CELEBRATING 40 YEARS 1978 - 2018

The Messenger

Mexborough & Swinton Astronomical Society

March 2019

Elisabeth Catherina Koopmann Hevelius

Born January 17, 1647, Died December 22, 1693) is considered one of the first female astronomers, and is sometimes called "the mother of moon charts".



She was the second wife of Johannes Hevelius. As a young girl just into her teenage years a fascination for astronomy which led her to meet with Johannes Hevelius, an astronomer of international repute who at that time had reputedly the best observatory in the world in Danzig.

She was to marry the fifty-two-year-old Hevelius in 1663 when she was just sixteen. This allowed her to pursue her own interest in astronomy by helping him manage his observatory.

They had a son, who died as an infant and three daughters. Elisabeth contracted smallpox around 1666 and was permanently scarred by it. Following Johannes Hevelius's death in 1687, she completed and published "Prodromus astronomiae" in 1690, their jointly compiled catalogue of 1,564 stars and their positions.

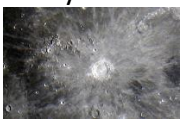
The Prodromus Astronomiae contained, a star catalogue, and an atlas of constellations it also outlined the methodology and technology used in creating the star catalogue.

It provided examples of the use of the sextant and quadrant by Johannes, in tandem with known positions of the sun, in calculating each stars' longitude and latitude. The "Catalogus Stellarum" consists of 183 leaves, 145, alphabetized according to constellation, containing star positions. Each star had specific information regarding the magnitude found by astronomer Tycho Brahe and Johannes' own magnitude calculation. The star's longitude and latitude by both ecliptic coordinates measured by angular distances and meridian altitudes found using Johannes' quadrant, and the star's equatorial coordinates calculated using spherical trigonometry.
Although the observations of the catalogue used nothing more than the astronomer's naked eye, the measurements were so precise as to be used in the making of celestial globes into the early 18th Century.

Elisabeth Hevelius died in December 1693, at the age of 46, and was buried in the same tomb as her husband.

The minor planet 12625 Koopman is named in her honour, as is the crater Corpman on Venus.

Keep Your Eyes Open

Thursday 14th March 	**"A Day in the Life of the ISS"** **Steve Taylor** Steve will regale us with the events of a day aboard the iconic space station which has been in orbit since 1998
Thursday 21st March 	**"Life after Skylark"** **Roger D Cooper** The British Government ended support for the Skylark Sounding Rocket programme in 1979. Thus, opened new opportunities in space technology. The use of orbiting spacecraft to derive a position anywhere on the planet is one of many examples. A tiny fraction of some more obscure applications are presented
Thursday March 28th 	**Annual MSAS Photo competition** Get your entries ready for the event of the year!

Time on Someone's Hands?

Who sat down an actually worked this out! They must have been a lighthouse keeper, or an amateur astronomer waiting for the next clear night!

When written the number, 84,672 becomes as words, EIGHTY-FOUR THOUSAND SIX HUNDRED SEVENTY-TWO. Count the letters in each of those words, multiply them together, and you get $6 \times 4 \times 8 \times 3 \times 7 \times 7 \times 3 = 84,672$. Not just happy with that the next numbers that do this are – 1,852,200, then 829,785,600.

Is that weird or not!

Not sufficiently happy with just finding this instance, he worked out that if you normally say "AND" after "Hundred" then the first number that does this is 333,396,000 – that is THREE HUNDRED AND THIRTY-THREE MILLION, THREE HUNDRED AND NINETY-SIX THOUSAND. Again, you can go on and the next number to do this is 23,337,720,000.

And in my best Michael Caine voice – "There's not many people that known that!"

Mike Hall's March 2019 Skynopsis



Diary (all times **GMT)**

1st	Sunrise 06.45, Sunset 17.35; 06.00 Saturn 6°. East of Moon
2nd	**New Moon**
7th.	Neptune in conjunction with Sun
8th	Sunrise 06.30, Sunset 17.52; 22.00
10th	19.00 Uranus 7° West of Moon
14th	**Moon at First Quarter**
15th	Sunrise 06.16, Sunset 18.04; 02.00 Mercury in inferior conjunction
20th	Equinox
21st	**Full Moon**
22nd	Sunrise 05.59, Sunset 18.15
27th	05.00 Jupiter 1.2°. South of Moon
28th	**Moon at Last Quarter**
29th	Sunrise 05.43, Sunset 18.27; Saturn 1°. North of Moon; dwarf planet Pluto 3°. East of Moon
31st	**British Summer begins**

Galactic Goodies:

	No major meteor showers or showers this month
Occultations	1st. 10.28hMoon occults Saturn; 29th. Moon occults Saturn 04.59h
Moon	**Full** eclipse visible throughout the UK; Penumbral eclipse begins 02.36, full eclipse at 04.40,
	full eclipse ends at 05.53
Messier Objects	M65, M66, M81 and M82, M97 "Owl Nebula", M67

From the Final Frontier

'Lucy in the Sky': - NASA is planning a mission to Jupiter's mysterious Trojan asteroids. These asteroids orbit Jupiter in two groups; one ahead and on behind in the two Lagrange points. The mission is named "LUCY", after the pre-historic skeleton which reveals knowledge of our past. The satellite is expected to reveal further information of our solar system's past.

The mission is still in the planning stage as part of NASA's "Discovery Programme" and will be operated by NASA's Goddard Space Flight Centre and Southwest Research Institute. The spacecraft will include remote sensing instruments to study the geology, surface composition and physical properties, such as mass and densities of these Trojan asteroids.

Launching in 2021; between 2025 and 2033, Lucy will fly close to seven different asteroids. First in the 'Main Asteroid Belt', and then making its way out of the asteroid belt and finishing by observing a rare binary asteroid.

Mike Hall

The Ancient MSAS Astronomer

During my 70 years of astronomy interest much has changed in how astronomers have viewed the night skies. Back in my early tears if you wanted a telescope you usually ground your own mirror and even built your own mount and telescope tube assembly. Roll on another 20 years and it was a case of amateur societies started to grow. There was still very little practical written books etc to help you learn the rudimental so societies helped teach people in the science of astronomy. Yes, it is a science that is why the humble observer has much to learn and even understand about their hobby which for a few is their profession.

So now we have access to low coefficient of expansion of mirror glass which is machine polished and figured to a very higher value than we could achieve on our own. When electronics and semi-conductors appeared, you could accurately control the speed of your drive. This then meant you could now take long exposure pictures of deep sky objects.

I built several drives having to calculate the different gear ratios to try to get the telescope to drive at the sidereal rate, I must confess not with a great deal of accuracy. It usually meant my drive was a fraction fast and it involved then of turning off the drive for about 20 seconds for the object (usually planetary) to re centre in the eyepiece.

Fast forward another 50 years and now superb optics, accurate drives, go to telescopes drives with thousands of objects to observe. I know many say you should learn the sky and move the telescope from object to object manually. If that is your preference do it. However, most people new to astronomy have little knowledge of the night sky and I must confess it took me a long time to use my 60 mm refractor on a manual mount to find faint objects using my 5 X 30 mm finder attached to my telescope.

My idea is to use whatever help that is available to make your viewing experience easier at the start of your astronomy experience using a telescope, then explore the night sky as you become proficient in finding objects with the go to system by star hopping.

About 20 years or so ago people started using web cams to take images of the Moon and planets, this has now put us into the realms of deep sky photos which 80 years ago using photographic plates on the 100-inch reflecting telescope, with our new camera on the C14 we can equal and possibly surpass those 100-inch images from ground breaking discoveries as they were then. So, we may be behind the professional observers but the results we get now at least are a great deal closer to the multibillion spending on the giant telescopes planned for the next 5 to 15 years of completion.

As a keen planetary observer, I have now dipped my toe into photographing deep sky objects. I was surprised that with my Meade alt az mount I managed to get colour showing in M42 nebula with only 15 seconds at 1600 ASA with my Pentax KS1 camera just with a single shot no stacking no dark images these will be tried later I promise for the astro imagers of DSO. So do not despair if you have failures along the way as the society has plenty of knowledge to make you succeed eventually. Do not forget beauty is the eye of the beholder if you like what you see either visually or photographically then be happy with your results.

Colin Jubb



MakeMake

MakeMake – a Kuiper belt object is nicely placed at opposition on the 25th March

RA 13h 6m 5.6s, Dec 24°14’ 8”. It will be at magnitude 17 – so very difficult – but should be accessible to a photograph of 30 secs plus on our 14” celestron at the observatory. If we get lucky should see the movement over a few hours – or even better a day later.

Radio Telescopes at High Bradfield



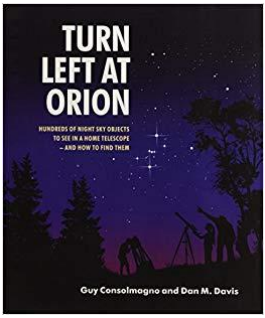
The remains may be gone now – the photographs are from 2013 – when they are being described as "decaying". Sheffield University ran the site next to Yorkshire Waters Kirk Edge reservoir tank. It is now called the Bradfield Environmental Laboratory which as only just opened and is described as;

"*This unique laboratory facility provides an outstanding location for both field teaching and research into the physical and cultural geographies of our landscape and lends itself to short term sampling and longer-term experiments.*
'The department has had a weather station on the Bradfield site for forty years. Now, the development of the new laboratory facilities gives us, for the first time, a real base to provide innovative teaching and research facilities in an upland environment, a UK environment where change is happening quickly'."

A quick search on Google seems to indicate that the University of Sheffield were using the radio telescopes and associated aerials for monitoring meteors as late as the early 1990's.
Maybe next time we get a speaker from University of Sheffield we could ask what happened to them.



Books You Really Should Own



Turn Left at Orion by Guy Consolmagno and Dan M. Davis

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You can find this book on Amazon for various prices – the most current version is about £20.82 (Kindle at £17.27), there are also second-hand issues from the previous publication at £2.82.

Turn Left at Orion is widely regarded as the single best guide for the beginner with a new telescope. Using bright stars in the sky. Each object illustrator gives almost "sat nav" details on how to find it.

This will guide the new telescope or binocular owner to dozens of interesting objects even if they don't know the constellations.

Contains easy to use finder charts and illustrations that show what the objects actually look like through a telescope. With over 100,000 copies sold since first publication, this is one of the most popular astronomy books of all time. It is a unique guidebook to the night sky, providing all the information you need to observe a whole host of celestial objects. The book also shows what you can actually see, rather than the grand hubblesque photographs shown in many similar publications. I've had a copy for years – there's a copy in the club library, maybe we should get one for up at the Ob!

Roy Gunson

Monoceros the Unicorn

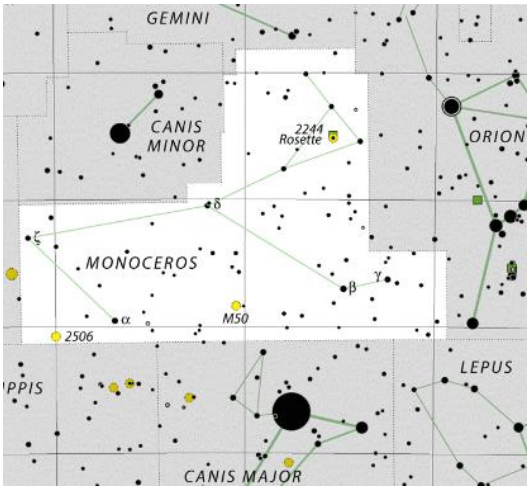
With Orion standing out majestically, faithfully followed by Sirius and fainter Procyon in Canis Minor, the triangular patch of "barren" sky between these stand out objects is perhaps understandably overlooked.

This area is home to the mythical Unicorn, or Monoceros to give its Latin title. The constellation was introducedby the Dutch astronomer and cartographer Petrus Plancius from the observations of Dutch navigators in the17th century. The constellation was created to fill the area between two large constellations, Orion and Hydra,where there weren't any constellations introduced in Greek times. The German astronomer Jakob Bartsch included the constellation in his 1624 star chart as Unicornus. Monoceros is a faint constellation containing only a few fourth magnitude stars, but it is home to some famous variables: S Monocerotis, R Monocerotis, V838, Plaskett's Star, which is one of the most massive binary stars known, and the triple star Beta Monocerotis (a gorgeous triple white dwarf system). The area also contains several interesting deep sky objects: the open cluster Messier 50 (NGC 2323), the Rosette Nebula, the Christmas Tree Cluster, the Cone Nebula, and Hubble's Variable Nebula, among others

Monoceros contains one Messier object, M50., and is an open cluster of stars
The brightest star is beta Monocerotis, mag +3.76. Alpha Monocerotis is the second brightest star in Monoceros. It is an orange giant with the stellar classification of K0 III. It has a magnitude of +3.94 and is approximately 144 light years distant from the Sun. Beta Monocerotis is a lovely telescope, triple star target. The three stars in the system are remarkably similar. William Herschel who discovered it in 1781 commented that it is "one of the most beautiful sights in the heavens". They're all spectral class B3, have temperatures around 18,500 K and are all hydrogen-fusing dwarfs. Beta Monocerotis A is 3,200 times more luminous than the Sun, while components B and C have 1,600 and 1,300 solar luminosities.
Epsilon Monocerotis is a double star approximately 128 light years from Earth. The primary component is a

white, class A5 subgiant, the companion is a yellow-white main sequence dwarf of the spectral type F5, with a visual magnitude of 6.72. The two are separated by 12.1 arcseconds.

S Monocerotis is a massive variable spectroscopic binary system consisting of two stars that orbit each other every 25 years. It is in the Christmas Tree Cluster in NGC 2264, and is surrounded by the nebula Sharpless 273.



Plaskett's Star is a spectroscopic binary star system named after the Canadian astronomer John Stanley Plaskett, who discovered that it was a double star in 1922. The system has an apparent visual magnitude of +6.06 and is approximately 5,245 light years distant from Earth. It consists of two massive, blue O-type supergiant stars. The primary component belongs to the stellar class O8 and the companion has the classification of O7.5. Plaskett's Star is one of the most massive binary systems known, along with Eta Carinae.

It has a total mass about 100 times that of the Sun. The components have an orbital period of 14.4 days.

The nearest known black hole to our Solar System is in this constellation. The binary star system A0620-00 (abbreviated from 1A 0620-00) in the constellation of Monoceros is at a distance of about roughly 3,300 light-years (1,000 parsecs) away. The black hole is estimated to be 6.6 solar mass.



Rosette Nebula NGC2244 Location: Monoceros
80mm 500mm FL Refractor, Camera SBIG 8300 cooled CCD camera
Ha wavelength only. 14 x 5 minute sub exposures

Trevor Worrall

The Rosette Nebula in Monoceros is a beautiful large emission nebula and associated cluster NGC 2244 is some 5200 Ly distant and is about 65 Ly across. Rosette Nebula complex has been photographed by many of our club members, but probably best by Trevor Worrall from his more southerly base!

Also in Monoceros is the prize for winter observers is NGC 2264, The Christmas Tree and the Cone nebula.

"Astronomy compels the soul to look upwards and leads us from this world to another" ~ Plato

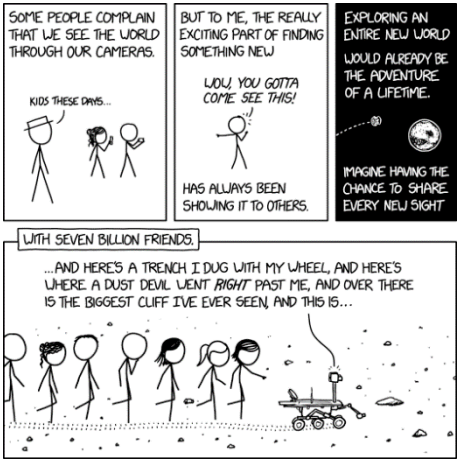
Diary

Date	Time	Location	Subject / Event	
Tue Mar 5th	19:00	Observatory	Visit of 82nd Sheffield Cubs	*Roy & Paul*
Thu Mar 7th	19:45	Club Room	Spring Sky	*Andy Kirton-Vaughan*
Mon Mar 11th	19:00	Observatory	Visit of 93rd Sheffield Cubs	*Roy & Paul*
Wed Mar 13th	20:00	Club Room	Executive Committee Meeting	
Thu Mar 14th	19:45	Club Room	Following the ISS	*Phil Muffett*
Sat Mar 16th		Old Moor	RSPB Manvers – Public Outreach	*Phil & Les*
Thu Mar 21st	19:45	Club Room	Life After Skylark	*Roger Cooper*
Fri 22nd – Sun 24th	***Club Weekend at Malham Tarn***			
Thu Mar 28th	19:45	Club Room	Annual Photo Competition	*Tony Morris*
Thu April 4th	19:45	Club Room	The Backyard Worlds	*Peter Jalowiczor*
Wed Apr 10th	20:00	Club Room	Executive Committee Meeting	
Thu April 11th	19:45	Club Room	TBA	*Prof Sean Palin*
Thu April 18th	19:45	Club Room	Astro News	*Various*
Thu April 25th	19:45	Club Room	Solar Activity 1129 - 2019	*Mick Nicholls*

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



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