The Messenger

Mexborough & Swinton Astronomical Society

November 2017



Dancing the Telescope Tango – and Dave had lost his castanets!

"A postcard from Almeria" inside

Keep Your Eyes Open



Les Marsden

Saturday 11th November – RSPB Old Moor

The evening will start with a choice of guided walk to our hides to watch the wonderful wildfowl come in to roost. You may even see the barn owls return to their nests or even our elusive bitterns settling down in the reed beds. Following the walks the astronomy society will be on hand to show you the wonders of the night sky through their powerful telescopes. In the classroom will be an amazing presentation of film footage of the stars. Meanwhile in the visitor centre there will be a demonstration of a planetarium to show you the wider planetary systems. Up in our cafe soup and hot drinks are available



Dan Tovey

Thursday 23rd November: Dispatches from the high energy frontier

The latest results from the Large Hadron Collider

Professor of Particle Physics at Sheffield University. Works on the ATLAS detector at the Large Hadron Collider in Cern



Prof. Vik Dhillon

Thursday 7th December : The European Extremely Large Telescope (E-ELT)

With a primary mirror of diameter 39m, 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. The E-ELT is already under construction, with first light planned in 2024.



Susan Cartwright

Thursday 14th : GW170817: The birth of a new Astronomy

Gamma-ray bursts are one of the most energetic phenomena in the universe. Astonishingly, the very first neutron star merger observed by aLIGO, on the 17th of August 2017, turned out to be associated with a short gamma-ray burst. This GRB was ten times closer than any previously observed short gamma-ray burst, and unusually faint--perhaps because we were looking at it from a slightly less than optimal direction--but it is still enough to provide the "the clearest smoking gun for the compact object merger model". Furthermore, the "kilonova" outburst predicted to occur as a result of the neutron star merger was observed over the whole electromagnetic spectrum from X-rays to radio.

(See diary page for times and location)

BACKYARD WORLDS

Background



2011 was a milestone for me as I was named a discoverer of four exoplanets within the framework of the prestigious Lick-Carnegie Team. After the research finished, I participated in alternative projects such as collating material for a book about different types of stars (football stars!) at the old Millmoor football ground (2012) and to another book: a WWII research project (2014) about the Polish ex-servicemen who settled in Rotherham after the war and made their lives here amongst which my dad was one.

New Project

Top of the league for projects (in interest) has to be Astrophysics and, the probable existence of planet nine in our Solar System year led to the inception of the Backyard Worlds project led by NASA scientist Dr. Marc Kuchner (2017). The aim was primarily to encourage volunteers to distinguish real celestial objects from image artefacts in data from NASA's Wide-field Infrared Survey Explorer (WISE) mission. The real objects are brown dwarfs and low-mass stars, the Sun's nearest neighbours. The prizes of participating include finding an object closer than Proxima Centauri (the closest star to the Sun) or even discover the Sun's hypothesized ninth planet which models suggest might appear in these images. Brown dwarfs are of course failed stars with masses ranging from 13 Mj TO 80Mj. The project means advanced users become aware of professional tools available to Astronomers. Over the months, I have become self-trained in the use of Astronomical database systems to vet candidates through SIMDAD, VizeR, IRSA Finderchart , to name a few. Although I am still learning…

Surreal, but Real!

In my experience, this project has offered something different: the means of being able to communicate with people live: videoconferencing. With it the opportunity to speak to representatives from some of the leading institutions in the World! I'd not done this since 2005 via Skype and when I received a request an invitation from Dr. Marc Kuchner to link up in February, I was unable to do so (no camera amongst other things!). Not to worry, later chances would come. The linkups have become a regular monthly event. During my first one I was so nervous that I typed my name to introduce myself on-screen to everyone; now it is a real pleasure to participate!

However, the discovery would come at the beginning of September. During one videoconference, reviewing the procedures I was implementing for vetting candidates. Feeling that statistically I should have had a discovery by now following months of submissions. Dr. Adam Schneider of the University of Arizona asked for one of my submissions. Quoting the last one on my list from the previous evening. To my amazement he confirmed an undiscovered object with proper motion, most probably a red dwarf! He forwarded me a research paper so I could pin down the exact spectral type by comparing different colours in VizeR. It turns out to be an M5 class object. The benefit received out of the discussions was that it has improved my vetting of candidates so (hopefully!) there should be more to come. The dwarf hasn't been published yet as it will be part of a population of objects in our neighbourhood.

And Finally…

In particular, I would like to discover a few brown dwarfs. Then I could 'have' a collection of objects ranging in mass from the gas giants of our Solar System (with the exoplanets) straight through to the M-dwarf. But then when do you stop?

Peter Jalowiczor

Mike Hall's November 2017 Skynopsis



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

1st	Sunrise 7.04 Sunset 16.35
2nd	13.58 Venus 3.3° North of Spica; Uranus at 23.00h highest in the UK sky close to 45° altitude
4th	Full Moon
5th	Lot's of stars in the sky and bangers too! Expect smoke clouds.
6th	Moon is at Perigee, 361 438 km; Aldebaran is 0.8°. South of Moon
8th	Sunrise 7.18; Sunset 16.22
10th	Moon at Last Quarter : 01.58 Beehive Cluster is 2.7° North of Moon
12th	Northern Taurids meteor shower, see below
15th	Sunrise 7.31, Sunset 16.10; 00.40 Mars 3.2° South of Moon
17th	Leonids meteor shower
18th	New Moon
22nd	Sunrise 7.43, Sunset 16.01
24th	Mercury at Greatest Elongation, 22,**0 °** East skimming South West horizon a dusk
26th	Moon at First Quarter
29th	Sunrise 7.55, Sunset 16.53 : Mars 2.9° North of Spica in early morning

The Solar System

Mercury Starts the month in Libra, moving into Scorpius then loitering between Ophiuchus and Sagittarius **Venus** Mag. -3.9 as morning object at the start of the month,low down at 10° at dawn
Jupiter Not visible from South Yorkshire
Mars Morning object in Virgo throughout November. Rises before Sun mid-month; 14° high
Saturn Not visible from South Yorkshire
Uranus A mag. +5.7 object dimly visible in Pisces. Just past opposition.
Neptune A mag. +7.9 low down and will disappear around 11pm mis month

Galactic Goodies

Triangulum Galaxy (Messier 33)[RA 01h 33m 50s; Dec +30deg 39' 37''; Mag. +5.7;Size 71'x47']
Third largest galaxy in the local group, approximate dia 60 000 LY; approx. distance 2.6 – 3 million LY

Comet C2017 01 (ASASSN)

Date	RA	Dec	Mag
1st Nov	04h 54m 40s	+69° 26' 45"	+7.9
8th Nov	04h 53m 40s	+75° 21' 33"	+8.0
15th Nov	04h 43m 18s	+80° 09' 00"	+8.3
22nd Nov	04h 12m 43s	+83° 45' 37"	+8.5
1st Dec	02h 29m 43s	+86° 27' 24"	+8.9
8th Dec	00h 34m 53s	+86° 53' 32"	+9.2

As can be seen the comet is moving rapidly across the sky and you are advise to check hourly Ephemeris (such as theskylive.com)

Raising Club Funds with "easy fundraising"

With 'that time of year' approaching and we are all about to go on a spending splurge I'd like to remind you how you can raise money for your MSAS without spending anything extra.

1. If you buy anything from Amazon please access the Amazon site via our homepage. There is a link near the bottom. If you use this then we receive 1.5% of the purchase price. Yes Dave, I do think you deserve that 60 inch ultrahigh definition TV you've been thinking about and Jan deserves those 1 ct stud earrings that would go nicely with that necklace.
2. Easy Fundraising is a clearing site for charitable donations. This is a little more involved.
    a. Go the easy Fundraising site at www.easyfundraising.org.uk.
    b. In the box 'Join Us' type in Mexborough and Swinton Astronomical Society and select our entry.
    c. Click on 'Join Us' under our logo
    d. Fill in your details (one time process) then 'next'.
    e. Select Gift Aid option – only select this if you want the society to claim the tax back, and then 'Next'.
    f. Install the donation reminder – this will tell you when a shopping website is signed up to Easy Fundraising and will start the claiming process automatically.

That's it. Every time you shop on-line the computer will automatically detect if a shopping site offers a donation and will send it.

Please remember to use and encourage friends and family to use our portal to the Amazon site.

Thanks,
Paul D'Silva

DISTANCE OF SPIRAL NEBULAE – An article from 1918 Falkirk Herald

The question, "Are Spiral Nebulae External Galaxies?" has been actively debated by astronomers during the past few years, and a summary of evidence pro and con is presented Dr Crommelin in "Scientia.". It is interesting that astronomers are returning the idea of Sir William that many nebulae and clusters are distinct galaxies, or island universes, far outside our own. Herschel's estimates of their distances are quite out of the same order of magnitude those now accepted; he assumed for example, that the Great Nebula in Andromeda was the nearest of them, and at distance of about 15.000 light years. Spectroscopic proof, first adduced by Huggins, that many nebulae are gaseous, showed that their non-resolvability in the telescope is not indication of immense distance and led to reaction against the "external galaxy" idea; and the belief became general that all the nebulae belong to our own stellar system. The pendulum swung in the opposite direction after photographic methods had revealed the great number of spiral nebula; and their distribution with respect to Milky Way—there are few near it and they are most numerous near its poles. The spectroscope reveals enormous radial velocities in the spirals. Some are approaching or receding from us at a rate of more than 1000 kilometres per second. This implies motions across the line of sight of the same order magnitude; yet" these nebulae show hardly any 'measurable proper motion—another indication of immense distance. "Most of the evidence." says Dr Crommelm, "seems to favour the extra-galactic position of the spirals; but if we once adopt this it follows that they are of dimensions quite comparable with those of our galaxy. This, combined with the resemblance of shape, justifies us in concluding, at least a plausible assumption, that they are similar formations. Recent evidence also indicates that some the globular star dusters are distant the spirals. Hertzsprung has suggested that the globulars are star systems in settled state, while spirals are the result of the interpenetration and mutual capture two globular clusters.

A Postcard from Almeria

During September David & Jan were guests of Andy, Judy & Alfie (the Westie) of the Mexborough & Swinton Astronomical Society, Southern Observatory in Almeria, South Eastern Spain.
Leaving a cool & dry Manchester, the weather upon our arrival was a very pleasant 25 Celsius. During the transfer from the airport to our destination, the "Mews", or as Phil described it the "garage", Andy provided a brief outline of the features and location of Andalucía.
Over a "light supper" our objectives and the reasons for the holiday where outlined to our hosts. As the first night was clear, we took the opportunity to explore the observatory, which is cleverly disguised as a "Sauna". With the telescope aligned to Saturn, our "adventure" began.
Saturn was clearly observed and imaged and the "Milky Way" was visible in all its splendour. Our main objectives had been achieved within the first few hours of arrival!
Day 2 began with a hearty breakfast and plenty of tea. With "wall to wall" sunshine coupled with the sighting of some "Bonelli's Eagles", the Solar observing commenced. Using Hydrogen Alpha, Calcium-K and White Light we imaged a small sunspot and some minor prominences. (My 3Tb hard drive was filling up and this was only our first full day. Jan was busy absorbing the "rays" to improve her suntan, seated by the pool, with dragonflies & butterflies keeping watch.
The "Eagle Nebula" (M16) was the first deep sky object to be selected. This nebula is 7000 light years from earth and was discovered by Jean-Philippe de Cheseaux in 1745-46.
The "Triffid Nebula" (M20) was then selected. This nebula is slightly closer to earth, just 5200 light years away and was discovered by Charles Messier on June 5th 1764.
It is such a pleasant experience to observe the solar system during warm September nights as opposed to the colder temperatures at "Hoober"!
A globular cluster (M56) was also imaged. This cluster is approximately 32,900 light years away and as a strange coincidence, was discovered by Charles Messier on the 19th January (my birthday) in 1779.
Note to Phil M. The "water feature" is attracting a wide variety of wildlife. During our stay the following were observed:

- Crossbills
- Bee Eaters
- Siberian Warbler
- Crested Lark
- Swallows
- Goldfinches
- Spanish Sparrows
- Bats
- Geckos & Small Lizards



Disappointingly the Ibex & Tortoises failed to put in an appearance!
On a lighter note a very brave mosquito decided to "bite" Jan. She was introduced to a very efficient Spanish medical service and had the injections & antibiotics to show for it. Thanks to Andy for his proficient medical interpretation.

Conclusion
Our objectives were definitely exceeded. The astrophotography "summer school" should be experienced by all members. The clear skies & warm evenings are thoroughly enjoyable.
I now have the data to bring all the aspects together, that is, observing, data gathering and processing to a final image.
Good food, good conversation & first class hospitality. Who could ask for more?

Our thanks go to Andy & Judy for a memorable & enjoyable experience. We will return. Yes you have been warned!

David & Jan Stallard

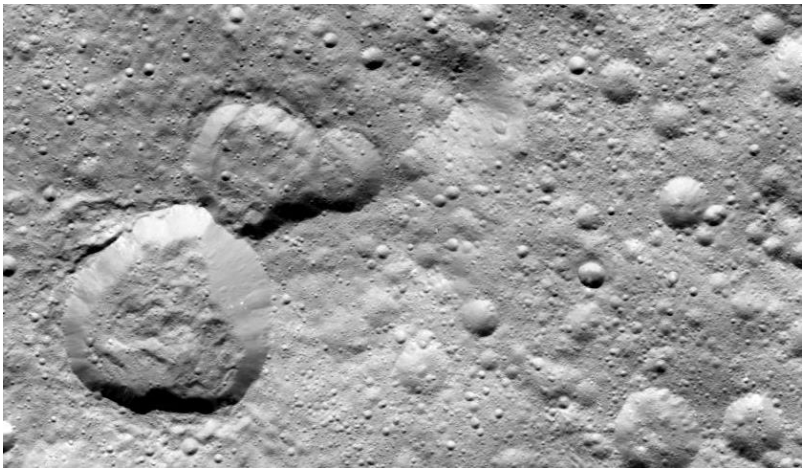
An Extended Dawn

NASA has authorized a second extension of the Dawn mission at Ceres, the largest object in the asteroid belt between Mars and Jupiter. During this extension, the spacecraft will descend to lower altitudes than ever before at the dwarf planet, which it has been orbiting since March 2015. The spacecraft will continue at Ceres for the remainder of its science investigation and will remain in a stable orbit indefinitely after its hydrazine fuel runs out.

The Dawn flight team is studying ways to manoeuvre Dawn into a new elliptical orbit, which may take the spacecraft to less than 120 miles (200 kilometers) from the surface of Ceres at closest approach. Previously, Dawn's lowest altitude was 240 miles (385 kilometers).

The extended mission at Ceres additionally allows Dawn to be in orbit while the dwarf planet goes through perihelion, its closest approach to the Sun, which will occur in April 2018. At closer proximity to the Sun, more ice on Ceres' surface may turn to water vapour, which may in turn contribute to the weak transient atmosphere detected by the European Space Agency's Herschel Space Observatory before Dawn's arrival. Building on Dawn's findings, the team has hypothesized that water vapour may be produced in part from energetic particles from the Sun interacting with ice in Ceres' shallow surface.

Since its launch on Sept. 27, 2007, Dawn has achieved numerous technical and scientific feats while traveling 4 billion miles (6 billion kilometers). It is the only spacecraft to orbit two extra-terrestrial solar system targets. It is also the only spacecraft to orbit a dwarf planet, a milestone it achieved when in entered orbit around Ceres on March 6, 2015. The spacecraft's ion propulsion system enabled Dawn to study each of these worlds from a variety of vantage points and altitudes, creating an impressive scrapbook of 88,000 photos. Additionally, Dawn's suite of instruments enabled it to take a variety of other measurements of Vesta and Ceres, revealing the contrasting compositions and internal structures of these two bodies.



The “Rubber Duck” craters - Halki Crater, the 'head,' is 12 miles (20 kilometers) in diameter, while Telepinu Crater, the 'body,' is 19 miles (31 kilometers) across.

Diary

Date	Time	Location	Subject / Event	
Thu Nov 2nd	**19:45**	**Club Room**	**Comets**	*Peter Jalowiczor*
Wed Nov 8th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu Nov 9th	**19:45**	**Club Room**	**Stars : Part 3 Age & Development**	*Roy Gunson*
Sat Nov 11th	**18:00**	**Old Moor RSPB**	**Public Event**	*Les Marsden*
Thu Nov 16th	**19:45**	**Club room**	**Scanning for Meteors**	*Phil Muffett*
Thu Nov 23rd	**19:45**	**Club Room**	**Despatches from the High Energy Frontier**	*Prof Dan Tovey*
Fri Nov 24th	**19:45**	**Observatory**	**PVE**	*Les Marsden*
Thu Nov 30th	**19:45**	**Club Room**	**Winter Sky**	*Andy Kirton-Vaughan*
Thu Dec 7th	**19:45**	**Club Room**	**The European Extremely Large Telescope**	*Prof Vik Dhillon*
Wed Dec 13th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu Dec 14th	**19:45**	**Club Room**	**GW170817: The Birth of a New Astronomy**	*Dr Susan Cartwright*
Thu Dec 21st	**19:45**	**Club Room**	**TBA**	*Jez Robinson*
Thu Dec 28th	**19:45**	**Club Room**	**TBA**	*TBA*

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

Anniversary

The committee has set a date of June 15th for next year's Solstice Dinner. We are looking at possibly hosting an anniversary conference, and maybe a "trip". If any member has suggestions please talk to a committee member below.

Les Marsden – Chairman
Shaun O'Dell – Secretary
Glenn Marsden – IT Officer
Paul D'Silva – Fundraising Officer
Andrew Kirton-Vaughn – Observations Officer
Roy Gunson – Deputy Chair
Mick Collinson – Treasurer
Tony Morris – Curator
Steve Taylor – Programme Coordinator
Phil Muffett – Member without Portfolio