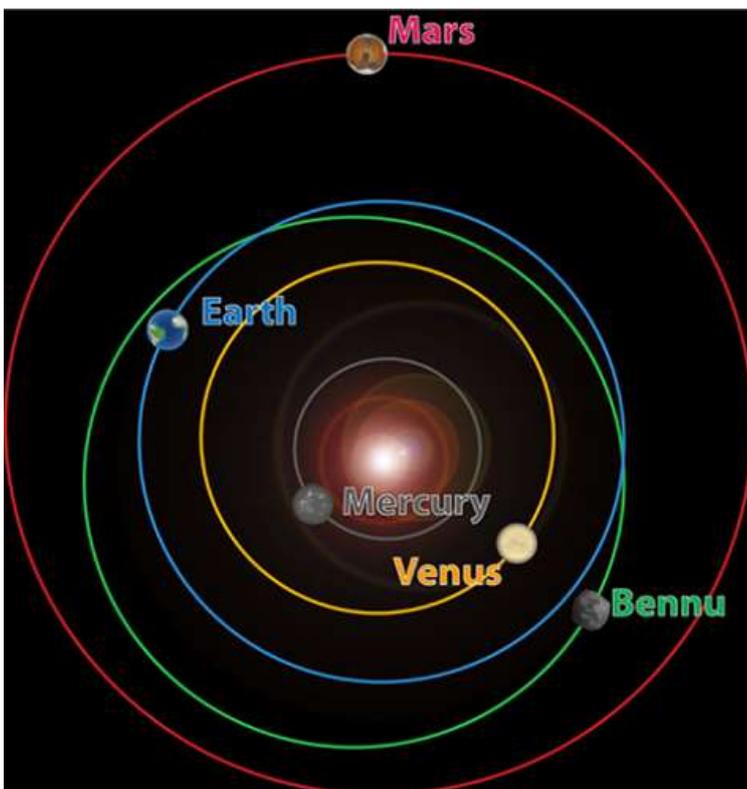
NASA studying Earth-bound asteroid

An Earth-crossing asteroid has been earmarked by NASA as a possible hazard. Initial analysis of asteroid Bennu's orbit suggests a 1-in-2700 chance of an impact with Earth in the year 2185.

Although the chance of an incident appears remote there are thousands of such bodies in the Solar System and some of them do end up striking our planet. Unfortunately until the path of Bennu can be more accurately calculated we won't know whether or not it is destined to collide with Earth.

On the positive side, the chunk of rock is relatively small at about 500 metres across.

To be considered a major threat a body of this type needs to be double that size.



In comparison, the asteroid that wiped out the dinosaurs was around twenty times the width of Bennu.

Astronomers will learn a lot more about the asteroid soon thanks to the OSIRIS-RE mission which will take off in September, sending a lander to the asteroid. After a two year journey the craft will spend a further two years studying Bennu before returning surface samples to Earth in the mid-2020s.

Not only will the mission help astronomers to accurately predict the asteroid's path – they also hope to shed light on the question of whether asteroids were the source of organic matter to Earth.

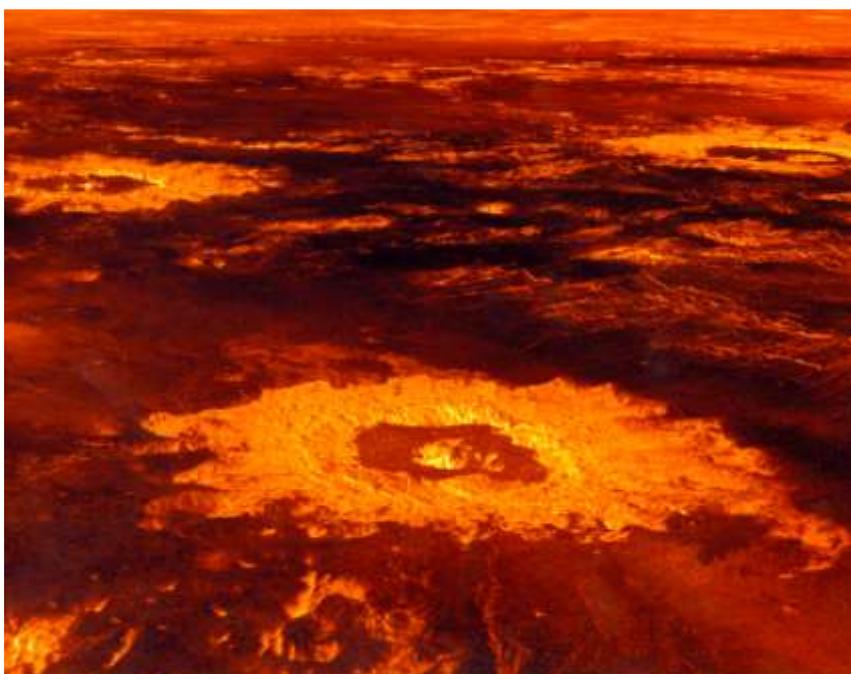
Venus may once have been a far nicer place

NASA is trying to discover whether Venus may once have been suitable for hosting life.

Earth's nearest neighbour is currently one of the solar system's most inhospitable places with surface temperatures of 465 Celsius and an atmospheric pressure over ninety times that on Earth.

Having carried out a period of climate-modelling, researchers believe Venus may well have been a far more welcoming place around 700 million years ago. With surface temperatures of about 11 degrees Celsius and oceans of water up to 1,700 feet deep it would have been a perfectly suitable place for life to develop, and may have been so for some two billion years before geological activity prompted the conditions on the planet – which include a runaway greenhouse effect, to change drastically.

Any possibility that Venus had a milder history will be boosted if astronomers can uncover more details about the planets geological past or find evidence of water erosion or of a previous rotational period closer to that of Earth. The problem is that surface landers that would establish those details are unable to last very long on the surface of the planet and remote sensing equipment isn't as capable of uncovering the type of information needed.



THE NIGHT SKY : THE PLANETS

August - September 2016

MERCURY : Could just be visible given a clear horizon for the encounter with Jupiter and Venus on 27th August (see below). After that not really visible until end of September, as it reaches inferior conjunction 13th September when it moves into the morning skies. However the best morning showing this year is on 28th September and the crescent Moon is close on 29th

VENUS : At a low altitude in the evening skies and not well placed for viewing. There is a close encounter with Jupiter and Mercury on 27th August, but very low down and a clear horizon will be required. A thin crescent Moon very close on 3rd September

MARS : In the western skies, nearby to Saturn and the star Antares. On 23rd August the three objects will be in a line and on 1st September they will form an isosceles triangle. Moon close on 9th September

JUPITER : Very low down in the western skies after sunset, in conjunction with the Sun 26th August and will have disappeared completely by September, and not visible at all during that month. Last opportunity will likely be the close encounter with Venus on 27th August, but they are both very close to the horizon

SATURN : Still visible all night for the rest of August, but increasing approaching the horizon. Moon to the north on 8th September

Image: show Saturn – brightest upper left - and Mars - brightest lower right - on 8th August 2016

URANUS : At its highest point in the skies at the end of August in Pisces. Moon close on 22nd August and 18th September

NEPTUNE : In Aquarius, reaches opposition on 2nd September. Moon close on 19th August; eclipsed by the Moon on 15th September

THE MOON

Penumbral eclipse on 16th September



New 2nd August
New 1st

First 10th
First 9th

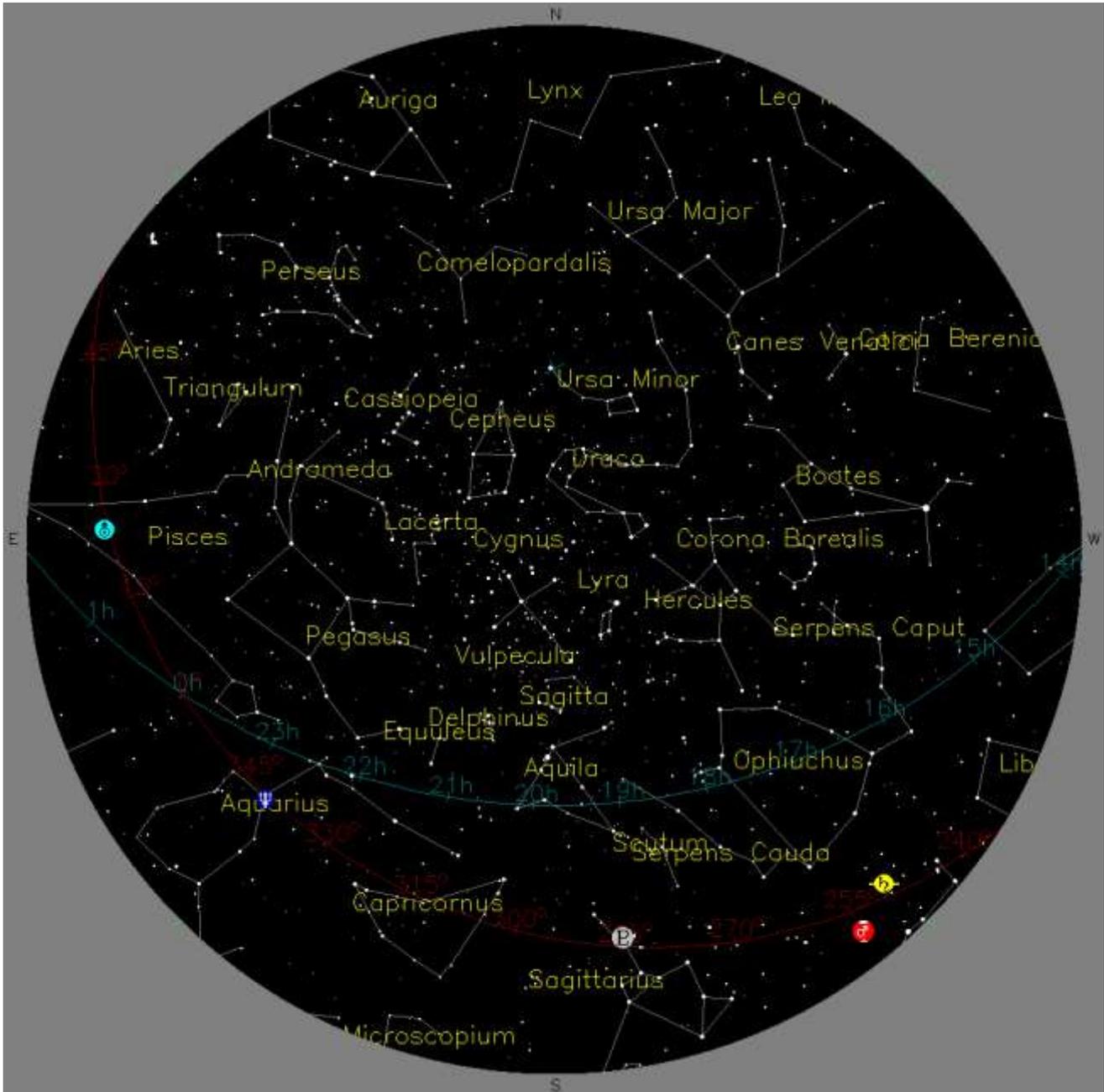
Full 18th
Full 16th

Last 25th
Last 23rd

New 1st September
New 1st October

THE NIGHT SKY : MAP

1st September 2016, 22.00hrs GMT / 21.00hrs UTC



| KEY | |
|--|--|
|  MERCURY |  SATURN |
|  VENUS |  URANUS |
|  MARS |  NEPTUNE |
|  JUPITER |  PLUTO |



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