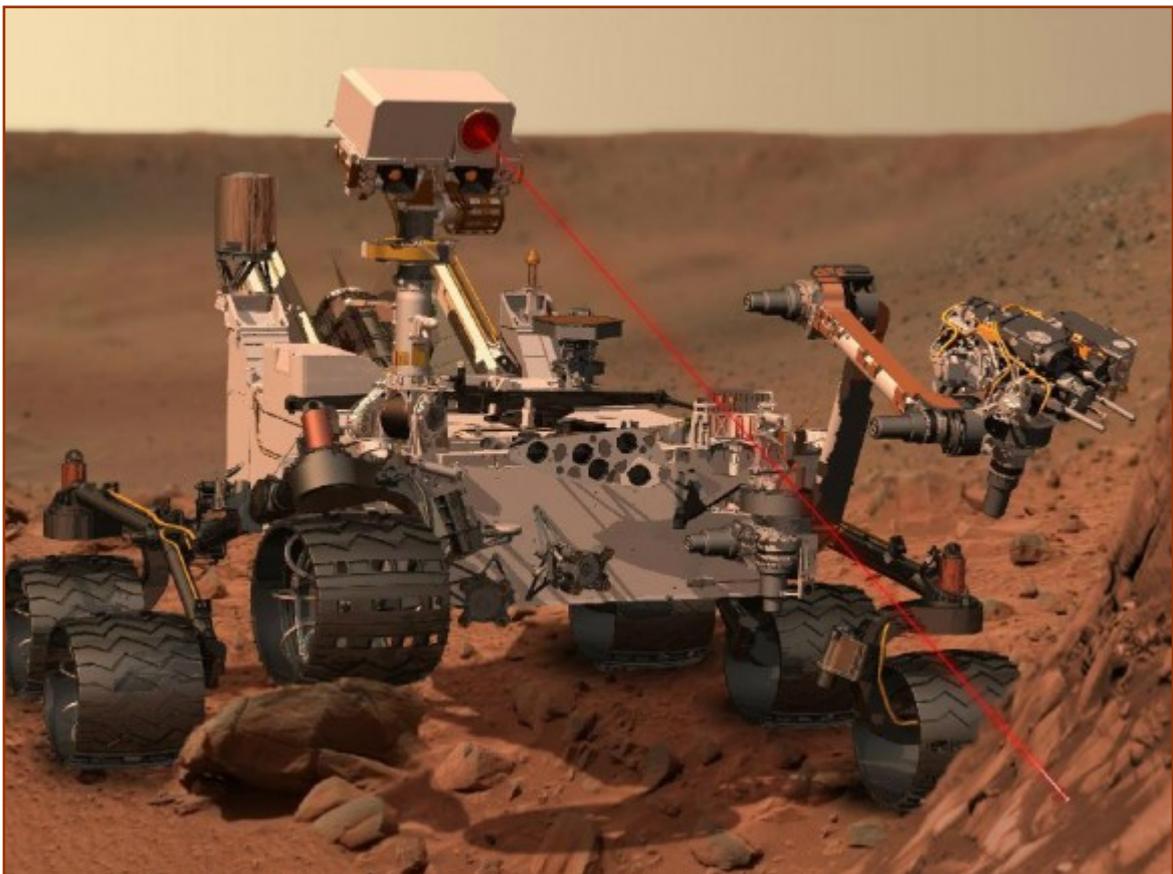


2002



**NEXT MEETING THURSDAY, 18th October
2012**

**THE ASTRONOMICAL SOCIETY OF HARINGEY
VOLUME 40 : ISSUE 12 : October 2012
www.ashastro.co.uk**

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.

NOTE - as below - the Meeting information is also on the NEW website:
www.ashastro.co.uk – updated from May

Doors open - 7.30pm : Main speaker - 8.00pm : Finish - 10.00pm sharp!
New or updated information is in *italics*

2012

October 18th : AGM and Small Talk

November 15th - Bo Maxwell : “The Latest News From Mars”
Moved from September

December 13th – Christmas Meet and Guiz VIII

ASH Committee

The October meeting is approaching and it will be time for another AGM. The Committee has been more or less the same for the last few years but now is the time for some change. Charles Towler, Membership Secretary, is having to step down from this post, as a result of family and other commitments, though he would like to retain the post of Secretary. He has our thanks for all the time he has spent sorting out the membership details. Alistair Innes has expressed interest to stand for this post, which is good, but of course does not prevent anyone else being nominated for this, or any other of the positions – **The Committee Needs You!**

The positions of Public Relations Officer (PRO) and Vice Chairman are also open, as Mat currently holds these as well as Editor, which he is happy to continue with. These are not posts that required every minute of your time, but the time we all give is necessary for the smooth running of the Society. Committee meetings are held at various times (as become necessary) during the year and last 2 to 3 hours at most. Nominations will be open at the start of the next meeting or by post or e-mail.

COVER

As Jim discussed during the last meeting, one of the most recent space probes to be landed on another planet is Curiosity on Mars. This artist impression shows the laser in operation, which of course came into Jim's talk.

Image : NASA/JPL

Jim

SOCIETY NEWS



We meet in the Drama Room at Ashmole School, (previously the Curriculum Support Building - still noted as such in the map). This is the low building, (right), just past the Performing Arts Centre.



MEETING PREVIEW : October 18th : AGM and Small Talk

Besides the AGM itself, there is a Small Talk, so an invitation to anyone who has a short talk, or something to say, for the October meeting. Contact Chairman Jim, especially if you need a PowerPoint Presentation.

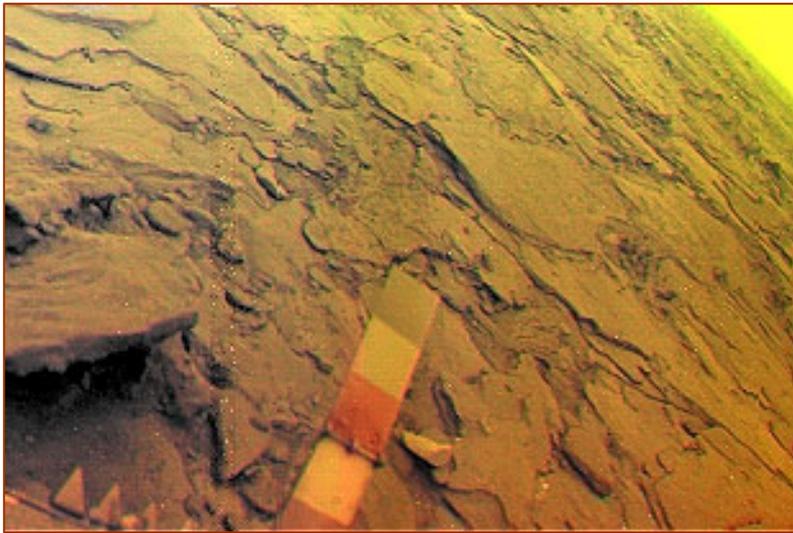
MEETING REVIEW : September 20th : Jim Webb : "What's Up Doc?"

Having an apple falling on his head, his mathematics, refinement has enabled us all around the world. It wasn't until the Soviets were aiming for Venus missions. The proto-Venera



mission began as an easy start. The the first to try planets by Venus with the (Венера) very first was 1VA on

February 4, 1961. It was to be a flyby but failed to leave Earth orbit. Venera 1 launched a week later, again a flyby, lost communications en route. After many more attempts, Venera 3 (launched on November 16, 1965) lost communications just before atmospheric entry. This was the first man-made object to land (or in this case, crash) on another planet on March 1966. Finally, launched on Jun 12, 1967, Venera 4 arrived on October 18, 1967 and was the first probe to enter another planet's atmosphere and return data. It did not transmit from the surface, but this was the first interplanetary broadcast of any probe.

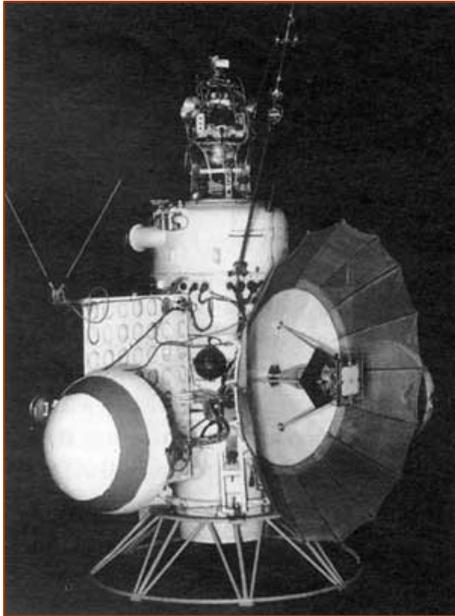


Venus proved to be a very nasty place. Because the next two Veneras (6 & 7) arrived in early 1969 and managed to survive for around 50 minutes before being crushed by the 89 atmosphere pressure, while the surface temperature was recorded at 450 °C! Eventually, the redesigned Venera 9 landed on October 22,

1975, and sent back the first black and white images of the surface of Venus. It survived for 53 minutes before being destroyed by the heat and pressure. Venera 11 and 12 recorded 143 gamma-ray bursts between them on the way to Venus and on December 21, 1978 Venera 12 recorded what is thought to be lightning on the surface! On March 1, 1982, the Venera 13 lander survived 127 minutes before being destroyed by the heat and pressure and returned the first colour images from the surface of Venus. (*above*) Veneras 15 and 16 were orbiters that arrived October, 1983 and mapped the northern hemisphere down to 30° from North with a resolution of 1-2 km.

The Americans initially tried for Venus, as well, with the Mariner missions. Mariner 1 launched on July 22, 1962 (*left*) but had to be destroyed shortly after liftoff. Mariner 2 launched on August 27, 1962 went to Venus on a 3½ month flight and became the first spacecraft to have flown-by another planet. Presumably, because the Soviets were still aiming for Venus, the Americans changed target and aimed for Mars. Mariner 3 launched on November 5, 1964 was lost when the launch vehicle's nose fairing failed to jettison. On July 15, 1965 Mariner 4 became the first successful flyby of Mars and sent back 22 close-up pictures of the planet – showing craters and not canals! Subsequent Mariners went to Mars and Venus (two were lost) but Mariner 9 entered Martian orbit in November 1971 and become the first spacecraft to orbit another planet. Now shut off, it should stay in orbit until at least 2022. Mariner 10 launched on November 3, 1973 was the first to use a gravity assist trajectory. It used Venus's gravity to send it on a different course to reach Mercury. It was also the first spacecraft to encounter two planets at close range. It had three encounters with Mercury (between March 1974 and 1975) and sent back a wealth of images and data.

The Soviets also targeted Mars, early on. Mars 1M on Oct 10, (*top – next page*) 1960 failed to achieve orbit and Mars 1 (launched Nov 1, 1962) failed en route to Mars. Mars 2 launched on May 19, 1971 reached Mars on November 27, 1971. The descent module entered the Martian atmosphere a steeper angle than planned. The descent system malfunctioned and the



lander crashed delivering the Soviet Union coat of arms to the surface. Mars 3 reached Mars on December 2, 1971. The lander achieved a soft landing and began operations. However, after 20 seconds the instruments stopped working but it still managed to transmit a portion of the first picture of Martian surface. Mars 5 reached Mars on February 12, 1974 and was put into an elliptical orbit. About 60 images were returned. Mars 6 reached Mars on March 12, 1974 but contact was with the descent module shortly before it hit the surface.

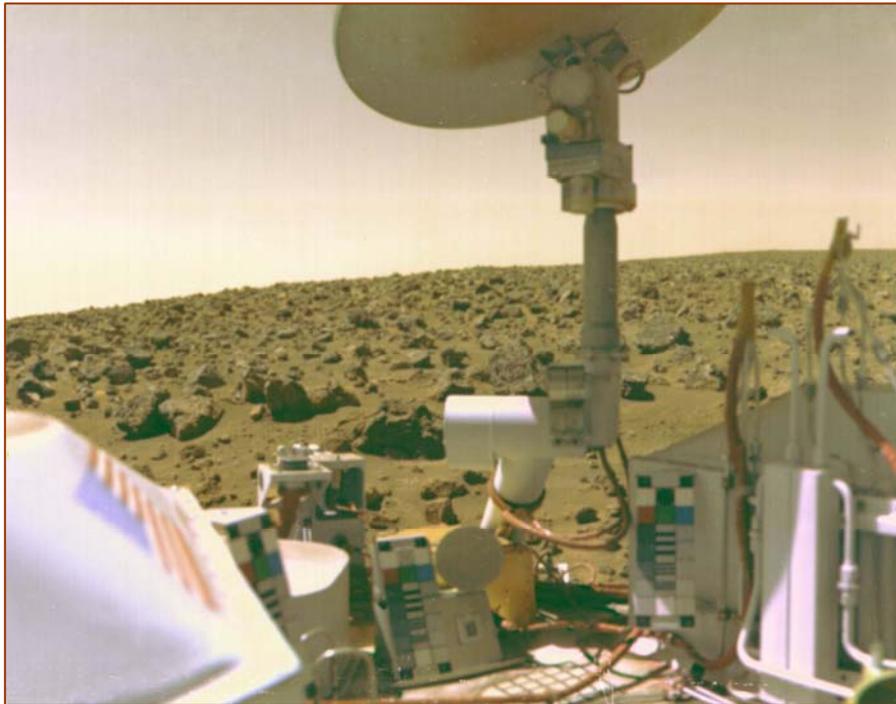
NASA went further into the Solar System. Pioneer 10, launched on March 3, 1972, reached Jupiter on November 6, 1973 and sent back the first close up images of the Jovian system over the next 60 days. Pioneer 11 went even further. Launched on April 6, 1973, it reached Saturn early September, 1979 after using Jupiter for a gravity assist in December 1974. Voyagers 1 and 2 were the pinnacle of deep Solar System exploration. By fortunate coincidence, Jupiter, Saturn Uranus and Neptune were in the right configuration for a visit. Voyager 2 was launched first on Aug 20, 1977 and Voyager 1 went later on September 5, 1977. Voyager 1 went on a faster trajectory and reached Jupiter first on March 5 1979. As it was planned to fly near Saturn's Titan its orbit would then take it out of the Solar System. The trip to Uranus and Neptune was taken on by Voyager 2. These two probes are now heading out of the Solar System. Recent data from Voyager 1 have shown a jump in cosmic particle counts which suggest it has effectively left the influence of the Sun.

Galileo launched on Oct 18, 1989 was sent to Jupiter and its moons. It arrived at Jupiter on December 7, 1995, via gravitational assist flybys of Venus and Earth, becoming the first spacecraft to orbit Jupiter and image two asteroids on the way there. It was crashed into Jupiter on September 21, 2003. Cassini launched on October 15, 1997 entered into orbit around Saturn on July 1, 2004, after an interplanetary voyage which included flybys of Earth, Venus, and Jupiter. On December 25, 2004, Huygens separated from the orbiter and reached Saturn's moon Titan on January 14, 2005, when it entered Titan's atmosphere and descended onto the surface. This was the first landing ever accomplished in the outer Solar System. Cassini is still sending back spectacular pictures of the Saturnian System. New Horizons launched on Jan 19, 2006, is estimated to arrive at the Pluto system on July 14, 2015. There may be subsequent attempts at flybys of one or more other Kuiper Belt Objects, if suitable targets can be located. It was launched with an Earth-relative velocity of about 36,373 mph making it the greatest-ever launch speed for a man-made object. It received a gravity assist from Jupiter on February 28, 2007. Just to make the trip

planning more interesting, two more Pluto satellites were discovered by Hubble a few months ago!

Going back into the Solar System, Messenger was launched on August 3, 2004, only the second mission after Mariner 10 to go to Mercury. To get there it flew by Earth once, Venus twice, and Mercury itself three times, until entering Mercury's orbit on March 18, 2011! It is still sending back excellent images. Magellan was launched on May 4, 1989, aboard Space Shuttle Atlantis. It was deployed from the Orbiter and launched on May 5, 1989 sending the spacecraft into an orbit where it would circle the Sun 1.5 times, before reaching Venus 15 months later on August 10, 1990. It sent a wealth of high resolution radar images of the Venusian surface.

Back to Mars, Viking 1 left on Aug 20, 1975 and the lander touched down



in western Chryse Planitia on July 20, 1976. It transmitted data for 6 years and 116 days! Viking 2 (*left*) launched on Sept 9, 1975 and the lander touched down September 3, 1976 in Utopia Planitia. It was turned off on 11 April 1980 when its batteries failed. There have been many missions to Mars since then, many

of which have failed – some quite spectacularly. Currently Curiosity (*cover*) is the 'star' having just successfully landed and deployed the LIBS (Laser Induced Breakdown Spectroscopy) system – its mechanism being demonstrated live by using a focused blue laser to burn a hole into a business card. (LIBS actually uses an infra-red laser!)

Of other missions there was Hayabusa launched on 9 May 2003 and rendezvoused with asteroid 25143 Itokawa in mid-September 2005. In November 2005, it landed on the asteroid and collected dust samples which were returned to Earth (in Parkes, Australia) aboard the spacecraft on 13 June 2010. Finally Dawn was mentioned. Launched on September 27, 2007, the probe entered the orbit around Vesta on July 16, 2011. Dawn has just left Vesta on a course for Ceres, which it is scheduled to reach in February 2015.

Many fascinating photographs were shown during the talk but there are now even more images to look forward to over the coming years.

CHAIRMAN'S QUARTERS



Where do science and science fiction converge and science fact make SF actual fiction? This could take a whole year's worth of 2002s to answer but here goes with emphasis on emerging technologies.

Jules Verne took men from the Earth to the Moon (a preposterous notion at the time) – feat NASA achieved just over a hundred years after its publication (and importantly, NASA's men came back!). H.G. Wells had Martians with heat rays – today the American military have demonstrated both ship and airborne lasers that can damage missiles and burn out the front ends of speedboats! By contrast the blaster, popular of comics and, of course, Star Wars, will be very unlikely due to sheer power required to create a laser beam capable of doing that kind of damage from a handheld weapon. Same with the ubiquitous Star Trek 'phaser', being able to stun a person with a beam of energy. As a completely absurd aside – by international treaty signed in the late 80's, one can blow up, maim and variously physically damage soldiers (nowadays referred to as a 'war fighters'!) but it is illegal to blind them by use of high power visible lasers!

Back to Star Trek, the communicator has emerged as the mobile telephone - some models of which featured the 'flip-top' design. Interestingly, though, the mobile phone has very rapidly evolved from being merely a communication device to something akin to a computer / entertainment device – almost like a "holo-deck" minus the 3D virtual reality part. Talking of the 'holo-deck', the media have now completely misunderstood and misrepresented holograms to the point that any form of 3D trickery is often, and fallaciously, described as a 'hologram'. Still with Star Trek (even though this 'technology' predates the TV series back to Dan Dare and before), we have the transporter. The sheer energy and computing power required to achieve this is almost unimaginable so that is another likely non-starter. The 'force field' is another technology that is probably not going to come to be either. Solid objects are deflected but gasses appear to pass through – today's methods have not shown any obvious method to achieve this.

Another technology, on the other hand, has some very real seedlings of happening, to a certain extent – namely the replicator. Creating a glass of water or edible food is probably impractical, but creating solid objects is now a regular feat! The basis of this is the '3D printer' which builds up the object, thin layer by thin layer, by laying down a film of a photosensitive polymer and hardening it by a computer controlled laser beam to harden the material and washing away the unexposed material. This is currently a slow process but the technology is very rapidly maturing to the point that it could be very affordable. 30 years ago laser printers cost in the excess of £50,000 – now one can pick one up for around £100!

Exotic emerging materials offer an area where SF has not touched upon. Graphene is one which is currently attracting huge research efforts as a material with answers looking for questions. It is, essentially, a single sheet of graphite – i.e. a flat plane of carbon atoms arranged in a hexagonal manner. The small pieces of ultra-pure graphene that have been made, so far, show strength far in excess of steel – to the point that a single sheet of it (one atom thick) could be made into a window! Even more bizarre is the fact that by depositing other materials on it can be made to behave like a micro transistor and even a light emitter (like an LED). This opens up the possibility of graphene laminates that can be a computer, display monitor / TV and (non-reflective!) window tougher than glass. Its possibilities are seemingly endless!

See you at the next Meeting.

Jim

Out and About

Haven't had one of these for some time, but if you cast your mind back a few years, Michael Franks gave us an intriguing insight on star gazing on the Island of Tenerife in the Canary Islands. Now your Editor has been there, including a conducted tour of the Observatory...



Left - Your Editor near the top of Mount Teide, (didn't quite get to the top!), with the Observatory in the background on the ridge.

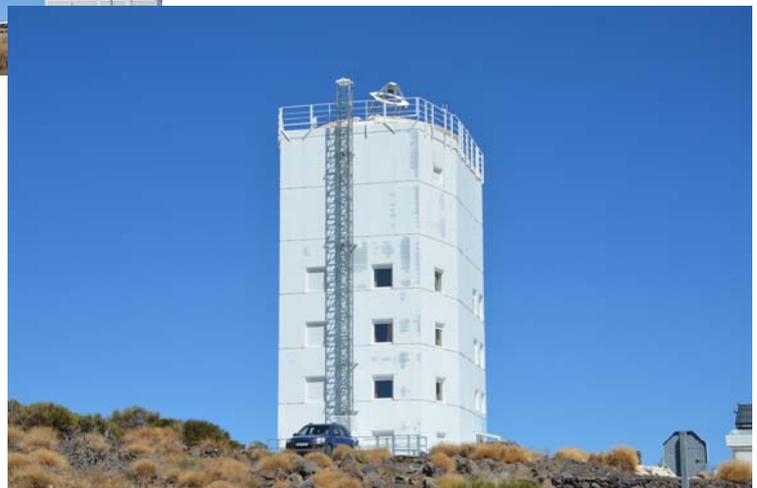
Right - here we are above the clouds; the haze in the distance is the top of the cloud cover! Altitude is 2400m/9350ft above sea level.



Left - the largest telescope on site - the Optical Ground Telescope run by ESA. It has three purposes - tracking space debris; checking lasers aboard orbiting craft and general astronomy.

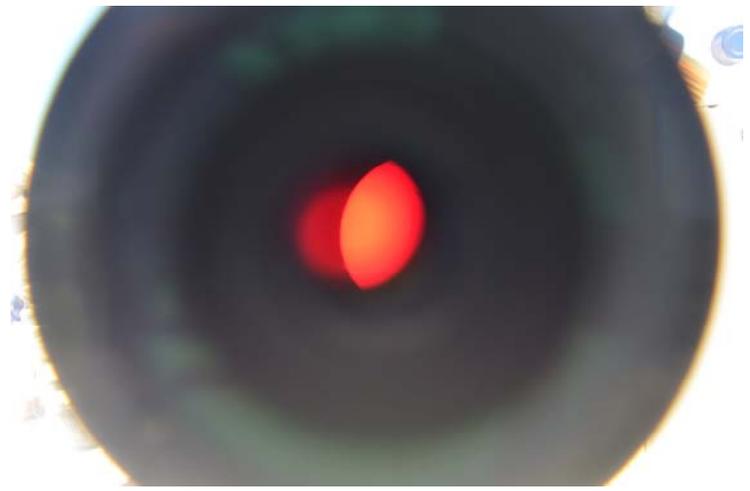


Right the VTT - the Vacuum Tower, is a Solar telescope with 6 floors up, and another 4 below ground level. The coelostat mirror at the top is 70cm in diameter.





Two telescope are set up for visitors to view the Sun. Left, one with a standard filter to allow viewing in 'real colours', here US friend Dean Milano, (he was the bass player with one incarnation of The New Seekers), takes a look.



While another - above - has a hydrogen-alpha filter to allow viewing of prominences. Not easy to photograph 'off the cuff', but the top shot does just about catches them.

Right : Mount Teide dominates where ever you are on the Island.



The Night Sky : October - November 2012

THE PLANETS

MERCURY : Setting very soon after the Sun, so very close and really too close for safe observation. A pointer could be a two-day old crescent Moon close on 16th October, and three-day on 17th. But you'll need a clear horizon to see these, and watch for the Sun that will only recently have set. Mercury is at greatest elongation east on 26th October.

VENUS : Brilliant in the morning skies for those you can rise early! It is at magnitude -4. Moon close 11th October.

EARTH : BST ends on 28th October, 'fall back' to GMT.

MARS : Faint, in Libra around magnitude -1, in the west after Sunset. Moon close on the night of the Meeting, 18th October and 16th November.

JUPITER : Now rising before midnight, brilliant around magnitude -2. Moon close by on 5th October and 2nd November. An occultation, on the latter date, will be visible in South Africa

SATURN : Now lost from view for most of this month as the planet is in conjunction with the Sun on 25th October. Moon close by 12th November, but during the day.

URANUS : Moon close on 27th October

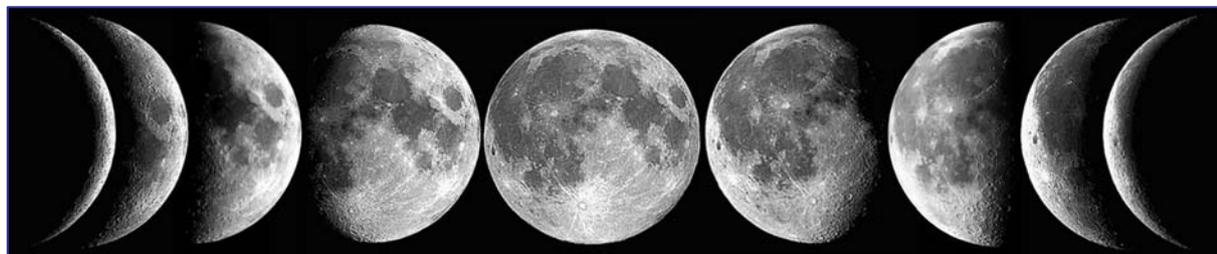
NEPTUNE : Moon close on 24th October and 20th November

PLUTO : If you have a telescope, a pointer could be the Moon, only .08 degree south on 20th October. In South Africa you could potentially see an occultation of the Minor Planet, though this at 14.00hrs. Also on 16th November near midnight, when there will be an occultation visible from Central and South America.

METEORS

Orionids peak on 20th October; Taurids peak on Bonfire Night, 5th November. Early warning that the Leonids peak on November 17th

THE MOON



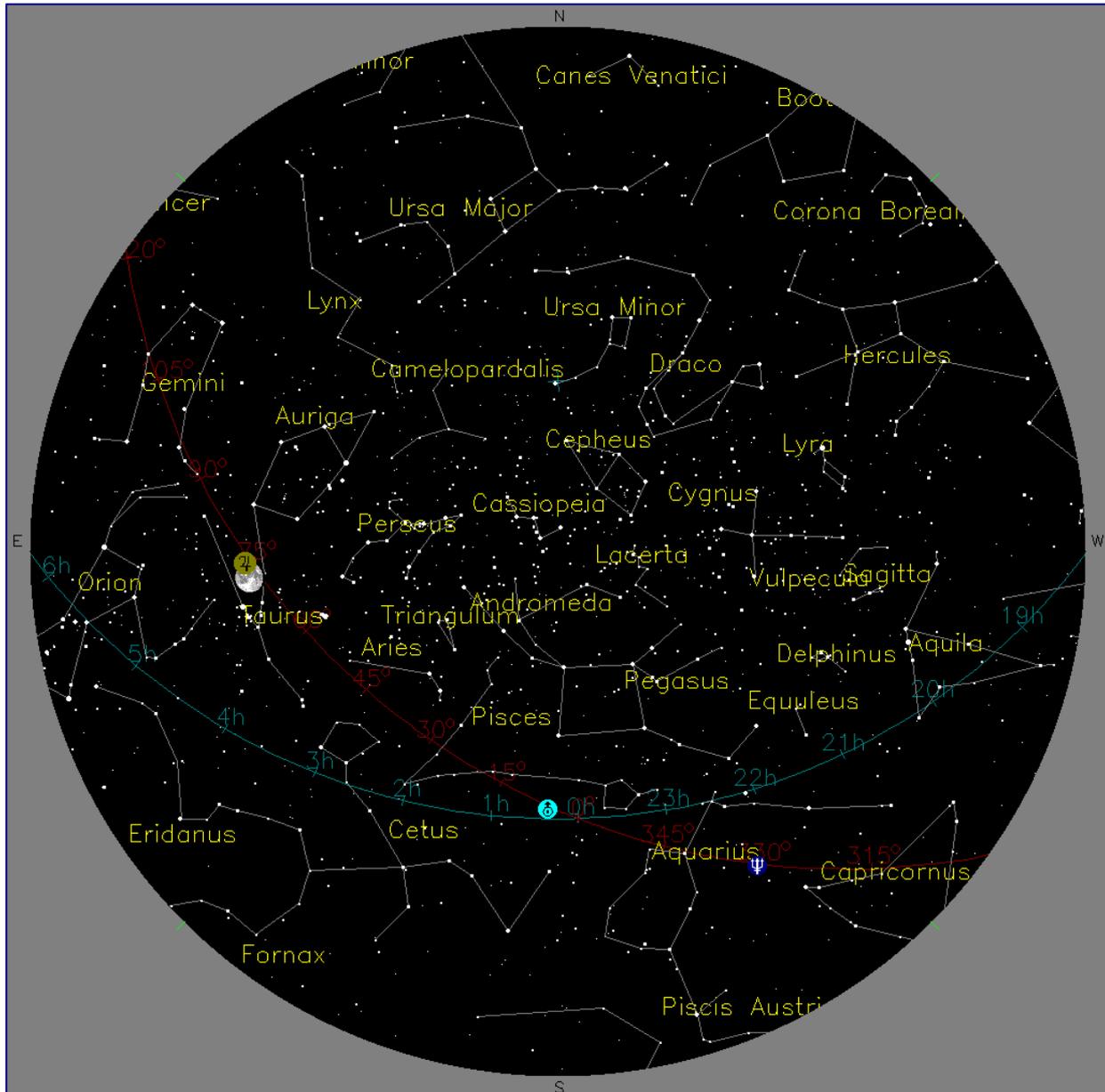
New 16 th Sept	First Quarter 22 nd	Full 30 th	Last Quarter 8 th October	New 15 th
New 15 th	First Quarter 22 nd	Full 29 th	Last Quarter 7 th Nov	New 13 th

THE SUN

There is a total eclipse 13th November, visible over Australasia, South America and the South Pacific

THE NIGHT SKY : October - November 2012

As of 1st November 2012, 21:00:00 GMT



KEY



MERCURY



VENUS



MARS



JUPITER



SATURN



URANUS



NEPTUNE



PLUTO



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ASH COMMITTEE MEMBERS : 2011 – 2012

CHAIRMAN : Jim Webb

020.8441.7421 chairman@ashastro.co.uk [www.glservices.org]

SECRETARY and MEMBERSHIP SECRETARY : Charles Towler

01707 322686 secretary@ashastro.co.uk

TREASURER : Gordon Harding

020.8444.2229

EDITOR, P.R.O. and VICE CHAIRMAN : Mat Irvine

01908.510191 editor@ashastro.co.uk [www.smallspace.demon.co.uk]

GENERAL MEMBER : Mitchell Sandler 020.8958.4185

GENERAL MEMBER : Liz Partridge

JUNIOR MEMBER : Nicholas Lucas

WEBMASTER and GENERAL MEMBER AT LARGE : Gary Marriott

Contact addresses :

Chairman and general enquiries : 136, Lancaster Road, East Barnet, Herts EN4 8AL

Secretary and Membership : 6 Parkway Close, Welwyn Garden City, Herts AL8 6HJ

Treasurer : 57 Tetherdown, London N10 1NH

Editor and PRO : The Forge Cottage, 20 Gold Street, Hanslope, Bucks MK19 7LU

NEXT MEETING

THURSDAY 18th October 2012

THE NEW 'SITE - UNDER BETA TEST : www.ashastro.co.uk

Note there are now 'ASH' email addresses – as above

General queries to <info@ashastro.co.uk>

[**THE ORIGINAL WEB SITE** : www.ashastro.org]