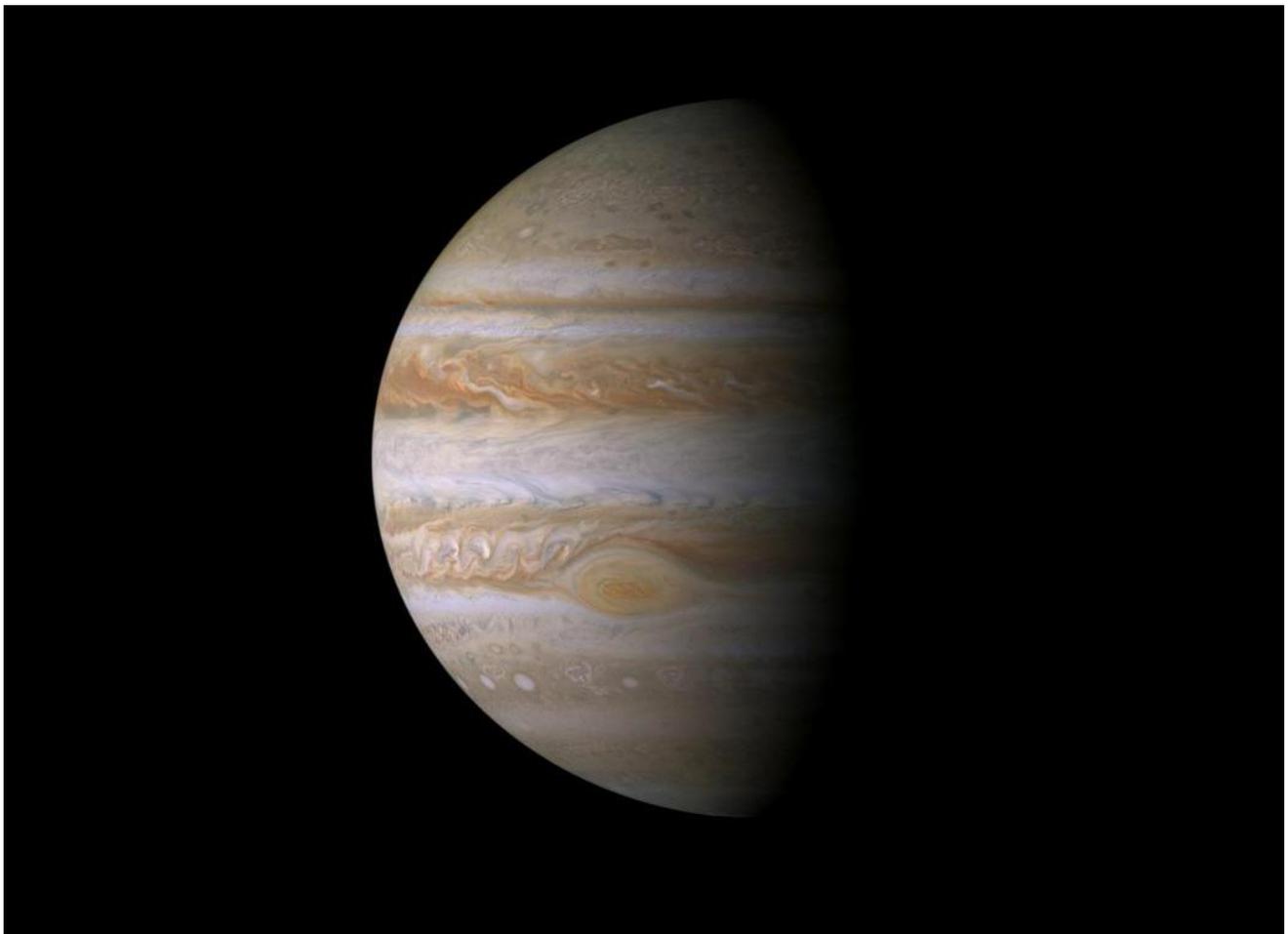


2002



NEXT MEETING

THURSDAY, 20th February 2014

THE ASTRONOMICAL SOCIETY OF HARINGEY

VOLUME 42 : ISSUE 4 : February 2014

www.ashastro.co.uk

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 currently we do not hold a meeting, and this now currently applies to the December Christmas Meet, though that may change back in the future? However, in case of changes, it is always advisable to double-check the dates below.

IMPORTANT

**Remember we have had a change of meeting room.
See the next page**

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

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.

Confirmation as to which meetings will be held are due to be announced after the next Committee Meeting.

February 20th : Jim Webb : *"Lasers – A Solution Looking For A Problem..."*

March 20th : TBA

April 17th : Jerry Stone : "Is Pluto A Planet?"

May 15th : TBA

June 19th : TBA

July 17th : TBA

August : Summer Break

September : 18th : TBA

October 16th : AGM

November 20th : TBA

December : Probably no meeting this month

COVER

With Jupiter being the most prominent object (needless to say, after the Moon) in the night sky, here is an image that shows the giant planet in all its glory. This true-colour mosaic of Jupiter was constructed from images taken by the narrow-angle camera onboard NASA's Cassini spacecraft on December 29th, 2000, during its closest approach to the giant planet at a distance of approximately 10 million kilometres (6.2 million miles).

It is the most detailed global colour portrait of Jupiter ever produced; the smallest visible features are approximately 60 kilometres (37 miles) across. The mosaic is composed of 27 images: nine images were required to cover the entire planet in a noughts-and-crosses pattern, and each of those locations was imaged in red, green, and blue to provide true colour. Although Cassini's camera can see more colours than humans can, Jupiter's colours in this new view look very close to the way the human eye would see them.

Photo – NASA

SOCIETY NEWS MEETING ROOM



Due to the new rooms we had been given in the Sixth Form Centre not being entirely suitable, we have moved again, this time to the Main Music Block.

This is the two-storey building, next to our original room, the now-demolished Music Room (marked with the X - see the main photo on left.) Note, especially for those walking, the easiest route from the Main gate is as the arrow depicts, ie not the route you'd likely think of taking through the car park! We will be meeting in one of the first floor rooms, details will be posted as you come in. 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.

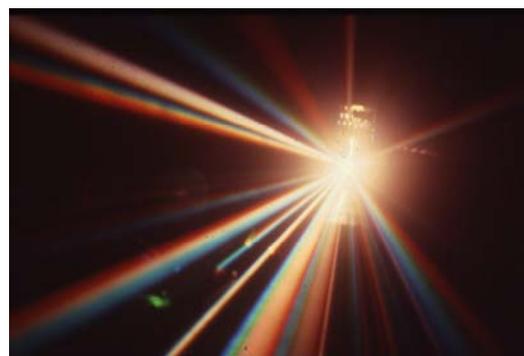
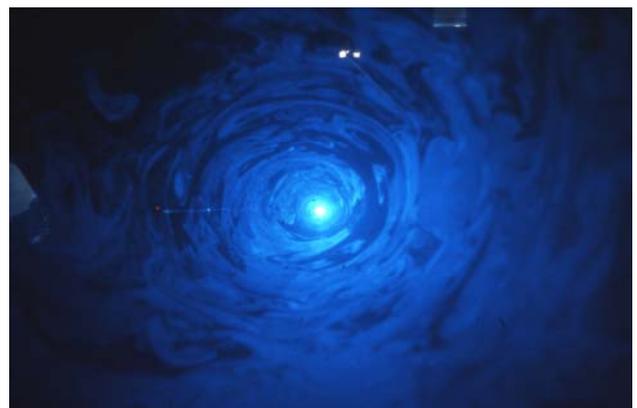
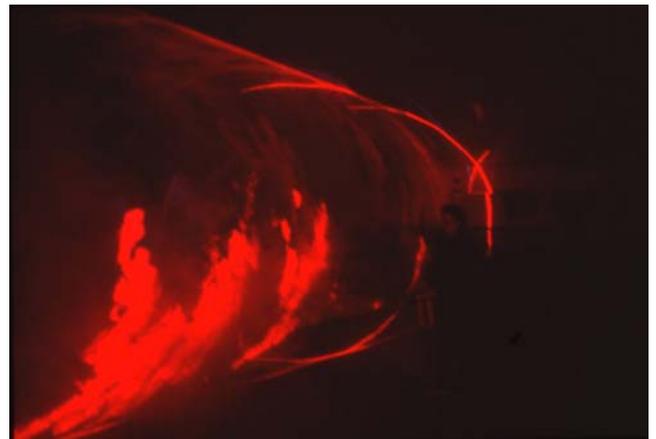
MEETING PREVIEW : 20th February

"Jim Webb : "Lasers – A Solution Looking For A Problem"

There is a change of subject-matter from that originally publicised by our Chairman.

It has been 52 years since Theodore Maiman made the first visible laser and its invention has had far reaching consequences to our technology and lives.

Jim will be giving a talk on his favourite subject, indeed his work, on the current developments with lasers. This will involve a little bit of technology, but will mostly be non-technical and even fun involving lasers of all types. Indeed Jim has said to be prepared to be amazed and dazzled (not literally!), as he is planning to bring a number of them along both for demonstration – and entertainment.



MEETING REVIEW : 16th January 2014 Roger O'Brien : "To the Moon and Beyond"

Roger was planning to deal not only with the Moon, with the Chinese Chang'e lander and NASA LADEE mission, but also onto Mars, with the Indian MOM, Mars Orbital Mission. However there was so much to deal with the first two, that Mars – for the time being – had to be postponed!

LADEE and Chang'e are different missions from different countries, but they have a link...

LADEE stands for Lunar Atmosphere and Dust Environment Explorer and is, according to NASA, pronounced 'laddie'. (Though NASA doesn't say if a Scottish accent is required?) It was designed to measure Lunar dust, and one of its first tasks was to detect the result of the landing of Chang'e 3 – hence the connection.



The Chang'e mission was not a total surprise. With China becoming the third manned spacecraft country, the push outwards to the planets was hardly unexpected. Chang'e 3 is a Lunar lander, with a Lunar rover, called Yuti (Jade Rabbit). This is certainly a first for China, though it should be born in mind that the Soviet Union had Lunokhod, landed via Luna 17, in 1970, so we are talking of 43 years earlier! The name, Chang'e is the Chinese Moon Goddess, and Yuti is her pet rabbit! (*left*)



The evening was rounded off by your Editor with what is hopefully a regular event, 'What's in the Night Sky' – and extension of the items in the magazine. There was also a mention of the recent Stargazing Live series on BBC-2, on which he had worked, albeit briefly! He bought along one of the models features in the programmes, the Saturn probe Cassini, (*right*). This



was used by NASA scientist Dr. Carolyn Porco, head of imaging for the Cassini Mission. (*above left*)

CHAIRMAN'S QUARTERS



Back in the USA, again, for my regular January exhibition jaunt. San Francisco is the venue for Photonics West – the exhibition for lasers, optics and related technologies. This year it featured a few companies producing 'off the shelf' adaptive optic components for large telescopes. It struck me that this technology has evolved from a highly specialised, 'custom build' process to a full blown commercial enterprise. Other booths featured advanced optics for space and terrestrial use. All very flashy. I got chatting to Bill Holmes, a director at Micropac Industries, on a small unassuming booth, opposite the one I was based. They are located in Garland, Texas and manufacture custom electronic modules. It turns out that some of what they produce ends up in space. One such assembly is on the Mars Rover Curiosity whose purpose is to precisely detect the position of the onboard cameras. Another of their small modules is for use in satellites for power management. This three-in-one unit can switch power among the onboard components; act as a resettable fuse if there is a power overload and continuously monitor the volts and amps flowing through the entire system! There is not a lot of space in spacecraft so everything had to be as compact and multifunctional as possible.

Unlike the comforts of our protected planet, space is a very hostile place full of not a lot of matter but brimming with radiation covering the entire electromagnetic spectrum. Sending anything into space is a major logistical task of not just getting it up there (that is relatively easy!) but keeping it from either being destroyed or destroying itself. Simple things like materials we use routinely use on our lovely planet (like plastics and rubber) can just fall apart in the vacuum of space. Components can outgas causing them to change shape, crack or blow apart. In the early days most components were metal with big chunky circuit boards that didn't suffer too much from these problems, even though some soldered joints, with air trapped in them, did fail! Modern complex circuit boards have to be thoroughly vacuum tested before 'going up'.

Power management is also a major issue. The right amount of power has to go to all the correct places. If something goes wrong, there is no one to go and deal with the problem! Everything has to be carefully monitored and controlled with enough on-board 'intelligence' to immediately deal with any problems (generally to shut down the faulty circuit) before they can lead to a catastrophic situation. The fault conditions then have to be fully relayed to Earth for the ground controllers to analyse the data and then decide how to best deal with the situation to try to get it back up and running. This is particularly important for deep space missions where it can take hours for the data to get to Earth and, of course, for the solution to be relayed back to the spacecraft.

Heat management is another major issue. The side of a spacecraft facing the Sun will get very hot whereas the other side will be freezing. The same applies for Earth orbit because the temperature drops very quickly when entering the Earth's shadow! Components continually expanding and contracting will fail. Shielding or rotation are general solutions but more exotic solutions have to be found when onboard components (such as infra-red detectors) have to be kept at very low temperatures all the time.

Radiation is another major problem. In earlier times semiconductors were large and chunky so were not susceptible to radiation or charged particles. Modern integrated circuits are so delicate that charged particles can embed themselves in the microchip and destroy or even modify their functionality, as happened in the Clementine satellite! Every gram of shielding adds to the launch costs so very sophisticated methods have to be devised and employed. "Shields up Mr Sulu – cosmic storm approaching!"

See you at the next meeting.

JIM

Sky Views

With Jupiter still very prominent in the night sky - and the subject of the first episode in Season 2 of *The Sky at Night!* - here are the sort of scenes you can photograph using basic everyday photographic equipment.

The top image was taken by Chairman Jim on January 19th through the 12-inch Zeiss refractor at the Griffith Park Observatory, LA, using the camera in his Nokia cell phone. The three dots in line are three of Jupiter's Galilean satellites, the fourth dot, above right, is a bright star. Jupiter itself is grossly overexposed to show the satellites.



The lower image was taken by Alister Innes on January 10th, using a Samsung PL series camera. It shows all four Galileans.



A few more images from both astronomy programmes.

Top: The end of an era! The banner - displayed at Patrick's House (even with his passing, it is still "Patrick's House") - celebrated the end of Series One of The Sky at Night. Note this ran from 1957 to 2013... which has to be the longest ever for any TV series. It was deemed to be the end as, even though the programme continued after Patrick's death in December 2012, it hasn't been until now that the way the programme is made has changed. Not apparent on screen as such - unless you read all the end credits! - but The Sky at Night now comes, along with Stargazing Live, under the Science Department. It may seem odd that it wasn't already, but up until now, it has come under General Features.

Top left : Chris Lintott interviews Apollo 7 astronaut Walt Cunningham on the roof of the offices at Jodrell Bank for The Sky at Night, while making Stargazing Live.

Middle: Walt (*far right*) with the crew behind the SGL Tweets. In fact this image - taken by your Editor - is the one that was Tweeted!

Bottom: not the usual view at Jodrell Bank, the giant OB (Outside Broadcast) wagon used for Stargazing Live, parked in front of the main building.

The giant 250 feet diameter Mk 1A Lovell dish dominates the background.

Photos - Mat



THE NIGHT SKY : THE PLANETS

February - March 2014

MERCURY : Was at inferior conjunction (directly between the Sun and Earth) on 15th February, and moved into the morning skies. But the planet is very low down and difficult to spot. The best morning appearance will have to wait until November this year. The Moon is to the north on 27th February. At greatest elongation west on 14th March. Conjunction with Neptune on 22nd March

VENUS : Reached inferior conjunction on 11th January and moved into the morning skies by the end of the month. Far easier to spot than Mercury as it is currently around the brightest it ever gets, -4.6 magnitude, and at 17 degrees above the horizon at Sunrise. However the usual reminder has to be given if you are viewing at dawn, be very aware of the rising Sun, and especially avoid using any optical device. In conjunction with the waning crescent Moon (three days to New) on 26th.

MARS : Rises around mid-evening in Virgo, near to the bright star Spica increasing in magnitude as the month progresses, from about $+0.2$ to -0.5 . With modest magnification and good seeing it is possible to see markings on its reddish surface, such as the Syrtis Major and the polar regions. The North Pole is currently tilted towards us. The Moon is to the south on the night of the meeting, ie the 20th, also on 19th March.

JUPITER : Still visible all night in Gemini, dominating the south-eastern skies at around 60 degrees. If you need a pointer, Jupiter is lower right of the Gemini Twins, Castor and Pollux, though in reality, it will be Jupiter acting as a pointer to the Twins, which are fainter and to the upper left! The magnitude is around -2.7 with a disk 47 arc seconds across. A small telescope will reveal the four Galilean satellites and The Great Red Spot which seems to be somewhat larger than usual. Moon to the south on 10th March. See also [SKY VIEWS](#)

SATURN : Rises around 02.00hrs in the pre-dawn sky, moving back as the month progresses to just after midnight, by the end of February. In Libra with a magnitude of $+0.4$. The waning crescent Moon is very close at $.2^\circ$ North on 21st February. From some viewpoints, the Moon will occult the planet, but this will only be visible in the southern hemisphere.

URANUS : In Pisces. Magnitude around $+5.7$ which means it is just on the edge of naked eye visibility, as that is usually taken to be a maximum of $+6$. But this assumes ideal viewing conditions and 20:20 vision! Moon close by on 3rd March.

NEPTUNE : In conjunction with the Sun on 23rd February.

COMETS

Nothing is so far forecast for any 'Great Comets' for 2014, but as it is invariably said, comets are as predictable as cats – both have tails and both do exactly what they like! Periodic Comet Holmes approaches the Sun in March. In 2007 at its last approach it increased in brilliance by a factor of .5 million. In May it is calculated the Earth could pass through the tail of Comet 209P LINEAR, which could result in a meteor storm.

THE MOON



New 30th January
New 1st March

First 6th Feb
First 8th Feb

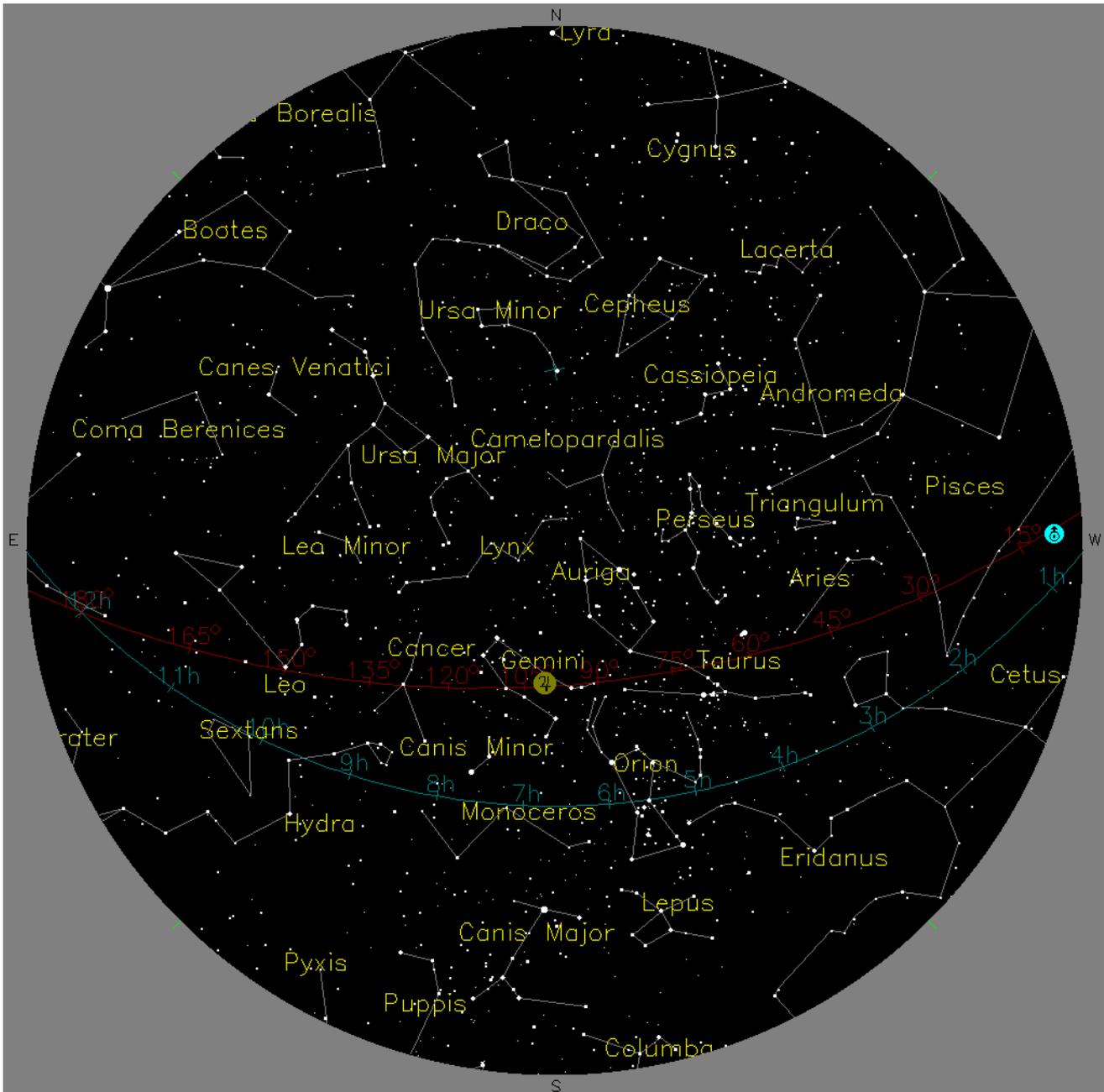
Full 15th
Full 16th

Last 22nd
Last 24th

New 1st March
New 30th

THE NIGHT SKY : MAP

1st March 2014 : 20.00hrs GMT/ UTC



KEY



MERCURY



VENUS



MARS



JUPITER



SATURN



URANUS



NEPTUNE



PLUTO



Astronomical Society of Haringey

Patron: **Sir Arthur C. Clarke, C.B.E., B.Sc., F.R.A.S., F.B.I.S.**

President : **Frederick W. Clarke, F.Ph.S.(Eng), F.B.I.S.**

Vice President : **Walter T. Baker**

ASH COMMITTEE MEMBERS : 2012 – 2013

CHAIRMAN : Jim Webb email chairman@ashastro.co.uk [www.glservices.org]

SECRETARY: Charles Towler email secretary@ashastro.co.uk

TREASURER : Gordon Harding

MEMBERSHIP SECRETARY: Alister Innes email memsec@ashastro.co.uk

EDITOR, P.R.O. and VICE-CHAIRMAN (and current WEBMASTER) : Mat Irvine
email editor@ashastro.co.uk [www.smallspace.demon.co.uk]

GENERAL MEMBER : Mitchell Sandler

GENERAL MEMBER : Liz Partridge

JUNIOR MEMBER : Nicholas Lucas

GENERAL MEMBER AT LARGE : Gary Marriott

GENERAL INFORMATION : info@ashastro.co.uk



Astronomical Society of Haringey