The Messenger
Mexborough & Swinton Astronomical Society October 2016

Mary Ward (1827 -1869)



Mary Ward was born on 27th April 1827 at Ballylin in Ireland. She was a cousin to the astronomer William Parsons, the Third Earl of Rosse, who built the giant telescope Leviathan. Mary often visited the Third Earl and was a good artist sketching the construction of the giant telescope as it was built.

Mary was also interested in biology and drew insects, and using a microscope to see the tiny details. Mary taught herself microscopy until she had an expert knowledge. She made her own slides from slivers of ivory, as glass was difficult to obtain, and prepared her own specimens. The physicist David Brewster asked her to make his microscope specimens, and used her drawings in many of his books and articles.

Women in those days didn't attend university and scientific societies were also a male preserve, but Mary wrote frequently to scientists, asking them about papers they had published. During 1848 her cousin William Parsons was made President of the Royal Society, and visits to his London home meant that she met many scientists. William Parsons held his cousin in the highest regard and kept in close touch with her throughout his life. During his presidency of the Royal Society), Parsons would regularly invite her to dinner parties at his London home, where she would meet all the leading scientists of the day – but sometimes it was his young cousin who emerged as the expert. On one occasion when he was unable to answer the query of an eminent guest, Parsons replied, 'My cousin Mary knows rather more than I do on that subject. I recommend that you address your question to her".

She was one of only three women on the mailing list for the Royal Astronomical Society. (The other two being Queen Victoria and Mary Somerville)

On 6 December 1854, Mary married Henry Ward who became Viscount Bangorin 1881. They had three sons and five daughters. Her great-granddaughter being the Doctor Who actress Lalla Ward.

When Ward wrote her first book in 1857 "Sketches with the microscope", she found it very difficult to find a publisher who would accept a woman's scientific work. As a result her first book "Sketches with the Microscope" was published privately. However, in the following year it was published by Groomsbridge of London, as "The World of Wonders as revealed by the Microscope", and proved to be very successful, being reprinted eight times between 1858 and 1880.. In 1859, "Telescope teachings" a companion volume, featuring her drawing of the Birr Leviathan on its cover, was published. Her books, simply written, appealed to all. She also published articles in journals like "Procreative Science" and "The Intellectual Observer".

Death

Mary Ward is known as being the first automobile fatality. On 31st August 1869 while travelling in a steam carriage, that William Parsons' sons had built, with her husband, she was thrown from the carriage, when it hit a bump and crushed by one of the wheels, dying instantly.

West Yorkshire Astronomical Society

From Phil Coursey - Visiting Speakers Secretary, West Yorkshire Astronomical Society

On behalf of the West Yorkshire Astronomical Society, I'd like to extend this invitation out to your societies for our Guest Speaker visiting us on 4th October (details below):

Dr Pete Edwards - Director of Science Outreach and Science and Society Officer in Physics, University of Durham

Talk: "The Dark Side of the Universe".

Dr. Pete Edwards has built up a wealth of experience in the fields of Dark Matter, Gamma Ray Detection and Radiation. He has both authored and contributed to several publications over the years, as well as securing essential grants for the quest to discover the Higgs Boson Particle.

Brightness Scale

The *magnitude* system refers to the numeric scale used by astronomers to quantify object brightness. Its rather baroque character can be traced to its origins over 2000 years ago, when the Greek scholar Hipparchus first began visually classifying stars into six brightness categories, with the brightest stars called "stars of the first magnitude", slightly fainter ones "stars of the second magnitude", and so on. When 19th century astronomers sat down to come up with some sort of mathematical expression corresponding to Hipparchus' original six magnitudes, it was discovered that the brightness of some of the stars he'd assigned magnitude 1 were actually too bright to be so classed based on the rest of his system; these brightest stars now carry magnitudes of 0 and *-1*.

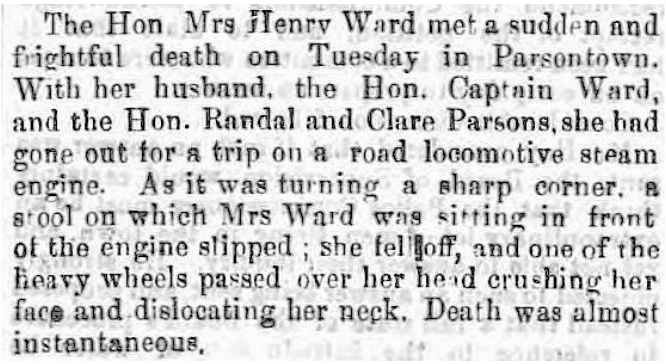
Here are some magnitude values for objects for comparison

Object Magnitude

Sun -26.8, Full Moon -13.6, Venus (at brightest) -4.4, Jupiter -2, Sirius (a Cma) -1.4
Vega (a Lyr) 0.0, Uranus +6 (naked eye limit), Pluto +15

Mary Ward

Nairnshire Telegraph and General Advertiser for the Northern Counties, Sep 8th 1869.



The Hon. Mrs Henry Ward met a sudden and frightful death on Tuesday in Parsontown. With her husband, the Hon. Captain Ward, and the Hon. Randal and Clare Parsons, she had gone out for a trip on a road locomotive steam engine. As it was turning a sharp corner, a stool on which Mrs Ward was sitting in front of the engine slipped; she fell off, and one of the heavy wheels passed over her head crushing her face and dislocating her neck. Death was almost instantaneous.

Mike Hall's October 2016 Skynopsis

Diary (all times BST unless otherwise specified; Sunrise/Sunset local time)

1st	12.00 New Moon; Sunrise 07.08, Sunset 18.42; 06.30 Mercury at mag. -0.7, 100 above eastern horizon
3rd	17.00 Venus 50 South of moon
4th	11.00 Moon at apogee
6th	08.00 Saturn 40 South of Moon
7th	Draconids meteor shower
8th	Sunrise 07.21 Sunset 18.25; 02.00 Pallas stationary, 12 p.m. Mars 70 South of Moon
9th	05.00 Moon First Quarter
11th	Mercury 0.90 North of Jupiter
15th	Sunrise 07.33, Sunset 18.09; 06.00 Neptune 1.20 South of Moon
15th	11.00 Uranus at opposition
16th	04.00 Full 'Super' Moon (33.50), 23.00 Moon at perigee
19th	07.00 Aldebaran 0.30 South of Moon
21st	05.00 Ceres at opposition; Orionids meteor shower peaks
22nd	Sunrise 07.46, Sunset 17.53: 19.00 Moon at Last Quarter
23rd	Minor planet Melpomene at opposition (mag. +8)
26th	04.00 Venus is 30 North of Antares
27th	16.00 Mercury in superior conjunction
29th	Sunrise 08.00, Sunset 17.39
30th	18.00 New Moon; British Summer Time Ends
31st	19.00 GMT Moon at apogee (406,661 km)

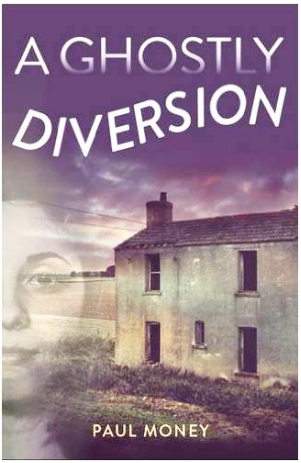
Mercury	Best viewing, early morning for the first ten days of the month, see Diary above
Venus	Poor visibility this month; best opportunity at end of the month 30min. after sunset
lying	60 above SW horizon together with Saturn
Mars	Lying low among the stars of Sagittarius, best seen early in the month 120 above horizon as darkness falls close to the 'Lid 'of the 'Teapot asterism'
Jupiter	Best viewed at the end of the month in the pre-dawn sky in Virgo, close to gamma Virginis at mag. -1.7, 30 arc-seconds
Saturn	Lying quite low in the twilight until in conjunction with Venus on 30th.
Uranus	In opposition on 15th, at mag. +5.2, rising at 18.00 up to 250 by 20.30
Neptune	In Aquarius and well placed for viewing all this month
Pluto	In conjunction with Mars on the 18th, lying to the right of Omicron Sagittarius
Ceres	At opposition 05.00 on 21st, due South after midnight alt. 380 , mag. +7.4, 10 South of 61 Ceti, mag. +5.9

Draconids Meteor Shower

The Draconids is a minor meteor shower producing only about 10 meteors per hour. Produced by dust grains left behind by comet 21P Giacobini-Zinner, first discovered in 1900. Best viewed early evening.

Double Cluster — RA 2h 20m, Dec. 570 08'; in the constellation Perseus, NGC 868 and NGC 884, mag. 4.3 and +4.4 respectively; each cluster approx. half a degree so requiring a good wide field.

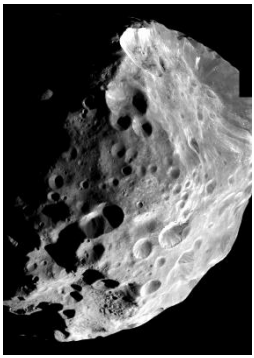
A Ghostly Diversion



Paul Money is not now only an acclaimed "Telescopic Observer" & "Speaker to Astronomers", he has now ventured into the realms of "Writer of Novels and Strange Tales".
His first novel is entitled "A Ghostly Diversion" and is set around his local hunting ground of Horncastle.
Whilst not in the realms of Stephen King, the story is strong enough to keep you wanting to read it further. The descriptions of the local countryside settings give a sense of reality to the events depicted.
The story has an old fashioned ghost story feel to it without all the blood and gore of the modern genre that seems to permeate TV and film.
The story encapsulates a mystery to be solved along with the ghostly goings on in old abandoned country cottage, it'll keep you engaged from first to last.
So all in all I'd recommend it – and be quick I believe there's a sequel on its way.
The book can be bought off amazon either in paperback form or direct to your kindle.

Roy Gunson

Running Rings Around the Centaurs



Centaurs are asteroidal bodies that orbit between the gas planets of the solar system, because of the position of these orbits they may be unsustainable over many million years. It is thought that these centaurs may be strays from the Kuiper belt, and when they are further disrupted and sent into the inner solar system they will become comets. Several centaurs are already known to show comet like behaviour. It is thought that the Saturnian moon Phoebe (pictured left) may be a captured centaur.
The largest of these Centaur bodies is 10199 Chariklo, discovered in 1997, and is estimated to be 232 km (144) miles in diameter. Unusually this minor planet has also been found to have rings. In fact it has two rings, named Olapoque and Chui at orbital distances of 395 and 405 km. The rings have a wifth about 5km. It is thought that the gap is caused by the presence of a shepherd moon which at present remains undiscovered (it will be very small and hence very faint)

Recent calculations indicate that passage close to one or more of the gas giant planets, probably Uranus, may have helped form the rings through tidal disruption of the surface. (Chariklo is in a 4:3 orbital resonance with Uranus, and it's aphelion being 18.5 AU compared with Uranus's perihelion of 18.3 AU).

Until the discovery of the rings in 2014, many believed the only celestial bodies with rings around them were the four gas giants: Jupiter, Saturn, Uranus, and Neptune. Researchers took out multiple telescopes during stellar occultation, an event that occurs when a celestial body blocks light from a star. Soon after this initial discovery of the rings around Chariklo, rings were discovered around 2060 Chiron.

Camera Shutter Speeds, Aperture and ISO.

For those wanting to start photographing the night sky here are some beginners tips

The Moon is a very bright object in the sky, but most of the other stuff we want to photograph is faint. So we need to record as much light as possible. There are usually two ways in which a digital camera lets more or less light onto the chip behind the lens which gathers and records this light.
You should always use the manual setting (big letter M on the canon camera's and from there you can easily alter the ISO and other settings.
Firstly there is a shutter that opens and lets the light into the camera, the longer that shutter is open the more light will go onto the chip, also the larger the hole the more light will be let in as well. Shutter speeds (the length of time the shutter is open) run from a very small intervals of time from around $1/1000^{th}$ of a second to several seconds (most DSLR cameras have a fixed maximum of about 30 seconds), there is also a setting called "Bulb" which can be used to extend the period of time the shutter is open.
Aperture settings are given by a series of numbers such as F/2.5, F3.8, F4, and F8. A setting of F4 means it has a bigger hole to let the light in than an F/8 setting. You'll probably find that the F setting is adjusted by twisting the lens as is dependent on the type of lens you have. So low F numbers are the widest field of view.
With a digital DSLR camera you can also change the sensitivity with a factor known as the ISO. ISO numbers may range from a value of 100 to 32,000 or more. The higher the ISO number the more sensitive the chip will be to light entering the camera. Unfortunately there is a trade of and at the higher ISO settings you can get more noise within the image which may make that picture look "grainy".
You can buy remote camera switches for DSLR camera's, some automatic, some manual, which when the camera shutter is placed in "Bulb" mode allows you to extend the shutter opening beyond 30 seconds. However without some kind of tracking device to follow the movement of the sky for general exposures of the night sky beyond 30 seconds will probably result in streaking where the star images become elongated due to the Earth's rotation.
Use a tripod to steady your camera, and preferably, if not using a remote device to trigger the exposure, put some delay on the shutter opening
On most DSLR cameras there will be an opportunity to alter something called "White Balance" , leaving the White balance to auto is fine but in our skies around Rotherham, Sheffield and Barnsley you will quickly get a reddish tint to the sky with exposures longer than about 5 seconds. This is due to light pollution, and even though towns are installing the newer LED street lights there won't be a lot of improvement. You can buy a filter to go in the camera, however if you alter the white balance to "tungsten" you might see an improvement.
Get your camera on a tripod, point it at a bright star, and take a photograph of say 5 seconds. If the image isn't a point (you can use the zoom in feature to check the image), then keep adjusting the focus until you get the sharpest, point-like, image you can. After several sessions you should get a feel for exactly where the best focus will be. (It's usually a little way back in from the full stop infinity, as camera manufacturers actually make the very end stop of the infinity focus just beyond "infinity" to allow themselves a bit of wriggle room in the manufacture of their camera's and lenses.)

Use a tripod of some steady surface

Set the camera to widest aperture

Set the shutter speed to the best value for the conditions (Bulb if you have a remote shutter control)

Set the ISO reasonably high

Set White Balance to Tungsten

Focus to get pinpoint stars

Use self- timer or remote to release shutter

The Thoughts of Chairman Les



Hello everyone this is your chairman speaking and I hope that you are all well.
It is very sad times for the society particularly those of us who used to visit Aberystwyth annually for some first class observing under very dark skies.
Our Honorary Member Jeff Williams has died from leukaemia at age 66 and he will be sorely missed.
Jeff helped the society in so many ways particularly on the technical side of things in any, if not all, our developments in the last 23 years.
Our thoughts are with his wife Janet.

Boston Castle Rotherham

This was our first joint venture with Boston Castle. We were to provide Solar Telescopes at ground level, a 'scope on the roof to investigate the surrounding area and a couple of indoor presentations.
The programmed was to run from 11.00am to 3.00pm. The weather was not ideal at first for solar observing but the cloud did clear and customers got a couple of hours observing. The 'scope on the roof proved to be extremely popular and was busy all day. The presentations were not such a success as they were to be held in the Craft Room which was very busy all day by entertaining the children. Our display on the ground floor was well received by the visitors and proved to be a success yet again. The end of the day came round very quickly and was a rush to clear things away to close the rooms and secure 'The Castle'.
At this busy time there was phone call from 'The Star' saying their reporter was coming to do an article on the day. This in its self was a busy and interesting period as the reporter wanted lots of information for her to give a good and full report of the day.



I wish you clear skies

Les Marsden FRAS

Chairman

Horncastle Astronomy Weekend

A small delegation of members (Roy Gunson, Steve Taylor, Mike Collinson plus ex-member Gary Gawthorpe) went to Horncastle this year on September 9th – 11th. It was held this year at Minting Village Hall.
We were entertained and educated with talks from Alan Chapman, Neil Haggath, Mary Spicer, Mike Foulkes and Peter Rea amongst others. The Saturday night observing time was spoilt originally by clouds – we were told it cleared up after midnight, but by that time we'd headed back to the digs for more liquid refreshment!



Steve, Gary & Mike enjoying the Sun



Some of the solar scopes on show during Sunday

Mick Nichols Talk

Following on from my talk here is a list of the software what I mentioned on the night.

1. Polar finder	free software for easy location of Polaris on polar scope for Goto and equatorial mounts.
2. Stellarium	the best freeware planetarium and Goto mount control currently available.
3. WinJupos	free software to show data and graphical representations of the planets etc. as well as limited processing.
4. IMGALT	free software for image alignment (not stacking).
5. Regustax 5.0/6.0	free software for image stacking and limited processing.
6. PIPP	free software for video conversion and extracting individual frames from video.
7. Castrator	free software for cropping video files etc.
8. BackyardEOS	software for using the Canon DSLR for deep sky and planetary imaging. The software has to be purchased and is not freeware. Several versions available



Programme for September & October 2016

Date	Time	Location	Subject / Event	
Thu Oct 6th	19:45	Club Room	TBA	*Tony Morris*
Fri Oct 7th	19:45	Observatory	PVE	*Les Marsden*
Sat Oct 8th	18:00	Old Moor RSPB	Stargazing Extra + Pie & Peas	*Les Marsden* *Phil Muffet*
Wed Oct 12th	19:45	Club Room	Executive Committee Meeting	
Thu Oct 13th	19:45	Club Room	Isaac Newton & the Surrey Pumas	*Mike Frost*
Thu Oct 20th	19:45	Club Room	Ultra-High Energy Cosmic Rays	*Dr Matthew Malek*
Thu Oct 27th	19:45	Club Room	Astronomy News	*Various*
Sat Oct 29th	13:00	H.A.S.	Yorkshire Astromind	
Thu Nov 3rd	19:45	Club Room	Uncertainty of Mr Heisenberg	*Roy Gunson*
Wed Nov 9th	19:45	Club Room	Executive Committee Meeting	
Thu Nov 10th	19:45	Club Room	Grubb Telescopes	*Steve Taylor*
Fri Nov 11th	19:45	Observatory	PVE	*Les Marsden*
Thu Nov 17th	19:45	Club Room	TBA	*Nick Hewitt*
Thu Nov 24th	19:45	Club Room	Winter Sky	

Old Moor RSPB – Manvers Way, Barnsley, S73 0YF
H.A.S. – Huddersfield Astronomical Society
RA – Rockingham Arms, Wentworth
Clifton Park –Clifton Lane, Rotherham, S65 2AA
Thryberg Country Park – Doncaster Rd, Rotherham, S65 4NU
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

On Thursday October 20th Dr Matthew Malek will be talking on 'Ultra-High Energy Cosmic Rays: Messengers from the Extreme Universe'

'The highest energy cosmic rays remain one of the Universe's most elusive mysteries. We have detected cosmic rays with energies greater than a tennis ball travelling at 100 miles per hour, yet we know next to nothing about these quirks of nature. What are they made of? Where do they come from? And, most puzzling of all, what in the Universe can accelerate a particle to such extreme energies? In recent years, the latest generation of cosmic ray observatories -- including the Pierre Auger Observatory in Argentina and the US-based Telescope Array -- have started to shed light on this puzzle. In this talk, I will review the history of cosmic ray observations and summarise what we now know, then point the way forward to future discoveries"