FAS Newsletter

Federation of Astronomical Societies http://www.fedastro.org.uk

Exciting Project should Reduce Light Pollution in Cornwall

Cornwall Council has embarked on a project which could have implications for astronomers everywhere. They have decided to renew all of its street lights over the next 3 years. The old sodium lights are being replaced with new-generation metal halide lamps mounted in a new design of luminaire.

Whilst the principal objective of this project is cost saving, it seems certain that the levels of light pollution should be significantly reduced – which will be very much welcomed by all astronomers in Cornwall. There is however a possible 'sting in the tail' – of which more later.

The current lights on the main roads are a mixture of high and low-pressure sodium and are to be seen in the adjoining photos. It will be seen that the glass of the lamp extends the full length of the luminaire and from the direct light pollution point of view it projects down a long way from the casing. This means that the 'side spill' of light is very significant—and it is this 'direct' light which is a real problem, specially to the visual observer.

Existing low-pressure sodium lights

The new luminaire is shown in the main picture, held by James Lanstbery, Cornwall County's project manager. It will be seen that the glass projection below the frame is small, which should really reduce the side spill of light.

Cornwall has approaching 50,000 lights and each of these receives a maintenance visit every 3 years. As the new luminaries can be retrofitted to the existing post/arms it is intended that these will be installed during these maintenance visits. Thus all the lights will be renewed over the next 3 years.

A further feature of these lights is that each single light can be controlled remotely and is capable of being dimmed—individually, as well as on an area basis. I am sure this has potential interest, and perhaps benefit, to astronomers.

There is, however, one aspect which needs further investigation in order to assess the impact on astronomy. This is the fact that the lamps produce white light as opposed to the sodium dominant existing lights. How this will impact on the use of filters by imagers and others remains to be seen.

Cornwall County are happy to collaborate with us and so I will try to establish the full implications of these lights to all aspects of astronomy over the next couple of months and hope to have a fuller report in the next issue. I would like to thank the people at Cornwall Council for their co-operation in this investigation.

Frank Johns

James Lantsbery holding one of the new luminaires

President
Richard Sargent
4 Bache Drive, Upton,
Chester. CH2 2JB
president@fedastro.org.uk

Treasurer
Peter Cooke
Haven Cottage, Frithville,
Boston, Lincs, PE22 7DS
01205 750868
treasurer@fedastro.org.uk

Issue 91 Summer

Secretary
Shaun O'Dell
147 Queen St, Swinton,
Mexborough, S Yorkshire.
S64 6NG
0121 288 4373
secretary@fedastro.org.uk

Newsletter Editor
Frank Johns
38 Chester Road, Newquay,
Cornwall. TR7 2RH
01637 878020
newsletter@fedastro.org.uk

Published by the Federation of Astronomical Societies ISSN 1361 - 4126

Presidents Spot

Well I'll begin with a sad tale and then move onto better news. In the last newsletter we asked for a volunteer to look after finding advertisers for our FAS publications. We gave a description of the role and tasks and asked interested folk to contact me after obtaining the support of their local astronomical society. Not a single volunteer has yet come forward! As I said in my first newsletter article as President, the services offered by the FAS cannot survive if members do not put themselves forward for service on Council. Don't assume someone else will volunteer.

Now on to better news. Each year the FAS holds a Convention & AGM. This year it will take place on Saturday, 3rd October at the Institute of Astronomy (IoA) in Cambridge. Elsewhere in this newsletter you will find details of the excellent programme of speakers for the day, and there will also be astronomy trade stands and the opportunity of a telescope tour. So good is the programme of speakers that we strongly recommend you purchase tickets in advance (see FAS website for how to). When the tickets are gone they are gone, and we can't exceed the capacity of the venue. If you are coming please bring a packed lunch with you as there are no food outlets in the IoA or close by. Tea and coffee is provided though, in the IoA.

Approximately 45 minutes of the Convention day is devoted to the AGM of the FAS. Lots of things happening this year in the FAS, e.g. changes to the costs and timings of the subs renewal and PLI premium, changeover of council members, revised presentation of accounts etc. It won't be a boring AGM!

I'd like to take this opportunity (and on your behalf as well) to thank Eric Hutton who is standing down from the FAS Council at the AGM in October. Eric has worked very hard on the Council for many years, as the PLI Officer who organises the PLI cover and as Publications Distribution organiser sending out the newsletters and other FAS publications. Thank you very much Eric for all your work for the FAS and its member societies.

How is IYA 2009 working out for you and your local society? Perhaps you are a member of a large society

which has organised special astronomy events for the public because it has the people and resources to do so. Or maybe your local society is small with insufficient resources to do much more than its usual activities. Whatever, I would be interested to hear from societies that have some learning to share from their experiences (good or bad) in participating in IYA 2009. We could collate the good and bad learning points and share with all member societies for the benefit of future events. Perhaps you have an interesting or amusing story from your IYA 2009 experiences that you'd like to share with other FAS members? Pass it to me and you never know we might put it in the newsletter!

Finally if you are coming to the FAS Convention do come forward and say hello to myself and your other Council members on the day as we welcome feedback from the members of the FAS.

Clear skies and good fortune,

Richard Sargent

A montage of images taken by El Presidente (Richard Sarget) during his visit to China to see the recent total eclipse. The conditions were not quite perfect—there being quite a bit of high cloud at the time

Isle of Wight Star Party Report

Thu 26th - Mon 30th March, 2009

The Isle of Wight Star Party is a chance for astronomers living in light polluted areas to come on a mini-break to a dark sky site and enjoy the wonders of the night sky. This year, the weather was also co- operative, as clear skies were enjoyed every night of the four night event. Held during the week of the New Moon in March, this now annual event is based at Brighstone Holiday Centre on the South coast of the island. The location offers almost 180-degree southerly views across the Channel and the Holiday Centre offers ensuite rooms as well as camping facilities, and a great cooked breakfast. This year the event attracted over fifty astronomers from as far as Birmingham and Cambridge - some island astronomers even stayed on site so as not to miss anything.

Equipment ranged from binoculars to an 18 inch Obsession Dobsonian. Owen Brazell, an attendee at the Star Party, said, 'My only regret about going to the Isle of Wight Star Party, was only taking the 15" rather than the 20" Dobsonian'.

The New Moon was an early target with Saturn and The Great Orion Nebula (M42) also being popular. Low declination objects, such as M6, M7 and the Lagoon Nebula (M8) were seen by some for the first time from the UK. Some of the astroimagers took photos of the Rosette nebula, the Great Hercules Cluster (M13), and a very early

Stars—and delegates looking through scopes
Photo: Stephen J Griffiths

Witch's Broom (NGC6960, part of the Veil nebula), amongst others.

The warm tea and coffee room, lit with a red bulb to preserve night vision, was very useful and provided the opportunity for everyone to get to know each other and to recognize who is hiding under which wooly hat. Discussions about kit, what to observe and friendly competition ensued.

The dark skies were measured with Sky Quality Meters, and with a maximum of 21.3, it was confirmed that the island does indeed have some of the darkest skies in the South of England.

This year's guest speaker was Professor Ian Morison from Jodrell Bank Observatory. He also brought four of his own telescopes, although all were much smaller than the 76m Lovell radio telescope he has at work. The talks Ian and others had offered to give at Brighstone in case of bad weather were not required this year, but it was great to have them in reserve.

Four astronomical traders (Island Planetarium, Astronomia, Astroparts and 365 Astronomy), were represented with stock ranging from GPS GOTO telescopes to bespoke astronomical equipment.

Thanks are due to these companies and others, including Widescreen Centre, Orion Optics, Springer, Astronomy Now Magazine, BC&F, David Hinds and First Light Optics, who provided prizes for the main raffle. Thanks are also due to the British Astronomical Association, the Society for Popular Astronomy and STFC for providing information and items for the welcome packs. On the Saturday, many of the telescopes were set up during daylight hours, so everyone could admire the kit and question the owners about the advantages and disadvantages of their particular set- up - something it is difficult to see and do during the night.

Astronomers looking for New Moon
Photo: Lucy Rogers

There was also an excellent visit to the ex-rocket testing site at the Needles New Battery (Highdown), run by the National Trust, with a talk by a rocketman - one of the men who was involved with the secret rocket testing programme. The Black Knight rockets were tested on the island, before being launched from Woomera, Australia.

The Star Party was run by the Isle of Wight's Vectis Astronomical Society (VAS) in association with the Southern Area Group of Astronomical Societies (SAGAS). Many thanks to all those who helped out and took part, in particular thanks to Lucy Rogers, Stephen J Griffiths, Bill Johnston, Brian and Sue Curd and Brian Bond. More information about the Star Party is available on *www.iowstarparty.org*, where there is also a link to a forum, which becomes very active in the lead up to the event. The Isle of Wight Star Party is also on twitter - *www.twitter.com/iowstarparty*.

The 2009 Isle of Wight Star Party is set for Thursday 11th - Monday 15th March, 2010 coinciding with the New Moon on the 15th. There will be more accommodation available, with self catering chalets being offered, along with the ensuite rooms used in previous years and the camping facilities. There have also been requests for an Astrojumble, so start sorting your kit out and put aside those unwanted items for next March. See you there...

Dr Lucy Rogers
Chairman, Vectis Astronomical Society

More images of the event are to be found on Page 12

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

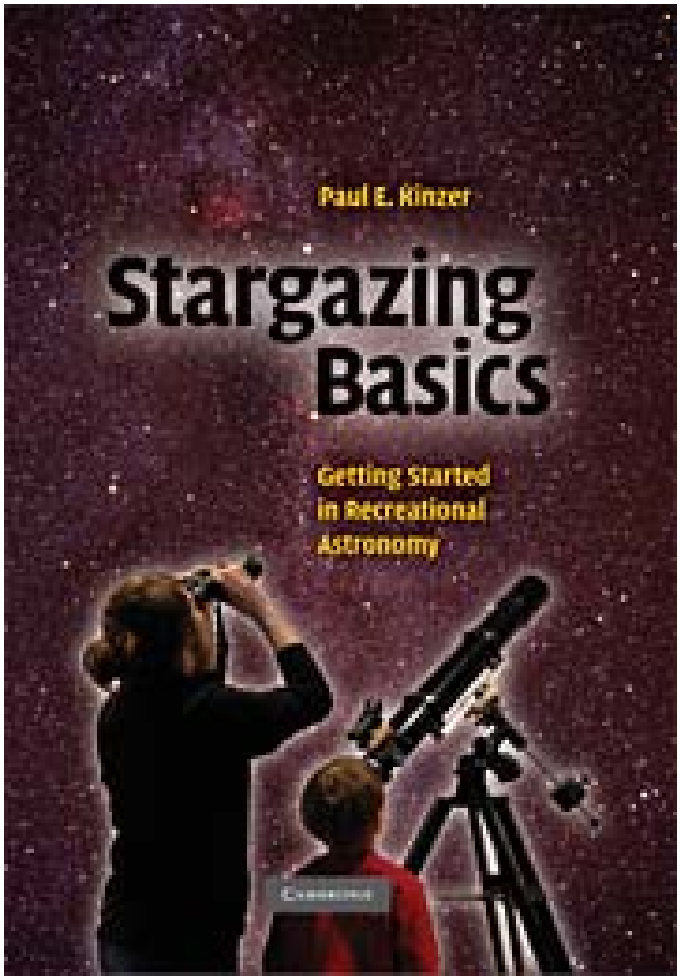
- To identify key contacts within makers, suppliers, and vendors of astronomical equipment, books and educational establishments.
- In good time for the publication dates, procure advertisements.
- To review advertising rates and develop new advertising packages that may be of interest to suppliers.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

Stargazing Basics - *Getting Started in Recreational Astronomy.*

By Paul. E. Kinzer (ISBN-13: 9780521728591) £11.99 Cambridge University Press

I was given a telescope in my youth, but despite studying Astrophysics at university I have lacked the confidence to use it for the best part of two decades, but it seems I was not the only one, according to the author's personal anecdotes. A lack of clear and suitable information available to the novice spurred the author on to produce this excellent guide for all those would-be amateur astronomers like myself; but for the more experienced astronomers amongst you, this book is not for you.



The book is divided into 3 sections. Section 1 focuses on the techniques and equipment required to observe the night sky. The author concentrates on 'low-key' inexpensive scopes and binoculars, and discusses the relative merits of the types of telescopes and mounts, allowing the reader to make an informed choice. He uses photos and diagrams to explain the differences between the scopes and mounts. There is also a small section here on astrophotography; just enough to get you enthused and 'up and running'.

Section 2 is entitled "What's up there?" The author introduces the key content of the Solar System, including the Moon, planets, comets, meteors, asteroids, and of course, the Sun, with advice on how to view them all. He then goes on to introduce the other objects visible in the night sky, such as stars, galaxies and nebulae, with some sensible advice on how to view these as best as possible using your chosen equipment.

Throughout these two chapters, the author has cleverly included "More Info" boxes, which allows the reader to expand on his/her knowledge if they wish, but without detracting from the main objective of the chapter. The idea is to keep it simple as much as possible, rather than dazing and confusing the reader with a plethora of complicated scientific words. He has also included a thorough list of resources at the end of each section, such as websites, books and software. Where new vocabulary is introduced for the first time it is done so as highlighted text. This is to advise the reader to skip briefly to the final section of the book, section 3 "The Stargazing Glossary", where they will find an alphabetical (rather than chronological) descriptive list of those words which are new to the novice astronomer. There is also a useful appendix of constellation names (including their pronunciation; very handy for a novice!) and some simple (albeit small) star charts.

This book does exactly what it says on the tin; it is a simple (yet informative) guide to get you started, or what the author describes as allowing the readers to "dip their toes into recreational astronomy before deciding whether to take the plunge". This is the perfect guide for anyone thinking about embarking on taking up astronomy as a new hobby.

Sam Frost

Co-ordinator of Astronomy, Penair School.

Nontilucent Clouds over North Cornwall—Roy Dunstan

Local Astronomers Scoop Top National Prize

Mexborough & Swinton Astronomical Society, a local educational charity, today scooped top prize in a national competition which recognizes best practice in the online publication of charities' annual reports and accounts.

The Charities Online Accounts Awards are sponsored by the Charities Aid Foundation and the Institute of Chartered Accountants in England and Wales; the aims of the awards are to: increase transparency, reward best practice in financial accounting, and raise the standard of web-based annual reports and accounts.

The Society's Annual Report and Statement of Accounts to March 31st 2008 took top honours in the category of Charities with an income below £100,000 – beating off stiff competition – and improving on the 3rd place they achieved last year.

The Society carried off a certificate and prize money of £1,500 but more importantly, took away valuable feedback as Secretary Shaun O'Dell explains "the money is a great boost to us but the recognition of the hard work we put in to running our Society in an open and transparent way is what really matters. Our supporters can have real confidence in what we do."

The judges were clearly impressed with the Society's efforts commenting "'Innovation is still being driven from the smallest end of the market. Mexborough has clearly got someone there going great guns on a voluntary basis with a degree of hyperlinking and html that was missing from charities with far larger budgets. They also had a technical score of 97% which is very good."

Society Chairman Les Marsden says the Society won't be resting on its laurels though "We'll continue to ensure we're following best practice in our management, accounting, and reporting, and I know we'll continue the innovation on our web site to see if we can impress the judges again next year."

Shaun O'Dell (centre) receiving the award

For further information please visit the Society's web site at www.msas.org.uk.

Further information about the Charities Online Accounts Awards can be found on the Charities Aid Foundation website ***www.cafonline.org/Default.aspx?page=11266***

International Year of Astronomy 2009
Lincoln Astronomical Society 50th Anniversary

10th October 2009 as a part of the IYA2009 celebrations.
at St Georges Church Hall, Eastbrook Road, Lincoln

The timetable for speakers are:

10.15am to 11.15 **Paul Money** (Amateur Astronomer, Broadcaster and Writer). The subject of his talk will be announced nearer the date.

11.45am to 12.45 **Mark Hurn** (University of Cambridge). 'Failed to find Neptune'

14.00pm to 15.00 **Peter Rae** (Cleethorpes AS). 'Panoramic Moon'.

15.00pm to 16.00 **Dr Andy Longmore** (Royal Observatory Edinburgh) 'Astronomical Adaptive Optics (Taming Atmospheric Seeing)'

16.15pm to 17.15 **Professor Barrie Jones** (Open University) 'Pluto Sentinel of the Solar System'

17.15 Closing Address

17.30 - 20.00 Following the closing address at St Georges Church Hall, the Observatory will be open for visitors to make use of the telescope and other facilities. As this will be staffed by non paid volunteers your donations will be gratefully received.

The backup speaker will be Michael Czajkowski (Open University) and member of Lincoln Astronomical Society.

Liquid refreshments will be available all day.

Admission will be by Ticket Only as the hall has limited capacity. To obtain your tickets please contact the secretary David Swaby by phone on 01522-531591 or email david.swaby@lincolnastronomy.org

Tickets are £10 each, children under 18 years £7.50

New Society Formed at Nene Valley

The Nene Valley Astronomical Society was founded in April 2009 to cater for a number of amateur astronomers in Wellingborough and East Northamptonshire who thought that this area should have its own dedicated society.

Our first meeting was held at the start of April in at the Friends Meeting House in Wellingborough and attracted a total of a dozen people, who decided from the outset that the society should be as kept as informal as possible and that all members should be encouraged to participate in the running of meetings and events.

During the first couple of months, meetings were held monthly, however it was very quickly realised that a second meeting was needed and so from the start of June (in addition to meetings on the first Monday of the month in Wellingborough) meetings were commenced on the third Monday of the month at Chelveston Village Hall which is particularly suited for observing as it's located in a rural area. Meetings start at 8pm.

A full lecture programme is being lined up for the autumn (see Round Up).

In addition to lectures, members are actively encouraged (and do!) show there latest images and discuss their recent observations at meetings as well as exchange hints and tips.

Being a relatively rural area and to reflect our members desire to observe from darker out of town locations, the NVAS has secured access to a number of sites in East Northants and regular observing sessions are commencing at these from September. We also plan to play our part in the IYA Moonwatch by hosting public observing sessions this Autumn as well.

NVAS has also recently established a regular monthly newsletter 'The Nene Valley Stargazer' which is circulated as a PDF to members. This includes the usual society news notices, a night sky guide, a round-up of members' observations and articles to encourage practical observation.

Further details on the NVAS can be obtained from Steve Williams on 01933 650331 or by e-mail: stevemwilliams@fsmail.net. A web site will also be established at eastnorthantsastronomy.org.uk.

Spotlight on – Liverpool Astronomical Society – Sidewalk Astronomers (LASSA)

In 1968, John Dobson helped to start the San Francisco Sidewalk Astronomers. He wanted to show as many people as possible the wonders of the night sky and looking through a telescope. Subsequent groups were established in Los Angeles and other US cities.

In 1997, we established our own Liverpool Sidewalk Astronomers, a group of keen amateur astronomers, most of whom are members of the Liverpool Astronomical Society. We bring astronomy to as many people as possible in our local area. Using a combination of slide shows, computer displays, and, when the weather is kind to us, several portable telescopes which range in size from six inches to 30 inches, we like to educate and entertain members of the public in and around Merseyside and the North West of England. Once or twice a month, the Sidewalk Astronomers hold organised events at many well established locations including city centre streets, national forests, country park ranger stations, sports clubs, university grounds and even outside a lighthouse (no longer in use of course!). Events are free.

We have calculated that over 3,541 people have come to see us at over 77 events since 1997. The first one being Wepre Park, Connah's Quay, Flintshire in February 1997 and the very latest at Beacon Country Park, Skelmersdale, West Lancashire in April 2009. More events have already been arranged for later this year and 2010. Visit the LASSA website for sidewalk event details and maps http://lassa.wikispaces.com/ or contact Dave Owen via the Society website.

At the Liverpool Astronomical Society's May AGM, Dave Owen accepted the "Martin Suggett Certificate" on behalf of the LASSA team for the excellent work he and his fellow Sidewalk Astronomers had done in recent years promoting both the Society and astronomy in general within the local area.

IMAGES OF SIDEWALK EVENTS

and yet more images of Sidewalk-ers

Hundreds flock to MoonWatch in Shropshire!

The National Trust property Attingham Park near Shrewsbury in Shropshire was the impressive backdrop for Shropshire Astronomical Society's (SAS) MoonWatch event on April 3rd – 5th. Generously allowing free access to the property for the three nights, the National Trust provided the area in front of the house for SAS members to set up their telescopes.

Taking full advantage of the Society for Popular Astronomy's (SPA) pack of supporting material for the MoonWatch events the SAS Committee worked hard to promote the event. Over 150 SPA Moon-Watch posters were distributed by society members, the press release was sent to local papers and SAS Chairman Richard Pearce took part in a live radio programme explaining what the event was all about and inviting people to come along.

The event was a huge success, attracting well over 250 visitors over the three days with people travelling from as far as South Birmingham and Stoke on Trent to attend. Many of the people had never looked through a telescope before. Lots of children and teenagers came along with some people coming back for a second and even third night bringing different people with them to have a look!

The SAS members provided an impressive range of about 17 telescopes and binoculars including a 14" Dobsonian for people to look though. In common with all societies the members are a knowledgeable and enthusiastic bunch; their enthusiasm was infectious and the atmosphere of excitement, awe and wonder grew quickly as the number of visitors increased. Exclamations of "Wow! Look at this" and "is that really Saturn?" created instant queues behind the telescopes.

The many questions asked by adults and children alike were eagerly answered by society members who had also brought along Moon maps, Moon Globes, fact sheets and lists of what to look for on the Moon. The UK weather was kind and the Moon was visible on all three nights but Saturday was by far the best viewing night where visitors got views of Saturn, the Orion nebula, the Pleiades and more.

As people left they gave many positive comments:

"The MoonWatch was absolutely amazing. Great View! So glad I came along."
***Amanda Bottomley,**

***"It was fantastic , very interesting and exciting."**George Hearle (age 7),**

"A fantastic and extremely interesting evening. Have seen things that I never would have envisaged seeing. Wonderful."
Mrs Clark

Although it was an exhausting three days, the Society members thoroughly enjoyed the event and have wonderful memories of the looks of wonder, particularly on the children's faces, as people looked at the Moon and other celestial objects, for more photographs of the event see:-

http://image-a-nation.com/sas/main.php/v/Attingham

On behalf of the Society for Popular Astronomy (SPA) I want to thank and congratulate all those that helped out at the MoonWatch event at Attingham. It was a tremendously successful event that attracted over 250 visitors. Those of you on the 'front line' did a particularly good job as you can see by the comments that were made by people as they left and the photographs that Mark Wiggin took; you made the impact and helped create the wonderful atmosphere.

I know it was tremendously hard work, especially on Saturday when the queues behind all the telescopes were constantly there, as Nigel, Ron and myself witnessed as we greeted and guided down to the house a constant stream of people. However, people went away with lasting memories of what they saw and very excited about it all; some even returning for a second night.

When we sat around the SPA Council table just over two years ago and came up with the idea of some sort of Open Telescope Evening, I don't think any of us envisaged how big a national event it would become.

The Shropshire MoonWatch event achieved all the SPA hoped it would: bringing lots of people, especially youngsters, out to view the Moon and other objects they had not seen in such detail before; inspiring many newcomers to astronomy and hopefully increasing membership of the local society.

Our event at Attingham did all of that and in some style! (Thanks to Ron Iremonger for

securing such a fantastic venue for us). It was lovely to welcome some of the visitors to Attingham Park to our Rodington meeting in April, which shows how successful it all was.

So with my SPA hat on (not literally as I've yet to purchase one – oops!) I'd just like to say thank you for helping to realise the dream the SPA Council had and helping to make the Spring

MoonWatch event such a resounding success.

Plans are already underway to repeat the event at Attingham Park in the autumn, on October 23rd, 24th and 25th when the SAS plan a JupiterWatch and MoonWatch event.

Mandy Bailey
SPA Publicity Officer and SAS member.

Peter Shah (Shropshire AS) visits Sir Patrick Moore

What a great weekend I had – the wife and I went over to see Sir Patrick Moore at his home.

What a gentleman. We sat with him for about an hour and a half, talking about all kinds of things really.

I asked, out of all the people he had ever met, who was his favourite; he told us about how he had met Orville Wright, but he said his favourite had to be Albert Einstein, and related how Einstein was a violinist, and that Patrick had accompanied him on the piano – Oh for a tape recorder!

Patrick also told us that his skills as a lecturer are not what they used to be and that he wasn't going to give another talk! – what a shame!

He signed my Moon globe and gave me two of his books and signed those as well of course.

After the tea and cakes, we had a look at his observatories and had a tour of his home, what an Aladdin's Cave!!

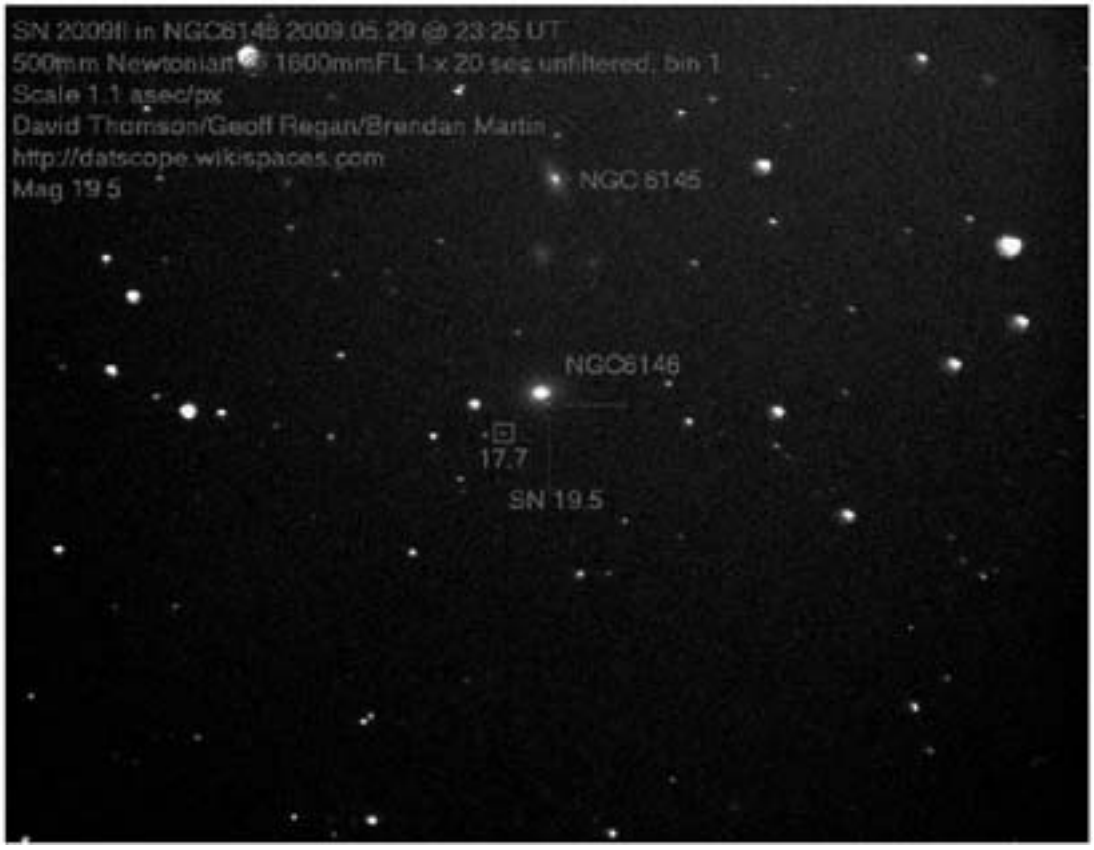
Memories I will cherish!

My wife thought she could rival his xylophone skills... not a chance!!!

Supernova Discovery
Brendan Martin

Well what can I say; at the Liverpool AS AGM myself and Dave Thomson gave a presentation on how our supernova searches were progressing, unfortunately no real discoveries.
Well I can now report we independently discovered supernova SN2009fl (see image below).

The supernova occurred sometime between 24/05/09 and the 29/05/09; we know this as we imaged the galaxy on the 24th and no sign of a supernova. The host galaxy is NGC6146 (mag. 14) which lies in the constellation of Hercules some 390 million light years away and is an elliptical galaxy. The supernova is a type1a-p (mag. 19.5 +or- 0.5) which suggests it was one of a binary system. The Lick Observatory Supernova Search (LOSS) pipped us to the post but we had discovered it before it was announced.



The image below was taken 5 days earlier on 24/05/09 @ 01:43UT

Courtesy:
Liverpool AS

More images from the Isle of Wight Star Party

Telescopes wrapped in daytime
Image: Madeline Paterson

NGC6960
Image: Richard Jarvis - www.deepsky.org.uk

M31
Image: Richard Jarvis - www.deepsky.org.uk

NGC2236
Image: Richard Jarvis - www.deepsky.org.uk

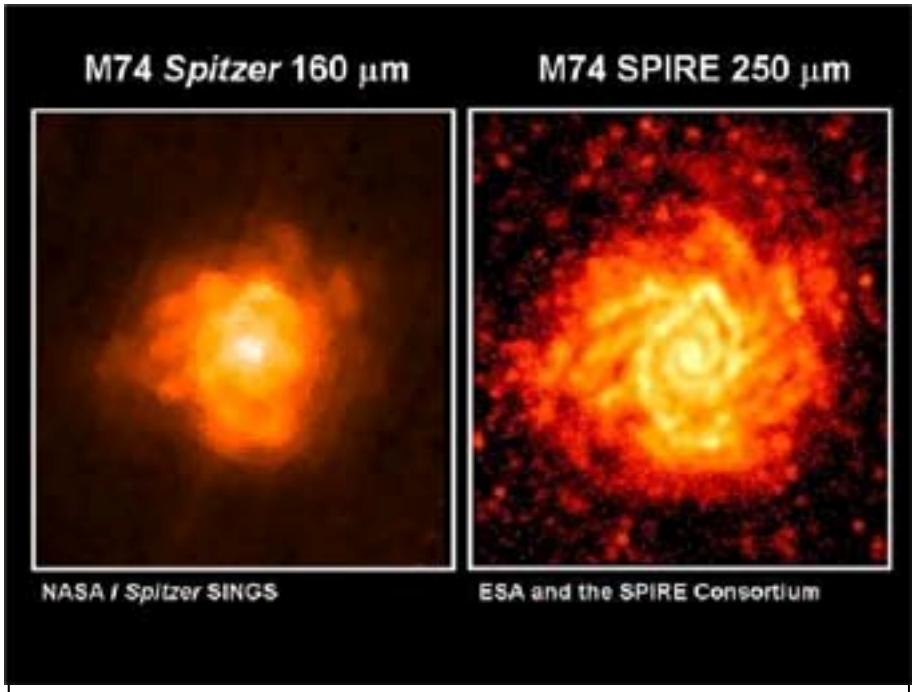
M13 - photo: Richie Jarvis

Send in report and pictures of your star parties and other events!!

Herschel Images Promise Bright Future For Astronomy

Herschel has carried out the first test observations with all its instruments, with spectacular results. Galaxies, star-forming regions and dying stars comprised the telescope's first targets. The instruments provided spectacular data at their first attempt, finding water, carbon and revealing dozens of distant galaxies.

These observations show that Herschel's instruments are working beyond expectations. They promise a mission of rich discoveries for waiting astronomers.



M74 (also known as NGC 628) is a face-on spiral galaxy located about 24 million light years from Earth in the constellation Pisces. The infrared SPIRE images trace the cold dust between the stars, clearly showing the galaxy's spiral structure. They also contain many faint dots that are actually distant galaxies. These galaxies contain dust that radiates at infrared wavelengths, but because they are much further away, we cannot see the structure in the galaxies. (Credit:

SPIRE surprises with power

On 24 June, Herschel's Spectral and Photometric Imaging Receiver (SPIRE) was trained on two galaxies for its first look at the Universe. The galaxies showed up prominently, providing astronomers with their best images yet at these wavelengths, and revealing other more distant galaxies in the background of the images.

The pictures show galaxies M66 and M74 at a wavelength of 250 microns, longer than any previous infrared space observatory, but still the shortest SPIRE wavelength.

SPIRE is designed to look at star formation in our own Galaxy and in nearby galaxies. It will also search for star-forming galaxies in the very distant Universe. Because these galaxies are so far away, their light has taken a very long time to reach us, so by detecting them we are looking into the past and learning how and when galaxies like our own were formed.

Herschel's primary mirror is 3.5 m in diameter, nearly four times larger than any previous infrared space telescope. These images prove that it represents a giant leap forward in our ability to study celestial objects at far infrared wavelengths.

Spitzer primarily observes shorter infrared wavelengths than Herschel, so the two telescopes complement each other.

These observations were all made on the first day that SPIRE was used. They clearly show that the main scientific studies planned with the instrument are going to work extremely well.

Water-hunter HIFI scores at first try

Scientists used Herschel's Heterodyne Instrument for the Far-Infrared (HIFI) on 22 June to look for warm molecular gas heated by newborn massive stars in the DR21 star-forming region in Cygnus.

HIFI provided excellent data in two different observing modes, returning information on the composition of the region with unprecedented accuracy and resolution. It works by 'zooming in' on specific wavelengths, revealing different spectral 'lines' that represent the fingerprints of atoms and molecules and even the physical conditions of the object observed. This makes it a powerful tool to study the role of gas and dust in the formation of stars and planets and the evolution of galaxies.

Using HIFI, scientists observed ionised carbon, carbon monoxide, and water in DR21. These different molecular lines add their pieces to a more complete understanding of what is happening.

The high quality of these first observations promises great new insights into the process of star formation.

PACS stares into the Cat's Eye

The first observation with the Photodetector Array Camera and Spectrometer (PACS) instrument was carried out on 23 June.

The first target was the dying star known as the Cat's Eye Nebula. Discovered by William Herschel in 1786, this nebula consists of a complex shell of gas thrown off by a dying star. Dying stars create spectacular nebulae, enriching the interstellar medium with heavy chemical elements. But how does an initially spherical star produce such a complex nebula? To solve this question we need to look at the processes close to the star, where the matter is ejected.

With the PACS spectrometer it is now possible for the first time to make images in spectral lines for on the sky, and see how the wind from the star shapes the nebula in three dimensions. The PACS spectrometer was used to look into the Cat's eye. This mode records the composition and condition of celestial objects at precisely defined wavelengths.

PACS observed the nebula in two spectral lines from ionised nitrogen and oxygen. For better orientation, the PACS photometer took a small map of the Cat's Eye Nebula in its 70 micron band, showing the structure of a dust ring with an opening on one side.

Following these first light images, Herschel is now in the performance verification phase, where the instruments will be further tested and calibrated. This phase will last until the end of November, after which the mission will begin its routine science phase. These images show that there is a lot of science to look forward to.

- ScienceDaily

VISIBILITY OF DEEP SKY OBJECTS by Trefor Harries

This article discusses some basic concepts pertaining to the visibility of deep sky objects. Some simple maths is included to provide some equations for calculating visibility factors. Derivations have been included for those who like to understand where these things come from ! These can be skipped over if preferred.

It is obviously desirable to be able to gauge the visibility of deep sky objects before embarking on an observing session. This allows a judgement to be made on the likelyhood of being able to see an object given the size of the telescope and the prevailing sky conditions.

The visibility of a DSO depends upon several factors :

- The brightness of the object
- The sky transparency and background glow
- The altitude of the object
- The observing apparatus

Brightness (B)

The brightness of an object depends firstly on its luminance (L). This is the total energy radiated per second, i.e. the radiated power output, and is measured in watts (joules / sec). The perceived brightness (B) then depends upon the radiated power per square metre received by the observer. The energy flux can be considered as being distributed on an expanding spherical shell as it radiates away from the source, and so the density of this flux depends upon the surface area of this sphere ($4\pi r^2$), so we have :

$B = L / (4\pi d^2)$ *:where d is the distance of the object.*

Brightness is often quoted as a number on the magnitude scale. This is a scale originated by Hipparchus to designate the brightness of stars on his star catalogue. On this scale the brightest star was designated as magnitude 1, and the dimmest observable by the naked eye was designated as magnitude 6. Now the human eye has a logarithmic response, perceiving equal ratios of light intensity as equal differences in brightness, and the intensity ratio from magnitude 1 to magnitude 6 turned out to be approximately 100. This was later formalised as defining magnitude 1 to have 100 times the light intensity of magnitude 6 (notice that magnitude increases as brightness decreases). So, we have that a difference of 5 magnitudes represents an intensity ratio of 100 - therefore each difference of 1 magnitude represents a ratio of $\sqrt[5]{100} = 2.512$.

Hence, the magnitude difference $(M_2 - M_1)$ corresponding to the brightness ratio (B_2 / B_1) is :

$$M_2 - M_1 = -\log_{2.512}(B_2 / B_1)$$

- where the negation signifies that increasing brightness results in decreasing magnitude.

Alternatively, since $\log(x^n) = n \log(x)$ we may write :

$$M_2 - M_1 = \log_{2.512}(B_1 / B_2) \quad \text{.....(1)}$$

Now, $\log_{2.512}$ is a cumbersome element to work with so we can translate this into a $\log_{10}$ term :

$$\log_a x$$

Since, by definition, $a = x$ ..... (2)

and $\log_b(x^n) = n \log_b(x)$ .....(3)

taking $\log_b()$ of both sides of (2) :

$$\log_b(a^{\log_a x}) = \log_b(x)$$

and applying (3) :

$$\log_a(x) \log_b(a) = \log_b(x) \quad \text{or, gathering bases :}$$

$$\log_a(x) = \log_b(x) / \log_b(a) \quad \text{.....(4)}$$

we can now use (4) to rewrite (1) as :

$$M_2 - M_1 = \frac{\log_{10}(B_1 / B_2)}{\log_{10}(2.512)}$$

or more simply as :

$$M_2 - M_1 = 2.5 \log(B_1 / B_2) \quad \text{.....(5)}$$

(5) translates a brightness ratio into a magnitude difference.

Using magnitudes for deep sky objects

The magnitude scale seems straightforward when applied to stars, but when we try to apply it to deep sky objects we have to face up to some troubling subtleties. These arise from the fact that stars can be assumed to be point sources of light whereas deep sky objects are distended sources having area and shape.

So, what do we mean, for example, when we say that a nebula has magnitude 7.3 ? Well, as a first step, we can define this as meaning that the total light received from the nebula equals that received from a star of the same magnitude. This is OK, but we are now in the situation where a given amount of light (i.e. that which would be received from a star of the specified magnitude) is now spread out over a finite area. It is obvious that the greater the area of spread the dimmer the surface will be. This can be demonstrated by projecting a slide onto a screen. As the projector is taken further from the screen the image gets bigger but also dimmer. This leads to the concept of surface brightness as a measure of an object's brightness per unit area.

Imagine in turn a star, a planetary nebula of, say, a few arc seconds diameter, and a large reflection nebula of, say, several arc minutes diameter, all of the same total (integrated) magnitude. The star will look brightest against the sky background since all its light is focused into a point. The planetary nebula, being a small object will look less bright than the star because its light is diffused over an appreciable area. The reflection nebula will look least bright since its light is diffused over an even greater area. It should be apparent then that it can be difficult to gauge the potential visibility of a deep sky object just by referring to its integrated magnitude. Not only will this depend upon the apparent size of the object, but also on its brightness profile since it may not be uniformly bright over its presented area. For example a galaxy might have a small bright nucleus surrounded by a larger dimmer area. Even its dimensions can only be an estimate since the extent of the visible area will depend on the viewing apparatus, and the darkness of the sky background. This can be illustrated by comparing different DSO databases - the figures for size and magnitude will often be found to differ markedly from one authority to another.

Despite these difficulties however, the use of the idea of surface brightness to describe a deep sky object will usually be more helpful than a total magnitude in indicating its potential visibility, and will surely be nearer to the truth even if it is only a next approximation. It is unfortunate, and rather surprising, that few sky atlases list figures for the surface brightness of deep sky objects, although this situation is improving. Perhaps this arises from the difficulty of formulating rigorous definitions for their derivation.

Using Surface Brightness

Surface brightness is typically expressed as stellar magnitudes per area. Professional astronomers usually use magnitude per square arc second, whereas amateurs more often use magnitude per square arc minute.

Note that surface brightness is an inherent property of the source; it does not decrease with distance as might be imagined; this is because

(Continued on page 15)

(Continued from page 14)

although the brightness will decrease, the area subtended by the object will decrease in the same proportion so brightness per unit area is unaffected.

Recalling equation (5) :

$$M_2 - M_1 = 2.5 \log(B_1 / B_2) \text{ .....(5)}$$

This equation can be re-used to relate a magnitude to a surface brightness : if B_1 is ascribed to the total brightness of the object and B_2 to the brightness per unit area, then M_2 will be the surface brightness as a magnitude and M_1 will be the resulting stellar, (or integrated) magnitude, which is the figure that is usually listed for the object. This is equivalent to integrating the light over the whole area of the extended object to get the total received light emission, then 'focussing' this down to a point to derive a stellar object of the same total brightness.

Let us make a simplifying assumption here : since a point has zero area, and zero quantities are difficult to calculate with, lets assume instead that we have a very small circular area. In fact this will indeed be the case anyway since a focussed star image will be a finite size, viz. the size of the Airy disc. To further simplify the subsequent maths let us say that this area is 1 square arc second which is in any case a good approximation for an Airy disc. Hence to facilitate our approximations we have normalised the area corresponding to a stellar magnitude to 1 square arc second. If this area is then 'defocused' so that its light is uniformally spread out over an area equal to that of the extended object, then B_2 can represent the brightness of each square arc second of the extended area, and M_2 will be the corresponding magnitude of each square (i.e. the surface brightness magnitude).

We will now rewrite equation (5) as :

$$M_2 = M_1 + 2.5 \log(B_1 / B_2)$$

Here, M_2 now represents the surface brightness, so we will substitute S for M_2.

M_1 is the integrated magnitude, and we will substitute M for it.

Also, since the brightness figures are inversely proportional the areas we can substitute (A_2 / A_1) for (B_1 / B_2) where A_1, A_2 are the respective areas.

This then gives us :

$$S = M + 2.5 \log(A_2 / A_1)$$

and since we have normalised the smaller area A_1 to be 1 square arc second, we can finally write :

$$S = M + 2.5 \log(A) \text{ .....(6)}$$

where A is in sq arc secs and S is in magnitude per sq arc sec.

Equation (6) then gives the <u>average</u> surface brightness of an extended object from its integrated magnitude and its area.

This area, of course, will usually be irregular, but it can be approximated according to the general shape of the object e.g. :

for a rectangular shape :
$A = r_1 r_2$ where r_1 and r_2 are the sides

for a circular shape :
$A = pr^2$ where r is the radius

for an ellipsoidal shape :
$A = pr_1 r_2$ where r_1 and r_2 are the semi-major and semi-minor axes.

If only the mean diameter d is given, S can be approximated for any shape by :

$$S = M + 2.5 \log[pd^2/4]$$

but note that for this to be even approximately accurate d needs to be the geometric mean of the diameters.

Surface brightness figures can be converted between area units by incorporating a scale factor.

For example to convert from sq arc mins to sq arc secs :

Rewrite (6) more explicitly as :

$$S_s = M + 2.5 \log(A_s)$$

$$S_m = M + 2.5 \log(A_m)$$

where S_s denotes surface brightness in mag/arcsec^2
S_m denotes surface brightness in mag/arcmin^2
and A_s denotes area in sq arc sec
A_m denotes area in sq arc min

we have :

$$S_s = M + 2.5 \log(3600 A_m)$$

so using $\log(xy) = \log(x) + \log(y)$:

$$S_s = M + 2.5 [\log(A_m) + \log(3600)]$$

and $S_s = M + 2.5 \log(A_m) + 8.89$

or $S_s = S_m + 8.89$ .....(7)

so, for example a surface brightness of 11.6 mag/arcmin^2 would equate to 20.5 mag/arcsec^2

Background Surface Brightness

The visibility of an object can thus be better gauged by referring to its surface brightness than to its integrated brightness but another factor that needs to be taken account of is the darkness of the sky. This is a large factor as there can be a big difference in visibility between a remote rural site and an urban site. This factor can be incorporated by specifying background surface brightness of the sky. Any part of an object where its surface brightness is less than the sky background surface brightness will probably not be visible, although this may be altered by other influences such as magnification, use of filters etc.

A big factor in the visibility of an object is the contrast between the object and the sky background. Using a larger magnification will reduce the surface brightness of the object in the image, but it will also reduce the background brightness, so this should not constitute a large influence. In fact, a larger magnification can sometimes increase the visibility of an object since the background brightness is reduced even more than the object because the smaller angle of view reduces admission of scattered light. Magnification also helps here because a larger object is more readily detected by the eye than a smaller object of the same surface brightness since the total light signal is greater, and more retinal cells are being used in the perception of the image.

The contributors to sky background surface brightness in descending order of influence are :

(1) Sky glow : artificial light pollution, dust smog etc.

(2) Haze : photochemical contamination of the upper atmosphere; vapour trails etc.

(3) Zodiacal light : scattered sunlight from gas and dust in the plane of the solar system

(4) Integrated starlight : scattered starlight

(5) Galactic light : scattered light from interstellar dust and gas

(6) Extragalactic light : scattered light from intergalactic dust and gas

The often quoted estimates for sky background surface brightness for various conditions are listed below.

These are in magnitudes per square arc second and assume good transparency and no moon.

Urban skies	: 17.0 - 18.0
Suburban skies	: 18.0 - 20.0
Rural skies	: 20.0 - 21.0
Remote sites	: 21.0 - 22.0
Ideal dark sky site	: 22.0

VENUSIAN HEAT - New Map Hints At Venus' Wet, Volcanic Past

Venus Express has charted the first map of Venus's southern hemisphere at infrared wavelengths. The new map hints that our neighbouring world may once have been more Earth-like, with both, a plate tectonics system and an ocean of water.

The map comprises over a thousand individual images, recorded between May 2006 and December 2007. Because Venus is covered in clouds, normal cameras cannot see the surface, but Venus Express used a particular infrared wavelength that can see through them.

Although radar systems have been used in the past to provide high-resolution maps of Venus's surface, Venus Express is the first orbiting spacecraft to produce a map that hints at the chemical composition of the rocks. The new data is consistent with suspicions that the highland plateaus of Venus are ancient continents, once surrounded by ocean and produced by past volcanic activity.

"This is not proof, but it is consistent. All we can really say at the moment is that the plateau rocks look different from elsewhere," says Nils Muller at the Joint Planetary Interior Physics Research Group of the University Munster and DLR Berlin, who headed the mapping efforts.

The rocks look different because of the amount of infrared light they radiate into space, similar to the way a brick wall heats up during the day and gives off its heat at night.

Besides, different surfaces radiate different amounts of heat at infrared wavelengths due to a material characteristic known as emissivity, which varies in different materials. The Visible and Infrared Thermal Imaging Spectrometer (VIRTIS) instrument captured this infrared radiation during Venus's nighttime orbits around the planet's southern hemisphere.

The eight Russian landers of the 1970s and 1980s touched down away from the highlands and found only basalt-like rock beneath their landing pads. The new map shows that the rocks on the Phoebe and Alpha Regio plateaus are lighter in colour and look old compared to the majority of the planet.

On Earth, such light-coloured rocks are usually granite and form continents. Granite is formed when ancient rocks, made of basalt, are driven down into the planet by shifting continents, a process known as plate tectonics

The water combines with the basalt to form granite and the mixture is reborn through volcanic eruptions.

"If there is granite on Venus, there must have been an ocean and plate tectonics in the past," says Muller.

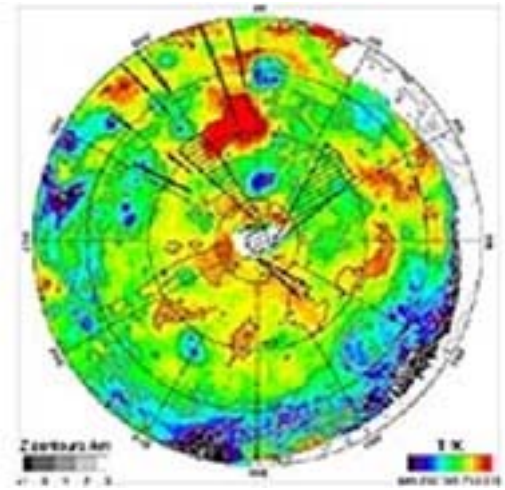
Muller points out that the only way to know for sure whether the highland plateaus are continents is to send a lander there. Over time, Venus's water has been lost to space, but there might still be volcanic activity. The infrared observations are very sensitive to temperature. But in all images they saw only variations of between 3-20 degrees C, instead of the kind of temperature difference they would expect from active lava flows.

Although Venus Express did not see any evidence of ongoing volcanic activity this time this time around, Muller does not rule it out.

"Venus is a big planet, being heated by radioactive elements in its interior. It should have as much volcanic activity as Earth," he says. Indeed, some areas do appear to be composed of darker rock, which hints at relatively recent volcanic flows.

The new map gives astronomers another tool in their quest to understand why Venus is so similar in size to Earth and yet has evolved so differently.

- Space Daily



The first temperature map of the planet's southern hemisphere at infrared wavelengths, charted with Venus Express's Visible and Infrared Thermal Imaging Spectrometer, VIRTIS. The new map hints that our neighbouring world may once have been more Earth-like, with a plate tectonics system and an ocean of water. *Credits: ESA/VIRTIS/INAF-IASF/Obs. de Paris-LESIA*

snippets

Total Solar Eclipse leaves Skywatchers in awe

A TOTAL ECLIPSE of the sun was watched by millions of skywatchers across India and China on 22 July.

"Eclipse in Yichang exceeded expectations," wrote SETI astronomer Seth Shostak on Twitter. "Locals agog, as was I."

The path of the eclipse began in India and crossed through Nepal, Bangladesh, Bhutan, Myanmar (Burma) and China. After leaving mainland Asia, the shadow crossed Japan's Ryukyu Islands and curved southeast through the Pacific Ocean.

It was the longest total solar eclipse of the 21st century, and will not be surpassed in duration until June 13, 2132. Totality -- the phase of darkness when the sun is completely covered by the moon -- lasted for up to 6 minutes and 39 seconds.

I look forward to receiving reports from those who were lucky

Testing Relativity, Black Holes And Strange Attractors In The Laboratory

Even Albert Einstein might have been impressed. His theory of general relativity, which describes how the gravity of a massive object, such as a star, can curve space and time, has been successfully used to predict such astronomical observations as the bending of starlight by the sun, small shifts in the orbit of the planet Mercury and the phenomenon known as gravitational lensing. Now, however, it may soon be possible to study the effects of general relativity in bench-top laboratory experiments.

For further information Goto:

http://www.sciencedaily.com/releases/2009/07/090720134239.htm

Eagle Nebula: An Eagle Of Cosmic Proportions

LOCATED 7000 light-years away, towards the constellation of Serpens (the Snake), the Eagle Nebula is a dazzling stellar nursery, a region of gas and dust where young stars are currently being formed and where a cluster of massive, hot stars, NGC 6611, has just been born.

The powerful light and strong winds from these massive new arrivals are shaping light-year long pillars, seen in the image partly silhouetted against the bright background of the nebula. The nebula itself has a shape vaguely reminiscent of an eagle, with the central pillars being the "talons".

The star cluster was discovered by the Swiss astronomer, Jean Philippe Loys de Chéseaux, in 1745–46. It was independently rediscovered about twenty years later by the French comet hunter, Charles Messier, who included it as number 16 in his famous catalogue, and remarked that the stars were surrounded by a faint glow. The Eagle Nebula achieved iconic status in 1995, when its central pillars were depicted in a famous image obtained with the NASA/ESA Hubble Space Telescope. In 2001, ESO's Very Large Telescope (VLT) captured another breathtaking image of the nebula (ESO Press Photo 37/01), in the near-infrared, giving astronomers a penetrating view through the obscuring dust, and clearly showing stars being formed in the pillars.

The newly released image, obtained with the Wide-Field Imager camera attached to the MPG/ESO 2.2-metre telescope at La Silla, Chile, covers an area on the sky as large as the full Moon, and is about 15 times more extensive than the previous VLT image, and more than 200 times more extensive than the iconic Hubble visible-light image. The whole region around the pillars can now be seen in exquisite detail.

The "Pillars of Creation" are in the middle of the image, with the cluster of young stars, NGC 6611, lying above and to the right. The "Spire" – another pillar captured by Hubble – is at the centre left of the image.

Finger-like features protrude from the vast cloud wall of cold gas and dust, not unlike stalagmites rising from the floor of a cave. Inside the pillars, the gas is dense enough to collapse under its own weight, forming young stars. These light-year long columns of gas and dust are being simultaneously sculpted, illuminated and destroyed by the intense ultraviolet light from massive stars in NGC 6611, the adjacent young stellar cluster. Within a few million years – a mere blink of the universal eye – they will be gone forever.

Three-colour composite mosaic image of the Eagle Nebula (Messier 16), based on images obtained with the Wide-Field Imager camera on the MPG/ESO 2.2-metre telescope at the La Silla Observatory. At the centre, the so-called "Pillars of Creation" can be seen. This wide-field infrared image shows not only the central pillars, but also several others in the same star-forming region, as well as a huge number of stars in front of, in, or behind the Eagle Nebula. The cluster of bright stars to the upper right is NGC 6611, home to the massive and hot stars that illuminate the pillars. The "Spire" -- is in the

ScienceDaily

Nowhere to go on the ISS? - Toilet is fixed on space station

AS THEIR COLLEAGUES on the ground signified the 40th anniversary of a man's stepping onto the Moon's surface, astronauts on the International Space Station tended to a more mundane task: fixing a toilet.

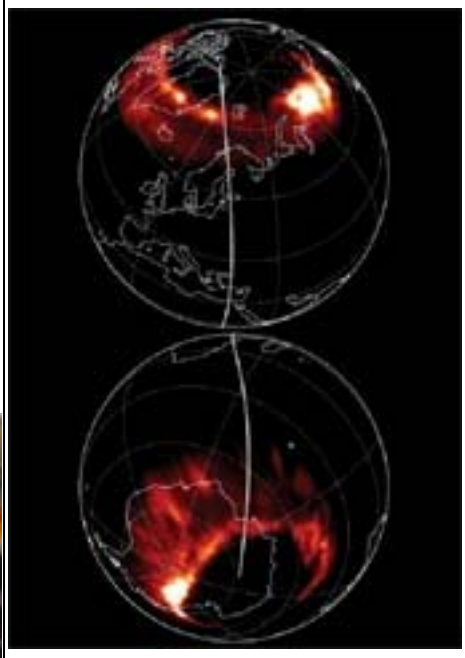
A pump on the recently installed toilet in the American laboratory, Destiny, broke Sunday, contaminating part of the system. The pump's function was to inject chemicals that helped separate liquids from solid waste.
Col. Gennady I. Padalka, the station commander, and Frank De Winne, a flight engineer, replaced some of the parts, and the toilet was operational on Monday.
In the interim, the seven astronauts from the space shuttle Endeavour, which docked Friday, had to use the toilet on the shuttle while the six station crew members already aboard the station used a second toilet in the Russian module.
Other than the plumbing problem, activities aboard the crowded space station continued without major glitches. Dr. David A. Wolf and Dr. Thomas H. Marshburn, both mission specialists, performed the second of five spacewalks planned during the Endeavour's mission, moving spare parts including an antenna and a coolant pump to a storage platform on the space station.
During the spacewalk, commentary by the National Aeronautics and Space Administration noted the exact moment, 40 years earlier, that the module Eagle with Neil A. Armstrong and Buzz Aldrin inside landed on the Moon.
The astronauts ran behind schedule during the spacewalk, and a second task, to install a camera on the Japanese laboratory module, was postponed.

(Source: The New York Times)

Astronaut Tom Marshburn is seen outside the Qwest airlock in this view from fellow spacewalker Dave Wolf's helmet camera as the pair work outside the International Space Station during their projected 6.5 hour excursion in this image from NASA TV July 20, 2009. REUTERS/NASA TV

Northern & Southern Aurorae Are Siblings, But Not Twins

Seen the Northern Lights and you've seen them all, hm? Not so.

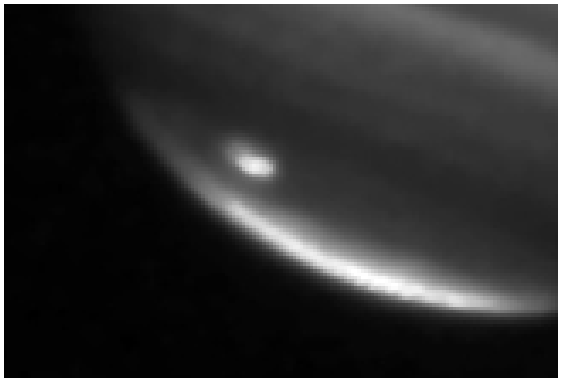


It is commonly assumed that the aurora borealis in the Northern Hemisphere and the aurora australis in the Southern Hemisphere are mirror images of each other – but new research has revealed differences between the events.

To read more follow the link below

www.universetoday.com/2009/07/22/northern-southern-aurorae-are-siblings-but-not-twins/#more-35058

Amateur Astronomer first to see it!!



Jupiter Apparently Smacked by Rogue Object, New Images Reveal

By Tariq Malik, Senior Editor—Space.com

JUPITER has apparently been smacked again by a rogue object hurtling through space, new images from amateur astronomers and NASA reveal.

A giant scar-like blemish has appeared in the clouds near Jupiter's south polar region, which NASA observed in infrared after receiving a tip from an amateur skywatcher in Australia. The likely impact appears to have occurred exactly 15 years after the remnants of Comet Shoemaker-Levy 9 bombarded the planet in 1994 in an event that was widely predicted and scrutinized as it happened.

The latest impact was not predicted, and it was caught by chance.

"We were extremely lucky to be seeing Jupiter at exactly the right time, the right hour, the right side of Jupiter to witness the event," said Glenn Orton, a scientist at NASA's Jet Propulsion Laboratory in Pasadena, Calif., in a statement. "We couldn't have planned it better."

Orton and his colleagues used JPL's Infrared Telescope Facility atop Mauna Kea in Hawaii to collect evidence of the impact. The initial call came from Anthony Wesley of Murrumbateman, Australia, who told NASA he noticed a new dark "scar" suddenly appear on Jupiter early Friday between 6 a.m. and 12 p.m. EDT (1000 and 1600 GMT).

A hit on Jupiter

In an observation report posted to his Web site, Wesley said he almost missed spotting Jupiter's new blemish entirely because he was tired after a late-night skywatching session.

"It was a very near thing," he wrote, adding that by 1 a.m. Local Time, he decided at the last minute to keep observing for another half hour.

"I'd noticed a dark spot rotating into view in Jupiter's south polar region and was starting to get curious," Wesley went on. "When first seen close to the limb (and in poor conditions) it was only a vaguely dark spot, I thought likely to be just a normal dark polar storm. However as it rotated further into view, and the conditions also improved, I suddenly realized that it wasn't just dark, it was black in all channels, meaning it was truly a black spot."

The spot, Wesley added, was moving too slow to be a moon and his previous observations from two days earlier showed a pristine, spotless Jupiter. A short while later, he decided to begin contacting people to spread the news of his find.

Orton and his team haven't stopped tracking Jupiter, which is a gas giant and the largest planet in the solar system.

The near-infrared image collected by his team revealed the odd blemish, which appeared to have a bright center, and what looked like debris to the northwest of the likely impact site.

"It could be the impact of a comet, but we don't know for sure yet," Orton said. "It's been a whirlwind of a day, and this on the anniversary of the Shoemaker-Levy 9 and Apollo anniversaries is amazing."

Other skywatchers have also been tracking the apparent Jovian impact. Lars Zielke, a skywatcher based in Tvis, Denmark, spotted the tell-tale scar to much excitement.

"My camera showed the spot clearly and I was lucky to get at great sequence with the dark spot and Io passing by," he told SPACE.com. "I was so thrilled that I didn't stop in time, so I missed the first hours of work this morning."

Echoes of Shoemaker-Levy 9

Between July 16 and July 22 in 1994, Comet Shoemaker-Levy 9 was torn apart by Jupiter's gravity as it swung past the planet. The remaining pieces crashed into the planet while astronomers looked on with telescopes on Earth and in space.

It was the first collision of two objects within the solar system in ever observed from Earth.

The impacts were cataclysmic. More than 20 fragments - some as large as 1.2 miles (2 km) across - slammed into Jupiter at 134,200 mph (215,973 kph) as the planet rotated, sending plumes of hot gas into the Jovian atmosphere and causing dark scars that lasted for weeks.

A similar impact on Earth would cause widespread devastation on a global scale.

First Test of NASA's New Rocket Delayed to Oct. 31

James Dean FLORIDA TODAY

NASA's first flight test of a next-generation rocket intended to replace the space shuttle is expected to slip another two months, to Oct.

Managers of the Ares I-X flight test continue to analyze potential technical problems, including vibration levels during the flight, while renovating a Kennedy Space Center launch pad.

Once targeted for April, the critical test now will occur well after a blue-ribbon panel reviewing the future of NASA's human spaceflight program issues recommendations to the Obama administration.

By next month, the review committee is expected to assess whether NASA's proposed Ares I rocket is the best option for returning crews to orbit after the space shuttle's expected retirement next year.

The targeted Halloween launch of the Ares I-X flight test is tentative and must be approved by new NASA Administrator Charles Bolden, who has not yet been briefed on its status, officials said.

If processing work proceeds without glitches and schedules can be accelerated, the launch could move up to mid-October, said George Diller, a NASA spokesman at Kennedy Space Center.

The $360 million test flight is the first of six planned before NASA hopes to launch astronauts atop an Ares I rocket in March 2015.

The rocket would launch a crew of four in an Apollo-style capsule called Orion, first to the International Space Station and later to the moon.

Data from the Ares I-X flight test is supposed to help the agency assess the design's safety and stability.

A four-segment solid rocket booster like those used by the space shuttle will power the test rocket. It will also carry mock-ups of an additional first stage segment, the upper stage, an Orion crew capsule and launch abort system.

KSC workers last Friday completed stacking of the first stage on a mobile launcher platform in the 52-story Vehicle Assembly Building.

Ares I-X managers plan to meet to decide when to begin stacking the upper stage, probably in early August. Modifications are ongoing to launch pad 39B .

Earlier this month, Jon Cowart, deputy Ares I-X mission manager, said that mid-September was a realistic target for the launch but that a slip to October was possible.

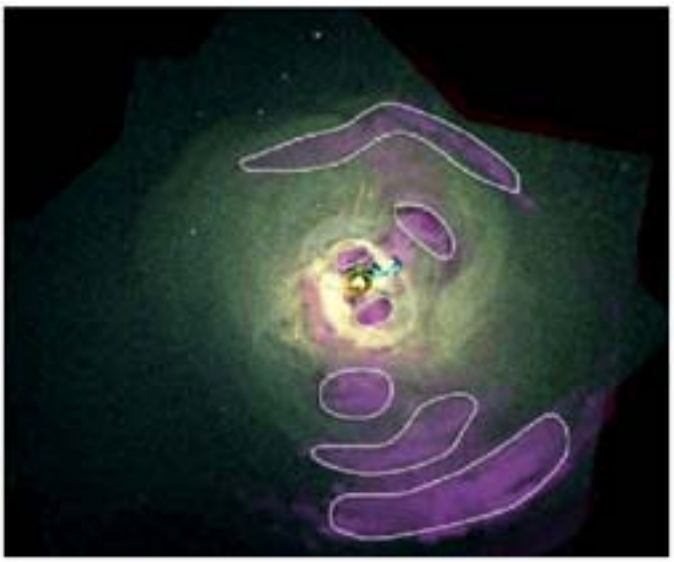
He attributed the delays to the challenge of building a rocket for the first time.

Multi-Wavelength Observing
Brian Finney

The Perseus Galaxy Cluster (Abell 426) is the brightest cluster in the sky when observed in the X-ray band and for those with a musical bent produces the deepest note ever generated in the cosmos, a B ♭ . It is one of the most massive objects in the universe; the cluster contains thousands of galaxies immersed in a vast cloud of multimillion degree gas with the mass equivalent of trillions of suns.

No human will actually hear the note, because it is 57 octaves below the keys in the middle of a piano. The sound waves appear to be generated by the inflation of bubbles of relativistic plasma by the central active galactic nucleus in NGC 1275. They are visible as ripples in the X-ray band using Chandra X-ray Observatory, as the X-ray brightness of the intracluster medium which fills the cluster is strongly dependent on the density of the plasma.

Chandra's Image of the Perseus Cluster with Overlay of Low Pressure Region special processing designed to bring out low and high pressure regions in the multimillion degree gas in the Perseus cluster has revealed huge low pressure regions (shown in purple). These regions appear as expanding plumes that extend outward 300,000 light years from the super-massive black hole (shown as the white contour in the centre) in NGC 1275, the giant central galaxy in the cluster. The gas pressure is assumed to be low in the plumes because unseen bubbles of high-energy particles have pushed the gas aside. The plumes are evidence of explosive activity near the super massive black hole.



(Credit: NASA/CXC/IoA/J.Sanders et al.)
Scale: Image is 284 arcsec across

An accumulation of 270 hours of Chandra observations of the central regions of the Perseus galaxy cluster reveals evidence of the turmoil that has wracked the cluster for hundreds of millions of years. Enormous bright loops, ripples, and jet-like streaks are apparent in the image. The dark blue filaments in the centre are likely due to a galaxy that has been torn apart and is falling into NGC 1275, a.k.a. Perseus A, the giant galaxy that lies at the centre of the cluster.

Peering into the tumultuous heart of the nearby Perseus galaxy cluster, Hubble discovered a large population of small galaxies that have remained intact while larger galaxies around them are being ripped apart by the gravitational tug of other galaxies.

The Hubble images provide further evidence that the undisturbed galaxies are enshrouded by a "cushion" of dark matter, which protects them from their rough-and-tumble neighbourhood.

"We were surprised to find so many dwarf galaxies in the core of this cluster that were so smooth and round and had no evidence at all of any kind of disturbance," says astronomer Christopher Conselice of the School of Physics & Astronomy University of Nottingham, and leader of the Hubble observations. "These dwarfs are very old galaxies that have been in the cluster a long time. So if something was going to disrupt them, it would have happened by now. They must be very, very dark-matter-dominated galaxies."

Credit: NASA, ESA, and C. Conselice and S. Penny (University of Nottingham)

First proposed about 80 years ago, dark matter is thought to be the "glue" that holds galaxies together. Astronomers suggest that dark matter provides a vital "scaffolding" for the universe, forming a framework for the formation of galaxies through gravitational attraction. Previous studies with Hubble and NASA's Chandra X-ray Observatory found evidence of dark matter in entire clusters of galaxies such as the Bullet Cluster.

Because dark matter cannot be seen, astronomers detected its presence through indirect evidence. The most common method is by measuring the velocities of individual stars or groups of stars as they move randomly in the galaxy or as they rotate around the galaxy. The Perseus Cluster is too far away for telescopes to resolve individual stars and measure their motions. So Conselice and his team derived a new technique for uncovering dark matter in these dwarf galaxies.

Samantha Penny School of Physics & Astronomy University of Nottingham explains the new technique, 'essentially, we compare the total mass of stars (stellar mass) contained within each dwarf galaxy and the theoretical minimum mass that the dwarf galaxy must have to prevent it being tidally disrupted. If the minimum mass to prevent tidal disruption exceeds the stellar mass and there is no tidal disruption then it is implied that dark matter is present.'

Further reading
http://hubblesite.org/newscenter/archive/releases/2009/11/
http://chandra.harvard.edu/photo/2005/perseus/

Courtesy: LAS eNewsletter

Astronomers map 'blue whale' of space

Heather Catchpole - ABC Science

Australian astronomers have made the most detailed map yet of a radio galaxy, which could lead to a better understanding of these strange phenomena.

The map of Centaurus A, a galaxy in the Centaurus constellation, covers a segment of sky 200 times the area of the full moon.

The team, led by Dr Ilana Feain released the map at a meeting dedicated to the galaxy, The many faces of Centaurus A, held in Sydney last week.

"Only a small percentage of galaxies are of this kind. They're like the blue whales of space - huge and rare," says Feain, from CSIRO's Australia Telescope National Facility.

It took 1200 hours of observing time and 406 images, taken by the Australia Telescope Compact Array and Parkes radio telescopes, to create the detailed map. It took an additional 10,000 hours of computer time to process the image.

Centaurus A is 14 million light years away, extremely close for radio galaxies, which are typically found in the early universe, billions of light years distant.

No one had attempted to map the galaxy to this degree of detail because of its huge size and close proximity.

Team member Tim Cornwell says it was a "real achievement in radio astronomy."

"It will have a big impact in terms of our understanding of what these objects look like and what the physical conditions are like in the galaxy," says Cornwell.

"[The term] Rosetta stone is overused but it really is a key radio source."

Radio waves stream millions of light-years into space from the heart of the galaxy Centaurus A (Source: Ilana Feain, Tim Cornwell, Ron Ekers (CSIRO))

Uneven lobes

The new image reveals the structure of the galaxy lit up by jets of radio-emitting particles blasted from a central supermassive black hole.

There are two distinct 'lobes' created as the jets energise material in the galaxy, and Cornwell says the map has revealed some unexpected differences between each lobe.

"The north lobe is very smooth compared to the south lobe. Both are generated from the same object in the same way and are presumably the same age, so it's a bit of a mystery why the two lobes look quite so different."

Professor Ken Freeman from the Mount Stromlo Observatory in Canberra says the mosaic image gives a "global perspective" on the galaxy.

"Although much of the structure of this radio galaxy was known already, we now see some terrific detail, and it's a beautiful image," he says.

But he says each radio galaxy "has a personality of its own".

"To learn things in general about radio galaxies you need to look at each individually."

Cornwell agrees, saying radio galaxies were like "clouds in the sky".

"[Just] like clouds have given shapes, [radio galaxies] are all different."

He says to understand more about radio galaxies, a wide number of observations in other parts of the spectrum, such as the optical and x-ray, are needed.

"Understanding how they are different is what this type of astronomy is all about."

Galileo's Notebooks May Reveal Secrets Of New Planet

- Science Daily

Galileo knew he had discovered a new planet in 1613, 234 years before its official discovery date, according to a new theory by a University of Melbourne physicist.

Professor David Jamieson, Head of the School of Physics, is investigating the notebooks of Galileo from 400 years ago and believes that buried in the notations is the evidence that he discovered a new planet that we now know as Neptune.

A hypothesis of how to look for this evidence has been published in the journal Australian Physics and was presented at the first lecture in the 2009 July Lectures in Physics program at the University of Melbourne in the beginning of July.

If correct, the discovery would be the first new planet identified by humanity since deep antiquity.

Galileo was observing the moons of Jupiter in the years 1612 and 1613 and recorded his observations in his notebooks. Over several nights he also recorded the position of a nearby star which does not appear in any modern star catalogue.

"It has been known for several decades that this unknown star was actually the planet Neptune. Computer simulations show the precision of his observations revealing that Neptune would have looked just like a faint star almost exactly where Galileo observed it," Professor Jamieson says.

But a planet is different to a star because planets orbit the Sun and move through the sky relative to the stars. It is remarkable that on the night of January 28 in 1613 Galileo noted that the "star" we now know is the planet Neptune appeared to have moved relative to an actual nearby star."

There is also a mysterious unlabeled black dot in his earlier observations of January 6, 1613, which is in the right position to be Neptune.

"I believe this dot could reveal he went back in his notes to record where he saw Neptune earlier when it was even closer to Jupiter but had not previously attracted his attention because of its unremarkable star-like appearance."

If the mysterious black dot on January 6 was actually recorded on January 28, Professor Jamieson proposes this would prove that Galileo believed he may have discovered a new planet.

By using the expertise of trace element analysts from the University of Florence, who have previously analyzed inks in Galileo's manuscripts, dating the unlabelled dot in his notebook may be possible. This analysis may be conducted in October this year.

"Galileo may indeed have formed the hypothesis that he had seen a new planet which had moved right across the field of view during his observations of Jupiter over the month of January 1613," Professor Jamieson says.

"If this is correct Galileo observed Neptune 234 years before its official discovery."

But there could be an even more interesting possibility still buried in Galileo's notes and letters.

"Galileo was in the habit of sending a scrambled sentence, an anagram, to his colleagues to establish his priority for the sensational discoveries he made with his new telescope. He did this when he discovered the phases of Venus and the rings of Saturn. So perhaps somewhere he wrote an as-yet undecoded anagram that reveals he knew he discovered a new planet," Professor Jamieson speculates.

Professor Jamieson presented at the first of a series of lectures in July, aimed at giving an insight into fundamental questions in physics to celebrate the 2009 International Year of Astronomy.

New Portrait Of Omega Nebula's Glistening Watercolors

The Omega Nebula, sometimes called the Swan Nebula, is a dazzling stellar nursery located about 5500 light-years away towards the constellation of Sagittarius (the Archer). An active star-forming region of gas and dust about 15 light-years across, the nebula has recently spawned a cluster of massive, hot stars. The intense light and strong winds from these hulking infants have carved remarkable filigree structures in the gas and dust.

When seen through a small telescope the nebula has a shape that reminds some observers of the final letter of the Greek alphabet, omega, while others see a swan with its distinctive long, curved neck. Yet other nicknames for this evocative cosmic landmark include the Horseshoe and the Lobster Nebula.

Swiss astronomer Jean-Philippe Loys de Chéseaux discovered the nebula around 1745. The French comet hunter Charles Messier independently rediscovered it about twenty years later and included it as number 17 in his famous catalogue. In a small telescope, the Omega Nebula appears as an enigmatic ghostly bar of light set against the star fields of the Milky Way. Early observers were unsure whether this curiosity was really a cloud of gas or a remote cluster of stars too faint to be resolved. In 1866, William Huggins settled the debate when he confirmed the Omega Nebula to be a cloud of glowing gas, through the use of a new instrument, the astronomical spectrograph.

In recent years, astronomers have discovered that the Omega Nebula is one of the youngest and most massive star-forming regions in the Milky Way. Active star-birth started a few million years ago and continues through today. The brightly shining gas shown in this picture is just a blister erupting from the side of a much larger dark cloud of molecular gas. The dust that is so prominent in this picture comes from the remains of massive hot stars that have ended their brief lives and ejected material back into space, as well as the cosmic detritus from which future suns form.

Three-colour composite image of the Omega Nebula (Messier 17), based on images obtained with the EMMI instrument on the ESO 3.58-metre New Technology Telescope at the La Silla Observatory. North is down and East is to the right in the image. It spans an angle equal to about one third the diameter of the Full Moon, corresponding to about 15 light-years at the

The newly released image, obtained with the EMMI instrument attached to the ESO 3.58-metre New Technology Telescope (NTT) at La Silla, Chile, shows the central region of the Omega Nebula in exquisite detail. In 2000, another instrument on the NTT, called SOFI, captured another striking image of the nebula (ESO Press Photo 24a/00) in the near-infrared, giving astronomers a penetrating view through the obscuring dust, and clearly showing many previously hidden stars. The NASA/ESA Hubble Space Telescope has also imaged small parts of this nebula (heic0305a and heic0206d) in fine detail.

At the left of the image a huge and strangely box-shaped cloud of dust covers the glowing gas. The fascinating palette of subtle colour shades across the image comes from the presence of different gases (mostly hydrogen, but also oxygen, nitrogen and sulphur) that are glowing under the fierce ultraviolet light radiated by the hot young stars.

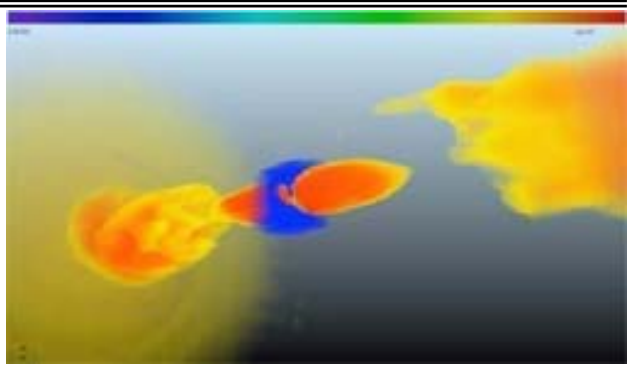
Turbulence Responsible For Black Holes' Balancing Act

We live in a hierarchical Universe where small structures join into larger ones. Earth is a planet in our Solar System, the Solar System resides in the Milky Way Galaxy, and galaxies combine into groups and clusters. Clusters are the largest structures in the Universe, but sadly our knowledge of them is not proportional to their size.

Researchers have long known that the gas in the centers of some galaxy clusters is rapidly cooling and condensing, but were puzzled why this condensed gas did not form into stars. Until recently, no model existed that successfully explained how this was possible.

Evan Scannapieco, a theoretical astrophysicist, has spent much of his career studying the evolution of galaxies and clusters. "There are two types of clusters: cool-core clusters and non-cool core clusters," he explains. "Non-cool core clusters haven't been around long enough to cool, whereas cool-core clusters are rapidly cooling, although by our standards they are still very hot."

For further information refer to:
www.sciencedaily.com/releases/2009/07/090714124952.htm



This is a snapshot of gas temperatures in a three-dimensional computer simulation of a cool-core cluster. The blue ring shows the cool gas accreting onto the central black hole disk; the red and yellow jets show the hot gas ejected by this disk. Older bubbles from an earlier outburst are visible on the far left and right sides of the image. Turbulence generated by the jets mixes the hot and cool material together, which stabilizes further accretion and allows the cluster to perform its remarkable balancing act. (Credit: E. Scannapieco / M. Brueggen / ASU Fulton High Performance Computing Initiative)

SOCIETY ROUND UP

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

ABINGDON AS www.abingdonastro.org.uk
2nd Mon at Methodist Church Hall, Dorchester Crescent, Abingdon
Email: chris.c.holt@ntlworld.com

ALTRINCHAM & DISTRICT AS
www.astroadas.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 Todmorden & 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 Fri (exc Bank Hols) 19.30 at Woodchurch Memorial Hall, Front Road, Woodchurch. TN26 3QB
Drew Wagar e-mail: drew@wagar.org.uk

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

AYRSHIRE AS http://ayrastro.thesmallearth.com/
1st Tues at Ayr College
email: gm0dig@hotmail.com

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: bevian11@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: petermiski@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. johnbards@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.bristolastrosoc.org.uk
Every Fri at Bristol Grammar School, University Road
Simon Smith, email: secretary@bristolastrosoc.org.uk

CALLINGTON CAG www.callington-astro.org.uk
1st & 3rd Sat (exc Aug), at Space Centre, Callington Community College.
Beccy 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@ilddat.demon.co.uk
Oct 1: Luna-tick Astronomy Andrew Lound
Oct 29: Astronomy & the new media Robert Simpson
Nov 12: Small scope big skies Martin Griffiths
Nov 26: Fare forward voyagers Roger Butler

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

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.com/
3rd Mon Robin Smitten 07900-858690.
Email: robin@chippingnortontheatre.com

CLACTON AS www.clactonastronomy.co.uk
1st Thurs (exc Aug) at Quakers House, Granvile Road, Clacton-on-Sea. CO15 6BX
David Pugh 01255 429849 e-mail pugh-d@sky.com
Nov 5: Titan Jerry Workman

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

DONCASTER AS www.donastro.org.uk
2nd & 4th Thurs at Church House—behind St George Minster, Doncanster.
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
Sep 8: The English Mount P Hingley

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
Oct 1: Exploring with Satellites Dr Helen Walker
Dec 3: Host Galaxies of Long GRBs Dr P Schady

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.szymanek/havering.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
Sep 24: The Antikythera Mechanism Geoff Mansfield
Oct 29: Biggest bangs in Universe Prof Nial Tanvir
Feb 25: Observing the Moon Alan Wells
Apr 29: The Cygnus project Dr Nick Hewitt

HEBDEN BRIDGE AS
Meetings at Hope Baptist Church Rooms at approx 4 week intervals.
Len Entwhistle (01422-378368) or visit FAS webpage.
Sep 23: Cauldrons in the Cosmos Dr David Jenkins
Oct 21: Meteorite Research Dr Jamie Gilmour
Nov 25: Our Solar Neighbourhood Dr Colin Steele
Dec 16: Planetary Volcanology Prof Lionel Wilson
Jan 13: Stellar Birth Dr Rene Oudermeijer
Feb 17: Radio Astronomy Rod Hine
Mar 17: VHE GR Astronomy Dr Paula Chadwick
Apr 14: Blinking Stars & Binos Melvyn D Taylor-

HEREFORD AS
Meet 1st Thurs at Kindle Centre, Hereford .
Contact: Paul Olver (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

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
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

LEEDS AS www.leedsastronomy.org.uk
2nd & 4th Wed at The Friends Meeting House, Carlton 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

LETCHWORTH & 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
Sep 25: Presidential Address

LOUGHTON AS www.las-astro.org.uk
Every Thurs in the Scout Hall, Loughton Lane, Theydon Bois, Essex.
Jerry Workman (0208-507-7568)

LOWESTOFT & GT YARMOUTH RA (LYRA)
2nd Tues at Waveney Gymnastics Centre (access Notley 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
Sep 24: Imaging Nik Szymanek
Oct 29: British Antarctic Survey Mike Pinnock
Nov 26: Apollo Revisited Jerry Workman

MACCLESFIELD AS www.maccastro.com
1st Tues (exc Jan) at Jodrell Bank Observatory & 3rd Tues at Goostrey Village Hall.
email: secretary@maccastro.com

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-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 pwparish54@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, Bletchley, Milton Keynes
Mike Leggett Tel: 01908 503692
Email: publicity@mkas.org.uk

MORAY AC, SIGMA www.sigma-astro.co.uk
1st Fri at Birnie Village Hall, Thomshill, Elgin, Moray.
Ian Brantingham 01466 771371
Email: ian@branters.freeserve.co.uk
Sep 04: How the Sun got its Spots Brian Kelly

NENE VALLEY AS
www.eastnothantsastronomy.org.uk
1st & 3rd Mon at Chelveston Village Hall at 7.45pm.
email: stevemwilliams@fsmail.net Tel: 01933-650331
Oct 5: Mars Mission Updates Steve Williams
Oct 19: The Green Flash Mike Frost

NEWBURY AS www.newburyas.org.uk
1st Fri (Sept-June) United Reformed Church Hall, Cromwell Place, Newbury.
email: rfleet@clara.co.uk

NORMAN LOCKYER OBS SOC http://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: japrockter@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

NOTTINHAM AS http://beehive.thisisnottingham.co.uk/nottinghamastro
1st Thurs British Geological Survey, Nicker Hill, Keyworth, 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-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
Sep 2: Cosmology/Dark Energy Carolin Crawford
Oct 7: Gullies on Mars Susan Conway
Nov 4: C P Smyth's Observatory Dave Eagle

PETERBOROUGH AS www.pas-stargazer.co.uk
1st Tues at St Kingburgh Church Hall, Castor, Peterborough.
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.freeserve.co uk

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

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 & DISTRICY 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 Bennet 01843-831079
email: Secretary@sekas.co.uk

SHETLAND AS
Monthly, South Mainland, Shetland
Peter Kelly Tel: 01957 733242
Email: theglebe@zetnet.co.uk

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SHROPSHIRE AS www.shropshire-astro.com
1st Sat at Rodington Village Hall
Contact: Mark Wiggin.
e-mail: mark.wiggin@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.freeserve.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.freeserve.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://tavistockastronomicalsociety.googlepages.com/home
Kelly College. Exeter Road, Tavistock
Email: jewelsv137@aol.com Tel: 07877-448117 or robin@sigmanova.com

LIST OF OFFICERS 2008/2009

President, Secretary, Treasurer & Newsletter Editor - See Page 1

Vice President:
Callum Potter: vicepresident@fedastro.org.uk

PLI & Distribution:
Eric Hutton: plisecretary@fedastro.org.uk

Membership Sec:
John Axtell: membership@fedastro.org.uk

Meetings Sec:
Shaun O'Dell (see details on Page 1)

Webmaster:
Gary Gawthrope webmaster@fedastro.org.uk

Chilterns Group : Steve Williams

North West Group : vacant

West Midlands : Dave Evetts

SAGAS: Keith Brackenborough

Yorkshire Group : Paul Harper

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 Tele;01375 676602
email: roy.hookway1@btinternet.com
May 6: A Chemist's View of Life Tony Sizer

TIVERTON AS ww.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.uskastronomicalsociety.org.uk
Email: jbprince9@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
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.freeserve.co.uk
First Tues - Allendale Centre, Wimborne, Dorset.
Alan Jefferis, e-mail alan@ajefferis.freeserve.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

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
Sep 14: Pluto Prof Barrie Jones
Oct 12: View from Saturn Prof Carl Murray

WEST YORKSHIRE AS www.wyas.fsnet.co.uk
Every Tues (exc Aug/BH's) at 'Rosse Observatory', Carleton Rd, Carleton, Pontefract. James Boulton 0924-379376. Email: jcandcboulton@btinternet.com

WEST NORFOLK AS www.wyas.fsnet.co.uk
James Boulton 0924-379376.
Email: l.peters@homecall.co.uk

WILTSHIRE AS www.wasnet.co.uk/
Andrew Burns Email: anglesburns@hotmail.com

WIGTOWNSHIRE AS www.wigtownshire-astro.org.uk
Second Wed Glenamour, Newton Stewart.
Robin Bellerby 01671-404387 / 07966-413679
Email: robin@glenamour.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.wolvas.org.uk
Alt Mon, between Sep & Apr at The Environmental Centre, Highfields School, Boundary Way, Penn Wolverhampton. WV4 4NT
Graham Mogford grahammogford@hotmail.com

WORCESTER AS www.worcesteras.freeserve.co.uk
Meetings held 2nd Thurs 8-10pm at University College, Oldbury Rd, Worcester
Michael Morris. Email: michaelmorris@hotmail.com

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
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.me.uk

Deadlines for submission for the next newsletter:
Winter 2009 — 7 November 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.

Printed for the FAS by: P&J Print, Newquay, Cornwall