



The CHESTERFIELD ASTRONOMICAL SOCIETY

Newsletter MARCH 2017

CAS website: www.chesterfield-as.org.uk

Registered Charity No. 514048

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Committee Members: - Sue Silver, David Frost, John Marsh and Catherine Wood

Subscriptions - full membership £65
or £6.50 per month by Standing Order (10 months)

Senior citizens (60 yrs and over) and students (18 yrs and over) £45
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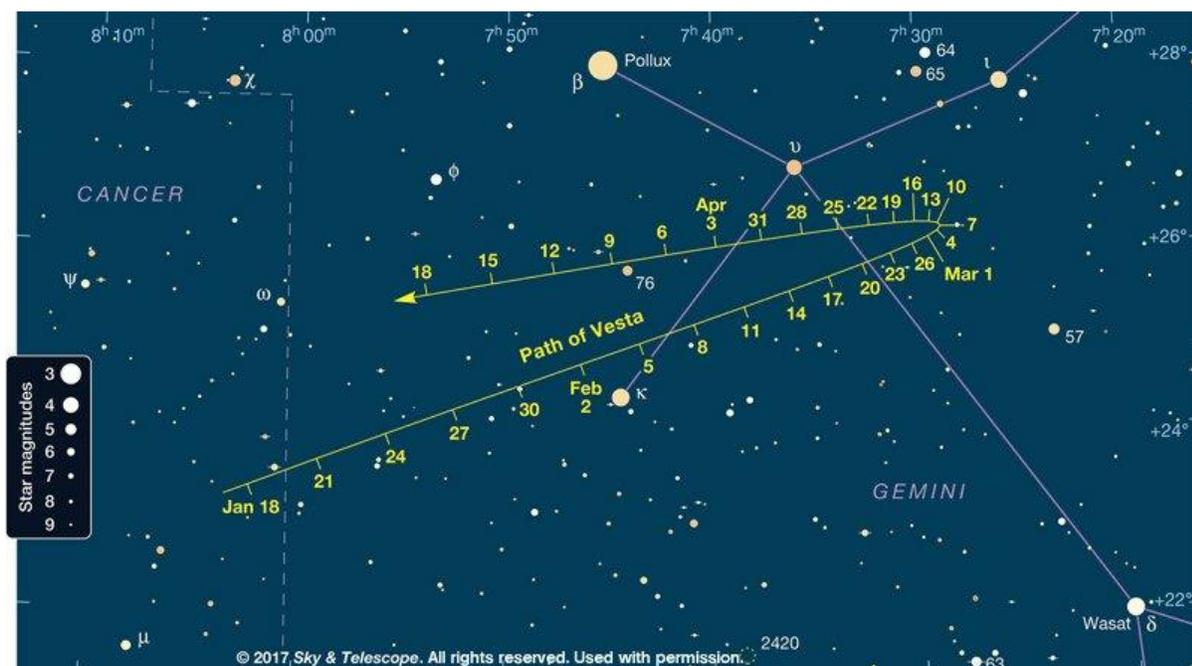
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The Waterfall Nebula

Welcome to the March issue of the CAS newsletter.

AN AUDIENCE WITH VESTA

Towards the end of January I received a newsletter email from Sky and Telescope containing an article (<http://www.skyandtelescope.com/astronomy-news/vesta-the-brightest-asteroid-now-high-overhead/>) indicating that Vesta, the second largest and second most massive body in the asteroid belt, was now visible at around 6th magnitude in Gemini for the next few months. It included a chart of Vesta's path through the sky with stars shown down to 9th magnitude (see below. There is a copy of this on the members' notice board at the back of the lecture room).



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Sadly, since receiving the email, the weather had been against us viewing Vesta ... until last night (4 Feb 2017)!

Saturday was a glorious day, and the evening was looking promising, so I contacted the Committee and a few other members with the intention of observing the minor planet from the Barnett Observatory.

I arrived just before 8pm, and found that Peter Davison was already there doing some astro-photography, but had stopped as it was getting hazy.

We studied the map and after a cuppa, Peter set the 18" 'scope up and pointed it at κ Geminorum, a 4th mag. star just south of Pollux, close to the path. Shortly afterwards, John Brown and John Bardwell turned up.

I started to star hop using the finder, and found what I thought was Vesta, a slightly yellowish star-like object of around the right brightness, but I couldn't find it in the main

scope. After a bit of tinkering with the finder, which wasn't aligned, I found κ Gem. again and star-hopped to Vesta. It was immediately visible in the main scope in a field sparsely populated with faint stars, and we all had a look.

As the stars in the field of view were too faint to appear on S&T's chart, I made a little map of my own on the back of an envelope (recreated here on Paintbrush – see figure below).



I noted two stars near, and Vesta made an isosceles triangle with them. If it was moving, then we should notice the triangle change shape, so we decided to leave it for half an hour or so, with occasional tracking adjustments on the scope in the meantime.

The haze increased to the point where there was a vivid halo around the moon. Unfortunately this meant that the two stars disappeared so it was impossible to tell if the triangle had changed shape. After half an hour, Peter decided to leave as the haze was thickening up.

Shortly after, and totally unexpectedly, the haze cleared, and the two stars were visible in the scope again. We all looked, and the triangle was no longer isosceles, so Vesta had moved! Catherine Wood arrived and she viewed it too.

Hopefully we can repeat the observation on Friday nights over the next couple of months.

Rob McGregor

Many thanks for this Rob and for getting permission from Sky & Telescope to use their map.

Mapping the Milky Way

On Friday 17th February we received an excellent talk from Professor Rob Jeffries from Keele University all about the latest ESA space telescope, Gaia.

Gaia is a twin-telescope that will map, catalogue, size and age many stars. The baseline number of stars it will map is 1 billion all of a magnitude of 20 or greater representing around 1% of all the stars in the Milky Way.

Gaia will be working for 5 years and our first significant cut of data will be received in April 2018. It is located at Lagrange point L2 a million miles away from the Earth where it is in a very stable orbit.

Some of the key objectives of the project will be:

- To produce a stereoscopic (3D) map of the Milky Way
- To more accurately map out the distance to many stars
- To more accurately determine the age of many stars
- To identify thousands of asteroids and comets not seen previously
- Identify new exoplanets
- Discover new quasars

Gaia is set to boost our understanding of the Milky Way by such an extent that it should revolutionise astronomy.

If you would like to learn more about the Gaia mission, there's an app you can get to keep you up to date on your phone:

<https://www.cosmos.esa.int/web/gaia/gaia-app>

And you can learn more about this amazing project at:

<https://gaia.ac.uk/>

and

<https://www.cosmos.esa.int/web/gaia>

Our thanks to Rob who we hope will come back and update us in the future as Gaia unfolds some of the secrets of the Milky Way.

Thanks also to Marilyn for organising this.

Cheers, Mark.

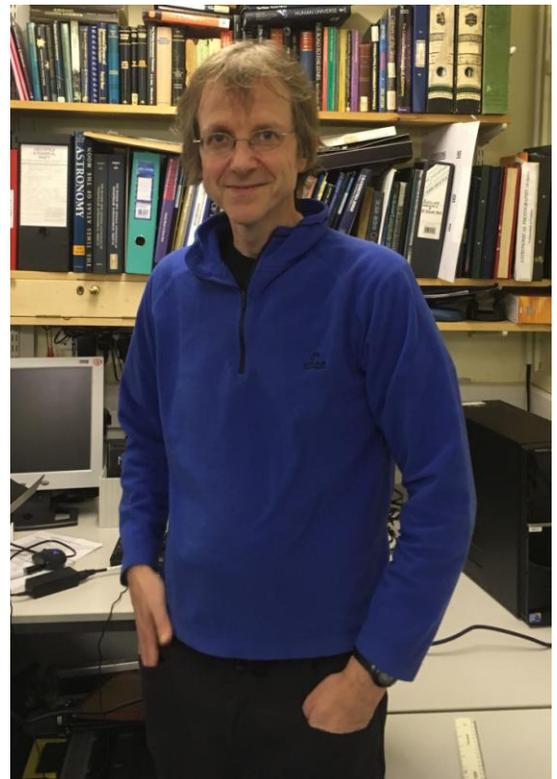


Photo Gallery.....

These are from Graham Leaver.....

"Venus this afternoon (04/02/17), focal plane 10" f9 OMC, atmosphere very wobbly, even through the red filter, but it has stacked reasonably well."



Vesta

'.... at around midnight decided to have a go at the Leo triplet but a band of cloud came over after I had done 3 x 6 min exp....'.



This could be withdrawal symptoms suffered by an astrophotographer due to bad weather!

I liked this with the ring around the Moon and you can see Orion through the clouds.

Thanks for these Graham



The weather this month has not been very favourable towards our astrophotographers so Peter Davison has kindly sent this one from his collection.....

"Comet Lovejoy. I took it just over two years ago on 31st Jan 2015 while I was down at Graham Jenkinson's observatory. It was taken using graham's refractor."

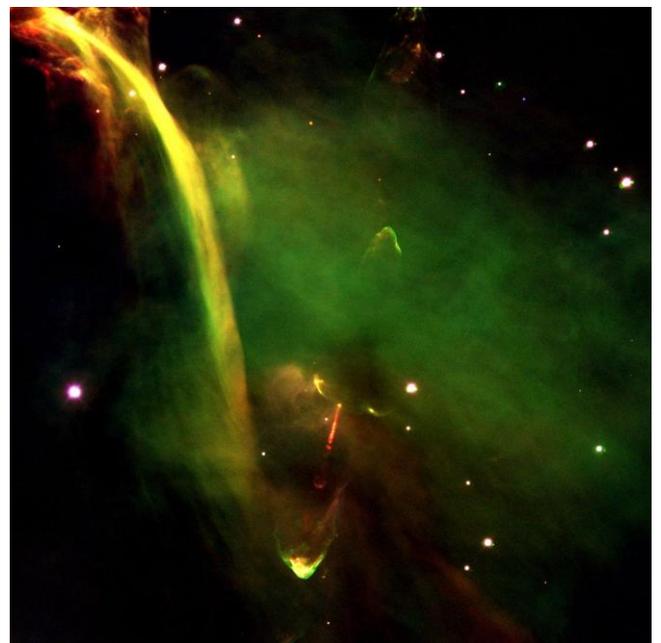
Thanks Peter.



The header this month is the Waterfall Nebula.

What created the Waterfall Nebula? No one knows. The structure seen in the region of NGC 1999 in the Great Orion Molecular Cloud complex is one of the more mysterious structures yet found on the sky. Designated HH-222, the elongated gaseous stream stretches about ten light years and emits an unusual array of colours.

One hypothesis is that the gas filament results from the wind from a young star impacting a nearby molecular cloud. That would not explain, however, why the Waterfall and fainter streams all appear to converge on a bright but unusual non thermal radio source located toward the upper left of the curving structure. Another hypothesis is that the unusual radio source originates from a binary system containing a hot white dwarf, neutron star, or black hole, and that the Waterfall is just a jet from this energetic system.



Such systems, though, are typically strong X-rays emitters, and no X-rays have been detected. For now, this case remains unsolved. Perhaps well-chosen future observations and clever deductive reasoning will unlock the true origin of this enigmatic wisp in the future.

On the Sky at Night this was described as a "bow shock" wave following an event within the complex possibly involving four stars. On an image using a difference wave length of light the "opposite side" of the shock wave could be seen.

Things to see in March.....

- Wednesday 1st** The waxing crescent Moon (12% lit) is 4° south-southeast of mag. +5.9 Uranus and 4.9° south of mag. +1.3 Mars this evening. The planets are separated by 2°, Uranus is southwest of Mars.
- Thursday 2nd** Jupiter is well positioned for a moon and shadow transit of Ganymede this evening. The shadow transit starts at 22:39 UT on 2nd March, ending at 01:10 UT on 3rd March. Ganymede transits between 02:06 and 04:02 UT on the 3rd.
- Thursday 9th** Tonight's waxing gibbous Moon (92% lit) shows a favourable libration for the eastern limb bringing features such as the Mare Marginis and the Mare Humboldtianum into view.
- Friday 10th** There is another chance to see Ganymede and its shadow transiting Jupiter this morning. The shadow transit occurs between 02:37 and 05:06 UT, the noon transit is between 05:30 and 07:26 UT.
- Sunday 19th** It's Io's turn tonight, the inner most Galilean moon, to transit Jupiter. Io's shadow begins its transit at 23:44 UT with Io following at 00:11 UT on the 20th. The shadow transit ends at 01:55 UT while the moon leaves the disc at 02:21 UT.
- Monday 20th** Saturn and the waning gibbous Moon (54% lit) appear 4° apart at 04:00 UT.
- The northern hemisphere's spring equinox occurs at 10:20 UT.**
- Wednesday 20th** 9th magnitude comet C/2015 V2 Johnson is approximately 3° from mag. +9.4 globular cluster NGC 6229 in Hercules from now until the end of the month.
- Saturday 25th** The Moon visible in the morning sky shows a favourable libration for the western limb.
- Venus reaches inferior conjunction, after which it will be a morning planet.

Sunday 25th **The clocks go forward at 01:00 UT marking the start of British Summer Time**

Wednesday 29th Mag. -0.3 Mercury is 8° north of a thin waxing crescent Moon (3% lit) at 20:30 BST in twilight. They form a celestial triangle with Mars low in the west.

Thursday 30th Mag. +1.5 Mars is 6° north of tonight's waxing crescent Moon (9% lit). You can find them together with mag. -0.2 Mercury low in the west from 20:30 BST.

LAST REMINDER.....

Haddon Grove Astro-camp Friday 17th March to Sunday 19th March 2017

The next astro-camp will take place on the weekend of Fri 17th March - Sun 19th March 2017 at the Haddon Grove campsite. If we are lucky enough to have clear skies we will be hoping to try for as many Messier objects as possible. This time of year it is possible to observe all 110 Messier objects during a full nights observing. On view after Midnight we will have the last quarter phase of the Moon and Jupiter to look at as well.

The camp is open to all members and friends of the Society, if you could let me know if you will be attending either camping or just visiting for the evening I can let the owner of the campsite know.

My email address is peterdavison45@virginmedia.com or phone me on 07806670609.

Get in touch with Peter if you are interested please

Things to remember.....

Amazon.....

Please remember if you are ordering anything from Amazon follow the link on our website – this earns us commission!!!

Thank you.

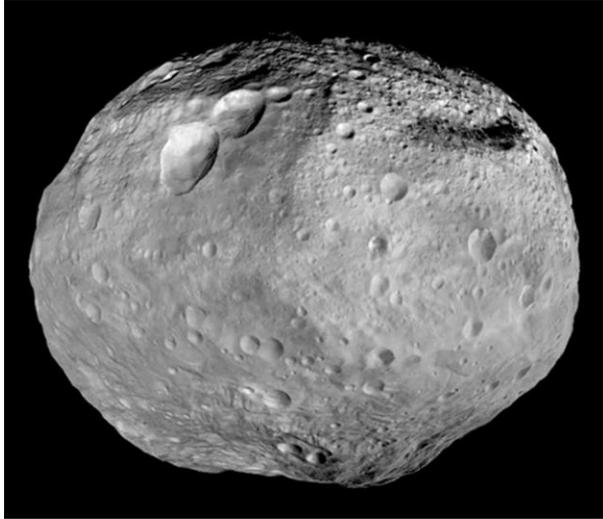
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ASTROSTUFF

Vesta



Full Vesta. It's 355 miles (570 kilometers) from end to end. This composite was assembled from images by the Dawn spacecraft orbiting it in 2011.

Minor-planet Vesta, is one of the largest objects in the asteroid belt, with a mean diameter of 525 kilometres (326 mi). It was discovered by the German astronomer Heinrich Wilhelm Olbers on 29 March 1807 and is named after Vesta, the virgin goddess of home and hearth from Roman mythology.

Vesta is the second-most-massive and second-largest body in the asteroid belt after the dwarf planet Ceres and it contributes an estimated 9% of the mass of the asteroid belt. It is slightly larger than Pallas, though significantly more massive. Vesta is the last remaining rocky protoplanet (with a differentiated interior) of the kind that formed the terrestrial planets. Numerous fragments of Vesta were ejected by collisions one and two billion years ago that left two enormous craters occupying much of Vesta's southern hemisphere. Debris from these events has fallen to Earth as howardite–eucrite–diogenite (HED) meteorites, which have been a rich source of information about Vesta.

Vesta is the brightest asteroid visible from Earth. Its maximum distance from the Sun is slightly greater than the minimum distance of Ceres from the Sun, though its orbit lies entirely within that of Ceres.

NASA's *Dawn* spacecraft entered orbit around Vesta on 16 July 2011 for a one-year exploration and left orbit on 5 September 2012 en route to its final destination, Ceres. Researchers continue to examine data collected by *Dawn* for additional insights into the formation and history of Vesta



Vesta, Ceres, and the Moon with sizes shown to scale

FUN STUFF

At the height of the gale, the harbourmaster radioed a coastguard and asked him to estimate the wind speed. He replied he was sorry, but he didn't have a gauge. However,

if it was any help, the wind had just blown his Land Rover off the cliff. (Aberdeen Evening Express)

Just a reminder to those who stole electrical goods in last year's riots.....
Your One Year Manufacturer's Warranty Runs Out Soon.

A magician was working on a cruise ship in the Caribbean. The audience was different each week so he did same tricks over and over.

The problem was, the captain's parrot saw all the shows and began to understand how the magician did every trick.

He started shouting in the middle of the show: 'Look, it's not the same hat. Look, he's hiding the flowers under the table. Hey, why are all the cards the ace of spades?' The magician was furious but, as it was the captain's parrot, he could do nothing. Then one day the ship sank and the magician found himself floating on a piece of wood with the parrot.

They glared at each other but said nothing. Finally, after a week, the parrot said: 'OK, I give up. Where's the boat?'

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.