



Southampton
Astronomical
Society

Founded 1924

www.southampton-astronomical-society.org.uk

Newsletter

April 2007

Next Meeting Thursday 10th May

Chris Lintott: 'Bang - The Complete History of the Universe'

Programme of Events

Thursday 26th April:	Club Evening
Thursday 10th May:	Chris Lintott: 'Bang - The Complete History of the Universe'
Thursday 24th May:	Club Evening
Thursday 14th June:	Ron Arbour: 'Things that go Bang in the Night'
Thursday 28th June:	Club Evening
Thursday 12th July:	Nik Szymanek: 'Introduction to CCD Imaging and Image Processing using the Faulkes Telescope'

All Meetings start promptly at 7.30 pm.

Club Evenings and Observing Meets: Maps to venues are available at the Monthly Meetings. Alternatively, please email Fay Capstick (fay@snookums.co.uk) for a map.

First Friday Observing Evening, Out of Town Centre in Beaulieu: These meetings are no longer being held as society events – members are still welcome to attend though.

Venues for Monthly Meetings: Meetings on the 2nd Thursday of each month are held at:

Edmund Kell Unitarian Church Hall, Bellevue Road, Southampton, SO15 2AY.

Parking Arrangements: On-street parking is usually available in Bellevue Road. There is a car park in King's Park Road nearby. From the car park there is pedestrian access to Asylum Road. Please ensure that your car is securely locked.

Please note that our venue is accessible by Disabled Visitors

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News & Observations

Book Offer from our May speaker, Chris Lintott

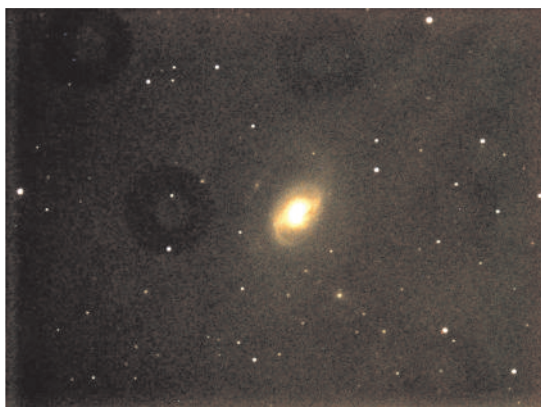
Our speaker in May, Chris Lintott from *The Sky at Night*, will be talking about the history of the universe. This ties in with his new book, co-authored with Patrick Moore and Brian May. Chris has kindly offered members the chance to buy the book at a discounted rate (and I am sure if you ask nicely he might sign it too).

Copies usually retail for £20.00, but Chris is offering members the discounted rate of £18.00. Purchases will also benefit the society, as Chris will donate £2.00 from every copy sold back to the society. It would be helpful if members who wish to take advantage of this offer could let a member of the committee know in advance, so that our speaker can plan an approximate number of copies to bring.

Observations from Lawrence Harris



The eclipse pictures show the advance of the umbra at 2202UTC followed by one near totality at 2233UTC.



The 10-minute exposure of M96 was taken during the total phase because M96 was close to the moon yet clearly visible in the eclipse.



The other one is a short test exposure of M42, only 5 minutes long, at f6 taken using the 12" RCX400 scope.

January Meeting Report

Apologies for absence were received from Dennis White.

Secretary's Notices:

The FAS bulletins have been published and are available for members. There will be an observing evening at Lilian's on the 18th and a club evening at Fay and Simon's on the 25th January. Ian again reminded members of the fire regulations. Members will be pleased to know that the red book has been found!

Mike informed members that Max Morgan (a long standing member with an interest in comets) wants to pass on thanks for the newsletter and that he will be sending a donation to the society.

A comet has been generating excitement among members, with only a few days left to observe it. No real observational reports have been received due to cloudy weather. Lawrence has only counted six clear nights in the last month.

Laser Gateway Update:

(plus more follows on pages 7 and 8): Lawrence addressed the council meeting. Lilian spoke to members about how the laser gateway story broke. Lawrence appeared on South Today and Lilian appeared in the Daily Echo and been interviewed on Radio Solent. Lilian described her photo shoot for the paper. The CfDS have also been involved. Lilian isn't too positive about the chances of stopping the scheme. An initial decision is due on the 22nd Jan. Solent Astronomers are also involved in the campaign. Lawrence wanted to thank Lilian for making him aware of the proposed laser scheme.

Alan Dowdell: *The Deep Sky*

A dark sky is needed for 'fuzzy' objects. But how did we get to where we are now? What characters are involved?

The Rev. Thomas William Webb (b. Dec 1806) is who we have to thank for how we do astronomy today. He gave talks. He is known for a book he wrote called "Celestial Objects for Common Telescopes", used to promote his interests. He lived in Wales, in Hardwick. Alan once gave a talk about Webb in his own church.

So, what is a 'common telescope'? Probably now, an 8" Meade. Webb was one of the first amateurs to use silver on glass reflectors while working with another Reverend. At this time, Reverends were well educated, well bred and quite well off.

The BAA have an 8 1/2" scope that may have actually belonged to Webb, which is quite unusual. Webb used the scope to observe what others had found. He wrote and drew his observations of the deep sky, comets and planets. He also ground mirrors. Romsey Abbey features a stained glass window featuring a telescope. The other Reverend developed the 'Romsey Observatory' based on his lifeboat design.

Webb is the model for amateur astronomy, the Patrick Moore of his day. He kept very readable and detailed notes, and his work is still available.

Admiral William H. Smyth, was a naval sea captain when we were at war with France in the 1800s. Capturing enemy ships involved a cash bonus, and Smyth took the biggest cut. He spent some on building an observatory with a 7" refractor. His book is still in print, details below.

January Meeting Report (Continued)

Mecier observed comets. He mainly found deep sky objects by luck. He found 100 Mecier objects, and others helped him develop his list during the French Revolution.

Herschel had a big appetite for deep sky observing. He was originally from Germany but settled in Bath. He made telescopes for a living. He discovered Uranus, which got the King's attention, and ended up as the King's astronomer. 12-16" aperture telescopes were his favourite. Telescopes were large and tracking was impossible – they simply waited for an object to pass into view. His sister Caroline discovered some comets, and worked as his observing partner on their 48" telescope. Working conditions were so cold that ink froze in the inkwell. Regular mirror polishing was needed. Herschel took drawings of the deep sky objects that he saw. His son, John, took over his work. John took the telescopes to South Africa where he he observed before returning to the UK and produced the General Catalogue of Objects. N.G.C. The New General Catalogue was the updated version. John Herschel was one of our greatest scientists, even though a South African newspaper said that he was observing people on the moon!

Many wealthy people practised amateur astronomy. They were self funded and assistants did a lot of the actual work. A telescope built by a wealthy amateur is in Bir, Ireland. 72 feet above the ground and not for the faint hearted. Ross observed M51.

By the 1880s, 9-hour photographic exposures of galaxies were being taken, with prime focus photography guiding the image on the plate. Amateurs were still using camera film in the 1980s.

The Bedford Catalogue: *A Cycle of Celestial Objects: 002* (Paperback)
by W. H. Smyth (Author) Publisher: Willmann-Bell (April 1986)
ISBN-10: 0943396107, ISBN-13: 978-0943396101

Tips for Practical Observing from Alan Dowdell

1. Keep warmly. Dress appropriately for the weather and cold associated with standing still.
2. Binoculars are the best investment and a good place to start. They available at all prices and large binoculars are available.
3. Star Charts: Norton's and Sky Publishing publications are on a computer. Star hopping made easy!
4. Eye pieces: Can come with eye relief. Don't forget the eye changes as it gets older.
5. Pad of paper and a pencil, to draw your observations. Spiral pads work best against the wind and encourages proper and detailed viewing of an object.

February Meeting Report

Apologies for absence were received from Simon and Fay Capstick.

Michael Maunder: *Volcanoes & Astronomy* (review by Ian Gore)

Michael's talk was entitled "Volcanos and Astronomy", though a more accurate title would have been "Volcanos and Global Warming". Michael is clearly unconvinced that human activity is responsible for global warming, and while showing us some spectacular pictures of the World's volcanos he also considered the evidence. Astronomy did get a look-in when he pointed out that Mars too appears to be undergoing global warming.

March Meeting Report

Secretary's Notices

This month's club evening will be at Michael's for observing. Lots of telescopes will be available for members use. Members are reminded about the free Science Week lecture taking place on March 13th at Harbour Lights.

Member were told about the Globe at Night Project (<http://www.globe.gov/GaN/>) running from March 8th – March 21st 2007. This is a project to measure light pollution using a map of Orion to determine magnitude. More can be found on the website of the project.

Apologies for absence were received from Betty and Gloria.

Observing Reports

Most members managed to view some of the recent Lunar Eclipse, and reported good views of the stars near the moon. The reports that the moon would look red were overrated observers felt.

Lawrence has been taking some long exposure imaging, perhaps down as far as mag. 20-21, if the software is to be believed.

Professor Malcolm Coe: *The Magellanic Clouds*

Background

The Magellanic Clouds are unusual objects seen in the Southern Sky. There are a Large and Small Magellanic Cloud (LMC & SMC), though the SMC might actually be two objects. The LMC is 1/10th the size of the Milky Way. The SMC has 1,000 million stars, and both clouds are gravitationally bound to our Milky Way. The SMC is 2,000 light years away and is an irregular galaxy due to tidal forces, a chaotic system. The LMC is 10 times larger than the SMC, is also chaotic and lacking structure. The clouds are named after Ferdinand Magellan.

They are best viewed between August and Christmas, though they are circum polar and never actually set, always being above the horizon. In the Northern Hemisphere, the furthest North that they can be seen from is Yemen.

From Cape Town, John Herschel, a wonderful artist, drew the clouds. That observatory is now the SAAO headquarters. Cape Town was not the best location then. Herschel was self-funded and used an 18" reflector. In the 1840s his observations were published. The drawings closely resemble modern photographs of the Clouds.

Origins

The Clouds were trapped or caught by the Milky Way, part of our local group of galaxies. Over time the Milky Way and Andromeda have 'mopped up' smaller members of the local group. The Clouds were captured approximately 1 billion years ago.

The SMC and LMC are gravitationally bound together, taking 1 billion years to make a complete orbit of the Milky Way. They have left behind a large trail of debris, which is letting scientist plot their path and trajectory. Scientists are trying to simulate the orbit, but this is being made harder by the fact that they are both pulling on each other, as well as the Milky Way itself. In future they might escape the Milky Way, in effect being 'slung off'.

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March Meeting Report (continued)

Science

A radio map shows the hydrogen. Members viewed a 3D simulation of the SMC rotating, though it might not be completely accurate. The SMC could be a very deep cylindrical object, stretching away from view. The LMC is probably thinner and more galaxy like.

The LMC might have a central bar. The Magellanic Bridge connects the two objects, which contain some stars which can be seen in the radio frequency. The enormous Magellanic Stream stretches 60 degrees, and is also shown in the radio frequency. It has no stars. The stream lets scientists work out the orbit.

Prof. Coe's Research: High Mass X-Ray Binaries (HMXBs)

HMXBs are binary star systems which contain a high mass object, such as a black-hole or pulsar, that emit X-Rays. They are often X-Ray bright as they accrete matter, ploughing through dust or stellar wind from their companion star. The neutron star companion often has an eccentric orbit caused by its previous supernova explosion. Simulations show that an eccentric orbit of a neutron star disturbs the dusty solar system disc, and results in matter accretion by the neutron star, causing X-Ray emission.

HMXB Population: In the SMC, 1 or 2 systems are expected, but observations now show 50, perhaps more. But why? This could be due to the tidal interaction. Scientists are using X-Ray Satellites to measure signal once a week to try and work out the binary orbits. Looking for the pulse signature of an object. The period of the pulsars varies widely. They are starting to see objects return, some weekly, some after ten years.

There are patterns to the pulsars. 1 or 2 were predicted. 1 was indeed found in 1977. No one re-checked it. Work done in the mid 1990s showed raised numbers. 70 have now been found, and there are no signs of a slow down. Results are expected to be published soon.

In comparison with the SMC, the LMC is boring, rather similar to the Milky Way. The LMC only has a few X-Ray pulsars and meets predictions. It has been suggested that the LMC has Super-bubbles due to supernovas.

There is not much tidal interaction between the SMC and the Milky Way. However there is huge interaction between the LMC and SMC. Massive SMC stars, now neutron stars, were created in the past by these tidal forces.

Tools Used to Study the SMC

The main tools being used to study the SMC are Chandra (NASA) and SALT.

Chandra is an orbiting X-Ray observatory run by NASA. This provides the best quality pictures. Pulsars in the 'wing' of the SMC are being radio mapped, and this area has different tidal forces.

SALT is an 11 metre telescope. It uses a mosaic of mirrors to image and is located a few hours outside of Cape Town in South Africa. SALT's spectra camera has some problems at the moment and light is being lost. It is going back to its manufacturer, in the US, for its optical surfaces to be recoated. Hopefully it will all be working by June. Professor Coe is waiting to use SALT on the SMC. With it he should be able to see down to 20th magnitude.

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March Meeting Report (continued)

Conclusions

- * The LMC and SMC are satellite galaxies of the Milky Way.
- * They were captured several billion years ago.
- * They might be lost in the future.
- * The SMC is periodically exposed to extreme tidal forces from the LMC, producing star populations that would have otherwise not existed.

Southampton Laser Gateway Update by Lawrence Harris

At the beginning of February Lawrence Harris sent an update to society members via email detailing the work he has been doing to stop the Laser Gateway scheme from happening. For any members that do not have email, and therefore haven't been updated, his update is printed below:

Our monthly meeting [January] provided no real opportunity for me to properly update society members on the events that took place at the council's decision meeting on Monday 5 February.

I found myself having to arrive for 3pm and found only a few fellow 'public' people ready to expound their concerns. I was called first after everyone was asked to limit their talks to 2-minutes. I spoke about the failure of the councillors to reply to or answer the points made in my detailed critique. I pointed out that they had acknowledged my complaint about their false claims about laser radiation attenuation by their webmaster agreeing to change their website content. I noted that it still contained many errors and false claims. I added that the project (Vinson's folly) was unlikely to affect my own observatory but that it created a very bad precedent, and in any case, had no justification.

I noted that their paragraph 7 ("a permanent laser gateway would also provide national recognition") by saying that I agreed with this:

Southampton **will** be recognised as the council that ignored:

- 1 - environmental guidelines on light pollution
- 2 - ignored safety warnings from the CAA
- 3 - ignored the waste of tax-payers' money at a time of punitive council tax levels.
- 4 - ignored pleas from many authorities such as New Forest National Park Authority and others.
- 5 - ignored all the scientific evidence available from 30+ years from British research, and insisted on the spending of £5,000 on repeating well-understood scientific measurements of the propagation of laser light through the lower atmosphere.

Friends of the Earth then spoke briefly, followed by John Langley of Vectis. There was no-one present from the Solent group.

Cllr Vinson then responded briefly to my points without actually answering them. At that stage no response by the public is allowed, so this was a very frustrating experience. He continually congratulated himself!

Cllr Samuels made the only sensible comments, noting my numerous points that Cllr Vinson had failed to answer. Other cllrs (Kay?) falsely claimed that the CAA had approved the scheme, and

Southampton Laser Gateway Update

by Lawrence Harris (continued)

stated that Southampton University were "cooperating" as well. In fact I was concerned at their portrayal of the university as apparently supporting the laser scheme and being willing to 'prove' that it was OK.

Cllr Mizon (no relation to Bob) praised the council as if she was expecting an imminent promotion. Cllr Baston personally criticised my comments about "bad science" (as I described the false claims about laser attenuation) but of course I was not permitted to respond. I felt 'honoured' to have been singled out for using the phrase 'bad science' in her personal criticism.

They approved funding for the 'tests' without any vote being taken.

I think it is probably a lost cause, but at least delays have been created. The university's decision to 'assist' the council is perhaps not the best thing that they could have done for astronomers. There is much evidence from legal experts to suggest that it is probably illegal anyway.

Following the meeting, I contacted Prof Coe to update him about the claims made by the council.