

Stargazey Pie – June 2012

Society Notices

1. 2012-13 Programme Update and Dates for Your Diary.

Copies of the Programme and membership forms are available at the front desk and can be downloaded from the website.

2. Please keep the **weekend of 7th, 8th and 9th September 2012** free. “A special event to celebrate the all new **Orkney Astronomy Society** (OAS) during this year’s Orkney Science Festival which is from 6 to 12 September. The event is exclusively for members of HAS, Sigma, Caithness Astronomy Society, OAS and Shetland. Individuals can of course extend their stay”. Further details will be available later.

3. If Orkney is too far, then that same weekend the **BAA** has their weekend **meeting** at **King’s College, University of Aberdeen AB24 3FX** to consider Sun, Aurora and Noctilucent Clouds.
<http://britastro.org/baa/>

4. The Caithness Astronomy Group now has a website.
<http://www.spanglefish.com/caithnessastronomygroup/index.asp>

They have sent HAS members a warm invitation to join them if you are in the area.

5. Wed. October 17th Apollo 12’s Command Module Pilot Dick Gordon will be in Glasgow.
<http://www.walkwithdestiny.com>

6. Solar Saturday Observing Sessions - JSL Observatory, NTS Visitor Centre Car Park, Culloden Moor. Please check www.spacegazer.com before setting out.

Date	For Whom	Time	Supervisor
Sat. 09 th Jun.	public and members	14:00 – 16:00	Pauline
Sat. 16 th Jun.	public and members	14:00 – 16:00	Steve C.
Sat. 23 th Jun.	public and members	14:00 – 16:00	Pat W.
Sat. 30 th Jun.	public and members	14:00 – 16:00	Antony
Sat. 07 nd Jul.	public and members	14:00 – 16:00	Gerry

From April to mid-September, weather permitting, Solar Saturdays will be held at the Observatory.

7. The Next Meeting is on Tuesday 3rd July 2012.

Our two Schools' Representatives Samantha and James will give a talk entitled *Dark Matter*. The “**Youngstars**” session for 8-14 year olds, before the main meeting, will run from 19:00 until 19:30 led by Pauline and Triona.

8. The Aurora and Telephone Alerts.

The Sun is active. Aurorae are forecast. Should you see an aurora, noctilucent clouds, sprites or anything else of astronomical interest please alert Paul (01667 456789), Pauline (07751 112586) or Pat W. (0793 0183 999). It is never too late at night. We currently have 35 members who are happy to be contacted in the wee small hours.

9. Images of HAS Events.

Maarten would welcome digital photos to use on the website. Please send him your best images to <mailto:maarten@spacegazer.com>

Venus: The Planet and its Transits

Every civilization has seen it and our next opportunity was just a few hours away.

This month's speaker was Dr Gordon McKenna of HAS and his subject was Venus and its transits. Gordon has been a medical consultant at Raigmore and in NHS Grampian since 1997 and stargazed all over the world, including Crete, the South Pacific, and Afghanistan.

At magnitude -4.6, Venus is one of the brightest objects in the night sky and was initially thought by some cultures to be two stars, the Morning Star (Phosphoros in ancient Greek) and the Evening Star (Hesperus). But the Hellenic Greeks adopted the Babylonian idea that it was one object. It is still remembered in the English word *Friday*, named after the Norse goddess Friga; Friday is Venus-Day.

Telescopes reveal very little of Venus save for its phases, although these, as seen by Galileo, did provide crucial evidence to support the Copernican model of the Solar System. Some detail can be seen of cloud tops, and this has led to some spectacular mistakes, for example Percival Lowell's drawings of canals on Venus, possibly caused by effects within Lowell's own observing eye.

Venus has the most circular of all orbits, and its orbital period is 224.7 days. Eight Earth orbits equals 13 orbits of Venus, creating the possibility of observing transits of Venus in front of the Sun. These transits occur in intervals of 8 and then 125 years, and would be more regular if the orbit of Venus was not inclined at 3° to that of the Earth. The last was in 2004 and the next after 6th June 2012 will be in 2117.

Spectroscopic studies of Venus have revealed the predominance of carbon dioxide and sulphuric acid in the planet's atmosphere. Radar imaging, beginning with those from the Arecibo telescope, has identified topographic features, and these have been given female names in all cases but one,

the Maxwell Montes, named after James Clerk Maxwell of Aberdeen. Gordon revealed that there was a plaque commemorating Maxwell beside a Thortons' chocolate shop in that city.

Remote exploration of the planet began with NASA's Mariner 2 mission in 1962, the first interplanetary spacecraft. Mariner established Venus' rotational period as 243 days, meaning that a Venusian day is longer than its year, high surface pressure and a surface temperature of 449°C. Venus is hotter than Mercury with only 25% of its solar radiance because of a greenhouse effect caused by the atmosphere.

The USSR launched 16 Venera and Vega missions to Venus of which 10 landed – Venera 7 was the first to land, surviving 23 minutes on the surface, and Venera 13 was the first to send back images. These revealed a rock-strewn surface under a brown cloud cover. US Pioneer orbiters created Mercator projection maps of the planet, and there have been slingshot flybys by missions like Galileo and Cassini, but the most detailed survey has been by NASA's Magellan mission, which mapped 98% of the surface.

Most of Venus is very flat. Some 60% of the surface is within 1600 feet of the mean radius.

Venus' internal structure consists of a mantle and core, but the core is not hot enough for convective currents. There is no magnetic field and also no plate tectonics. Surface features include shield volcanoes, pancake volcanoes and impact craters. Is there life? Although the surface seems radically inhospitable, there is a possibility of life in layers of the atmosphere. A Russian mission is due to return in 2016.

The history of the transits are a testament to human endeavour and have involved some of the great names of astronomy from Tycho Brahe and Kepler to Mason, Dixon and John Harrison. The first predicted transits to be observed were probably those of 1631 and 1639, but Those of 1761 and 1769 enabled astronomers to measure the distance from the Earth to the Sun by parallax using Venus. Getting these measurements was not easy – Cook travelled around the world to Tahiti and Le Gentil to Pondicherry, where he was stuck for many years and, in the end, was not able to see the transit due to cloud. But the endurance and endeavour of these astronomers enabled accurate measurements, and Thomas Horsnby in 1771 presented the first reliable distances between the known planets and the Sun.

And what about this transit? The forecast for Nairn at 4 tomorrow morning is... Cloudy.

Some recommended books on Venus: *Venus* by Patrick Moore (2002: Cassell), *The day the World Discovered the Sun* by Mark Anderson (2012: Da Capo Press), *The Transit of Venus* by Peter Aughton (2004; Orion Books) and *Transit of Venus, 1631 to the Present* by Nick Lomb (2011: Powerhouse Museum)