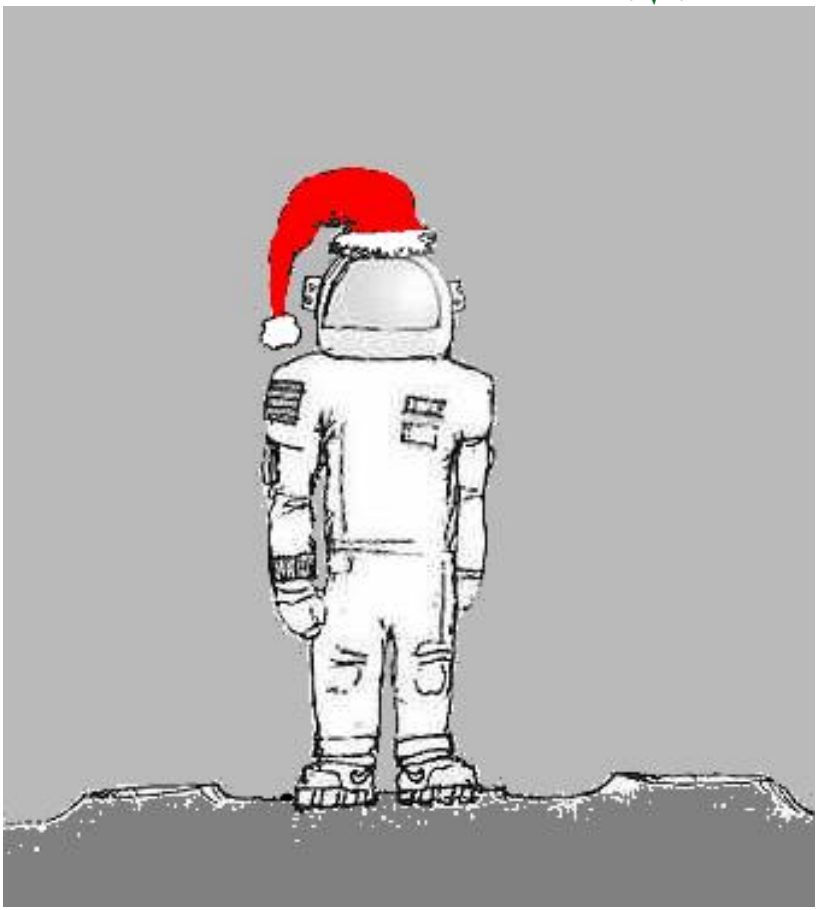
CELEBRATING 40 1978 - 2018 YEARS

The Messenger

Mexborough & Swinton Astronomical Society

Christmas 2018



Merry Christmas & Happy New Year from MSAS

The Thoughts of Chairman Les



I seem to have missed a couple of editions of late for which I apologise.
It's been a very busy summer as we have built the extension to the observatory. There has been a lot of hours worked and we are thankful to you all. We were a little late in finishing the task but things are now near enough to completion. There was a Public Viewing Evening, Thursday 22 for the 18th Barnsley Hoyland Cubs which was the first since the observatory was closed in May this year. You may have seen their reply on Facebook recently that the evening had been a total success saying they will spread our name throughout the area.
I must mention a very important and very successful day when we presented, as part of our 40 Anniversary, 'AstroCon' which was a full day of astronomical enjoyment and was a complete experience for all the attendees; we know this because of the feedback from everyone who were there. The speakers for the day were excellent with content covering a wide range of astronomical subjects. Our membership proved to be 'on tune' as always and did a fantastic job of preparing the room at the Masonic Hall in Swinton were we had the whole room and day to ourselves and visitors. We had one of those very kind visitors sponsor us for the cost of the room for which we are very grateful. Our Master Ceremonies gave our thanks to the lady who did the buffet; it was first class and plenty of it.
Our celebrations will continue for a few months yet with other items of interest from our past 40 years. We have another PVE Dec 27 (Thursday) 'Christmas Telescopes' where we will help anyone who might have received a 'scope for Christmas together with a short astronomical presentation. We intend to get back to our regular programme of PVE's in the New Year, January, February, March 2019.
Thank you for all the work that has been done throughout the past year.
I wish you a Merry Christmas and a Happy New Year.
Clear Skies

Les H Marsden [Chairman]

Time for a Christmas Present?

Lunar Dust Scent Sample. What does the moon smell like? There are only twelve people who have had the precious opportunity to smell it. In collaboration with the French perfumer Barnabé Fillion, Unfold dived into the NASA archives to track the various references astronauts made on the smell and appearance of lunar dust and based on these references formulated a scent with accents of silver, ozone, gunpowder, musty dust and honey.
The Lunar Dust Sample - Limited Edition box contains a sealed borosilicate glass vial containing scented artificial lunar regolith that was used in the 'Sea of Tranquillity' installation.
But here's your dilemma: break open the vial and the scent will dissipate over time and just like all the material brought from the moon by NASA it will become devoid of any smell; or leave it sealed and preserved forever, enjoying the precious idea of an out-of-this-world scent. Will cost you about 100 Euro's



UNFOLD
Mortselsesteenweg 192
2100 Antwerpen



Mike Hall's December 2018 Skynopsis



Diary (all times Greenwich).

1st	*Sunrise 07.55, Sunset 15.57*
2nd	*00.00 Venus at greatest illuminated extent*
3rd	*19.00 Venus 4°, South of Moon*
5th	*21.00 Mercury 1.9° South of Moon*
7th	*07,00 New Moon; asteroid (433) Eros at opposition (mag. +9.7)*
8th	*Sunrise 08.04, Sunset 15.54; Asteroid (40) Harmonia at opposition (Mag, +9.4)*
9th	*05,00 Saturn 1.1 ° South of Moon*
12th	*12.00 Moon at apogee; Comet 46P//Wirtanen at perihelion (peak mag.+2.9)*
14th	*12.00 Gemini meteor shower peak, 14.00 Neptune 3° North of Moon, 23.00 Mars 4°.North of Moon*
15th	*12.00 Moon at First Quarter; 12.00 Mercury at greatest eastern elongation (21 °),*
18th	*04.00 Uranus 5°, North of Moon*
20th	*02.00 Jupiter5°, North of Antares*
21st	*08.00 Mercury 6°. 08.00 Mercury 6°. North of Antares, 22.00 Winter Solstice*
22nd	*18.00 Full Moon; Sunrise 08.16, Sunset 15.55*
24th	*10.00 Moon at perigee*
29th	*Moon at Last Quarter; Sunrise 08.18, Sunset 16.01*

Galactic Goodies:

Geminids	*Meteor shower, 13/14tth. best observed just after midnight*
Ursids	*Meteor shower, 21/22nd may be difficult in glow of full moon*



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Dawn Breaks Off Communications

The problem with long duration missions is they often fail to hold our attention. After the 'big science' has grabbed the world's media for the flutter of a few wing beats they are forgotten. The DAWN mission was launched on 27th September 2007 and after a journey of four years entered the asteroid belt. Here DAWN achieved many remarkable firsts.

Probably the most memorable of these is that it was the first mission to rendezvous and orbit two celestial bodies. These were Vesta and Ceres, the second and first minor planets in the asteroid belt between Mars and Jupiter, some 2.4 and 2.8 AU from the Sun. It orbited Vesta enabling scientists to map and analyse its surface from a distance of only 130 miles. After spending 14 months at Vesta mission controllers fired the engines again to take DAWN to Ceres. Arriving on the 6th March 2015, four months before New Horizons shot past Pluto, DAWN became the first probe to study a minor planet. On entering Ceres orbit the probe repeated the mapping and analysis mission carried out at Vesta. Orbits ranges from 2,750 down to 233 miles.

The reason DAWN achieved these feats was that was that it was built around an ion engine. Unlike conventional rockets that burn fuel to create thrust (a lot of thrust over a very short period of time) an ion engine heats up Xenon to create ions and then accelerates them in electric fields to create a stream of expelled ions to create thrust. The drawback is an ion engine only produces a small amount of thrust. In DAWN's case this was just 90 Newtons (about the same force needed to lift four bags of sugar). The plus is that the engine can be run for long periods of time, in the case of the engines used for DAWN this totalled in excess of 5 years and 10 months!

The mission changed the view we have of Ceres and Vesta. We no longer think of them as featureless rocks but know them as worlds that contain water, organic material and until recently Ceres had an active volcano Ahuna Mons.

The mission ended when controllers lost contact with DAWN on 31st October 2018 after it ran out of hydrazine used for attitude control. The spacecraft is no longer able to point it's antenna to Earth but will remain in orbit around Ceres indefinitely.

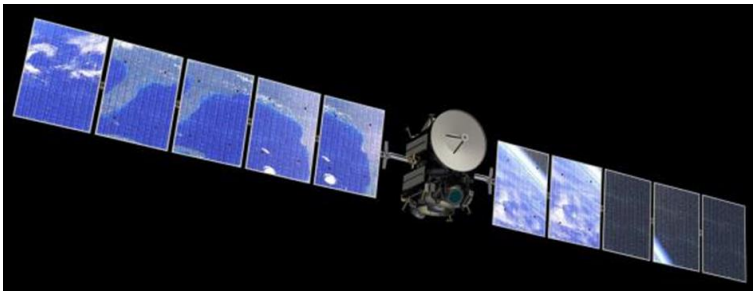


Figure 1 Dawn Spacecraft

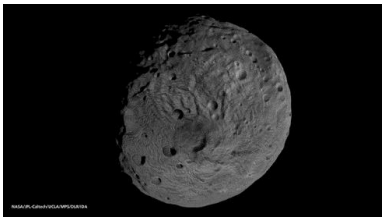


Figure 2 View of the south pole of Vesta

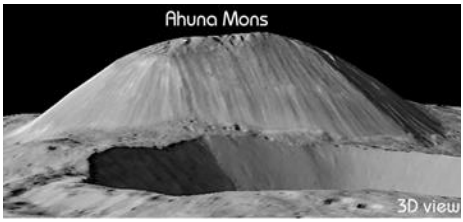


Figure 3 Ahuna Mons on Ceres

Paul D'Silva

Astrocon



On Saturday 27th October 2018 Mexborough & Swinton Astronomical Society had the pleasure in hosting the Swinton Astrocon as part of our 40th Anniversary celebration at Swinton Masonic Hall, Swinton, South Yorkshire.

Booking had been slow and our public appeared a little reticent to get buying tickets but finally, we had confirmation of 74 delegates and speakers. Everything was prepared. All the speakers had confirmed their attendance and the programme looked great.

The day began with Paul D'Silva welcoming everyone and giving a history of the society which went down very well.

The programme consisted of;

10.00	Paul D'Silva	Welcome/Introduction
10.15	Dr Sue Cartwright	Supernovae OK
11.00	Tea/Coffee	
11.15	Peter Rea	Mars - A Guided Tour of the Tharsis Region OK
12.00	Rod Hine	George Ellery Hale and the Golden Age of USA Astronomy OK
12.45	Lunch	
14.00	Albert Zijlstra	Planetary Nebulae OK
14.45	Roger Cooper	Skylark OK
15.30	Tea/Coffee	
15.45	Tony Morris	Astro Imaging OK
17.00	Finish	

Unfortunately, it did not go quite according to plan! Number one speaker Dr Sue Cartwright forgot to come.

We tried as hard as we could to find her but no show. We blamed the trains with Mike Scollan even checking the station just in case.

It was at this point that Peter Rea began his talk a little earlier than planned and carried on with the longest most detailed Q & A session I have ever heard. This filled in the time to our next speaker brilliantly.

The remainder of our speakers kept us interested and informed for the rest of the day with us all learning something new, a sincere thanks to them all.

Anyway a good day was had by all who attended but unfortunately, we still did not attract the interest of any younger astronomers which is a shame.

We were congratulated upon the friendly and helpful manner of our society members and extremely good value for money. We may even do it again in the future and I must not forget the excellent catering by Sarah Woodhouse who kept everyone well fed and watered all day long.

Thanks to all our members who attended and assisted in the preparation and set up.

Steve Taylor

Comet 46P Wartanen

Like most others I like to examine where things come from. It was a great lecture we had last Thursday 22nd November 2018. It answered a lot of my thoughts about star and galaxy formation. With all the questions put to the presenter and his informed answers after the lecture it was a most enjoyable experience. There is now a Comet in the sky now which may approach naked eye visibility in the month of December 2018 it is called 46P Wirtanen. This a small object of about 0.6 km diameter, and it orbits the Sun in 5.4 years. My Sky safari software states it is at 10.4 mag as of 25th November but if you look at www.theskylive.com there are estimates of 6 mag and a coma size of 20.6 minutes of an arc (Moon size is approximately 30 minutes of an arc).

46P comes to opposition on Wednesday 19th December 2018 so about 1 week before and 1 week after this date it should be at it's brightest. However it is also the time of the full Moon around this time so it may help to wait until the Moon has set just before dawn lights up the sky and the Moon has set. Do not let this bad news stop you from looking for the comet in the early evening of the first 12 days in December it will be far enough away from the Moon to not interfere with observation.

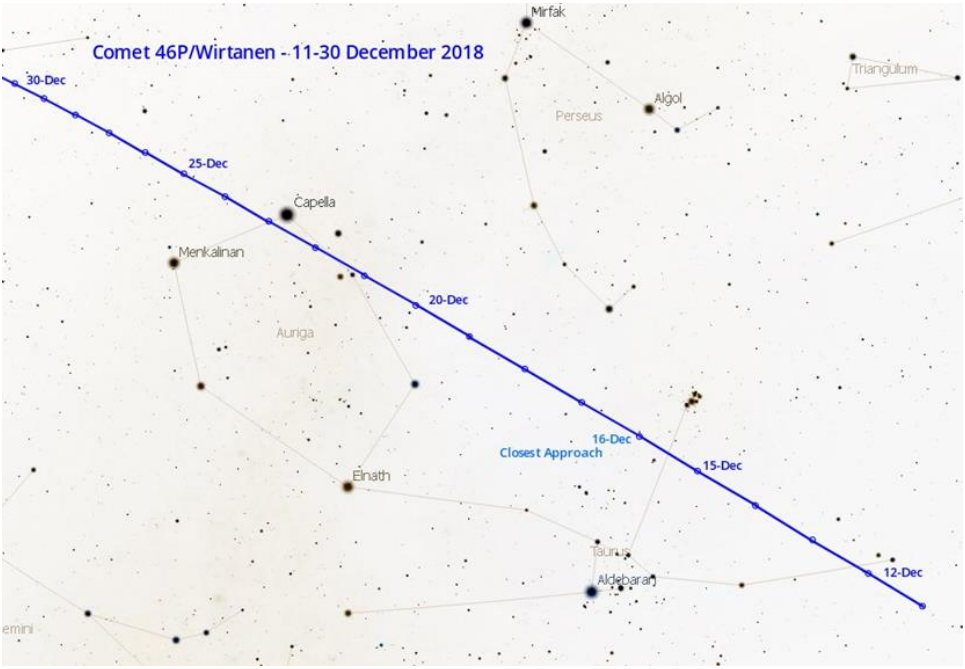
For those of you who are not familiar with looking with binoculars here are a few tips. Number 1 if you can mount your binoculars on a sturdy tripod do so. Do not wear a long coat as this may catch the tripod legs and shake the binoculars as you move around the tripod. If you have not a tripod try sitting on a garden chair the wrong way around so you can rest your elbows on the seat back to help keep the field in the binocular steady. Focus the binoculars on a bright star and then fine tune them to show as many faint stars as possible in the Milky Way field. And finally allow at least 15 minutes for your eyes to get dark adapted, you can easily gain another magnitude of seeing after your 15 minutes of dark adaption.

While you are waiting use the time to look at the constellation shapes and try to identify M31 which is circumpolar and M42 which will be visible at 8 pm low down in the SE.

See if there are tails shown from the coma, the one directly pointing away from the Sun is the plasma tail and consists of ions such as water ions it is sometimes twisted and forms knot in it. It starts to form closer to the Sun than the dust tail. The dust tail slightly pointing directly away from the Sun is usually curved in shape and consists of dust particles of different sizes and shows sometimes 2 closely paired tails. If you try to take photos of the comet be aware that the comet is approaching the Sun at a fast speed and will smear its image in about 1 minute compared to the static background star images. So you will have to guide your telescope and camera on the comet coma to keep the comet static in the photo field and you will see that the star images are extended instead.

Where do comets come from? There are 2 theories one which can be confirmed the other is a theoretical one. The first one states that short period comets of up to 200 years orbital period originate from the Kuiper belt which is a thin disc shape in the zodiac plane, this is situated between 30 astronomical units out to 50 astronomical from the Sun. The minor planet Pluto is situated in this region and since the early 1990's over one thousand objects have been discovered and named in the Kuiper belt region. The majority of these objects have a stable orbit and do not leave the Kuiper belt region. However objects in the belt sometimes come close together and deflect towards the Sun. Comet Halley has a period of 75.5 years and goes away from the Sun on its eccentric elliptical orbit about halfway to the Kuiper belt inner distance from the Sun.

The next theory of comet formation resolves around the Oort cloud theory. This says there is another region like the Kuiper belt situated in the zodiacal plane as a disc shape but situated 2000 to 20,000 astronomical units from the Sun. If comets originate from here they will have very long orbital periods of up to thousands of years But that is not the entire region of the Oort cloud as it the extends outward as a spherical disc from about 20,000 to about 50,000 astronomical units this is about 0.32 light years to 0.8 light years in distance away from the Sun and could contain in its entire mass of billions of objects from less than a kilometre to about 15 kilometres approaching as much as 100 masses of our Earth. However because of its great distance to the Earth it is impossible to see these faint objects so a theory that will allow longer period comets of 200 years to form here will not be proven until telescopes can image such very faint objects which because of their great distance from the Sun.



This year the perigee of Comet 46P/Wirtanen occurs Dec 16, 2018 less than 4 days after perihelion. This is when the comet is near its brightest – maybe even mag 3! At its closest, the distance from Earth to Comet 46P/Wirtanen will be: 0.0781 AU / 30 lunar distances / 7.1 million miles. This is the brightest prediction of known and future passes of this comet. This is also currently the brightest prediction for all comet passes in 2018

Comet 46P/Wirtanen is a short-period comet with an orbital period of 5.4 years. The comet is relatively small in size with an estimated diameter of just 1.2 kilometers. The object was the original target for ESA's Rosetta spacecraft but the launch window was missed so 67P/Churymov-Gerasimenko was Rosetta's target in the end.

Comet 46P/Wirtanen was discovered by Carl A. Wirtanen in 1948 at the Lick Observatory, California via photographic plate. The plate was exposed on 17 January 1948 during a stellar proper motion survey at the observatory. It took over a year before the object was recognised as a short-period comet due to a lack of observations.

46P belongs to a small family of comets that boast a higher level of activity than expected for their nucleus size. They emit more water vapour than they should. This is one of the reasons for added interest in this regular visitor to the proximity of Earth's orbit .

On 26th November it was announced that measurements report a rotation period of 8.91 hr, based on narrowband filter photometry in the OH band of the spectrum. Repetition over at least eight rotations is consistent with a conjecture that the nucleus is in a state of simple rotation.

Colin Jubb

Diary

Date	Time	Location	Subject / Event	
Thu Dec 6th	**19:45**	**Club Room**	**TBA**	*Dr Susan Cartwright*
Wed Dec 12th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu Dec 13th	**19:45**	**Club Room**	**Vikings at Barsoom Part 1**	*Paul Money*
Thu Dec 20th	**19:45**	**Club Room**	**TBA**	*Jez Robinson*
Thu Dec 27th	**19:45**	**Observatory**	**Santa Sent you a Telescope for Christmas!"**	*Paul D'Silva*
Thu Jan 3rd	**19:45**	**Club Room**	**Quadrantids**	*Tony Morris*
Wed Jan 9th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu Jan 24th	**19:45**	**Club Room**	**TBA**	*Sean Palin*
Thu Jan 31st	**19:45**	**Club Room**	**TBA**	
Sat Feb 9th	**16:00**	**Clifton Park**	**PO "Planets in the Park"**	*Club Members*
Wed Feb 14th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu Feb 28th	**19:45**	**Club Room**	**Vikings at Barsoom Part 2**	*Paul Money*

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

Web site: http://msas.org.uk
Old Moor RSPB – Manvers Way, Barnsley, S73 0YF
Clifton Park - 40 Doncaster Rd, Rotherham S65 2BH
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
Masonic Hall - Swinton Masonic Hall, 63 Station St, Swinton, Mexborough S64 8PZ
Mexborough & Swinton Astronomical Society is Registered Charity N° 1064103 in England & Wales

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

Moon

Jovian Europa, Ganymede, Callisto
Is their gravitational pull a cosmic foe
Which sulphuriosly pummels moon Io
With devilish endless predilection
To stretch and distort and taunt with friction?

Io's volcanic eructions flow into labile lakes of lava
Why can't Jupiter's moons combine with Saturnine-like grandeur
Which cajoles Enceladus's plumes of hot ejected water
To freeze into glistening crystal rings of iconic icy splendour,
Unlike the allotropic sulphur spawn of Inachus's daughter?

Geoff Pike