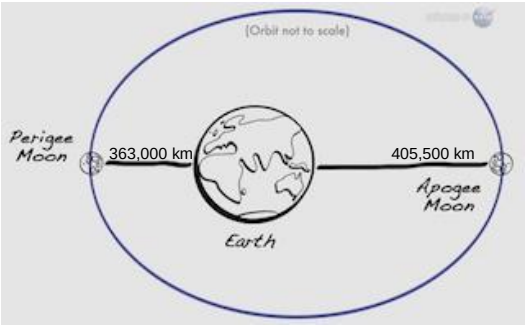
The Messenger
Mexborough & Swinton Astronomical Society
October 2019

Supermoon

Supermoons get lots of publicity from the media, but is there anything to them beyond the hype? If the term "supermoon" bothers you because it's not an official astronomical term, don't throw up your hands. You can turn supermoon lemons into lunar lemonade for your star party visitors by using it to illustrate astronomy concepts and engaging them with great telescopic views of its surface!

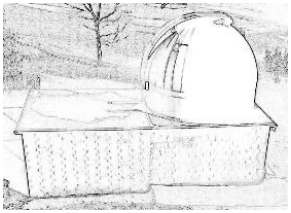


Many astronomers find the frequent supermoon news from the media misleading, if not a bit upsetting! Unlike the outrageously wrong "Mars is as big as the moon" pieces that appear like clockwork every two years during Mars's close approach to Earth, news about a huge full moon is more of an overstatement. The fact is that while a supermoon will indeed appear somewhat bigger and brighter in the sky, it would be difficult to tell the difference between an average full moon and a supermoon with the naked eye.
There are great bits of science to glean from supermoon discussion that can turn supermoon questions into teachable moments. For example, supermoons are a great gateway into discussing the shape of the moon's orbit, especially the concepts of apogee and perigee. Many people may assume that the moon orbits Earth in a perfect circle, when in fact its orbit is elliptical! The moon's distance from Earth constantly varies, and so during its orbit it reaches both apogee (when it's farthest from Earth), as well as perigee (closest to Earth). A supermoon occurs when the moon is at both perigee and in its full phase. That's not very rare; a full moon at closest approach to Earth can happen multiple times a year, as you may have noticed. While a human observer won't be able to tell the difference between the size of a supermoon and a regular full moon, comparison photos taken with a telephoto lens can reveal the size difference between full moons.



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The View from the Ob



So, you'll have noticed that the club room is out of action for a while whilst some remedial work is done on the ceiling. As I write these notes the ceiling has been reboarded and plastered. We now need to get the club room cleaned up and volunteers will be gratefully welcomed. Mick Collinson or Les Marsden maybe the best committee people to talk to about offering your services. In the mean time we will be holding meetings in the concert room at SWMC.

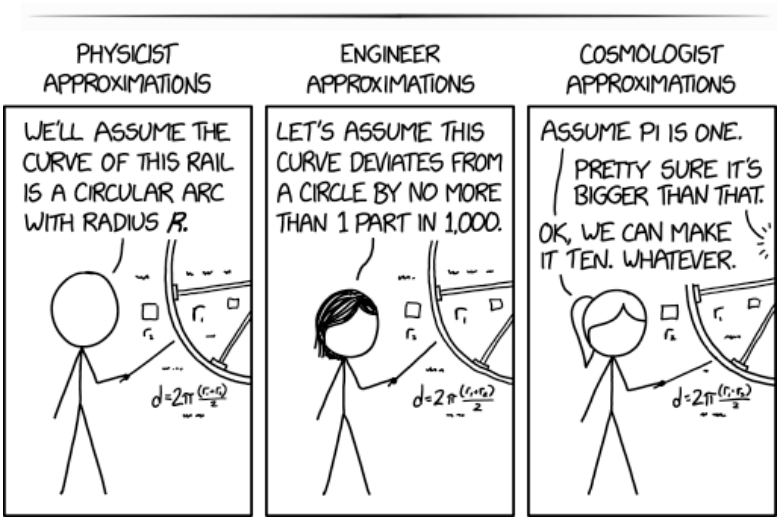
We have a stand at "Space Day", Big Local Thurnscoe is planning a Space Event on Saturday 26th October this year from 11am-4pm at St Helen's Church Hall in Thurnscoe. This will be an exciting family event which will feature a large astronomical dome provided by Auriga astronomy as well as activities, stalls and information. We are providing a display stand and a short workshop/ talk - we could do with some "helpers" – we will be inside the church hall and there is no outside space – so it will be just display boards and talking to people. We hope to take along the "Skylark" It's Going to be a busy Autumn at the Society, Our Autumn "Moon" programme is well under way with the following events……

Thu Oct 3rd	Talk "Simply the Moon" - Roy Gunson
Sat Oct 5th	Member **viewing** night @ Observatory – collecting data
Thu Oct 24th	Talk: "Mapping & Naming the Moon" – Kevin Kilburn
Sat Nov 2nd	Member viewing night @ Observatory – collecting data *
Thu Nov 7th	Talk: "Patrick Moore and our Volcanic Moon" – Bill Leatherbarrow
Sat Nov 16th	Early Morning at the Observatory - 20 day old Moon
Sat Nov 23rd	Early Morning at the Observatory - 26 day old Moon *

* Standby night if first night "clouded out"

NOTE: October 5th is also "International Observe the Moon Night".

We hope to be having a "Data Processing" day one Saturday in December



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Keep Your Eyes Open



Thursday 17th October "Double Stars"

John Cox talk this evening is a basic introduction in Double Stars and the types, i.e. Binary Optical, Spectroscopic, Eclipsing etc. What the observer can see through the telescope. There is no maths involved. been a member of the Webb Society and American Society of Double Star Observers. In 1995, I joined MSAS until 2002, when I joined DAS as that had now been reformed. I have been a member ever since and as well as being an active observer, both, in my back-garden using an 8" SCT and at our site in Austerfield using the 14" SCT. I also manage the website for Doncaster AS and as such am a Committee member.



Thursday 24th October "Mapping & Naming the Moon"

Kevin Kilburn has been interested in astronomy since age 4 and has had a particular interest in the moon and sun for about 50yrs.
He is currently studying the surface colour of the moon and taking whole disc white light and H-alpha images of the sun for the BAA Solar Section whenever skies permit, typically on 150-200days each year. Having been president of Manchester AS on three separate occasions (they were desperate!), he is currently Vice President of Manchester Astronomical Society and Vice Chairman of the Society for the History of Astronomy.



Thursday November 7th "Patrick Moore & our Volcanic Moon"

Bill Leatherbarrow first joined the BAA in 1965 and am an active observer of the Moon and planets. I served as BAA President from 2011 - 2013. Currently Director of the Lunar Section, he also serves on the Committee of the Mercury and Venus Section. In the past he was a member of the Lunar Section Committee under the directorships of Patrick Moore and Ron Maddison and has served as Secretary to the Mercury and Venus Section under the long directorship of Hedley Robinson. He has an observatory containing an Orion Optics OMC300 Mak-Cass.

The Final Frontier -Chang-e 4



The fourth instalment of the Chinese Lunar Exploration Programme and the second Chinese Lander/
Rover mission to visit the Moon.
Chang'e is the Chinese Goddess of the Moon. Like its predecessor Chang'e 3 it has placed a lander on
the Lunar Surface and release a rover 'Yutu-2'. It will explore areas of the Moon not yet explored.
Change-4 made a soft landing in the 'von Karmen' crater in January 2019.One of the largest craters
in the South Pole, in the Aitkin Basin on the Far Side of the Moon, not visible from Earth. We see
from Earth dark areas 'Mare' on the Lunar Near Side.These planes are scarce on the Far-side, which is peppered with many more 'impact crater'. Recent analysis of the Lunar South Pole has revealed the presence of 'Lunar Water''!
Chang-4 was launched on the 7th December 2018 from the XICHANG Satellite Launch Centre, Sichuan Province, on the tip of a 'Long March' rocket. The Chang-e team partnered with institutions and universities in Germany, Netherlands and Sweden. They provided the Lander and the Yutuk-2 rover with spectroscopes, cameras, neutral atomic analysers and dosimeters.

Mike Hall

The Planets in the Sky for October

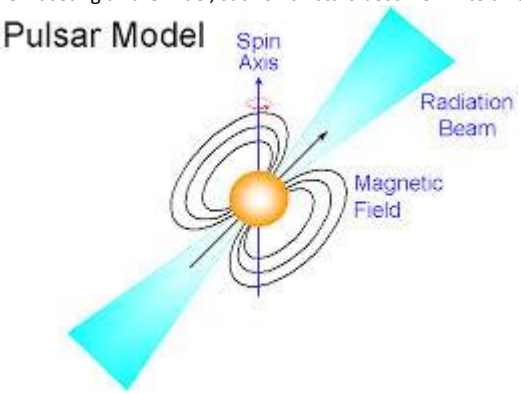
The First Quarter Moon occurs on the 5th at in the constellation of Sagittarius, and is in conjunction with Saturn at a low altitude culminating at 12° above the southern horizon at 6pm.

The Full Moon is on the 13th, and is often called the Hunter's Moon. It maybe because of the wild geese migrating at this time of year or the Moon is now higher in the sky when full, it gives more light for poachers to stalk their prey. Another is that when the Moon is high in the south at midnight, the constellation of Orion becomes completely visible above the horizon for the first time since last winter.

Throughout October, Mars rises before the Sun at around 5am, so that as the month progresses and the Sun rises later each morning, the planet becomes more visible above the south eastern horizon. The planet's magnitude is around +1.6.
At sunset, Jupiter becomes readily visible in the SSW sky at an altitude of 10° above the horizon. It cannot be mistaken as it shines steadily like a beacon – the brightest star-like object in the evening sky after the Moon.
Jupiter sets at about 8pm at the start of the month, and by 6:30pm on Halloween. The thin waxing crescent Moon is in conjunction with Jupiter on this last day of the month and at 5pm the angular distance between the two is about one degree, worth a go with your camera.
Saturn is still around in the south, but still very low in the sky. It sets about 10pm on the 1st of October but 2 hours earlier at 8pm at the end of the month.
Uranus is at Opposition on the 28th and is theoretically visible all night at magnitude +5.7.
Neptune culminates at an altitude of 30° in the south around 11pm at start of month and 10pm at the end at magnitude 7.9 you will need good binoculars or telescope to find.
Clocks go back on October 27th at 2am (BST)

Pulsars

1934 Walter Baade and Fritz Zwicky predicted the existence of neutron stars: stars which have collapsed under their own gravity during a supernova explosion. Stars like our Sun will not form neutron stars. After exhausting all their fuel, such small stars become white dwarfs. Only very massive stars (at least a few times more massive than our Sun) will undergo a supernova explosion and become neutron stars. Even more massive stars will collapse to form black holes.



It was thought that neutron stars would never be detectable using telescopes on Earth. They were predicted to be very dense, to spin very fast, have a tiny radius of only about 10km and to possess large magnetic fields. However, we now know that charged particles moving along the magnetic field could cause beams of radiation to be emitted from the magnetic poles. Then, as the neutron star rotates, the beam would sweep across space. When this beam is in the direction of the Earth, a pulse may be detectable using a radio telescope

1902

If you think 2019 was a "poor" year for astronomical observations – particularly of the planets – then just have a read of this tale of misery from 1902 – as published in the Sheffield Independent, Friday 2nd January 1903

THE YEAR'S ASTRONOMY.

Working Out Some Problems.

In striking contrast to 1901 the past year has been in some ways barren of astronomical interest, says a writer in the "Globe." We have had no new star like Nova Persei of the preceding year, no great comet like that southern one of April, 1901, that was first seen by pickets on the veldt, and that was a somewhat unwelcome distraction to the parties that had gone to Mauritius and Sumatra to observe the great total eclipse of the sun in May. One comet we have had this year, a poor fuzzy thing that was of no particular interest scientifically and failed to become bright and popular. The Leonids were conspicuous by their now accustomed absence, and altogether, so far as events of popular and even sensational interest are concerned, 1902 has been a poor year.

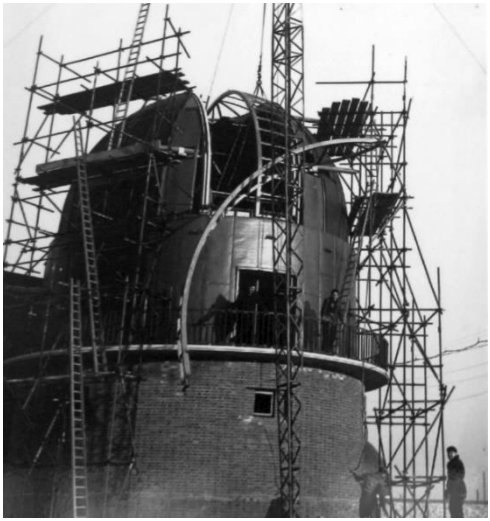
Royal Greenwich Observatory, Herstmonceux



The Royal Observatory was founded at Greenwich in 1675 for the practical purpose of improving the accuracy of star positions so that ships upon which England's naval power and maritime trade so critically depended could be navigated with greater confidence. For more than two and a half centuries Greenwich was the power house of British Astronomy and a world leader in the production of navigational aids and time-keeping, hence the universal adoption of the Greenwich meridian as the zero longitude and of Greenwich mean Time.

During the late 19th and early 20th centuries astronomer's interests began to move away from pure positional measurements to asking more fundamental questions about the nature of stars and galaxies, how they were formed, how they moved and what they were made of. The position measuring instruments were supplemented by more powerful telescopes capable of probing fainter stars and analysing their composition by examining their detailed spectra. At Greenwich during the 1920's and 1930's, as at other city-based observatories, the ever increasing light and smoke pollution severely hampered this work and the Admiralty, which ran the observatory sought a site with clearer skies and suitable grounds.

The purchase of Herstmonceux Castle was made in 1947 and soon after work began on the newly styled Royal

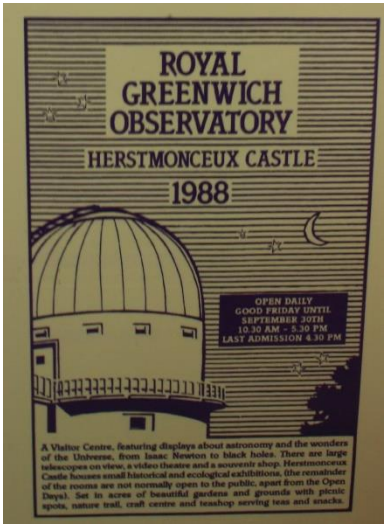




Greenwich Observatory. Staff were soon installed in the Castle and in temporary huts. It took another 10 years to complete the domes for the Greenwich telescopes, offices and workshops.



The 1960's were a time of rapid expansion for British Science and the RGO flourished in the vanguard of a growing competition for observing time on large telescopes in good climates. Part of this demand was the building of the 100-inch Isaac newton Telescope, opened in 1967. Astronomers from all over the UK clamoured for observing time and many new avenues of research were opened up. A particular highlight was the success of RGO observers in identifying the first black hole candidate, Cygnus X-1. In 1975 the RGO celebrated its 300th anniversary, marking the occasion with a visit from Princess Margaret, who unveiled a bust of John Flamsteed, the first astronomer Royal. Sadly, even then the RGO's days at Herstmonceax were numbered. Herstmonceux is not a good astronomical site in world terms and the unreliable UK weather meant that the Isaac Newton Telescope could not be utilised as much as it should have been. With the advent of cheap air travel in the sixties it became feasible for astronomers to travel to other observatories in order to use telescopes in the best possible locations. Eventually, the decision was taken to establish a major overseas observatory in the northern hemisphere and to move the INT there, where it could be put to better use. In 1979 the telescope was dismantled, removed from its dome and completely refurbished before being installed on top of an extinct volcano on the Canary Island of La Palma in 1984. Here it formed part of the International 'Roque de los Muchachos Observatory' run as an overseas facility by the Royal Greenwich Observatory. With its main telescopes located abroad, resources for maintaining the instruments at Herstmonceux diminished and they were used less and less. Eventually, the decision was taken to move the Observatory again, this time to a new site at Cambridge, adjacent to the University's Institute of Astronomy. The Observatory moved to Cambridge in 1990 leaving behind the Equatorial Group of Telescopes. The RGO closed as an entity in 1998, and it's work and project distributed around various universities in the UK.



The Isaac Newton telescope is now run in collaboration between the UK Science and Technology Facilities Council, the Dutch NWO and the Spanish IAC.

The Observatory Science Centre opened in April 1995. After a programme of repair and upgrading of the buildings and telescopes was completed in 2004 with the aid of a substantial grant from the National Heritage Lottery Fund. It is been opened as a museum and a unique facility for the general public, schools, colleges and astronomical societies.

Diary

Date	Time	Location	Subject / Event	
Tue Oct 1st	**19:00**	**Observatory**	**6th Barnsley Cub Visit**	*Roy Gunson*
Thu Oct 3rd	**19:45**	**Club Room**	**Simply the Moon**	*Roy Gunson*
Fri Oct 4th	**19:45**	**Observatory**	**PVE**	*Les Marsden*
Sat Oct 5th	**19:30**	**Club Room**	**Members Moon Observing**	*Roy Gunson*
Wed Oct 9th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu Oct 17th	**19:45**	**Club Room**	**Double Stars**	*John Cox*
Thu Oct 24th	**19:45**	**Club Room**	**Mapping & Naming the Moon**	*Kevin Kilburn*
Sat Oct 26th	**10:30**	**St Helen's Thurnscoe**	**Space Event @ Thurnscoe**	*Roy Gunson*
Thu Oct 31st	**19:45**	**Club Room**	**Nuclear Fission**	*James Lennard*
Fri Nov 1st	**19:45**	**Observatory**	**PVE**	*Les Marsden*
Thu Nov 7th	**19:45**	**Club Room**	**Patrick Moore & our Volcanic Moon**	*Bill Leatherbarrow*
Wed Nov 13th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu Nov 14th	**19:45**	**Club Room**	**TBS**	
Fri 15th /Sat 16th Nov	**22:00**	**Observatory**	**Members Moon Observing**	*Paul D'Silva*
Thu Nov 21st	**19:45**	**Club Room**	**Winter Sky**	*Andy Kirton-Vaughan*
Thu Nov 28th	**19:45**	**Club Room**	**TBA**	*Gary Gawthorpe*

(Details correct to time of publication)
PVE – Public Viewing Event – Bookable Only
TBA – To be announced – (otherwise – We don't know!)

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 Nº 1064103 in England & Wales

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

Speakers Wanted

Steve Taylor is looking for more "Member Speakers" to help fill out the program – if you fancy telling us about your astronomical experiences, or any topic you fancy let Steve know. I'm sure many of the members will appreciate any efforts you make.

During the "Disruption"

Whilst the upstairs club room is being "sorted|" over the next few weeks, we will be holding our meetings in the concert room downstairs in SWMC.

We also need Volunteers to assist with the clean up of the meeting room after the plastering and other work has been completed as there will be a lot of dust and muck to clean away. Thanks