

FAS Newsletter

Federation of Astronomical Societies

<http://www.fedastro.org.uk>

Scotland selects two dark sky sites

To celebrate the International Year of Astronomy 2009, the world's first Dark Sky Discovery Sites were announced in Scotland. *Provided by Science and Technology Council, UK*

The Dark Sky Scotland partnership named the two sites as Newbattle Abbey College in Dalkeith and Highland Council's Glen Nevis Visitor Center grounds, near Fort William. The two sites, which are relatively free of light pollution, tall buildings, and are safe and accessible, were chosen following a winter of community astronomy activities led by the John Muir Trust, the Highland Council Countryside Rangers, and the Forestry Commission Scotland.

"Many of us live in light polluted towns and cities yet in every community there is somewhere that is the best local place to go to look up and discover the stars," said Dan Hiller from the Royal Observatory Edinburgh Visitor Center. "From these places, which might be a park or playing field, you can see planets, hundreds of stars, space satellites, and other wonders of the night sky. The organizations that have identified these first two Dark Sky Discovery Sites have taken a world leading role in helping people to discover the universe that is on their doorsteps."

The announcement of the sites took place March 25 at Newbattle Abbey College, Scotland's only adult education residential college. "Woodlands are a fantastic place to view the stars," said Jeremy Thompson of Forestry Commission Scotland, which works closely with Newbattle Abbey College. "Not only do you get a still silence, but



Students study the stars at Newbattle Abbey College in Dalkeith. *Forestry Commission Scotland*

it adds a natural feel to the whole experience of stargazing." "There are wonderful opportunities in the Highlands to view and experience the fascination of planets and space," said Iain Ross of The Highland Council's Planning, Environment, and Development Committee. "Glen Nevis is an accessible location which offers a site free of light pollution and one where people can enjoy a range of community activities."

"Many people visit Glen Nevis from developed areas with lots of light pollution and are often amazed to see shooting stars, the Milky Way, and entire constellations at night in Scotland's wilder places," said Alison Austin, Nevis conservation officer for the John Muir Trust. "It is great that Dark Skies Discovery Sites can highlight places like this and help people discover the night sky."

"This might seem to be an odd thing for Scottish Natural Heritage, along with the Scottish government, to fund, but it isn't," said Catriona Morrison, communities and green spaces officer for SNH. This project will also help to raise awareness of the importance of places where people can appreciate the night sky."

More Dark Sky Discovery Sites will be identified during 2009 by organizations involved in the Dark Sky Scotland program and similar Dark Sky programs in other parts of the United Kingdom and Ireland. A similar initiative is being set up in the United States.

March 26, 2009

Eric Zucker Award



On behalf of the FAS, Norman Lloyd, Chairman of Bridgend AS presenting the Eric Zucker Award to Clive Down - a previous Secretary for the FAS

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Issue 90 Spring 2009

Presidents Spot

Well I hope this newsletter finds your society in good health and enjoying IYA 2009. There are four topics I'd like to cover in this article so here we go with the first – the outcome of the Extraordinary General Meeting held on 7th March. No don't switch off this is good news! I have e-mailed details of the outcome to society contacts and you can also access them on the FAS website. In summary the EGM (including postal votes) voted to accept changing the FAS subs year to run from 1st April instead of from 1st September. For existing member societies of the FAS the current membership will be extended free of charge until 31st March 2010.

The FAS Council is also changing the annual PLI policy start month from January to June. Again for societies who are currently in the PLI scheme and cover period, a free of charge extension will be made to transition to the new start month (June 2010). So the request for payment of FAS annual subs and for PLI cover if required (at additional cost) will be sent to existing FAS member societies in January 2010. These changes will bring benefits to the FAS's financial planning and control. Societies will also benefit by not having to deal with renewal requests during the summer period when many of them go into hibernation. We are also working on changes to the format and presentation of the annual accounts to improve their clarity and ease of understanding, in response to comments received at the last AGM.

The FAS Annual Convention and AGM will take place on 3rd October this year at the IoA Cambridge and features a really great list of speakers. In fact so good that this is going to be a popular event and you are strongly recommended to purchase advance tickets to guarantee entry. There will also be the usual trade stands and telescope tours. See FAS website for details. This event really is a great astronomy day out; why not see if your local society members want to travel together and make this a society trip.

The next thing I want to mention is our need for a volunteer to come onto the FAS Council to be our Advertising Officer. Elsewhere in this newsletter you will find a description of the role and duties of the Advertising Officer. There are 3 Council meetings per year (on Saturday afternoon's) in London and travelling expenses are covered. Please consider if you would like to volunteer for this under the nomination of your society. Don't think someone else is bound to volunteer; we need to fill this post. If you would like to volunteer please e-mail your details and the contact details of your local society chairman who can confirm that your application is endorsed by your society, to me at president@fedastro.org.uk. If you are a committee member of your local society can you please publicise this request by announcement at your meetings. Thank you.

Many societies are engaged in astronomy events for the public in IYA 2009. Lots of people wandering around telescope tripods and equipment in unfamiliar places in the dark could be a recipe for an accident. One tool available to help us make our events as safe as possible is risk assessment. This is a process which provides the user with a structured approach to identifying what hazards may be present and deciding how to protect against them. If you are organising a star party or observing event for your society the FAS recommends you and your fellow organisers carry out a risk assessment beforehand.

For simple clear guidance on how to do one just visit the HSE website at <http://www.hse.gov.uk/risk/>. There you will be able to download a PDF giving a five step guide and template for doing a risk assessment. Even if your event venue host doesn't require you to do one beforehand (and some do) it is worth doing one to help make your public observing session a safe as well as enjoyable astronomy event.

Clear skies and a successful IYA 2009 to you all,

Richard Sargent

The Editor's Occasional

Well, we are now into Spring and soon Summer will be with us - and with luck, better weather than 2008. More significantly let's hope that we get clear skies to support the efforts of many societies who are doing their best to 'spread the word' during this Year of Astronomy.

You will see that the IYA2009 activities of a couple of societies have been featured in this issue. Please send me details of what you and your society have been up to in this regard and I will try to make some space to publicise it.

For mainly the electronic version of the Newsletter, I have been scouring the internet to find news items that you may find to be of interest. I have tried to avoid those things which are featured in the magazines and journals that we all tend to subscribe to in the UK.

I would appreciate hearing from you as to whether you think this sort of thing is worth including - and also to let me know what other things, subjects, etc., you think I should include.

Of course for the paper version, I am limited by the number of pages being a maximum of 8. For the electronic version, there is no such limit.

Hopefully all members of each society will be getting the electronic version passed on to them by the designated contact. If you don't receive it please let me know.

*Clear Skies
Frank*

Advertising Officer required for FAS

(see President's Spot article in this newsletter)

Role

To seek out advertisers for FAS Publications (Newsletter, Astrocalendar, + other publications developed), and to promote FAS publications to the UK Astronomy community.

Main Duties

- To identify key contacts within makers, suppliers, and vendors of astronomical equipment, books and educational establishments.
- In good time for the publication dates, procure advertisements.
- To review advertising rates and develop new advertising packages that may be of interest to suppliers.
- To send publications for review to appropriate magazines.
- To identify sales channels for publications

If you would like to volunteer please e-mail your details and the contact details of your local society chairman who can confirm that your application is endorsed by your society, to president@fedastro.org.uk.

ISLE OF WIGHT

Vectis AS, Pointer Inn, Newchurch - 25th January

To celebrate the International Year of Astronomy, Vectis Astronomical Society braved the rain on the evening of Sunday 25th January and took equipment to the Pointer Inn in Newchurch. Although the sky was completely covered in cloud, one piece of equipment, the Celestron Sky Scout was still able to be used. The Sky Scout allows you to find and identify any star you point at, or, even better, particularly if it is cloudy, to locate the direction of any star.

A couple of drinks later, the sky cleared and the 10 inch Dobsonian telescope and binoculars were trained on distant objects, such as the Orion Nebula M42 and galaxies M81 and M82. One new member joined the society that evening, and a few more took details about the club.

The landlord of the Pointer Inn, Nathan Clark, was impressed "It turned out to be a fantastic night, with wonderful clear skies later," he said. "We hope to have another event soon."

The Sky Quality Meter, an instrument that shows how dark the sky is, gave a reading of about 20, which later improved to 20.25. "Even though we were in the garden at the back of a village pub, these are still some of the darkest skies in the South - which is why we hold the Isle of Wight Star Party over here" said Stephen Griffiths, organiser of the Isle of Wight Star Party (www.iowstarparty.org).

Vectis AS & Brighstone Primary School, 30th January

The planet Venus hung just below the crescent Moon on the evening of Friday 30th January. Vectis Astronomical Society (www.wightastronomy.org) provided telescopes, binoculars and expertise so over 80 pupils and parents from Brighstone Primary School, on the Isle of Wight could get a close up look at these two objects. Dr Lucy Rogers, chairman of the VAS said "The school contacted us as they had heard it was the International Year of Astronomy, and the children were interested in finding out what astronomy is all about. The location high on the Downs on the South of the Island provided a great vantage point and even though the weather conditions were not ideal, we had a great time."

The parents were well prepared for an evening in the cold and provided a rather welcome soup kitchen. Most of the children, and many of the parents had never seen the moon through a telescope before, and were amazed to see the craters in detail. "One of the smaller children thought it

looked like a banana," said Dr Rogers. Dr Rogers added "The clouds cleared a little during the evening and the constellation of Orion and the Pleiades cluster or Seven Sisters were also seen. The children really loved the fact that in Japanese the Pleiades are known as Subaru, and that the logo on a Subaru car is a representation of the star cluster."

The Vectis AS is pleased to be involved in the International Year of Astronomy. Their observatory in Watery Lane, Newchurch, Isle of Wight is open every Thursday evening from 19:30 and anyone interested can just turn up, although it is recommended to only come if the skies are clear and you can see the stars.



Brighstone Primary children are 8 year olds Jacob Reynolds and Emelia Matthews (white hat). Photo credit Dr Lucy Rogers.

SHEFFIELD

Sheffield AS celebrate Astroday 2009

Sheffield Astronomical Society staged an exciting and fun-packed, hands-on "Astroday" on Saturday 7 March at Tapton Secondary School in Sheffield as part of National Science and Engineering Week.

The event attracted over 300 visitors who were given an amazing introduction to astronomy. Visitors were also made aware of International Year of Astronomy and the activities over the coming year.

Visitors enjoyed trying out telescopes, and families took part in lots of "hands-on" activities such as making and flying air rocket, controlling a mars rover, badge making, meteor crater making, taking photos in 3d, and much more.

The public also listened to a variety of talks given by local University lecturers and

Society members. They were given free shows throughout the day in an inflatable planetarium dome.



Society members were delighted to answer many of the visitors' questions, and give advice on telescopes and other equipment.

"Everyone really enjoyed the day and we received extremely good feedback from parents and children. A teacher who came with pupils from Fir Vale School told me he was really impressed at how friendly and helpful the Society members were" says James O'Neill, Vice President of Sheffield Astronomical Society.

The Society has planned a wide variety of exciting activities for International Year of Astronomy, which coincides with its own 75th anniversary. "We are very passionate about giving the people of Sheffield the opportunity to learn more about astronomy and share

with them the many wonder of the night sky" say Society President Steve Adams.

The Society launched Sheffield's own opening ceremony for IYA 2009 at the beginning of the year. They have also introduced a new series of events called Star Nights and Sol Days, which are taking place throughout the year. These events will give the public the opportunity to use the Society's telescopes and other instruments. This will also be combined with a series of interesting talks aimed beginners about various aspects of astronomy.

James O'Neill, Vice President of the Society, will also be presenting a 365 Days of Astronomy Podcast on the Society's anniversary, in which he will examine how the Society has developed over the years and now works hard as a charitable organisation to bring astronomy education to the public.

More details about all the Society's events can be found on their website at www.sheffieldastro.org.uk.



New View of Young, High-Mass Binary Star at Heart of Orion

A new glimpse inside the heart of Orion has confirmed the separation between two [stars](#) that orbit each other so closely, astronomers once believed they could be a single star.

The research team, led by Stefan Kraus and Gerd Weigelt from the Max-Planck-Institute for Radio Astronomy (MPIfR) in Bonn, Germany, used ESO's Very Large [telescope](#) Interferometer (VLTI) to obtain the sharpest ever image of the young double star Theta 1 Ori C in the Orion Trapezium Cluster.

The pair represents the most massive star in the nearest high-mass star-forming region to [Earth](#).

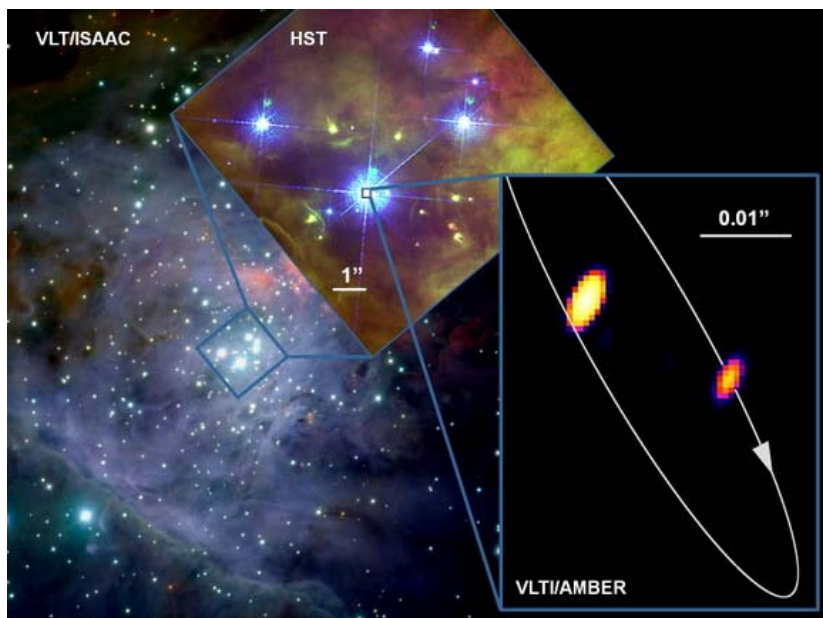
Theta 1 Ori C is the dominant and most luminous star in the Orion star nursery. Located at a distance of only about 1,300 light years, it provides a unique laboratory to study the formation process of high-mass stars in detail. The intense radiation of Theta 1 Ori C is ionizing the whole Orion nebula. With its strong wind, the star pair also shapes the famous Orion proplyds, [young stars](#) still surrounded by their protoplanetary dust disks.

Although Theta 1 Ori C appeared to be a single star, both with conventional [telescopes](#) and the Hubble Space Telescope, the team discovered the existence of a close companion.

"VLTI interferometry with the AMBER instrument allowed us, for the first time, to obtain an image of this system with the spectacular angular resolution of only 2 milliarcseconds", says Stefan Kraus. "This corresponds to the resolving power of a space telescope with a [mirror](#) diameter of 130 meters."

The new image clearly separates the two young, [massive stars](#) of this system. The observations have a spatial resolution of about 2 milliarcseconds, corresponding to the apparent size of a car on the surface of [the Moon](#).

The VLTI image reveals that in March 2008 the angular distance between the two stars was only about 20 milliarcseconds. Additional position measurements of the binary system have been obtained over the last 12 years using the technique of bispec-



VLTI/AMBER image of Theta 1 Ori C in the Orion Trapezium Cluster, plus position measurements of the binary system obtained over the last 12 years. Credit: Max Planck Institute/VLTI/AMBER

trum speckle interferometry with 3.6- to 6-meter-class telescopes, allowing high-angular resolution observations even at visual wavelengths down to 440 nm.

The collection of measurements shows that the two massive stars are on a very eccentric orbit with a period of 11 years. Using Kepler's third law, the masses of the two stars were derived to be 38 and 9 solar masses. Furthermore, the measurements allow a trigonometric determination of the distance to Theta 1 Ori C and, thus, to the very center of the Orion star-forming region.

The resulting distance of 1,350 light-years is in excellent agreement with the work of another research group led by Karl Menten, also from MPIfR, who measured trigonometric parallaxes of the nonthermal radio emission of Orion Nebula stars using the Very Long Baseline Array. These results are important for studies of the Orion region as well as the improvement of theoretical models of high-mass [star formation](#).

The researchers say the results highlight new possibilities of high-resolution stellar imaging achievable with infrared interferometry. The technique allows astronomers to combine the light from several telescopes, forming a huge virtual telescope with a resolving power corresponding to that of a single telescope with 200 meters diameter.

"Our observations demonstrate the fascinating new imaging capabilities of the VLTI," said Gerd Weigelt. "This infrared interferometry technique will certainly lead to many fundamental new discoveries."

Sources: [Max Planck Institute](#) press release (emailed through Eurekalert), and the [original paper](#).

*Written by Anne Minard
Courtesy: Universe Today*



VLTI

LETTERS

CASTLE POINT AS REACHES 40

I thought I would let you know that 2009 is the 40th anniversary of CPAC.

Since 1969, we have grown to a Club with nearly 60 members from beginners to experts. (One of our members even edits one of the magazines!) We are an informal, friendly club who will always welcome visitors and new members regardless of their level of interest, experience or expertise.

We meet every Wednesday at St Michael's Church, St Michael's Road, Daws Heath, HADLEIGH, Essex
GPS: 51.56774°N 0.61808°E

The second and fourth Wednesday's of the month are Beginners'/Observing Nights. If it is clear, those who have scopes bring them along and set them up outside for themselves and others to look through. If it is cloudy we have an evening suitable for beginners inside.

On the other Wednesdays we have a mixture of members giving talks, group events and outside speakers. These evenings are a bit more in depth, but still accessible for beginners. Outside speakers are often researchers in their field and we have an excellent selection this year including Dr Chris Lintott.

We have dark site evenings at a location in deepest and darkest Essex on new Moon weekends. We also hold open evenings for the public during the winter.

Full details can be found on our web site <http://www.cpac.org.uk>. We can also be contacted as below: e-mail: Secretary@cpac.org.uk or by telephone to Mike Culley on: 01702 434449 (daytime Wednesday-Saturday)

Regards

Andrew Mowbray

*Congrats on reaching this significant milestone and wishing your Society many more years of fun.
Ed*

Facts and Speculations in Cosmology

by Jayant Narlikar & Geoffrey Burbidge

Cambridge University Press

ISBN 978-0521865043

RRP: £30.00.

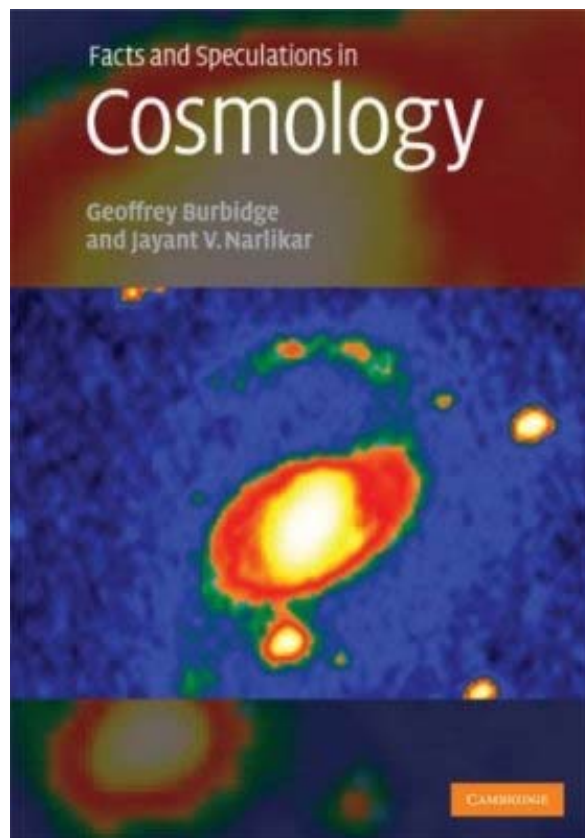
Two of the most eminent cosmologists, Jayant Narlikar and Geoffrey Burbidge, present an interesting discussion on the state of play in cosmology.

They iterate that cosmology is an investigation of the real Universe and is an observational science. In essence this means that it has to be driven by observational discoveries. They point out that the way that major discoveries are accepted is related to the leaders in the field at the time. They start off with a rather interesting discussion on ancient mythology and how the ideas of old were adapted to fit in with observational evidence. There is an excellent discussion of the Day of Brahma and other interesting stories. In short they point out the way that current ideas in cosmology are modified is not too far from some of the perturbation seen in mythology.

This is a rather thought-provoking book which is aimed at general readers who have an interest in the origin of the Universe. There are parts in this book that I would suggest are aimed more at undergraduate students but this should not stop anyone from reading this book.

The authors are, as one would expect, rather sceptical about the currently accepted model of the Universe and propose a number of interesting other scenarios. Personally, I'm not convinced about their models but they do have a number of rather interesting points against the currently accepted ideas.

Samuel George



A User's guide to the Meade LXD55 and LXD75 Telescopes

Author: Martin Peston Publisher: Springer

ISBN: 978-0-387-36489-6 Price £21.99

The LXD series of telescopes is Meade's range of German Equatorial mounted instruments with GOTO capability. This book aims to "provide a wealth of information on setting up, using and maintaining the telescope, along with lots of tips and tricks for getting the best out of it".

The book is a useful 250 pages set out into chapters starting from the (very!) basics including how to set up the scope and progressing through such subjects as alignment, Autostar operation and telescope maintenance. The layout means that information may be quickly found although did make for a less "browsing friendly" experience. This book is perhaps best considered as a comprehensive manual rather than a bedtime read!

As a relative novice myself to GOTO scopes I found it a very useful tome to delve into when facing a particular issue. It nicely set out sequences of instructions to configure the Autostar GOTO control system leaving no room for error when following instructions - useful when fettling with a scope in the dark.

The book has many excellent images depicting details of the hardware and its operation. The featured planetary images were inspiring although the deep sky images did not really do justice to the potential of the instrument. Usefully, detailed information on the instruments, detectors and exposure times are included for all astronomical images.

I sometimes felt that many very simple aspects could have been omitted, and some more advance aspects were really not elaborated on enough. I'm not sure how many people need to be told how to pack their telescope away at the end of a night! In particular the imaging section was very basic considering the wealth of options available to amateurs nowadays.

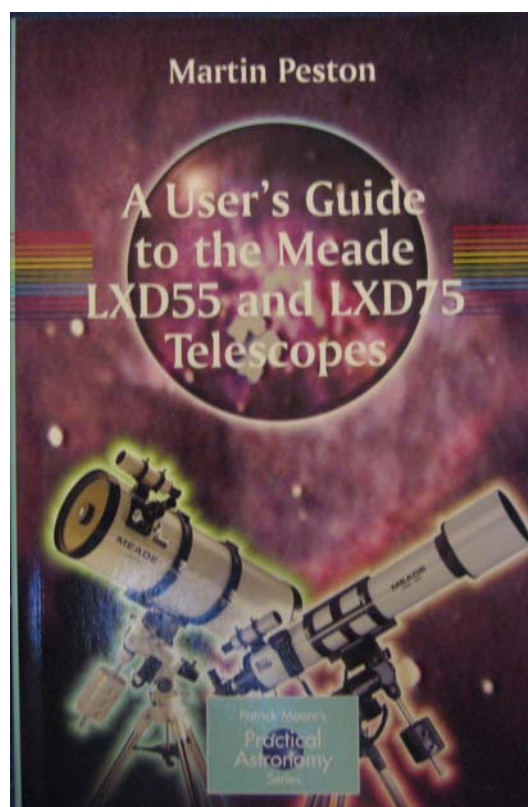
Despite my above reservations, I found this book to be a very useful reference for the beginner or intermediate owner of the relevant scopes. The beginner will find the basic descriptions of astronomical terms and techniques informative and Martin Peston also provides a good introduction to the myriad variations of OTA's mounts and peripheral hardware such as filters and eyepieces.

Intermediates will also find the book useful for inspiration and reference. Features only occasionally used such as updating AutoStar

firmware are ably covered. Functionality such as spiral searching and satellite tracking (I wasn't aware that this could be done with a GOTO scope!) are also featured and will allow the more advanced user to maximise their enjoyment of an observing session.

Overall this is a useful reference for the beginner or intermediate user of the LXD series of telescopes and will help to fix many of the immediate issues that a user new to the instrument may face.

Darryl Sergison



ON SPACE AND TIME

Cambridge University Press (2008)
ISBN-13: 9780521889261 RRP: £13.99

The book consists of six essays:

The Dark Universe.
Quantum Spacetime and Physical Reality.
Causality, Quantum Theory and Cosmology.
On the Fine Structure of Spacetime.
Where Physics meets Metaphysics.
The Nature of Time.

Andrew Taylor
Shahn Majid (Editor)
Roger Penrose
Alain Connes
Michael Heller
John Polkinghorne

This book is an in-depth expansion of a public discussion which took place at Emmanuel College, Cambridge during 2006 at which distinguished invited contributors addressed our current understanding of the true nature of space and time. The book is primarily about those aspects of General Relativity, Quantum Theory, Particle Physics, and Cosmology which, although they comprise the defining standard models of twentieth century physics, cannot be reconciled. The contributing authors go to great lengths to explain how the root problems arise, why they present serious and fundamental difficulties of interpretation and how current thinking might represent the first tentative steps towards a theory of Quantum Gravity. The presentation is challengingly philosophical and the reader is confronted with questions concerning the fundamental nature of geometry and time which are at issue in the so-called Planck regime. The book concludes with an examination of the possible impact which these new ideas and concepts might have on the interaction between Theology and Physics. How might a theory of Quantum Gravity change our view of God? How might Theology guide us in thinking about Quantum Gravity? Such questions take their place alongside more familiar discussions of Dark Matter, Dark Energy and related issues in what is a unique collection of essays.

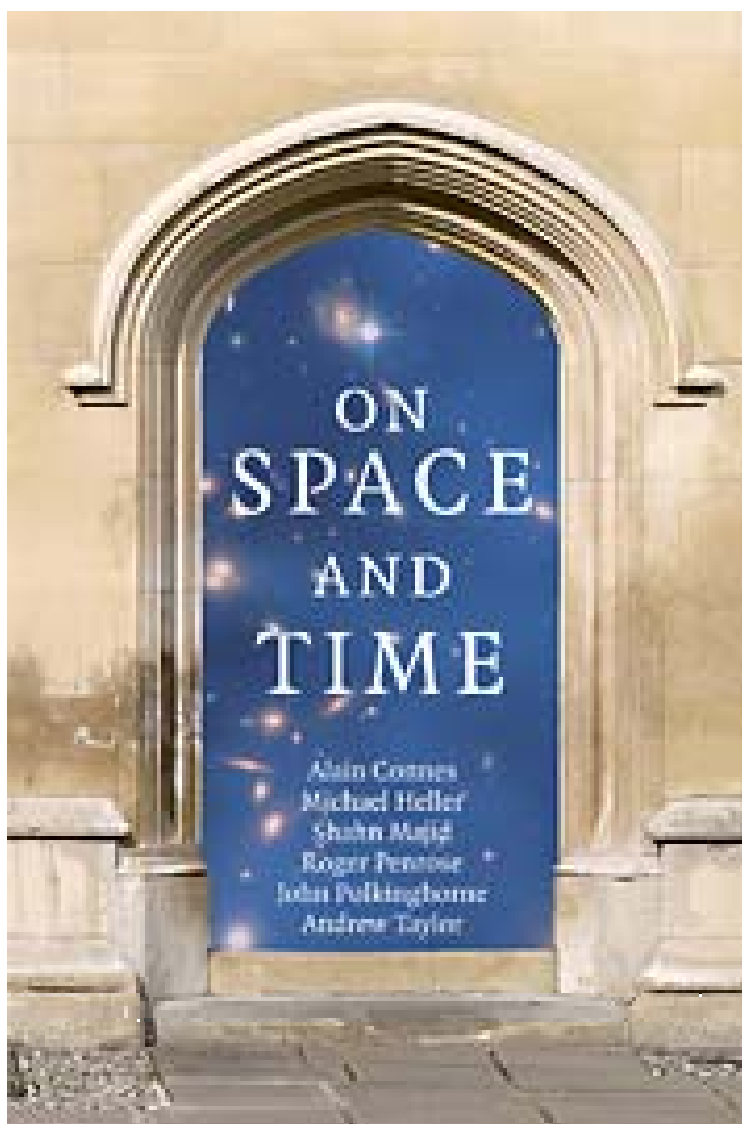
A significant part of this book is mathematical. Not in the sense that there are pages of mathematical argument (there are a few) but in the sense that there is lengthy and detailed discussion of the key features of relevant mathematical ideas and of their potential in describing the extreme realms at which quantised gravitational processes might reveal themselves. The language and vocabulary of these sections is essentially that of mathematics. Much of this content will be accessible only to experienced mathematicians and theoretical physicists but as is often the case there are valuable insights to be gained by the persistent lay reader. The scene is set in a brief but incisive and thought provoking preface by Shahn Majid who presents in clear terms the serious difficulties which arise in interpreting and reconciling General Relativity and Quantum Theory. Andrew Taylor then reviews recent developments in Observational Cosmology and highlights the difficulties which concepts such as Dark Matter and Dark Energy present to standard models of particle physics and field theory and to our general

understanding of the large scale structure and evolution of the Universe. The essays by Shahn Majid and Roger Penrose make up a substantial part of the book and the reader is introduced to the challenging new ideas which these contributors argue will be necessary for a viable theory of Quantum Gravity. The new field of non-commutative geometry is introduced and tantalising concepts are discussed, such as Conformal Cyclic Cosmology – cyclical universes without a Big Crunch? The mathematical language and notation is uncompromising, which few casual readers will feel entirely comfortable with, but within this format there are extensive sections which provide insight and guidance for the non-mathematical reader. Majid's essay includes,

for example, a discussion of the experimental tests which might soon be possible for certain features of quantum gravity. Tests, such as those for a variable speed of light, which might be probed using gravitational wave detectors will, he argues, provide renewed impetus to these fundamental areas of study. Alain Connes examines further the new mathematical ideas and related aspects of geometry and outlines links to elementary particle physics and number theory. The book concludes with essays by Michael Heller who considers the confrontation between theological thinking and the promise of a quantum theory of gravity and by John Polkinghorne who discusses the challenging issue of the true nature of time.

On Space and Time is a book aimed primarily at the specialist reader who will gain a compact view of current thinking about Quantum Gravity. The non-specialist might struggle with some of the mathematical vocabulary but the philosophical content is thought provoking and there is a sufficient "Where are we now?" and "Why are we here?" aspect to the presentation to make it a worthwhile read. A substantial part of the book is of course all about "Where are we going?"

Brian Parsons



Observing the Night Sky with Binoculars

A Simple Guide to the Heavens by Stephen James O'Meara
Cambridge University Press ISBN-13: 9780521721707 £19.99

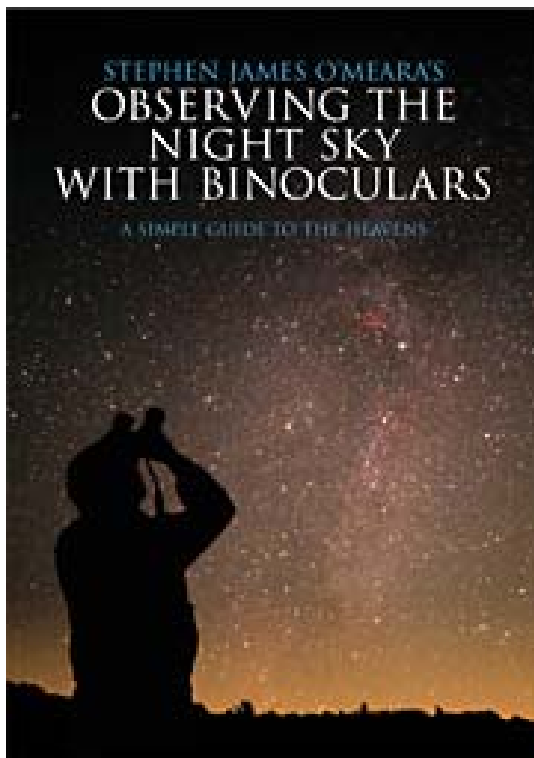
I first came across Stephen James O'Meara's work with his book *The Messier Objects* – published by the respected magazine *Sky & Telescope*. Whilst observing catalogues are quite abundant – most are quite bland 'matter of fact' accounts of what has been observed. Stephen's descriptive style reads more like a novel, where the reader is taken on a journey through his various observing sessions. In a way, the reader doesn't have to know or understand anything about astronomy in order to appreciate what is being described to him. It is for this very style, that I jumped at the chance to review this book – as well as being able to add a copy to my collection of his other works.

I'm not really an observational astronomer, as my interest is primarily based around CCD imaging, so I've tried to approach this review as a beginner to observational astronomy, with perhaps a little knowledge of the subject – much in the same way as I suspect most readers of this book will come by it.

From the outset, Stephen stresses the importance of using nothing more than a basic pair of binoculars – something the average person is likely to have in their possession. However unlike most books of this type, Stephen starts our astronomical journey looking North to the Asterism of the Plough (the Big Dipper as our American cousins call it). The reasons for this introduction are based around sound principles and common sense. The Asterism is always visible in Northern latitudes, and is likely known by even the most astronomically unaware. Even so, Stephen shows us how to find this object using nothing more complicated than a clenched fist on an outstretched arm. This rough measuring device allows the reader to understand how our system of measuring the sky is made. When linked to the field of view of our chosen pair of binoculars, this forms the basis for finding all of the objects that are described in this book.

While the reader is taken on an introductory journey through the plough and the objects within it, we are also introduced to the Stellar magnitude system; distance and depth perception, Star colouration, the star life cycle, variable stars, as well as observational techniques like averted vision.

Now armed with a few of these basic observational skills and a few facts to explain what is being observed, the reader is then taken on a yearlong journey through the night sky. Although starting with the Spring constellations – from here on in, the reader can dip into the book wherever they like according to the time of year they find themselves in.



Each of the four seasonal chapters cover the primary constellations that are best placed for observation at that time. Stephen provides the almost obligatory mythical history one finds in these kinds of books, but he also relates these stories to events and observations made in much more recent times. Occasionally, he throws the reader an historical conundrum – For example

Alpha Canum Venaticorum, the principle star in Canes Venatici, is known as Cor Caroli, meaning Charles's Heart – a title honouring King Charles I. Apparently this star blossomed on the evening of May 29, 1660 when Charles II returned to London at the restoration of the monarchy, so in that case shouldn't Cor Caroli honor Charles II. However, Stephen then points out that the star has a longer name Cor Caroli Regis Martyris – which refers to the fact that Charles I was beheaded. Confused!!

With each chapter, Stephen introduces the reader to more advanced topics such as the cycles involved during a Supernova, or why the 'Pole Star' won't be in 14,000 years time when its Vega's turn. Bit by bit, we are fed with little gems of information that enhances our appreciation and understanding of what we are observing. It's for this very reason that I found this book enthralling, and quite enchanting. Stephen is an accomplished observer, but more importantly, he has the ability to put across his obvious excitement and love of the subject, that draws the reader into this fascinating subject and may be mans place within the wider Cosmos.

Nick Tonkin

snippets

Astronomer recognised in Honours List

Congratulations for the award of MBE go to Dr John William MASON. This award is for services to the South Downs Planetarium and Science Centre, Chichester. (West Sussex)

First Bat in Space?

A bat that was clinging to space shuttle Discovery's external fuel tank during the countdown to launch the STS-119 mission remained with the spacecraft as it cleared the tower, and analysts at NASA's Kennedy Space Center concluded.

Based on images and video, a wildlife expert who provides support to the center said the small creature was a free tail bat that likely had a broken left wing and some problem with its right shoulder or wrist. The animal likely perished quickly during Discovery's climb into orbit.

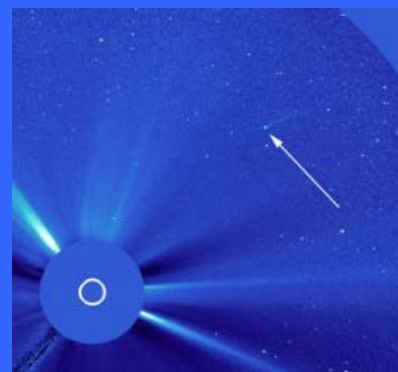
Source: NASA



New Comet Yi-Swan

Its name is Comet Yi-SWAN and it's not going to be very long before it's easily within range of small scopes and larger binoculars. So where is it at? Head out to the early morning skies for your best look, as it was in Cassiopeia in early April and by end of April it'll be just south of NGC884 and 869.

Source: Universe Today



Electrically Charged Particles Found in Enceladus' Plumes

Nancy Atkinson—*Universe Today*

A team of planetary scientists working on the Cassini-Huygens mission has discovered tiny, icy particles in the plume from [Saturn](#)'s moon Enceladus that offer a tantalizing glimpse of the interior of this enigmatic world. The spectrometer on Cassini, the Cassini Plasma Spectrometer (CAPS) discovered a surprise: the ice particles are electrically charged.

Cassini has been exploring Saturn and its moons since 2004. Enceladus is 500 kilometers (300 miles) wide and Cassini's suite of instruments has found [the moon](#) to be active, with jets near its southern pole that spew gas and water thousands of kilometers out into space. During two particularly close flybys of the moon in 2008, skimming only 52 and 25 km from the surface at around 15 km per second (54,000 km per hour), the CAPS instrument on the spacecraft was pointed to scoop up gas as it zoomed through the plume.

The CAPS instrument is designed to detect charged gas (plasma), but its measurements in the plume revealed tiny ice grains whose signatures could only be present if they were electrically charged. These grains, probably only measuring a few nanometres across (billionths of a meter – 50, 000 times thinner than a human hair), fall into a size range between gas atoms and much larger ice grains, both of which were sampled directly during previous Enceladus flybys. The particles have both positive and negative electrical charges, and the mix of the charges varied as the Cassini spacecraft crossed the plume.

Dr. Geraint Jones and Dr. Chris Arridge, both from University College London's Mullard Space Science Laboratory, present the results for the CAPS team at the European Week of Astronomy and Space Science conference at the University of Hertfordshire.

Jones and Arridge suggest that the grains may be charged through so-called triboelectric processes, through bumping together in the vent below Enceladus's surface before they emerge into the plume. This provides important hints to the conditions in the vents, and in turn may help with understanding conditions in the interior.

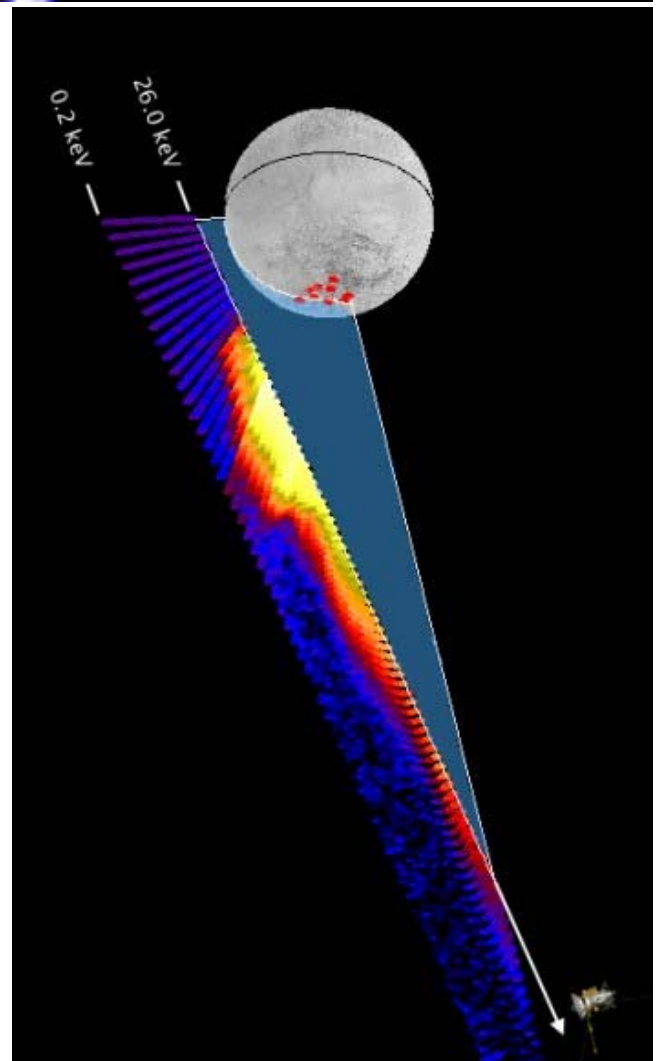
Jones and Arridge are intrigued by what their discovery reveals about Enceladus: "What are particularly fascinating are the bursts of dust that CAPS detects when Cassini passes through the individual jets in the plume" says Jones. "Each jet is split according to charge though", adds Arridge, "Negative grains are on one side, and positive ones on the other".

Arridge said that perhaps, as these charged grains travel away from Enceladus, their paths are bent by electric and magnetic fields in Saturn's giant magnetosphere. In this way Saturn's magnetosphere acts as an enormous mass spectrometer for the plume particles, allowing scientists to constrain their masses. Arridge has begun modelling the paths of these newly-discovered particles.

Ionised gas (plasma) in Saturn's magnetosphere flows past Enceladus at over 80000 km per hour. Arridge's results show that for this enormous mass spectrometer to work and for these dust particles to reach Cassini, this river of plasma must be significantly slowed down, in and near the plume, to speeds of less than 3200 km per hour. This slowing of the plasma is a result of the plume injecting particles into the plasma stream - making the whole flow slow down in a similar effect to when cars join a busy motorway. These new results provide further evidence that the material in the Enceladus plume has a huge influence on the moon's surroundings.

Future Cassini flybys will help further understand the processes that occur at Enceladus and in its vicinity. William Herschel could not have suspected that the tiny point of light that he found in 1789 would turn out to be such an exotic place.

Source: [RAS](#)



Observations from the Cassini Plasma Spectrometer (CAPS) made during the Cassini flyby of Enceladus on 12th March 2008, superimposed on Cassini's path. As the spacecraft passed the moon, CAPS detected streams of charged particles in individual jets within the plume; negative particles are shown in this view. Each ribbon in the image gives an indication of the measured particle energy per charge: high energy particle fluxes are shown nearest Enceladus, and lower energy particles are farthest. The red points marked on Enceladus show the locations of known jet sources found by other Cassini instruments. Credit: MSSL-UCL.

NASA and the Moon

NASA Delays Next Moon Probe's Launch to June

NASA has pushed back the launch of its Lunar Reconnaissance Orbiter (LRO) mission again, this time to June 2 at the earliest, due to a launch delay of the U.S. Air Force's Wideband Global Satcom-2 (WGS-2) communications satellite.

The lunar orbiter is NASA's vanguard mission for the agency's plan to [return humans to the moon](#) by 2020 aboard its new Orion spacecraft and Altair lunar landers. NASA also plans to [launch a second probe](#) with the orbiter to slam into the moon's surface as part of a hunt for water ice.

Both LRO and the military's WGS-2 satellite are slated to launch from the same pad at Cape Canaveral Air Force Station in Florida aboard Atlas 5 rockets. Denver-based United Launch Alliance, manufacturer and operator of the Atlas and Delta rockets, needs about 60 days between launches for ground processing.

The launch of WGS-2, now set for April 3, was scrubbed in March when a leak was detected in the Atlas 5 Centaur upper stage's oxidizer valve. Once the WGS-2 launch occurs, United Launch Alliance can begin preparations for the LRO liftoff.

NASA has [delayed LRO's launch](#) several times due to a crowded launch manifest and now two WGS-2 delays. The original goal was to launch LRO before the end of 2008. Other launch dates had been set in April and May.

Todd May, NASA's deputy associate administrator for science, said the agency's launch windows for LRO span a limited four-day period



that begins once every 12 days. NASA will try to launch LRO between June 2 and June 6, May said Wednesday.

LRO will map the moon in unprecedented detail and search for water and other resources that could pave the way for humans to stay for extended periods on the lunar surface. Its companion spacecraft, the Lunar Crater Observation and Sensing Satellite (LCROSS) is designed to [crash into the lunar surface](#) and create a plume so large that it can be observed by scientists on the ground. The plume will be studied for signs of water ice in the shadowed polar regions of the moon.

By Space News Staff - 02 April 2009

NASA Displays Moonship Prototype

A prototype of NASA's new Orion spacecraft that will carry astronauts to back to moon made a pit stop Thursday at the agency's Florida spaceport as engineers prepare for its first ocean water test.

The [Orion Crew Exploration Vehicle prototype](#) is a seaworthy mockup of NASA's space shuttle successor, a capsule-based spacecraft slated to begin ferrying astronauts to the International Space Station by 2015, [and then to moon by 2020](#).

The craft made its way to NASA's Kennedy Space Center in Cape Canaveral, Fla., from the Naval Surface Warfare Center in Bethesda, Md., where engineers and Navy divers began water recovery tests to understand how the 18,000-pound (8,164-kg) capsule performs after splashdown.

The initial tests [were performed in pool](#), but NASA is planning a second round of tests off the coast of Florida to see how Orion ships behave in open water.

"The goal of the operation, dubbed the Post-landing Orion Recovery Test, or PORT, is to determine what kind of motion astronauts can expect after landing, as well as outside conditions for recovery teams," NASA officials said.

NASA's three aging space shuttles are due to retire at the end of 2010. The Orion spacecraft are designed to launch atop the agency's [new Ares I rocket](#) to ferry six astronauts to the space station or a four-person crew to the moon and back. The spacecraft and rocket, as well as the planned Altair lunar lander and heavy-lift Ares V booster, make up NASA's Constellation programme.

After leaving Maryland, [the mock Orion capsule](#) stopped at the National Mall in Washington, D.C., to be displayed before arriving at Kennedy Space Center, where it can be seen at the spaceport's Visitor's Complex until Friday.

The open water recovery test was due to begin on April 7.

by SPACE.com Staff - 02 April 2009



The Bradford Telescope

During the 1990's, John Baruch at Bradford University had the idea that schools, educational organizations and individuals might like access to an automated remote telescope. It was an idea ahead of its time and pushing the technology, but he did it anyway. A telescope was built out in Oxenhope – not known for its clear skies.

Students from the university staffed the development – some earning MScs and PhDs along the way – and using a rather meager funding source they made a 16" telescope available to everyone free of charge. It was the first on the web and has obviously since been occluded by the Leviathan Faulkes Project – though that doesn't support Joe Public, just schools and those in educational establishments. But despite a lightning strike in 1996 the project is still going and now based on the slopes of sunny Tenerife.

Recently I logged on to the Bradford Telescope site at <http://www.telescope.org> and registered myself as a potential user. It was remarkably easy to do – even I could manage it – and I put in a request for some observations to be made of a star field in Gemini. One tip: before choosing which camera to use and what exposure have a look at a few examples in the gallery, some people asked for a 120s exposure of Venus – WAAHHH what a mess that picture is.

Then I just had to sit back and wait. It's not easy – I'm an impatient soul at heart – and I found myself looking at the website a lot to see what it was up to. The webcams page gives various views of the telescope surroundings and the sky above together with a statement of whether the telescope is currently working (if it's raining, cloudy, down for maintenance or there's too much dew it won't be).

By chance, I looked at the site and ended up putting the webpage into a small window at the top corner of my computer screen so I



Image: Courtesy 'The Bradford Telescope'

could watch the sunset over Mt Teide and the earth shadow and full Moon rise. It was really pretty. Later in the evening I watched the stars and fleeting clouds over the dome and the moonlit illuminated clouds below the mountain peak. All this from the UK, where the temperature was -9.5°C with freezing fog.

I have had some pictures back, but the automated focus is dodgy at the moment and awaiting repair. By the time you read this it should be up again. But the image gallery

<http://www.telescope.org/gallery.php> there suggests it's possible to take some quite nice pictures free of charge, so I think it will be worth the wait. Suddenly the BBC weather forecast for the Canaries is very interesting!

Grant Privett

Courtesy: Hermes—newsletter of Shropshire AS

Follow IYA2009 in the UK on Twitter

It's been a busy couple of weeks for IYA2009 in the UK, with our Spring Moonwatch (28 March - 05 April), the 100 Hours of Astronomy (02 - 05 April), Around the World in 80 Telescopes 24-hour webcast (03 - 04 April), and the hundreds of starparties, open observatory nights, lectures and planetarium shows that have been happening all around the country.

I hope you managed to take part in at least some of these exciting projects, and that you got some clear skies! If you missed any of the online activities you can watch them again at

www.100hoursofastrology.org

Our electronic newsletter is a good way of keeping up-to-date with what's happening, but an even better way is to follow us on Twitter. Don't know what Twitter is? Well...

Twitter is an online social networking service that enables its users to send and read other users' updates known as tweets. Tweets are text-based posts of up to 140 characters in length. Updates are displayed on the user's profile page and delivered to other users who have signed up to receive them.

So how do you follow us on Twitter? There are three easy steps:

1. Go to <http://twitter.com> - click on "Get Started - Join!" to create an account for yourself. It's free; all you need to do is think up a username and password, and enter that info along with your name and email address
2. Once you have created a Twitter account and logged in, click on "Find people" and then search for astronomy2009uk (our Twitter feed). Once you've found us, click on "Follow".
3. Go to your Twitter homepage and you'll see all our recent tweets!

Every time you log in to Twitter you'll see what we've been tweeting about. You can also post your own tweets, and anyone who's following you will get to read them. - Happy tweeting, and see you online!

Steve Owens, UK Co-ordinator

International Year of Astronomy 2009

t 0141 420 5010 ext 299 m 07717720479

e steve@astronomy2009.co.uk w www.astronomy2009.co.uk

Follow astronomy2009uk on Twitter! twitter.com/astronomy2009uk

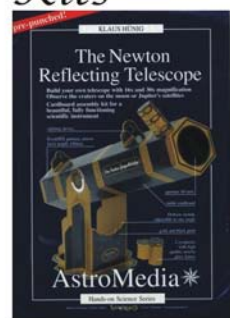
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Google launches "Live from Mars"

Google 3-D update brings you images from the Mars Odyssey spacecraft — in some cases, within hours of the images being beamed back to Earth from the Mars Odyssey spacecraft. *Astronomy* magazine spoke with one of the key people at Google behind this exciting new application.

Daniel Pendick, Associate Editor - Astronomy

Get ready to go to Mars any day of the week — from your computer.

Today Google released a major update to its Mars browser that will allow you to see images taken from orbit by the Mars Odyssey spacecraft. "Some of them will only have been downloaded by NASA hours earlier," says Michael Weiss-Malik, product manager for the Google Mars 3-D component of Google Earth. "In many cases, the user will be the first human to see the image itself."

To use Google Mars 3-D, load [Google Earth 5.0](#) (the most recent version available). Find the icon on the upper toolbar shaped like Saturn and click it. Then scroll down to "Mars" and click. You are now within a fully 3-D model of the planet Mars.

This web application is officially called "Mars in Google Earth," but let's call it Google Mars 3-D. In Google Earth, users can click on and off various layers — the names of major highways, for example, or historical locations. Clicking on the new layer in Google Mars 3-D called "Live from Mars" connects the browser to a live feed from NASA's Mars Odyssey satellite, which has been orbiting the Red Planet since 2001.

The images come from Odyssey's Thermal Emission Imaging System (THEMIS). The spacecraft loads images into memory and sends them back to Earth periodically. Google Mars 3-D will access the images automatically as the THEMIS camera team receives them.

"Live from Mars" will also be "Mars Uncensored." Users of Google Mars 3-D will see the THEMIS portraits before scientists have processed them. "This is raw imagery," Weiss-Malik explains. "So it'll be the beautiful stuff as well as sort of the warts." The images will show features on Mars as small as 330 feet (100 meters).

Still, the Odyssey feed represents the first direct connection between Mars satellite imagery and the public. When the timing is just right, users could be seeing THEMIS images within a few hours of NASA downloading them from the spacecraft. But most images will post within 12 to 24 hours of their arrival on Earth. Google worked with scientists at NASA and Arizona State University in Tempe to create the Mars Odyssey downlink for Google Mars 3-D.

NASA rebooted the Mars Odyssey spacecraft's computers March 11 to clear a potential memory malfunction. As soon as new images download to Earth, Google Mars 3-D will post them. In the meantime, expect to see images dating to right before the planned outage/reboot.

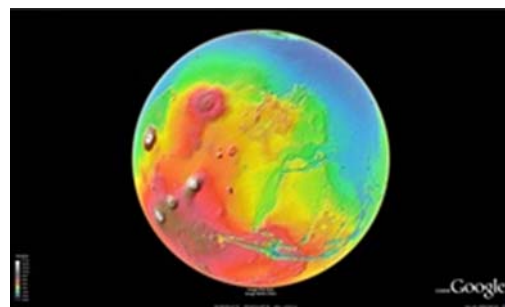
Other new features to appear with this update include:

- Orbital tracks of the satellite's trajectory around Mars. Images will appear at their actual location in the orbital track. The images and orbital tracks will refresh every day or two.
- Overlays on the martian surface of historical maps created by Percival Lowell (1855-1916), Giovanni Schiaparelli (1835-1910), and others, based on telescopic observations. The release of the update is timed to coincide with Schiaparelli's March 14 birthday. (Both Lowell and Schiaparelli documented what many assumed to be canals on the surface of Mars.) Browsers will be able to toggle between the different maps and between the historical and modern surfaces of Mars.
- The trackways of the Mars Exploration Rovers Spirit and Opportunity, including the ability to see panoramic "street views" that the robots captured on their journeys.
- Guided tours of Mars narrated by Ira Flatow, host of National Public Radio's *Science Friday* program, and Bill Nye the Science Guy.

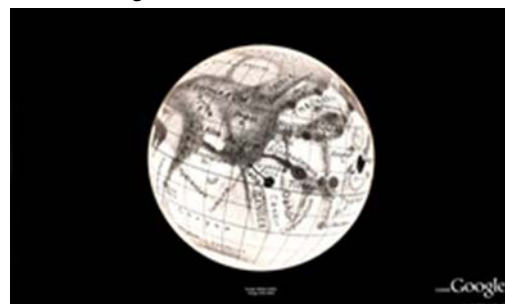
The Google team's vision for Google Mars 3-D is as a browser for a planet. And the door is open for anyone to create and distribute additional layers for the Google Mars 3-D universe using the keyhole markup language (KML) originally developed for use with Google Earth, Weiss-Malik says. "Our hope is that [NASA] will leverage it increasingly to inject their own content. They don't have to go through Google."

Using KML, non-scientists can also create new content for Google Mars 3-D. A thriving community already exists on the Internet that creates and exchanges KML layers for Google Earth. A similar community could develop for Google Mars 3-D. "Anyone who wants to can be the first person to create, say, the Viking image layer," Weiss-Malik says. "They can import oodles of data we haven't gotten around to doing yet."

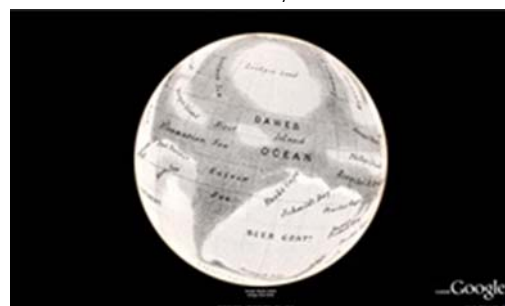
Google also hopes scientists will begin to communicate new findings using Google Mars 3-D, either in the form of KML documents or on web pages. "We would love for people to use us as their publishing tool for their scientific results," says Noel Gorelick,



Google Mars 3D colorized terrain



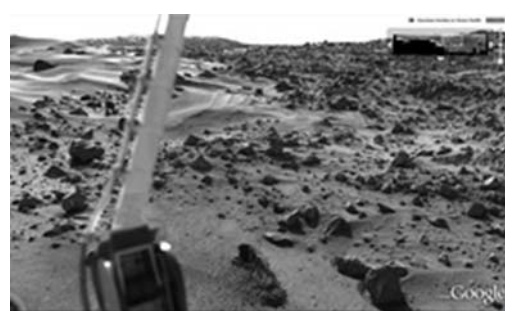
Mars historical maps Antoniadi



Mars historical maps Nathaniel Green



Google Mars 3D view of Victoria Crater



Viking panorama in Google Mars 3D

technical lead for the Google Astro team. "When you've got a scientific result that's easily expressed in a 3-D form, we're a great way to include that in your publication."

Ultimately, Google Mars 3-D is about seeing the planet in a new way. "This increases your ability to understand and see the information," Weiss-Malik says.

March 13, 2009

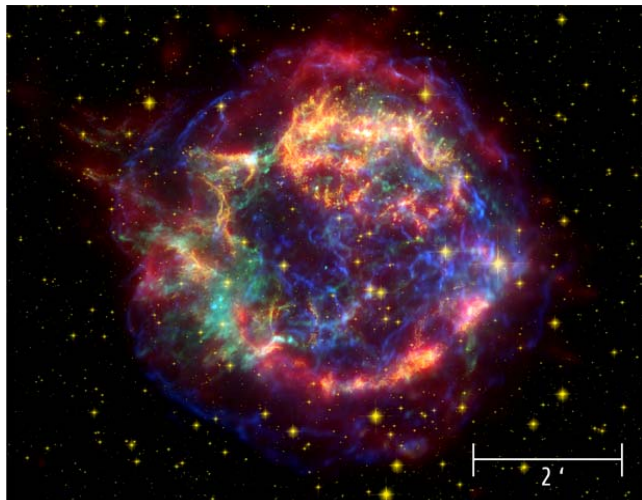
Multi-wavelength observing

Brian Finney

3D visualisation of the supernova remnant Cassiopeia A - a first !

January 2009 saw two major strides forward in multi-wavelength observing; the three-dimensional (3D) visualisation of Cassiopeia A (Cas A) and the findings that the opposing jets of Cas A are in fact opposing broad discs. Cas A is a supernova remnant, the debris from a star that blew itself apart some 330 years ago at a distance of 11,000 light-years from Earth - now has a diameter of 10 light years, see fig 1.

It is located west of Caph, beta Cassiopeia, the western most star in the 'W' and midway towards M52 Open Cluster. Whilst it is the brightest radio source in the sky it is extremely faint optically, and is only visible on long-exposure photographs.



Credit: X-ray: NASA/CXC/SAO; Optical: NASA/STScI; Infrared: NASA/JPL-Caltech)

Fig 1



Credit NASA, ESA, and the Hubble Heritage (STScI/AURA)-ESA/Hubble Collaboration.

Acknowledgement: Robert A. Fesen (Dartmouth College, USA) and James Long (ESA/Hubble)

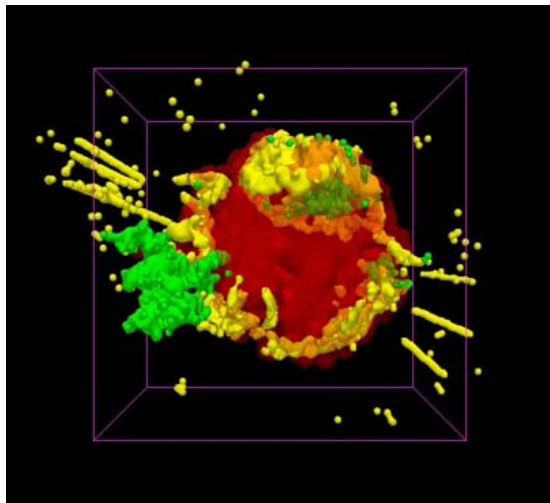
Fig 2

Recently, an infrared echo of the Cas A explosion was observed on nearby gas clouds using [Spitzer Space Telescope](#). The recorded spectrum proved the supernova was of [Type IIb](#), meaning it resulted from the internal collapse and violent explosion of a massive [star](#), most probably a [red giant](#)

Cas A was among the first discrete radio sources to be found, in 1947. The optical component was first identified in 1950. In 1979, Shklovsky predicted that Cas A had a black hole. In 1999, the Chandra X-Ray Observatory found a "hot point-like source" close to the centre of the nebula that is quite likely the neutron star or black hole predicted but not previously found.

The computer reconstructions formed using multi-wavelength

data, fig 3, forms the foundation of the 3D fly-through and clearly shows the green (iron) and yellow (argon and silicon) jet material as a broad disc rather than the expected jet. Red is cold material seen in infrared.



Credit NASA/CXC/MIT/T. DeLaney
Provided by Dr Haley Gomez Cardiff University

Fig 3

'Astronomers had known about the plumes and jets before, but did not know that they all came out in a broad, disk-like structure. Also the flat disc structure is material from within the inner layers of the star and the blast wave (ring) material is from the outer layers of the star.' Says Dr Haley Gomez of Cardiff University's School of Physics and Astronomy.

The 3D visualization of Cas A can be seen at:

<http://news.bbc.co.uk/1/hi/wales/7814351.stm> . It uses X-ray data from Chandra, infrared data from Spitzer and pre-existing optical data from NOAO's 4-meter telescope at Kitt Peak and the Michigan-Dartmouth-MIT 2.4-meter telescope. In the visualization:

green is mostly iron observed in X-rays.

yellow is a combination of argon and silicon seen in X-rays, optical, and infrared - including jets of silicon - plus outer debris seen in the optical.

red is cold debris seen in the infrared.

blue reveals the outer blast wave, most prominently detected in X-rays.

To create this visualization, scientists including Dr Haley Gomez, took advantage of both a previously known phenomenon - the Doppler effect - and a new technology that bridges astronomy and medicine. When elements created inside a supernova, such as iron, silicon and argon, are heated they emit light at certain wavelengths. Material moving towards the observer will have shorter wavelengths and material moving away will have longer wavelengths. Since the amount of the wavelength shift is related to the speed of motion, one can determine how fast the debris is moving in either direction. Because Cas A is the result of an explosion, the stellar debris is expanding radially outwards from the explosion centre.

Using simple geometry, the scientists were able to construct a 3-D model using all of this information. A program called 3-D Slicer - modified for astronomical use by the Astronomical Medicine Project at Harvard - was used to display and manipulate the 3-D model. Commercial software was then used to create the 3-D fly-through.

Further reading:

http://www.nasa.gov/mission_pages/chandra/multimedia/video09-001.html
http://coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/casA.html

Fig 1 shows Cas A in X-ray, Infra red and Optical wavelengths.

Red - Infrared : Orange - Optical : Blue & Green - X Ray

For comparison Fig 2 shows Cas A in optical by Hubble Space Telescope

Courtesy: Liverpool AS Newsletter—March 2009

OBSERVATORY SCIENCE CENTRE, HERSTMONCEUX

Graham Boots

Herstmonceux, near Hailsham, East Sussex, was the home of the Royal Greenwich Observatory (RGO) from 1955 to 1990.



It moved from its original home at Greenwich due to the growing problem of artificial light brightening the night sky, making astronomical observing increasingly difficult. In 1990, the RGO moved to the Institute of Astronomy at Cambridge and the 98" telescope moved to a dark site on La Palma in the Canary Islands. A few years later the RGO was disbanded, as British astronomical research moved into universities.

There are currently about 40 universities with astronomical departments.

Herstmonceux is now the home of the Observatory Science Centre (OSC), which consists of six observatories, known as the 'Equatorial Group'. Five of the domes contain large telescopes, most of which are the RGO originals; four of these are in working order. The sixth dome houses a museum. The complex is open to the public, and also contains a hands-on exhibition area.

The OSC holds open evenings on the first Friday of each month. Three of the telescopes are made available for public viewing. As the RGO was the responsibility of the Admiralty, all the telescopes are painted battleship grey!



Dome E houses the 26" Thomson refractor. This was made in 1887 by Sir Howard Grubb, at a cost of £5,000. By 1980 it had surveyed much of the northern sky onto 60,000 frames that are now stored in a 'safe house' in London.

Precise measurements of star positions were taken at an accuracy of 1/50 the width of a human hair. Using the annual parallax shift method, the distance from Earth to about 800 stars was calculated with this telescope. The entire floor of this dome moves up and down, taking the astronomer to the business end of the telescope. The 325mm refractor finder fitted to the Thomson was made in 1859 and was originally the 'Great Equatorial' at Greenwich in London.

Dome C contains the Earth Orbiting Satellite Tracking telescope, which is no longer in use, but it is also home to a 16" Meade schmidt cassegrain telescope.

Dome D is home to a 13" astrograph refractor fitted with a 10" refractor finder.

The 30" Coudé focus reflector in dome A uses an optical system of five mirrors to keep the focal point at the same position; the middle mirror rotates in order to create a static focusing position. This does mean that a very long focus length can be achieved and/or heavy equipment can be used in a more convenient static position. There are two telescopes of this type in the UK, the other being in Scotland. This telescope was used to gather stellar spectra.



The largest telescope at the OSC is the 36" Yapp cassegrain reflector, which occupies dome B. This telescope came to be with a donation of £15,000 in 1932 from William Yapp, a London businessman. It was made in Newcastle-on-Tyne by Sir Howard Grubb. It has a parabolic primary mirror that is 6" thick and a convex secondary mirror giving an effective focal ratio of f15. There are two finders of 7" and 3"

aperture. The Yapp has been used for stellar classification purposes using a spectrograph, star magnitude measurements using photometry and as a test bed for other types of detectors for the benefit of other telescopes. In 1986, an early CCD camera was fitted to this telescope to record comet Halley. The 36" mirror used to be realuminised once a year and during this process the mirror was lowered through a trap door in the observatory floor into the processing room in the basement below. This telescope is too large for the general public to use, but it is hoped that it will soon be ready for amateur astronomers to use.

Open evenings are held 19:00-23:00 on the first Friday of each month.



Costs £7.23 per adult, £5.41 per child.

For more details, see www.the-observatory.org or telephone 01323 832731.

Courtesy: WAS NEWS - Worthing AS

more IYA 2009 ACTIVITIES

IYA Public Star Party - Liverpool AS - 23 January 2009 - *by Dave Owen*

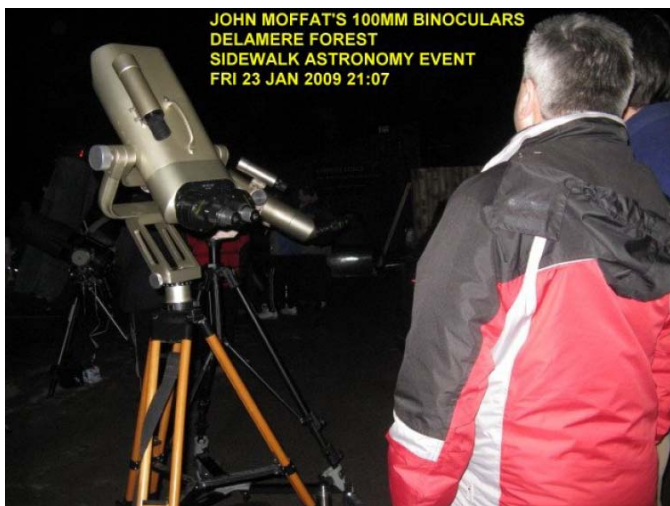
I arrived at about 19:55, with Jim Lawler and my 16 inch Dobsonian reflector. This was the first trial of Jim's modified Mini Van trailer. This had lots of room to easily transport the 16 inch, a small ladder and the 8 truss poles, without the need for a roof rack.

It took about 20 minutes to assemble the 16 inch. However, in my haste to put the weight on the back end of the telescope, I accidentally removed one of the three collimation wing nuts. When this was put back on, the telescope was severely de-collimated. With help from Llandrillo AS members, who also brought a 16 inch Dobsonian, the collimation was mostly restored. Our main collimation expert, Geoff Regan, was kept busy indoors by doing an illustrated talk.

Brendan Martin brought his 10 inch Dobsonian reflector, another LAS member Alex Wood brought his 10 inch Dobsonian reflector. Dave Bentley brought his 9.25 inch Celestron reflector. Jim Stacey brought his Celestron C6 GoTo reflector. John Simcock brought his 5 inch Maksutov telescope. John Moffatt brought his 100mm binoculars and one of his friends brought his 120mm binoculars. Lawrence Ashworth brought his 4 inch refractor. The final scope I can recall being there was Brian Bolton's Meade ETX 90mm telescope.

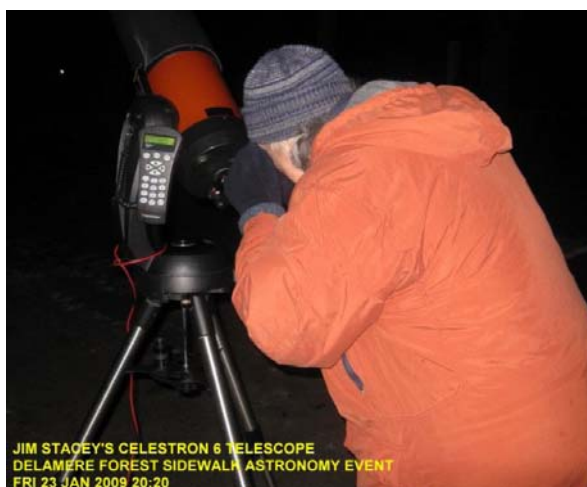
The weather stayed clear until just before midnight, by which time we were all ready to go home. Some of the objects seen were Venus, M1, M42, M43, M31, M32, M44, M45, M110, M46, Ngc2438, M81, M82, Ngc2392, M97, M47. The total attendance was estimated to be about 55 public, paying the Forestry Commission entrance fee of £3.50. There were also about two dozen Liverpool AS//Llandrillo AS members.

EVENT PICTURES by Jim Stacey & Alan Dennott:

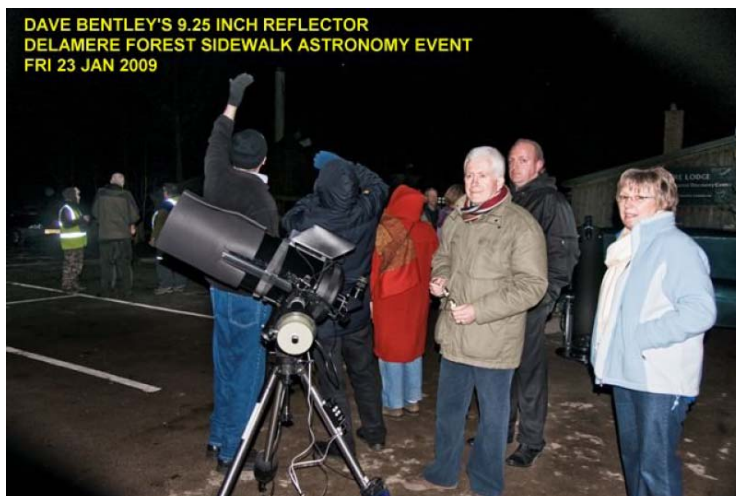




**GEOFF REGAN TALK
DELAMERE FOREST SIDEWALK ASTRONOMY EVENT
FRI 23 JAN 2009**



**JIM STACEY'S CELESTRON 6 TELESCOPE
DELAMERE FOREST SIDEWALK ASTRONOMY EVENT
FRI 23 JAN 2009 20:20**



**DAVE BENTLEY'S 9.25 INCH REFLECTOR
DELAMERE FOREST SIDEWALK ASTRONOMY EVENT
FRI 23 JAN 2009**



**LLANDRILLO AS 16 INCH REFLECTOR
DELAMERE FOREST SIDEWALK ASTRONOMY EVENT
FRI 23 JAN 2009 21:10**

**What are you
doing for
IYA2009?**

Send me details and
photos of any and all
events that your
society has been
involved in.

Faulkes Telescope South - Safety upgrade engineering visit - January/February 2009

By Dave Thomson

This article covers an engineering visit to Faulkes Telescope South at Siding Spring Observatory, Coonabarabran, New South Wales, Australia. The following link gives more information on the Faulkes project:- <http://faulkes-telescope.com/>

This engineering visit essentially replicates all the work undertaken on three previous visits to Faulkes North Telescope, but squashed into a four week engineering trip to reduce down time of the telescope. The same work on Faulkes North took in total near eight weeks. The reason we did three trips to Faulkes North instead of completing all the work in one trip, was that the design was still ongoing and was phased in to reduce the risk to the telescope. Once all the upgrades were complete and tested, we would implement the same upgrade to Faulkes South.

We arrived on site and immediately shut the telescope down from remote operations. The power was isolated and we began to strip the telescopes electrical systems. Things went well for the first two weeks and good progress was made. The main services panel was completely rewired and a new control system and safety partner was installed. Other electrical panels around the facility and on the telescope had similar treatment. Moral was on a bit of a roller coaster, but we were very determined to get the job done on time and get the telescope back on sky as planned.

Bryan (one of the electricians I have worked with for years), de-



cided to wear a new hat each day. This came about for reasons I would not rather go into, but some of his hats were extravagant to say the least. My favourite was the Star Wars Storm trooper helmet! As a bit of a laugh, we all decided to have a group photo with us all wearing one.

This trip seemed to have less Kangaroos around than usual, yet Emus were more common. The amount of insects too seemed to be higher than normal, with the number of Huntsman spiders on site taken much less. The Praying Mantis was common. The image above was taken on the door of Woolworths (yep it survives in Aus)



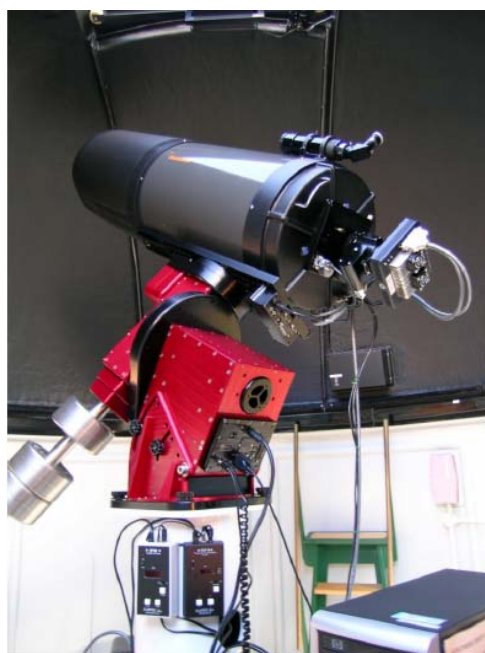
After two weeks of intensive equipment changes, rewiring and testing, the telescope was ready for pendant control prior to getting back on sky. I had completed most of my tasks and had to get back to the factory to complete documentation before I left at the end of March. The rest of the guys stayed on site for another few weeks finished off all the bits and bobs jobs and other tasks that had been outstanding for a while.

Hopefully all the completed tasks would mean there would be no more major changes/upgrades for years to come. The telescopes should just work with minor maintenance from the skeleton crew remaining in Birkenhead. The factory is now empty and the remaining employees will have moved to a small office by the time this newsletter is published.

John Shobbrook is the site manager for Faulkes South. He lives just a few miles away from the site and lives in what can almost be described as a Hobbit house. It is quite amazing and made of mud with a metal roof. The inside is unusual in many ways. One feature is a tree branch for the banister rail.



John has a number of observatories in his grounds that are adjacent to Siding Spring observatory. The Muhlenberg Observatory (the Sirius dome) has a C14 on a Paramount. The Observatory runs ACP (. This is the same software I use for my own observatory. More about



the Muhlenberg observatory can be seen here:-

<http://www.muhlenberg.edu/depts/physics/optical.html>

The observatory next to Muhlenberg Observatory is the Rose-Hulman observatory. This has a 0.5M RC Optical telescope in a purpose built run off roof observatory. More information about the observatory can be seen by following the link below:-

<http://www.rose-hulman.edu/Users/groups/Observatory/construction/osso1.htm>



Spot the Huntsman spider making out like a tap handle below! These guys can be BIG



Sadly, this is my last trip with Telescope Technologies (TTL). I have been with them since March 2003. I have seen first light on the Faulkes North Telescope in Hawaii and Faulkes South Telescope in the factory and on site in Australia. One other first light was of the Yunnan Telescope in China too.

I have been involved with many site engineering visits across the world including, La Palma in the Canaries, Maui Hawaii (Faulkes North), Siding Spring Australia (Faulkes South), Kitt Peak Arizona, Yunnan, China and Design meetings in Athens. In total over the last 6 years I have spent one whole year on site trips. It has been fantastic, but there have been some down moments with having to leave my family at home.

After the 2.0M Liverpool Telescope and the Faulkes Telescopes where complete towards the end of 2004, it looked then as if Telescope Technologies would not survive much longer. Contracts were not coming through. Telescope Technologies was then bought by Las Cumbres Observatory (LCO) late in 2005. LCO then owned both of the Faulkes Telescopes. Luckily LCO saved the demise of TTL and planned a global telescope network which included building more, larger telescopes. Things looked good for years to come.



Me standing on the 3.9M dummy mirror of the AAT

But, just over a year ago the plan changed due to costs. This plan has altered again more recently due to the global economic issues, and unfortunately Telescope Technologies has suffered. Most of the engineering staff have either gone or are going (including myself) at the end of March 2009. LCO will continue on based at Santa Barbara, California, with a small satellite group of five people in a smaller office in Birkenhead.

The Faulkes Telescopes will survive and the global network will still happen, but the number of telescopes in the network and the level of input to the educational arm of LCO has reduced too.

There are potential opportunities to stay working with Telescopes in the UK, but I am not sure if I will be able to have a slice of that yet.

Images above are of the Faulkes south Telescope and the welcome sign as you enter Coonabarabran



Article courtesy LAS News Circular—March 2009

Brightest supernova died six times

Astronomers analysing the brightest supernova ever detected say the titanic flare has reshaped thinking about the death struggle of gigantic stars.

Supernova SN 2006gy, located 240 million light-years away in galaxy NGC 1260, entered the record books in September last year when it dramatically brewed into an explosion 50 billion times brighter than the sun.

It was about 100 times brighter than the flash of a typical dying star.

The supernova was probably caused by a truly enormous star, a behemoth at least 100 times more massive than the sun, the scientists write today in the journal [Nature](#).

And they theorise the star did not blow up just once, but several times.

"We usually think of a supernova as the death of a star, but in this case the same star can blow up half a dozen times," says lead author Professor Stan Woosley of the [University of California at Santa Cruz](#). Woosley's hypothetical model starts with what happens when an exceptionally big star, something 90-130 solar masses, nears the end of its life.

The temperature in the stellar core gets so hot that some of the star's gamma radiation converts into electrons and their anti-matter counterparts, positrons.

The conversion causes the blast of radiation to suddenly fall, and the star begins to shrink.

"As the core contracts it goes deeper into instability until it collapses and begins to burn fuel explosively," Woosley says.

"The star then expands violently, but not enough to disrupt the whole star. For stars between 90 and 130 solar masses you get pulses.

"It hits this instability, violently expands, then radiates and contracts until it gets hotter and hits the instability again. It keeps going until it loses enough mass to be stable again."

Fireworks continue

Eventually, the star shrinks to about 40 solar masses, but even then the celestial fireworks aren't over, says Woosley.

It contracts to an iron-rich core that collapses, ending with a searing gamma-ray burst.

Stars that are between 90 and 130 times the mass of the sun are rare beasts, especially in the Milky Way.

But Woosley believes they may have been more common in the infancy of the universe.

Rival theory

Meanwhile, Dutch astronomers Dr Simon Portegies Zwart and Professor Edward van den Heuvel of the [University of Amsterdam](#) offer a



The brightest supernova ever detected was about 100 times brighter than the flash of typical dying star

(Image: iStockphoto)

rival theory, which they also publish today in *Nature*.

They suggest that SN 2006gy could not have been created from a single star, but from two very large stars that collided.

Their calculations are based on what happens in a young, dense cluster of stars that are commonly seen at the centre of galaxies.

Courtesy: ABC Science Online

Cosmonauts banned from using astronauts' space station toilet

Russian complains he is not allowed to use American facilities as commercial interests dent space cooperation

Luke Harding

The Guardian - 31 March 2009

It was supposed to be the final frontier, where the petty jealousies of earth and other planetary concerns were left behind. But space is not the haven of international harmony it used to be. Once upon a time, astronauts on the international space station shared resources - food, equipment, facilities. But now, a veteran Russian cosmonaut has complained that he is not even allowed to use his American colleagues' exercise bike - or his toilet.

According to Gennady Padalka, commercial squabbles on earth are starting to compromise morale in space. For seven glorious years after his first space mission in 1998, Padalka said he and his American astronauts had cooperated brilliantly. All this changed in 2005 when space missions were put on a commercial footing, he said, and Moscow started billing the US for sending its astronauts into orbit.

Padalka told Novaya Gazeta newspaper that officials had rejected his request to work out on the American exercise bike during their pre-training mission. Worse than that, they had also ruled that American and Russian crew members should use their own "national toilets", with Russian crew banned from using the luxurious American astro-loo.

"What is going on has an adverse effect on our work," Padalka, 50, was quoted as saying in an interview before he and his crew mates blasted off to the international space station last Thursday. They arrived safely on Saturday.

Padalka, who will be the station's next commander, said the arguments date back to 2003, when [Russia](#) started charging other space agencies for the resources used by their astronauts. Other partners in the space station responded in kind.

"Cosmonauts are above the ongoing squabble, no matter what officials decide," said Padalka. He went on: "We are grown-up, well-educated and good-mannered people and can use our own brains to create normal relationship."

(Continued on page 19)

Telescope-carrying Jet Has Trial Run

Irene Klotz — Discovery News

Testing has started of a jet modified to house a sensitive infrared telescope that the US space agency says will offer astronomers a new window on the ever-evolving Milky Way. The [Stratospheric Observatory for Infrared Astronomy](#), or SOFIA, is intended to operate at altitudes up to 13,000 metres. That would put it above 99% of earth's atmospheric water vapour, which blocks wavelengths from reaching the ground.

"In the visible and ultraviolet, you're mainly looking at stars," says SOFIA chief scientist Professor Eric Becklin, an astrophysicist with the [University of California, Los Angeles](#). "When you look in infrared you see stars, but also see the dust and gas those stars formed from or are throwing off as they die. You really get a different view of the universe," he says.

"The most exciting science is really trying to understand the chemistry and, potentially, the biology that's going on in space, and really getting to the heart of the question, did life form here on earth, or did it form out in space?"

SOFIA's scientific agenda includes studying star formation in the Milky Way, determining the chemical composition of the interstellar medium and seeing through the dust hiding the black hole at the centre of the galaxy.

"We can open up some wavelengths that are impossible to see from any ground-based observatory," says SOFIA science program manager Ed Austin, with NASA's Ames Research Center in Moffett Field, California.

Cheaper and flexible

SOFIA also is less expensive to build and operate than space-based



*Polishing the telescope's 2.5 metre wide primary mirror
(Image: DLR)*



The aircraft has a 5 metre opening in its fuselage to house the telescope (Image: NASA)

(Continued from page 18)

"It's politicians and bureaucrats who can't reach agreement, not us, cosmonauts and astronauts."

The standoff over the gym machine appears to mirror the dismal relationship between Moscow and Washington under the former US president George Bush and Russia's Vladimir Putin.

He said he had inquired before the mission whether he could use an American machine to stay fit.

"They told me: 'Yes, you can'. Then they said 'no'. Then they hold consultations and they approve it again. And now, right before the flight, it turns out again that the answer is negative."

While sharing food in the past helped the crew feel like a team, the new rules oblige Russian cosmonauts and US and other astronauts to eat their own food, Padalka said, conceding that the US astronauts generally had tastier stuff.

observatories and can be quickly positioned to view cosmic phenomena such as approaching comets.

"We can position the aircraft anywhere in the world to take advantage of some really unique things that ground-based observatories are likely not able to get," Austin says.

SOFIA scientists can take advantage of newer, but potentially riskier, technologies than those typically onboard space-based platforms that cannot be retrieved or modified.

With its 2.5 metre diameter primary mirror, the 20 tonne observatory is a bit bigger than the Hubble Space Telescope, which observes primarily visible and ultraviolet light..

NASA modified a Boeing 747SP aircraft for SOFIA, cutting a 5 metre opening in the fuselage so the telescope can view the cosmos. It also added a door to keep the observatory safe and dry during take-offs and landings.

Test flights of the jet with the telescope's door closed are under way at NASA's Dryden Flight Research Center at Edwards Air Force Base in California.

Open-door excursions are scheduled to begin next year. NASA hopes to have its first images from the telescope in 2009. "As soon as possible, we want a science instrument on the plane," says SOFIA program manager Bob Meyer.

SOFIA, which is being built in cooperation with the [German Aerospace Centre](#), is a follow-on program to the successful Kuiper Astronomy Observatory aircraft, which flew for 21 years.

NASA provided the aircraft and will conduct flight and mission operations, while the Germans contributed the telescope. Germany also provided upgraded engines and subsystems for the aircraft, as well as a new coat of paint.

How Low Can It Go?

Sun Plunges into the Quietest Solar Minimum in a Century

The sunspot cycle is behaving a little like the stock market. Just when you think it has hit bottom, it goes even lower.

2008 was a bear. There were no sunspots observed on 266 of the year's 366 days (73 percent). To find a year with more blank suns, you have to go all the way back to 1913, which had 311 spotless days.

Prompted by these numbers, some observers suggested that the solar cycle had hit bottom in 2008.

Maybe not. Sunspot counts for 2009 have dropped even lower. As of March 31st, there were no sunspots on 78 of the year's 90 days (87 percent).

It adds up to one inescapable conclusion: "We're experiencing a very deep solar minimum," says solar physicist Dean Pesnell of NASA's Goddard Space Flight Center in Greenbelt, Md.

"This is the quietest sun we've seen in almost a century," agrees forecaster David Hathaway of NASA's Marshall Space Flight Center in Huntsville, Ala.

Quiet suns come along every 11 years or so. It's a natural part of the sunspot cycle, discovered by German astronomer Heinrich Schwabe in the mid-1800s. Sunspots are planet-sized islands of magnetism on the surface of the sun, and they are sources of solar flares, coronal mass ejections, and intense UV radiation. Plotting sunspot counts, Schwabe saw that peaks of solar activity were always followed by valleys of relative calm—a clockwork pattern that has held true for more than 200 years.

The current solar minimum is part of that pattern. In fact, it's right on time. But is it supposed to be this quiet? Measurements by the Ulysses spacecraft reveal a 20 percent drop in solar wind pressure since the mid-1990s—the lowest point since such measurements began in the 1960s. The solar wind helps keep galactic cosmic rays out of the inner solar system. With the solar wind flagging, more cosmic rays penetrate the solar system, resulting in increased health hazards for astronauts. Weaker solar wind also means fewer geomagnetic storms and auroras on Earth.

Careful measurements by several NASA spacecraft have also shown that the sun's brightness has dimmed by 0.02 percent at visible wavelengths and a whopping 6 percent at extreme UV wavelengths since the solar minimum of 1996. These changes are not enough to reverse global warming, but there are some other, noticeable side-effects.

Earth's upper atmosphere is heated less by the sun and it is therefore less "puffed up." Satellites in Earth orbit experience less atmospheric drag, extending their operational lifetimes. That's the good news.

Unfortunately, space junk also remains in orbit longer, posing an increased threat to useful satellites.

Finally, radio telescopes are recording the dimmest "radio sun" since 1955. After World War II, astronomers began keeping records of the sun's brightness at radio wavelengths, particularly 10.7 cm. Some researchers believe that the lessening of radio emissions during this solar minimum is an indication of weakness in the sun's global magnetic field. No one is certain, however, because the source of these long-monitored radio emissions is not fully understood.

All these lows have sparked a debate about whether the ongoing minimum is extreme or just an overdue market correction following a string of unusually intense solar maxima.

"Since the Space Age began in the 1950s, solar activity has been generally high," notes Hathaway. "Five of the ten most intense solar cycles on record have occurred in the last 50 years. We're just not used to this kind of deep calm."

Deep calm was fairly common a hundred years ago. The solar minima of 1901 and 1913, for instance, were even longer than what we're experiencing now. To match those minima in depth and longevity, the current minimum will have to last at least another year.

In a way, the calm is exciting, says Pesnell. "For the first time in history, we're getting to observe a deep solar minimum." A fleet of spacecraft — including the Solar and Heliospheric Observatory (SOHO), the twin probes of the Solar Terrestrial Relations Observatory (STEREO), and several other satellites — are all studying the sun and its effects on Earth. Using technology that didn't exist 100 years ago, scientists are measuring solar winds, cosmic rays, irradiance and magnetic fields and finding that solar minimum is much more interesting than anyone expected.

Modern technology cannot, however, predict what comes next. Competing models by dozens of solar physicists disagree, sometimes sharply, on when this solar minimum will end and how big the next solar maximum will be. The great uncertainty stems from one simple fact: No one fully understands the underlying physics of the sunspot cycle.

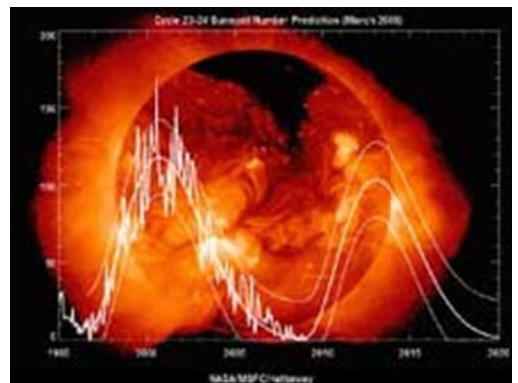
Pesnell believes sunspot counts should pick up again soon, "possibly by the end of the year," to be followed by a solar maximum of below-average intensity in 2012 or 2013.

But like other forecasters, he knows he could be wrong. Bull or bear? Time will tell.

Source: NASA



The Michelson Doppler Imager on SOHO captured this white light continuum image of the spotless sun on March 31, 2009. Credit: SOHO, NASA/ESA.



The sunspot cycle from 1995 to the present. The jagged curve traces actual sunspot counts. Smooth curves are fits to the data and one forecaster's predictions of future activity. Credit: David Hathaway, NASA/MSFC



An artist's concept of NASA's Solar Dynamics Observatory. Bristling with advanced sensors, "SDO" is slated to launch later this year—perfect timing to study the ongoing solar minimum. Credit: NASA

Hubble Finds Hidden Exoplanet in Archival Data



Image Credit: NASA, ESA, and G. Bacon (STScI)

In 19 years of observations, the Hubble Space Telescope has amassed a huge archive of data—an archive that may contain the telltale glow of undiscovered extrasolar planets. Such is the case with HR 8799b, shown in this artist's concept.

The planet is one of three extrasolar planets orbiting the young star HR 8799,

which lies 130 light-years away. The planetary trio was originally discovered in images taken with the Keck and Gemini North telescopes in 2007 and 2008. But using a new image processing technique that suppresses the glare of the parent star, scientists found the telltale glow of the outermost planet in the system while

studying Hubble archival data taken in 1998.

The giant planet is young and hot, but still only 1/100,000th the brightness of its parent star. By comparison, Jupiter is one-billionth the brightness of our sun.

Source: NASA

NASA and Caltech Test Steep-Terrain Rover

PASADENA, Calif. ~ Engineers from NASA's Jet Propulsion Laboratory and students at the California Institute of Technology have designed and tested a versatile, low-mass robot that can rappel off cliffs, travel nimbly over steep and rocky terrain, and explore deep craters.

This prototype rover, called Axel, might help future robotic spacecraft better explore and investigate foreign worlds such as Mars. On Earth, Axel might assist in search-and-rescue operations.

"Axel extends our ability to explore terrains that we haven't been able to explore in the past, such as deep craters with vertically-sloped promontories," said Axel's principal investigator, Issa A.D. Nesnas, of JPL's robotics and mobility section. "Also, because Axel is relatively low-mass, a mission may carry a

number of Axel rovers. That would give us the opportunity to be more aggressive with the terrain we would explore, while keeping the overall risk manageable."

The simple and elegant design of Axel, which can operate both upside down and right side up, uses only three motors: one to control each of its two wheels and a third to control a lever. The lever contains a scoop to gather lunar or planetary material for scientists to study, and it also adjusts the robot's two stereo cameras, which can tilt 360 degrees.

Axel's cylindrical body has computing and wireless communications capabilities and an



Axel rover prototype. Image credit: NASA/JPL

inertial sensor to operate autonomously. It also sports a tether that Axel can unreel to descend from a larger lander, rover or anchor point. The rover can use different wheel types, from large foldable wheels to inflatable ones, which help the rover tolerate a hard landing and handle rocky terrain.

SOCIETY ROUND UP

ABERDEEN AS www.aberdeenaastro.org.uk
2nd Tues at Cromwell Tower Observatory, King's College, Old Aberdeen
Email: aas@aberdeenaastro.org.uk

ABINGDON AS www.abingdonastro.org.uk
2nd Mon at Methodist Church Hall, Dorchester Crescent, Abingdon
Email: chris.c.holt@ntlworld.com
Jun 9: t.b.a. Samuel George

ALTRINCHAM & DISTRICT AS
www.astroroads.org.uk
1st Fri (exc Jul & Aug) at Scout's Building on Park Road, Timperley, Altrincham
Geoff Flood 0161 980 1675
email: geoffrey513flood@btinternet.com

AS OF GLASGOW
www.astronomicalsocietyofglasgow.org.uk/
Meetings 3rd Thurs. at Room 345, Uni of Strathclyde (Montrose St entrance)
Email: DDegan@aol.com

AMATEUR ASTRONOMY CENTRE
www.astronomycentre.org.uk
Off A681 halfway between Tadmorden & Bacup
e-mail: membership@astronomycentre.org.uk

ANDOVER AS www.andoverastronomy.org.uk
3rd Thur (exc Aug) at Grateley Village Hall.
e-mail: secretary@andoverastronomy.org.uk

ASHFORD AS www.ashfordastro.org.uk
Last Mon (exc Bank Hols) 19.30 at Stanhope Rooms, Otterden Close, Ashford
Drew Wagar e-mail: drew@wagar.org.uk

AYLESBURY AS www.aylesburyastronomy.org.uk
1st Mon (exc Bank Hols) at the Scout Hut, Oakfield Road, Aylesbury.
Sue Macdonald sumacdonald@tiscali.co.uk

AYRSHIRE AS <http://ayrastronomy.themalleearth.com/>
1st Tues at Ayr College
email: gm0dig@hotmail.com
May 19: How to Observe the Sun Lyn Smith

BASINGSTOKE AS www.basingstokeas.org.uk/
4th Thurs at Cliddesden Primary School
email: john.stapleton@tesco.net

BASSETLAW AS <http://beehive.thisisnottingham.co.uk/bassetlawastro>
Meets at The Village Hall, Tylden Rd, Rhodesia, Notts. S80 3HL

Andrew Patten email: andrew_patton@talk21.com
BATLEY & SPENDBOROUGH AS
Every Thurs at Milner K Ford Observatory, Wilton Park, Batley
I Newsome 01924 443860
email: bevan11@hotmail.com

BECKINGTON AS www.basnet.org.uk
3rd Fri (exc Jul, Aug & Dec) at Beckington Baptist Church Hall, Beckington,
email: info@basnet.org.uk

BEDFORD AS www.bedsastro.org.uk
Last Weds, Bedford School, Burnaby Road, Bedford, MK40 2TU
Email: society@bedsastro.org.uk

BIRMINGHAM AS www.birmingham-astronomy.co.uk
Every Weds at Aston Uni. & Last Tues—lecture
Email: john.spittle.homecall.co.uk

BLACKPOOL & DISTRICT AS
www.blackpoolastronomy.org.uk
1st Wed of month at St Kentigern's Church Hall, Newton Drive, Blackpool
Terry Devon Tel: 01253-625975
email: info@blackpoolastronomy.org.uk

BOLTON AS www.boltonastro.org.uk
1st & 3rd Tues at Bolton TIC Centre on Minerva Road (nr Bolton Royal Hospital)
Peter Miskiw. Email: petermiskiw@hotmail.com

BRADFORD AS www.bradfordastronomy.co.uk
Alt Mons in upstairs room at Eccleshill Library, Bolton Road, Bradford, BD2 4SR
Hilary on 01274 672570. john-bards@blueyonder.co.uk

BRANNEL ASTRONOMY
www.brannelastronomy.com
1st & 3rd Fri at Brannel School, St Stephens, Cornwall.
Frank Johns, 01637-878020
e-mail: frank@laplage.demon.co.uk

BRECKLAND AA www.brecklandastro.org.uk/

2nd Fri at Recreation Centre, B1077 Watton Road, Great Ellingham
Rod Crockford. Email: rod_crockford@yahoo.co.uk

BRIDGEND AS
www.bridgendastronomicalsociety.co.uk
2nd Fri (Sept-May) Parc Slip Nature Reserve, Aberkenfig.
Email: clivedown@btinternet.com

BRISTOL AS www.bristolastro.org.uk
Every Fri at Bristol Grammar School, University Road
Simon Smith, email: secretary@bristolastro.org.uk

CALLINGTON CAG www.callington-astro.org.uk
1st & 3rd Sat (exc Aug), at Space Centre, Callington Community College.
Becky Watson; callintonastro@kimwatson99.fsnet.co.uk

CARDIFF AS www.cardiff-astronomical-society.org
Alt Thurs, Sep-Jul, at Dept Physics & Astronomy, Univ. of Wales, 5 The Parade.
David Powell, 029 2055 1704.
Email CAS@ildat.demon.co.uk

CAROLIAN AS www.carolianaastro.org.uk
Contact: Chris Ashman 01562 743758.
Email: info@carolianaastro.org.uk

CASTLE POINT AC www.cpac.org.uk
Every Weds at St Michaels Church, St Michaels Rd, Daws Heath, Hadleigh. 2nd & 4th Weds: Beginners/Observing. Other Weds: talks & group events
01702 434449. Email: secretary@cpac.org.uk

May 6: Meteors Neil Bone
May 20: Future of Amateur Astronomy Pete Carson
Jun 3: Cosmology Today Dr Chris Baddeley
Jul 1: Apollo—Did they really go?
Jul 8: Galaxy Zoo Dr Cgris Lintott
Jul 15: Destination Moon—69.72 Terry Jacobs

CHESTER AS www.cpac.org.uk
Last Weds (no meeting Aug & Dec) at Burley Memorial Hall, Waverton, Chester
Tim Colegate-. Email: tjcsmith@btinternet.com

CHIPPING NORTON AAG www.cnaag.co.uk/
3rd Mon Robin Smitten 07900-858690.
Email: robin@chippingnortontheatre.com

CLACTON AS www.clactonastrology.co.uk
1st Thurs (exc Aug) at Quakers House, Granville Road, Clacton-on-Sea. CO15 6BX
David Pugh 01255 429849 e-mail dpugh@sky.com

CLEETHORPES AS
www.cleethorpesastronomy.co.uk
Meetings held at the Beacon Hill Observatory, Cleethorpes, start at 7.30pm.
Paul Thompson 01472 233552
e-mail paul@cleethorpesastronomy.co.uk.

CLYDESDALE AS www.clydesdaleastro.org.uk
2nd Mon at Dunglass House, Ayr Road, ML11 9TU
Contact: Lyn Smith 07725 347711. e-mail: clydesdaleastro@hotmail.co.uk

CORNWALL AS www.CornwallAS.org.uk
2nd Tues & 4th Thurs at WI Hall, Mabe, Penryn..
Robert Beeman (01326-341164)
Email: info@CornwallAS.org.uk

COTSWOLD AS www.cotswoldas.org.uk
2nd Sat at Millenium Hall, Bishop Road, Shurdington, Cheltenham.
Duncan Willoughby (01452-416405)

COVENTRY & WARWICK AS <http://uk.geocities.com/covwaras/>
2nd Fri at Earlsdon Methodist Church Hall, Earlsdon Ave South, Earlsdon
email: cov_wark_as@yahoo.co.uk
May 9: Pluto & Outer Solar System Dr Mike Leggett

CRAWLEY AS <http://uk.geocities.com/crawleyas/>
3rd Fri (exc July & Aug) at Ifield Community Centre. 7.30 pm.
Jim Swift 01293-882560
E-mail: cytron@btinternet.com

CROYDON AS www.croydonastro.org.uk
2nd Fri during term time at Royal Russell School, Coombe Lane
Paul Harper email: chairman07@croydonastro.org.uk

DALGETY BAY AC <http://db-astro.org>
Meets at The Kabin, junct Moray Way South & Regents Way.

DERBY & DISTRICT AS www.derbyastronomy.org
1st Fri (exc July) at 7.30 at Friends Meeting House, St Helen's St, Derby
May 5: Apollo: Tranquility & Beyond
Anthony Southwell

DONCASTER AS www.donastro.org.uk
2nd & 4th Thurs at Church House—behind St George Minster, Doncaster.
Mrs Lesley Hardware on 01302-743352
email: secretary@donastro.org.uk

DUMFRIES AS Society web-site
www.astronomers.ukscientist.com
Monthly meetings at the St. George's Churchhall, George Street, Dumfries
Email: lesley.burrell@btinternet.com or 01387 269762

EASTBOURNE AS www.EastbourneAS.org.uk
Saturdays at the Willingdon Memorial Hall, Church Street, Willingdon p.m.
Bob Cripps, tel. 01323 732067
email bobwcripps@btinternet.com

EAST RIDING ASTRONOMERS
www.eastridingastronomers.org.uk
3rd Mon at the Friends Meeting House, Quaker Lane, Beverley.
Tony Scaife, email astrogen@astrogen.karoo.co.uk

FALKIRK ASTRONOMERS www.astronomy-falkirk.co.uk
2nd Weds (exc June/July) at Old Peoples Welfare Hall, Laurieston, Falkirk.
email: malcolm@astronomy-falkirk.co.uk

FARNHAM AS www.farnham-as.co.uk
Meet 2nd Tues at Willis Hall, Sandy Lane, Church Cookham, Fleet

Barry Bellinger, tel. 07748766610
barry.bellinger@nokia.com
May 12: Our Vital Moon Dr R Gorman
Jun 9: Exploring Mars & other planets

Dr H Walker
Dr L Hobbs
P Hingley

Jul 14: Telescope Remote Control
Sep 8: The English Mount

FLAMSTEED AS www.flamsteed.info
1st Mon at Royal Observatory & National Maritime Museum, Greenwich.
Friends Office. tel. 020 8312 6678
E-mail: jjbendall@btinternet.com

FURNESS & SOUTH LAKELAND AS
www.furness-astrosociety.org.uk
1st Fri (exc Jul/Aug) at Trinity Church Centre, Warwick St. Barrow-in-Furness
Richard Alldridge, 01229 826864
Email: Richard@alldridge.worldonline.co.uk

GUERNSEY AS www.astronomy.org.gg
Every Tues at the Observatory, Rue Lorier, St. Peters, Guernsey.
Debby Quertier. 01481 725760
Email: quertiers@thomasmiller.com

GUILDFORD AS www.guildfordas.org
1st Thurs at Guildford Institute, Ward Street, Guildford
John Axtell. 01932 341036 johnaxtell42@aol.com

HAMPSTEAD GARDEN SUBURB AS
Last Wed at Free Church Hall, Northway, London NW11.
Dianne Fishman 020 8458 4038
email: hgsas@dfish.demon.co.uk

HAMPSHIRE ASTRONOMICAL GROUP
www.hantsastro.org.uk
Wed & Fri at Observatory, Hinton Manor Lane, Clanfield. Main monthly lecture 2nd Fri (exc Aug) Clanfield Memorial Hall, South Road, Clanfield

Graham Bryant 02392 241764
email: graham.bryant@hantsastro.org.uk
or graham.g.bryant@btinternet.com

HANTS ASTRO.ORG www.hantsastro.org
David Woods 023 9261 7092
email: subscribe@hantsastro.org

HARROGATE AS
Last Fri at The Green Hut, Harlow Community Centre, Harlow Ave.
Email: patsyorio@tiscali.co.uk

HAVERING AS <http://homepages.tesco.net/~nik.szzymanek/having.htm>
3rd Wed at Cranham Community Centre, Marlborough Gardens, Cranham. Contact: Frances Ridgley 01708 227397

HEART OF ENGLAND AS www.hoeas.co.uk
Last Thurs Furnace End Meeting Site, The Old Exchange, Shustoke, Warwickshire
email: hoeas@tiscali.co.uk

May 29: How to Build a Galaxy Prof M Merrifield

HEBDEN BRIDGE AS

Meetings at Hope Baptist Church Rooms at approx 4 week intervals.

Len Entwistle (01422-378368) or visit FAS webpage.

HEREFORD AS

Meet 1st Thurs at Kindie Centre, Hereford.

Contact: Paul Oliver (01432-761693)

email: info@hsastro.org.uk.

HERTFORD AS <http://hag.110mb.com/hag/>

Meet Cricket Pavilion, Hertingfordbury

Contact: Marion email: secretary@hertsastro.org.uk.

HERSCHEL AS www.herschel-astrosoc.co.uk

Email: hasadmin@gmail.com

HIGHLANDS AS www.spacegazer.com

1st Tues at The Green House, Beechwood Business Park North, Inverness.

Eric Walker, Tel: 01349 863821

email: pat.williams@ndirect.co.uk

May 5: Aurora Jim Wild

HORSHAM AS www.horshamastronomy.co.uk

1st Wed at Christs Hospital School, Horsham, West Sussex.

Richard Griffith

email: secretary@horshamastronomy.co.uk

HUDDERSFIELD A & P SOCIETY

www.huddersfieldastronomy.org.uk

Every Fri at 4A Railway Street.

Email: marcus.armitage@ntworld.com

HULL & EAST RIDING AS www.heras.org.uk

2nd Mon at Room S25, Wilberforce Bldg, Uni of Hull,

Cottingham Road, Hull

Mark Evans, Secretary.

E-mail: mark.Heras@merrydowncontrolware.co.uk

ILKESTON & DISTRICT AS

2nd Tuesdays at Hayloft Erewash Museum, Ilkeston,

Derbyshire

Mary McMulty, tel. 01298 78234

email: mintaca@msn.com

May 12: Meteors—Comet to Camera Dr Colin Steele

Jun 9: t.b.a. Paul Money

Jul 14: The Aurora Dr Nigel Bannister

Aug 11: The Planet Saturn Alan Heath

Sep 8: Pluto & Outer Solar System

Dr Mike Leggett

IRISH AA www.irishastro.org

Meets at Bell Lecture Theatre, Physics Building,

Queen's Uni, Belfast

e-mail: iaa@irishastro.org

ISLE OF MAN AS www.iomastronomy.org

1st Thurs at the IOM Observatory, Foxdale.

James Martin e-mail: ballaterson@manx.net

JAVEA & DISTRICT AS www.U3ADenia.org

Meets 1st Mon Café Solo, Denia at 3pm

JERSEY AC www.jerseyastronomyclub.org.je

Meets 2nd Mon at Sir Patrick Moore Astronomy

Centre, Les Creux, St Brelade.

Eileen Besnard. 01534-860802

e-mail: hakmat@jerseymail.co.uk

KIELDER OBSERVATORY AS

www.kielderobservatory.org

Lyn Henderson. Tel: 0191-4261708

e-mail: lynhenderson@blueyonder.co.uk

KNOWLE AS www.knowleastro.org.uk

1st Mon (+/- 1 wk for BH exc Aug) at St George & St

Theresa's Parish Centre, Dorridge, Solihull.

Nigel Foster. 21 Speedwell Dr, Balsall Common,

Coventry CV7. 7AU Tel: 01676-535941

Apr 27: Geocentric Centuries Nigel Foster

June 1: Search for Gravity Waves Prof M Cruise

LEEDS AS www.leedsastronomy.org.uk

2nd & 4th Wed at The Friends Meeting House, Carl-

ton Hill, 188 Woodhouse Lane, Leeds LS2 9DX—19.30

Mailto: xavier@leedsastronomy.org.uk or

xvermeren@gmail.com

LEICESTER AS www.leicester-astronomical.co.uk

Meets 2nd and 4th Tues 19.30. National Space Centre,

Exploration Drive, Leicester

Chris Gutteridge 0116 270 0596

email: chris@gutteridge.co.uk

LETCWORTH & DISTRICT AS

Meets last Wednesday of the month at Plinston Hall,

Letchworth: 7.45pm

Nick Ellis e-mail: ellis.nick@virgin.net

LINCOLN AS www.lincolnastronomy.org/

1st Tues (exc Jan) at 23 Westcliffe St, Lincoln

David Swaby. Tel: 01522-531591

LIVERPOOL AS www.liverpoolas.org

3rd Fri at The Gibberd Room, The RC Metropolitan

Cathedral, Liverpool L3 5QW

email: clarklunar@aol.com

LOUGHTON AS www.las-astro.org.uk

Every Thurs in the Scout Hall, Loughton Lane, They-

don Bois, Essex.

Jerry Workman (0208-507-7568)

LOWESTOFT & GT YARMOUTH RA (LYRA)

2nd Tues at Waveney Gymnastics Centre (access Not-

ley Rd).

Richard Chilvers: 01502 57401

email: good.goat@tiscali.co.uk

LUTON AS www.lutonastrosoc.org.uk

Last Thurs at Putteridge Bury Campus, University of

Bedfordshire

Geoff Mitchell. Email: user998491@aol.com

MACCLESFIELD AS www.maccastro.com

1st Tues (exc Jan) at Jodrell Bank Observatory & 3rd

Tues at Goostrey Village Hall.

email: secretary@maccastro.com

May 19: Jodrell Bank-Tenerife, Lagrange 2 & Big Bang

Prof Rod Davies

MAIDENHEAD AS www.maidenhead-astro.net

1st Fri (exc July & Aug) at Stubbings Church hall,

Maidenhead SL6 6QZ

Tim Haymes 07796-164010

MANCHESTER AS www.manastro.co.uk/

3rd Thurs Godlee Observatory, Sackville Building,

University of Manchester,

Email: massecretary@manastro.co.uk

MANSFIELD & SUTTON AS [www.sherwood-](http://www.sherwood-observatory.org.uk/)

observatory.org.uk/

Sherwood Observatory, Coxmoor Rd, Sutton-in-

Ashfield. NG17 5LF

Cathy Beaumont 01623 552276

Email: secretary@sherwood-observatory.org.uk/

MARCHES A G www.spaceguarduk.com/mag

2nd Fri at Spaceguard Centre, Knighton, Powys. LD7

1LW.

Michael Birch 01597 850010 zakdorn@hotmail.com

MEBOROUGH & SWINTON AS

www.msas.org.uk

Every Thurs at Swinton Working Mens Club, 4 Station

Rd, Swinton. S64 8AU

Shaun O'dell (Secretary) 01709-579529

MID KENT AS www.mkas-site.co.uk/

2nd and last Fri at The Bredhurst Village Hall,

Hurstwood Road, Bredhurst, Kent

email pwparrish54@yahoo.co.uk

MIDLANDS SPACEFLIGHT SOC

www.midspace.org.uk

MILTON KEYNES AS www.mkas.org.uk

Alt Fri at Rectory Cottages, Church Green Road,

Blechley, Milton Keynes

Mike Leggett Tel: 01908 503692

Email: mike.leggett@fsmail.net

May 15: Historical Observations at Cambridge

Mark Hurn

Diana Parsons

Zoe Ball

MORAY AC, SIGMA www.sigma-astro.co.uk

1st Fri at Birnie Village Hall, Thomshill, Elgin, Moray.

Ian Brantingham 01466 713171

Email: ian@branters.freemove.co.uk

May 1: Galileo to Ligo & Geo

Martin Hendry

Jul 3: Beyond the Rainbow

Chris Jennings

Aug 7: Armageddon

Ian Brantingham

Sep 04: How the Sun got its Spots

Brian Kelly

NEWBURY AS www.newburyas.org.uk

1st Fri (Sept-June) United Reformed Church Hall,

Cromwell Place, Newbury.

email: rfleet@clara.co.uk

May 6: Microquasars

Sebastian Perez

May 7: Mmmagma

Dr Alison Rust

NORMAN LOCKYER OBS SOC [http://](http://www.ex.ac.uk/nlo/welcome.htm)

www.ex.ac.uk/nlo/welcome.htm

Fris & 2nd Mon at Norman Lockyer Obs, Sidmouth

Devon. EX10 0YQ

e-mail: enquiries@normanlockyer.org

Tel: 01395 512096

NORTH ESSEX AS <http://www.neas.me.uk>

3rd Thurs (exc Aug & Dec) at Henry Dixon Hall,

Rivenhall End, Witham.

Neil Short e-mail: njs.int@btinternet.com

NORTH NORFOLK AS <http://www.nnas.org>

At General Townend Club (Royal British Legion),

Cattle Market St, Fakenham.

Email: japrocker@aol.com

Jan 16: James Naysmyth

Kevin Kilburn

NORTH WALES & LLANDRILLO COLLEGE AS

www.manastro.co.uk/nwgas/llandrillo

2nd Tues at Lecture Hall, Llandrillo College

Jean Smith e-mail: jsmith2859@aol.com

NORTHANTS AA www.naastronomy.com

1st Tues at Church House, St Bodolphs Rd, Barton,

Seagrave, Kettering and on 3rd Tues at Newton Field

Centre nr Geddington.

Steve Williams 01933 650331.

NORWICH AA

www.norwich.astronomicalsociety.org.uk/

3rd Fri at The Seething Observatory, Toad Lane,

Thwaite St Mary

David Balcombe 01953 602624.

email: nassec@tiscali.co.uk

NOTTINGHAM AS [http://](http://beehive.thisisnottingham.co.uk/nottinghamastro)

beehive.thisisnottingham.co.uk/nottinghamastro

1st Thurs British Geological Survey, Nicker Hill, Key-

worth, Notts. NG12 5GG.

Paul Stocks. email: nottinghamastro@yahoo.co.uk

OBSERVATORY FOR CORNWALL

www.observatoryforcornwall.co.uk

email incoming@observatoryforcornwall.co.uk

ORPINGTON AS [www.orpington-](http://www.orpington-astronomy.org.uk/)

astronomy.org.uk/

4th Thurs at High Elms Nature Centre.

email membership@orpington-astronomy.org.uk

ORWELL AS www.oasi.org.uk/

Weds at Orwell Park Observatory, Nacton, Ipswich

IP10 0ER

Roy Gooding (Secretary) 01473-462977

email ipswich@ast.cam.ac.uk

PAPWORTH ASTRONOMY CLUB

1st Wed at Vinter Room, Vinter Close (off Elm Way),

Papworth Everard

Peter Sandford 01480 830729

email peter@cheere.demon.co.uk

PETERBOROUGH AS www.pas-stargazer.co.uk

1st Tues at St Kingburgh Church Hall, Castor, Peter-

borough.

Gerry Holland 01733 769639

Email: gerry_comrep@yahoo.com

PLYMOUTH AS

2nf Friday at GK Centre, Alfred Street (off Lockyer St),

Plymouth

Alan Penman (Chair) 01752-338491

email: oakmount12@aol.com -

PORT TALBOT AS

1st Tues—7.45pm at Mozart Drive Community Centre,

Sandfields, Port Talbot.

John Minopoli (secretary) - phone 01792 850919.

email: john@jminopoli.freemove.co.uk

May 5: Smoking Supernova Dr Haley Gomez

Jun 2: Search for Life in Solar System

Dr Martin Griffiths

READING AS www.readingastro.co.uk

Meets third Sat 7.00pm at St Peters Church Hall,

Church Road, Earley.

Chris Menmuir email: info@readingastro.org.uk

May 16: C1XS on Chandrayan 1 Barry Kellert

Jun 20: Rise & Fall of Qasars Dave King

RENFREWSHIRE AS

www.renfrewshireastro.co.uk

Meets every Fri 7.30pm at The Coats Observatory

Ian Anderson Tel: 0141 580 9852

email: ianander2000@yahoo.co.uk

SALFORD AS www.salfordastro.org.uk

1st Wed at The Observatory, Chaseley Road, Salford:

John Pond

SAWTRY & DISTRICTY AS

Last Fri (exc Jul/Aug) at the Football Pavillion,

Greenfields, Sawtry.

Contact: Pan Dow 01733-242227

Email: pameladow@btinternet.com

SCARBOROUGH & RYDALE AS

www.scarborough-as.org.uk

3rd Fri (exc Aug & Dec) at East Ayton Village Hall,

Willson Lane, East Ayton

01723 500389

email: gwenfrangwernan@btinternet.com

SEKAS (SOUTH EAST KENT) www.sekas.co.uk

Tony Benner 01843-831079

(Continued from page 23)

SHROPSHIRE AS www.shropshire-astro.com

1st Sat at Rodington Village Hall

Contact: Mark Wiggan.

e-mail: mark.wiggan@blueyonder.co.uk

SOLENT AMATEUR ASTRONOMERS

www.delscope.demon.co.uk

3rd Tues. Room 8, Oaklands Centre, Fairisle Road, Lordshill, Southampton

Ken Medway. 02380-582204

email: ken@medway1875.freemove.co.uk

SOUTHAMPTON AS www.southampton-

astronomical-society.org.uk

2nd Thurs at Edmund Kell Unitarian Church Hall, Bellevue Road

Email: secretary@southampton-astronomical-society.org.uk

SOUTH CHESHIRE AS www.scastro.org/

scastro.stewart@googlemail.com

Meets alternate Thurs

SOUTH Lincs A & G S www.solags.co.uk

3rd Frid (exc Jul/Aug) at St Mary's Church Hall, Pinchbeck, Spalding.

Martin Anderson 01406-380003

email: secretary@solags.co.uk

SOUTH WEST HERTS AS www.swhas.org.uk

Shirley@atwhitelands.freemove.co.uk

STAFFORD & DISTRICT AS www.freewebs.com/

philiphall/

3rd Thurs at Weston Road High School, Stafford.

ST18 0YG

Joe Jaworski, 0543 686043

ST NEOTS AS

Meets 1st Mon 19.00hrs in the Citizenship Block, St Neots Community College, Barford Road, Eynesbury.

David Roberts 01480-212960

email: davidr.astro@btinternet.com

STOUR AS www.stourastro.org.uk/

Meets 1st Tues 19.30hrs in the Jubilee Room,

Cavendish Memorial Hall,

Tony Dagnall email: members@stourastro.org.uk

STRATFORD UPON AVON AS www.astro.org.uk

Home Guard Club, Tiddington, Stratford upon Avon.

Mike Whitecross 01789 731784

SUNDERLAND AS www.sunderlandastro.com

2nd & 3rd Sunday Wildfowl & Wetlands Trust, Washington

Graham Darke 0191 415 2625 darke@bun.com

SWANSEA AS www.swanastro.co.uk

2nd & 4th Thur at Lecture Theatre C, Science Block, Uni of Wales, Swansea

01792-299311

TAVISTOCK AS

http://tavistockastronomicalociety.googlepages.com/home

Kelly College. Exeter Road, Tavistock

Email: jewelsv137@aol.com Tel: 07877-448117 or

LIST OF OFFICERS 2007/2008

President, Secretary, Treasurer &

Newsletter Editor - See Page 1

Vice President:

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John Axtell: membership@fedastro.org.uk

Meetings Sec:

Sam George

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Gary Gawthrop: webmaster@fedastro.org.uk

Chilterns Group: Steve Williams

North West Group: Richard Sargent

West Midlands: Dave Evetts

SAGAS: Keith Brackenborough

Yorkshire Group: Paul Harper

robin@sigmanova.com

THE LEWES ASTRONOMERS

www.lewesastro.org.uk

1st Wed at Southover Grange, Southover High St.

Lewes. BN7 1TP.

Alice Smol 01273-477441 email: alice.smol@tesco.net

THURROCK AS www.thurrockastronomy.com

First Wed (exc Aug) at Methodist Hall, High Street, Horndon-on-the-Hill SS17 8LN

Roy Hookway Tel: 01375 676602

email: roy.hookway1@btinternet.com

May 6: A Chemist's View of Life Tony Sizer

TIVERTON AS www.tivas.org.uk

Fri at St Aubyn's School, Blundells Road, Tiverton.

Neil Purves 01884-277425

TORBAY AS www.torbayastro.org

1st & 3rd Thurs - Sep to Apr at Torquay Boys

Grammar School.

Dennis Humphreys on 01626 367280

UNIVERSITY OF BIRMINGHAM AS

www.astrosoc.org.uk

We are a University society but all are welcome.

Kym Goss, email: kjg494@googlemail.com

USK AS www.uskastronomicalociety.org.uk

Email: jhprince9@yahoo.co.uk

VECTIS AS (IoW) www.vectis-astro.org.uk

4th Fri of month (exc Dec) at Parish Hall, Town Lane, Newport.

Sue Curd email: secretary@vectis-astro.org

Jun 26: The Distant Future of Earth

Dr Robert Smith

Jul 24: Exploring Titam Dr Axel Hagermann

Aug 28: Colours in the Sky—Oddball Theories

Sep: 25: Search for Nova & Supernova Guy Hurst

WADHURST AS www.wadhurst.org.uk/was/

Third Wed at the Methodist Church Upper Room, High Street, Wadhurst.

G G Rathbone, 13 Brookfield, Kemsing, Sevenoaks, Kent. TN15 6SQ

WALSALL AS www.walsallastro.co.uk

Every Thurs at the Rushall Olympic Football Club, Dales Lane, Walsall.

Alan Ledbury 01922 632624 email:

email: g.ledbury@blueyonder.co.uk

WEBB DEEP-SKY SOCIETY

www.webbdeepsky.com/

Bob Argyle. email: rwa@ast.cam.ac.uk

WESSEX AS www.wessex-astro-

society.freemove.co.uk

First Tues - Allendale Centre, Wimborne, Dorset.

Alan Jefferis, e-mail alan@ajefferis.freemove.co.uk

WEST DIDSbury AS

2nd Mon (exc Aug) at William Hulme Grammar School, Springbridge Rd, Whalley Range. M16 8PR

Susie Metcalfe email: susiemetcalfe@yahoo.com

May 11: New Advances in Digital Astrophotography

David Ratledge

WEST OF LONDON AS www.wolas.org.uk

Second Mon (exc Aug) at: Christ Church Chapel, Redford Way, Uxbridge AND at St John's Ambulance Hall, North Harrow (odd months)

Duncan J Radbourne.

Email: duncan.radbourne@gmail.com

May 11: Three Sides of the Sun Nick Howes

Sep 14: Pluto Prof Barrie Jones

WEST YORKSHIRE AS www.wyas.fsnet.co.uk

Every Tues (exc Aug/BH's) at 'Rosse Observatory',

Deadlines for submission for the next newsletter:

Summer 2009 — 18 July 2009

Please remember to send ALL items to the Editor. Material can only be returned if supplied with a SAE.

Details of meetings mentioned in the Society Roundup should be confirmed before travelling. All programmes may be subject to change with no notice. The FAS can accept no responsibility for any inaccuracies. However if the details of your society are incorrect, or indeed if you aren't included, please send details to the Editor.

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WEST NORFOLK AS www.wyas.fsnet.co.uk

James Boulton 0924-379376.

Email: l.peters@homecall.co.uk

Apr 27: In Search of the Winged Messenger

WILTSHIRE AS www.wasnet.co.uk/

Andrew Burns Email: anglesburns@hotmail.com

WIGTOWNSHIRE AS www.wigtownshire-

astro.org.uk

Second Wed Glenamoure, Newton Stewart.

Robin Bellerby 01671-404387 / 07966-413679

Email: robin@glenamoure.com

WHITE PEAK ASTRO OBS GROUP

www.wpaog.co.uk/

Hopton Cottage, Hopton, Top Hopton, Derbyshire, DE4 4DF

Robin Spencer. Tel: 01332-881912

Email: robin108@tiscali.co.uk

WOLVERHAMPTON AS www.wolvast.org.uk

Alt Mon, between Sep & Apr Beckminster Methodist Church Hall, Birches.

Sydney Crump (tel 01299 871606)

email secretary@wolvast.org.uk

WORCESTER AS www.worcesteras.freemove.co.uk

Meetings held 2nd Thurs 8-10pm at University Col-

lege, Oldbury Rd, Worcester

Michael Morris. Email: michaelmorris@hotmail.com

May 14: Dark Matter & Boulby Project

Prof Tim Summer

WORTHING AS

Meet 3rd Mon (exc Aug) 7.30pm at Emmanuel United Reform Church, corner Heene Rd/St Michaels Rd.

Graham Boots

Email: meeting_secretary@was.org.uk 01903 505346

101 Ardingley Drive, Goring, Worthing West Sussex BN12 4TW

WYCOMBE AS www.wycombeastro.org.uk

Third Weds at Woodrow High House, between High Wycombe and Amersham.

Jackie Harris. Email: www.wycombeastro.org.uk

May 20: To see the Beginning of Time

Andrew Lound

Jun 17: 14 Pioneers of Astronomy Bob Mizon

YORK AS www.yorkastro.co.uk

Denham Room, The Priory Street Centre, York,

Martin Whillock on 01347 821849

email: martin@whillock.mcl.co.uk

