

Stargazey Pie!

A slice of Highlands astronomical life!

Tues 7th July 2009

Introduction

July's meeting was the last that we would be able to attend at The Green House. This venue has been really excellent and we have enjoyed using its facilities enormously over the last few years. Sadly, we now have to move on, but one of the highlights of the meeting was the announcement of an exciting new venue for us! There is more of interest in the notices below, and we had an excellent talk about an observer's real life experiences chasing a total solar eclipse half the way round the world – to China, no less, given by Des Loughney.

- **Monthly Meeting Venue.** Due to a change of ownership of The Green House we can no longer afford to hold our meetings there and our lease has expired. The Committee has secured a new and very suitable venue (see more below). The next meeting will be the first at the new venue and details of its location are available on this website.
- **Membership Application Forms.** It is very important that the Taxpayer box is ticked (if applicable) and the form signed. This ensures that the Society can claim Gift Aid. Also, if the Telephone Alert box is not ticked the member will not be included in the alert system. Glad that's clear!
- **Subs.** Subscriptions are due again. It is very important that the Society receives prompt payment in order to fund its ongoing operational commitments. Lapsed members will be required to pay the £2.50 visitor fee from the August meeting onwards.
- **Roll Up, Roll Up!** The raffle continues in its quest to generate useful income for the running of the Society. Donated prizes will be gratefully received.
- **You WILL Volunteer...** Volunteers are needed to help man the stands at the forthcoming Inverness Highland Games (Sat 18th July) and Black Isle Show (Thu 6th Aug). Please contact Pat Williams if you would like to volunteer, or for any further information.
- **Moon-Magic.** Moonwatching For All – The Science and Beauty of the Moon, featuring Prof. John Brown and Dr. Gill Russell. Two events will be held to coincide with the Royal Astronomical Society's IYS2009 National Astronomy Autumn Moonwatch Week (phew) which takes place in late October/early November this year, as close to Full Moon and First Quarter as possible. Activities will include Binocular observing, Recording Phase and Position, the Effect of Moonlight on Stars and Landscapes, Halos and Moonbows, etc. The Highlands Astronomical Society is looking for volunteers to help develop this project. If you are interested, please contact Pat Williams.
- **IYA Webcasts.** Eric is broadcasting from his home observatory throughout the year. Visit <http://www.ustream.tv/channel/the-cosmos-cam> to see when the next programme is planned, or email him to be automatically notified of webcasts as they happen.

- **Seeing Stars.** The latest Seeing Stars article is by Pauline Macrae and is called 'Seeking Out Landing Sites'. Naturally, it reports on the new wave of lunar reconnaissance missions and what they hope to achieve. It is now on our website here: <http://www.spacegazer.com/index.asp?pageid=159497>
- **Big Ol' Moon.** Due to Eric's rapidly fading eyesight, caused by peering at tiny Moon images on the oh-so-easily-carried-but-oh-so-small Moon Phase Postcards, he has acquired a selection of larger (easier to read) Moon Phase Posters! If you would like to obtain one, please contact Eric himself or Pat Williams.
- **More Moon.** The Lunar 100 is being revisited. Improve your lunar observing skills this summer and take up the Lunar 100 challenge. 100 lunar features are listed and marked on a Moon map for you to find and tick. All you have to do is look for them – what could be more fun and challenging? The information sheet and special Moon map are downloadable from the Astronomy Projects section on the "Documentation" page of the Society website.

The New Venue

Paul Jenkins represented the Committee and gave a small presentation about the new meeting venue for the Highlands Astronomical Society. In choosing a new venue, several criteria had to be met. Paul listed them for us:

- Availability
- Consistent Usage
- Capacity
- Reasonably Central Location
- Car Parking

To meet these criteria, several sites were considered, and ultimately one was selected. The ***new meeting venue for HAS is Smithton-Culloden Free Church*** located on ***Murray Road, Smithton, IV2 7YU***.

This venue boasts presentation equipment, including a projection screen, ample seating for all our members to attend meetings. There are breakout areas too, to allow us to continue our Breakout groups that are so popular. There is a full kitchen with dishwasher, so our tea breaks will now be easier to organise and there will be seating space instead of us having to stand in the outer area.

One of the best features that Paul commented on though, was the friendliness with which the venue's owners dealt with the Society Committee members. It looks like we will enjoy the new venue, and our very next meeting will take place there on Tuesday 4th August. A map showing the location can be found on our website here (link to follow).

Almost as an aside, the cost of the Free Church is a lot less than what we are currently paying for The Green House. It will cost us £30 per night instead of the £75 we currently pay, or the £175 that the new Green House owners raised it to! Bargain? Find out next month...

The Main Event

'The Solar Eclipse of 2008 from China, and the Beijing Observatory' by Des Loughney

Des Loughney visited us from the Edinburgh Astronomical Society, which he joined twelve years ago. Since then he has served as the President for two and a half years, and is also a member of the BAA, particularly the Variable Star section. In 2006 he became the Eclipsing Binary Secretary, and he has also

been working in two pro-am ventures. The first is a USA-based international campaign to observe Epsilon Aurigae, and the other is with the Royal Astronomical Society of New Zealand to observe equatorial eclipsing binaries. His BAA Handbook on Observing Eclipsing Binaries should be published in the autumn.

His journey to China to observe the total solar eclipse of 1st August 2008 was the subject of his talk. It was quite a momentous endeavour for him, as not only had he not been to China before, but he also had never seen a total solar eclipse! Travelling halfway round the world to see his first one was quite a big step then.

Des documented his arrival in Beijing, showing pictures of the traditional Fu Lions that abound in the city. They are found near temples, shrines, government buildings, theatres, public buildings; in fact all over the place and in the pictures that Des showed they had been specially decorated to commemorate the upcoming solar eclipse. Des also had many pictures of the famous Beijing Observatory.

This is not how we would imagine an observatory, with a series of domes and telescopes, but rather a large area built during the time of the Ming dynasty, with a large 40metre-square brick platform on which various astronomical and astrological tools were placed. The raised area provided excellent views (at least until the encroachment of modern buildings) and early Chinese astronomers were able to use such devices as the Equatorial Armilla, Celestial Globes and others to pursue their quest for celestial understanding.

In fact, the introduction of the great astronomical tool of the astronomer, the telescope, was resisted by the Chinese until the mid-19th century. Star maps were used though, including the now famous Dunhuang map from the Tang dynasty, which was hidden by Buddhist monks in the Mogao Caves until it was found in the 1900s.

Des was part of a 23-member party from the UK that would join with other groups, adding up to a total of about 300 people from various different countries. The Chinese were well aware of the interest in the eclipse and made the international visitors most welcome, providing special entertainments for the groups, before and after the event itself.

The reason that the part of the Gobi Desert near the city of Jiuquan was chosen as the destination for the group was that the weather conditions are generally ideal there. There was a predicted 90% chance of clear sky, so although the duration of the eclipse would be limited to just 1m 56s, it would still be a very worthwhile trip.

The groups were transported to the observing site by coach, forming a large convoy on the desert roads. Once there, they began to make their preparations. These included setting up many cameras, camcorders, filters, laptops etc to capture images of the exciting phenomenon. Though he had not seen one before, Des was determined to capture some photographs, and so had been practising with his camera in the months running up to August. When photographing the unobscured Sun, a solar filter had to be in place, but once the Sun was totally eclipsed the filter would have to be removed. This had to be done quickly and smoothly so as not to upset the camera settings. There were many people there who had observed a lot of eclipses before (up to 27!), so tips and help were available.

As the event neared, hopes were not very high. Clouds were present, as shown in some more of Des's pictures, and they looked like they might well persist and block the eclipse, preventing any direct observations. Thankfully though, the clouds did clear bang on time and the passage of the Moon across the face of the Sun was completely unobscured!

Des did manage to take some pictures, including first contact, the ingress of the Moon across the Sun's disk, and the full eclipse itself. Different settings on the camera were tried to allow more detail in the corona to be seen in the photographs. As well as his own pictures, Des showed some taken by experienced eclipse photographers, and pointed out the different details that were visible in some of them, including a large prominence from the Sun's limb in one of them.

Soon, of course, the eclipse was finished, and a picnic was enjoyed under the clear skies of the Gobi Desert. The coaches then took the party back to Jiuquan, but along the way they stopped in the darkness

and allowed the visitors to spend an hour or so under the pristine, black, desert skies. The Sungazers got a chance to enjoy a wonderful nighttime vista that followed on from the daytime conjunction they had travelled to see – a nice bonus!

In summing up, Des commented that in his opinion a first time eclipse viewer should perhaps concentrate on just soaking up the occasion, not fiddling with cameras, filters and other equipment in such a short space of precious time.

Following on from his exploits in China, Des then spoke a little about observing eclipsing binaries. This is something he is heavily involved in, and he does this with a laptop, a digital SLR camera, some software and a photo tripod. This shows how a limited amount of equipment can acquire really accurate data from observational photographs.

In particular, Des is keen to get as many people as possible observing the strangest eclipsing binary of them all: Epsilon Aurigae. It is an easy star to find, being part of the triangle of stars that is headed by Capella, and during its eclipse the magnitude drops from 3.0 to 3.8, which is quite noticeable. The nature of the eclipsing object is not known, but it is suspected to be a large cloud of interstellar dust or gas, or possibly the leftover material from a bout of planetary formation. It is certainly too large to be another star.

Observations of this eclipse are important, as at any one time there may only be a very few people able to make them. Visual estimates are good, and two nearby stars (zeta and lambda Aurigae) provide good steady magnitude comparisons. Photographic observations though, can provide measurements that are accurate to +/- 0.02 magnitudes! That's quite a bit better than the 0.1 magnitudes the human eye can manage! A short series of 5-second exposures with an 85mm lens can be stacked and interpreted by computer software, to reveal these mind-blowingly accurate magnitude comparison values. When you think about it, such good accurate scientific results coming from such a fairly simple level of equipment is quite amazing.

If you want to have a go at observing the eclipse of Epsilon Aurigae (which can last for 21 months) then first contact is expected on or around 8th August this year. The next time that the event will happen will be in 27.1 years time, so if you want to sit this one out remember to set your alarm for 2036!

Thank you to Des for sharing his Eclipse Odyssey with us and for inspiring us (maybe) to take a closer and longer look at one of the stars near Capella this autumn.

Telescope Breakout

Eric Walker hosted the Telescope Breakout group, giving a demonstration of his "throw it in the car" 4.5" Tasco Newtonian on equatorial mount. This particular telescope introduced Eric to astronomy, and many of his astronomical photographs were taken through that tube. He has modified the mount somewhat, but that is almost expected of amateur astronomers, as they learn from experience and 'tweak' their hardware to give the results they want from them.

The discussion included the topics of collimation, secondary obstruction, using an equatorial mount, portability, eyepieces, and more, and was educational and enjoyable.

Next month's Telescope Breakout will also be Newtonian-based, but on a slightly larger scale...

Next Time

Please don't turn up at The Green House on Tues 4th August, as we won't be there! We will be at **Smithton-Culloden Free Church, Murray Road**, for our meeting, starting at 19:30 as usual. The 'Youngstars' group will start at 19:00 as usual. Maarten de Vries will be speaking on 'Planet Exploration with Robotic Vehicles' and will be showing off the Martian rock samples collected with his very own radio controlled Mars Rover (maybe...)! There will also be a Breakout hosted by Paul Jenkins showing off his Dobsonian telescope and discussing it with interested members, and we will get to sample our new surroundings throughout the meeting. It would be great if you could come along as we would like to get feedback about our new meeting venue as soon as possible.

In the meantime, enjoy the rest of July and don't forget the suncream!

See you in August,

Antony