The Messenger

Mexborough & Swinton Astronomical Society

September 2019

Winter Stargazing Tips: Stay Warm and Cosy at Hoober

Those long January nights up at Hoober can get a bit Baltic ... even for weather hardened Yorkshire folk it's enough to make you forget these current hot balmy summer evenings ever existed! One thing that is guaranteed to warm even Les's astronomical heart in these cold winter nights: the beautiful, sparking skies! With no clouds! Orion, Taurus, the Pleiades, Sirius, the Andromeda Galaxy, the Double Custer in Perseus: these are just a few of the gorgeous sights that are at their peak in the winters of the Northern Hemisphere, not to mention the clockwork actions of the Moon and planets. But how can you observe and stay comfortable outside or in the Observatory at Hoober when the weather seems determined to turn you into a cast member from "Frozen"!

1. Layers are your friend!

You may already know this, but remember to wear multiple layers of clothes! A super warm coat won't help that much if all you are wearing underneath is a t-shirt. At the same time, moving around during your setup and observing may actually heat you up to an uncomfortable degree, so being able to peel off a sweater or overcoat would be very welcome. For those really cold nights – thermal underwear is a must.

2. Warm, wool socks

Thick cosy socks are a must, especially as the night wears on. Your feet will thank you, especially if you are wearing good shoes or boots.

3. Waterproof boots

You will want warm boots or shoes with good soles – thin soled shoes quickly let the cold through and cold toes are very uncomfortable. If there is snow up at the ob, make sure your footwear is also waterproof. Any water soaking through your shoes is a sure way to make your toes icy and prematurely end your observing.

4. Blankets

Did you bring a blanket? We used to suggest this if you intend to spend time sat outside observing those pesky winter meteor showers. Even if you think you won't need one...you well may want one after the first hour or so, especially if you are seated very still.

We now have a heater downstairs in the Ob so that can be used as a bolt hole on those exceptionally cold nights, it's also useful for when especially if you are undertaking a long-automated camera shoot in the open dome area.

5. **Gloves**

Pack your gloves! Some astronomers prefer fingerless gloves that allow them to work on their instruments while outside, while others prefer combo mitten-gloves that allow you to flip the ends of the mittens off for fingerless glove access. Remember, you will be handling lots of cold metal as you set up your equipment in the cold so if you don't want your fingers going numb within minutes, gloves are a must! Personally, I sometimes use a combination of fingerless and gloves with the full fingers - wearing both sets and removing the top set when needing to "fiddle" with some setting or punch keyboard keys.

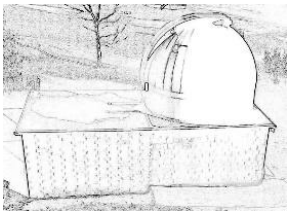
6. A big goofy hat and earmuffs

A hat with ear flaps? Big fuzzy earmuffs? You will definitely want these! While they may look a bit silly, you will be toasty inside, with nice warm ears rather than frigid lobes in danger of frostbite. Besides, you will be in the dark: who cares what you look like?

7. A warm drink

Avail yourself of the kettle and tea and coffee in the kitchen area at the ob, or bring a flask.

The View from the Ob



The New committee was elected at the AGM on 1st August 2019. The executive committee for 2019-2020 will be;

CHAIRMAN	*L. Marsden*	CURATOR	*T. Morris*
VICE CHAIR	*R. Gunson*	IT OFFICER	*G. Marsden*
SECRETARY	*S. O'Dell*	LIBRARIAN	*P. Jalowiczor*
TREASURER	*M. Collinson*	FUNDRAISING	*N/A*
PROGRAMME SECRETARY	*S. Taylor*	ORDINARY	*P. Muffett* *P D'Silva* *K Hudson-Lee*
OBSERVATIONS OFFICER	*A Kirton-Vaughan*		

The meeting business included the increasing of the annual subscription rate from 1st April 2020 to £88 per annum for full rate and £68 per annum for concession rate.
In other news from the "exec".
The society have a "new" second hand lawnmower for the observatory site. Keep aware we may ask for members help for some work parties to help clear back some heavy weeds and foliage at the observatory site in the Autumn. Work has been proceeding on the instrumentation trench and manhole for the magnetometer that is going to be sited there.

There will be a special programme for Moon observation in the autumn. – this will coincide with "International Observe the Moon Night" sponsored by NASA on October 5th 2019.
We're also putting on a small display at St Helen's Church Hall, Thurnscoe, for their "Space Event" Day on Saturday Oct 26th (11am – 4pm); they've hired a mobile planetarium. And we're going to put on a display, probably take the Skylark along as well.

The roof in the club room has now been made watertight by SWMC and work should begin in the near future on the water damaged ceiling in the club room.

Keep Your Eyes Open



Thursday 26th September – a regular visitor to our society Dr. Matthew Malek Matthew may be the only physicist you ever meet who has gone SCUBA diving in a particle physics detector. After starting university with the intention of a career in cognitive psychology, he accidentally got side-tracked in to particle physics.
Matthew will review the history of neutrino astronomy and present the recent observations from IceCube, and describe future discoveries that astronomical neutrinos have in store for us



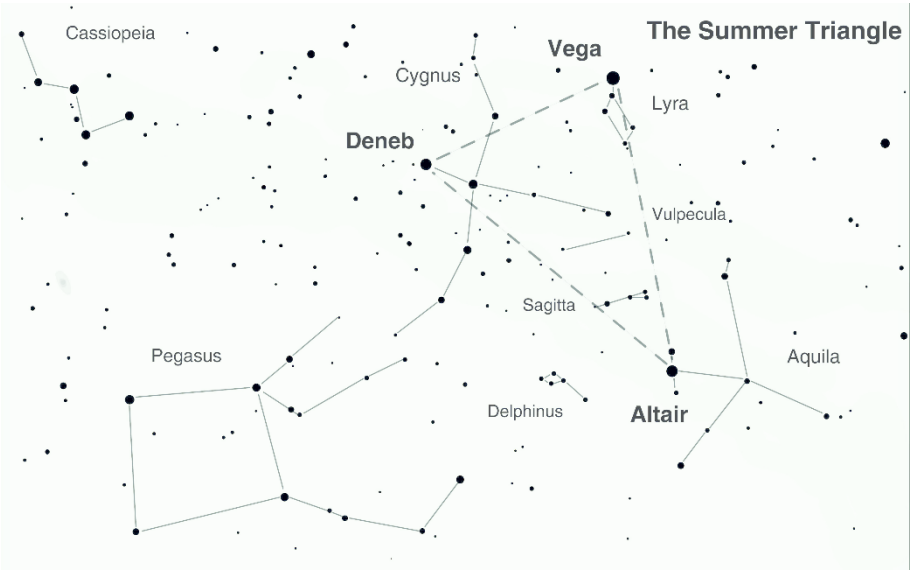
Thursday 24th October Kevin Kilburn has been interested in astronomy since age 4 and has had a particular interest in the moon and sun for about 50yrs. He is currently studying the surface colour of the moon and taking whole disc white light and H-alpha images of the sun for the BAA Solar Section whenever 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.

Spot the Stars of the Summer Triangle

September skies are a showcase for the Summer Triangle, its three stars gleaming directly overhead after sunset. The equinox ushers in the official change of seasons on September 23. Jupiter and Saturn maintain their vigil over the southern horizon, but set earlier each evening, while the terrestrial planets remain hidden.

The bright three points of the Summer Triangle are among the first stars you can see after sunset: Deneb, Vega, and Altair. The Summer Triangle is called an asterism, as it's not an official constellation, but still a striking group of stars. However, the Triangle is the key to spotting multiple constellations! Its three stars are themselves the brightest in their respective constellations: Deneb, in Cygnus the Swan; Vega, in Lyra the Harp; and Altair, in Aquila the Eagle. That alone would be impressive, but the Summer Triangle also contains two small constellations inside its lines, Vulpecula the Fox and Sagitta the Arrow. There is even another small constellation just outside its borders: diminutive Delphinus the Dolphin. The Summer Triangle is huge!

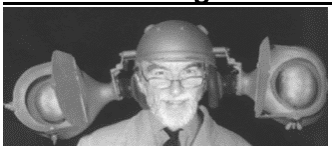
The equinox occurs on September 23, officially ushering in autumn for folks in the Northern Hemisphere and bringing with its longer nights and shorter days, a change many stargazers appreciate. Right before sunrise on the 23rd, look for Deneb - the Summer Triangle's last visible point - flickering right above the western horizon, almost as if saying goodbye to summer.



Planet watchers can easily find Jupiter and Saturn shining in the south after sunset, with Jupiter to the right and brighter than Saturn. At the beginning of September, Jupiter sets shortly after midnight, with Saturn following a couple of hours later, around 2:00am. By month's end the gas giant duo is setting noticeably earlier: Jupiter sets right before 10:30pm, with Saturn following just after midnight. Thankfully for planet watchers, earlier fall sunsets help these giant worlds remain in view for a bit longer. The terrestrial planets, Mars, Venus, and Mercury, remain hidden in the Sun's glare for the entire month.

David Prosper (This article is distributed by the NASA Night Sky Network)

Mike Hall's August 2019 Skynopsis



Diary

2nd	09.11 Spica 7.7°. South of Moon, 10.42 Mars in conjunction with Sun
4th.	01.40 Mercury at superior conjunction
5th	19.06 Antares 7.8°. South of Moon
6th	03.10, Moon at First Quarter
8th	13.42 Saturn 0.1°. North of Moon
10th	07.24 Neptune at opposition; at closest approach and at its brightest (mag 7.4)
13th	13.32 Moon at apogee (406,377 km.)
14th	Full Moon
15th	Alpha Auregid shower second maximum
20th	16.45 Aldebaran 2.7°. South of Moon
22nd	Moon at Last Quarter
23d	07.50 Autumnal Equinox
25th	New Moon

Galactic Goodies

Neptune	At opposition and at its closest approach to Earth; Uranus worth looking at 20 ° higher.
NGC7	North American in Cygnus is best placed over 80 °r. altitude, Mag. 4. Nearby is IC5070 "The Pelican" at Mag..4
NG 1497	"California Nebula" altitude 50°. rising to 76°. around dawn.
M31	at Mag. 3.4 Andromeda Galaxy is visible all night. Cassiopeia Constellation being circumpolar with Nebula IC1805 "Heart" and IC1848 "Soul" easily located at Mag.5

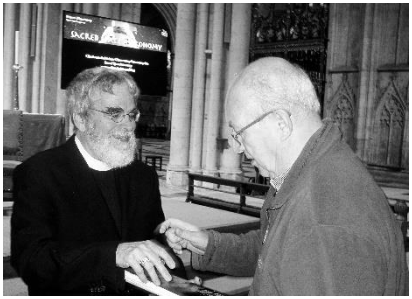
From the Final Frontier

China is preparing a new space station with Low-Earth orbit construction expected to begin 2020. The station will accommodate three astronauts. Named Chinese Space Station (CSS). Its predecessor Low orbit station Tiangong 2 was launched in 2016 and d-orbited July 2019. Its main purpose was to test key technologies for the CSS. The CSS will be about 60 tonnes; approximately 1/7th of the International Space Station and roughly half the weight of the Russian station MIR. The CSS will consist of a core module, two experimental modules and eight solar panels. Sixteen nations have applied to co-operate in research; excluding the USA and the United Kingdom.

Following the celebrations of the fiftieth anniversary of the Apollo Moon landings, a team at the Open University has been investigating some of the rocks that have been collected on the Moon. The rocks belong to NASA and are loaned out to research teams where they are satisfied that the research programme is valid. The Open University team, under Dr. Mahesh Anand have been looking for signs of water in these ancient rocks; no evidence has been found as yet but there are a lot of rocks to go! Further missions to the Moon and comets are being planned. Instruments are already being designed and built at the OU for future robotic landings on the Moon in the coming year. Future international missions to intercept and land on comets are underway – "Comet Interceptor 2028t", "European mission", "Flyby Mission". Imperial College are leading on the magnetometer instruments on flyby missions.

Mike Hall

Small MSAS Delegation go to York Minster



Members of MSAS headed to York Minister to the Ebor Lectures on the 21st August to hear the Director of the Vatican Observatory Br Guy Consolmagno SJ deliver his talk ' Astronomy, God & The Search For Elegance'.

Br Guy is also the author of excellent beginner's manual 'Turn left at Orion'. Roy Gunson took along his copy to be signed by the author.

The "Moon" Programme



It won't have escaped your notice that we are having a bit of a "MoonFest" this autumn. The idea is to get some practical observing done, and to encourage members who are a little wary of using the observatory equipment to come and "give it a go"

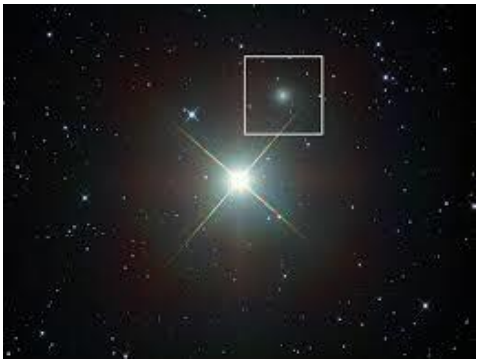
We are "kicking things off with a talk be Andy Kirton-Vaughan on Thursday 12th September, on "Return to the Moon". Roy Gunson will talk about "Simply the Moon" on October 3rd (which will be an introduction to the observing sessions arranged for 5th October (which is also "International Observe the Moon Night". We have another evening observing scheduled for Saturday November 2nd if the October date is clouded out.
Kevin Kilburn of Manchester AS will be giving a talk on 24th October – "Mapping & Naming the Moon"
On Thursday 7th November we will have Bill Leatherbarrow giving a talk on "Patrick Moore and our Volcanic Moon"
Then for the hardy ones amongst us Paul D'Silva is going to lead an early morning observing session to get the waning crescent Moon on November 16th.
Then hopefully in November we will have a session either on a Thursday or Saturday looking at processing the data we have obtained from our observing sessions.

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.

A Ghost, a Snowball and a Cascade

The constellation of Andromeda is in a good position for observation at the moment. Most famous for M31, one of its less well-known objects is NGC404, a galaxy located very close to the bright star Mirach. This galaxy's nickname is the "Ghost of Mirach" due to its apparent ability to blink in and out of vision when an observer switches between looking directly at Mirach and then away from it. It's actually quite a bright galaxy at magnitude 11 but the proximity of Mirach makes it seem much fainter. It is also a difficult camera object due to Mirach's brightness.



NGC404 is a lenticular galaxy at a distance of around 10 million light year away. Lenticular galaxies are odd. The name means "lens shaped" which they are. They are class of galaxy in between ellipticals and spirals. They have the rough shape of spirals but without spiral arms.

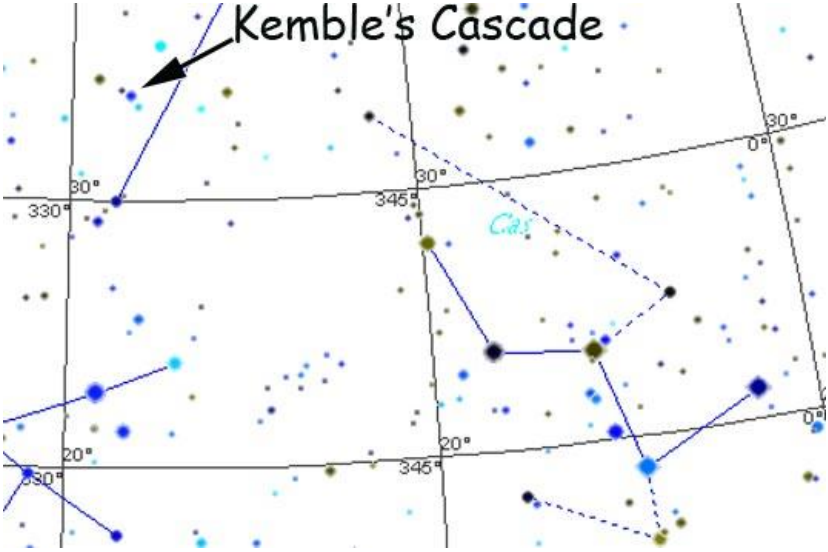


Also, in Andromeda is the Blue Snowball, a planetary nebula. The catalogue number for this object is NGC7662. This object is extremely bright and is easy to see even from heavily light polluted locations. It is however quite small and does require a reasonable amount of magnification to reveal it as anything other than a bloated star.

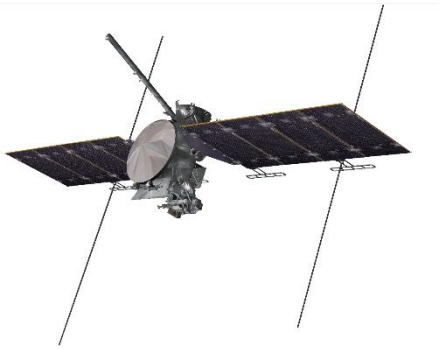
To find it without the use of a GOTO system requires some patience as it's not near any bright stars. The closest star of any note is the fourth magnitude Lambda Andromeda. From there you need to head towards Scheat, the upper right star in the Square of Pegasus - about one fifth of the way. Look out for a star with a fuzzy looking edge, centre it up and switch to higher magnification. The blue colour is quite prominent.



In the nearby constellation of Camelopardalis, the Giraffe, there is a sight that requires very low power and a wide field – Kemble's Cascade. Binoculars are ideal for this one. The cascade is a string of magnitude 7 to 8 stars running down towards the open cluster NCG1502. The cluster and the stars of the cascade are unrelated but this chance alignment gives a rewarding spectacle. It's almost like a cascade of water with the cluster being the splash-pool at the bottom. It's a very pretty object and can be found by sweeping with binoculars eastwards from the W of Cassiopeia about the same diameter of the W asterism. It would make a great target for imagers with telephoto lenses or short focal length telescopes.



We're Going to Europa



Well not MSAS, but NASA are planning a mission to the icy moon of Jupiter that could harbour life! The decision that allows the mission to progress to completion of final design, followed by the construction and testing of the entire spacecraft and science payload has been made. develop this mission in the most cost-effective fashion, NASA is targeting to have the Europa Clipper spacecraft complete and ready for launch as early as 2023. The agency baseline commitment, however, supports a launch readiness date by 2025.

The Europa Clipper will not orbit Europa, but instead orbit Jupiter and conduct 45 flybys of Europa at altitudes from 25 to 2,700 km (16 to 1,700 mi) during its 3.5-year mission. The Clipper would use gravity assists from Europa, Ganymede and Callisto to change its trajectory, allowing the spacecraft to return to a different close approach point with each flyby. Originally there was to be an associated lander probe but that has now been removed from the planned mission due to budget costs and uncertainty of surface conditions.

The mission will complement ESA's Jupiter Icy Moons Explorer launching in 2022, which will fly-by Europa twice and Callisto multiple times before moving into orbit around Ganymede.

Diary

Date	Time	Location	Subject / Event	
Thu Sep 5th	19:45	Club Room	TBA	*Phil Muffett*
Fri Sep 6th	19:45	Observatory	PVE	*Les Marsden*
Wed Sep 11th	20:00	Club Room	Executive Committee Meeting	
Thu Sep 12th	19:45	Club Room	Return to the Moon	*Andy Kirton-Vaughan*
Thu Sep 19th	19:45	Club Room	Measuring the Solar System	*Ed Bothomley*
Thu Sep 26th	19:45	Club Room	What's Nu in Neutrino Astronomy	*Matthew Malek*
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 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*

(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

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"Cold" Mars



Mars's 687-day orbit around the Sun has carried it to its furthest point to the Sun – its aphelion – at a distance of 1.67 AU, at the end of August. At the moment Mars is on the other side of the Sun to the Earth so is virtually "invisible" to us here. Mars is next at opposition on October 14th 2020.
Unlike most of the planets, which follow almost exactly circular orbits around the Sun which only vary in their distance from the Sun by a few percent, Mars has a significantly elliptical orbit. Its distance from the Sun varies between 1.38 AU and 1.67 AU – a variation of over 20% – meaning that it receives 31% less heat and light from the Sun at aphelion as compared to perihelion. So, Mars is going to be in the "coldest" part of its orbit. This distance also coincides with the Southern pole winter on Mars – making the south polar regions on Mars the coldest place to be on the planet.