



# TRANSIT

The Newsletter of



8th October, 2004. Julian Day 2453287



The galaxy to name this month, together with the Messier number, NGC number and the constellation it is in. Did you have to look it up? If you didn't, you are on the Thomas Wright Trophy Team from now on.

## Editorial

**September meeting.** CosmosV was held on Saturday, 18<sup>th</sup> September at the Stockton Campus of Durham University (see page 18). Neil Haggath is to be congratulated on arranging a full day of excellent lectures in a splendid, modern lecture theatre. The presentations were very professional, using all the hi-tech facilities available. Those attending enjoyed the day very much and hope that, despite Neil's announcement, it will not be the last.

**October meeting.** On October 8<sup>th</sup>, at Thorpe Thewles, the monthly meeting will be the quiz night for the Thomas Wright Trophy. Teams from around the district will answer fiendishly difficult questions on astronomy and battle for the Trophy. Support your team and learn a lot about astronomy.

**Planetarium and Observatory.** John McCue has a full programme of events for 2004 and into 2005 at both venues. The dates and details are given later in Transit. John's Annual Report is also included in this month's edition.

**More on the Planetarium, Observatory and Wynyard Woodland Park.** There have been extensive changes and improvements to all the facilities at what we used to call Castle Eden Walkway. Ed Restall, Bob Mullen with some helpers have worked very hard in 2004 to achieve dramatic changes. Ed's description of the improvements is included later in Transit.

**Leeds Astromeeet.** To be held on Saturday, 6<sup>th</sup> November in the Brunswick Building in Leeds. Five lectures, book stands, trade stands will be at "the biggest amateur astronomical meeting in the North" according to the publicity sheet (enclosed with Transit).

**Comet Machholtz.** Keith Johnson has written an article on the comet, describing what it is and where it will be. He included a map, which is enclosed as a separate full page to make it easier to read than an A5 sheet.

**Monthly picture.** For the front page picture, I am starting to use an astronomy image we should all be able to name. Yes, this month's is a very recognisable galaxy but we have to start somewhere. It will get harder! The name of the galaxy will be given in November Transit.

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### Events at the Planetarium

Just to keep you up to date with what's happening at the Planetarium, here are some dates and times. The October 15th. talk should be quite special and may be popular so drop me a line if you are interested. Best wishes, John McCue

### **Winter events**

"The Lord of the Rings: Cassini explores Saturn", Nov 19, Dec 17, 2004. Find out what discoveries have been made by Cassini/Huygens, at single-decker-bus-size, the biggest spacecraft ever launched. All at 7.30pm.

"What's up in the sky this month?": Nov 5, Dec 3, 2004, Jan 7, Feb 4, Mar 4, Apr 1, 29, 2005. What stars are up there this month, and are there any planets to see? All at 7.30pm.

"Is there Life out there?": Jan 21, Feb 18, Mar 18, April 15, May 20, 2005. Life-forms are tough survivors, and the number is slowly growing of planets and moons in our solar system where they may be clinging on to existence. All at 7.30pm.

"Impact Earth", Oct 15, 2004, 7.30pm. A special public talk by Andy Heywood of the National Space Centre, Leicester. How much danger do we face from asteroid impacts? How close is Armageddon?

Public Observing through the observatory telescope. This will take place on every Friday night (except Xmas Eve and New Year's Eve, 2004). Observing will start at 7.30pm or as soon as it gets dark (clear skies permitting). On Planetarium nights, observing will start after the show. Come and marvel at the Universe.

Public observing is free, and all planetarium shows are £3 adults, £1.50 concessions, and £6 for an unlimited family ticket.

## Castle Eden Walkway Country Park Planetarium and Observatory Annual Report for 2003/4

### **Introduction**

Opened in April, 2002, the Planetarium is an extension of the popular observatory, which was built in 1994. The Planetarium's main function is the delivery of educational presentations to schools and colleges in the north-east under the guidance of John McCue and the invaluable help of volunteers. Planetarium shows for the general public and community groups continue to be popular, with bookings coming in from a widening range of groups and institutions. The overall total of planetarium presentations during this year has been 234, an increase on last year's 206.

The observatory, now equipped with a new type of telescope, a 475 mm reflector named the Millennium Telescope, is making progress on three programmes of serious astronomical work, which is further described in this report.

### **Equipment**

Planetarium shows were launched full-time in April, 2002, with the American Spitz A1 planetarium projector donated by the Europlanetarium at Genk, Belgium, which was replaced by a newer projector in August, 2002, a 1970's Japanese Goto E5 projector, which was surplus to requirements at Glasgow University. The Goto has performed well since its inauguration, and it is, in fact, very satisfying to the presenter to hear comments from schoolchildren, when the twilight dims, to the effect that the starlit sky looks real. The planetarium continues to make use of its full range of audio-visual facilities: computer displays, video sequences and television broadcasts through the data projector, colour slides shown with twin Braun projectors (fade facility) and a sound system with mini-disc, CD, and a mixer desk. Equipment continues to be purchased by, and donated to, the planetarium/observatory complex. Notably, a hygrometer monitors the humidity as a protection for the fabric of the dome; a colour CCTV camera (instead of monochrome) improves the school demonstrations, as does a newly-purchased monitor which enables the presenter to see the demonstrations which are being projected behind his head on the inside of the dome. Another monitor, donated, replaces a worn-out monitor in the observatory and will be vital to check the transmission from the observatory for public viewing of the transit of Venus on June 8, 2004. Two further CCTV cameras have been donated: one is used on the dais in tandem with the original camera, and controlled by a dual switch (also donated), and the second is held in reserve. A coordinate measuring

light-table machine, for use with the set of sky prints in the Palomar Observatory Sky Survey, has been donated by Cambridge University. A reflecting telescope with an eight-inch mirror has been donated by parents of a former pupil of the director. This is being prepared for use with the recording of the transit of Venus on June 8<sup>th</sup>, 2004.

### **School visits**

In all, 111 school visits have been made to the planetarium from all age groups during the year. This is an increase from last year's figure of 78. There are naturally more visits from primary schools as there are more schools of this type in all authorities. Earth and its place in the Universe is on the National Curriculum at all key stages of education, and consequently each school planetarium presentation contains as much instruction as possible towards the attainment targets specified by the syllabus and being pursued by the teachers. We continue to be encouraged by the response of the teachers, and the immediate reaction of the children, to a planetarium performance. Last year's report gives a detailed account of the format for a typical school visit.

An encouraging development has been the successful presentation of all-day courses to Gifted and Talented pupils, each attending from a cluster of schools. Such events have been raised for the Stockton and Hartlepool areas. Also pleasing is the new arrival of parties from Special Needs Schools. Two Adult Education classes have also been delivered; Stars for the Navigator, and Explore the Night Sky. An educational link with the Arc, Stockton, is planning the visit of Prof. Andrew Cameron (St. Andrews Univ.) in May, who will give two lectures to Stockton pupils and students at Bede College and the Arc itself.

### **GCSE Astronomy**

John McCue is currently teaching the national GCSE Astronomy syllabus to two groups of Year 10 pupils, one at Ian Ramsey School and the other at Our Lady and St. Bede, Stockton. They are taught immediately after school on Thursdays and Wednesdays, respectively. They make regular visits to the planetarium to benefit from the educational facilities there.

### **Remote telescope link-ups**

#### **1) Mt. Wilson, California**

This is an exciting scheme exclusively for school use. After registration, and purchase of software, the planetarium is able to link to a telescope on Mt. Wilson, California. The class are able to direct the telescope and take electronic images of asteroids, comets, planets, star clusters, nebulae and galaxies. During the year, 14 sessions have been arranged, usually on a Wednesday morning (California is 8 hours behind, so it is convenient for British schools to use this system). Success has been achieved 4 times. Sessions may fail because of inclement weather in California, or technical problems, usually the latter. A new telescope with the same specifications has been installed in Chile, on which 16 sessions have been scheduled, 7 of which have been successful. Two attempts to link up with the newest remote telescope under this NASA-sponsored

scheme, in Australia, have failed because of technical difficulties at the other end. The Australian link is planning to re-open in the near future.

## **2) The Liverpool Telescope (Tenerife) and Faulkes Telescopes (Hawaii and Australia).**

These instruments are on a much larger scale than the Mt. Wilson, Chile and Australia telescopes. They are state-of-the-art research-standard reflectors, each with a mirror 2 metres in diameter. The first of these three (Tenerife) is currently undergoing testing, and the next (Hawaii) will go on line in September 2004.. Schools will be able to request images for their chosen celestial objects. The planetarium has been asked to take part in a pilot scheme for the Hawaii telescope, and hopes to take a full part in the educational use of the Tenerife instrument.

### **Shows for the general public and community groups.**

In all, 123 non-school presentations have been made during the year, a similar figure to last year's 128. During the summer of 2003, the planetarium gave shows for the public on Sunday afternoons, which attracted satisfactory audiences. Themes were written for the shows, such as The Stars from Down Under, and Secrets of the Sun. During autumn and winter the shows reverted to Friday evenings fortnightly, alternating with public observing sessions at the observatory using the new Millennium Telescope. The shows from September to December, describing the Beagle 2 mission to Mars during the run-up to its ill-fated landing in December, were extremely popular. The Big Bang shows from January onwards were not capacity audiences but were still popular with public visitors. The most frequent community group visitors are scout and guide groups, who attend for evening shows, but there are many other diverse visitors, such as mental health groups, scientific societies, Rotary Clubs, and retired groups. On clear nights the visitors appreciate views of the real night sky through the portable telescopes owned by the planetarium, which are taken out onto the paved area outside the building (the security lights being turned off!).

### **The Observatory**

The construction and testing of the new telescope is now complete, and a serious programme of astronomical work is now underway.

The Wynyard list. This is a list of 100 deepsky objects to track down and study. They have been chosen mostly from the NGC as the next level of challenging visual observing from the Messier and Caldwell lists. More importantly, they are all included in a new book of astrophysical data on deep-sky objects; it is vitally important to be able to tell pupils and students how far away, how big, how bright...objects are. This information is not always readily available.

Comets. We aim to keep track of as many comets as possible, not just bright examples. The observatory is hoping to earn an international code for this work.

New double stars. We have undertaken scans of the sky using remote telescopes and compare them with our copy of the Palomar Observatory prints here at Wynyard (kindly

donated by Cambridge University Institute of Astronomy). We have three new discoveries already and a report is currently being prepared for the Washington Double Star Catalogue.

### **Volunteers**

The Planetarium and Observatory could not have offered the wide range of technical activities so soon without the help of volunteers dedicated to the vision of the project. Mr. Bob Mullen and Dr. Ed Restall helped on a near full-time basis during the first half of the year. Bob is a communications expert who has advised on, and constructed, the radio station, as well as completing innumerable technical tasks, both innovative and maintainable. Ed has continued and developed his electrical work, especially installing a new telephone network in the planetarium, and extra service pipes and cables to the building; he has also written and regularly updates the web-site. During the second half of the year, their labours were urgently needed during the Wynyard Woodland Park re-development, but they continued to help at the planetarium/observatory where possible. Mr. Jack Youdale provides invaluable publicity in his radio and TV broadcasts, and Mr. Ray Worthy offers regular help and advice based on his long experience of portable planetarium shows. Mrs. Eve Ripley has helped with planetarium concerts. It was hoped to return to the technique of planetarium scripts recorded on mini-disc, and for volunteers to become familiar with, and to execute, the required visual accompaniments for a full show, but this has not proved easy to organise. Two new volunteers are attending on certain Friday afternoons as part of a scheme with their employer, Northumbrian Water. They provide valuable work and advice on computer topics and office administrative tasks.

### **Multifarious activities**

Weddings are becoming popular, with three ceremonies conducted during the year (Nov, 2003, and two in April, 2004). Another is scheduled for May, with three more planned during 2004/5. Two birthday parties have been held, an interesting development.

Two musical concerts have been held, on February 24 (Synthonia Male Voice Choir), and March 26 (Ian Boddy computer music), at which local and talented musicians gave their services to promote the planetarium/observatory complex. They were fully attended and very much enjoyed, and the planetarium owes a debt of gratitude to the musicians.

In October, 2003, Russian cosmonaut Alexandre Alexandrov, and ballistics expert Alexandre Martynov visited the Teesside area for a 4-day educational tour of schools and colleges. They gave a presentation at the planetarium on Friday, Oct. 10.

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### Comet C/2004 Q2 Machholtz From Keith Johnson

Hi Alex,  
I'm sure the more dedicated Society members are already aware of Comet C/2004 Q2 Machholz but, for those who are not, here's a few facts about it.

This possible binocular, or even naked eye, comet makes it way into the northern winter skies from mid December at around 6th magnitude and continues to brighten as it heads northwards until late January 2005 after which it begins to fade.

The comet is at magnitude 6 in the constellation of Eridanus from 3rd Dec to 27th Dec. Then it sweeps through Taurus (28th Dec.-11th Jan.), when it will be at it's brightest at around 4th magnitude. Moving into Perseus, visibility will be hampered briefly by the Milky Way. Emerging from the Milky Way it is still in Perseus (12th January-27th January), before it sweeps into Cassiopeia on the 28th January through to February, by which time the comet begins to fade. What could turn out to be a spectacular sight is at midnight on the 8th January. The Moon has long set when the comet can be seen close to the open cluster M45, "The Pleiades" in Taurus. Also a view that should be worth seeing is in February, when the comet passes through the open cluster region in Cassiopeia.

I've included a Skymap image (*enclosed on a separate sheet, Ed*) plotting the comet's path using the latest ephemerides. The map displays the position for midnight BST on the dates given, together with the comet's magnitude.

Regards, Keith.

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## Astronomy and the Internet

*from Rod Cuff*

If you have any particular areas that you'd like me to tackle for a future issue, please e-mail me ([rod@wordandweb.co.uk](mailto:rod@wordandweb.co.uk)).

An eclectic mix of Stuff this month, working slowly outwards.

### The Moon

- o The Full Moon Dictionary and Glossary of Lunar Terms is at [www.lunarrepublic.com/info/glossary.shtml](http://www.lunarrepublic.com/info/glossary.shtml)
- o The same website has a great resource in a complete series of interactive lunar maps, with more than 2,500 geographic formations identified simply by moving your mouse cursor over the feature. It's at [www.lunarrepublic.com/atlas/index.shtml](http://www.lunarrepublic.com/atlas/index.shtml)

### The Sun

Looking at the Sun through a white-light filter is remarkably satisfying (this from ongoing personal experience), but one of these days I'd love to have a hydrogen-alpha filter (currently very expensive) to study prominences and so forth. A guide to what you can see with H-alpha is at [www.spacew.com/sunnow/sunhelp.html](http://www.spacew.com/sunnow/sunhelp.html).

### The Planets

- o There are a series of specialist sites each covering information and news about a particular planet: [www.mercurytoday.com](http://www.mercurytoday.com), [www.marstoday.com](http://www.marstoday.com), [www.jupitertoday.com](http://www.jupitertoday.com) and [www.saturntoday.com](http://www.saturntoday.com). I guess Venus and Neptune are

too featureless to be worth having a site of their own, Pluto really WOULD be pushing the envelope a bit, and just think about the name of the remaining possibility and you'll have some idea why there might be some reluctance to run the site...

- o The imaginative Space Audio site at [www-pw.physics.uiowa.edu/space-audio](http://www-pw.physics.uiowa.edu/space-audio) has turned the signals from various space probes into sound – so now, for instance, you can listen to the shock wave of the solar wind hitting Saturn's magnetic field, courtesy of the Cassini spacecraft.

### Infinity and Beyond

- o Almost every week sees new spectacular images from distant objects. In March, the Hubble telescope stared at a fixed point for over 11 days, resulting in the Hubble Ultra-Deep Field. This has given a cornucopia of data for astronomers all over the world. Analytical results are beginning to be published – one of the first is discussed at [http://skyandtelescope.com/news/article\\_1356\\_1.asp](http://skyandtelescope.com/news/article_1356_1.asp).
- o And for spectacular pics it would be hard to beat the X-ray image at <http://spaceflightnow.com/news/n0408/23chandra> that the Chandra orbiting telescope recently took, again with an exposure of over 11 days, of the Cassiopeia A supernova remnant.
- o And now we have the Spitzer telescope operating in the infrared and picking up objects beyond the reach of Hubble and Chandra. There's a lovely picture of a twin of our own galaxy at <http://spaceflightnow.com/news/n0406/28spitzergalaxy>, and comparisons with what other scopes can see at <http://spaceflightnow.com/news/n0406/01hidden>. This latter was the result of the Great Observatories Origins Deep Survey (GOODS), when all three telescopes simultaneously studied a small patch of the southern sky containing more than 10,000 galaxies.
- o If you've ever wished you could do something spectacular with these sort of images, now's your chance. Here's a quote from <http://spaceflightnow.com/news/n0407/08hstsoftware>:

*For many years astronomical images from the world's telescopes were reserved for an elite of astronomers and technical people. Now anyone with a desktop computer running Adobe Photoshop software can try their hand at crafting astronomical images as beautiful as those from the Hubble Space Telescope. A free software plug-in, released [in July], makes a treasure trove of archival astronomical images and spectra from the NASA/ESA Hubble Space Telescope, the European Southern Observatory's Very Large Telescope, the European Space Agency's XMM-Newton X-ray observatory, NASA's Spitzer Space Telescope and many other famous telescopes accessible to home astronomy enthusiasts.*

The software in question can be downloaded from the website itself. Go to it ...





## The Planetarium, Observatory and Wynyard Woodland Park.

*From Ed Restall, September 2004.*

Those of you who have visited the Planetarium in recent months will be aware of some major changes at our host site. It's now a year since the site changed its name from Castle Eden Walkway Country Park to Wynyard Woodland Park and in that year a lot of money has been spent by the local authority to improve and refurbish the Park and its facilities.

The Visitors Centre has been the main focus of the changes, with its tired façade receiving long needed attention. The main change that you will notice here is that the old school room, where we used to hold our society meetings, has now been made into a tea rooms, a facility that has long been requested by visitors to the Park. The tearooms are run by a local company, Red Berry Foods (visit [www.redberryfoods.com](http://www.redberryfoods.com) for more information), specialising in wholesome, natural and seasonal produce. The rest of the visitors' centre has been augmented with a Farm Shop selling organic produce, with a virtual visitors' centre (where you can explore what the Park has to offer) being installed in the tearooms in the next few months. Well worth a visit next time you're up there, or why not make a special trip for a damn fine cup of coffee – you can always pop in to say hello to John in the Planetarium afterwards.



The upshot of losing the schoolroom is the arrival of the railway carriage, which will replace it as the main educational facility on the Park. Bob Mullen and myself, along with some assistance from the park rangers, have transformed the carriage into a comfortable and exciting environment for school groups. It will be the hub for visiting schools on environment visits with the rangers and astronomical activities with John, in the Planetarium. It also makes a refreshingly different venue for meetings and will be available for hire as such should anyone require it.

Some of you may well be aware that since it's inception the Planetarium has struggled for electrical power, existing on a very limited power budget at the opposite end of the site from where the electricity comes in. Since the addition of the carriage and the redevelopment of the visitors centre, power to the site as a whole has been totally inadequate and the Planetarium has had to remain functioning on even less power than before. Thankfully this situation has now changed. You may have noticed the small

annex (see below) now built on the side of the planetarium and the apparent “large mole” problem digging up vast sections of the car park in recent months.



This is all part of the new three phase power scheme for the site, which makes the planetarium the hub of all power distribution – thanks to Bob Mullen and Dave Lewis with their help on this grand scheme. Piggy backing on this we now have a fibre optic network backbone connecting the astronomical end of the site with the visitors centre and a limited water supply allowing John to at last do his washing up in the Planetarium in the next few months. Anyone who has attended a wedding at the Planetarium whilst this urgent and essential work has been going on please accept my apologies for any inconvenience caused.

A number of you have raised concerns about security on the site after dusk with the usual idiots causing chaos in the car park with their dangerous automotive antics. The planetarium and observatory have also been the target of mindless vandalism over the years. Unfortunately the main car park gates can no longer be locked on a night time due to a central government grant funded bus scheme that runs from early morning to late evening. We have sectioned off the car park area around the planetarium, with the addition of another gate, to provide some degree of segregation and more effective ways of securing the car park continue to be assessed. Planning permission has been granted for an additional CCTV camera at this end of the site and money provided to install a better system than exists at the top of the car park and there may be the possibility of sorting out the IR light pollution that comes from the existing camera. Every effort has been made in all of the redevelopment work to avoid any light pollution on the site that may impede astronomical activities. If anyone encounters problems with anti-social or criminal behaviour on the site can you please report it to the Cleveland Police incident desk on 01642 326 326 and/or Hardwick police station on 01642 672987.

Finally, Wynyard Woodland Park Trust, comprising members of the local community, local authority personnel and myself representing the interests of the astronomical society, now oversees the woodland park site management. If you have any issues that you would like to raise with the trust please e-mail me at [webmaster@wynyard-planetarium.net](mailto:webmaster@wynyard-planetarium.net) or call me on 07952 532 684.



## Keith Johnson's Telescope Set-up

Hi' everyone, I thought it would be nice to show all of you the observing/ image capture set up that I now have in place. When setting up to either focus or position an object on the computer monitor, the swivel base on which the computer monitor rests is simply swiveled to point outside. From outdoors the monitor is less than 12" away from where I'm adjusting the focus of the scope or Mintron camera settings. Using the EQ 2 mount I was fed up with having to go outside constantly to adjust the R/A drive, so I upgraded to a Vixen G.P. mount which is driven in both R/A/ and Dec.



The next project was to run the cables permanently from the telescope pier into the observatory, which then feed into a box attached to the inner wall (see above image left). The R/A/ and Dec. hand controller, which is situated next to the CCTV monitor (above image right), connects into the wall box, these cables can be detached if I want to observe at other sites. I must say that the yellow arrow is a nuisance whilst image capturing ...I must do something about it!



The paving slabs were lifted and hose pipe was laid to protect the cables inside. (picture above). The black hose can be seen running up and into the conservatory wall. Attached to the counter balance weight is the Mintron CCTV camera, which is used as a guide camera, because the shaft/counter balance weight rotates with the declination axis and perfect tracking is obtained. The camera is fitted to a ball socket, so the camera can be positioned independently from the OTA. I can capture, for example, planetary objects

using the OTA and use the Mintron for deep-sky, wide-angle views. Attached to the OTA is the Toucam Pro.2 and the Mintron is used as a guide camera (sorry about the washing).



The RA and Dec. cables are simply disconnected and wrapped up into a plastic bag containing packets of silica gel, which is then fitted inside the pier and is then covered against the elements. The benefits? Attaching the mount /OTA /cameras and cables now only takes approx. 10mins. I have a VERY accurate polar alignment and fully motorised drive system.

A typical image capture set up and procedure would be:

The web camera/2x Barlow is attached to the OTA, then using the 8X 50 finder I position the object central to the computer monitor. Then, using the Mintron camera with a wide angle lens attached, I position the camera so that the same object is positioned onto the CCTV monitor ( anywhere on the screen will suffice ). I then place a small ( 2" x 2") piece of red transparent plastic (which has a small hole in it's centre) directly over the object on the CCTV monitor ( the static on the monitor holds the plastic in place). I then slew to another object (Saturn for example) and when the object is aligned to the hole in the plastic (eg the object turns from red to white) the object is visible on the computer screen. A simplistic guide/goto system is achieved. Because I'm indoors I can image capture for longer periods. This set up is ideal for teaching image capturing indoors in comfort, where I can sit directly next to a person whilst they are doing an image capture/processing session.

I'm now offering to show anyone wanting to get started in webcam/CCTV image capturing what equipment they require and give them image capture lesson sessions at my home. This will be free and in my own time. All I'll ask of them?.....to turn up, they will get hands on full tuition from setting up the camera/camera's settings, the initial image capture/ image processing to the final resulting image. Maybe it could be the beginning of a "CADAS image capture group"?

I need to know members thoughts and idea's on this. If I don't get responses (which sometimes happens!), then naturally I'll assume that no one's interested.

Update: I've taken the axe to the washing line! Regards, Keith Johnson.

## The CaDAS Interview – Rob Peeling

*Rob is a keen observer and uses the Planetarium and Observatory facilities whenever possible. He has supported Transit with several articles, some based on work for the distance learning courses he takes. He came over to Darlington and we had a relaxed conversation, filling out some of the material he had already sent for the Interview article. It is always more enjoyable to carry out an interview face-to-face, when serendipitous topics can arise, which would not otherwise be included.*

*Where were you born and brought up?* I was born in the London Hospital, Whitecapel, London. *Within the sound of Bow Bells!!* Yes, but I like to keep that quiet. My mother was born in China and my father in India. Their British parents happened to be working in those countries at the time. *That's a very unusual situation.* One month after my birth, my mother took me to join my father in Chicago, where he was an intern at a hospital. A year later we all returned to East London, then we moved to Cardiff and finally to Newport, South Wales. I have one sister, who now lives in Banbury.

*So you were brought up in Wales?* Yes. But I don't think of myself as Welsh. I am very Welsh where an oval-shaped ball is concerned. I played at school but gave up when I grew a bit slower than the rest and took up cross country running. *Do you still run?* No, I haven't run for years. The problem is when you reach 17 or 18 other interests intervene, like girls and beer.

*Do you feel the need to "keep fit"?* Now you came to ask, I have just re-joined a keep fit class very recently. Maybe that will lead back to running. Who knows? Some guys at work are keen cyclists and keep trying to get me out on a bike. *You don't smoke?* No. Dabbled early on and quickly decided it was daft, so stopped.

*Have you moved around the country a lot since then?* Well, I went to a public school near Newbury and then to another in Bath. I enjoyed being a boarder but not necessarily for the "right" reasons. Living away from your parents gives considerable scope for misbehaviour! University – I read Chemical Engineering at UMIST - and my first job were in Manchester, before moving to Teeside, where I've been for the last 20 years.

*I did physics at UMIST. Did you enjoy it?* It took me a while to get used to all the concrete around the campus but once I had settled down I liked Manchester very much. The campus is gigantic now. Halls of residence and all the rest of it. It just goes on and on. *Chem Eng students worked very hard indeed, I remember.* Yes, we used to compare our work level with the medics. The hours we put in were very similar. It was stimulating and enjoyable. The job is interesting, too. There are no two chemical plants which are the same. There are always technical challenges. One plant I worked with had run for 20 years without anyone really understanding precisely how it worked.

*So you are confident with science, maths and computers?* I am professionally a chemical process engineer, working with titanium chemistry, inorganic and organic. It means keeping in practise with maths and computers. Modern industry could not

function without computers, and I have to design the process and realise how computers can be used, rather than actually programming them myself. I have a tendency to use the haunted edges of software's capability. My ability to find new bugs in commercial software has once or twice led to the publishers' giving me the beta version of their latest offering to see if I could break it.

*Tell me about your own family.* I met my wife at University. We were in the same hall of residence and she was reading French and other languages. She has just re-trained as a primary school teacher. There is a plan to introduce languages into the primary school curriculum and French will be one of the most popular languages. We have two children. Paul is 22 and studying engineering and Katie is 9. They are both quite musical. Paul plays violin, viola and piano. I think if Katie puts in the work she could follow Paul.

*How did you first become interested in Astronomy?* I have always had some interest in astronomy from school days. My first sight through a telescope was of Jupiter. I particularly remember seeing the Great Red Spot. I've always been interested in astronomy books and the developing world of astronomy – Patrick Moore's TV programmes and all that. My interest revived and deepened about four years ago. I don't know quite why, it just happened. Astronomy is now my primary hobby. *It's surprising how many members of the Society have returned to astronomy after being interested as children years ago.* At present I use 8x30 and 20x70 zoom bins and a 150mm f/5 Newtonian. Mostly I observe from my back garden, occasionally from the Planetarium car park, or using the Society's telescope.

*Do you specialise in any aspect of astronomy?* No, I am not a specialist. My favourite type of astronomy tends to be where my current enthusiasm leads me! Most of my observing is done in the back garden, despite light pollution. It is so convenient to be able to dodge into the house for things, or a drink, or to warm up on cold nights. I used to go up to the North Yorks Moors for dark skies but it never seemed to work out. One night a funny thing happened, I recall. You meet all sorts of people up there at night. I met two guys with torches and a bucket full of toads!! The toads migrate through the night and these guys were picking them up to get them across the road without them being squashed.

*Have you done any mirror grinding or telescope making?* No. This is a bit too painstaking to appeal to me.

*What is good about the Society and what is bad?* The best thing about the Society for me is the chance to meet other astronomers. I wish people would actively participate more. It surprises me how few people are interested in joining in to make serious use of a wonderful instrument like the 475mm telescope we have. Of course the weather hasn't been that good recently. There is a small group who meet as regularly as the weather allows to use the big telescope. The group will get going again in the coming winter.

*Do you worry about asteroid strikes, global warming or the ozone layer?* Not really. Through my professional engineering, I understand the probabilities fully. I personally

can have little effect on the odds, so why get concerned? I do care about the environment and as a practicing process engineer, I have more opportunity than most to work for positive improvements. *Do quantum theory and black holes excite you?* Puzzle is more the word.

*Most astronomers I talk to are life long learners. I know you study astronomy seriously and take distance learning courses.* I read astronomy and astrophysics related texts all the time. I read a textbook on astrophysics over last winter (although I admit to giving up doing all the problems at the end of the chapters after a while!). My second distance learning course with Liverpool John Moore University has just started. It's called "The Universe through a Large Telescope". The first assignment is computing the orbits of extra solar planets from the original data of the discoverers. A year ago I did "The Universe through a Small Telescope", which challenges you to develop your own observing skills. We tracked the four big moons of Jupiter accurately over about 6 weeks; I bought a reticulated eyepiece specially for the job. We then had to compute the orbits of the moons and from Kepler's 3<sup>rd</sup> law deduce the mass of Jupiter. I was totally stunned by the accuracy of the results. The periods of the moons I computed were within minutes of the text-book values. I didn't realise that amateur observations could be so good. Couldn't believe it! The other big bonus was to be forced to drop my reticence about sketching what you see through an eyepiece. I thought I was no good at it. Now I am happy to do a quick sketch any time to record what I see and it has transformed the way I see things. It's like learning to painting, I suppose – you have to really see what is there and not just look in a cursory fashion.

*Do you like travelling?* I am not a great fan of travelling; air travel is so frustrating. I like new places when I get to them, though. *Do you have a favourite place?* No. There are plenty of interesting places to see and visit yet.

*Have you "done all the Messier objects as a 'marathon'?"* No. I do a fair bit of observing, so I may someday have seen all the Messier objects by chance and not design. *You are a member of the British Astronomical Association, Variable Star Section.* Yes, I joined the VSS in the hope of being stimulated to do some structured observing and contributing to the data base of amateur observations the Association keep.

*Do you have time for other interests and hobbies?* Not really. I consider myself fairly proficient at DIY. I have completely fitted our new bathroom myself. Does that count as another interest? *Are you a musician?* I do enjoy music, mostly listening to classical music these days. I learned violin and piano at school; but didn't progress, partly out of laziness but also a severe lack of talent! *Do you like films and theatre?* I have seen all the Harry Potter and Lord of the Rings films but otherwise I am a very sporadic attender of the cinema and theatre.

*What are you reading at the moment?* I am currently reading a new (2004) biography of Jeremiah Horrocks that my son gave me for my birthday. It's called "The Transit of Venus", by Peter Aughton, published by Weidenfield and Nicholson. I recently read "New Worlds in the Cosmos" by Mayor and Frei, Cambridge. Mayor is one of the

discoverers of the first exoplanet found orbiting 51 Pegasi. The book includes Mayor's account of this discovery. This links in with my current distance learning course. We take from the web the original data for the exoplanet going round 51 Pegasi and compute the orbit. I would recommend any astronomer to read these books. I am also a fan of Patrick O'Brian's 'Aubrey/Maturin' novels. There are frequent astronomical links in these novels. One of the key characters is a sailor who has developed an interest in astronomy through studying navigation and even becomes a fellow of the Royal Society, although they are not science fiction or pure astronomy.



### An Unusual Use for a Meteorite

From John Crowther

Some of us will have watched the ITV Sunday evening series "Island at War". This is a dramatic interpretation of the German occupation of the Channel Islands during the Second World War. Based on the truth, it draws together what happened on the four main islands and puts them in the mythical setting of St. Gregory. Filming took place on the Isle of Man and even there some long term residents objected to the swastika flag and the acting out of the occupation of the Channel Islands.

Thirteen years ago, I bought a book called "Islands in Danger" on the same subject and the programme prompted me to get down to reading it! As often happens, the truth is stranger and more interesting than a television fiction script.. Of interest to us was the use of a meteorite which fell on the Island of Guernsey in 1915, as the following extract mentions.

'Though the liberation of France immeasurably increased the hardships of the islanders, there were compensations. To bring the cheering news of Allied victories there was the powerful new B.B.C Forces transmitter, easily picked up on home-made crystal sets. The B.B.C. gave instructions on how these sets could be put together and their manufacture was undertaken industriously. The record is probably held by Father Rey of the Jesuit College in Jersey, who made and gave away sixty-three sets during the course of the Occupation. He was fortunate in being able to draw for raw material on a huge piece of crystal, kept in the College Geological Museum, which he had picked up as a missionary in Madagascar.

The utmost ingenuity was shown in getting different kinds of crystals. One jeweller in Guernsey cut up a meteorite which had fallen there in 1915 and which turned out to serve the purpose admirably.

The headphones for the crystal sets came from telephone receivers.'



### Scientists Discover First of a New Class of Extrasolar Planets

A recent NASA Press Release from Ray Worthy

Astronomers announced today the first discovery of a new class of planets beyond our solar system about 10 to 20 times the size of Earth - far smaller than any previously detected. The planets make up a new class of Neptune-sized extrasolar planets. In



addition, one of the new planets joins three others around the nearby star 55 Cancri to form the first known four-planet system.

The discoveries consist of two new planets. They were discovered by the world renowned planet-hunting team of Drs. Paul Butler and Geoffrey Marcy of the Carnegie Institute of Washington and University of California, Berkeley, respectively; and Barbara McArthur of the University of Texas, Austin. Both findings were peer-reviewed and accepted for future publication in the *Astrophysical Journal*. NASA and the National Science Foundation (NSF) funded the research.

"NASA, along with our partner NSF, is extremely proud of this significant planetary discovery," said Al Diaz, Associate Administrator of NASA's Science Mission Directorate. "The outcome of the tremendous work of the project scientists is a shining example of the value of space exploration." "These Neptune-sized planets prove that Jupiter-sized, gas giants aren't the only planets out there," Marcy said. Butler added, "We are beginning to see smaller and smaller planets. Earth-like planets are the next destination."

Future NASA planet-hunting missions, including Kepler, the Space Interferometry Mission and the Terrestrial Planet Finder, will seek such Earth-like planets. Nearly 140 extrasolar planets have been discovered. Both of the new planets stick very close to their parent stars, whipping around them in a matter of days. The first planet, discovered by Marcy and Butler, circles a small star called Gliese 436 about every two-and-one-half days at just a small fraction of the distance between Earth and the sun, or 4.1 million kilometers (2.6 million miles). This planet is only the second known to orbit an M dwarf, a type of low-mass star four-tenths the size of our own sun. Gliese 436 is located in our galactic backyard, 30 light-years away in the constellation Leo.

The second planet, found by McArthur, speeds around 55 Cancri in just under three days, also at a fraction of the distance between Earth and the sun, at approximately 5.6 million kilometers (3.5 million miles). Three larger planets also revolve around the star every 15, 44 and 4,520 days, respectively. Marcy and Butler discovered the outermost of these in 2002. It is still the only known Jupiter-like gas giant to reside as far away from its star as our own Jupiter. The 55 Cancri is about 5 billion years old, a bit lighter than the sun, and is located 41 light-years away in the constellation Cancer. "55 Cancri is a premier laboratory for the study of planetary system formation and evolution," McArthur said. Because the new planets are smaller than Jupiter, it is possible they are made of rock, or rock and ice, rather than gas. According to the scientists, the planets may have, like Earth, formed through gradual accumulation of rocky bodies. "A planet of Neptune's size may not have enough mass to hold onto gas, but at this point we don't know," Butler said. Both discoveries were made using the "radial velocity" technique, in which a planet's gravitational tug is detected by the wobble it produces in the parent star. Butler, Marcy and collaborators, including Dr. Deborah Fischer of San Francisco State University and Dr. Steven Vogt of the University of California, Santa Cruz, discovered their "Neptune" after careful observation of 950 nearby stars with the W.M. Keck Observatory in Mauna Kea, Hawaii. They were able to spot such a relatively small planet, because the star it tugs on is small and more susceptible to wobbling.

McArthur and collaborators Drs. Michael Endl, William Cochran and Fritz Benedict of the University of Texas discovered their "Neptune" after obtaining over 100 observations of 55 Cancri from the Hobby-Eberly Telescope at McDonald Observatory in West Texas.

Combining this data with past data from Marcy, Fischer and Butler from the Lick Observatory in California, and archival data from NASA's Hubble Space Telescope, the team was able to model the orbit of 55 Cancri's outer planet. This, in turn, allowed them to clearly see the orbits of the other three inner planets, including the new Neptune-sized one.

For visuals depicting the new planets and information about NASA's planet-hunting missions on the Internet, visit: [http://planetquest.jpl.nasa.gov/news/ssu\\_images.html](http://planetquest.jpl.nasa.gov/news/ssu_images.html)  
<http://planetquest.jpl.nasa.gov>

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## Cosmos V Report

by Neil Haggath

My thanks to all of you who attended Cosmos V on 18 September. The day was highly successful, and attended by 75 people. Despite all my fears of making a loss, I managed to break even after all; in fact, I've finished about £30 in the black. After all expenses have been settled, the small profit will be given to CaDAS, and an accounts statement will be made available to the members.

I'm sure those who were there will agree that we had an excellent series of talks. As this was definitely the last Cosmos, I think Prof. Mike Edmunds' brilliant "Sir Isaac Remembers" performance was a fitting finale.

There was one major hitch on the day, and I would like to extend my sincere thanks to John McCue, for saving the day at incredibly short notice. For those who weren't there, this takes a little explaining. Paul Money, who was due to speak in the afternoon, was unable to come, as he was suddenly taken ill. I was informed that he wasn't coming at about 9.00 a.m. on the day of the event! After a few moments of panic, I phoned John – who was just about to leave home to come to Cosmos – told him the bad news, and asked him, "Do you have a talk which you could put together at very short notice? Like by 2.00 this afternoon?" He replied that he would miss the morning's talks, go to the Planetarium and put something together, and would arrive at lunchtime.

I must point out here that John had spent the previous week at an observatory in Mallorca, where he was one of the tutors for an Open University course, supervising a series of observing projects. He had arrived home at 5.00 a.m. that very morning; to say that he was tired out is putting it mildly!

When I asked him if he could put a talk together within a few hours, I was thinking in terms of something which he already had prepared at the Planetarium, so that he would just be able to come along, plug in his laptop and be ready to go. I never imagined that he would do what he *actually* did... In the space of four hours, he actually put together a talk *completely from scratch* – starting with nothing but the photos stored in his digital camera – about the work he had been doing in Mallorca up to and including the previous day!

Obviously, John hadn't had time to produce a sophisticated PowerPoint presentation – but the fact that he had managed to produce *anything*, in the time available, was pretty impressive. So once again, my sincere thanks to John, for doing a remarkable job under difficult circumstances.

John – I owe you one, big time!

Fred Stevenson Course 2004  
Atmospheric Phenomena

There seems to have been a bit of interest in various optical atmospheric phenomena judging by the cadas images/messages that I have been receiving recently. I thought that I would let you know that, coincidentally, I have arranged to give a course entitled 'optical phenomena in the atmosphere and beyond' for the WEA in Great Broughton starting on September 14th at the Gt Broughton and Kirkby Sports Club (it lasts for 10 weeks - meetings from 7 - 9pm).

I will be discussing the basic physics that determines the how and why of rainbows, halos, sun-dogs (parhelia) as well as a plethora of other less well known phenomena including some of astronomical interest such as meteor trails and the aurorae. Personally I find this a fascinating field which is a perfect blend of science, art and geometry and so, in theory, should have wide appeal.

Further information can be obtained from me at [prfred@fstevenson99.fsnet.co.uk](mailto:prfred@fstevenson99.fsnet.co.uk) or via the WEA contact Wayne Barnacal on 01642 711741.

Fred Stevenson

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The Greatest!  
From Neil Haggath

I have just been privileged to meet *the* greatest visual observer alive today - Steve O'Meara of Sky & Telescope. He claims to see mag. 8 with the naked eye! (He does have pretty good skies, as he lives on the Big Island of Hawaii). He was the first person visually to recover Halley's Comet at its last apparition. He holds the naked eye record for the youngest crescent Moon sighting - about 22 hours, I think and - how about this - he discovered visually the spokes in Saturn's rings, four years before the Voyager encounters! I would describe him as the E. E. Barnard of our time.

*Yes, but who was E.E.Barnard, Neil? Ed.*

Neil's Meteorite

There have been reports in the papers recently about a woman in Lowestoft, who was supposedly hit by a "walnut-sized" meteorite. Of course, it remains to be seen whether it actually *is* a meteorite...

The following is an extract from the write up in the Daily Telegraph - a supposedly "respectable" paper! It was obviously written by some pillock who knows not a lot about astronomy, doesn't know the difference between a meteor and a meteorite, and couldn't be bothered to check his facts!

"The rock fell last week when the annual Perseid meteorite shower from the asteroid belt between Jupiter and Mars was at its peak."

AAAAAAAAAAAAAAAAAAAAAAAAAGH!!

The Back Page Picture



Rob Peeling is the subject of the CaDAS Interview this time.

Transit Tailpiece

**Quote/Unquote**

You arrive at the truth by telling a pack of lies if you are writing fiction, as opposed to trying to arrive at a pack of lies by telling the truth if you are a journalist.

*Melvin Burgess*

The supreme triumph of reason is to cast doubt on its own validity.

*Miguel de Unamuno*

The irony of life is that it is lived forwards but understood backward.

*Soren Kierkegaard*

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Post and Email If anyone wishes to change the way they receive their Transit, please let me know. If any member is not receiving a copy, or has changed their address, please let me know.

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Articles Wanted! Please send contributions for the newsletter to Alex Menarry, 23, Abbey Road, Darlington, DL3 7RD, 01325 482597 or to John McCue, 01642 892446 (john.mccue@ntlworld.com). Copy deadline date is the 1<sup>st</sup> of each month

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