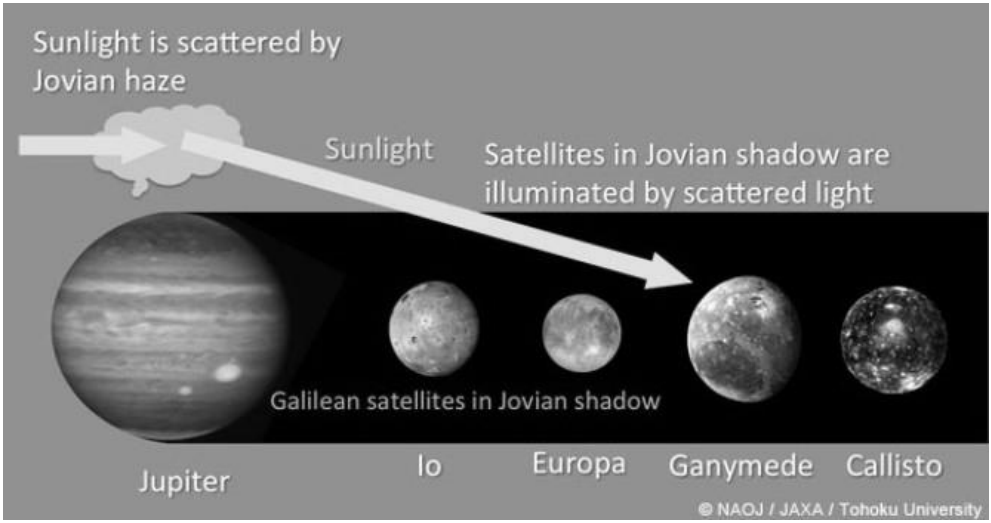
The Messenger

Mexborough & Swinton Astronomical Society

July 2014

Jupiter's Moons Stay Lit

Astronomers using the Subaru and Hubble Telescopes have found that Jupiters main Galilean moons (Io, Europa, Ganymede and Callisto) remain slightly illuminated (up to one millionth of their normal brightness) even when in the shadow of Jupiter and not illuminated by the sun.



It is thought that this is due to sunlight being scattered by the upper layers and hazes in Jupiters atmosphere. This is similar to the blood and red moons we get during total lunar eclipses on Earth due to scattering through the Earth's atmosphere.

Tsumura et al. 2014. **Near-infrared Brightness of the Galilean Satellites Eclipsed in Jovian Shadow: A New Technique to investigate Jovian Upper Atmosphere**. *Astrophysical Journal*, July 10, 2014

The Thoughts of Chairman Les



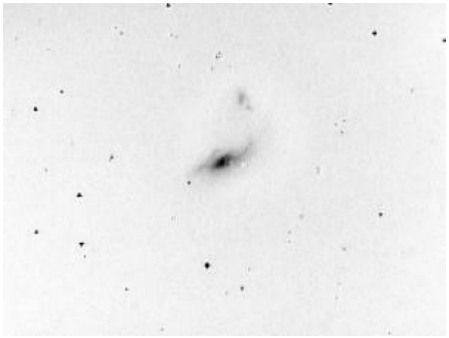
Our longstanding members with know, and our newer members might realise, that our society is always looking to the future for inspiration. Throughout our evolution we have done many weird and wonderful things to take our society forward. The items that have a visual impact is our meeting room that is first rate and totally dedicated to astronomy and the society and is due to us having a good relationship with our landlords, Swinton Working Man's Club. We have been in theses premises for many years, the 'room' that you see now was originally three separate rooms. When SWMC agreed for us take one of the rooms all those years back I'm sure they didn't dream, no did we, that we would become as large and as popular as we are today. From that first room which needed a lot of attention to bring it up to our standards we grew in number and the room became too small. We asked SWMC if we could remove the wall to the next room which would about double the area we had, it was agreed and we did the work over two weekends. After a few years the room was getting too small again so we asked for SWMC approval which was granted. This was in fact a double brick build wall with a fire place on each side; this meant that there were a lot of bricks and a chimney stack to remove. After some discussion it was decided that it was too large a job for the membership to undertake this time so we started to get some prices from builders for the job. To cut a very long story short we got the whole job done for about £3,000; it was a lot of money but we deemed it worth it but it took a lot longer than we had been promised. After all that work and money and the effort over the years we now have a meeting second to none. Our second target was to have an observatory away from street lights, as I had been brought-up in Hoober and knew how dark the area was but it was not on any bus route or anything else, so we started our search. After some considerable time looking at different areas we came back to Hoober. Back in 1952 I watched a new very large reservoir being built by Yorkshire Water never thinking that I would be using a building next door. After plenty of letters going back and forth Yorkshire Water granted us permission to use the land that we now have a fine building to boot. The observatory has served us very well and continues to do so. However we find that its popularity is overtaking us a bit and more room is needed for members to carry out their astronomical interests and the work involved. This is such a need that, as you may know, we had a meeting last month for a Feasibility Study as to an extension to the existing observatory building to overcome the shortage of space. If you feel that you could bring something of value to this kind of meeting please feel free to attend this month's meeting. I wish you clear skies

Les Marsden *Chairman*

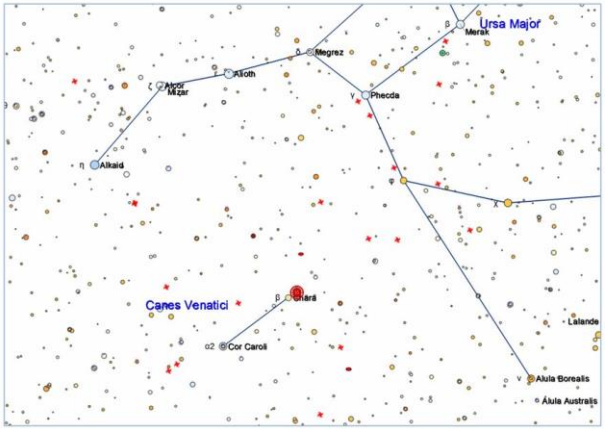
The Cocoon Galaxy

By Brian Ventrudo

Gravity is the weakest of the four main forces, but it is relentless, pulling massive structures like spiral galaxies together slowly and merging them into larger and featureless elliptical structures. Astronomers can catch a few of these galaxies in the act. Even a small backyard telescope shows the fairly bright Cocoon Galaxy which lies about 50 million light years away in the constellation Canes Venatici.



The negative image with a Mallincam video camera shows the two interacting galaxies warped and distended by a recent close approach. Gravity's pull has triggered a wave of star formation in both spiral galaxies, which are now distorted by their encounter. The larger galaxy is NGC 4490, while the smaller spiral is catalogued as NGC 4485. The 10th-magnitude pair lies just adjacent to the star beta Canes Venaticorum, or Chara, under the handle of the Big Dipper.



The two galaxies have already made a close approach. They have passed each other, but gravity will eventually bring them together again. Astronomers use the current state of NGC 4490 and NGC 4485 to test computer simulations of galaxy interaction and collision. Such simulations are essential to understanding galaxy interactions, including the collision between the Milky Way and the Andromeda galaxy expected in some 2 billion years.

With permission from "One Minute Astronomer" at:
http://oneminuteastronomer.com/

Moonlighting



July Night Sky

1st July: Both Mars and Saturn are moving towards the setting sun, which at this time of year is late evening. Mars sets just after midnight on the 1st July, Saturn follows just over an hour later. Venus rises in the east just after 3am and climbs to about 10° before sunrise.

4th July: At 10am Earth is at aphelion (1.017 AU from sun). Vesta and Ceres only $^{1}/_{6}{}^{th}$ degree apart

5th July: Moon at first quarter

12th July: Full Moon

19th July : Moon at last quarter

27th July: New Moon

28th July Delta Aquarids Meteors

31st July: Saturn and Mars are technically still evening objects , Saturn some 12° above horizon at sunset, magnitude 1.3, Mars even lower at 7°. Mars officially sets at 11pm, Saturn at midnight. Venus rises at about 3:30am and has been getting closer to the sun all month.

100 years ago

Sinope – retrograde moon of Jupiter was discovered in 1914 by Seth Nicholson at Lick Observatory. It didn't get its name until 1971, before that it was known as Jupiter IX or "Hades".

June's puzzle answer

The Cashier's Problem - An old man goes to a bank with a check of £200 and asks the cashier "Give me some one pound coins, ten times as many twos and the balance in five pound notes!" What will the cashier do?

Solution:

The smallest amount of one-dollar and two-dollar bills the cashier may give to the old man is 1x1+10x2=21.

He must give the old man a multiple of 21 i.e. 21 or 42 or 63 or 84 or 105 or 126 or 147 or 168 or 187; without exceeding 200. Out of all these numbers only 105 can be added to a multiple of 5 to sum up to make 200 altogether.

So he must give the balance of 95 in five-dollar bills. Therefore, the cashier must give 5 one-dollar bills, 50 two-dollar bills and 19 five-dollar bills.

Guest Speaker – June 19th



Kevin Kilburn gave us a talk on "Eric Burgess: Manchester's First Rocket Man" on a warm June evening. Even with the counter attraction of a vital England game versus Uruguay in the World Cup on the Telly, we had a good attendance of the high twenties in the club room.
Kevin started his talk with a look at the formation of the British Interplanetary Society founded in Liverpool and the political shenanigans that took it to London. He talked about the visitors to the Society in the early days such as Willy Ley. And the work done by Eric Burgess, Ken Gatland and Phillip Cleator.
Details of Kevin's talk can be found at

http://www.mikeoates.org/astro-history/burgess.htm

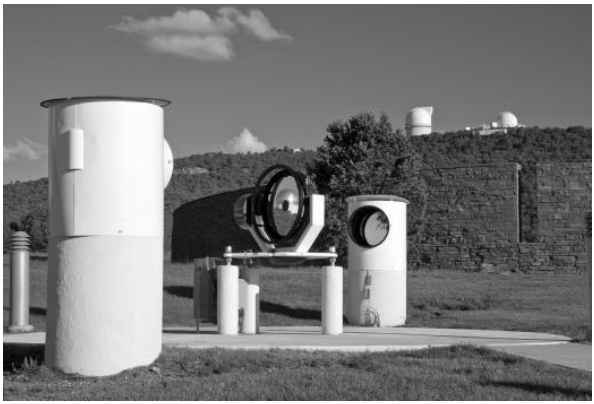
RSPB Solar Day – June 15th

The RSPB event was a poor show by our standards with thick cloud all day!
However we did have a few visitors who came to talk to us about observing the sun and our telescopes
Maybe next time we might have a presentation to run, but I doubt it would have made any difference on Sunday due to the weather.
Thanks to Tony Hood for bringing his scope & Mick W, Emma and Gary G for some company!

Tony Morris

The Pfund Telescope

The Pfund telescope, originated by August Herman Pfund (1879 -1949), provides a method for achieving a fixed telescope focal point in space regardless of where the telescope line of sight is pointed. One such telescope is now at the Austin McDonald Observatory in Fort Davis, Texas and is used to enable wheelchair visitors see the heavens from a stationary position. The telescope's two 18-inch (0.46 m) primary mirrors are aligned north-south, with a steering flat mirror cantered between, them to allow quick, easy access to the entire sky. The small movable portion of the design allows the telescope to move rapidly from one target to the next, while the eyepiece stays fixed. This high-speed pointing system will allow mobility-impaired visitors a much greater level of participation in star parties than previously possible.





The Pfund style telescope is named in honour of George B. Wren II (1917-1993) and Mike Marcario (1954-1998). . Mike Marcario was a McDonald Night Assistant during the mid-1990s, an optician who fabricated a key optical element for the Marcario Low-Resolution Spectrograph on the Hobby-Eberly Telescope, and friend of the Observatory.

Programme for July & August 2014

Date	Time	Location	Subject & Speaker
Thu July 3rd	19:45	Club Room	**Shakespeare & Astronomy** *Roy Gunson*
Sun July 6th	14:00	Hoober Observatory	**Solar Observing**
Thu July 10th	19:45	Club Room	**NASA's Maven Mission** *Phil Muffett*
Sun July 13	10:00	RSPB Old Moor	**View the Sun – Public Outreach**
Thu July 17th	19:45	Club Room	**Stars & Stone Circles** *Duncan Lunan*
Thu July 24th	19:45	Club Room	**TED Talks – Ideas worth Spreading** *Tony Morris*
Thu July 31st	19:45	Club Room	**The Stranger Side of Science & Astronomy** *Barry Jackson*
Sun Aug 3rd	14:00	Hoober Observatory	**Solar Observing**
Thu Aug 7th	19:45	Club Room	**Astronomy in Pathe News** *Roy Gunson*
Thu Aug 14th	19:45	Club Room	**The Herschels (Part 1)** *Trevor Worrall*
Sun July 13	10:00	RSPB Old Moor	**View the Sun – Public Outreach**
Thu Aug 21st	19:45	Club Room	**Constellation Corner** *Michael Waterfield*
Thu Aug 28th	19:45	Cub Room	**Autumn Sky**

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

RSPB Old Moor is at Manvers Way, Wath-Upon-Dearne, S73 0YF

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