



The CHESTERFIELD ASTRONOMICAL SOCIETY

Newsletter MARCH 2016

CAS website www.chesterfield-as.org.uk

Registered Charity No. 514048

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Juniors members - (17 yrs and under) £0.
(All juniors must be accompanied by an adult who must be a fully paid up member).

Welcome to the March issue of the CAS newsletter.

CAS News

Friday 19th February – Talk by Dr Malek

Another excellent talk by Dr Malek which was very well received by an appreciative audience with a good (and fairly length) question and answer session afterwards. To say this was well attended was an understatement, we were packed to the rafters!

Visits to the Observatory

Another busy month with visits from children's groups. A total of eight visits (approximately two a week) with an offsite visit to Hardwick Hall. These were manned by the usual "crew" without whom these would not be possible so a big thank you to all who have given talks and attended to help out in the dome, with telescopes outside and attended the offsite visit.

Our Friday nights are also busy with visits from adults who "didn't realise this place was here" although they live only a short distance away. Our 18" telescope never fails to "wow" all our visitors, old or young, who then want to know the story behind it and its history, which of course we are happy to tell them.

From these visits we have sparked new interest in astronomy for some people and gained some new members. We rarely have a Friday night without people coming up to the Observatory who have never been before and some who, after a phone call, turn up with their telescopes for some "expert" advice and help with setting it up and how to use it.

Coming up.....

Friday 18th March – Talk by Martin Braddock – Europa – Mission to unlock her secrets

Another talk to put in your diaries. This should be very interesting so hopefully we will have our usual good turnout!

LAST REMINDER!.....

HADDON GROVE ASTRO-CAMP – Friday 1st April to Sunday 3rd April

The first Astro-camp of the year will take place on Fri 1st Apr - Sun 3rd Apr, it will be at our normal venue at Haddon Grove. If anybody would like to go please let me know, either by email peterdavison45@virginmedia.com or by phone 07806670609. If you do not wish to spend the night then visitors can come along for an observing session at one of the darkest sites in Derbyshire. If you do fancy camping but do not have any equipment then I could lend out tents and sleeping bags. Please let me know as soon as possible if you wish to borrow anything so I can get them to you in plenty of time before we go.

This is from Peter Davison, please contact him if you need anything or have any questions.

One to put in your diaries for April.....

**Talk on the 15th April by Clare Burrage
Entitled: The dark side of the universe**

Billions of years ago the Big Bang sent everything flying apart. In theory, gravity should stop galaxies from moving apart and matter should eventually re-collapse on itself. Surprisingly, we have learnt that galaxies are actually moving apart with ever-increasing speed. Nothing in our current knowledge of physics can explain this, but theorists are developing a solution: dark energy. Roughly 70% of our universe is comprised of dark energy and yet very little is known about it. I will describe what we currently know about the nature of dark energy, how it affects other matter in the universe, and what plans we have for observing this mysterious force.

Please check our website frequently to see what's on and when. Also have a look at our photo gallery plus news and notices.

Also please remember if you ordering from Amazon to follow the link from our website – it earns us commission!

Photo gallery.....

These two are from Graham Leaver taken last night 28/02/16 (just made it!)



These below are all from Mark Eustace and he has been kind enough to give some details about them.

Alnitak

This is the bright star that is the furthest left of the three in Orion's belt and is 736 light years away from us. A huge emission of ultra-violet light results in the flame nebula being lit up by Alnitak. The correct name for this type of nebulae is a transmission nebula. Unfortunately I did not possess the time or perhaps the skill to capture the flame nebula so we'll just have to enjoy looking at this class O blue supergiant for its own sake.



Betelgeuse

This is everyone's favourite 10 million year old red supergiant. In red supergiant terms, Betelgeuse is at the end of its days and could explode at any moment. Actually, since it is about 650 light years away, it could have exploded in the last 650 years and we wouldn't know it yet as the light from the blast would still be on its way to us.



Orion's Nebula

One of the most photographed nebulae in the night sky, Orion's Nebula or M42 is a beautiful star nursery; a place where new stars are being formed. This is a couple of light years across and is part of a much larger nebula – the Great Orion Molecular Cloud Complex which covers the entire constellation and is about 150 light years across. It's a monster of a cloud with many gorgeous nebulae contained in it.



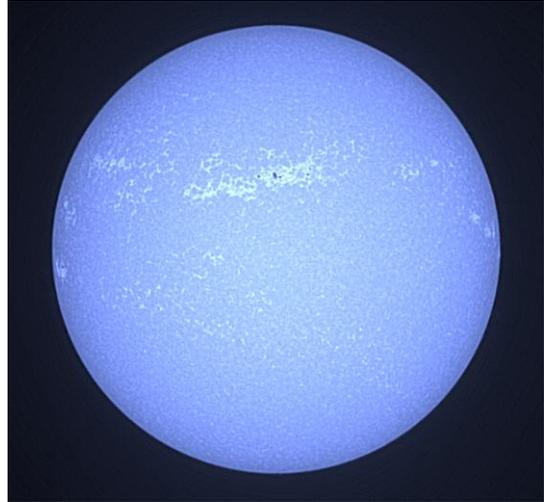
Pleiades

Pleiades (often pronounced 'ply-a-dees') is a star cluster roughly 400 light years from us. This image is a little too narrow so you don't get to see the whole cluster in all its glory but you can see a little 'nebulosity' around some of the stars. This is a gas cloud that is passing behind Pleiades. Open clusters are stars that have formed from the same gas cloud (also known as interstellar medium). They are not gravitationally bound and will gradually drift away from each other.



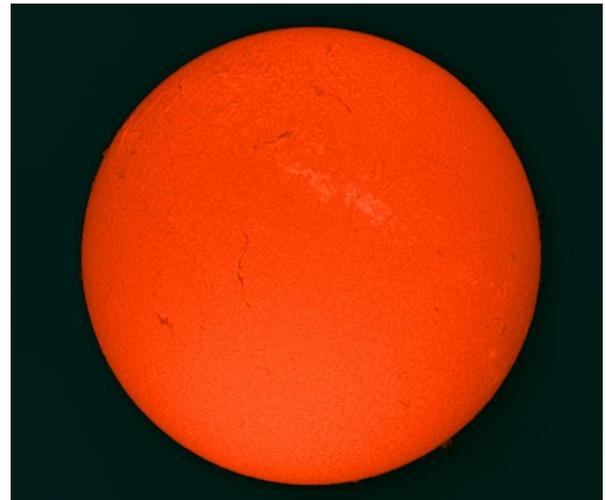
Calcium Sun Image

Using a special filter that only lets through light of a certain wavelength, this image shows the sun at a specific level above the photosphere. This gives us special detail that can't be seen at other wavelengths. Some people combine images taken with a calcium filter with images taken using a hydrogen alpha filter to give a different view of the sun. Approximately 80% of everything we know about the universe comes from analysing light so using different filters provides us with a better understanding of our star and thus of other stars too.



HA Sun Image

This is a hydrogen alpha image that again allows us to see different features of the sun. I think I have over-done the processing and colouring of this image and will revisit it when I have time to hopefully bring out the detail better.



Sirius

Known as the Traffic Light star because it is often seen low in the sky and is very bright so our polluted atmosphere ruins our view of it as it changes colour all the time, Sirius as seen from the dark Spanish skies shines perfectly. The brightest star in the night sky, Sirius (Orion's dog in Greek mythology) is less than 9 light years away and is actually comprised of two stars – Sirius A and Sirius B.



Thanks for all these Mark! (I always like the Sun in hydrogen alpha, makes it look "real").

These are from Graham Leaver 18/02/16



These next three are taken by Peter Davison using our 18" telescope after a visit from a group of Beavers on Monday 15/02/16!.....*Peter describes as follows:*

The first one is of the small crater Messier, Messier is only 11 km in diameter and because the rays that come away from the crater gives it the appearance that it is a comet. That is why the crater is named after the 18th century comet hunter Charles Messier.



This second picture is of a central area of the Moon, the three large craters are near to the terminator and are called, from top to bottom:-

Parrot, diameter 70 km,

Albategnius, diameter 136 km and Hipparchus and its diameter is 151 km. The third and last picture shows the heavily cratered Southern area of the Moon, there are so many craters it is difficult to name them all.

Many thanks for these Peter!

Our "resident" astrophotographers have been busy this month!!

Thanks to all of you



ASTROPHOTOGRAPHERS – PLEASE READ.....

This is from the "Sky at Night" magazine:-

SEND YOUR PICTURES TO NASA

"With the Juno spacecraft due to arrive at Jupiter in July, now has never been a better time to start taking regular images of the planet. **NASA is calling on amateur astronomers to submit their images** to help decide on imaging targets for one of the probe's instruments, the JunoCam. Full details on how to submit images can be found on NASA's website (www.nasa.gov/feature/jpl/to-jupiter-with-junocam)."

How about it guys? Give it a go!

Things to see in March.....

- Tuesday 1st** The waning gibbous Moon (58% lit) is 4.75° from Mars at 02:20 hrs this morning, both low in the southeast.
- Jupiter's moon Callisto can be seen casting a shadow on the planet's disc from 03:02 to 06:22 hrs.
- Wednesday 3rd** The waning crescent Moon (47% lit) is slightly less than 3° north of mag. +0.9 Saturn, both low in the south-southeast at 04:50 hrs.
- Monday 7th** Completing its morning trip past some of the planets the waning crescent Moon (4% lit) is 2.75° above mag. -3.8 Venus. The pair is visible just before sunrise low in the east-southeast.
- Tuesday 8th** Jupiter is at opposition today. This is the time a planet reaches a position in the sky that is opposite the Sun. Between 00:31 and 01:54 hrs there will also be two moons (Europa and Io) and two moon shadows on Jupiter's disc. At opposition the shadows appear in line with their moons.
- Wednesday 9th** It may be possible to see a very thin (1%) waxing crescent Moon just after sunset.
- Ganymede will be casting a shadow on Jupiter's disc as the sky begins to darken. The event is over by 19:14 hrs.
- Tuesday 15th** The Galilean moons Io and Europa will be crossing Jupiter's disc along with their shadows this morning. The double moon and shadow transit starts at 02:20 and ends at 04:10 hrs.
- Thursday 17th** Callisto, the outermost Galilean moon, can be seen transiting Jupiter's disc from 19:15 until 21:46 hrs. The moon's shadow transit occurs between 21:03 on the 17th and 00:14 hrs on the 18th.
- Sunday 20th** At 04:30 hrs the centre of the Sun will cross the celestial equator, a point in time known in the northern hemisphere as the spring equinox.
- Tuesday 22nd** The Moon is just 2.75° from mag. -2.3 Jupiter at 02:30 hrs and although the Moon will be virtually full (98% lit), the planet will stand out well.

Wednesday 23rd The Moon is full today. This particular full Moon occurs when the Moon is near to the farthest point in its orbit from Earth, a point known as apogee. Consequently, the apparent size of the full Moon will be close to its smallest for the year. Apogee occurs on the 25th at 14:00 hrs while today's Moon is full at 12:00 hrs.

Thursday 24th Comet C/2013 US10 Catalina passes slightly to the east of open cluster NGC 1528 in Perseus.

Another double moon and moon shadow transit occurs on Jupiter, this time it is Io and Ganymede between 23:51 hrs on the 23rd and 00:34 hrs on the 24th.

Sunday 27th This morning at 01:00 UT the clocks go forward one hour as British Summer Time begins, the local time therefore at 01:00 UT becomes 02:00 BST.

Tuesday 29th The waning gibbous Moon (73% lit) is 5° from Mars and 6.5° from Saturn at 04:00 BST this morning.

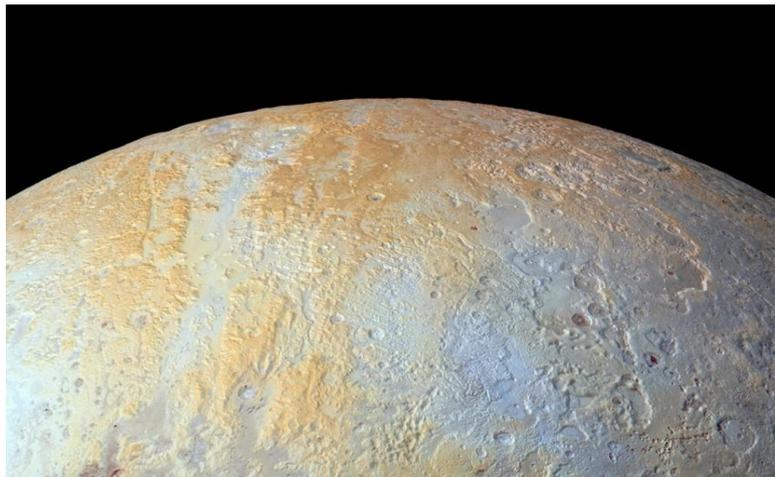
Thursday 31st The Moon reaches its second last quarter phase of the month at 16:18 BST.

ASTROSTUFF

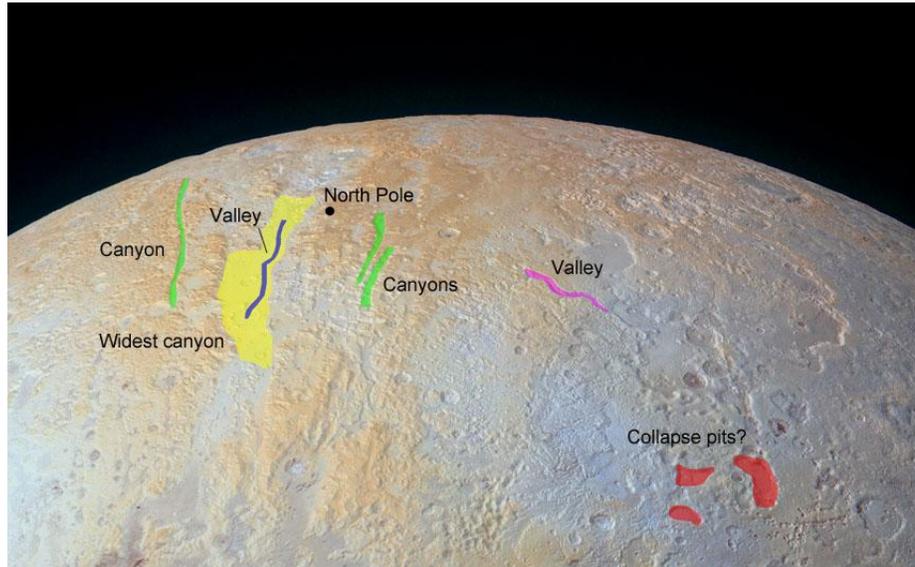
SPOTLIGHT ON PLUTO'S FROZEN POLAR CANYONS

This enhanced colour view shows long canyons running vertically across Pluto's north polar region — part of the informally named Lowell Regio, named for Percival Lowell, who founded Lowell Observatory and initiated the search that led to Pluto's discovery.

The widest of the canyons is about 45 miles (75 km) wide and runs close to the north pole. Roughly parallel secondary canyons to the east and west are approximately 6 miles (10 km) wide.



Pluto's frozen nitrogen custard "heart" has certainly received its share of attention. Dozens of wide and close-up photos homing on this fascinating region rimmed by mountains and badlands have been relayed back to Earth by NASA's New Horizons probe after last July's flyby. For being only 1,473 miles (2,370 km) in diameter, Pluto displays an incredible diversity of landscapes.



The New Horizons team shifted its focus northward, re-releasing an enhanced colour image of the north polar area that was originally part of a high-resolution full-disk photograph of Pluto. Inside of the widest canyon, you can trace the sinuous outline of a narrower valley similar in outward appearance to the Moon's Alpine Valley, cut by a narrow, curvy rill that once served as a conduit for lava.

A composite of enhanced colour images of Pluto and Charon, taken by NASA's New Horizons spacecraft on July 14, 2015.

This image highlights the striking differences between Pluto and Charon. The colour and brightness of both Pluto and Charon have been processed identically to allow direct comparison of their surface properties, and to highlight the similarity between Charon's polar red terrain and Pluto's equatorial red terrain. Pluto and



Charon are shown with approximately correct relative sizes, but their separation is not to scale.

We see multiple canyons in Pluto's polar region, their walls broken and degraded compared to canyons seen elsewhere on the planet. Signs that they may be older and made of weaker materials and likely formed in ancient times when Pluto was more tectonically active. Perhaps they're related to that long-ago dance between Pluto and its largest moon Charon as the two transitioned into their current tidally-locked embrace.

FUN STUFF

In a Podiatrist's Office: Time wounds all heels.

At an Optometrist's Office: If you don't see what you're looking for, you've come to the right place.

On a Plumber's truck: Don't sleep with a drip, call your plumber.

CHECK THE E-MAIL ADDRESS !

A few days after her husband's death, a grieving widow accidentally receives an e-mail from a man waiting for his wife in Miami.

The e-mail reads:

Dearest Wife,

Just got checked in. Everything prepared for your arrival tomorrow.

P.S. Sure is hot down here.

That's all folks.



Sue

This newsletter is sent out to all present members without whom the Society could not survive. Also to previous members and people with an interest in astronomy in the hope that they may wish to join/re-join the Society.

If you no longer wish to receive this newsletter by e-mail please let us know. Thank you.