CELEBRATING 40 YEARS 1978 - 2018

The Messenger

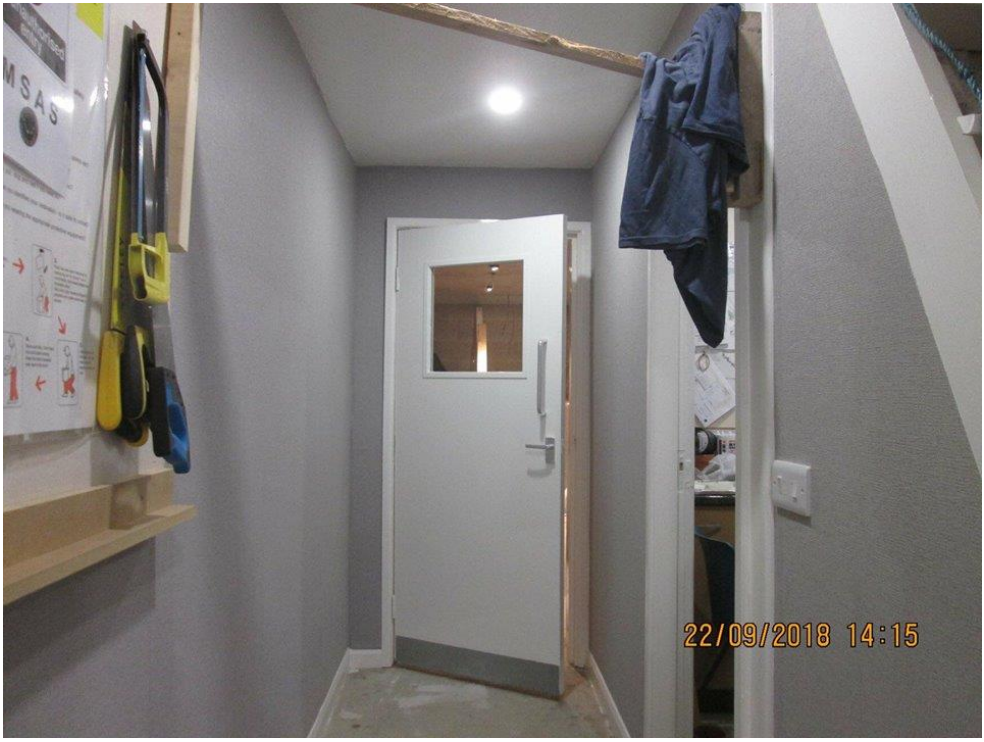
Mexborough & Swinton Astronomical Society

October 2018

The "New" Observatory

Work on the inside of the observatory extension and toilet gathers apace. Can you give some time up to help get the observatory ready for the winter observing season. We are not far off now, but we need hands to paint and "tidy up".

Have a word with Paul D'Silva or Chairman Les to see where you could "lend a hand"



CELEBRATING 40 YEARS 1978 - 2018

Mexborough & Swinton Astronomical Society

Presents

SWINTON ASTROCON

Get your tickets now.

SATURDAY 27th OCTOBER 2018

10am – 5pm

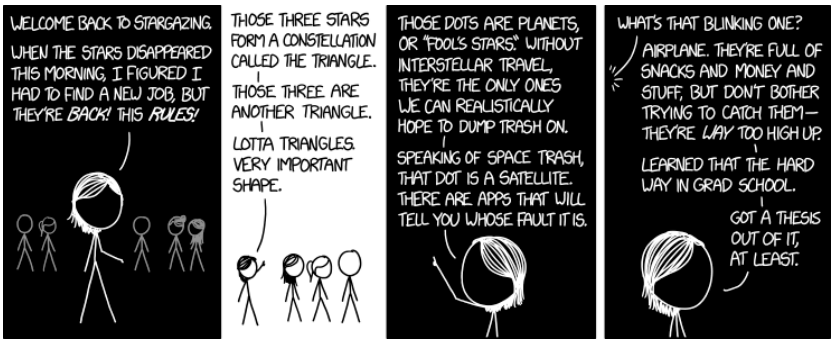
SWINTON MASONIC HALL, 63 STATION STREET
SWINTON, MEXBOROUGH, S64 8PZ

Programme of Talks

10:00	Paul D'Silva	*Introduction & Welcome*
10:15	Dr Sue Cartwright	*Supernovae*
11:00		***Tea/Coffee***
11:15	Peter Rea	*Mars – A Guided Tour of the Tharsis Region*
12:00	Rod Hine	*George Ellery Hale & the Golden Age of USA Astronomy*
12:45		***Lunch***
14:00	Albert Zijlstra	*Planetary Nebulae*
14:45	Roger Cooper	*Skylark*
15:30		***Tea/Coffee***
15:45	Tony Morris	*Astro Imaging*
17:00	Finish	

All this and a Buffet lunch too – all for just £5

STARGAZING 2



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Mike Hall's October 2018 Skynopsis



Diary (all times BST, except Sunrise/Sunset, local (Sheffield) time).

1st	Sunrise 07.06, Sunset 18.44
2nd	Moon at Last Quarter
5th	22.00 Moon at perigee; 04.00 Venus stationary; 18.00 Mercury 2° North of Spica
7th	Dwarf planet Ceres in conjunction
9th	04.00 New Moon
8th	Sunrise 17.19, Sunset 18.27
11th	21.00 Jupiter 4°. South of Moon)
14th	15.00 Mercury 7°. North of Venus
15th	Sunrise 07.31, Sunset 17.55; 03.00 Saturn 1.8°. South of Moon
16th	18.00 Moon at First Quarter; 23.00 dwarf planet Eris at opposition
17th	19.00 Moon at apogee
18th	13.00 Mars 1.9°. South of Moon
20th	22.00 Neptune 3°. North of Moon
21st	Orionid meteor shower peeks
22nd	Sunrise 07.44; Sunset 17.55
24th	17.00 Full Moon; 01.00 Uranus at opposition; 13.00 Uranus 5°. North of Moon
26th	14 .00 Venus at inferior conjunction
28th	02.00 British Summer Time ends
29th	Sunrise 06.58; Sunset 16.41
30th	04.00 Mercury 3° South of Jupiter
31st	17.00 Moon at Last Quarter

The Solar System and beyond:
Draconids meteor shower on the 8th; with no moonlight viewing should be good
Orionids 21st-22nd; visibility poor except for brightest meteors, due to nearly a full moon
Mercury Good viewing this month; 14 to 19 °. Early morning; naked eye object around 20th August (mag. 1.1), reaching mag. -0.7; 5th September passing about one degree north of Regulus
Mars and Jupiter still good evening objects in the west, reaching 21° elevation
Uranus Well placed this month, transiting south in Pisces at midnight mid-month, elevation 50°.
Neptune In Aquarius but low, peaking around mid-night
Pleiades Transiting south around 02.00 hours, elevation 60°.
California Nebula in Perseus transiting south in the evening followed the Triangulum Galaxy

Keep Your Eyes Open



Thursday October 4th **"The Chemistry of Space"**

Dr David M Benoit is Senior Lecturer in Physical Chemistry at University of Hull. He previously led a research group in computational chemistry at the University of Ulm, Germany. His research interests include "Astrochemistry on ice surfaces and interstellar dust grains" and "Molecule–surface interactions"



Thursday October 18th **"The European Extremely Large Telescope"**

Professor Vik Dhilon of Sheffield University will tell us all about the European Extremely Large Telescope (E-ELT) will be the world's largest telescope operating in the visible to infrared wavelength range. The E-ELT will collect 13 times more light than the largest telescopes today and the telescope's adaptive optics will deliver images 16 times sharper than the Hubble Space Telescope.



Saturday October 27th **MSAS 40th Anniversary "ASTROCON"**

Mexborough & Swinton Astronomical Society are celebrating the 40th year of our formation. As part of our year long series of events we have designed a programme of talks at a special day "AstroCon" that we are hosting. There will be a number of trade



Thursday November 15th **"Electromagnetic Spectrum"**

James Swinscoe has been involved in medical research for over 25 years at Weston Park Hospital and University of Sheffield. He will give us a talk on the Electromagnetic spectrum and its uses in medical imaging and investigations.

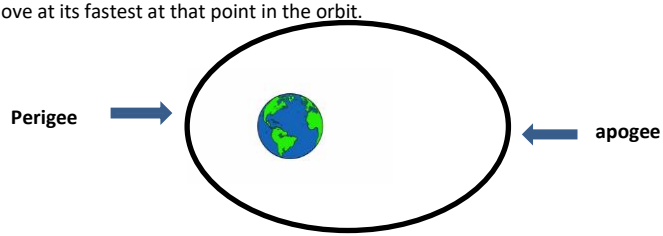


Thursday November 22nd **"What Atoms tell us about Galaxies"**

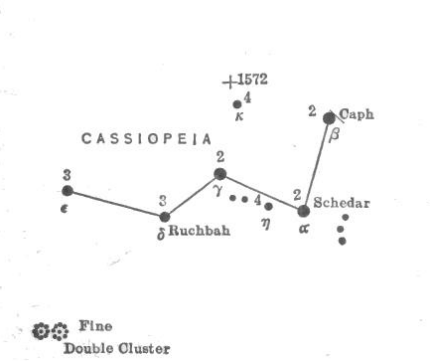
The elements in the world around us are created almost exclusively by stars and this creation process is intertwined with the larger scale growth of galaxies in the Universe. Galactic archaeology is the process of understanding how galaxies formed using clues hidden in the elemental composition of stars. I will explain the origins of the elements and exactly how we can use them to learn about the long-lost history of galaxies.
Dr C Gareth Few is an astrophysicist working at Hull University.

Dictionary Corner

When the Moon or a satellite is near the point in its orbit which is farthest from the Earth and hence called the **apogee**, it appears on account of its greater distance from the observer to move more slowly than when it is at its nearest point in its orbit to the Earth this is called **perigee** and the orbiting body will move at its fastest at that point in the orbit.



Cassiopeia The Lady in the Chair



Cassiopeia is characterized by a zigzag row of stars which form a rude "W, " but in mid-autumn, to an observer facing north, the "W" appears more like an "M," and is almost overhead. To be honest Cassiopeia is fairly hard to miss, and should be easily recognised.

At magnitude 2.2, α Cassiopeia, called Schedar, is the brightest star in Cassiopeia. Schedar is a red giant star some 675 times more luminous than the sun.
Data from the Hipparcos space telescope gives the estimated distance to the star to about 70 parsecs or 228 light years. Like all giant stars, Schedar rotates slowly with an approximate velocity of 21 km/s—a speed which takes the star approximately 102 days to make one complete revolution on its axis

β Cassiopeia, called Caph, a magnitude 2, F class giant. It has 3½ times the radius of the Sun, but rotates on its axis in only 21 hours means that it has a highly squashed appearance with the equatorial diameter being some 25% larger than the polar diameter.

δ Cassiopeia has the traditional name Ruchbah deriving from the Arabic word rukbah meaning "knee, the star Alpha Sagittarii also bore the name Ruchbah but in 2016, the International Astronomical Union confirmed β Cass as Ruchbah and Alpha Sagittarii was given the name Rukbat. δ Cass is an eclipsing binary, but the magnitude change is only from 2.75 to 2.68, which is really only detectable by electronic means, the orbital period being just over two years at 759 days.

1572 marks the spot of (Tycho's Supernova, Tycho's Nova), or B Cassiopeia (B Cas), was a supernova of Type Ia in the constellation Cassiopeia, one of about eight supernovae visible to the naked eye in historical records. It appeared in early November 1572 and was independently discovered by many individuals. The remnant of the supernova has been observed optically but was first detected at radio wavelengths; it is often known as 3C 10, a radio-source designation, although increasingly as Tycho's supernova remnant.

A figure called the "Tinted Hand" also appeared in the stars of Cassiopeia in some Arab atlases. This is variously said to represent a woman's hand dyed red with henna, as well as the bloodied hand of Muhammad's daughter Fatima. The hand is made up of the stars α Cas, β Cas, γ Cas, δ Cas, ε Cas, and η Cas.

Some northern cultures see animal moose antlers in the pattern. These include the Lapps, for whom the W of Cassiopeia forms an elk antler. The Chukchi of Siberia similarly saw the five main stars as five reindeer stags.
If the Earth's Sun could be observed from α Centauri, the closest star to the Solar System, it would be visible in Cassiopeia as a yellow-white 0.5 magnitude star, far brighter than any of the other stars of the constellation. The famous W of Cassiopeia would be unchanged because its stars are much further away than α Centauri, but the Sun would appear as an addition at the leftmost end, closest to ε Cas, creating a zig-zag pattern.
The double cluster is a fine binocular object, NGC869 and NGC884 , in the constellation of Perseus, but unfortunately won't qualify for our Messier binocular challenge. The clusters contain hundreds of blue-white stars and are both about 7,500 light years from Earth. The cluster was first noted as a naked eye object by the Greek astronomer Hipparchus about 130BC, but its appearance as two distinct associations of stars wasn't recognised until William Herschel observed it around 1780.

A Speedy Little Double Star



An image of 70 Ophiuchi by Damian Peach.

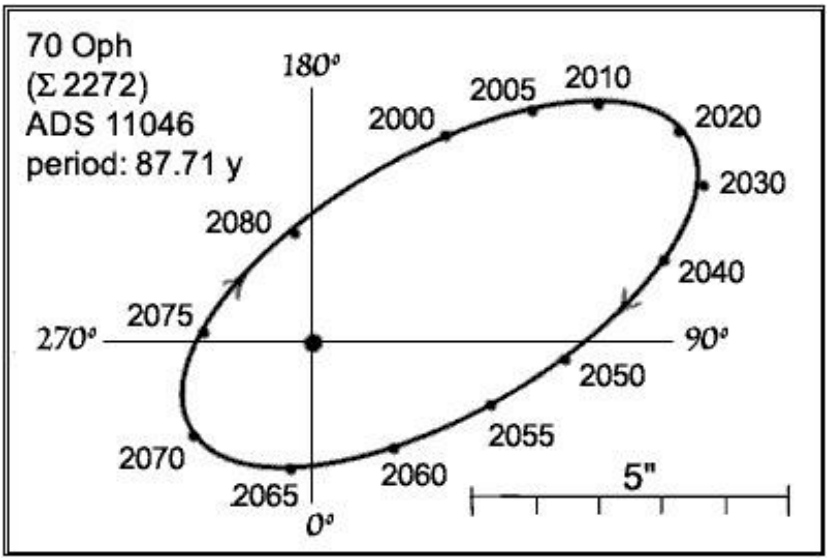
When it comes to observing the stars and other sights beyond our solar system, there's always something new to see. But once you see it, chances are it's not going to chance much in the coming years. That's because things move slowly in the cosmos, at least compared to a human lifetime.

There are, however, a few exceptions. One of the most important for astronomers is the nearby binary star called 70 Ophiuchi, a little gem in the asterism known as Taurus Poniatowski in the constellation Ophiuchus. It's a beautiful star for casual stargazers armed with a small telescope. Serious stargazers can watch over the course of a year or two to detect the motion of the two components as they slowly revolve around each other during their 88-year period. It's one of the few double stars that make a complete revolution within the course of a human lifetime.

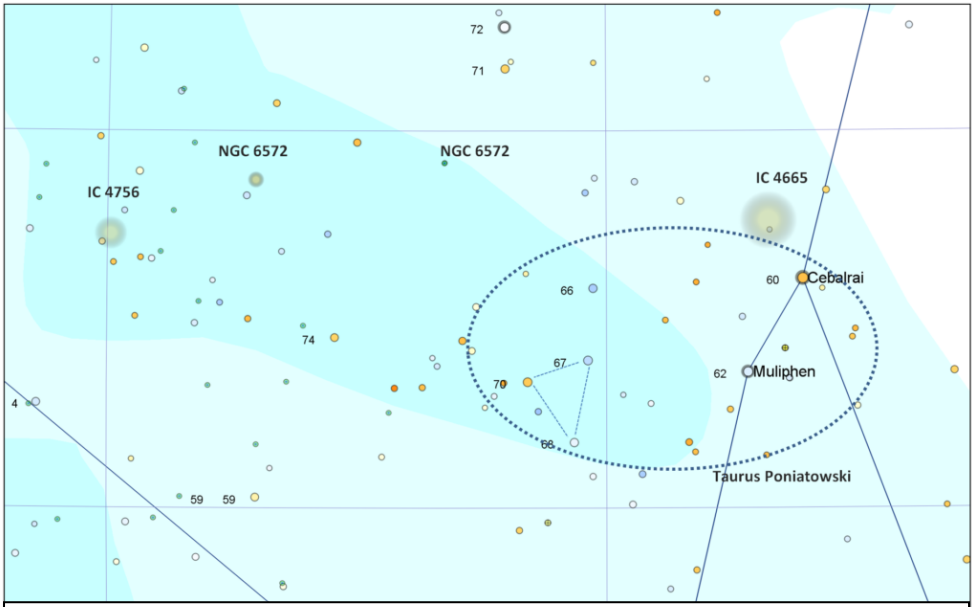
At a distance of just 16 light years, 70 Oph is a relatively nearby star. Both components are small orange main sequence stars, each with a mass of about 90% that of our Sun. One shines about half as brightly as the Sun, while the other is just 1/7 as bright.

70 Oph was first catalogued by William Herschel in the late 18th century. An astute observer, Herschel noted the apparent motion of the two stars around each other, and subsequent studies showed the stars follow a motion predicted by Newton's Law of Gravitation, a law discovered by examining the motion of the planets in our solar system. The measurements of 70 Oph helped astronomers show the same physical principles apply not just to our solar system, but to the galaxy as a whole.

Also, by carefully mapping out the motion of the components of 70 Oph, astronomers used Newton's principles to calculate the mass of the stars. This was a first step towards a deeper understanding of what makes stars tick.



From our vantage point, the two components of 70 Oph have an apparent magnitude 4.2 and 5.9, so the pair is visible to the unaided eye as a single point of light. In this second decade of the 21st century, the pair is separated by about 5”, which means you can resolve them in nearly any telescope using a magnification of 75x to 100x or so. The brighter star has a yellow-gold colour while the fainter looks orange-red. Some observers report a tinge of violet in the fainter star.



The region in and around Taurus Poniatowski in the constellation Ophiuchus. These maps show the asterism as well as the stars 67 Oph and 70 Oph and the star clusters IC 4665, IC 4756, NGC 6633, and planetary nebula NGC 6572.

(Pro tip: to improve your visual perception of colour when observing stars, move your telescope out of focus just a touch to expand the size of the image of the star on the back of your retina. Yes, this really works).
The average distance between the two components of 70 Oph is about the same as the distance between the Sun and Uranus. The stars made their most recent closest approach in 1989. Since then, their separation has quickly increased from a tight 1.7” to a more spacious 5”. In many studies, astronomers suggested the indirect detection of planets around one of the components of 70 Oph. But so far, these detections remain unconfirmed.

70 Ophiuchi lies at the tip of the horns of the little asterism known as Taurus Poniatowski in the constellation Ophiuchus. The area is a rich trove of fascinating objects for observers armed with a small telescope.

Brian Ventrudo

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Diary

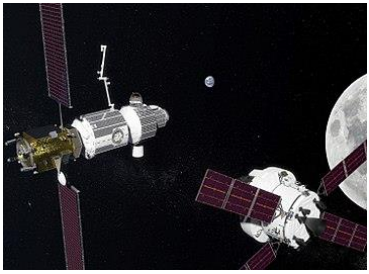
Date	Time	Location	Subject / Event	
Thu Oct 4th	19:45	Club Room	The Chemistry of Space	*Dr David Benoit*
Wed Oct 10th	20:00	Club Room	Executive Committee Meeting	
Thu Oct 11th	19:45	Club Room	TBA	*Andy Kirton-Vaughan*
Thu Oct 18th	19:45	Club Room	The European Extremely Large Telescope	*Prof Vic Dhillon*
Thu Oct 25th	19:45	Club Room	Their Germans were Better	*Mike Hall*
Sat Oct 27th	10:00	Masonic Hall	ASTROCON	
Thu Nov 1st	19:45	Club Room	The First Astrophotographer	*Roy Gunson*
Thu Nov 8th	19:45	Club Room	Magnetometers	*Phil Muffett*
Wed Nov 14th	20:00	Club Room	Executive Committee Meeting	
Thu Nov 15th	19:45	Club Room	Electromagnetic Spectrum	*James Swinscoe*
Sat Nov 17th	17:00	Old Moor RSPB	PO	
Thu Nov 22nd	19:45	Club Room	What Atoms tell us about Galaxies	*Dr C Garteh Few*
Thu Nov 29th	19:45	Club Room	Winter Sky	*Andy Kirton-Vaughan*

(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
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

From the Final Frontier



NASA is planning for a future crewed moon Orbital Platform Gateway. This small, moon-orbiting space station will be assembled and visited with the aid of NASA's Space Launch System mega-rocket and Orion capsule, both of which are in development The Gateway will house up to four astronauts for a month or two at a time and serve as a hub for robotic and crewed exploration of the lunar surface, NASA officials have said. The first element of the Gateway — its power and propulsion module — is scheduled to launch in 2022. Other key pieces will be launched shortly thereafter. If all goes according to plan, astronauts could visit the outpost as early as 2024 and start making trips to the lunar surface a few years later, before the end of the 2020s, NASA officials have said. Picture shows Orion spaceship visiting OPG. This will be a milestone when it happens; no boots have pressed into the grey lunar dirt since Apollo 17 astronauts departed for Earth back in 1972.

Mike Hall