CELEBRATING 40 YEARS 1978 - 2018

The Messenger

Mexborough & Swinton Astronomical Society

April 2018

Project A119



Leonard Reiffel

Leonard Reiffel an American Physicist and inventor who worked extensively for the US Air Force, NASA and US Department of Defence . He later became deputy director of the Apollo program. During the late 1950's he headed up a project for the US Air Force, before the formation of NASA known as Project A119, or "A Study of Lunar Research Flight". This was a top-secret plan developed in 1958 by the United States Air Force.

The aim of the project was to detonate a nuclear bomb on the Moon ostensibly stated to help in answering mysteries in planetary astronomy and astrogeology, however more likely to be more valuable as propaganda and a show of one upmanship against the Russians as the USA were at that time lagging in the "space race".

The idea was to explode a bomb on the darkened limb of the moon so the flash would be visible to the naked eye and the mushroom cloud would be illuminated be the sun. It was planned to use a bomb of at least the same size as that used on Hiroshima.



Carl Sagan

As part of the project team also involved was Gerald Kuiper (the Kuiper Belt) and his young post graduate student a certain Carl Sagan! Sagan and Kuiper were hired to undertake mathematical modelling of the expansion of the explosive cloud around the Moon and estimating it's visibility from Earth. Their idea was to drop a small W25 nuclear warhead along with the Moon's terminator (the division between the illuminated and shadowed parts). This means the mushroom cloud would be lit up by the Sun and could be seen from Earth and, in particular, viewable from Moscow. All of their research showed they did indeed have the technological clout to pull this off.

The project was never carried out, being cancelled primarily out of a fear of a negative public reaction, with the potential militarization of space that it would also have signified, and because a moon landing would undoubtedly be a more popular achievement in the eyes of the American and international public alike. A similar project by the Soviet Union also never came to fruition.

Information of this project leaked out when a biography of Carl Sagan was released in 2000 which indicated that Sagan may have breached security in a job application in the 1960's.

It's believed the USSR had a similar plan to A119, although next to nothing is known about it. Even so, it's very likely their plot was a rushed response to hearing about US plans.

International rules are now in place to stop countries using the Moon as their nuclear weapon playground and the Outer Space Treaty in 1967 means a nuclear device cannot be detonated on or around the Moon.

Ryun Goons

The Thoughts of Chairman Les



I found March to be a busy month yet again. I can only past comments in the following month of our speakers so here's my thoughts of our March speakers. Our guest speaker on the 15th was Prof Brad Gibson of Hull University on 'How Astronomy Effects Our Lives' which I think we all found very enlightening and of great interest.
Our member speaker Peter Jalowiczor gave us the details of searching for exoplanets.
We were to do our thing at RSPB on Saturday 17 March but sadly it had to be postponed due to adverse weather conditions due to loads of snow and freezing conditions. I'm sure it will be reprogrammed for later date. Other items yet to come I will have to comment on in the next issue.
There is a lot work going on behind the scenes concerning the extension and the synopsis of the progress to complete the project professionally and on time.

Les Marsden

Good News

Project Aquarius

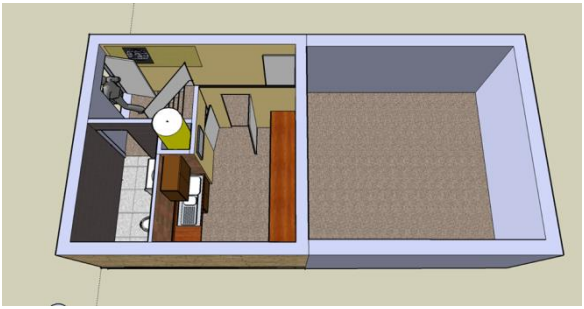
Mexborough and Swinton Astronomical Society are pleased to announce that the Big Lottery Fund has awarded a grant of £10 000 towards their Project Aquarius. We would like to thank all those who play the National Lottery for supporting us and so many other good causes.

BIG LOTTERY FUND

NATIONAL LOTTERY FUNDED

Project Aquarius aims to install a disabled rated toilet, water, waste management system and a bigger workroom at the JA Jones Observatory.

This will allow access for observing the night skies to many more members of the public and membership. Total cost of the project is just about £29000 and we still have a little way to go. If you can help us with building materials, expertise or a donation please leave us a message or contact us via our website at msas.org.uk



Keep Your Eyes Open



Thursday April 5th **"Asteroids"**

Join a regular favourite here at MSAS, Paul Money, for a journey through the Asteroids of the solar system. 018 we have Dwarf planet Ceres and the minor planets of Vesta and Juno, all of which become brighter than magnitude 8.5 on their opposition dates. Minor planets can look just like a faint star in a binocular or telescope so if possible look out for a 'star' that has changed position from night to night as a sure way of identifying which is a faint background star and which is the minor planet.

Speaker – Paul Money



Thursday, 26th Apr **"Deep Sky Observing; Equipment & Technique/Method Part 3"**

A continuation of Tony's series of talks on how to get the best out of your optical equipment and your photographic attachments. He will show us many ways in which to improve our techniques

Speaker – Tony Morris



Thursday 3rd May **"A Lift into Space"**

Mike will be talking to us about methods of getting into space from the surface of Earth including "space Elevators"

Speaker – Mike Hall



Thursday,17th May **"The Physics of Electromagnetic Keyboard Instruments"**

Ed Daw is a Reader in Physics at the University of Sheffield. He has worked on many aspects of 'the Dark universe', including searches for two kinds of dark matter, axions and WIMPs, and the quest for direct detection of gravitational waves with the LIGO instruments, an effort which he joined in 1997. He leads the University of Sheffield gravitational wave research group, which was a member of the team that announced the first and second direct detections of gravitational waves from black hole binaries earlier this year.

Speaker Dr. Ed Daw

Mexborough & Swinton Astronomical Society

Presents

SWINTON 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 stands available selling goods.

SATURDAY 27th OCTOBER 2018

10am – 5pm

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

Programme of Talks

Peter Rea	*Mars*
Roger Cooper	*Skylark*
Tony Morris	*Astro Imaging*
Dr Susan Cartwright	TBA
Rod Hine	*George Ellery Hale & the Golden Age of USA Astronomy*
Albert Zijlstra	TBA

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

Anniversary Solstice Dinner

Our after dinner speaker will be Dr Alan Chapman of Oxford University (and MSAS President)
Friday 15th June 2018 7:30pm
Rotherham Golf Club, Thrybergh Park, Thrybergh, Rotherham, S65 4NU

MENU

Homemade Vegetable Soup
Deep Fried Whitebait with Tartar Sauce
Melon with Seasonal Berries

*****

Thick Cut Braising Steak served with Yorkshire Pudding
Chicken Breast served in a White Wine & Mushroom Sauce
Darne of Salmon with Hollandaise Sauce
Cheese & Spinach Cannelloni

*****

Lemon Tart with a Raspberry Coulis
Honeycomb Cheesecake with Cream
Treacle Sponge & Custard

*****

Coffee & Mints
£20 per head, now taking Bookings, the cost will be £20 per head. Menu on the club notices area.

Mike Hall's April 2018 Skynopsis



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

1st Twilight 06.05, Sunrise 06.40, Twilight 20.15, ; Sunset 19.40; Mercury in inferior conjunction 18.00
2nd Mars 1.3° South of Saturn 12.00
3rd Jupiter 4° South of the Moon
7th 13.00 Saturn 1.9 °South of the Moon; 18.00 Mars 3deg. South of Moon
8th Last Quarter Moon 08.19; Twilight 05.47, Sunrise 06.06.24, Twilight 20.28, Sunset 19.52
12th 23.00 Neptune 1.9°North of Moon
15th Twilight 05.30, Sunrise 06,07, Sunset 20.05, Twilight 20.42;
17th 19.00 Venus 5° North of Moon
16th New Moon 02.58
17th 19.00 Venus 5° North of Moon
18th-19th 14.00 Uranus in conjunction with Sun 05.00 Aldebaran 1.1° South of Moon
22nd Moon at First Quarter 22.47; Twilight 05.13, Sunrise 05.51, Sunset 20.18, Twilight 21.10
29th Twilight 04.56, Sunrise 05.36, Sunset 19.34, Twilight 21.10; Mercury at greatest Western elongation,

The Solar System

Mercury	In inferior conjunction
Venus	Bright but poorly placed evening star
Mars	Starts the month close to Saturn but low in pre-dawn sky
Jupiter	Rising 22.00 by mid-April, moving next month in opposition
Saturn	Lying low in Sagittarius in South-Eastern morning sky
Uranus	Not visible this month (in conjunction with the Sun)
Neptune	Not visible this month from UK
Lyrids	Meteor shower,s18th-25th, peaks ,18.00; 23rd

April's Messier Objects – A gallimaufry of Galaxies
Virgo Cluster:- M87 elliptical galaxy, M100 and M99 galaxies
Canes Venatici:- M51 Whirlpool Galaxy,
Ursa Major:- M101,M108, M109, M81 and M82,

Congratulations





To Mick Nichols who won the 2018 MSAS Astrophotographer of the Year title.

Well done Mick!

Roy Gunson & Jez Robinson were runners-up.

The Lost Galaxy of Copeland



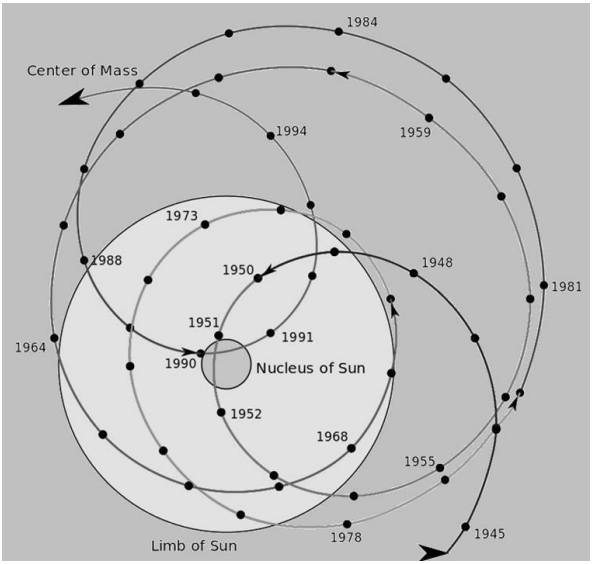
Originally discovered by William Herschel in 1785, NGC 4535 is a gorgeous, albeit low surface brightness barred spiral in Virgo. The moniker "Lost Galaxy" was given it by Leland S. Copeland in his 1955 Sky & Telescope magazine article “Adventuring in the Virgo Cloud”. In his article, Copeland refers to the galaxy as he describes his jaunt thru the Virgo Cluster using his 8" Cave reflector. He states, "North of the Diamond is a very dim spiral, here called the Lost Galaxy, NGC 4535." Leland Copeland was probably referring to NGC4535s difficulty to locate due to its inherently low surface brightness. Copeland also claims that NGC4535's "delicate structure shows only on long exposure photographs".

From the Final Frontier

The private launch vehicle developer, “Space-X”, has successfully launched a heavy cargo into space and landed the carrier rockets back onto a floating platform. Disappointingly, the cargo was a Tesla car, now on its way to Mars. Not satisfied with poisoning the Earth’s atmosphere, we are now sending junk to our neighbouring planet. Surely a more imaginative payload could have been launched!
Most members will be familiar with Haynes Workshop Manuals for cars and motorbikes but they have extended their range into other areas:- Star Trek and Star Wars spaceships, NASA and Russian launch vehicles etc. Members, who have enjoyed Paul Money’s presentations on the Voyager exploration of the outer Solar System and beyond, may be interested in the technology, mission planning and operation of the NASA deep-space probes. The author, Dr Christopher Riley was producer and director of the BBC film “Voyager-to the final frontier”. (NASA Voyager 1&2, Haynes Publishing, January 2018; also recommended “Planet Earth”)

Mike Hall

The Problem with the Orbit of Long Period Comets



The calculation of the orbits of some of these long period comets – some with periods as long as 7 million years, and purported to have originated in the Oort Cloud. Can be problematic – even for the most advanced mathematician and a super computer.

The main issue being is whether you use a heliocentric or barycentric model for your calculations. With a Heliocentric model the centre of the sun and the mass of the sun is used for orbital calculations and this may be fine for objects close in to the centre of the solar system. However the planets all have an effect on the motion of the sun., and the centre of mass, or barycentre, of the solar system changes as the planets – especially the 4 "giants" of the Solar System revolve around the sun. For example, the centre of mass of the Sun – Jupiter "system" lies some 745,000km from the centre of the sun, the figure for Saturn is 410,000km and it is 125,000km and 230,000km for Uranus and Neptune respectively.

So what should an incoming long distance comet be orbiting about? Way out beyond Neptune then you are looking at the "barycentre" of the system, which becomes more important as the comet approached the planetary region, then when it successively passes the major planets the mass centre of its orbit will change, making the calculations difficult. Even very small changes in the comets speed and the value of gravitational attraction in whatever direction will make significant changes in its orbit. A comet originating in the Oort Cloud may only be travelling at a few hundred miles per hour at aphelion and small differences and changes to the orbit may have significant changes.

In 1861 a large comet broke into two when entering the inner solar system, the "two" comets came to Perihelion just 6 days apart. According to the calculations in 300 years' time when they return they will be separated by more than 7 years at perihelion. The diagram above shows the movement of the "centre of mass" of the solar system in relation to the sun in recent times.

E J Thribb

Diary

Date	Time	Location	Subject / Event	
Thu Apr 5th	**19:45**	**Club Room**	**Asteroids**	*Paul Money*
Wed Apr 11th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu Apr 12th	**19:45**	**Club Room**	**Astronomical Videography**	*Mick Nicholls*
Thu Apr 19th	**19:45**	**Club Room**	**Astronomy & Space News**	*Steve Taylor & Others*
Thu Apr 26th	**19:45**	**Club Room**	**Deep Sky Observing; Equipment & Techniques – Part 3**	*Tony Morris*
Thu May 3rd	**19:45**	**Club Room**	**A Lift into Space**	*Mike Hall*
Wed May 9th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu May 10th	**19:45**	**Club Room**	**TBA**	*TBA*
Thu May 17th	**19:45**	**Club Room**	**The Physics of Electromagnetic Keyboard Instruments**	*Ed Daw*
Thu May 24th	**19:45**	**Club Room**	**Summer Sky**	*Andy Kirton-Vaughan*
Thu May 31st	**19:45**	**Club Room**	**Deep Sky Observing; Equipment & Techniques – Part 4**	*Tony Morris*

(Details correct to time of publication)

Old Moor RSPB – Manvers Way, Barnsley, S73 0YF
TCP - Thryberg Country Park
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
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 N° 1064103 in England & Wales

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

The Binocular Messier Challenge

Members will have noticed a chart up on the wall and many of you will have received your little "Observers Notebook". The idea is that over the next 12 months is to record as many of the Messier Objects as you can as seen through binoculars.
If you haven't got your notebook yet please grab Paul D'Silva or Tony Morris by the lapels and get yours now!

You even get to put stickers on the chart for each completed observation – just like being back at school!