



Ayrshire Astronomical Society

March 2013

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This Month's Meeting – 25th March 2013

Hi Everyone,

Welcome to the March issue of the AAS newsletter

Last meeting: Bob gave a fascinating talk about the incredible journey of a couple of portholes.

This month's meeting: Dr Lynn Smith will give a talk about 'The Moons'.

Please note: The meeting in May has been brought forward from the 27th to the 20th.

Look out for

Astronomers are already getting set for the arrival of Comet ISON, which may become one of the brightest comets ever seen when it cruises through the inner solar system this fall.

NASA has brought together a small team of experts to organize an observing campaign for Comet ISON, which could potentially shine as brightly as the moon when it makes its closest pass by the sun in late November if the most optimistic scenarios play out.

ISON is a sungrazing comet, meaning its long, looping path through space takes it extremely close to our star. Indeed, ISON is forecast to zoom just 680,000 miles (1.1 million kilometers) above the solar surface on its closest approach, which will take place on Nov. 28.

Comet ISON could put on a spectacular show around this time, experts say, potentially glowing so brightly that it's visible in the daytime sky. (The comet poses no impact threat to Earth.)

"Sungrazers experience the most intense thermal and gravitational stresses of any comet. There's a lot of

We are looking for volunteers to stand for nomination for the new committee. All members of the society are eligible to stand for nomination regardless of how long they have held their membership, and also regardless of whether they have previously sat on the committee.

Please give it some thought, and let us know if you're interested!

sublimation of material that doesn't normally sublimate," Battams told SPACE.com.

"Observing campaigns are planned by the SOHO, STEREO and SDO solar missions; by Spitzer, Chandra and Hubble space telescopes; and by the Deep Impact, JUNO, Mercury MESSENGER, Mars Odyssey and Mars Reconnaissance Orbiter missions," the CIOC website states. "Other missions at or on Mars are looking into observing ISON, as are a handful of other NASA Planetary missions. We welcome and encourage our international partners to contact us and join in the fun!"

There's no guarantee that ISON will live up to the hype; it may fall apart before even making its closest solar approach. Comets are notoriously unpredictable and sometimes fizzle out despite great expectations, as Comet Kahoutek did in 1973.

Condensed article from Space.com. Written by Mike Wall.

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Credit: NASA

Equipment and Top Tips

When I started out in astronomy many moons ago, I used the naked eye and binoculars to get to know the night sky. This is a very good way to start and learning the constellations and the brighter stars will be an aid to you no matter where you intend to take your astronomy.

The most versatile and portable binoculars are either 7 x 50mm or 10 x 50mm models which will give you a nice widefield view of the night sky and will aid in recognition of constellations, and finding objects such as star clusters. Any larger magnification and it then becomes necessary to mount the binoculars on a tripod and the narrower field of view makes it more difficult to orientate oneself - One dim star looks much like another. When buying, aim to buy the better quality BAK4 prism binoculars and not the BK2 or Roof prism types. BAK4 will give you a bright undistorted view.

After spending many years behind two optics, I decided I wanted a closer look at some of the objects I viewed through the binos, so I bought a Meade ETX 90 Maksutov Cassegrain reflector telescope which allowed excellent views of brighter nebulae and the planets and moon. I enjoyed 2 years of observing the night sky with this little scope. Unfortunately, because it had a focal ratio of f/13 and high magnification, combined with a relatively small impeded light path (the secondary mirror gets in the way on all of this style of reflector) the objects weren't particularly bright, and deep sky objects were often very dim, and as these were the objects I wished to view, I knew that a bigger aperture, faster scope was necessary.



My next purchase was a British made Orion 150 Europa Reflector Telescope... 6 inches of aperture at f/5, with only a small secondary mirror in the light path, meant that the views of nebulae and galaxies were much brighter. The Orion also came with a sturdy equatorial mount and I also purchased a clock drive for the right ascension axis which allowed me to track objects and also carry out basic prime focus photogra-

phy of the brighter objects quite well. As Allan has already alluded to, a sturdy mount is half the battle when viewing objects and especially when photographing them. A wobbly, unstable mount will create a fuzzy image and is next to useless in windy conditions. A stable mount will allow the telescope to stay firm in all conditions and consequently the observer is afforded the best possible view. I would have continued quite happily with the 6" Orion learning the night sky with the aid of setting circles and sky charts, but I had a yen to photograph objects that are invisible to the naked eye and often invisible even through a finder scope. I thought about upgrading the mount only, to a computerised one, but really I wanted a larger scope.... 'Aperture Fever' strikes again! So my 6" reflector is now doing sterling service in Hampshire as my nephews and niece enjoy astronomy for the first time! On hand over, there was quite a lot of cloud, but I managed to show them a nice view of the Andromeda Galaxy M31, which has set them on the right track. I'd definitely recommend this sort of scope to anyone learning astronomy, as it can be used for both planetary and deep sky observing and provides excellent views while being very portable.



My latest telescope is the Celestron CPC 925 f/10 Schmidt Cassegrain complete with computerised goto alt-az fork mount and a heavy duty wedge to allow long exposure astrophotography. I was looking to buy a Meade 10" LX200

scope as I was advised by Past President Bob Bower that a 10" SCT is really the largest that can be handled in the field. Bob was absolutely correct, and although I can handle the CPC 925 quite well, it is a mammoth beast and when I'm cold and tired, I do sometimes struggle to setup/dismantle! While looking for the LX200, I came across an advert for a little used Celestron complete with motor focuser and guidescope rings.... And the rest of course is history!

I absolutely love this telescope, as with a focal reducer, it allows operation at 1480mm at f/6.3 - good for wide field views of nebulae as well as 2350mm at f/10 - good magnification for planets and moon detail. Remote operation and autoguiding for astrophotography is also possible and 100 objects viewed in one night isn't difficult at all. The mount is rock steady and now I have modified the drive train with new hardened steel bearings, the tracking is very accurate and allows me to expose for several minutes unguided.

I have also upgraded the collimation screws to "Bob's Knobs" which allows very easy secondary collimation in the field and will stop me from ramming a philips screwdriver through the glass corrector plate. All these little improvements make life a little easier! The Starizona motor focuser allows focusing from the computer when observing a star image through the camera and when combined with software like Maxim DL allows autofocus... something previously unheard of until now! This is fine when using the scope with a laptop or in an observatory but I'm a bit dinosaur like, and on occasions still prefer to manually focus using a Bahtinov Mask in the field. Very often the KISS method is the best! My scope happily connects to The Sky 6 Planetarium Program... So once the scope is properly aligned, all that you need to do is click on objects in The Sky 6, and the scope automatically slews there for observing.



Currently the Celestron CPC 925 GPS XLT is available for £1,895 in standard configuration.

I hope we get many more nights with clear skies and good seeing, and if anyone would like to join me for an evening's observing, keep a watch on <http://facebook.com/Ayastro>, or register your interest by phoning either me on

01294 558306 or Nick Martin on 01292 590209.

All the best,

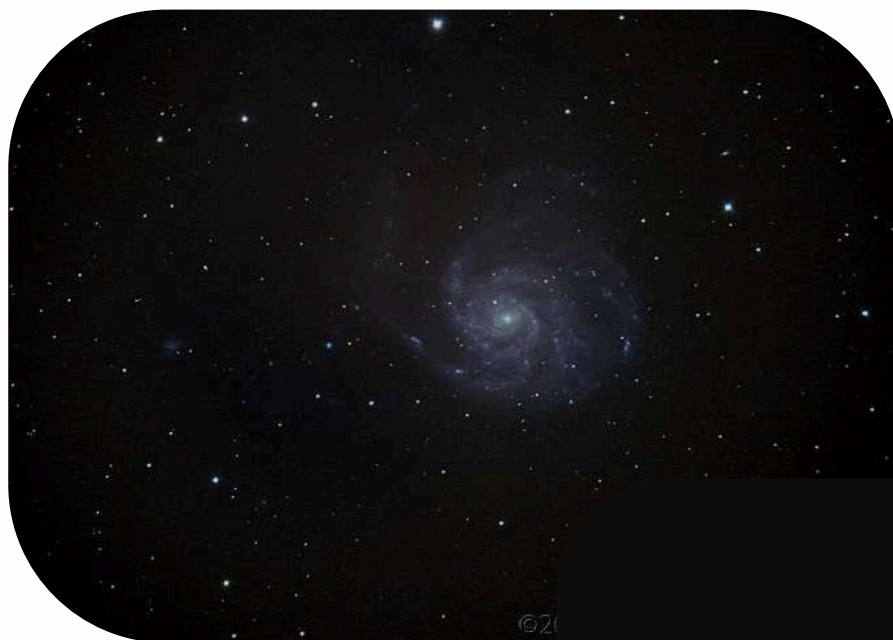
Clear Skies!

Roger H. Harman March 2013

Images taken with the Celestron CPC 925 GPS XLT

credit: ©2013harmanimaging.com

Pinwheel Galaxy M101



Saturn - during poor seeing



SDSO Monday the 11th

We all hope that when the new moon appears it coincides with clear skies, but more often than not this never happens! So with our fingers crossed we all looked forward to Monday the 11th March, the day after the new moon and the skies were set to be clear. As the date approached, heavy snow covered Ayrshire in a blanket of white and we thought the cloudy curse of the new moon would strike again. But the road up to the observatory was clear so it was all systems go for a proper dark sky session!

Paul, Roger, Nick, Willie, Allan, Derek, Rob from the observatory, Dave and myself had decided to meet before last light on the plinth of the SDSO to set up our own equipment. The night, as promised, was very dark and very clear; excellent conditions for stargazing and having a good go at the McIntyre challenge. The only downside was the cold and a good bit of wind-chill to add to the plummeting temperature. But being brave astronomers, we would not be put off!! Just at last light we searched the western horizon for comet Panstarrs, which was just visible from the top deck of the obsy as a dark line through binoculars. As full darkness descended there was a flurry of activity as the team finished setting up equipment: polar aligning, losing essential bolts (Roger), and realising I had left my dew shield in Darvell! Eventually the bolts were duly found, and a dew shield made from cardboard and stick tape!

So, on with the astronomy with Allan and myself deciding to search for the "more difficult" objects on the McIntyre challenge, starting with M1/Crab nebula, using his 90mm refractor and my 254mm schmit/newt. Allan had been determined to view all the challenge objects using star hopping maps and his small scope, good on him! M1 was an easy find at the obsy for Allan thanks to the dark sky and no MOON. This nebula had previously eluded his attempts to tick it off his list, and looked great through both scopes.



Next was the clownface/eskimo nebula, another tricky object which required a bit more work by comparing the image on my scope to star patterns on Allan's. But he found it ..another ticked off the list.

Nick and Roger had set up the society's own scope and mount, the 130 TMB refractor on an eq6, but the handset seems a little "wayward". So after a bit of fiddling, Nick had lined up on Jupiter, and we all had a look at the gas giant. Roger then started observing using his own CPC 9.5 scope slewing to the Crab nebula. Meanwhile Willie had aligned his new scope/mount which was having its second outing, and was viewing M42.



Determined as ever Allan star hopped to find the Leo Triplet with his refractor, easily finding M66 and M65, two of the three galaxies in the triplet. With a little trial and error the lenticular third galaxy was found, and the doublet was upgraded to a triplet! Roger also found the doublet, and after the addition of a focal reducer the three galaxies all were visible in the f.o.v. Next on the challenge list was bodes nebula/M82. This is one of the "classic" spring galaxies together with its companion M81, and seeing them both in the same f.o.v is wonderful. We were not disappointed as they were bright and easily resolved through everyone's scope. They looked amazing against the dark skies...another ticked off the list. And time for a cuppa, thanks Nick.

After a hot cuppa and a biscuit in the warm room at the observatory the intrepid astronomers headed back out to carry on with the challenge, M87 was the next object to tackle, and arguably the trickiest. This galaxy sits at the heart of the huge cluster of galaxies in Virgo, and the trick is to see how many others you can see around it. Allan found the "fuzzie" and added another tick to his list.

M87 was the highlight of the night for me, easily resolved in my scope as a bright central core with spiral arms, but the amazing thing was the amount of other galaxies around it, stretching from side to side of the f.o.v. Further away there were at least half a dozen easily seen, and perhaps the same again which were just tiny irregular shaped fuzzies ... excellent. Time was against us as it was getting late and some of us had work in the morning, so M51/whirlpool galaxy was the last difficult object on the challenge Allan had not observed through his scope, and it proved to be difficult to star hop towards it, as it sits in quite an empty part of the night sky, near the bottom star in the handle of the plough. But just as he was about to give up .. bingo!! He had it. You could easily see the familiar shape of the galaxy and its smaller companion NGC5195. Roger and myself had now set up our kit to



do some Astrophotography, imaging the Leo triplet and moving on to other objects. We are looking forward to seeing the results.

All in all we had a great night of astronomy with super dark clear skies. Hats off to Allan McIntyre who, using modest equipment, a 90mm refractor and a manual (handraulic! ask Roger) mount, showed us that it is possible to observe all the objects on the list including amazing deep space objects like star clusters, galaxies, and nebulas with just a little determination and patience and a good star map. Only Saturn to go and Allan will be the first to complete the spring challenge and claim his own "biscuit of quality". Thank you and well done to everyone who was at the obsy on Monday night !

Paul C at the Darvel astroshed

Let there be light....

The universe is large, unimaginably large, the most distant galaxies are so far away that their light takes millions of years to reach us even though light can travel at 186000 mps (miles per second), now that is really fast. At that speed a ray of light could go seven times around the world in just one second - gosh, and I thought my little Triumph Herald 13/60 convertible was fast at 62 miles per hour -- with a tail wind!! It was thought that the speed of light was constant but we now know it's not only in a vacuum does light reach its maximum speed, in other mediums the speed of light varies considerably, always being slower than the figure everyone knows. Through diamonds for example light goes at 'only' 81000 mps. Until recently, the slowest recorded speed of light (through Sodium at -272°C) was just over 38 mph...yes, miles per hour - slower than a bicycle! In 2001, the same team from Harvard University managed to bring light to a near standstill by shining it into a BEC (Bose-Einstein Condensate) of the element Rubidium. This element was discovered by Robert Bunsen - yes, he invented the 'burner' we are all familiar with from our school days, but light is actually invisible! -- you cannot see light itself, you can only see what it bumps into! A beam of light in a vacuum shinning at right angles to the observer cannot be seen.

It is actually quite logical when you think about it; if light was visible it would form a sort of fog or veil between your eyes and everything in front of you. Darkness is equally strange - it's not there, but you can't see through it!! -- gosh, astronomy sure is a thought provoking hobby!!

Those lovely sunrises and sunsets -- what causes them? When the sun is rising or setting and is low in the sky, its white light must pass through more of the earth's atmosphere than when it is high in the sky and thus the colours at the blue end of the spectrum which have short wavelengths are scattered and absorbed by the molecules in the atmosphere so that they seem to disappear completely while the red, yellow, orange colours at the opposite end of the spectrum (long wavelengths) pass through and consequently display themselves to us in their full finely glory.

And finally...

The dark winter nights are still with us, so, tonight if the sky is clear, go outside, and look upwards - it costs nothing to make friends with the universe.

Alex Baillie



Programme of main speakers for 2012/2013 Club Meeting Nights

10th September	"Transits of Venus"	Mrs Margaret Morris
22nd October	"Bob & Dave's Most Excellent Adventure: The Final Cut"	Bob and Dave
26th November	"Exploring the Dark Side of the Universe"	Prof. Martin A. Hendry
17th December	Christmas Dinner	
28th January	"Asteroids Resources and Exploitation"	Dr. Joan Pau Sanchez Cuartiles
25th February	"Which Way is Up?"	Bob Bower
25th March	"Moons"	Dr. Lyn Smith
22nd April	"The Edge of the Solar System"	Dr. Alex McKinnon
20th May	AGM and social evening	

Astronomers Discover Extremely Rare Triple Quasar

For only the second time in history, a team of scientists including Michele Fumagalli from the Carnegie Institution for Science in the United States have discovered an extremely rare triple quasar system. Their work is published in the Oxford University Press journal Monthly Notices of the Royal Astronomical Society.

Quasars are extremely bright and powerful sources of energy that sit in the centre of a galaxy, surrounding a black hole. In systems with multiple quasars, the bodies are held together by gravity and are believed to be the product of galaxies colliding. It is very difficult to observe triplet quasar systems, because of observational limits that prevent researchers from differentiating multiple nearby bodies from one another at astronomical distances. Moreover, such phenomena are presumed to be very rare.

The team led by Emanuele Farina of the University of Insubria in Como, Italy, combined observations from the New Technology Telescope of the European Southern Observatory at La Silla, Chile and from the Calar Alto Observatory in Spain with advanced modelling. This enabled them to find the triplet quasar, called QQQ J1519+0627. The light from the three quasars has travelled 9 billion light years to reach us, which means the light was emitted when the universe was only a third of its current age.

Advanced analysis confirmed that what the team found was indeed three distinct sources of quasar energy and that the phenomenon is extremely rare.

Two members of the triplet are closer to each other than the third. This means that the system could have been formed by interaction between the two adjacent quasars, but was probably not triggered by interaction with the more-distant third quasar. Furthermore, no evidence was seen of any ultra-luminous infrared galaxies (galaxies with very strong emission in infrared light), which is where quasars are commonly found. As a result, the team proposes that this triplet quasar system is part of some larger structure that is still undergoing formation.

"Honing our observational and modelling skills and finding this rare phenomenon will help us understand how cosmic structures assemble in our universe and the basic processes by which massive galaxies form," Fumagalli said.

"Further study will help us figure out exactly how these quasars came to be and how rare their formation is," Farina added.

Article from Science Daily:

<http://www.sciencedaily.com/releases/2013/03/130312>

I wish to remind everyone that your articles and/or photos are always welcome. Feel free to send them to me to be published in the newsletter at astrostef@yahoo.com.

See you all on Monday night, Stéphanie