

# *Stargazey Pie!*

*A slice of Highlands astronomical life!*

Tues 5<sup>th</sup> April 2011

## INTRODUCTION

April is AGM month of course, and this one was no exception. There was a reassuringly large turnout this time round, which bodes well for interest in the future plans of the Society. Could it also have been because of a home-grown talent giving a talk on Stellar Cannibals? I'm pretty sure it was. The meeting started with the regulatory AGM business before moving on to the (even more) interesting stuff...

- **Membership fees and programme.** Fees are now due. Please let the Treasurer have these at, or by, the May meeting. Fees are set by the members at the AGM, and this year there have been no changes to them. You should have received a membership form, either by email or post. Forms are also available at the front desk at meetings, or from the Treasurer or Secretary. James McTaggart and Michael Marett Crosby are currently compiling the programme for the next year, which will be ready by the May meeting. Look for it in your email inbox or letterbox sometime soon, and they will also be available at the desk.
- **Venue.** We meet in Smithton-Culloden Free Church, Murray Road, Smithton IV2 7YU. The new facilities are superb and the owners are very approachable and helpful. If there is anything you think can be improved, please mention it to a Committee member.
- **Raffle Prizes.** Our very successful raffle continues to generate useful income for running the Society. Any prizes which members care to donate will be gratefully received. No Ferraris have been donated yet, so if you want to be remembered for something impressive... Arthur and Lorna continue to organise prizes, but as Arthur is now chairing the meetings, Pat Escott is the one doing the official mugging.
- **Solar Saturdays.** These are now back on and take place on, funnily enough, Saturdays. They will run from 14:00 – 16:00 although the session may go on later depending on the session supervisor and the weather. A rota is being prepared for this so that the Observatory will be manned on Sunny Saturdays as often as possible this summer. If you are interested in training to be a Session supervisor, please contact Gerry, Rhona or myself (Antony).
- **HAS Stargazey Pie.** As you will have noticed, I have taken up the reins again of the club's newsletter. From the AGM Meeting onwards the *Pie* will be sent to all members who are unable to attend the monthly meeting.
- **Apollo 15 Astronaut.** Al Worden, of the Apollo 15 mission, is giving a public lecture at Glasgow Caledonian University on 20<sup>th</sup> May 2011. For further information go to [www.walkwithdestiny.com](http://www.walkwithdestiny.com)

## **Shooting Stars: Other Important Club News!**

Naturally, the AGM always brings some interesting news re the future of the club. You should have received all the documents by email already, and they will be on our website at some point very soon, so you have the basic information. The Treasurer's and Secretary's reports were unanimously favourably received, and the only real shocker was the proposal of TWO (not just one but two) changes to the Constitution!

These were to change the title of the leader-person to a gender-accurate "Chairman" or "Chairwoman" instead of the previous androgynous "Chairperson", and to increase the number of Committee members by two. These were both well received with no objections, despite the fact that the Committee now apparently outnumbers actual members by a ratio of 3:1.

So who are the Big Cheeses now? Well, Arthur has been elected Chairman, following on from his experience as acting Chairman after Eric Walker stepped down due to work commitments. Pat Williams remains as the Society's Secretary, though the office's duties have now been spread out between her, James McTaggart and Michael Marett Crosby. Pat will continue to organise general Society matters while James and Michael are concentrating on organising our programme for the coming year.

Speaking of which, if you have any suggestions or comments to make about speakers of late, please direct your enquiries and comments to one of the above. The dynamic duo are also working extremely hard to try and bring us some speakers whom they have approached at the Astrofest conventions over the last couple of years. You see it's not all fun; they really go down there just to "network" for us.

Pat Escott had something to say about the recent joint meeting at Nairn with Sigma. The talk given by Prof. J. Morrison on Black Holes was sublime apparently, with the most complicated of subjects being handled in such a way as to make it extremely manageable and enjoyable. Sadly, the turnout was rather disappointing, a point brought up by Tim and heartily endorsed by our new Chairman. Speakers of this calibre are hard to come by and really are outstanding to listen to, so it is hoped (no, ordered) that if any further events like this take place that we might be able to ensure a larger turnout for our esteemed guests.

## **Highland Skies – April 2011**

Saturn's back.

We're officially into British Summer Time now – can you feel the change? No need for the multiple layers of thermal underwear now; a single one should suffice. The disadvantage for the observational astronomer is that the evenings gradually begin to draw out and astronomical darkness falls later and later each night. At the moment it's sometime after 9pm.

There is a small advantage though, and that is that it's now possible to get home from work, eat, and set up your equipment in daylight or dusk ready for nightfall. This can make things easier if you're not a frequent observer or have not fully got used to newly acquired equipment. Simple things can sometimes be so important when setting up telescopes for the first few times or if you're out of practice.

Saturn's back.

For example, you've got a new equatorial mount but are not sure exactly where the counterweight should be positioned to balance the 'scope. This is easier to experiment with in daylight and requires no darkness to complete. Same with balancing the tube assembly in the mount's cradle or dovetail clamp. These two simple tasks are yet so important because if you have a set-up that is not balanced, and either the Right Ascension or Declination lock becomes undone, the result could be a heavy weight or expensive telescope tube swinging round and crashing into your tripod/head.

While waiting for darkness to fall you can revise your list of intended targets. Sort through them in order of possible appearance and decide on an observing plan. You will be able to gauge the weather and make a guess at how many minutes it will be before it clouds over or starts to rain – that's always a fun pre-observing game.

Saturn's back.

Assuming you get set up and the skies co-operate, the April sky is rewarding as long as you stay out late enough to see its treasures. The constellation Leo is at its highest this month at about 10pm and by itself has a huge selection of galaxies to observe. Very tempting if you're the owner of a larger telescope with a dark sky site. Virgo is getting higher too and the area of sky between Leo's hindquarters and Virgo is littered with galaxies to hunt down. In fact sometimes there are so many so close together that it can be difficult to discern exactly which one you are looking at!

Owners of smaller telescopes should not feel left out though, as the summer constellations of Hercules and Lyra make appearances in the late evening as the month draws on, with several showstopping objects within their borders for medium sized refractors or smaller Newtonians. M57, the Ring Nebula, is always something I look forward to revisiting after it has been lost to us for a few months. Likewise M13, the Great Hercules Cluster, and its neighbours M92 and NGC 6229.

Did I mention that Saturn's back too? In the constellation of Virgo, the ringed planet shines brightly at magnitude 0.7 or so and its rings continue to open out again. To find Saturn simply follow the arc from the handle of the Plough down to Arcturus in Bootes, then about the same distance again. Saturn is fairly low just now but will climb higher through the coming months. For me, the first 'challenge' in observing Saturn will be to see just how difficult it is to see the Cassini division with the rings still at a relatively shallow angle to us.

Then there's the whole Solar Observing thing, but I'll go into more detail on that next month. In the meantime the Solar Saturdays at the JSL Observatory are back up and running and the Sun is very, very active right now. Hopefully, when it comes to observing this month, we will be too.

### ***The Main Event 'Stellar Cannibals' by Amanda Smith***

Amanda Smith is a member of HAS, having joined in her teens. She first became interested in astronomy aged 6 and has developed that interest academically. She has a PHD in Astronomy, attained through the Open University, with whom she is now a lecturer.

Amanda's principal area of interest is binary stars, and this talk was an introduction to us on the interactions of close binaries and the processes that take place within these star systems. The presentation started with some images of popular double or multiple star targets, including Alberio, Mizar & Alcor, Polaris, Sirius and the Double Double in Lyra. Some of these can be seen to be multiple with the naked eye - Mizar certainly - but it takes a telescope to resolve the companions to the other stars.

Binary systems consist of two stars which orbit one another, or more accurately, orbit a common centre of gravity. Some orbit this point very quickly; Algol in Perseus for example has an orbital period of only 3 days or so. The brightness can be seen to change when the companion star transits the primary, and observing short-period variables like Algol can be very interesting and rewarding for visual observers.

To take this observation a bit further though requires the application of science. Spectroscopy is the spectral analysis of the stars being observed, using spectroscopic equipment. This reveals what the star is made up of - its chemical elements. Absorption lines, and their positional changes within the spectrum over time, show us the direction that the star may be moving in. For example, when a star moves away from us the lines are shifted toward the red end of the spectrum. When it moves towards us, the lines are blue-shifted. By interpreting detailed studies of binary stars using spectroscopy the orbital period can be very accurately determined. This was demonstrated in an excellent animation of an orbiting binary system

in motion and the effect on the two stars spectra relative to their movement. This sort of physical demonstration is a great tool for showing complicated mechanisms in an easy to understand format.

The main point of the talk was the fact that some binary systems are so close together and so unstable, that one star actually begins to leach material off its companion. The processes involved in this transfer of matter are amazing, with an accretion disc of material forming around the leaching star, usually a white dwarf. The donor star's material is often hydrogen-rich, and when sufficient amounts of this material reach the dwarf star, nuclear fusion can occur resulting in a dwarf nova outburst. Other types of outburst can occur, depending on the circumstances and amounts of energy being transferred, including classical nova outbursts and Type 1a supernovae.

Amanda went on to discuss various technical aspects of these processes, including the 3:1 resonance of the accretion disc to the donor star. Similar to the resonance of the "shepherd" moons in Saturn's rings, these resonance relationships are fundamental in creating the regularity within the instability that causes the semiregular cataclysmic outbursts of energy.

This was a fascinating subject, and the talk was delivered very professionally and in a manner that made the complex information more easily understood. This was Amanda's first talk for us in the Society, and that being so, I can only look forward eagerly to her next!

### ***Next Time***

The next meeting takes place on Tuesday 3<sup>rd</sup> May at 19:30 in our regular venue, the Smithton-Culloden Free Church. The Youngstars group will meet for half an hour at 19:00. The subject of the main talk will be "The Moon Landing Hoax" and Ken MacTaggart will be giving it, so expect a fully rational discussion of the subject. Suitable subjects for Break-Out Groups will also be discussed at that meeting, so be sure to come along and share your ideas for these invaluable educational and entertaining mini-sessions.

The other usual activities will all be present too: the tea and biscuits in the luxurious new dining area, the chance to catch up on the latest observations and happenings at the observatory, the chit-chat and equipment discussions, and of course the chance to win some lovely prizes in the club's raffle.

See you then at Smithton-Culloden Free Church. Until then, Clear Skies!

***Antony McEwan***