2002

NEXT MEETING
THURSDAY, 8th December 2011
SECOND THURSDAY

THE ASTRONOMICAL SOCIETY OF HARINGEY
VOLUME 40 : ISSUE 2 : DECEMBER 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 this next meeting, 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

December 8th Christmas Party and Guiz VII

2012

Apologies, details for the forthcoming meetings have still not been finalised. However it is intended they will be by the time of the first meeting in January!

Preliminary dates for the first half of 2012
January 19th
February 16th
March 15th
April 19th
May 17th
June 21st
July 19th

IMPORTANT NOTICE

Currently we have TWO ASH websites running, in some form or another. The original is running under www.ashastro.org (*not* .org.uk), while what is intended to be the new version is under www.ashastro.co.uk. Note - and although it indicates otherwise - the MAGAZINE link *is* working, where you will find November's 2002 in pdf form.

We may decide to move back to the URL, .org.uk, (which is still available), or may stay with .co.uk. However whichever is decided, what you put into your web browser, will 'point' to whatever is correct.

However the original direct ASH emails are not working, so will not get through. For the moment use the ones for Jim, Charles or myself, as listed on the back page. Eventually we hope to re-establish the ones with the <ashastro> in the name.

: Ed

COVER : It was Christmas time in 1968, 43 years ago, when a manned spacecraft first left the confines of the Earth and travelled to the Moon. The circum-lunar flight - Apollo 8 - took Frank Borman, Jim Lovell and Bill Anders on this historic flight. This image was taken on 24th December 1968, the first time the Earth had been seen from its closest neighbour. *NASA*

SOCIETY NEWS

We meet in what was the Music Room at Ashmole School. (And previous to that, it was the Curriculum Support Building - still noted as such in the map.) This is the low building, (centre of the photo- right), just past the Performing Arts Centre and opposite the main entrance to the technology block. (PS - we are not sure what its current role is?)

MEETING PREVIEW : December 8th Christmas Party and Guiz VII

For this year the traditional ASH Christmas Party returns to its more usual date. Moving it to January didn't really seem to work, (although there were other factors forced on us for last year), and we trust more members will turn up this time to the gig on 8th December.

What surprises will be revealed for Chairman Jim to identify this year? Come along and take part!

Main event will be Guiz VII - seven years since its reintroduction.

Food and drink will also be supplied.

The Committee is also asking that anyone who wants, please bring along a contribution, food or drink-wise.

MEETING REVIEW : November 17th

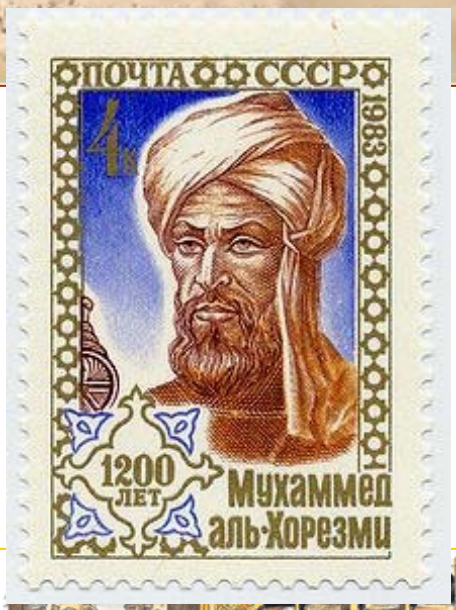
Roy Goldsmith: "The Arabic Astronomers"

Having dealt with Chinese, Renaissance and Medieval astronomy, Roy Goldsmith returned to the Society for the last meeting to continue his story of the ancient astronomers, with a look at what the Arabs were doing. It began when the Holy Roman Empire started to crumble in the 4th and 5th Centuries. This left a vast gap in northern Europe especially, but also in the areas surrounding the Mediterranean. The north had to deal with Saxons, Angles, and the Vikings, but in the south, the Islamic nations had it much to themselves and spread into former Roman controlled areas, such as the Italian peninsula and most of Spain.

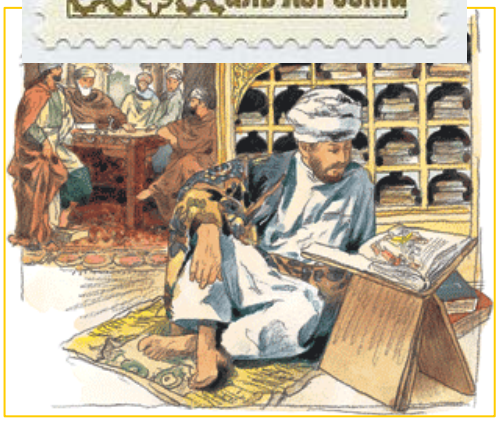
Baghdad was established as the capitol of this new region and the centre for culture, the arts, mathematics, and a growing range of sciences. Interestingly and although the vast majority of peoples were Islamic, they tolerated, and welcome other cultures, and many were Persian and even Spanish.

Al-Mamum built the ‘House of Wisdom’ [*right and lower right*] in Baghdad, as a cultural centre, completed in 838 AD. This attracted philosophers from all over the know world. Al-Khwarizimi [*centre right*] had been summoned to Baghdad around 830 AD to be chief astronomer and librarian.

Although these philosophers of the day were likely interested in forming their own theories, it does appear that there was an obsession with what had happened in Greece, centuries before. Ptolemy and Aristotle especially became favourites and their writings translated into Arabic. Philosophers of the time - they tended not to be called ‘scientists’ - such as Al-Marwazi calculated the diameter and distance of the Moon to figures that are very close to the modern-day, while Al-Farghani revised figures for the circumference of the Earth.



One of the best known names of the period, the Persian, Omar Khayyam [*below*] calculated the Solar year to more decimal points - 11 - than is usually used today. (A mere six!) But with all this advances, much thinking was still in the past, and many stuck with Ptolemaic views, which in northern Europe had long been overtaken by Copernicus.



Consequently the Arabic astronomers seemed to get to a point in discoveries and thinking - but no further, and eventually scientists in northern Europe overtook what their southern equivalents were doing. In many ways Arabic astronomy came to a grinding halt, although did leave us not only the way of writing numerals used all over the world, but their nomenclature in the names of many stars.

Mat Irvine

CHAIRMAN'S QUARTERS

RAM, ROM, CPU, LED, and so on - these are familiar TLAs (**T**hree **L**etter **A**cronyms). So what about it? Well, it's to do with the way we name technology. Modern terminology tends to be a suitable collection of words or phrases which describe some aspect of the device or the technology. Take laser, for example - anyone surprised I chose that one? This is **l**ight **a**mplification by **s**timulated **e**mission of **r**adiation. (Strictly speaking it is actually an oscillator which would make it **l**ight **o**scillation… but then again, no one wants to be associated with a loser!) Many familiar terms that we use are shortenings of longer words or phrases. 'Motor car' is a shortening of 'motorised carriage', which itself got shortened to just 'car'. 'Bus' is a shortening for 'omnibus'; Latin for 'many' – the people it carried.

Until the most recent three or four decades, scientific and technological names were made up using roots from classical languages, such as Greek or Latin. If we go back to the times, even before the Greeks, when language was just starting to be written, naming things takes on a real fascination. Most everyday things will have been given a name that everyone would be familiar with. But what happens when someone produces something new and quite different from the run-of-the-mill? The wheel, and all its associated paraphernalia would have been old hat; fire would be common place. We don't know when, but someone had the bright idea of wrapping a piece of thread - a well-known 'technology' - with beeswax and setting fire to it! This is a radical 'technological' innovation that would rapidly become ubiquitous. But what does one call it? The earliest reference, (there doesn't seem to be an Ancient Hebrew term which could roughly date its invention!), I can find is the classical Greek κανδήλη (kandili) from which we, obviously, get 'candle'.

Mechanisms were assembled to make life easier (Greek times) and war more 'efficient' (Roman times). The names created for these were mostly 'from scratch' and one or two compound names from simpler roots. The middle ages saw the rise of compound names derived from ancient roots. One of the most common prefixes is tele- (from the Greek meaning 'afar'). From this we have telescope and in modern times: telegraph, telephone, television, telephoto etc. Scientific gadgets grew and had both unique and compound names, the latter generally describing the function of the item. When the industrial age came, machines grew at a remarkable pace. The engine, whose name dates back to the 12th century (meaning a mechanical device or 'a cleverness'), became the core of all subsequent machinery. Within an engine exists a slew of component parts which had to be named. Some have simple names. A 'cam' appears to be a contraction of camber – the curved part of a road. 'Piston' from the French 'piston' – a large pestle. (No doubt you remember the old gag about the drunk coming across a motorist with the bonnet up on his car. "*Wadsh-up mate…hic*", expounds the drunk. "*Piston broke*" says the man. "*Sho am I*" replies the drunk!) It is then but a short step to compound nouns, like fly-wheel, cam-shaft and so on.

When we reach the 20th century, technology started growing at such a pace that unique names for anything became difficult. 'Rocket', for example, comes from an old Italian word for 'projectile'. Consequently classically derived compound names were regularly used. These days we have to resort to terms which themselves are grouped into the generic category of jargon - itself derived from the 14th century 'unintelligible talk' or 'gibberish' from the old French jargon - 'a chattering of birds'! So, if any of us invent anything new, let's be a bit more creative than maybe a widget - that is a 1920's corruption of 'gadget', itself a mid-1800's word 'gadjet' - sailors' slang for any small mechanical ship's part which they lacked, or forgot.

See you at the Guiz. Jim.

SHADOW FACTS

Mitchell Sandler

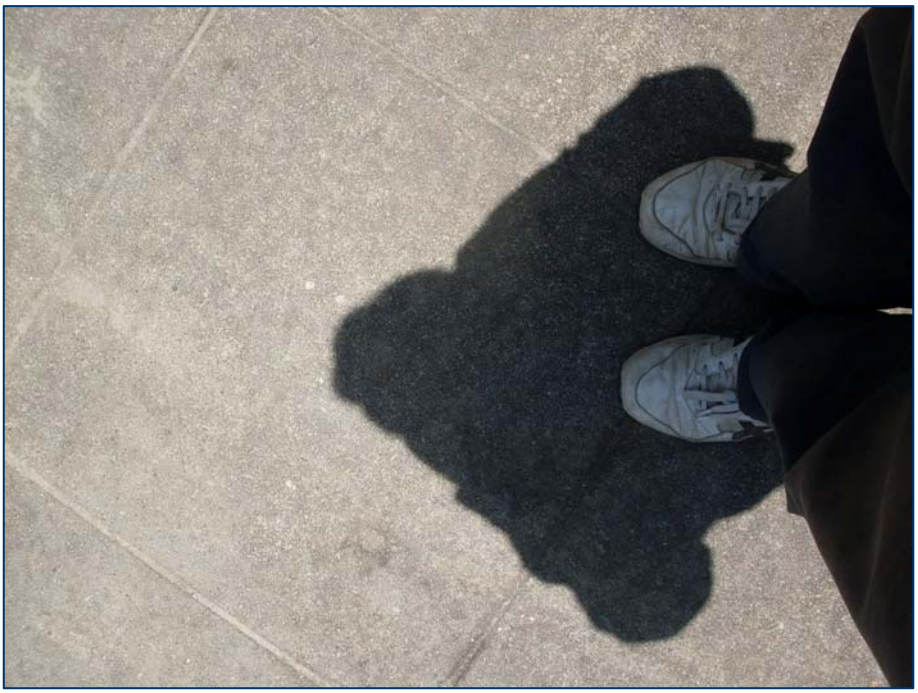
As long-suffering readers of this publication will be aware I do a fair bit of travelling. One of my more eccentric activities on these trips is to take pictures of my shadow.

This isn't quite as ludicrous as you may think, there is a scientific curiosity behind it, even if this article uses examples that can only touch on being even remotely close to strict scientific conditions.

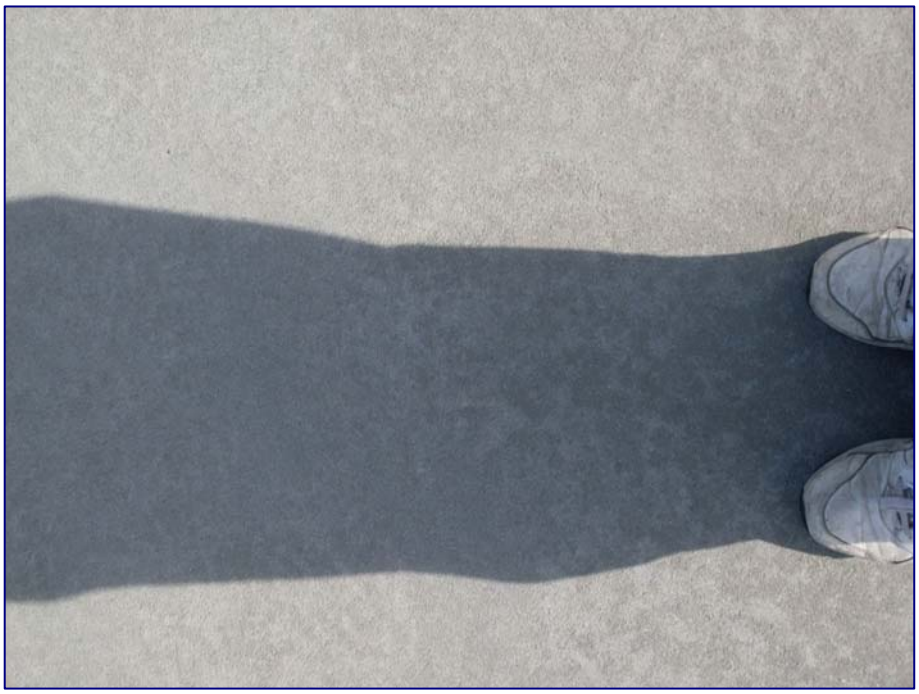
To begin with the scientific stuff - the Earth orbits the Sun every 365.24 days. As the north-south axis of the Earth is tilted at 23.5º this means that from the perspective of an observer on Earth the height of the Sun in the sky varies with the seasons - reaching it's northernmost around June 21st and southernmost on December 21st, corresponding to the moments when it is directly above the Tropics of Cancer and Capricorn respectively. Midway between these two dates are the moments when it crosses the celestial equator, so if you happened to be on the correct point of the equator at the moment of the equinox the Sun would be directly overhead.

The other factor to consider is the time of day. In Sri Lanka sunrise is always, (give or take a minute or two), at 6am and sunset at 6pm, so the Sun is directly overhead at approximately Noon. (Strictly speaking it can only be directly above one specific point on the Earth's surface - but Sri Lanka is a relatively small island, so let's assume it's above the entire island.) This means that the shadows it casts are going to be at their smallest.

When the two factors of local time and the Sun's celestial latitude come together you have optimum conditions for having a really short shadow. So if, for example, you happened to be in Kandy, Sri Lanka, (7.18º N) on Equinox Day, (September 23rd this year), you can get good results, as this picture, [*right*] taken at Noon, shows.



In fact the Sun crossed the celestial equator approximately two and a half hours after this picture was taken, so it may be a long time before I get a smaller shadow than this one. By way of comparison consider the two pictures taken at Noon a few days apart in early December 2008 - one in Quito, Ecuador, [*left*] (effectively on the equator) and one in Orlando, Florida, (28.33º N), [*below*] more or less due north of Quito.



Clearly the latitude has a significant effect on the length of shadow, but also compare the Quito picture with the Kandy one and note how the shadow length is affected by the proximity of the December solstice.

So now it's time for the real science to take over. Having talked about this with the Chairman it has been suggested, when ASH funds permit, of sending members out to three points on the same longitude (the two tropics and the equator) to take photographs at local Noon on the four Solstice and Equinox dates. Extensive perusal of the atlas for a longitude which has all three points on land in countries which aren't racked by political instability suggests that there is a longitude somewhere a little east of 120ºW which meets all the criteria. So with a plentiful supply of cameras, GPS locators and metre sticks all we really need are the volunteers - and, ahem, a treasurer in a generous mood…

Lemaître Constant - *Lost in Translation*

The greatest astronomical discovery of the 20th century may have been credited to the wrong person. But it turns out to have been nobody's fault except for that of the actual original discoverer himself!

Writing in the November 10th issue of the journal Nature, astrophysicist Mario Livio of the Space Telescope Science Institute has put to bed a growing conspiracy theory about who was fairly credited for discovering the expanding Universe.

For nearly a century, American astronomer Edwin P. Hubble [*left*] has held the fame for this landmark discovery, which would recast all of 20th century astronomy. Hubble reported that the Universe is uniformly expanding in all directions. It solved Einstein's dilemma of explaining why the Universe didn't already collapse under its own gravity.

Ironically, Hubble never got a Nobel Prize for this discovery, though astronomers from two teams who independently uncovered evidence for an accelerating Universe won the 2011 Noble Prize in Physics. But Hubble did get the most celebrated telescope of modern history named after him.

Hubble published his landmark paper in which he determined the rate of expansion of the Universe in 1929. This was based on the apparent recessional velocities (deduced from red-shifts) of galaxies, as previously measured by astronomer Vesto Slipher, [*right*] coupled to distances to the same galaxies, as determined by Hubble.

Hubble's analysis showed that the farther the galaxy was, the faster it appeared to be receding. The rate of cosmic expansion is now known as the Hubble Constant.

But two years earlier, a Belgian priest and cosmologist, Georges Lemaître, [*right and with Albert Einstein next page*] published very similar conclusions, and he calculated a rate of expansion similar to what Hubble would publish two years later.

Lemaître based his analysis on Slipher's same red-shift data, which he combined with estimates of galaxy distances inferred from Hubble's 1926 published observations.

But Lemaître's discovery went unnoticed because it was published in French, in a rather obscure Belgian science journal called the *Annales de la Société Scientifique de Bruxelles.* (*Annals of the Brussels Scientific Society*.)

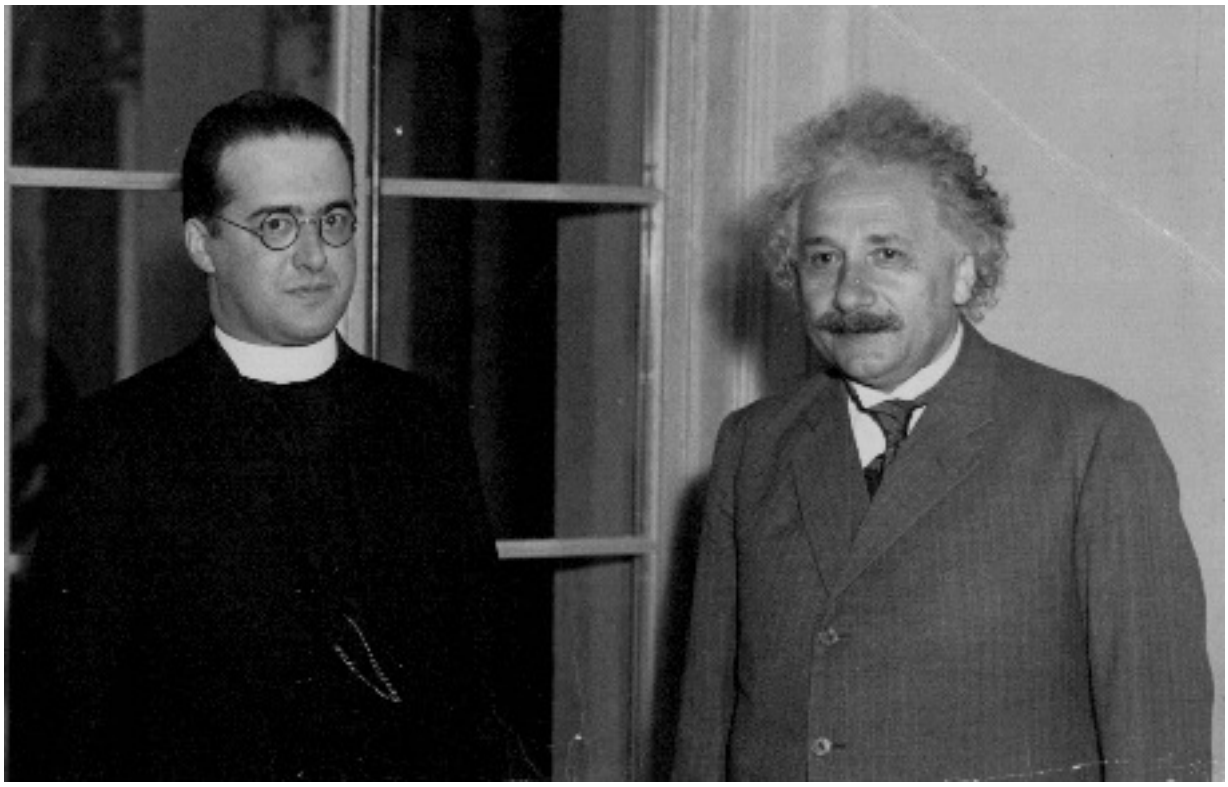
The story would have ended there, except that Lemaître's work was later translated and published in the Monthly Notices of the Royal Astronomical Society. When

published in 1931, some of Lemaître's own calculations from 1927, of what would be later called the Hubble Constant, were omitted!

The fact that paragraphs were missing from the translated paper has been known (although not widely) since 1984. There has been persistent speculation among astronomers over "*Who dunnit?*" Did the Monthly Notices editors cut the paragraphs out? Did Edwin Hubble himself have an influencing hand and censor the paper to eliminate any doubt that he was the original discoverer of the expanding Universe?

After going through hundreds of pieces of correspondence of the Royal Astronomical Society, as well as minutes of the RAS meetings, and material from the Lemaître Archive, Livio has discovered that Lemaître omitted the passages himself when he translated the paper into English!

In one of two 'smoking-gun letters' uncovered by Livio, Lemaître wrote to the editors: "*I did not find advisable to reprint the provisional discussion of radial velocities which is clearly of no actual interest, and also the geometrical note, which could be replaced by a small bibliography of ancient and new papers on the subject.*"



The remaining question is why Lemaître essentially erased evidence for credit due to him, for first discovering (at least tentatively) the expanding Universe.

Livio concludes, "*Lemaître's letter also provides an interesting insight into the scientific psychology of some of the scientists of the 1920s. Lemaître was not at all obsessed with establishing priority for his original discovery. Given that Hubble's results had already been published in 1929, he saw no point in repeating his more tentative earlier findings again in 1931.*"

Perhaps in some alternative history parallel universe, people are marveling at the deep-space pictures from the Lemaître Space Telescope.

Adapted from an article from NASA/ESA/M.Livio/[STScI]

The Night Sky : December 2011 - January 2012

THE PLANETS

MERCURY : In the morning skies, having reached inferior conjunction on 4th. The dark winter mornings maybe cold, but can offer the best viewing opportunities of this, the most elusive of the naked-eye planets. Possibly the best viewing opportunity will be on 23rd December when the crescent Moon will be a near-by pointer.

VENUS : In the evening skies still low down, on the western horizon, but very bright at -3.9 magnitude. Moon close on Boxing Day, 26th December.

MARS : In the morning skies, in Leo and close to Regulus. The apparent diameter grows to seven arc-seconds this month, which is the best appearance for 2011. Moon close on 17th December.

JUPITER : At magnitude -2.8 it is the most conspicuous planet for most of the night - Venus just outshines it before it sets. Rising in the early evening in the south east, it is visible throughout the night and frankly you would be hard pressed to mistake it for anything else. Moon is close 6th December.

SATURN : Now in the morning skies in Virgo and near the bright star Spica. The rings have been well placed for viewing this year, even in a small telescope. Moon close on 20th December.

URANUS : In Pisces**,** around magnitude 6. Moon close on New Year's Eve.

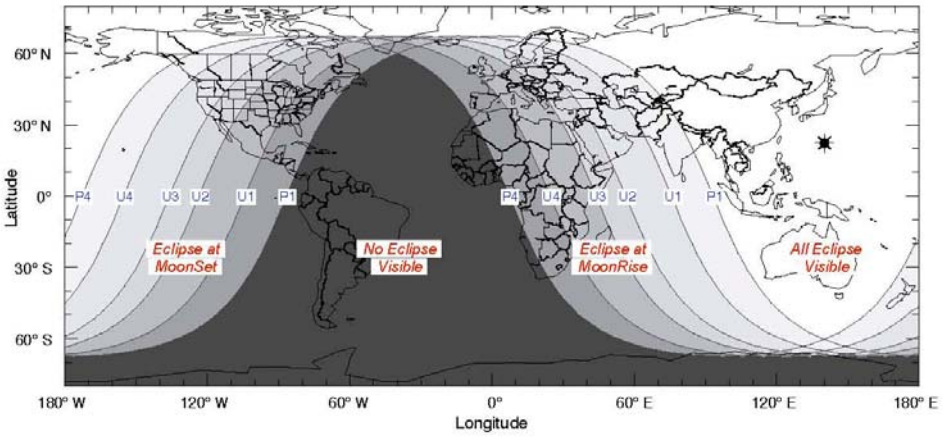
NEPTUNE : In Aquarius, around magnitude 7.8. The Moon is close on 29th December.

METEORS

Geminids peak 14th December, but the Moon is nearly full. Ursids peak 22nd December

THE MOON

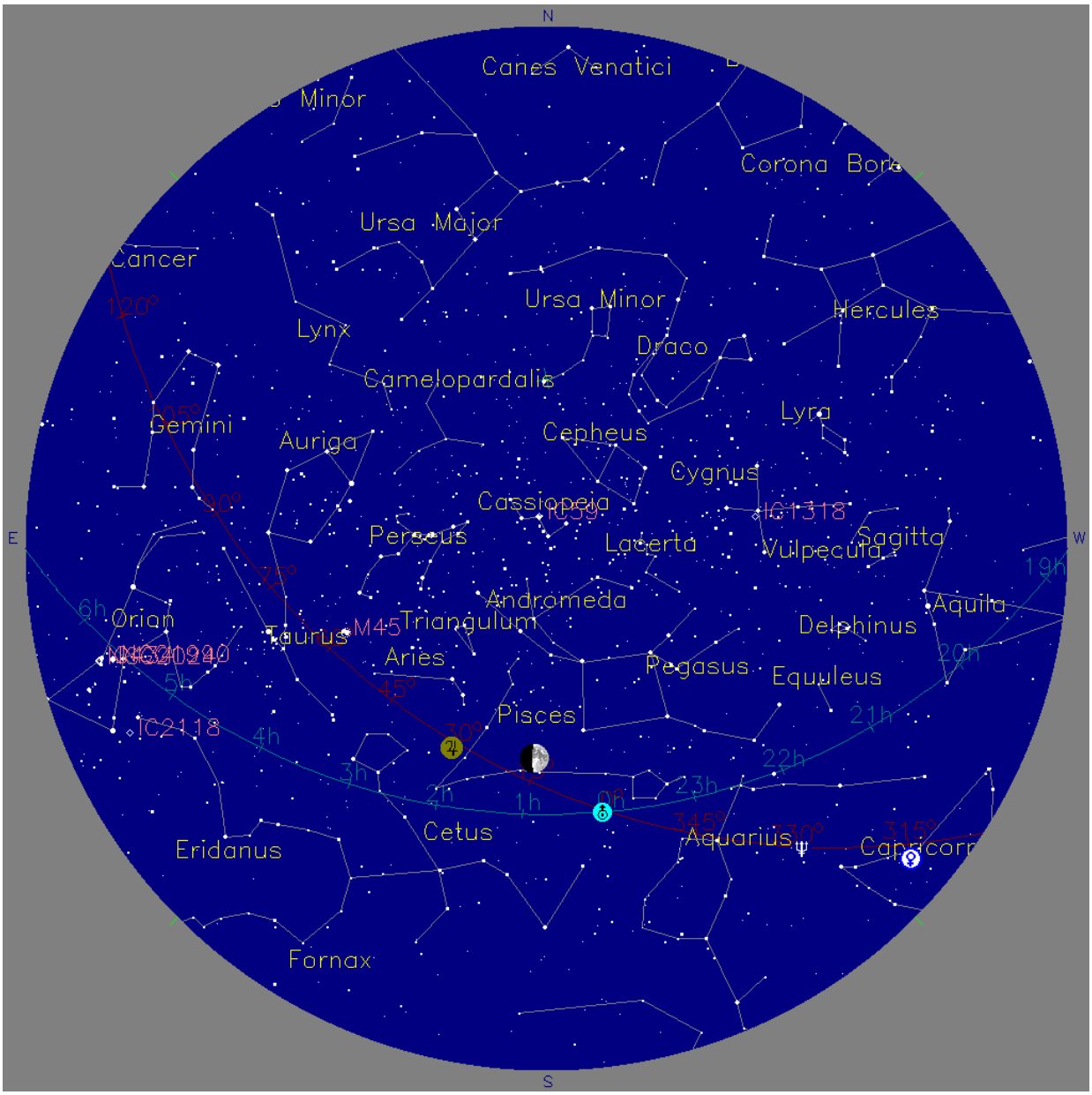
There is a total eclipse of the Moon on 10th December, but totality will only be seen from Asia and Australasia. North America Africa and Europe will only get partial stages. In the UK, Moonrise is around 15.30, so the skies will still be light.



NEW 25th November FIRST 2nd December FULL 10th LAST 18th NEW 24th
NEW 24th FIRST 1st January FULL 9th LAST 16th NEW 23rd

THE NIGHT SKY : December 2011 - January 2012

As of 1st January 2012, 18:00:00 GMT/UT



KEY	
MERCURY	SATURN
VENUS	URANUS
MARS	NEPTUNE
JUPITER	PLUTO

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NEXT MEETING
THURSDAY 8th December 2011
SECOND THURSDAY

THE ORIGINAL SOCIETY'S WEB SITE IS : www.ashastro.org
THE NEW ONE - UNDER BETA TEST : www.ashastro.co.uk
However use the emails as above for the present time