

# Janus



## Ewell Astronomical Society Newsletter – Winter/Spring 2008

Serving skywatchers in SW London and north Surrey

Ewell AS homepage [www.ewell-as.co.uk](http://www.ewell-as.co.uk)

Ewell Astro Soc c/o David Fishwick, Nonsuch HS for Girls, Ewell Road, Cheam, Surrey SM3 8AB  
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**JANUS-ON-LINE-IN-COLOUR:** For a full colour version of any recent Janus log-on to [www.ewell-as.co.uk](http://www.ewell-as.co.uk) / Janus / Janus pdf file. Cut + paste web addresses [[URLs](#)] direct to your Internet Browser and save typing errors!

**YOUR NEW COMMITTEE & OTHER OFFICERS** elected/ appointed on Dec 14<sup>th</sup> 2007 h 2007AGM – contact them if you have any Society queries. Chairman - David Cooper: Secretary - Richard Gledhill: Treasurer - Valerie May  
Committee members & other officers - David Fishwick [Dep Chairman]; Maurice Gavin [Janus Editor+Webmaster]; Mike Wright [Registrar]; Alan Lane [Publicity Officer] – Librarian –vacant.

**EWELL AS MEETINGS** : All held at Nonsuch HS for Girls – Ewell Road - Cheam [unless noted] and start at 8pm. Ordinary Monthly Meetings [in bold] in Common Room start at 7.40pm. Door subs – arriving at meetings with small change in your pocket and not tendering £10 and £20 notes is greatly appreciated. **Meeting fee £1 - visitors £3 each.**  
\*Headley Heath meetings phone 01252 382940 from 7pm on evening to check observing is ‘on’.

### EAS Meeting dates for your 2008 diary – see [www.ewell-as.co.uk](http://www.ewell-as.co.uk)

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**Door subscriptions £1 and £3 for visitors** - Arriving at meetings with small change in your pocket and not tendering £10 and £20 notes is greatly appreciated.

**Fri Feb 8** - Dr Glyn Collinson [Mullard Space Science Laboratory – UCL] *ESA’s Solar Orbiter Mission*

**Wed Feb 20 @ 8pm** – Users Group Meeting – NSHS Observatory Deck

**Mon-Thu Mar 3-6 @ 8pm** Observing Session Headley Heath\*

**Fri Mar 14** – Dr Andrew Ball [Open Uni] *Planetary Landers - Exotic Craft for Strange Places*

**Mon-Thu Apr 7-10 @ 8.30pm** Observing Session Headley Heath\*

**Fri Apr 11** – Dr Darren Baskill [Leicester Uni] *X-ray Astronomy & Cataclysmic Variables*

**Wed Apr 16 @ 8pm** – Users Group Meeting – NSHS Observatory Deck

**Ancient Lights** – Lynx quasar @ 12 billion LYs !

**Mon-Thu May 5-8 @ 9pm** Observing Session Headley Heath\*

**Fri May 9** – Prof. Malcolm MacCallum [QMC] *Gravitational Waves*

**Fri Jun 13** - Peter Meadows [BAA] *Solar Observing*

**Wed Jun 18 @ 8pm** – Users Group Meeting – NSHS Observatory Deck

**Fri Jul 11** – Prof. Mike Merrifield [Nottingham Uni] *How to build a Galaxy*

**August** – no main meeting

**Wed Aug 20 @ 8pm** – Users Group Meeting – NSHS Observatory Deck

**Fri Sept 12** – Prof. Monica Grady [OU] *The Earth - does it have a future?*

**Mon-Thu Sep 22-25 @ 8pm** Observing Session Headley Heath\*

**Fri Oct 10** – Dr Nigel Marshall -TBA

**Wed Oct 15 @ 8pm** – Users Group Meeting – NSHS Observatory Deck

**Mon-Thu Oct 27-30 @ 8pm** Observing Session Headley Heath\*

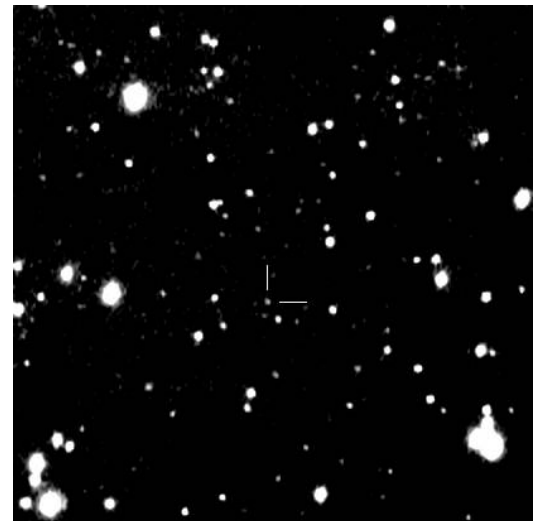
**Fri Nov 14** - TBA

**Mon-Thu Nov 24-27 @ 8pm** Observing Session Headley Heath\*

**Fri Dec 12** – AGM + talks TBA

**Mon-Thu Dec 16-19 @ 8pm** Observing Session Headley Heath\*

**Wed Dec 17 @ 8pm** – Users Group Meeting – NSHS Observatory Deck



**OBSERVING SESSIONS ON HEADLEY HEATH** will be held monthly [Sept to May] on dates noted on the EAS Diary at the ‘dark of the moon’ at NT carpark adj cricket pitch. Phone 01252 382940 from 7pm to check meeting is on.

**THE USERS GROUP MEETING** is held on Wednesdays from 8pm sharp on alternate months on dates noted on the EAS Diary in the School's Geography Room via Main School Entrance facing playing field -map [www.ewell-as.co.uk](http://www.ewell-as.co.uk)

**EWELL AS SUBSCRIPTIONS:** The Society annual subscriptions are due on January 1st. Please forward your sub [member £15; family £18; junior £5 made payable to Ewell Astro Soc] to our Treasurer - Valerie May, 41 The Green, Burgh Heath, Tadworth, Surrey KT205NP; phone: 01737361486

**GRESHAM COLLEGE LECTURES:** Professor Ian Morison, who gave our 40th Anniversary talk, continues his lectures at Gresham College - Staple Inn Hall lunchtime at 1pm on the following dates:

7 Feb 2008 - *Beauty of the Heavens*

21 Feb 2008 - *Proving Einstein right!*

7-9 Mar 2008 - *Gresham Astro WE* Farncombe Estate

3 Apr 2008 - *The search for ETI in the New Millennium*

Lectures are free but to register contact: Gresham College, Barnard's Inn Hall, Holborn, London EC1N Tel: +44 (0)20 7831 0575 Fax: +44 (0)20 7831 5208 Email : [enquiries@gresham.ac.uk](mailto:enquiries@gresham.ac.uk)

**JERRY WORKMAN'S TALK ON THE CASSINI MISSION** on Jan 11<sup>th</sup> by Alan Lane

Jerry Workman of Harringay AS presented a resume and update of the Cassini mission to Saturn. Speaking first about Saturn, Jerry compared the gas giant with Earth, its volume being 750 times greater and having a density less than that of water, while Earth is 5.5 more dense than water. The magnetic field around Saturn is much more powerful than that of Earth. The form of Saturn was a mystery to early telescope users, but eventually resolved into the famous rings and these were later seen to be apparently divided by one then two or more gaps. The information returned by Cassini show that the gaps are not completely empty but are much less dense. The main Cassini division is some 3000 miles wide. The rings are composed of ice particles, some room size but most are smaller with a lot of dust. They are no more than a few miles thick.

The first instruments to view Saturn from space were carried by Pioneer 11 and Voyager 1 and 2 which, said Jerry, "answered some old questions and raised some new ones". These were fly by missions, Cassini was specifically sent to examine Saturn and its satellites and carried a probe named Huygens to fly into and land on Titan.

Jerry described the spiral trajectory of Cassini which gained gravity boosts from two passes of Venus, one of Earth and then from Jupiter arriving at Saturn in July 2004. There followed 74 orbits of the Planet and 44 to Titan and other satellites. Huygens was released for its journey to Titan.

Describing Saturn's surface features Jerry said they were not as bland as they seem from Earth, Saturn had bands and anticyclone spots similar to those of Jupiter but paler. The spots were smaller than on Jupiter but still up to 1000 miles across. Winds of up to 800 mph were recorded, it is a mystery where the energy to generate such speeds comes from. Jerry then went on to describe the satellites of Saturn. Most of the small satellites are water ice with surface discolouring, often on just one side.

Janus just outside the rings - is a small irregular body with an average diameter of 130 miles. Mimas is slightly larger at over 200 miles diameter is notable for Herschel, a very large crater one third of the diameter of the satellite.

Enceladus at 500Km diameter is surprisingly smooth suggesting resurfacing, one view showed geysers spewing through cracks in the ice. The heat to feed this melting was probably generated by gravitational distortion from Saturn the surface of which is only 180,000 km away.

Tethys at 295,000 Km from Saturn is over 1000 Km in diameter and also has a very large crater some 400 Km across Dione is just 60Km larger than Tethys and 378,000 Km from its parent planet. Wispy white marks on the surface of Dione can be seen on closer inspection to be cliffs. Like the White Cliffs of Dover they expose the underling substance, but these cliffs are made of ice. Rhea is 1530 Km across and 527Km from Saturn is the second largest of its satellites. Hyperion, found in 1894, is irregular shaped, its longest axis being 300Km.

Iapetus is noticeably much darker on one hemisphere and has a distinctive encircling equatorial ridge. Close examination shows this to be a mountain range comparable in height to the Himalayas and probably caused by internal shrinkage.

Iapetus is 3.6 million Km from Saturn and 1440 Km in diameter. Phoebe, 12 million Km distant from Saturn, is only 220 Km across and has massive crater on one side and a huge chunk torn from the other. It has retrograde orbit and seems likely to be a captured asteroid.

Titan, the target of the Huygens probe, is the second largest satellite in the Solar system at over 5000 Km in diameter, larger than Mercury, and the only one to have visible atmosphere. It orbits Saturn at 1.2 million Km. Huygens showed Titan to have ice continents with methane lakes and rivers. Methane rain with golf ball sized drops falls almost continuously, as much as 50cm a year. A thick orange haze permeates the heavy nitrogen atmosphere. Cassini is still sending back information and may well last until 2010.

## JANUS CONTRIBUTIONS – CAN YOU HELP?

*Janus* always needs your contribution for *your newsletter*! If you have any astro observations, pictures, articles or notes please email it to [mgavin@ntlworld.com](mailto:mgavin@ntlworld.com) or hand it to Maurice Gavin on a floppy disk or CD. Thanks.

## SOCIETY INSURANCE

The Society changed its personal liability insurance awhile back and is now covered by the Nonsuch HS insurance but only for event on the school's premises. Outside visits, like Headley Heath observing sessions etc, are at the members/visitors own risk.

## OBSERVING SESSION – ALBURY HEATH on 2008 Jan 7<sup>th</sup> report by James Gordon.

Mike Fantham was informed at the last hour that the carpark at **Headley Heath** was closed due to resurfacing works. We decided to go to **Albury Heath** [where Guildford AS hold observing sessions]. It is a bit further to go for most people from EAS so we were not expecting a big turnout. Present were myself, Mike Fantham and Clive Cook.

We set up my 10" Newtonian and Clive's recent acquisition - the 16" Monster Dobsonian! Before setting up, a visual scan of the sky revealed an excellent southern sky but hideous light pollution coming from London [thanks Ken Livingstone!]. The **Milky Way** was visible from north of Cassiopeia, south and to the east of Orion, riding high. The **Great Nebula in the Sword [M42]** was clearly visible as a non-stellar bright blob. **Comet Holmes** was visible [just] near **Algol** in Perseus to the unaided eye. In binoculars it was very large and diffuse.

Appearing brighter in binoculars was **Comet Tuttle** in the south/south west. High up near **Mars**, in Taurus I had my first glimpse [barely!] of the **Crab Nebula – M1** in 15x70 bins. We used the darker than normal sky to advantage by seeking out faint deep sky objects. After the common targets, **M31**, **M42** etc I suggested **M33** in Triangulum. In the big Dob it showed as a very large blob. A bit disappointing as I have seen much detail in this galaxy before - but it is faint. We tried the tough edge on galaxy **NGC 891** in Andromeda. Couldn't find it in the 10" but it was there in the 16", although faint. With higher power [100x] I thought that a dust lane blinked into view but not sure if this was not imagined! Clive wanted to see **NGC 2419, the Intergalactic Wanderer** [mag 10.4 globular cluster]. Couldn't find it with the 10" but it showed a brighter centre and fainter outer parts, unresolved in the 16" Dob.

Keen to find more deep sky objects, we went to **NGC 2841** in Ursa Major. The 10" was getting redundant! In the 16" the galaxy appeared with a bright core with an elliptical haze around it. **M108** was a treat - a very narrow slither of light which extended with averted vision. Later in the 10", **M97 [planetary nebula]** made a splendid pair in the same field of view. Trying to find **NGC 2403** low down in Leo proved a little tricky. Mike found it with perseverance - another attractive galaxy with a bright core and a fainter haze around it. I could tell that the numerous galaxies were taking their toll on Mike and soon he thought we should take a look at **bright Mars**. Although very high up I found the view disappointing - the disk was bouncing around a lot! Before Mike went we thought we should try **Saturn**, but again it was not that impressive tonight. Through his big Dob, Clive said he saw several of **Saturns moons**.

Back to the **Deeper Universe!** Ursa Major and Leo were moving higher into much better conditions and now we had some great views of galaxies. We found **M81** and **M82** in the 10" and they had a friend with them, **NGC 3077**. All three galaxies in the same field, and showing lots of detail. In the 16" **M82** showed some dark lanes going across the disk, near the centre. Tried to find **M109** but couldn't, instead got the nearby mag 10.1 **NGC 3953**. Clive found **M109** in the Dob but it was very faint. In Leo Clive found the pair **NGC 3190** and **3193**. I found **M65** and **66** but not **NGC 3628**, the missing member of the **Leo Trio**. Have still not seen this galaxy - hopefully this spring! In the Dob just moving around Leo, **more faint galaxies** nestled in the starfields. We packed up and then hunted for Clive's missing glasses and then found them. The inconvenience of a longer journey was more than made up for with a dark sky, a large aperture scope, enthusiastic astronomers and hunting and finding many faint objects - a few of which I had not seen before. Thanks to Mike and Clive for unselfishly sharing his wonderful telescope. A deep sky observers dream.

**Addendum:** Forgot to mention we saw a few meteors - one a **bright fireball** that left a train passing north-west through **Pegasus**. Didn't note the time unfortunately. Also, near the end of the session we had a look at **M51**. Both cores visible with a peripheral haze in a disproportionate figure-of-8 shape. I reckon given another hour or two when it was higher up in a better part of the sky, the spiral arms would have been visible. And yes - to the north east London's sky looked like a permanent sunrise!

## MEMBER'S REPORT...

*Gary Walker emails* - At my last observation of **Comet Holmes** on January 9th 2008, it now just appears as a very large and dim, roughly circular "splodge" of haze in my 11X 80 binoculars. I have seen **comet 8p/Tuttle** on a very few occasions during the poor weather! In binoculars, it appeared as a small fuzzy patch, slightly brighter in the centre, but with no tail. On the night of December 29th/30th, I managed to see it, between clouds, close to **M33 Pinwheel Galaxy**.

In my 8" SCT, at 66x-100x, the comet appearance was not much changed, but the central condensation was easier to see. In my telescope, I can usually only see the central part of **M33**, due to its low surface brightness, and the comet was visible, apparently separated from the galaxy by about half a degree. The comet appeared somewhat brighter than the nucleus of M33. The comet was also larger than the nucleus of **M33**.

The comet appeared colourless in my instruments, without the green colour so prominent in photographs - However **Comets Hyakutake** and **Hale-Bopp** appeared a dirty yellow colour in my telescopes and binoculars, not the blue-green colours as in photographs. However, this comet was not particularly impressive - probably no better than **Halley's Comet** usually was - i.e. a typical "fuzzball"!

**INSTANT DEEPSKY VIEWING** - after the profusion of fantastic images seen on the Internet or in magazines, one of the big disappointments is viewing a galaxy - just a faint smudge even through a large telescope. Well in an *instant gratification age* that has changed with the introduction of the Collins I3 eyepiece <http://www.ceoptics.com/> [swap for a regular eyepiece] or in full colour on a TV monitor for group viewing - the Mallincam astrovideo camera - see <http://mallincam.tripod.com/id36.html> - there's even a colour pic of the Ring Nebula seen under full daylight ! *MG*

**ANCIENT LIGHTS** - this term is usually reserved to an ancient habit of light received by a window bordering onto neighbour's property that inhibits the neighbour from erecting anything to block the 'light'. *Ancient* is the operative word and there's another *ancient light* - it trickles down to your telescope from immensely remote stars and galaxies where the telescope effectively becomes a *time-machine*. My fascination with astronomy nowadays is largely driven by the quest to catch some of these ancient photons. But how far can they travel?

So immense is the Universe that light even from the nearest and brightest stars, travelling at 300,000km/s, can take years to reach us. From remote stars it's measured in thousands of years and nearby galaxies in millions of years [MLY] but can we go 'deeper'? The answer's 'yes' for nature has conjured some bizarre objects of incredible power - galaxies that probably contain massive active blackholes at their core of such brilliance that they far outshine 'normal' galaxies and so can be seen at immense distances across the Universe measured in billions of light years [BLY]. Quasar 3C273 in Virgo is such an object at 2 BLY range and can be seen in a telescope as a mag 12.4 star-like point.

Nature has yet another trick to see even deeper - gravitational lensing - whereby a relatively nearby galaxy or group of galaxies can bend and 'magnify' [via its gravity] the light of a galaxy or quasar way behind the lensing object. Such a quasar is in the constellation of Lynx [above Gemini] that is 'lensed' to 20 times brighter than normal into a faint mag 15.4 'star' some 12BLY from Earth in a Universe thought to be only a little older at 13.5BY! This quasar's light is nearly three times older than Earth and the Solar System - now that is *ancient*.

**Front cover image** of this Lynx quasar APM08279+5255 was taken with my small Meade ETX-70 refractor in 20 min CCD exposure on 2008 Jan 5. - more deepsky pics at <http://www.astroman.fsnet.co.uk/etx70mg.htm> *MG*

Attendees to the 2007 Dec 14 Ewell AS AGM at Nonsuch HS for Girls - photo by Arthur Wyatt assisted by David Fishwick

