Stargazey Pie!

A slice of Highlands astronomical life!

Tues 5th May 2009

Introduction

May's meeting of the Highlands Astronomical Society was a belter! We had a huge turnout to hear Howie Firth giving his talk, enigmatically titled "Sirius Red", and as a bonus we got an update on the progress of Space Tourism in Scotland. A discussion group and a telescope-focused breakout followed tea break, and there was much in the way of news, views and updates. Examples of which are in the notices below:

- **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. As a special bonus, Prof. Brown may do some magic tricks just for you…

- **Observing Sessions.** Regular sessions are no more, due to the totally unforeseen eventuality of something called "light evenings". However, although there are none officially planned at this stage, this will be reviewed in light of the Lunar 100 observing challenge mentioned at the last meeting. Updates on Summer Sessions will be announced on the website front page. The next season's opening night is planned to be and open night on Sat 19th Sept.

- **Seeing Stars.** The latest 'Seeing Stars' is by yours truly (Antony McEwan) and is about the Moon and two globular clusters. The title generated by the Inverness Courier (in which it was published on Fri 1st May) is way too long to bother typing, so I'll just refer to it as "May's Moon and Clusters". It can be viewed on our website here: http://www.spacegazer.com/index.asp?pageid=147432

- **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. The most recent webcast successfully showed the coincidental "X" formed by the rims of various craters at the terminator's edge, as well as Mercury

- **HAS Messier Challenge Update.** Please let a member of the Committee know if you are approaching completion of one of the Messier Challenge Sheets, or if you need some help to find particularly obstinate objects. At the May meeting both Eric and myself announced completion of the Bronze sheet, and so we hope to receive our certificates and Ferraris at the next meeting. Silver next, when it gets dark again…

- **Lunar Postcards.** So much has already been said about the lunar postcards that it's unnecessary to make further ado about them really. They're available, and they're cheap. Only £1 each: still as cheap as they were three years ago – talk about rolling back the prices! Buy a lunar postcard and beat the Credit Crunch blues today.

- **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.

- **Scope Calculator Update.** Maarten has updated the Telescope Calculator on our website so that you can now specify the size and resolution of a CCD chip or DSLR. Useful indeed for all the budding astro-photographers in the Society. You can access it here: http://www.spacegazer.com/index.asp?pageid=74737

The Main Event
'Sirius Red' by Howie Firth

Howie Firth was the director of the first Edinburgh Science Festival in 1989, creating a format for such events that has been adopted worldwide. With experience in teaching, writing, broadcasting and publishing, He's won various awards for his work in communicating science, including an honorary degree from the Open University, an MBE, and an award from the Institute of Physics. Primarily though, Howie is a mathematical physicist with a deep interest in the history and philosophy of science.

Howie started the presentation by clarifying a definition of 'science'. He described it not as a body of knowledge, but rather as the ongoing process of research and discovery. The practitioners of this pursuit, the scientists, can fall into different categories or 'models'. The detective, for example, will unceasingly question the evidence that they have obtained in order to be 100% sure of the identity of a crime's perpetrator (at least they do in fiction. Whether this applies in real life is another matter.) Journalists too must question the information that has been fed to them and be sure that it is true and unbiased; that it is not being presented to them for ulterior motives. The practitioners of many different religions must continually question too, solving problems based on dogma and finding within themselves ways to understand the unfathomable.

All of these types of people, and more, are using what Howie described as the "scientific method" of acquiring new knowledge, and using experimentation or observation to correct errors, update data or prove new hypotheses. It seemed to me that the talk had two subjects: the question of Sirius's mysterious redness and the use of he scientific method to try and unravel the answer to the riddle it presents.

The redness of Sirius was an excellent example to use in a talk based on the scientific method though. How many of us have observed Sirius? Probably most of the people reading this. How many have seen it as red? Probably none. And yet we can read reports from thousands of years ago that tell of Sirius being as red as Mars! Ptolomy writes one such testimony in 150AD in his Almagest. He quotes Hipparchos' list of six bright red stars – one of which is Sirius!

So there is a question about Sirius. We now see it as bright blue-white, and yet there are reliable historical observations that report it being red. How can this be? What mechanisms exist that can explain this change? Can we narrow down the timing of the observations to try and pinpoint the time when it changed from red to blue-white?

Employing the scientific method that Howie illustrated at the beginning of his talk can do all this. We know the dates of several of the "red observations", so we have to examine them and see how reliable they are and try to discover if any outside influences can have affected the observations.

Running alongside the interpretation of these reports is a tale from the Greek historian Plutarch, who tells how the death of the god Pan was revealed to a sailor, Thamus, between 14 and 37 AD. A voice on the wind told Thamus to announce that "Great Pan is dead" when he reached Palodes. This can be held to be relevant as gods were generally thought to be represented in the sky by stars and/or planets. Also, the colour generally associated with health and vitality is red, or ruddiness, whereas white is traditionally a colour of death. By combining the folk-tale and the observational reports of Sirius, it could be hypothesised that a change came about in Sirius's nature between 14 and 37AD and was interpreted as the death of the god Pan in mythology.

However, that does assume that Sirius was used to represent Pan celestially, which could be the case as the Greeks associated Sirius with Pan, whom the ancient Greek poet Pindar called "the shape shifting dog of the great goddess".

The reports of Sirius being red seem to die out around the end of the first millennium. In 650AD St Gregory of Tours described Sirius as red, but it is thought that he could have been merely copying an older text and had not made the observation himself. That would discredit the "red observation" for 650AD, meaning that the change could have occurred earlier. Also, it has been suggested that in his own observations, St Gregory may have confused Sirius with Arcturus! However, the change of colour may not have occurred between 14 and 37AD after all, as in 50AD Cicero describes Sirius's "ruddy light".

So, we are stymied again. As you can probably tell by now, in answering one question we are presented with several more. It is exactly this ongoing process of discovery and continued research that is the modus operandi of the scientific method!

Ultimately, having discussed various issues in the pursuit of an "answer" to the question of Sirius's ruddiness, Howie opened the matter to discussion. The subject of effects of variability in stars was brought up. Events such as the casting off of stellar matter or dust could, hypothetically, introduce a colour cast to a star. There is also the matter of Sirius's binary star status, having a companion star that might in some mysterious way have caused a change in the perception of the star's colour, though the argument against this is timescale.

In opening up the subject to debate and presenting us with these questions, Howie had achieved his goal, which I think was to show the scientific method in action. To show how we ask ourselves questions and, having answered one question at a time, phrase the following questions based on the answer found to the preceding one. This is the way of discovery and attaining knowledge that is used by the detectives, journalists and worshippers mentioned at the beginning of his talk, and of course by all the scientists who have ever asked a question like, "How does that work?"

Howie could give a talk on paint drying and make it seem exciting, thought provoking and dynamic. For he would not only show the paint drying, but he would also force us to ask questions based on the natures of paint and the material that had been painted, the outside influences affecting the drying process, and the various conclusions we could take from the whole. But most importantly, he would give us more questions to ask about paint drying than we would ever think possible!

So thanks for giving us the questions, Howie, and for showing us how to find the answers…

Bonus: Space Tourism Update

Howie gave us a very interesting and bang-up-to-date resume of the progress being made by Virgin Galactic in their drive to develop space tourism for the masses. One of the fantastic things about the VG program is that they are looking for sites to launch their space tourism vehicles from, and Lossiemouth is a leading candidate!

Testing of the new White Knight II vehicle is going very well, with its fourth test flight being very successful. There are some concerns about the bounce of the tailplane when the vehicle lands, and they are looking at that closely.

VG are becoming slightly concerned about the time needed to develop the vehicle and launch sites. There are nearly three hundred people who have paid reservation fees for seats on the first flights, so the organisation is naturally focusing on getting the program underway, probably from their Spaceport America facility in New Mexico. They hope to have the first flights blasting off in 2010 or 2011.

Kiruna in Sweden is being considered very favourably as a follow-up site, possibly being operational in 2012. Recently the organisations behind the Kiruna development invited a party of astronauts and space experts over and laid out the red carpet for them. They are very keen to get the second spaceport in Scandinavia and are doing everything in their power to link the project with the concept of tourism, even going so far as to allow travel agencies in Scandinavia to sell tickets for the space flights!

With Lossiemouth being another site under consideration for space tourism development we should consider what we can do to promote the Highlands. The fact that we have active astronomical societies in the area is a good start. Howie said that it showed we were a forward-looking area and were keen to develop new ideas. The Highlands are very much a tourist area already, and people do come here expecting dark, clear skies, and if we can encourage the link between astronomy and actual space tourism it can only improve the odds of getting Lossiemouth operational as a spaceport.

Scotland, as part of the UK, has close links with the USA, and the infrastructure of Lossiemouth as a military air base is a good basis for development. The political climate in Britain is also fairly stable and reliable, making it an attractive proposition for international development. The website that Howie is involved with that promotes Scotland as an ideal site for space tourism and also reports all the latest news on the program, is www.spaceportscotland.org. He recommended that we visit the site regularly to get the latest news, and to make our interest and support known. Also, please promote the site: tell people about it and make it even more well known!

Apart from the political, geographical and logistical advantages to Lossiemouth being used as a spaceport, it may be that there is a personal inclination towards Scotland as a site for a spaceport. Richard Branson's wife is Scottish, as are the President of Virgin Galactic, Will Whitehorn, and other important members of the development team! If we want to see regular space tourism flights launching from Lossiemouth, and enjoy all the benefits that they will bring to the area, we need to promote the area as much as possible, and hope that the call of the Highlands is loud and clear.

A Note on the Breakouts

I was very pleased to see such interest in my first telescope-specific Breakout group. I had taken along my Equinox 120ED Apo refractor and gave some background information on the telescope, its performance, features, and how and why I use it. Questions were asked, answers given, and discussion enjoyed.

It was the first of a new type of Breakout group. The Equipment Nights are no more, but it is hoped that a series of telescope-specific sessions, where owners show off and explain their telescopes to an interested audience, may help to de-mystify the telescope for beginners, and provide insight and technical information for experienced observers and novices alike.

If you own a telescope and would like to demonstrate it, show it off, discuss its features, or even just air a discussion about the type, please contact Eric Walker to arrange a slot. It doesn't have to be a long presentation – whatever you can manage will be fine.

Next Time

The next meeting will take place on Tuesday 2nd June at the Green House, starting at 19:30. The Youngstars group will again run from 19:00 to 19:30. The speaker at the main meeting will be Melvyn Taylor of Leeds Astronomical Society and his subject will be "Blinking Stars" (variable stars). There will be breakout groups afterwards, refreshments and a chance to et together with the other members and discuss life, the universe and everything.

See you on June 2nd,

Antony