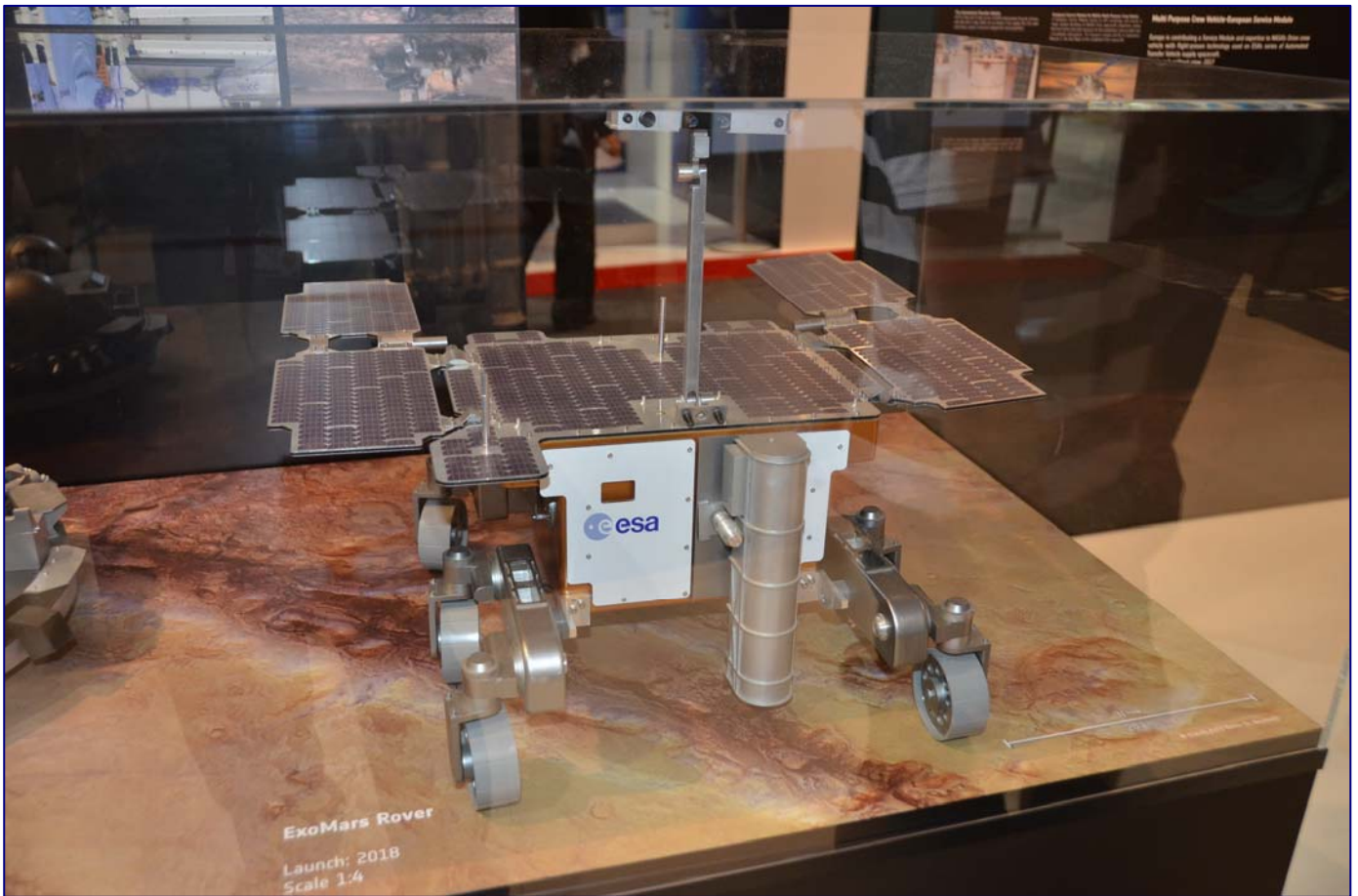


2002



NEXT MEETING
THURSDAY, 16th October 2014
THE ASTRONOMICAL SOCIETY OF HARINGEY
VOLUME 42 : ISSUE 12 : October 2014
www.ashastro.co.uk

The funeral arrangements for Gordon Harding have now been finalised. This will be on Friday October 17th, (the day after the next meeting), at 9.30am at the New Southgate Cemetery and Crematorium, Brunswick Park Road, New Southgate, London N11 1JJ. 0208 361 1713;
www.newsouthgatecemetery.co.uk



All friends of Gordon are welcome

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.

For more on this, and general meeting information, also check the website:
www.ashastro.co.uk. Latest update October 2014

A Facebook page is being set up. It will be in 'Groups', under 'ASHastro'

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

2014

Below are the currently scheduled dates for this year.

Most meetings will also end with a round-up of 'What to View in the Night Sky' for the following month. This is a continuation of what you get in the Night Sky pages here.

October 16th : AGM and Mat Irvine : "Space at Farnborough"

November 20th : *Michael Franks : "Is There Lava On Mars?"*

December : No meeting this month

Dates for **2015** to follow

COVER:

A 1:4 scale model of the ESA EXO Mars Rover on display at the 2014 Farnborough International Airshow in July this year.

Your Editor will be looking at the range of space-related items on show after the AGM at the next meeting.

Photo - Mat

SOCIETY NEWS

MEETING ROOM



We currently meet on the first floor of the Main Music Block. 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, the site is currently being redeveloped with a new structure). The route in red is shown from the main gate of the School. 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 : 16th October 2014

AGM and Mat Irvine: "Space at Farnborough"

The AGM comes round again, but with reversal of the usual personalities! Chairman Jim will not be able to be present but although your Editor/Vice Chairman is usually not able to attend, this time he can, so it'll be me running the show!

It is also the time for electing the Committee for 2014-2015 and although ideally a full list of nominees should be printed, this has not been able to happen but the current list of Committee Members can be found on the back page. The exception is of course the loss of our Treasure earlier this year, Gordon Harding, so that post is open. We have one nominee for that post, but any others - for any post - can be emailed through to info@ashastro.co.uk, (this comes to both Chairman and Vice-Chair). Otherwise nominees will be accepted from the floor on the day. Ideally we would have had a Committee Meeting before now, as several on-going points need discussing. However the practicalities of getting enough Committee together on any one date has been plagued with unavailability, consequently this has not taken place and currently the aim now is to hold a meeting at the beginning of November.

After the formalities of the AGM - which will be kept as short as practical - I will be looking at 'Space at Farnborough' and what was on show at this year's Farnborough International Airshow. This was postponed from last month as I was away.



Mat

MEETING REVIEW : 19th September 2014

Jim Webb: "More Observing"

"It was a dark(ish) and almost cloud-free night at Old Elizabethans Memorial Playing Fields. We walked along among the parking spots next to the field, when suddenly we heard the roar of many cars arriving: it was observing time."



Unfortunately we were brought back down to Earth with a bump as Alister had forgotten his telescope counterweights, so we were reduced to one large and one small telescope and a few pairs of binoculars. But this did not deter us as we were armed with tablet-wielding members using the latest software tricks to find objects in the sky. It was a very good turnout, eight people in all, including, we are pleased to say, some new faces. Being around New Moon was a bonus as London skies are not the darkest. Double stars, like Mizar and Alcor consequently proved noteworthy. The Andromeda Galaxy was somewhat disappointing, due to the general upper haze, but still visible as a fuzzy blob. Globular Cluster M13 was spotted, but the sky quality did not allow too much star resolution. The 'double cluster' in Perseus was excellent at low magnification. It was also good to point out the different colours of stars. However the *pièce-de-resistance* was finding Uranus in the low murky haze of the sky. Noticeably disk-shaped at higher magnification, this light blue orb was the find of the evening.



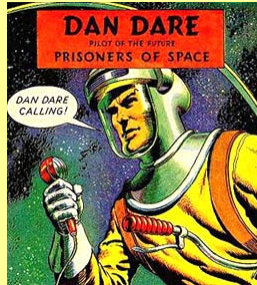
Further observing evenings are planned and, as the skies will be darker earlier, this will be a bonus. However the vagaries of British weather will always with us so some meetings maybe called on an impromptu basis. So if you are interested, please send me your phone numbers to be kept informed, and also keep an eye on the ASH website for developments.

Jim Webb

CHAIRMAN'S QUARTERS



I was recently looking through Future' from the old Eagle comic) and Frank Hampson. Among the frames wearing a 'classic' space suit of what (leatherette?). Mobility doesn't manipulation of things with the to today's spacesuits where limited. This reminded me of an technologies that are being applied to



some old Dan Dare books (the 'Pilot of the was being enthralled by the artwork of were scenes of Colonel Dare in space, appears to be loosely fitting leather appear to be a problem and even chunky gloves seemed easy. Contrast this everything is bulky and movement is quite article I had recently read about new spacesuits.

Future astronauts, instead of climbing into a conventional, bulky, air-pressurised suit, may don a lightweight, stretchy garment, lined with tiny, muscle-like coils. This skin-tight, pressurised suit would not only support the astronaut, but would give them much more freedom to move during planetary exploration. An electric current triggers the coils to contract and essentially shrink-wrap the garment around the astronaut's body. To take the suit off, a modest force is applied, returning the suit to its original looser form!

Researchers at MIT are getting close to engineering such an active, 'second-skin' spacesuit. The team have engineered active compression garments that incorporate small, spring-like, coils that contract in response to heat. The coils, made from a shape-memory alloy, are incorporated in a tourniquet-like cuff, to which a current is applied to generate heat. At a specific temperature, the coils contract to their 'remembered' form, tightening the cuff in the process. In subsequent tests, the team found that the pressure produced by the coils was equal to that required to fully support an astronaut in space.

Current spacesuits are essentially a balloon of gas that provides the astronaut with approximately one-third of an atmosphere pressure to keep them alive in the vacuum of space. What the team is hoping to achieve is the same pressurisation, but through mechanical counter-pressure, ie applying the pressure directly to the skin, thus avoiding the gas pressure altogether.

Skin-tight spacesuits have been proposed in the past but there has been one persistent design hurdle - how to squeeze in and out of a pressurised suit engineered to be extremely tight. This is where these shape-memory alloys may provide a solution. Such materials only contract when heated, and can easily be stretched back to a looser shape when cool. Around 14 shape-changing materials were considered by the researchers before they settled on nickel-titanium alloys. When 'trained' as tightly packed, small-diameter springs, this material contracts when heated to produce a significant amount of force. As it is a low mass material it is ideal for use in a lightweight compression suit.

To 'train' the material, the raw shape memory alloy fibre must be first wound into extremely tight millimetre-diameter coils, then heated to a high temperature to set them into the required, or 'trained' shape. At room temperature the coils may be stretched or bent, much like a paper clip. However, at a certain 'trigger' temperature (in this case, as low as 60°C), the fibre will begin to spring back to its trained, tightly coiled state.

The researchers attached an array of coils to an elastic cuff, attaching each coil to a small thread linked to the cuff. By applying a voltage, to generating heat, the coils contracted, pulling the attached threads, and tightening the cuff. These are basically self-closing buckles and when one puts the suit on, by running an electric current through the little features, the suit will snugly shrink-wrap to the body shape. Then an outside loosely fitting cover can be put on – like the Dan Dare suits. The challenge is finding a way to keep the suit tight without the need to maintain high temperatures, which would - needless to say - be totally impractical for the astronaut.

JIM

SPACE NEWS

It will be the furthest ever landing ever attempted in the Solar System. The ESA Rosetta mission is scheduled to deploy its lander, Philae, (below), to the surface of Comet 67P/Churyumov–Gerasimenko on 12th November.

Philae's landing site, currently known as 'Site J', is located on the smaller of the Comet's two 'lobes', with a back-up site on the larger lobe. The sites were selected just six weeks after Rosetta arrived at the Comet on 6th August, following its 10-year journey through the Solar System.



In that time, the Rosetta mission has been conducting an unprecedented scientific analysis of the Comet, a remnant of the Solar System's 4.6 billion-year history. The latest results from Rosetta will be presented on the occasion of the landing, during press briefings.

The main focus to date has been to survey 67P/Churyumov–Gerasimenko in order to prepare for the first ever attempt to soft-land on a comet.

'Site J' was chosen unanimously over four other candidate sites as the primary landing site because the majority of terrain within a square kilometre area has slopes of less than 30°, relative to the local vertical, and because there are relatively few large boulders. The area also receives sufficient daily illumination to recharge Philae and continue surface science operations beyond the initial 64-hour battery-powered phase.

For the primary landing scenario, targeting Site J, Rosetta will release Philae at 08:35 GMT/UTC at a distance of 22.5 km from the centre of the Comet, landing about seven hours later. The one-way signal travel time between Rosetta and Earth on 12th November is 28 minutes 20 seconds, meaning that confirmation of the landing will arrive at Earth ground stations at around 16:00 hrs, GMT/UTC.

SKY VIEWS



Top - a two-day old Crescent Moon, 26th September 2014, photographed from north Phoenix, Arizona. Seeing, let alone photographing, a Moon this young is difficult. However the clear, high-altitude, skies of the south-west United States helps.

Bottom, three days later, with an over-exposed image showing the Moon, with Saturn to the lower right, and Mars top left. The red star Antares, is lower left. Note the long(ish) exposure has created lens reflections for the Moon (below), and Mars and Antares that show up as the duller, bluer, images closer to the Moon. Both the above images were taken from the same location.

THE NIGHT SKY : THE PLANETS

October - November 2014

MERCURY : At inferior conjunction on 16th October (night of the meeting) and moving into the morning skies. On 22nd October around 07.00 hrs, it will be at magnitude +2.0 and 8 degrees above the horizon and, with care, can be viewed before the Sun rises. By the end of October it will be higher in the sky and brighter with a magnitude of -0.4. Reaches greatest western elongation on 1st November when it will measure seven arcs seconds in angular diameter and have phase of just over 50%. This is its best viewing for any morning this year. **HOWEVER THE USUAL WARNING TO TAKE EXTREME CARE WHEN VIEWING JUST BEFORE THE SUN RISES AND NOT TO USE ANY OPTICAL DEVICES.**

VENUS : Still currently in the morning skies, and rising only around half an hour before the Sun at the start of October at magnitude of -3.9. Reaches superior conjunction on 25th October and passes behind the Sun. It will be moving back into the evening skies in a few weeks time.

EARTH : GMT / UTC begins 02.00hrs on 27th October

MARS : Moves into Sagittarius on the 21st October, but reducing in magnitude from +0.8 to +0.9. Sets around two and a half hours after the Sun. Moon to the north on 28th October.

The thin two-day old crescent Moon was close by on 26th September, see [SKY VIEWS](#)

JUPITER : Magnitude -1.9 and rising around 02:30 (BST). Having started October near M44, the giant planet is moving down towards Leo, which it reached on the 14th. By the end of the month it is rising nearer to Midnight and increases slightly in size (from 34 to 36 arc seconds) and an increase in magnitude to -2. As the Earth and Jupiter get (slightly) closer, Jupiter's disk increases slightly making the equatorial bands in the atmosphere and the four Galilean moons more prominent. Moon to the north on 14th November.

SATURN : Magnitude 0.6 in Libra. Reached superior conjunction on 18th November. Meanwhile the planet is fading into the twilight as the month progresses, disappearing for a month or so. Good views will now have to wait for a while until the ringed-planet re-emerges in the morning skies. There will be an occultation of Saturn by the very thin Crescent Moon on 25th October, starting just about bang-on 17.00hrs.

The thin two-day old crescent Moon was close by on 26th September, see [SKY VIEWS](#)

URANUS : In Pisces, at opposition on 7th October. Moon to the north on 4th November. An occultation will be visible in Iceland.

NEPTUNE : In Aquarius, magnitude around +8. Moon to the north on 2nd November.

METEORS

The southern radiant Taurids peak on 5th November - but being Bonfire Night there could be confusion.... The northern radiant peak on 12th. Leonids peak, 18th November.

COMETS

2014's most anticipated comet, C/2013 A1 Siding Spring, approaches Mars on 19th October. The tail may even envelope the Red Planet, so if you are viewing you could get a 'fuzziness' appearing!

THE MOON



New 23rd

First 31st

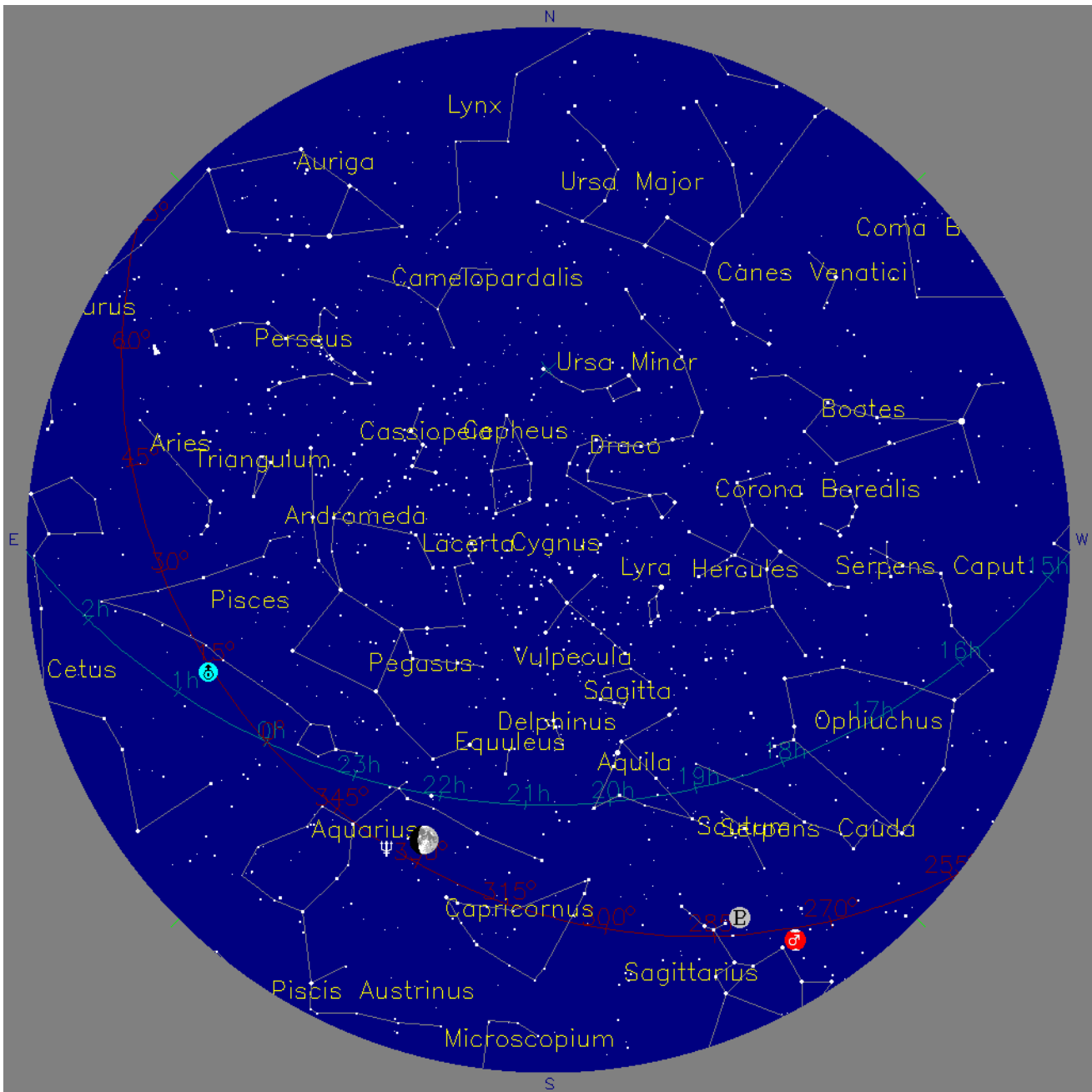
Full 6th November

Last 14th









New 22nd

THE NIGHT SKY : MAP

1st November 2014 : 18.00hrs GMT/ UTC



KEY

 MERCURY	 SATURN
 VENUS	 URANUS
 MARS	 NEPTUNE
 JUPITER	 PLUTO



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