The Messenger

Mexborough & Swinton Astronomical Society

March 2014

A Trip to Kennedy Space Centre

I was fortunate enough while on holiday at the end of 2013 to persuade the rest of my family to drop into Kennedy space centre to watch to launch of the mars atmospheric probe ascend into the clouds over Florida.

We spent the first half of the day walking round the rocket garden explaining to the children why all these rockets are important and what they have done. Then we visited the some of the exhibition halls around the site of which most have been built in recent years. Since 1998 the prototype shuttle ENTERPRISE has gone but has been replaced with what can only be described as a fantastic exhibition hall housing the magnificent ATLANTIS suspended from the ceiling with its cargo bay doors open for all to see. This hall also includes a shuttle liftoff simulator, several flight decks and many other exhibits which include a full size Hubble telescope.

Anyway, the afternoon involved a guided bus trip around KSC including a visit to the VLB, Apollo crawlers and the Saturn V hanger; the family were surprised to say the least at the size of the rocket not to mention the rocket nozzels. From the lawn adjacent the hanger we waited for approx 30minutes and listened to the final 20sec countdown, it was nail bighting, A cloud of steam appeared, then a rocket cone ascended out of it with a brilliant flame behind, my sons jaw hit the floor as it ripped into the sky followed by the thunder of an ATLAS V thruster, in seconds the rocket punched through the clouds at about 3,000ft, the sound was awesome, we glimpsed the rocket twice after that through gaps in the clouds to an overwhelming round of applause and cheering.



MAVEN should now be well on its way to mars and its results and photographs should be well worth the effort. Whether people are interested in spaceflight or not I can definitely recommend a visit to KSC.

Phil Muffet

Messenger by e-mail

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British Astronomical Society RAG 2014 General Meeting

I would be grateful if you could inform any of your Society/Club or Group members, who are interested in Radio Astronomy, of the General Meeting of the BAA Radio Astronomy Group which will be held at 10.30a.m. on Saturday 17th May at the National Space Centre, Leicester, LE4 5NS.
The last two meetings both sold out ahead of the day and were very successful, and therefore early booking is advisable.
Tickets for the event cost £12 for BAA members and £15 for non-members, including free parking at the NSC and free admission to the main attraction, excluding the Planetarium show. Tea and coffee will be provided during the breaks, but lunch is not included. Delegates are welcome to bring their own lunch or alternatively lunch can be purchased at the NSC shop (Boosters), which sells a range of sandwiches and other refreshments. (It would help the NSC if you could also note the number of people in your party that are likely to use Boosters when you book tickets).
This year Dr Klaas Wiersema (University of Leicester) will describe how new radio telescope technologies enable the exploration of the "transient" radio Universe, from the mysterious millisecond duration "fast radio bursts" to the energetic afterglows of gamma-ray bursts (GRBs) which are sometimes visible for years. The presentation will show how new technology is allowing us to study afterglows and other transients in a completely new way.
Supporting papers so far offered are: an ultra-low cost Hydrogen Line radio telescope (Peter East); the modelling of our local galactic topology (Gordon Dennis); the design of an Arduino-based magnetometer (Jonathan Rawlinson); making and analysing observations with Starbase (Laurence Newell); experiments with a small SDR radio telescope (David Morgan); and reports on developments at EAARO (Jason Williams) and the Harold Clayton Observatory (Dave James).
Tickets can be purchased by BAA and non-BAA .
Please contact radiogroup@britastro.org if you have any queries on the above.
You do not need to be a BAA member to participate in the radio group, or to attend this meeting and we welcome news of any activity related to radio astronomy.

March 20th, 2014 : Occultation of Regulus



The 45-mile-wide asteroid Erigone will pass in front of a very bright star (Regulus). The star is easily visible to the naked eye from all but the most light-polluted areas. Since the asteroid is much too small and dark to be visible, for people standing in the path of the asteroid's shadow one of the brightest stars in the sky will simply seem to disappear from the sky for up to 14 seconds.
Unfortunately the "eclipse" path doesn't pass anywhere near Swinton or Mexborough. The shadow will first touch land on the island of Bermuda at about 05:54 UT (12:54am ADT in Bermuda). It will then race northwest across the Atlantic Ocean, About 10 minutes later, around 06:05 UT, the shadow will pass over Long Island. It will then pass up the Hudson River Valley into the rest of New York State, and then finally follow a path into Canada.

Jupiter and the Speed of Light

The first real measurement of the speed of light came about half a century later, in 1676, by a Danish astronomer, Ole Römer, working at the Paris Observatory. He had made a systematic study of Io, one of the moons of Jupiter, which was eclipsed by Jupiter at regular intervals, as Io went around Jupiter in a circular orbit at a steady rate. Actually, Römer found, for several months the eclipses lagged more and more behind the expected time, but then they began to pick up again. In September 1676,he correctly predicted that an eclipse on November 9 would be 10 minutes behind schedule. This was indeed the case, to the surprise of his sceptical colleagues at the Royal Observatory in Paris. Two weeks later, he told them what was happening: as the Earth and Jupiter moved in their orbits, the distance between them varied. The light from Io (actually reflected sunlight, of course) took time to reach the earth, and took the longest time when the earth was furthest away. When the Earth was furthest from Jupiter, there was an extra distance for light to travel equal to the diameter of the Earth's orbit compared with the point of closest approach. The observed eclipses were furthest behind the predicted times when the earth was furthest from Jupiter.
From his observations, Römer concluded that light took about twenty-two minutes to cross the earth's orbit. This was something of an overestimate, and a few years later Newton wrote in the Principia (Book I, section XIV): "For it is now certain from the phenomena of Jupiter's satellites, confirmed by the observations of different astronomers, that light is propagated in succession (note: I think this means at finite speed) and requires about seven or eight minutes to travel from the sun to the earth." This is essentially the correct value.

Roman Jupiter

Jupiter was served by the patrician Flamen Dialis, the highest-ranking member of the flamines, a college of fifteen priests in the official public cult of Rome, each of whom was devoted to a particular deity. His wife, the Flaminica Dialis, had her own duties, and presided over the sacrifice of a ram to Jupiter on each of the nundinae, the "market" days of a calendar cycle, comparable to a week. The couple were required to marry by the exclusive patrician ritual confarreatio, which included a sacrifice of spelt bread to Jupiter.

The office of Flamen Dialis was circumscribed by several unique ritual prohibitions, some of which shed light on the sovereign nature of the god himself. For instance, the flamen may remove his clothes or apex (his pointed hat) only when under a roof, in order to avoid showing himself naked to the sky—that is, "as if under the eyes of Jupiter" as god of the heavens. Every time the Flaminica saw a lightning bolt or heard a clap of thunder (Jupiter's distinctive instrument), she was prohibited from carrying on with her normal routine until she placated the god.
During the Republican era, more fixed holidays on the Roman calendar were devoted to Jupiter than to any other deity

National Astronomy Week, 2014 March 01–08

The sixth National Astronomy Week (NAW) occurs from March 01–08. NAW is organised and promoted by a committee representing all the main astronomical organisations in the UK, including the BAA. Its purpose is to stimulate public interest in astronomy and space science through the organisation of events country-wide. The BAA is supporting NAW financially, and encourages all its members and affiliated societies and schools to organise, or otherwise take part in, events and activities aimed at bringing astronomy to the general public, particularly including observing activities.

The theme of this year's NAW is "Target Jupiter"; drawing attention to the fact that Jupiter will be ideally placed for observation during the evening in early March, at more or less the highest altitude it can obtain from the UK. Towards the end of the week the waxing crescent Moon will also be an attractive evening target, and of course the impressive winter deep-sky objects in Taurus, Auriga, Gemini and Orion will still be visible.

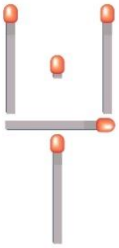
There will be an associated Star Count project to assess light pollution levels across the country, in collaboration with the BAA Campaign for Dark Skies and the Campaign for the Protection of Rural England, plus educational projects, including an attempt to reproduce Romer's measurement of the speed of light using phenomena of Jupiter's satellites, in association with Orwell Astronomical Society.

NAW should be well-supported by national and local media. The main source of information will be the NAW website:

http://astronomyweek.org.uk

This contains a calendar of events and a map showing where they are taking place in the country, as well as other information. Event organisers should register here (the process has been made as simple as possible) and input details of their events. Many events are already on there.

March Puzzle - An Olive in my Drink



Arrange four paper matches on a table as shown at right. They represent a martini glass. A match head goes inside to indicate the olive of a cocktail. The puzzle is to move just two matches so that the glass is re-formed, but the olive—which must stay where it is—winds up outside the glass. At the finish, the glass may be turned to the left or the right, or even be upside down, but it must be exactly the same shape as before.

Congratulations to this year's winner, Trevor Worrall. This year's competition was keenly fought, with Mick Nicholls coming in as the runner-up.

The President and the Professor by Brian Ventrudo

Many urban stargazers enjoy chance meetings with curious passersby who take an interest in looking through a telescope. But no one will likely receive the calibre of visitor who twice knocked on the observatory door of a lone astronomer in Washington, D.C. on a warm August night in 1863. The lone astronomer was Asaph Hall, a self-taught professor of mathematics at the U.S. Naval Observatory. Hall was an amateur stargazer who lacked funds for formal study, taught mathematics for a time, quit to assist at Harvard College Observatory for meagre $3 a week, then leveraged his skill and tenacity to gain a position at the U.S. Naval Observatory. Hall was promoted to full professor of mathematics at the Observatory by order of President Abraham Lincoln in May of 1863. So imagine Hall's surprise when he heard a knock at the trap door that separated the observatory floor from the office below and saw the striking figure of Abraham Lincoln himself emerging and walking towards him in the feeble light. The president was accompanied by his personal secretary John Hay (or according to some versions of this story, his Secretary of War, Edwin Stanton). Both men had walked through the dark streets of Washington to look through the observatory's telescope. The astonished Hall treated the president and his secretary to a look at the Moon and the bright star Arcturus through the 9.6-inch refractor.

Even during the American Civil War, Lincoln was a common sight in the streets of Washington. He shunned formality and security and often greeted casual visitors at the White House or at his small residence in Washington. Said Lincoln: "It would never do for a president to have guards with drawn sabres at his door, as if he fancied he were, or were trying to be, or were assuming to be, an emperor."

The president would occasionally relieve the anxiety of the war by indulging his interest in technology and science. Lincoln was a tinkerer with a curious mind and remains the only U.S. president to hold a patent (two actually). But something bothered him after his first visit to the Naval Observatory. So he returned a few nights later—alone—to question Asaph Hall about what he had seen. Lincoln was perplexed by his view of the Moon through the big telescope on his previous visit because it was clearly upside-down compared to the view he got through his own terrestrial spyglass. Hall explained to the president that astronomical telescopes lacked the extra optics to display rightside-up images. Satisfied with the answer, the president bade the professor farewell and wandered back to the burdens of his office. It's unclear whether they met again.

In 1877, Asaph Hall cemented his fame by using the observatory's 26-inch refractor to discover the two tiny moons of Mars. The names of these moons were chosen from Homer's Iliad in which, to stir up trouble, Ares (the Greek name for Mars, the god of war) summoned the gods Phobos (Fear)and Deimos (Dread).

Lincoln met his untimely end twelve years earlier when, shortly after winning a second term and seeing to the end of the Civil War, he sat with his wife, unprotected, and was shot at point blank range by confederate spy John Wilkes Booth at the Ford Theatre on April 14, 1865. He died early the next morning. Fear and dread indeed.

Trevor Worrall's March Skies

Planets

Mercury: Is at brightest on the morning of 13th at magnitude -0.7

Venus: A bright morning object for all this month. Greatest elongation on the 23rd

Mars: Located in Virgo, rising before midnight. Jupiter: Still around for imaging, this month found in or near the constellation of Gemini. High in the East at sunset sets before dawn.

Saturn: Rises in Libra in the South East after midnight, watch out for a close encounter by mid March where it will be 1.5 deg away from the Moon March 20th around 23:15 albeit close to the horizon

March Moon Phases:

New 1st, 1st Quarter 8th, Full 16th, Last Quarter 24th, New 30th

Constellations:

Bootes, Cancer, Crater, Hydra, Leo, Virgo

Classed as Spring constellations we have 6 either rising or already up for imaging the many targets in them for example the Leo Trio, a group of 3 galaxies a couple of degrees below the star Chertan. The trio can be captured easily in the field of view of a 80mm refractor and Canon EOS 500D with a suitable mount for accurate tracking for exposures between 3-6 Minutes

Comets in March

Comet Holmes is one of the more prominent comets in 2014. reaching Perihelion (closest approach to the Sun) March 27th. Orbits the Sun every 6.88 years. Holmes has a 3.2Km wide nucleus.

March 20 - March Equinox. The March equinox occurs at 16:57 UTC. The Sun will shine directly on the equator and there will be nearly equal amounts of day and night throughout the world. This is also the first day of spring (vernal equinox) in the Northern Hemisphere and the first day of fall (autumnal equinox) in the Southern Hemisphere.

This Month in History

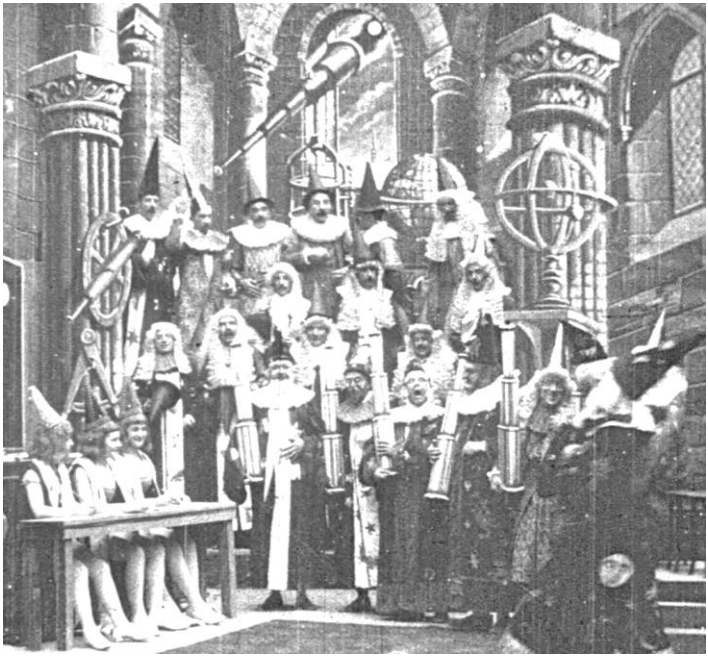
The Planet Uranus was discovered by William Herschel March 13th 1781 from his backyard 19 New King street Bath. Albert Einstein Born March 14th 1879

Icy Worlds of the Outer Solar System



Paul Money gave us one of his excellent talks on February 20th at the club rooms on the Icy Worlds of the Outer Solar System. His talk took us from Saturn's moons out past Uranus and Neptune to the dark cold depths of the Kuiper-Edgeworth Belt.

A lively discussion ensued at the end of the talk, with Paul giving back as good as he got. We hope to see Paul again later in the year.



Another Busy night at the Hoober Observatory for our members all resplendent in their official observing robes and the astrophotography group in their pointy hats

Astro Imaging Competition 30th January 2014

Congratulations to this year's winner, Trevor Worrall. This year's competition was keenly fought, with Mick Nicholls coming in as the runner-up. One of Trevor's "winning" photographs is shown below – The Horsehead Nebula in Orion.



Programme for March & April 2014

Date	Time	Location	Subject & Speaker
Thu Mar 6th	19:45	Club Room	**"Observing Jupiter"** *Roy Gunson*
Fri Mar 7th	19:45	Observatory	**PVE** *Les Marsden*
Sat Mar 8th	15:00	RSPB Old Moor	**Nature & Nebulae II**
Thu Mar 13th	19:45	Club Room	**"NASA's Maven Mission"** *Phil Muffett*
Thu Mar 20th	19:45	Club Room	**"Astrophotography"** *Dr Steve Barrett*
Thu Mar 27th	19:45	Club Room	**"Volcanoes"** *Alan Birch*
Thu Apr 10th	19:45	Club Room	**"Back to Basics"** *Paul D'Silva*
Thu Apr 17th	19:45	Club Room	**"A Tapestry of Orbits"** *Bob Christy*

Old Moor RSPB – Manvers Way, Barnsley, S73 0YF

PVE – Public Viewing Event

Web site: http://msas.org.uk

Meeting room is at Swinton Working Men's Club, Station Street, Swinton, South Yorkshire, S64 8AU.

Observatory is at Lee Brook Lane, Hoober, S62 7SH

Mexborough & Swinton Astronomical Society is Registered Charity N^{o} 1064103 in England & Wales

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For submissions to The Messenger - Editor: Roy Gunson: royg@gmx.co.uk

Last Month's Puzzle Answer

What happened on 2 February 2000 for the first time since 28 August 888?

When the date is written out numerically 02/02/2000 was the first time since 28/08/888 that all the numbers in the date were even!