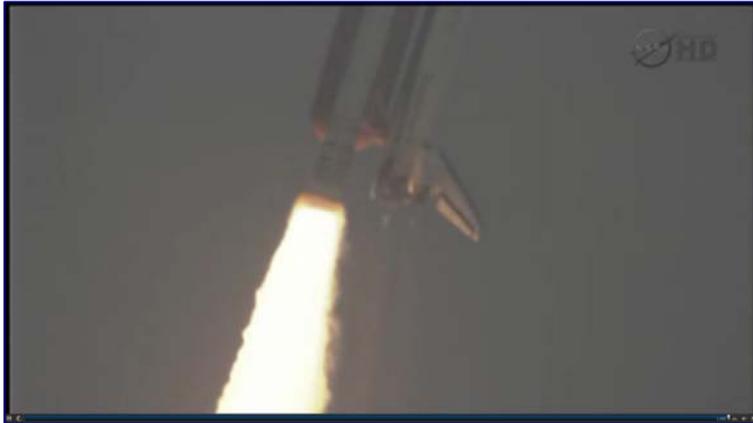


2002



NEXT MEETING
THURSDAY, 21st July 2011

THE ASTRONOMICAL SOCIETY OF HARINGEY
VOLUME 39 : ISSUE 9-10 : JULY- AUGUST 2011

SOCIETY NEWS

MEETING VENUE :
Ashmole School, Southgate, London N14 5RJ.

The day for all meetings is usually the third Thursday of each month. The exceptions are August, when currently we do not hold a meeting, and December, when the Christmas Meet has always traditionally been held during the second week. However, in case of changes – and there have been a few over the last year or so – it is always advisable to double-check the dates below.

Doors open - 7.30pm : Main speaker - 8.00pm. Finish - 10.00pm

2011

OK, the programme for this year has been a bit haphazard, and the remainder is still being worked on. By the time of the next magazine and meeting - for September - it is hoped the rest of year will be properly mapped out, and - heavens! - you may have many filled in for 2012! We still aim to have a number of our regular speakers throughout the rest of the year, and some new ones are being explored.

July 21st - Mat Irvine : “Picture This - Photographing the Skies”

August - Summer Break

September 15th

October 20th AGM

November 17th

December 8th Christmas Party and Guiz VII

COVER

The final Shuttle mission, STS-0135, lifted off on 8th July. The main image shows the Shuttle just leaving the pad, insert a close up of the engines firing. Here - a day before launch - Atlantis sitting on the pad on 7th July, with the processing facility rotated back.

Photos - NASA



SOCIETY NEWS

We meet in what is now the Music Room at Ashmole School. (This was the Curriculum Support Building - and still noted as such in the map.) This is the low building, (in the centre of the photo), just past the Performing Arts Centre and opposite the main entrance to the technology block.



MEETING PREVIEW : July 21st

Mat Irvine : "Picture This : Photographing the Skies"

Most months, including this - page 6 - I try and include various images I - and others for that matter - have taken of 'sky views' - the sort of stuff that anyone can go outside, gaze up at the skies and see. OK maybe slightly magnified with a long lens, but I don't often drag the telescope out to photograph through that.

So this month, given that everyone seems to have a camera (of sorts) these days, and using 'digits' instead of 'silver oxide', makes photography - well individual images - in effect free, I'm taking a look at the sort of pictures you could be expected to get of the night sky, using reasonable, but not that expensive equipment.



However, you don't necessarily need all of this - which is some of what I took for the Solar Eclipse in Turkey in 2006. (Not the drink though, that was already there...)

MEETING REVIEW : June 16th First Orbit

As a departure from the usual talk-orientated evening, we had a film – well actually a video. The movie was **First Orbit : The Flight of Yuri Gagarin**. Unfortunately, the laptop (running Vista) showing the video kept going into 'housekeeping mode' and introduced lots of glitches in the soundtrack but we did manage to see the whole movie.

Jim Webb

CHAIRMAN'S QUARTERS



I recently attended my every-two-years Laser Exhibition in Munich. No big innovations, in terms of astronomy – just improvements on existing technologies. In fact, it was quite bland in terms of major innovations, but I did get to chat to many friends, colleagues and customers and imbibe in the local lagers.

The industrial section had the usual set of big robots (not so many of them this time – there's a recession on, you know) and with the lack of innovations to distract me I started thinking tangentially about Isaac Asimov's *Three Laws of Robotics*:

1. *A Robot may not injure a human being or, through inaction, allow a human being to come to harm.*
2. *A Robot must obey any orders given to it by human beings, except where such orders would conflict with the First Law.*
3. *A Robot must protect its own existence as long as such protection does not conflict with the First or Second Law.*

A very obvious problem, here, is that we don't have a UN or a European Court of Inhuman Rights resolution to define or enforce these. The term *robot* was coined from the Czech word *robota*, literally meaning 'work' or 'labour' but also, traditionally, the work period a serf had to give for his lord for about half a year – therefore, a servant. Robots come in two varieties – dumb and smart. A washing machine would be a 'dumb' robot and therefore by its inability to do anything other than wash would be automatically exempt from the *Three Laws*. In fact most household labour saving devices come under this category. In the industrial world we have the 'smarter' robots which can be programmed to perform a task, but more importantly can be re-programmed many times. Though again, because they have a very specific programming, they are virtually exempt from the *Three Laws*.

The modern push in robotics is Artificial Intelligence (AI). This allows the robot to make some form of decision based its programming and access to information about the 'outside world'. There is an underlying belief that, with the proper planning and programming, we can insure that intelligent robots will never hurt us. Therein lies a potential problem. The 'dumb' ones, like cars, dishwashers, etc, can be controlled. Intelligent ones, like science fiction robots, or AI computers, cannot. Potentially the Three Laws become a myth, and a dangerous one. It appears they have already been discarded, anyway. The First Law? Many of our most advanced and reliable machines/software are in the military – laying down mortar fire, spying on targets, and guiding missiles. The Second Law? We don't want robots to obey just anyone, we want them to obey only the people who own them. Would you buy an automated security camera that would turn itself off whenever someone asked it to? The Third Law? Well, maybe but even then we have many which go into dangerous situations with no ability of self protection because they are considered 'expendable'. And that's just the practical critique of the Laws (no disrespect to Dr Asimov himself). Many authors (SF and others) have explored how you can't design or legislate safety from machine intelligence. The underlying reason appears to be that you can't predict what intelligence will do, or how it will evolve. If machine intelligence proves to be a new form of Armageddon, we would be wise enough to walk away from it. If it proves to be benevolent, I suspect we will find a way to live with its unpredictability. If it proves to be all-consuming, we may even find a way to become a part of it. But never bet against our own intelligence.

See you in September *JIM*

Chemical Fun!

Jim Webb

End of the line I'm afraid! Let's ease in with *Splendipherin*, a splendidly named protein that is a sex attracting pheromone used by the Australian 'Magnificent Tree Frog' (*Litoria Splendida*). It is exuded by male frogs to attract females and was the first pheromone ever to be found in frogs. So where does one go from there? Obviously, *Sexithiophene*! This consists of six (hence the 'sexi') thiophene rings. Interestingly, because of the way its double bonds are arranged, this organic molecule conducts electricity quite well and is being studied for possible uses in organic polymer electronics. The five ring version of this has the Latin prefix quinque (pronounced 'kinky'). You probably remember *Arsole* from an earlier article – if chemists could make a ring of six of these it would have to be called ...

There is also *Pubescine* which is extracted from the roots of the plant *Vinca pubescens*. I haven't found much about this and don't even know if it forms short, curly crystals. Of course, there has to be a *Vaginat*in which gets its name from the plant *Selinum vaginatum*. A closely related molecule is *Vaginol*, which also goes by the name *Archangelicin* (go figure!). And, yes, there is also *Kunzite*. This is a mineral gemstone (pink, would you believe), named after the gemologist G.F. Kunz (fortunately he was American – if he was German the pronunciation would have been ... well...) who first described it in 1902. It has an alternative name, *Spodumene*! We can't pass by *Clitoriacetal*, can we? This is named after the root of the plant *Clitoria macrophylla* and is a constituent of the Thai drug '*Non-tai-yak*' which is used to treat respiratory disorders and also works as an insecticide. There is a family of molecules called *Betweenanenes*. These are molecules which have a double bond shared between two *cycloalkanes* (carbon rings). If there are two double bonds linked together, the molecules are called *Screwenes*. This terminology isn't that popular, for obvious reasons! Not surprisingly there is *Spermine*. This molecule contributes to the distinctive smell of semen along with its chemical relative *Spermidine*. Intriguingly two other molecules also contribute to that smell - *Putrescine* and *Cadaverine* (yuck).

We have now reached *Fukugetin*. This chemical is also called *Morellofavone* (found in cherries, maybe?). *Fukugetin* is a constituent of the bark of the *Garcinia* species of tree. It was found in *Garcinia subelliptica*, which is known as *fukugi* in Japan. A derivative, called a *glucoside*, goes by the equally wonderful name of *Fukugiside*. Staying with the Japanese, *Fuki* is their word for the butterbur flower, and *Fukiic acid* is the hydrolysis product from this plant, *Petasites japonicus*. If we further oxidize this, we produce the wonderfully named *Fukinolic acid*. If one carries on, the conjugate base of fukinolic acid is a *fukinolate*. Yes we could carry on but it's probably about time we stopped!

Where does it all end – well you just throw your arms in the air and say "*Fucitol*". Well, this is actually an alcohol, whose other names are *L-fuc-ol* or *1-deoxy-D-galactitol*. It got its name from the fact that it is derived from the sugar fucose, found in a seaweed



What can possibly be used to illustrate this piece? How about a magnificent tree frog...?

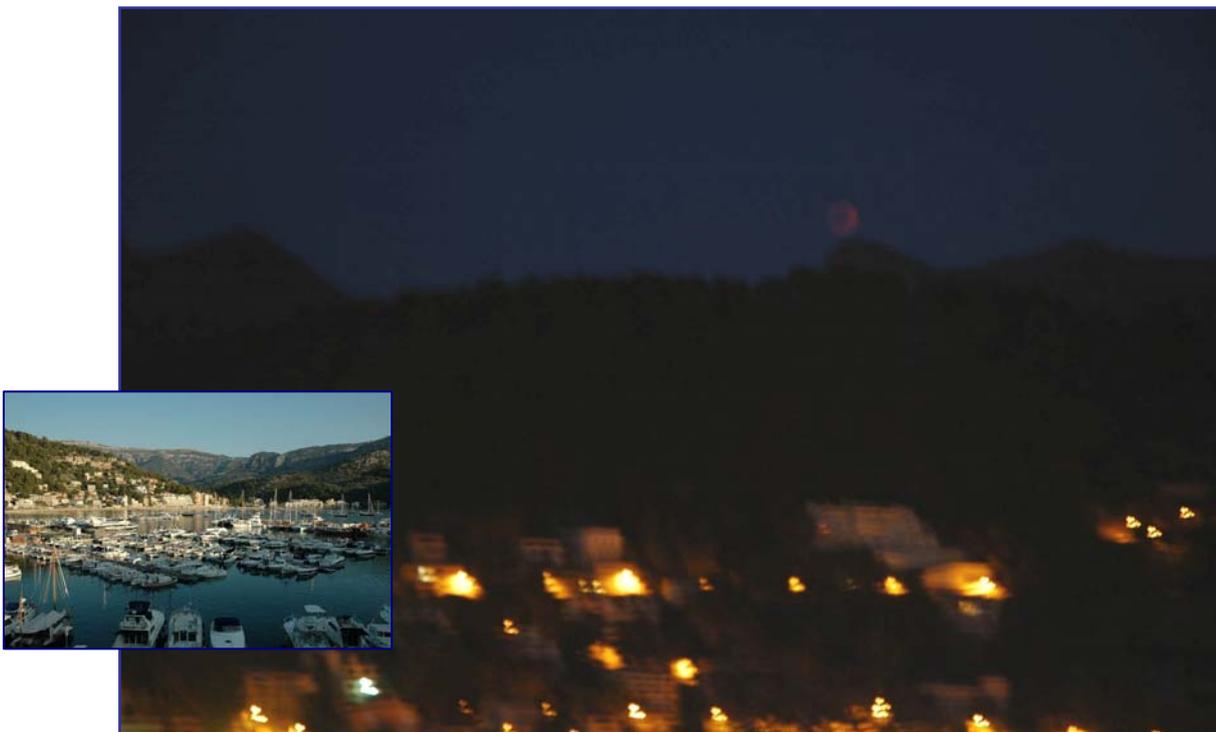
from the North Atlantic, called Bladderwrack, whose Latin name is *Fucus vesiculosus*. A Japanese biochemistry research team were working on a kinase enzyme which acts on fucose. In their thesis they missed the fact that *fucose kinase* should not be (conventionally) abbreviated as 'fuc-K'. Similarly, the E. coli K-12 Gene has other proteins that have been named *Fuc-U* and *Fuc-R*. Recently, the abbreviation for *fucose kinase* enzyme has been cleaned up (?) to *FUK*. However, there are now clones of this where the cloning position in the DNA sequence is labelled by its Open Reading Frame (ORF) number. And of course, these clones are called *FUK ORF* !

That's it – all done!

SKY VIEWS

Mat Irvine

Coinciding with the date of last meeting was a Lunar eclipse, although apparently viewing conditions were not ideal in the UK. But was not in the UK that day, having flown out in the morning to Mallorca, where the location gave a great span of totality and the skies were (hopefully) more guaranteed to be clear! Where I was staying was on the west coast of the island, in a place called Port de Soller and just up the road from the bay is a viewing platform by the Museum of the Sea. Here this gives a magnificent view over the setting Sun to the west, though not so good to the east, which is a range of, if not exactly mountains, certainly high and rugged hills. It was over this the already-eclipsed Moon would rise, but there was the slight problem of not being quite sure exactly where! The best calculation was of course noting where the Sun had set - and turning round 180°. At that time, which was coming up for 9 pm local, (ie two hours ahead of UT), the place was filling up with people who either knew what they were looking for; had heard of "an eclipse was happening", and might be expecting something along the lines of total Solar eclipse, so were to be sorely disappointed, or frankly were just there by chance. However at around 9.20 pm (local), I suddenly spotted a very dark patch just above the distant mountain ridge, which was indeed the very dark eclipsed Moon. The main trouble I had then was that, due to luggage restrictions, I hadn't got my camera tripod or any long lenses with me. However as 'digital' is, in effect, 'free', so worth experimenting, I propped the camera up on a litter bin and pressed the shutter. Actually this did produce the image below - not a very good image, but it does show you what the conditions were like!



The blur of the lights from the town below are an indication of the length of exposure - but the Moon is at least visible, and in many ways indicates just how dark it appeared! Incidentally this was taken on a Nikon D70S, with a 70mm lens, at aperture f4.5 and an exposure of 6 seconds! The insert image in day-time, is not from precisely the same view-point, but is approximate and shows the general position of the town, bay and hills.

Moving back to the flat a few hundred metres from this position, the Moon was becoming visible over the roof-tops. So again with a make-shift 'tripod', (actually the clothes bin from the bedroom), a series of images, as the Moon rose out of eclipse, could be got - although these are just a few of the 'better' ones - most were far worse! However it does show what can be done with minimal equipment 'in an emergency' - which is much of what the next meeting's talk will be about!



TIMINGS
Left - 21.45 local



Right - 22.05 local



Left - 21.15 local
Below - 21.27 local



Top to bottom, four images that start with the Moon still virtually eclipsed; then the terminator, at around '8 o'clock' beginning to move into light; then more so about half out of the eclipse, and last with a significant change of colour from blood red moving to the more usual grey. It also shows the significantly longer exposure for image 1, as it brings out the roof-tops opposite that are much fainter in the subsequent photos.

The Night Sky : July - August - September 2011

THE PLANETS

MERCURY : In theory visible low in the west after Sunset all July, but it is very low so a good horizon and clear skies will be necessary to spot the planet, which isn't the easiest even in the best of conditions. At greatest elongation, 19th July. The Moon will be to the north 1.5°, three Moon widths, on 1st August. The next best viewing opportunity for Mercury will have to wait until the planet's morning appearances in September.

VENUS : Bright in the morning skies in Sagittarius at around magnitude -3.5, but low down. Superior conjunction is on 16th August, but it will then be low down in the evening skies and in the twilight until later in the year.

MARS : Currently in the morning skies. The best viewing will not be until September, and even then the planet will only be five arc-seconds in apparent diameter. It will be last week of 2011 before Mars will present any significant viewing opportunities, but the best opportunities will have to wait until March 2012. Moon close on 27th July

JUPITER : Now rising before midnight, and getting better placed for observation as the months progress. At maximum altitude it will be at 52°, at magnitude -2.7, the highest for observers in the UK since 2003. Moon close 24th July and 20th August.

SATURN : The planet will spend most of the year in Virgo around magnitude 0.9, in the evening skies and, after conjunction, 13th October, will re-appear in the morning skies. The rings are well placed for viewing this year, even in a small telescope, and as we pass into August, the shadow of the planet, will move south, leaving a better view of the Cassini Division. Moon close by on 2nd/3rd and 31st August.

URANUS : Moon close on 21st July, 17th August, 13th September

NEPTUNE : In Aquarius, around magnitude 7.8. The Moon close on 18th July, 14th August and 10th September. As Neptune was discovered 165 years ago and takes about 164.8 Earth years to make an orbit. On 12th July 2011 the planet has made one orbit since its discovery. At opposition on 22nd August.

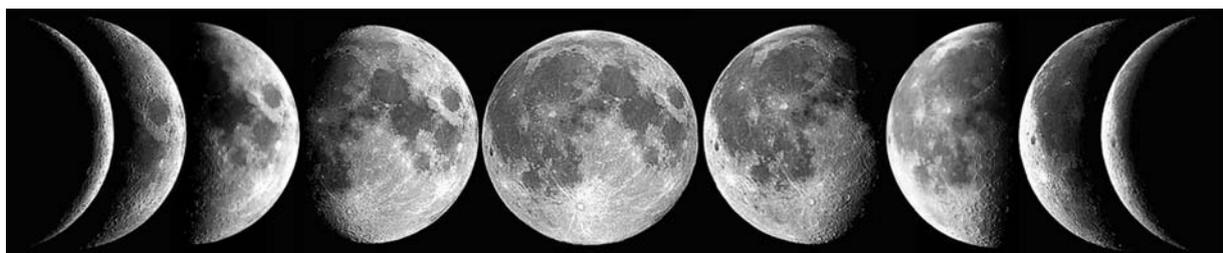
METEORS

Delta Aquarids peak on 29th July, although the term 'peak' is used loosely as this show can spread out weeks either side. It also favours the southern hemisphere so don't expect too much! The next major shower will be the Perseids on 12th -13th August, which is usually regarded as the best of the lot.

COMETS

Comet 45P Honda-Mrkos-Pajdusakova makes its closest approach to Earth on 16th August. This *could* be a naked eye object. It is a short-period comet with an orbital time of 5.26 years. Next return will be 11th February 2017.

THE MOON



NEW 1st July
NEW 30th July
NEW 29th

FIRST 8th
FIRST 6th Aug
FIRST 4th Sept

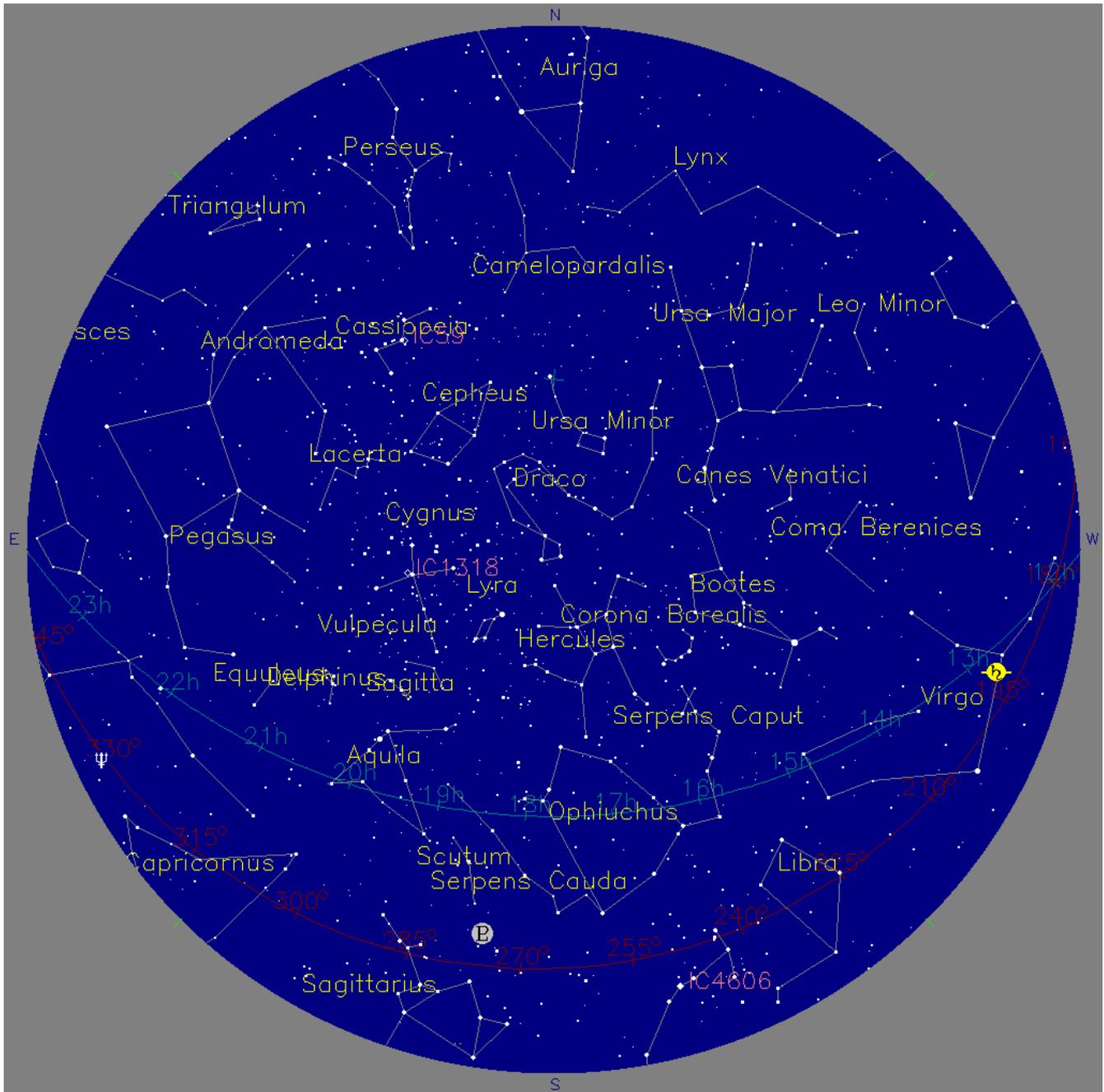
FULL 15th
FULL 13th
FULL 12th

LAST 23rd
LAST 21st
LAST 20th

NEW 30th
NEW 29th
NEW 27th

THE NIGHT SKY : July - August

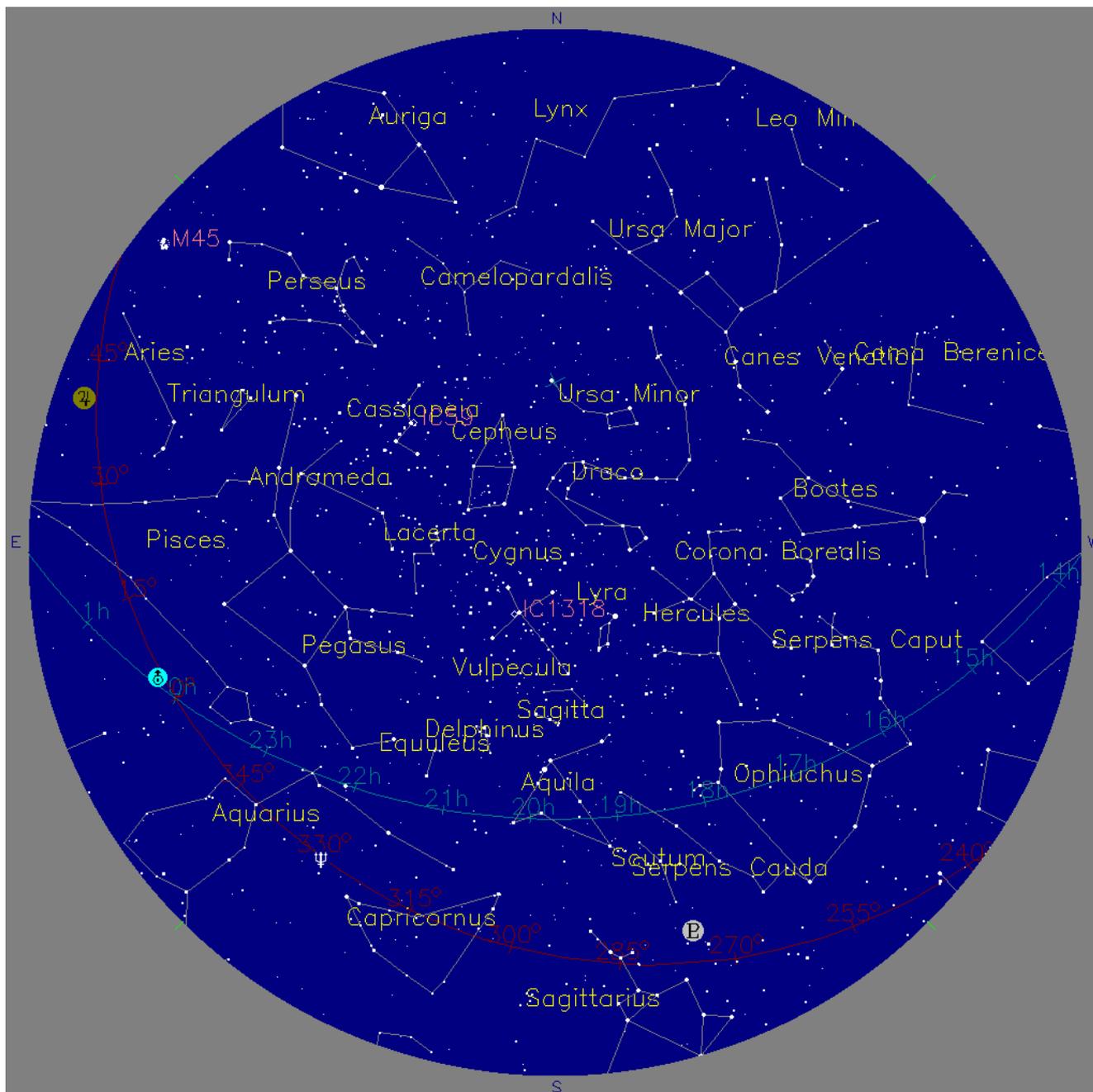
As of 1st August 2011, 22:00:00 BST



KEY	
 MERCURY	 SATURN
 VENUS	 URANUS
 MARS	 NEPTUNE
 JUPITER	 PLUTO

THE NIGHT SKY : August - Septmeber

As of 1st September 2011, 22:00:00 BST



KEY



MERCURY



VENUS



MARS



JUPITER



SATURN



URANUS



NEPTUNE



PLUTO

As mentioned a meeting or so ago, there is a 'popular space convention' being organised for the BIS, at the Open University in September. Details below...

An invitation to a new type of space convention

The British Interplanetary Society presents

FROM IMAGINATION - TO REALITY



FROM IMAGINATION TO REALITY is a two day space convention to be held at the Berrill Theatre, Open University, Walton Hall, MK7 6AA 17th - 18th September 2011

The aim is to explain and promote space research in the UK, through a series of popular talks by well-known experts in their field.

The two-days will feature :

OUT OF THE CRADLE : What came before the Space Age - including Thunderbird's creator; Gerry Anderson; Alan Bond - inventor of HOTOL and Skylon; Piers Bizony, author of *Filming the Future* - the definitive story of 2001 : A Space Odyssey and Doug Millard of the Science Museum, on Black Arrow.

ONE SMALL STEP: The Moon, and on to Mars - including Professor Coin Pillinger, mastermind behind Beagle 2; Bo Maxwell, President of the Mars Society UK and Bob Parkinson, president of the BIS.

HOLIDAY OF A LIFETIME: Space Tourism and Commercial Space - including the story of Skylon - could this kick-start the British manned space industry; Virgin Galactic's plans for space tourism, Alistair Scott on where the UK currently stands in the commercial space industry and Mat Irvine on a 'space tourism' movie that nearly got made - Arthur C. Clarke's *A Fall of Moondust*.

OUT OF THIS WORLD : Life, the Universe and Everything - including Professor John Zarnecki and the UK input into Cassini-Huygens and Saturn; Jerry Stone looks at the next 50 years in space and award-winning writer, Stephen Baxter, on *The SETI Guide to the Universe*.

Check : www.bis-space.com , for details - location, times and prices.

For direct queries contact the organisers :
Mat Irvine : mat@smallspace.demon.co.uk
Jerry Stone : jstone@spaceflight-uk.com



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NEXT MEETING

THURSDAY 21st July 2011

THE SOCIETY'S WEB SITE : www.ashastro.org.uk

Yes, changes and updates are still planned for the website - including getting the magazine, with back issues, back on line. This is planned to take place in the reasonably near future - work commitments of those involved, permitting.