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NEXT MEETING

THURSDAY, 17th September 2015

THE ASTRONOMICAL SOCIETY OF HARINGEY
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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: www.ashastro.co.uk. Latest update: September 2015.

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 now also be used.

2015

September 17th : Jerry Stone : "The Race into Space"

October 8th : Michael Franks "Who Owns the Moon?", including AGM
: **Note this date is a week earlier than usual to coincide with Space Week**

November 19th : Observing Evening

December : No meeting this month

2016

Dates to be announced

COVER:

All of 'The Race Into Space' is here, in this set of tea cards from Brooke Bond issued in 1971. But where did the writers and artists get it right - and what are we still awaiting? This premier talk by our regular speaker Jerry Stone will explain all at the next meeting.

Photo: Mat

SOCIETY NEWS

For up-to-date information, we are now 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, next to our original room, the original Music Room. This is marked with the X in the photo on left, (and although it is demolished, and the site has been redeveloped with a new structure). We hope a first floor will be suitable for all, as there isn't a lift. If anyone feels they will have difficulty, please let the Chairman know.
Contact details on back page.

MEETING PREVIEW
17th September : Jerry Stone
"The Race into Space"

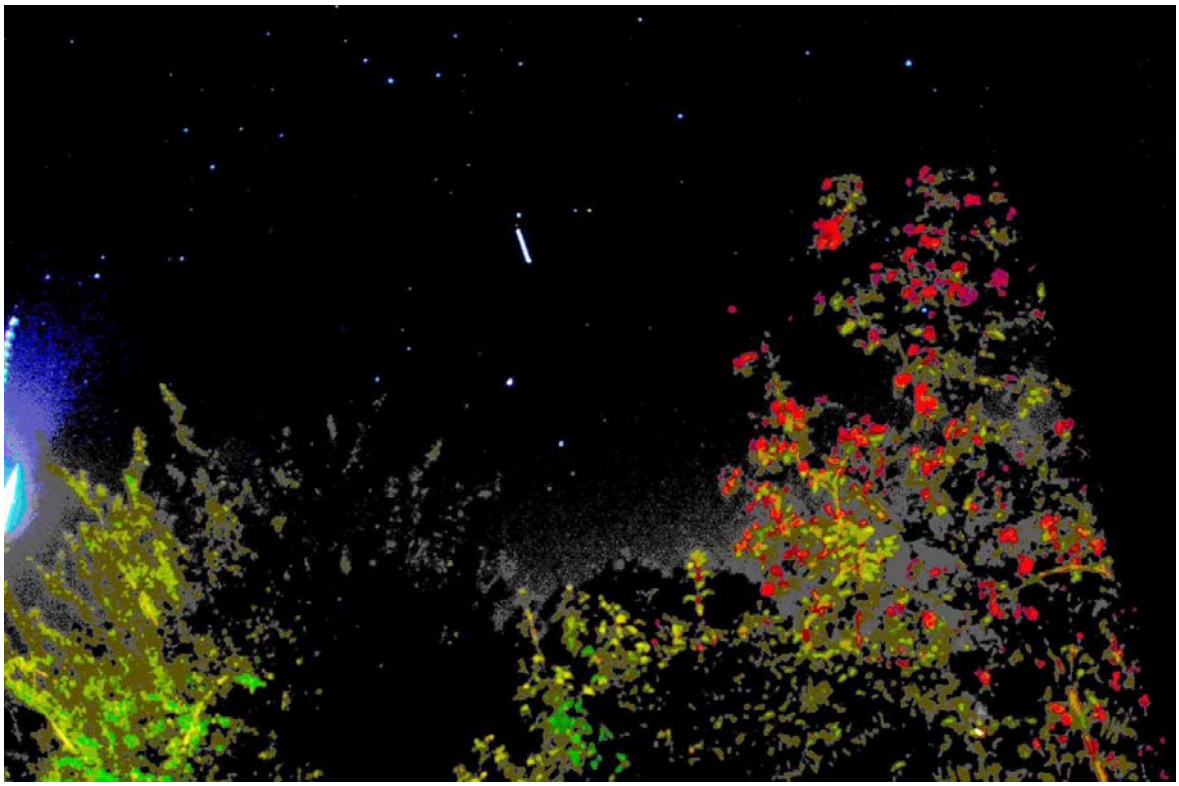
Back when many of us in the Society were a tad younger and mostly still at school, one of the pleasures of life was collecting tea cards. We are talking pre-Internet, social media, Twitter and tablets, so there was little else to do! The idea came out of the even earlier cigarette cards, where many sets were produced at the beginning of the 20th Century. And like an earlier version of the trading card sets kids still collect today, you collected what you could, then swapped the duplicates with school friends. (And there was always one you could never find!) Several tea companies made these sets, but the most comprehensive, and famous, range came from Brooke Bond. The subjects featured were wide and varied, though this set *The Race Into Space* is likely one of the best known.

The set was issued in 1971, so it was (almost) post-Apollo, but certainly pre-Shuttle and the majority of the more sophisticated planetary probes. Consequently the events listed in its 50 cards from the 1970s onwards are somewhat speculative. So that was the starting point for Jerry - taking the ideas in the cards - and seeing what has transpired, and what - so far - hasn't. This is the first time Jerry has done this talk, so you will be at a Premier Event!

SKY VIEWS

Chairman Jim photographed the 'Blue Moon' over Mount Olympus on July 30th

The International Space Station made some passes over the UK at the beginning of August. This was shot by your Editor on 8th, and processed to bring out the stars, and some over-exposed bushes. There will be more sighting possibilities starting 13th Sept.



CHAIRMAN'S QUARTERS

Now that we have got Pluto out of the way, what remains? The next target is being planned for New Horizons based on the amount of fuel on board and other earthbound practicalities - like budgets; NASA approvals; etc. One of the more interesting problems, however, is what to do with all the data when it arrives back on Earth over the next year or so? There is a huge amount of information on board Hew Horizons which, due to the distances involved, can only be transmitted relatively slowly to ensure data integrity. And once it has arrived, there is effectively only one data set from which a limited viewpoint has been observed. Admittedly, the adventure has been a spectacular success and the potential of further encounters is very exciting. But, revisiting the outer planets is currently not on the cards due to the distances and orbital positions. We have only been able to revisit as far out as Saturn and far in as Mercury, after a very long and tortuous journey.

What is really needed is a faster way to travel in space. Dan Dare and Star Trek impulse drives are 'standard' SF technologies, which get spacecraft relatively quickly around solar systems. Interestingly, these are technologies which are being seriously explored by NASA and other organisations. One such technology, the electromagnetic propulsion drive, generates thrust by using solar power to generate multiple microwaves that move back and forth in an enclosed chamber. This means that until something fails or wears out, theoretically the engine could keep running forever without the need for rocket fuel. Initial experiments on this technique - which has been patented - show very significant thrust by a mechanism which, currently, defies conventional scientific explanation, but has been measured and verified. What is more, because the power source is essentially electrical, it can be derived from solar energy which saves totally on fuel. Even though scientists still have no idea how it actually works, NASA suggested that it could have something to do with the technology manipulating subatomic particles which constantly pop in and out of existence in empty space - all very Star Trek! The current projections are that one could reach the Moon in four hours; Mars within 70 days and Pluto within 18 months! The implications of this mechanism are that we could contemplate robotic, and even manned return missions, to all the planets within reasonable timeframes.

With this drive Alpha Centauri could be reached in just 100 years, though this is still way too long for 'realistic' exploration. What is needed is something akin to the SF 'subspace' travel. Subspace is a convenient storytelling solution to the problem of exceeding the speed of light. Whether such a 'place' exists is debatable, but current theories suggest that a Star Trek-type warp drive could be feasible without the necessity of disrupting current scientific 'wisdom' on the structure of time and space. This would necessitate the production of a space warp both ahead and behind the spacecraft. In effect the craft would move in the space time medium at a super relativistic speed but not actually exceed the speed of light! This requires a very exotic mechanism and extremely large power source.

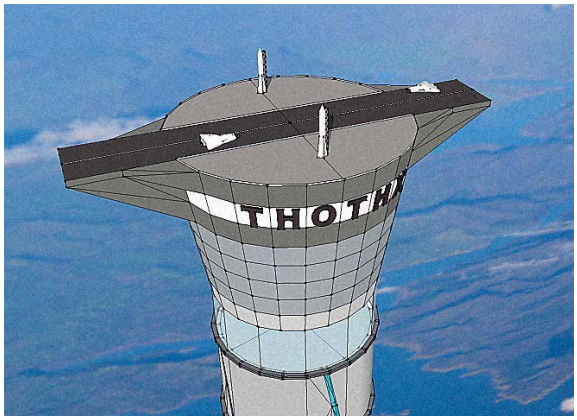
So, enter the Star Trek 'dilithium crystals'. OK, so these do not exist in reality, but the matter–antimatter reactor could be a feasibility. This concept has appeared in many SF books and movies. The basic principle is *total* annihilation of matter by bringing together matter and antimatter in a controlled manner. So far so good, but the real problem is getting hold of, or making, antimatter and storing it in a way that it does not come into contact with matter - until required! These exotic technologies are, probably, a long way away but the proven and soon to be practically tested electromagnetic propulsion drive may very well pave the way to an exciting new era of space exploration.

See you at the next meeting

JIM

NEWS - compiled by Kyri Voskou

The Space Elevator just got a step closer….



As an idea popularised in our late Patron's novel, *The Fountains of Paradise*, people have occasionally wondered why we don't build an elevator into space? If spaceflight is so dangerous and complicated then why not just build a tower so tall that it gets you closer to space, even if it isn't actually *into* space. It seems far-fetched – almost comical - but once upon a time the thought of flight was far fetched. Stick an elevator into the plan and the problem is solved!

Canadian company, Thoth, are thinking along the same lines. Having made their name manufacturing miniature gadgets for use in space they've now gone in completely the opposite direction and patented a design for a 12 mile / 19 km high elevator which would eliminate the most troublesome part of a space flight, which is getting a craft up and away from the Earth.

Although it's only a fifth of the way to the edge of the atmosphere, taking off from a runway 12 miles above sea level would make it possible for spacecraft to get into orbit without the need for multiple stage rockets and the vast amounts of fuel that make up most of their weight.

Payloads and passengers would reach the launch site using an electrical elevator.

Support services and tourist centres would be housed at various heights in the inflatable structure.

Most level headed people would think the idea is pie-in-the-sky, but compared to the Japanese Obayashi Space Elevator, planned to stretch some 60,000 miles (a quarter of the way to the Moon) by the year 2050, the Thoth plan is positively sedate.

Dark Side of the Moon

When Pink Floyd released their album "Dark Side of the Moon" over forty years ago, geeks aplenty appeared from nowhere, complaining that the term should be "Far Side of the Moon". Perhaps the musicians knew what they were talking about as this latest image from the NASA satellite DISCOVR suggests.

The Moon always keeps the same side facing the Earth so until satellites (and astronauts) orbited the far side during the early days of the Space Race we were never really sure what was there.

The image, taken from a million miles away, shows the Moon passing in front of the Earth and presenting its far side to the camera – and the surface really is dark! Of course that's no surprise to scientists who already knew that the Moon is grey in colour all the way around, but it will surprise anybody who looked up at night to see the Moon and thought it had a bright and shiny surface. In reality the surface is quite dull and only looks bright at night thanks to the amount of sunlight that reflects off its surface.

Having wowed the scientific world with this photo the DISCOVR satellite will now get on with its main job – collecting weather information.

Noctilucent clouds hail a change in the Earth's atmosphere

The incidence of noctilucent clouds has increased in recent years and the suggestion is that global warming is responsible. The increase in air temperature at lower elevations, thanks to heat being retained by greenhouse gasses and not being distributed in the way it was previously, has meant that temperatures at higher altitudes has dropped.

They can be spotted during the summer months and are formed at heights in excess of 50 miles / 80km, as opposed to normal rain clouds which are usually just a mile or two up. Even the highest wispy cirrus clouds are only around four miles above sea level. Noctilucent clouds are made of ice and thus shine with a vivid blue colour as the rays of the setting sun strike them. Their immense height means that they are still lit by the Sun when everything else is effectively in shadow, heightening their glow still further. Since the first recorded sighting of the phenomena in the late nineteenth century it's been difficult for scientists to learn a great deal about them but the NASA satellite, AIM (Aeronomy of Ice in the Mesosphere) is looking to change that.

Despite the fact that this rare phenomenon isn't quite as rare any more, this year has seen the biggest mid-season drop in the occurrence of noctilucent clouds since AIM was launched eight years ago. The drop happened during the second half of the southern hemisphere's cloud season. The northern season is now well underway and again there was a surprise in store when the first clouds were seen on 19th May – a week earlier than expected.

What this means is unknown but indicates that things are happening in the upper atmosphere – possibly even a warming process. Scientists will be watching the northern cloud season with interest to get some clues and hopefully the AIM project will shed some light on things too.

Second wind for Earth's helium supplies?

Helium is the second most common element in the Universe and yet there's very little of it on our planet. It's so light that it leaks off into space from the top of our atmosphere.

Our supplies of the gas, most commonly used to make balloons float, were only ever harvested as a by-product of natural gas extraction, and that's still the case. This helium, locked beneath the Earth's surface, was created during the decay of radioactive materials so once it's used up it will take billions of years for substantial amounts to be created again. That effectively means that our reserves of helium will run out and at the current rate of use that will be by the year 2050. If this doesn't concern you then it should. Helium isn't just needed to fill balloons and give people squeaky voices, it's an essential part of modern life. It is commonly used in many important scientific research processes as well as being a critical part of every MRI scanner.

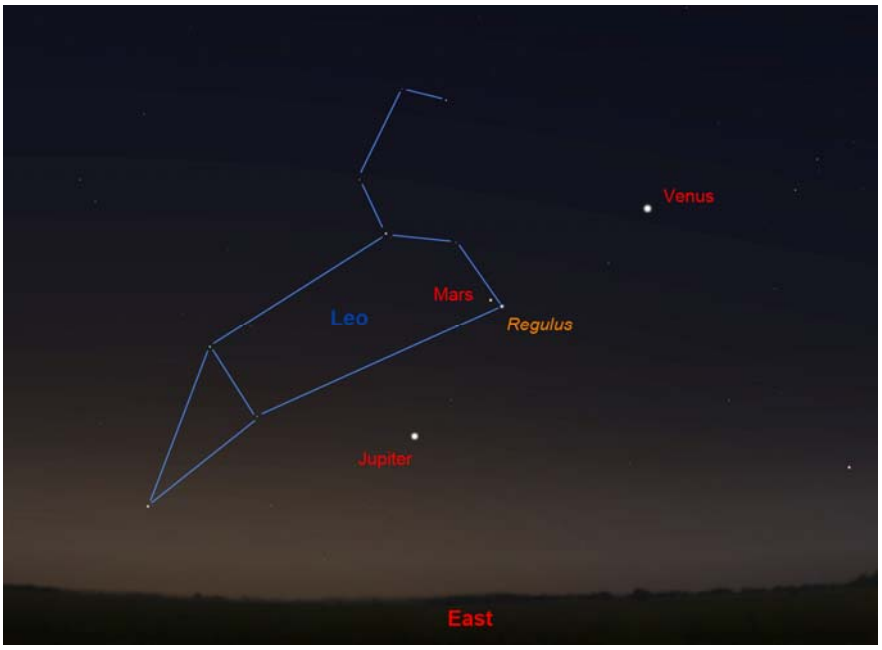
That's bad news in anybody's book, but the latest research may help paint a slightly rosier picture.
It now appears that helium is often found along with other chemicals which are only ever associated with groundwater. This means that at some time the helium we use was dissolved in groundwater. It's thought that major tectonic events in the past released helium, which then combined with groundwater before being removed and trapped by other geological structures or processes.

Such events are thought to have produced reserves of helium in the Rocky Mountains and the search is now on for other areas where helium might have been accumulating. Major tectonic events have happened throughout our planet's history so there's a good chance that there are many other geological traps where helium can be found. The next step is to study the direction that groundwater flows and hopefully find geological regions that might contain helium traps. It's very likely that commercially exploitable reserves of helium will be found this way, however even if further reserves are found, our supplies of helium remain finite and will one day run out.

THE NIGHT SKY : THE PLANETS :
September - October 2015

MERCURY : Was at greatest elongation west on 4th September. The Moon is close on 15th September and 11th October. The planet is stationary on 17th September and at inferior conjunction on 30th. The best morning apparition this year will be on 16th October.

VENUS : At greatest illumination - magnitude -4.6 - on 21st September. Moon to the south on 8th October. Reasonably close conjunction with Mars and Jupiter on the morning of 25th September - *see map*



EARTH : Autumn Equinox - 23rd September

MARS : Moon was to the south on 9th October. Mars is to the north of Jupiter on 17th October. By the bright star Regulus in Leo, and near Jupiter and Venus on 25th - *see map*. With Mars being reddish and Regulus bright bluish, this should make an interesting contrast.

JUPITER : In the morning skies, best view will be towards the end of September. With Mars and Venus on 25th September - *see map* Moon to the south on 10th October. To the south of Mars on 17th October.

SATURN : Reaches opposition at the end of the month, so the last chance to glimpse the planet, already close to the horizon at Sunset, for a few weeks. Moon close on 19th September and 16th October

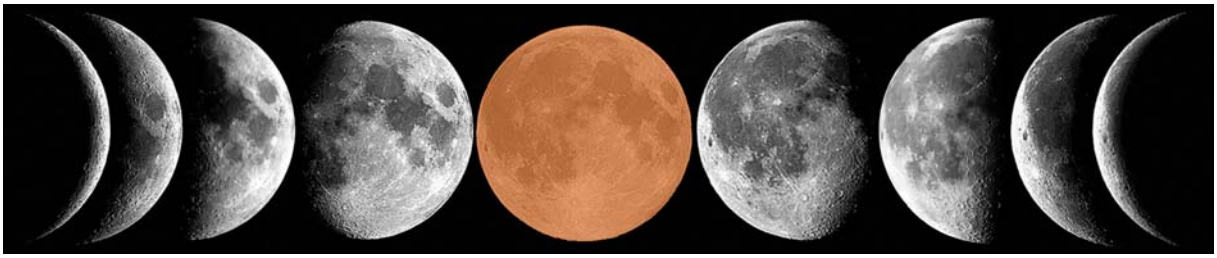
URANUS : At opposition on 12th October

NEPTUNE : Was at opposition on 1st September. Moon to the north on 26th September.

PLUTO : The space-probe New Horizons reached, and flew past, what was the 'outermost planet' on 14th July. If you have the right optical equipment, the planet can be located in Sagittarius.

THE MOON

There is a Total Lunar Eclipse on 28th September. It is an early morning event, starting around 01.15 BST and lasting until around 06.00. This is also the Harvest Moon, and it is at perigee (closest), so will appear even larger than usual!

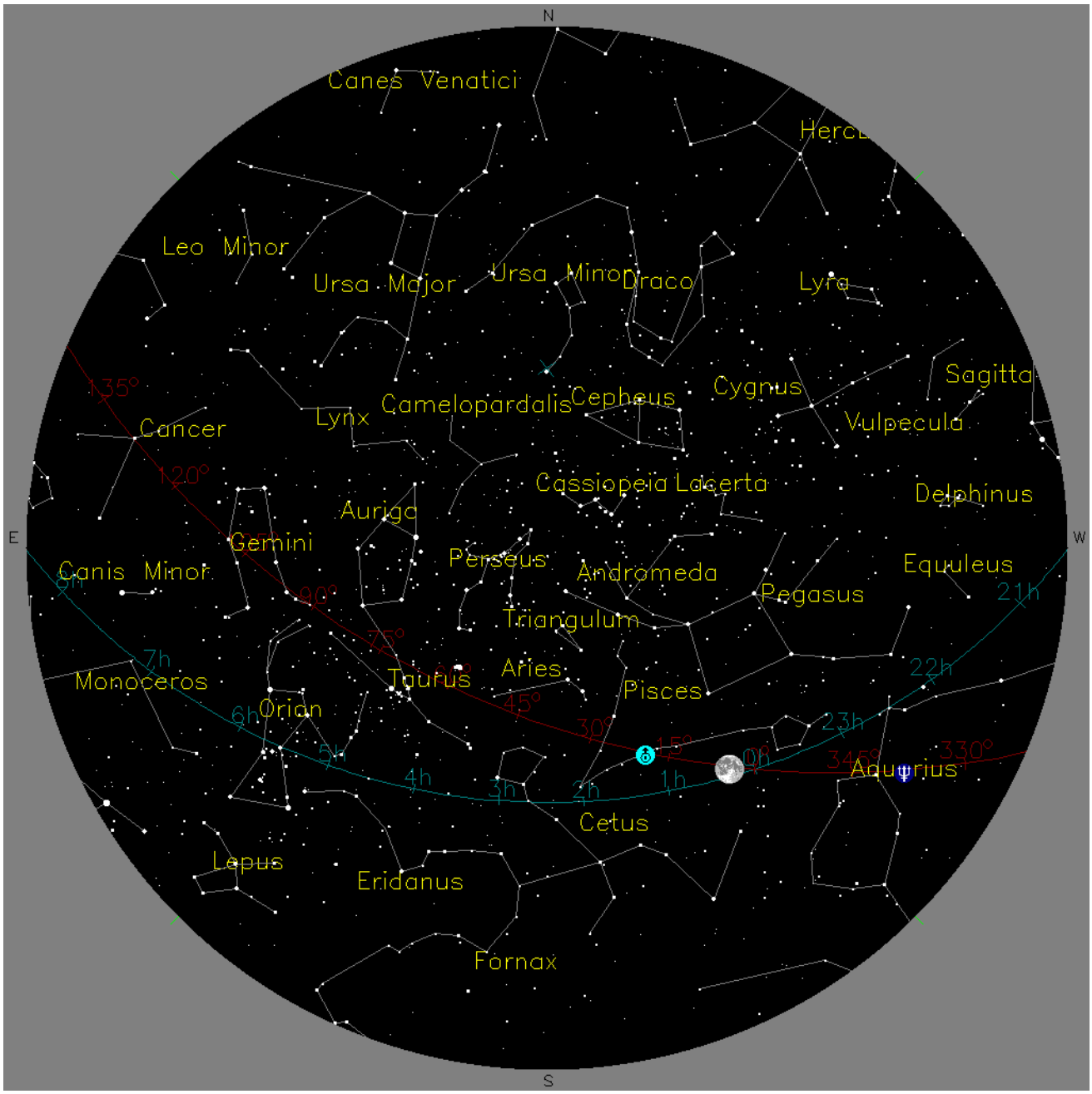


New 13th September First 21st Full 28th Last 4th October New 13th

THE NIGHT SKY : MAP

28th September 2015 : 01.00hrs GMT- UTC / 02.00hrs BST

Date of the Total Lunar Eclipse



KEY	
MERCURY	SATURN
VENUS	URANUS
MARS	NEPTUNE
JUPITER	PLUTO

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