



Southampton
Astronomical
Society

Founded 1924

www.southampton-astronomical-society.org.uk

Newsletter

January 2007

NEXT MEETING THURSDAY 11th JANUARY
Alan Dowdell: "The Deep Sky"

Programme of Events

Thurs 11th Jan:	Alan Dowdell: " <i>The Deep Sky</i> "
Thurs 25th Jan:	Club Evening with Simon and Fay Capstick
Thurs 8th Feb:	Michael Maunder " <i>Volcanoes & Astronomy</i> "
Thurs 22nd Feb:	Club Evening. To be announced
Thurs 8th March:	Professor Malcolm Coe " <i>My favourite astronomical objects - the Magellanic Clouds</i> "
Thurs 22nd March:	Club Evening: To be Announced

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.

Third Thursday Observing Evening at Lilian Hobbs': This is dependent on Lilian's availability, to be advised at the Monthly Meetings.

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

Southampton Laser Gateway

Members may have spotted that the Southern Daily Echo has been running articles on the proposed Southampton Laser Gateway. Suffice to say, four laser beams emanating from the clock tower of the Southampton Civic Centre will greatly add to the light pollution of some local astronomers. Rather than a diffuse orange glow from street lights, many will have their night sky views interrupted by an intense beam of green laser light too.

I'm sure many people will find it novel at first but ultimately it will limit local people's long term enjoyment of the night sky. Anyone trying to catch a glimpse of a meteor shower, with a bright green line in the way, may just have to give up or try and stay awake after midnight, the proposed switch-off time. Keen local astronomers will get an even rawer deal as many astronomical phenomenon and sights will only be viewable at certain times and positions in the sky. Anyone living near the East/West laser beams may find they struggle to observe any of the planets as the beam will coincide with the best part of the ecliptic. Anyone directly under a beam will find the clearest part of the sky above them (zenith) obscured by green light. Not only will people have to contend with neighbours' lights, trees, street lights and cloud, but they will have to 'dodge' the big green line too. I'm sure some of our more actively involved members will be able to update you on the situation in more detail at the next club meeting.

AstroFest

Members are reminded that the annual European AstroFest, organised by Astronomy Now magazine, is taking place on February 9th - 10th 2007 at Kensington Town Hall, Hornton Street, London. Tickets can be purchased in advance from www.astronomynowstore.com or by calling: 01732 446106 or 01732 367542. Ticket prices are as follows: One Session £12.50, Two Sessions £23.00, Three Sessions £31.50, Four Sessions £40.00.

For further information about the event, including a list of the speakers and maps to the venue please visit: <http://www.astronomynow.com/astrofest/> or look in *Astronomy Now* magazine.

Observational Report, Geoffrey Salt

A high camp in Snowdonia on a climbing expedition in September and early October 2006, provided good sightings of Saturn on 17 consecutive early morning observations with my Vixen 90mm. Maksutov, (titled Alice III).

In this apparition the rings are starting to close from their wide open stance of the last two seasons, but at 120 X the Cassini gap was clearly seen, as were some vague markings on the globe. This isn't bad defining for a 90mm instrument, and shows the advantages of observing 2500' above the lowest levels of Earth's atmosphere.

What made this occasion so special for me however was that it was possible to monitor the major moon Titan around a complete orbit (16 days) of its controlling planet, the first time I've been able to do so in 70 years of observing. This really was for me a 'highlight' of my observing experience, and a re-affirmation of the wondrous hobby we have in astronomy.

Pretty Pictures or Serious Stuff?

by Lawrence Harris

If you have invested money in a telescope you have probably already decided what you want the 'scope to do for you. I therefore pose this question with tongue firmly in cheek!

My very first telescope was actually a ten-inch reflector - but to be honest, it wasn't actually my 'scope. My school - Widey Technical School in Plymouth - took delivery of a rather old ten-inch mirror, together with the associated tube and mount. Nothing was actually connected together, but my enquiries led me to discover that not only was the 'scope now the property of the school, but a small observatory was due to be built within the grounds to house it! My known interest in astronomy led me to be unofficially regarded as the 'telescope contact', and eventually I had overseen the re-building of the 'scope on its mount within the tiny building. It was amazing to me, to realise that none of the teachers knew about equatorially mounted telescopes - not even the physics teacher. I was aged 16 at the time and, embarrassingly, have the pictures of some of these activities in my collection.

Imaging develops in the 1960s

It became obvious to me that not only could we (the newly formed school's astronomical society) get some pretty spectacular views through the 'scope but it could be possible to do some serious stuff. This was 1961-2 and the CCD had not been invented. It was eyeball or photography. I started taking some pictures. Yes, I still have one of them - a nova in Delphinus discovered by a dedicated amateur astronomer of that time. It was this activity that first made me realise that astro-photography was not merely 'point-and-shoot'! I was using a Brownie-box camera (no laughing please) and didn't have a clue about suitable exposures. So the first results were both encouraging (those shots that included bright stars or planets) and disappointing (most shots didn't!)

With no money, any progress with astro-photography was impossible. I did go in for doing my own processing because my uncle was a professional photographer and had showed me how it was done. He also gave me access to some lower priced accessories - including an enlarger. A year or two later I was able to do some experimenting using the newly formed Plymouth Astronomical Society's acquired 10" reflector. A member provided the space for it in his back garden in deepest town centre! And you think that you suffer from light pollution!

During the next few years (1965 to 1968) I made a little progress in taking images. With the camera firmly fixed to the 'scope, and a motor driving the 'scope at a reasonably accurate rate, it was possible to expose film for maybe a minute or so. In this way we captured a recently discovered comet.

However, it was to be a decade or two before I was once more able to get seriously into astro-photography. Let's jump forwards to 1992 when I bought my first LX200 - and of course it had to be a 10"! This is really where the astronomer can see that it becomes possible to take very impressive, long-exposure images of targets such as the bright Messier and NGC objects, but one can also do some serious work.

Serious work?

Pretty Pictures or Serious Stuff? (continued)

by Lawrence Harris

What do I mean by serious work? The amateur astronomer has never before had so many potential projects for serious study. This has come about by two factors: our equipment is often very capable of accurate tracking, and we have access to filters that were simply not available even 10 years ago. In addition, new CCD cameras are being developed with increasing sensitivity. In fact we are now at the point in their development where we have reached the limit imposed on us by light pollution; this affects background sky brightness. Although I am using filters that can remove almost all local light pollution, they cannot compensate for the light emitted by cities that activates high altitude air component molecules and adds a general background level. The only answer here is effective legislation to prevent it happening.

Scientific research anyone?

Given these limitations, the amateur astronomer can take part in research of either known scientific interest, or for personal interest. Perhaps both are identical.

We take a picture of a known galaxy - see figure 1 - or star cluster (rather than a random area of sky). Careful analysis will reveal its limiting magnitude - the magnitude of the faintest star that can be detected in the image. The image can then be 'blinked' with a similar image downloaded from the Deep Sky Survey. The latter images are freely available online. Better still, the image can be retained, and an identical one taken some weeks or months later. The two images are blinked; any changes - hopefully the appearance of a nova - can be detected by eye (or even software). So there is your science. There are many professional nova surveys, and many amateurs are also doing this type of work. If you wish to keep up to date with discoveries, you can subscribe to the IAU (International



Fig 1: The twin galaxies NGC7332 and 7339 captured in a 10-minute exposure with an SXV-H9C colour camera and a 12" RCX400 guided 'scope

Astronomical Union) circulars. However, it is not necessary - and you might even find it depressing to read of all the discoveries being made! On the positive side, it also shows you how many potential discoveries are there waiting!

As well as supernova hunting, don't forget asteroid studies. You might be surprised to realise that, with few exceptions, professionals do not normally monitor asteroids as such. This means that many asteroids have not been studied in detail - for instance their light variations with time are largely unknown. For practice you can identify (via software) a suitable bright asteroid - see figure 2 - and take regular images of it for, say, an hour. If you can select one with a known short rotation period, you can make your own measurements and confirm that you can

Pretty Pictures or Serious Stuff? (continued)

by Lawrence Harris

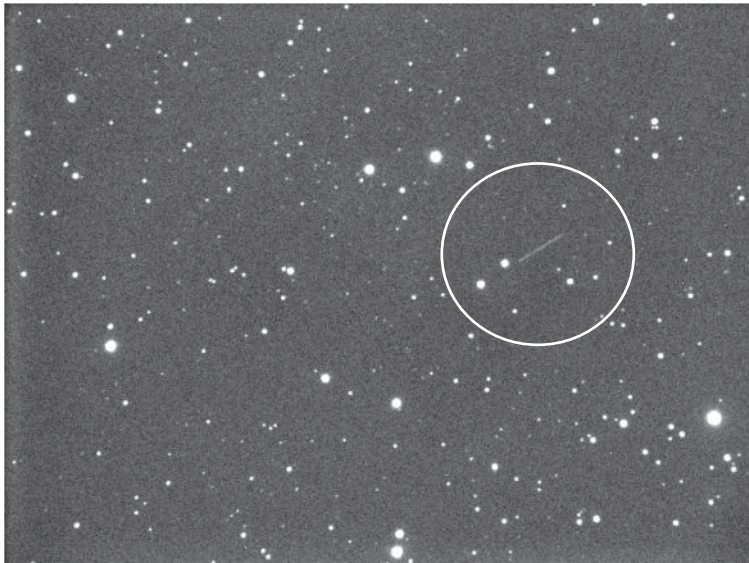


Fig 2: fast moving asteroid 2006RZ is captured as a trail in this 180 second exposure.

see the known rotation yourself from your measurements. Is that not a fascinating project? After doing this for a few known asteroids, in order to confirm your equipment and software are suitable and capable, you can then start identifying asteroids that are suitable for your specific interests. You might strike lucky and discover that an asteroid is actually a double asteroid!

Asteroid discovery is no longer relatively easy since the major surveys have been employing large telescopes to sweep everything up. Ten years ago one could take three images of an area

of sky, and repeat this twice during the evening, and have a reasonably fair chance of discovering something new, especially if the process was repeated on new areas of sky for several hours at a time. This is no longer the case. Amateur asteroid hunters are working at a severe disadvantage, although discoveries are still made by dedicated amateurs having sufficiently clear skies on a regular basis to increase their chances. Personally, I would strongly recommend using the time for real science such as asteroid photometry, as mentioned before.

Pretty Pictures

Pretty pictures are probably the best means to get you noticed amongst your peers. Publications in magazines and on recognised web sites are more likely for those who take good quality, long exposures, or, as many do, several shorter exposures that can be combined and subject to the newer techniques of image processing. The end result is likely to be more impressive than the considerably shorter exposures taken by the dedicated nova-hunter who steadily builds up a collection of deep space images for later comparison.

At the end of the day....

Undoubtedly the ideal solution to this apparent dilemma is a happy mix. After so many years working in the profession collecting scientific and astronomical data from satellites, the thought of only taking pretty pictures did not warm my heart. Such high technology surely deserves a better application? So I am slowly building up my collection of reference images from deep space, while occasionally stopping to take multiple images of some of the really dramatic objects that I come across. At ten minutes per routine exposure, it becomes a sacrifice to stop and spend even one hour on one target! Many astronomers will spend multiple hours on a target, followed by hours on image processing - so the competition is stiff. But try to remember, we do this for a hobby!

Meeting Reports (October - December 2006)

October Meeting Report

Apologies for absence were received from Betty Marek and Lilian Hobbs. Observational reports were received from Lawrence Harris and Simon Capstick.

Jerry Workman: "Mars Rovers"

Jerry Workman gave members a detailed account of the history of Mars exploration.

There has been lots of study of the planet Mars over the years including the following missions: Viking 1 and Viking 2 (1976), Pathfinder (1997), Spirit and Opportunity (2004).

Viking 1 took 55,000 photographs and analysed soil samples. Viking 1 lasted for 6 ½ years and Viking 2 for 3 ½ years, longer than expected. Pathfinder bounced down using air bags on July 4th 1997 and produced panoramic photographs of a high quality.

Spirit and Opportunity were more sophisticated missions. Opportunity landed on 4th January 2004 and was expected to last 90 days and was designed to move around on the surface. Spirit and Opportunity have greatly surpassed their mission goals.

November Meeting Report

Lilian Hobbs and Lawrence Harris

Lawrence Harris

Lawrence's talk was about observing comets and asteroids. He showed pictures of naked eye comets that he had taken during recent years. He explained that their origins, like asteroids, are believed to be debris remaining after the formation of the solar system when the main planets were formed. Graphics supplied by NASA were shown to illustrate the concentrations of asteroids and comets within the inner, middle and outer solar system. Groups of asteroids had formed and been given specific names - such as the Trojan asteroids that are gravitationally controlled by planet Jupiter.

Lawrence explained how optical aid - binoculars and telescopes can vastly

increase an amateur's ability to see and image comets. Using a planetarium program updated by free data from the Minor Planet Center in America, he showed that many tens of comets and hundreds of asteroids can be identified and imaged in amateur telescopes using sensitive CCD cameras, even in the suburbs. Images of a fast moving asteroid were shown, together with several comets, all imaged from Southampton.



Comet Swan (2006 M4) is a 5-minute exposure showing the bright nucleus of the comet moving rapidly during the exposure.

Lilian Hobbs

Notes about Lilian's talk will hopefully be available in the next newsletter.

December Meeting Report

Annual Film Show and American Supper

The evening started with the usual secretary's notices. Apologies for absence were received from Ron and Dorothy Deane.

The film show was from a NASA DVD box set (available to borrow from the club library).

Members enjoyed a couple of short historical films about Skylab, a space laboratory that operated in the 1970s.

A buffet was enjoyed, followed by the annual raffle.