Clydesdale astronomical society

Corona

Issue 134
Jan 2020

Email: clydesdaleastro@hotmail.co.uk
Web: www.clydesdaleastro.org.uk

The Committee:
Alice-Amanda Kay - (Chairman/Meetings/PR)
Allison Dunlop (Librarian)
Robert McFetridge (Secretary)
Lyn Smith (Newsletter)
Dave Stephens (Treasurer)
Janice Stephens

Picture Left
M7 or NGC 6475 star cluster in Scorpius just under 1,000 light years distant

From the Chairman/Society News

I would like to wish all members a very Happy New Year. I hope 2020 is better weather-wise and we get some clear skies so we can get out and do some observing.
I will be speaking to Paige Hughes, once she is back at work, to find out if the family star-gazing event is taking place. I should hopefully be able to give more information with regards to this at the next meeting. Our thanks must go to Roy Bryce for his excellent presentation at the last meeting. Thank you also to Jim Gibb, for his research and Power Point on the latest space news.
On our 10th February meeting, we have Jim Gibb, whose presentation is on 'Hollywood Sci-fi versus Reality'.

Next Meeting

7.30 pm Monday 13th January 2020
Bankhall Community Centre,
Climpy Road, Forth

Astronomy Fun Quiz Night

Sad News

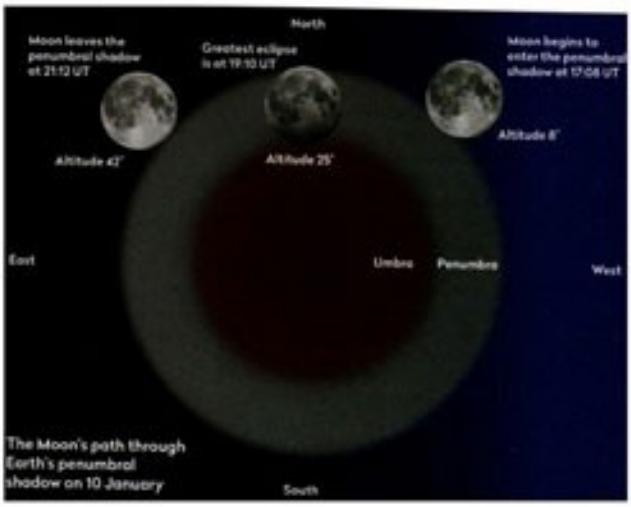
Many of you will be familiar with the lectures of aurora and noctilucent clouds from Dr Dave Gavine. It is with great sadness that we learned of his passing on 2nd January.

Born in Dundee in 1937, Dave went on to be a graduate of St Andrew's and Aberdeen Universities. He was a founder member of the Dundee Astronomical Society and served as President of the Astronomical Society of Edinburgh for 3 years and edited the society's Journal for 20 years.

Dave joined the BAA in 1955 and served as Assistant Director of the Aurora Section for 30 years and as Director from 2005 to 2010. He was awarded the Lydia Brown medal by the BAA in 2003 and asteroid 712 was named Davidgavine in 2012 in recognition of his contribution to astronomy.

He will be greatly missed.

Dr Dave Gavine pictured (left) with Ken Kennedy at the BAA meeting in Dundee



Lunar Penumbral Eclipse

This event will take place on 10th January commencing at 1708 UT. However it is not until the Moon passes close to the umbral shadow that one edge of the Moon will start to appear darker than usual. Max eclipse occurs at 1910 UT so that is the time to be outside having a look. No doubt this event will be missed by most of the population, but as astronomers we have a 'heads up' and can be alert to minor changes in lunar brightness. It could be a good opportunity for imagers or photographers.

The Sky at Night—January

Venus has now become unmissable in the darkening evening sky as it rises into the south-western sky. At mag –3.9 you don't need any pointers to this brilliant object. At the beginning of the month, Venus will be 5 degrees of altitude but by the end of January it will be 15 degrees and it's spectacular best. Sadly, this does not mean that the view improves through a telescope or binoculars in a dark sky due to contrast issues. So enjoy the naked eye view or try to find Venus during daylight with a telescope or binoculars but of course, go nowhere near the Sun! Venus will be accompanied by a waxing crescent Moon on the 27th and 28th and will be just 4 arc-minutes separation from Neptune on the 27th.

You will of course be familiar with the constellation of Orion in the winter sky and will not have failed to notice the bright red star Betelgeuse (top left hand corner of the constellation). Have you noticed that Betelgeuse is not as bright as usual? This giant red star is variable (first recorded by John Herschel in 1836) and can vary between mag 0.4 at its brightest and 1.2 at its dimmest. Recent observations show Betelgeuse at between mag 1.3 and 1.5. Because it is a pulsating red supergiant star, its diameter varies between the size of the orbit of Mars and that of the orbit of Jupiter at its maximum! It is in its last stages of evolution and is expected to go super-nova anytime between today and 100,000 years from now.

Corona

Issue 135
Feb 2020

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Picture Left
Omega Centauri—a globular cluster in the Centaurus region 15,800 light years distant

From the Chairman/Society News

We have the New Lanark Family Stargazing event from the 31st Jan-2nd Feb, with some members going on the 1st and others on the 2nd. Hopefully, the weather will be kind to us all at the weekend. I will let everyone know how it went at the next meeting, as this edition of Corona will be sent out before the event.
January's meeting was fun as usual, with three teams taking part in the astronomy fun quiz. The winning team comprised Robert McFetridge, Robert McFetridge Jr, Alistair McFetridge and Jim Gibb. Everyone got some sweets. Our speaker for 9th March is Dr Alan walker, whose presentation title is TBA as yet. Don't miss our February meeting, as it is sure to be interesting.

Next Meeting

7.30 pm Monday 10th February 2020
Bankhall Community Centre,
Climpy Road, Forth

"Hollywood Sci-Fi vs Reality"
Jim Gibb

The Sun is Waking Up

Solar Cycle 25 is under way and we have new sunspots appearing in the northern and southern hemispheres. Sunspots are still small and short-lived but the signs are good for increased activity in the coming months. This image shows an old cycle (Cycle 24) sunspot group imaged in Calcium K line by Alun Halsey (BAA Solar Section member) on January 28th . Old cycle sunspots appear near to the solar equator whilst new cycle sunspots appear higher in latitude. Note also a patch of Calcium K plage over the SE limb (top of the picture) compared to the brighter plage area accompanying AR2757 nearer the bottom of the picture. The orientation here is east at the top and south to the right.

Original article and artists impression to be found at http://warwick.ac.uk

Giant Planet Detected Around White Dwarf Star

The first evidence of a giant planet orbiting a dead white dwarf star has been found in the form of a disc of gas formed from its evaporating atmosphere.

The Neptune-like planet orbits a star a quarter of its size about once every ten days, leaving a comet-like tail of gas comprised of hydrogen, oxygen and sulphur in its wake. It is the first evidence of a giant planet orbiting a white dwarf star and suggests that there could be many more planets around such stars waiting to be discovered. Until now, there has never been evidence of a planet that has survived a star's transition to a white dwarf.

The Night Sky in February

Although the early evening sky is still dominated by brilliant Venus, take a look for dimmer Mercury at the start of the month although it will be at its highest elevation from the 10th to the 16th. Look towards the horizon after sunset, below and to the right of Venus. You will need a good flat SW horizon with nothing blocking the view to detect this elusive planet.

Venus stays with us throughout the month and requires no further comment except to say that through a telescope you should be able to see the phase of Venus change from 73% illuminated at the start of the month to 62% by the end.

Mars rises about 2 hours before the Sun but it is low in the sky in the constellation of Sagittarius. At mag +1.3 it can be found with the naked eye and will present as a tiny disk through a telescope.

Jupiter is also a morning object in Sagittarius and low in the sky. Saturn will also follow Mars and Jupiter into the morning sky making a trio of planets in Sagittarius. By the end of the month, all three planets will form a distinctive line in the pre dawn sky.

Uranus is an evening object in the south-west sky but will fade into the sunset glow as the month progresses.

Neptune has had its "close" encounter with Venus in our evening sky and now will also progress into the evening glow. The planet is mag +7.9 in the constellation of Aquarius.

Clydesdale astronomical society

Corona

Issue 136
Mar 2020

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Picture Left
Comet Hale-Bopp
Visible to the naked eye from the UK April/May 1997
Returns in AD 4385

From the Chairman/Society News

I would like to thank all the members who came along to our New Lanark Family Stargazing event on the 1st and 2nd February; it was much appreciated. On the 1st February the sky cleared, and the public were treated to the delights of the night sky through the telescopes on the roof garden. There was also the planetarium on both nights. Unfortunately, on the 2nd, it was not such a good night weather wise, but the sky I am told did clear up after 8:30pm. There was 295 members of the public on the Saturday night and 195 on the Sunday. The society is getting a £50 donation for helping at this event. Our speaker for 9th March is Dr Alan Walker, whose presentation is entitled "In the Footsteps of Giants: Kelvin, Tait, Maxwell, Wilson to Higgs and beyond." Our speaker for 13th April is Dr John Davis, whose presentation is entitled "New Horizons in the Solar System. (Missions to Asteroids and KBOs)". So, Come along and support each of these speakers.

Next Meeting

7.30 pm Monday 9th March 2020
Bankhall Community Centre,
Climpy Road, Forth

"In the Footsteps of Giants"
Dr Alan Walker

Zodiacal Light

If you see a faint white triangular glow extending from the Sun's position below the horizon along the ecliptic, you could be seeing the Zodiacal Light. It is caused by interplanetary dust scattering sunlight. It is best seen after sunset in the spring and before dawn in the autumn. March being the vernal equinox, is an ideal time to try and see this but you will need a sky free from light pollution.

ESA Solar Orbiter Launches

In addition to NASA's Parker Solar probe, ESA have launched its own mission to the Sun. The mission launched on February 5th and aims to study the heliosphere—a bubble in the solar system carved out by the solar wind. The orbiter will get close in to the Sun to analyse material as it leaves the solar surface and before it evolves. At its closest the spacecraft will pass within 42 million km of the solar surface

The Night Sky—March

Venus still dominates the evening sky and will reach its greatest eastern elongation on March 24th. Through a telescope the 62% illuminated disk will be seen early in the month and will remain well placed for observation throughout tracking near the Pleiades star cluster towards the end of March. The image below shows the cloud structure of the planet taken close up by the "Pioneer" spacecraft in 1979.

Mars, Jupiter and Saturn remain closely aligned in the morning sky throughout the month. Mars will be separated from Jupiter by 43 arc minutes on the 20th and one degree from Saturn on the 31st.

Uranus is fast encroaching upon the sunset glare so the best time to view will be early in March as the situation will only get worse with time. The gas giant will be 2.2 degrees from Venus on the 8th.

Neptune is not visible this month being in conjunction with the Sun on March 8th.

Betelguese, the giant red star located top left in Orion's famous star pattern, is now starting to slowly brighten and so quash the speculation that the star is about to go supernova. It seems this was just a deep phase of this star's variability pattern.

Early March is a good time to get the telescope or binoculars focussed on the Moon as its phase is first quarter progressing through to full Moon on the 9th. Concentrate on looking at the terminator—the line between light and dark on the lunar surface as this will throw up the features into stark contrast and reveal greater detail of craters and mountain ranges. Once full Moon has passed, the terminator will again progress across the lunar surface until New Moon on the 24th. See if you can spot the slender crescent on the 25th in the evening sky.

Corona

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Apr 2020

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Lyn Smith (Newsletter)
Dave Stephens (Treasurer)
Janice Stephens

Picture Left
The Pincushion cluster in the constellation of Carina, an open cluster of old and new stars

From the Chairman/Society News

As you know we have taken the decision to cancel all Society meetings until September. I hope you are all coping in these difficult times we face due to the coronavirus pandemic. Please stay safe and hopefully by September life can get back to some form of normality. Look after your mental health and keep reaching out to family and friends via Skype, Facetime, email or social media. Above all, no fighting in the supermarket aisles for toilet rolls!
See you all in the not too distant future. In the meantime, why not brush up on your astronomy knowledge for our quiz in January, coronavirus permitting that is.

Next Meeting

7.30 pm Monday 14th September 2020
Bankhall Community Centre,
Climpy Road, Forth

All Meetings are cancelled until September 2020

Covid-19 Update

As the pandemic has restricted movement for all of us, it is no longer possible to hold meetings but "Corona" (not related to the virus!) will continue every month as normal. If you have any astronomy related news, stories, images or articles then send them in to our email address (on the front page) and we will try to publish them over the coming months. It's important we keep in touch as a group in these trying times and of course, we have so much more time for astronomy!

Our Last Meeting

Since retiring in 2009 Dr Alan Walker MBE, was appointed an Honorary Fellow and he continues his public engagement work including talks on particle physics to primary and secondary schools and the general public. In 2013, he was awarded an MBE for 'Services to Science Education and Science Engagement in Scotland' and became a Fellow of the Institute of Physics. In the same year, he was awarded the first Royal Society of Edinburgh Pro Meritas Medal, for supporting the society and creating their new 'From Maxwell to Higgs Exhibition', and was awarded the Institute of Physics High Energy Particle Physics Group Science and Society Prize. In 2015, he was awarded Life Membership of the Faraday Club of the Orkney International Science Festival. In 2016, the University of Edinburgh awarded him the honorary degree of Doctorem honoris causa for his contributions to science education and science outreach. Since 2004 he has been the Secretary/Treasurer of the Scottish Universities Summer School in Physics a charitable organisation that has delivered 78 highly regarded advanced international summer schools in physics since 1960.

The Night Sky—April

Mercury is poorly placed for observation throughout the month. Not so Venus of course. An obvious sight to anyone in the darkening western sky, Venus will be approaching the Pleiades star cluster on the 1st and passes in front of it on the 3rd and 4th. Our "twin" planet shines in our sky for 5 hours after sunset, a full 3 hours in true darkness early in the month. Through a small telescope, Venus is 46% illuminated early in the month and that will reduce to a phase 25% lit by the end. The Moon will again provide a photographic opportunity on the 26th with the Moon as a 12% lit waxing crescent. Make the most of April as we will start to lose this glorious sight thereafter.

Mars can be seen low in the SE sky before sunrise for those that rise really early. At the start of the month, the red planet lies about 1 degree SSE of Saturn. Through a telescope, Mars is still a small target with its disk only appearing 6 arcseconds across although this will rise to 7 arcseconds by the end of the month. Mars should improve in the months to come but for now it is only the determined observer that will have any success.

Jupiter and Saturn are also early morning objects being low in sky to the SE. Mars, Jupiter and Saturn should form a cluster of planets to those knowing where to look. Neptune and Uranus are not favourable during April.

Corona

Issue 138
May 2020

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Dave Stephens (Treasurer)
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Picture Left
Abell 33 is a planetary nebula in Hydra 2,700 light years away

From the Chairman/Society News

I hope you are all still keeping safe and well, and making the best of the lockdown. As I stated in recent emails, we will be holding CAS on line meetings commencing 4th May at 7:30 pm via YouTube with Q &A afterwards via Zoom. We will hold a meeting every fortnight for now, but this time-scale is dependent upon speakers. So far we have three speakers on board. The link for the first presentation will be attached to an email circulated nearer the time. You will also be able to access it via our website and Facebook page. On the 18th May we have Prof Charles Cockell, whose presentation via YouTube is entitled "Are we are alone in the Universe?" followed by a question and answer session live on Zoom. But first, on 4th May 2020 at 7.30 pm we have Dr Julian Onions broadcasting his talk "Cold Dark Matter—is it Cold, Dark or Matter?"

Next Meeting

7.30 pm Monday 4th May 2020
CAS YouTube Webinar—Zoom Q&A

"Cold Dark Matter"
Dr Julian Onions

Minor Planets Discovered

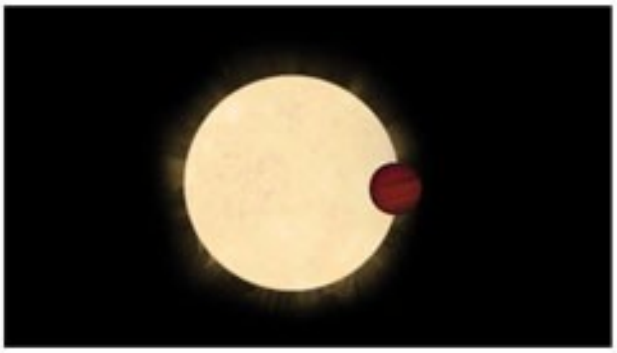
The number of minor planets located beyond the orbit of Neptune has now risen to over 100. Astronomers carrying out research into "dark energy" have found these distant members of the Solar System as a by-product of their wide deep field imaging. Plenty more targets for future missions to find out more about these objects that may be the oldest remnants of the Solar System.

Starlink satellites

SpaceX plans to launch thousands of satellites into low-Earth orbit which will have implications for astronomers and particularly those engaged in deep sky imaging. The satellites pass over as a string of bright naked eye objects typically mag 4—6. SpaceX are experimenting with making their satellites less reflective to cut down on annoying streaks across deep sky images.

Cheops Ready for Science

ESA's new exoplanet mission Cheops, has finished its first 3 months in-orbit commissioning and will be ready for full scientific operations from the end of April 2020. Cheops will study bright nearby stars known to host exoplanets to make high-precision observations of the planet's size in front of its host star to allow estimation of their mass, density, composition and formation.



The Night Sky in May

As the skies are rapidly losing darkness with the approaching summer, make sure you make the most of the next few weeks for observing.

Mercury will be an evening object after sunset in early May. At mag –1.7 on the 9th it will set 40 mins after the Sun and will be a good target for observation. Mercury will appear close to Venus on the 21st and 22nd as a reference. Venus remains bright in the evening sky but we will rapidly start to lose it from view as May progresses. The phase of Venus will be obvious in a telescope being a 24% illuminated disc at the start of the month. By the end of May, Venus will set just 30 mins after the Sun and will be in the glare of the sunset.

Mars remains low in the morning sky but is slowly brightening as it moves towards opposition in October. The red planet is only 9 arc seconds across making it a challenging object to resolve in a small telescope.

Jupiter and Saturn are morning objects also, Jupiter appearing the brighter of the two. The Moon lies nearby the pair on the 12th and 13th May.

With the onset of the brighter nights, the Moon remains a good target for observation. It's also a good time to take up solar observing, although the Sun is at solar minimum and there are few sunspots to see. Remember never to look directly at the Sun either naked eye or through a telescope or binoculars. Project the Sun's image on to a white piece of card.

Clydesdale astronomical society

Corona

Issue 139
Jun 2020

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Picture Left
Planetary Nebula IC1295 In the constellation of Scutum about 4,700 light years away

From the Chairman/Society News

I hope everyone is still keeping well. The first two webinars went really well, and there was a good turnout for each of the speakers. I would like to thank Prof Charles Cockell, for his excellent presentation on the 18th May. Everyone really enjoyed it and he got asked some great questions in the Q&A afterwards.
On the 1st of June, we have Lyn Smith, whose presentation is entitled "The Solar Cycle." The next two meetings after this one, are on the 15th and 29th of June respectively. The details of which are as follows: Duncan Lunan, "Incoming Asteroid - what could we do about it?" and Roy Bryce, "The Geology of Mars." I have not had a chance to ask anyone else as yet, but plan on doing that soon. The webinar link for Lyn's talk will be sent out this week.

Next Meeting

7.30 pm Monday 1st June 2020
CAS YouTube Webinar—Zoom Q&A

"The Solar Cycle"
Lyn Smith

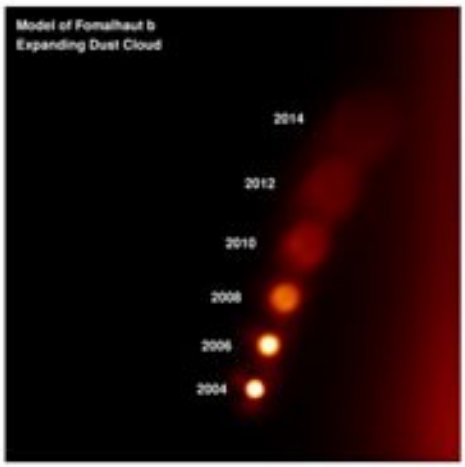
Name Change for "Corona"

It has been suggested by some members that due to the association of "Corona" with the current Coronavirus pandemic it may be an appropriate time to have a name change for our monthly e-newsletter. Four names have made the short list and we would like you to choose the final one. Please email Alice-Amanda on the Society's email detailed on page 1. The names are:

1. Alcor
2. Mizar
3. Galaxy
4. Orion

Fomalhaut b Planet—False

Back in 2008 there was much excitement that the Hubble Space Telescope had found an exo-planet around the star Fomalhaut, the first visual detection of an exo-planet. Continuing observations have shown the "planet" never existed; the bright point in the planetary disc of the star was a dissipating dust cloud. However, this is an even more rare event as it is believed this dust cloud was caused by the collision of two icy objects like those found in our Kuiper belt.



SpaceX Mission Delayed

Space X Mission "Demo-2" has been delayed due to bad weather and will now launch on Saturday 30th May 2020 at 8.22 pm UK time. This is the first launch from US soil since 2011. The mission will take astronauts Robert Behnken and Douglas Hurley to the International Space Station.

The Night Sky—June

Here we are again, light nights just about around the clock. As deep sky astronomy is almost impossible until later in the year, concentrate on what is available for the next few weeks.

Solar observing is always a good recourse and now, although sunspots are small and quite sparse on the solar disc, it is an interesting time to view them as we are seeing sunspots from two solar cycles. The old cycle 24 is ending and the new one is beginning. Lyn will tell you more during Monday night's webinar.

Early in the month, the Moon will be in its waxing gibbous phase arriving a Full Moon on the 5th. Thereafter you can following the waning gibbous phase through to thin crescent and New Moon on the 21st, Try to detect the very fine crescent of the new lunar cycle on the 22nd.

Noctilucent cloud season is once more upon us. Try to detect these very high latitude ice clouds in Earth's atmosphere around midnight. NLC's will appear as bright luminous bands or a network of waves across the twilight and you can often see stars twinkling beyond. They are always good to image so keep that camera handy.

Clydesdale astronomical society

Orion

Issue 140
Jul 2020

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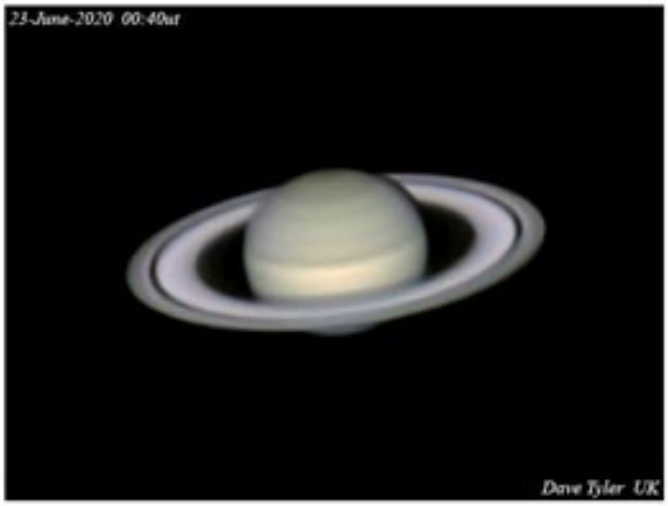

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Picture Left
Saturn
image by Dave Tyler taken 2020 June 23 at 0040 UT

From the Chairman/Society News

I hope you are all still keeping safe and well. You will see that our newsletter has a new name. Due to "Corona" being associated with coronavirus we decided to change it. "Orion" was suggested and members voted it in pretty much unanimously.
Our fortnightly webinars have been well received. We have a 40 minute lecture and then Q & A afterwards. If you've not already joined in, please do so or catch up via our YouTube channel (Clydesdale Astronomical Society Webinars) where all previous talks can be found. On the 13th July, Mary McIntyre will be talking about "Creating Stunning Star Trails" and on the 27th July, Roy Bryce will be telling us about "The History of Scottish Geology." I will email the links to the meetings prior to the lecture day so if you've not already taken part and want to do so, just send me an email at clydesdaleastro@hotmail.co.uk and I'll make sure you are on the notification list.

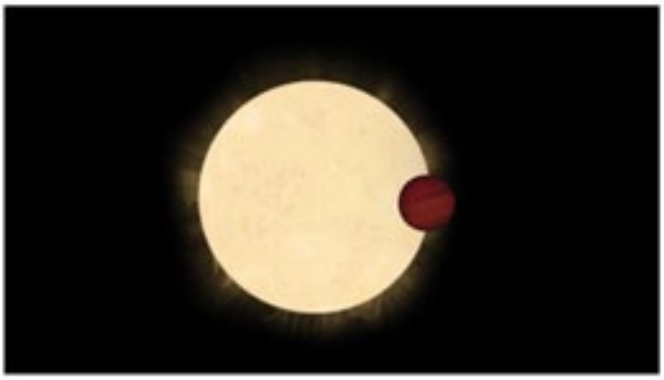
Next Meeting

Monday 13th July 2020 at 7.30 pm
CAS YouTube Webinar—Zoom Q&A

"Creating Stunning Star Trails"
Mary McIntyre

Our Nearest Exo-Planet

A planet has been confirmed around the nearest star to the Sun, Proxima Centauri just over 4 light years away. The planet, Proxima b, is about 1.2 times the mass of Earth and orbits its star every 11.2 days. Proxima Centauri is a red dwarf star and part of a triple star system; the other two stars Alpha Centauri A and B are similar to the Sun.



Mars Returns

Later this year, we will be treated to one of the finest oppositions of Mars for many years to come. Mars comes to opposition around once every 2 years and this time around it will occur on 13 October 2020. Due to the line up of Earth's orbit with Mars, some oppositions are better than others as the two planets are closer. This time around Earth and Mars will be separated by 62 million km whereas in 2027 they will be 114 million km apart. By 24 September, Mars will appear brighter in the sky than gas giant Jupiter and will remain bright well into November. The darker nights of the autumn will also be favourable for us to view the red planet high in the night sky.

Noctilucent Cloud

The image (right) was taken by Pete Lawrence (Sky at Night) on the night of 21/22 June at 0141 UT showing a magnificent display of noctilucent cloud in southern England. In Scotland, we are even better placed to view these ethereal silky clouds high in our atmosphere around midnight so keep a look-out during the summer months. These clouds are about 83 km high and illuminated by the Sun when 6 to 16 degrees below the horizon.

The Night Sky—July

This is the first time "Orion" has been published in July and August as our skies are really too light for serious observing. However, due to the pandemic we have decided to carry on publishing the newsletter throughout this year.

Mercury is not well placed early in the month but emerges as a morning planet and can be viewed after the 16th. It reaches greatest western elongation on the 22nd. Venus has now emerged from the Sun's glare and can also be seen as a morning object. Mid month, mag. –4.4 Venus appears less than one degree from mag +0.8 star Aldebaran on the 12th. Jupiter reaches opposition on 14th July but it is low in the sky and so not at its best. At mag. –2.6 it will still be easy to find but the thicker Earth's atmosphere at low latitude may make observing tricky. Saturn also reaches opposition on 20th July and will appear fairly close to Jupiter in the sky and both planets will be accompanied by the Moon on the 5th.

Clydesdale astronomical society

Orion

Issue 141
Aug 2020

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Picture Left
Noctilucent Cloud and reflection—image taken by Pete Lawrence, 22nd July 2020

From the Chairman/Society News

I hope you are all still keeping safe and obeying the rules to keep Covid-19 at bay and protect yourselves and others. Our fortnightly webinars have been well received to date. Our next webinar is on the 10th August, Mary McIntyre will be talking about, "Reflection, Refraction and Excitation - the Hunt for Atmospheric Optics." Then on the 24th August Prof Chris Lintott will be talking about "Crowd and the Cosmos." Which is based on his latest book. The weather hasn't been kind to most of us of late, and so there has been very little opportunity to see Comet Neowise, which is a shame really, as it is such a beautiful comet from all the pictures seen on social media.
Stay well and I hope to see you all on Zoom at the next meeting.

Next Meeting

Monday 10th August 2020 at 7.30 pm
CAS YouTube Webinar—Zoom Q&A

"Reflection, Refraction & Excitation"
Mary McIntyre

Comet C2020F3 Neowise

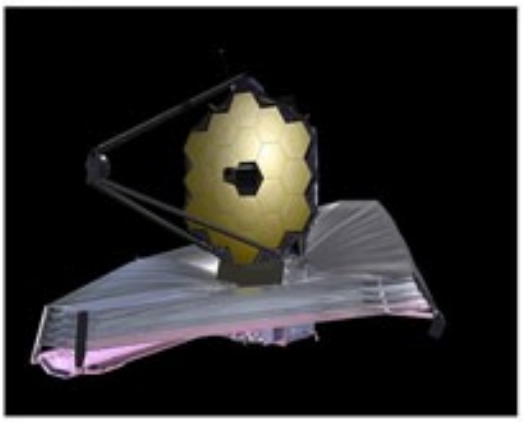
What a spectacular sight we have been treated to with this comet. The bright summer sky has prevented it being truly naked eye but it has been a magnificent sight in binoculars. The comet is moving away from the Sun and fading but you may still be able to track it down now in the constellation of Coma Berenices. Worth a look! (Image by Dave Tyler)

6 Billion Earths?

A recent study has estimated that there could be as many as 6 billion Earth type planets in the Milky Way galaxy alone. It is estimated that 1 in 5 Sun-like stars could host a rocky planet around the size of Earth and as about 7% of our galaxy's 400 billion or so stars are G type, stars similar to our own, it gives us this colossal total number. What chances life in some form?

James Webb Space Telescope

The launch of the James Webb Space telescope to replace Hubble, has been delayed from March 2021 to 31 October 2021 due to Coronavirus. The launch will go ahead using an Ariane 5 rocket sending this telescope sporting a 1.32m mirror (4 ft 4 ins) into space to look back at the formation of the first galaxies. The telescope will also have upgraded infra-red resolution to that of the Hubble Space telescope so we can look forward to some simply stunning pictures and new science.



The Night Sky—August

As the sky starts to darken again with the approach of autumn, there's certainly plenty to observe. Other than Comet Neowise, we have Jupiter sitting due south dominating the evening sky. On the 7th, it's largest moon Ganymede will be transiting the disc at 22.45 BST (21.45 UT) ending at 00.28 BST (23.28 UT).

To the east of Jupiter, the planet Saturn can be found. Both planets are quite low to the horizon but sufficiently high to be worth observing. Saturn will be close to a bright 88% lit waxing gibbous Moon on the 29th.

Mars is further to the east and also quite low to the horizon, in the constellation of Pisces. The best time to see it will be towards the end of the month around 0400 BST (0300 UT) but you will need a telescope of at least 150 mm aperture to resolve any features.

The Perseids meteor shower is with us from 1st to 23rd August, peaking on the night of 12/13 August. The Moon will be a nuisance in its last quarter phase rising at 23.50 BST on the 11/12th August which could be the best night to view as the peak is during UK daylight

Clydesdale astronomical society

Orion

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Robert McFetridge (Secretary)
Lyn Smith (Newsletter)
Dave Stephens (Treasurer)
Janice Stephens

Picture Left
The Jewel Box star cluster in the southern constellation of Crux
Image by the VLT

From the Chairman/Society News

I hope everyone is still keeping safe and well, both physically and mentally in these trying times. Our webinars have gone down well with a good turnout for each one so far. The one we held on the 24th of August had around 45 people listening to Prof Chris Lintott from the Sky At Night, giving his presentation entitled Crowd and the Cosmos. This was an excellent presentation, and a fun evening was had by all. There is still no word on when the Bank Hall will be open for us to meet in person, but I have asked the local councillor when that is likely to be, and as soon as I know I will let everyone know. In the meantime, we will continue with the Zoom meetings. Our next Zoom meeting is on the 7th of September when we have Andrew Devey, talking about "Filming Solar Cycle 24." As per usual I will be emailing the link for this soon.

Next Meeting

Monday 7th September 2020 at 7.30 pm

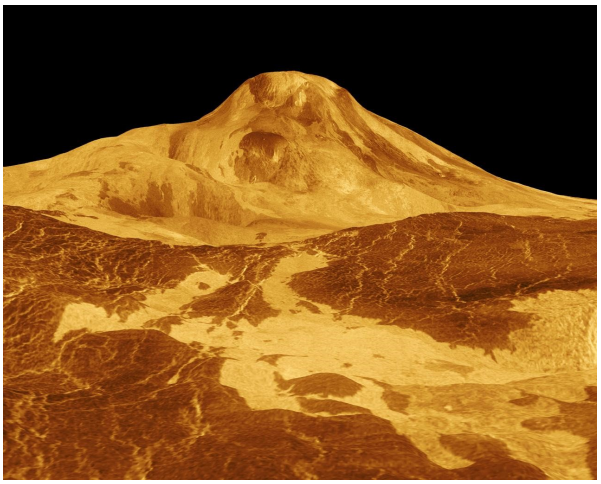
CAS YouTube Webinar—Zoom Q&A

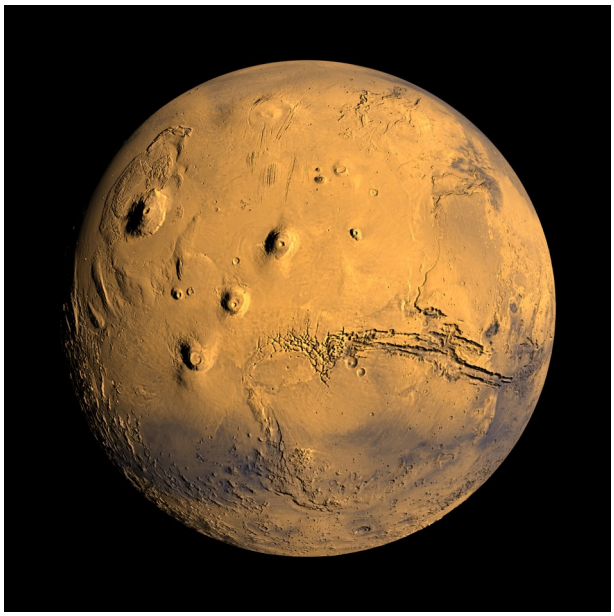
"Filming Solar Cycle 24"

Andy Devey

Active Volcanoes on Venus?

Satellite radar mapping has revealed Venus is covered in volcanoes but are any of them still active? It has been thought this was unlikely but a new study has identified 37 volcanic structures which are still active. Our view of Venus has now changed from a hostile dead planet to one whose interior is still churning, feeding active volcanic structures. Although interesting, Venus is still pretty hostile with a surface temperature hotter than a domestic oven at full blast.





Missions to Mars

Like busses, missions to Mars are few and far between and then 3 come along at once! During July, 3 countries launched missions to the red planet owing to a favourable line up between Earth and Mars cutting down the travel time. UAE launched "Hope", a climate and weather monitoring station; China launched "Tianwen-1" which will put down a rover to study rocks on the surface and radar mapping to probe underneath; NASA launched another rover "Perseverance" on July 30th which will collect rock and soil samples for a later mission to collect and return to Earth.

The Night Sky—September

Venus is a morning star rising 2 hours before the end of astronomical darkness. At magnitude -4.0 at the start of the month, it's difficult to miss it shining brightly in the constellation of Gemini. The planet will pass south of the Beehive cluster in Cancer between September 11—15 and then make its way to Leo where it is set for a near conjunction with alpha Leonis (Regulus) early next month.

Mars is approaching its best and will reach opposition next month. Mars reaches its "stationary point" on September 10th and will move west until its next stationary point in November. This is simply a visual effect of Earth's orbital motion in relation to that of Mars. In a telescope Mars will appear as a 18 arc seconds disc early in the month but by the end will be over 20% larger and will brighten from mag. –1.8 to –2.5. Mars will be just north of an 87% lit waning gibbous Moon on the 5th.

It's certainly a time for planet observing as Jupiter and Saturn are well positioned in the southern night sky. Both planets lie quite low to the horizon which does make observing more difficult but it's still worth having a go to see if you can identify the moons and of course the rings of Saturn. On the 24th and 25th both gas giants and the Moon will form a bent line in the sky.

Even Uranus and Neptune are on offer this month. Uranus is in the southern part of the constellation of Aries, not too far from Mars. Neptune reaches opposition on the 11th when it is available for observation all night. At magnitude +7.8 you will need binoculars or a small telescope to find its blue coloured tiny disc.

Clydesdale astronomical society

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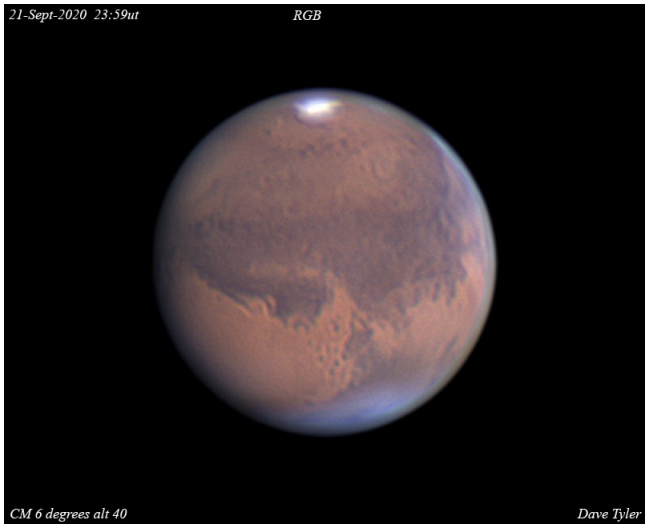

The Committee:

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Allison Dunlop (Librarian)
Robert McFetridge (Secretary)
Lyn Smith (Newsletter)
Dave Stephens (Treasurer)
Janice Stephens

Picture Left
Mars
Image taken by Dave Tyler at 2359 UT on 21 September 2020

From the Chairman/Society News

Welcome to our 15th session. Another astronomy session has started and so far, everyone has survived the unexpected trials of the last one. Members have stayed safe and well on the whole during this pandemic and I hope you continue to do so through the coming winter months. The society has moved with the times to keep meetings going via Zoom, which has kept everyone's spirits up as we had our webinar to look forward to every fortnight. Our membership has gone up thanks to the Zoom meetings with new associate members joining us. Our next Zoom meeting is on the 5th of October featuring Pete Williamson, whose topic is "Remote Telescopes for Public and Educational Access". It would be great to see as many of you there as possible. On the 19th of October, we have Dr Simon Cuthbert "Mercury -The Incredible Shrinking Planet."

Next Meeting

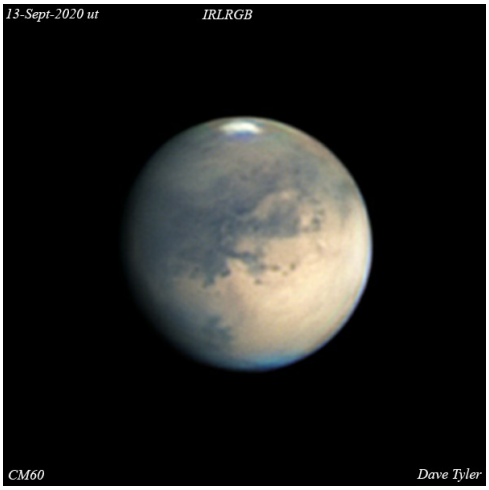
Monday 5th October 2020 at 7.30 pm

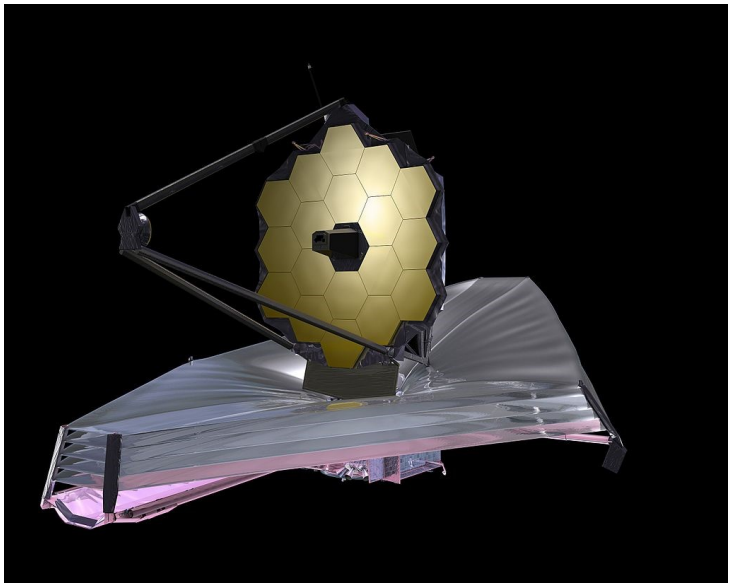
CAS Zoom Webinar + Q & A Session

"Remote Telescopes for Public & Educational Access"
Pete Williamson

Mars at Opposition

Few can have failed to notice the bright reddish "star" in the southern evening sky. Of course it's not a star, but the planet Mars. Opposition occurs mid month which means the planet is in the opposite part of the sky to the Sun. It's closest approach to Earth is on the 6th when the planet will present its largest disc in telescopes 22.6 arc seconds across. Mars has its southern pole tilted towards Earth (the image opposite by Dave Tyler is inverted). Mars is bright in our night sky at the moment at mag. -2.6. This is one of the best oppositions for some time so make the most of it and get out there with your telescope or binoculars.





James Webb Space Telescope Launch

The Hubble Space Telescope's replacement, the JWST, is due for launch via an Ariane 5 rocket from the Guiana Space Centre, on 31st October 2021. The next generation $10 billion successor to Hubble will provide improved infrared resolution enabling cutting edge investigations such as the formation of the earliest galaxies. Once fully operational, we can look forward to some stunning images of the universe and hopefully, new discoveries.

The Night Sky—October

Mercury is poorly placed in the evening sky and not likely to be easily seen. Venus however, presents its usual spectacular sight in the morning sky at mag. –4.0 in the constellation of Leo. On the 3rd, Venus can be seen close to the star Regulus, the brightest star in Leo. On the 14th, a 9% lit crescent Moon will be close by.

Jupiter and Saturn both persist in our southern evening sky. Saturn is further east but is fainter at mag. +0.8 compared to Jupiter at mag. –2.2.

Uranus reaches opposition on the 31st. The gas giant planet is in the constellation of Aries and at mag. +5.7 you will need a telescope to resolve its greenish disc. Neptune is also well placed for observation although now past opposition. At mag. +7.8 its bluish disc can be resolved in a small telescope. Neptune is currently in the constellation of Aquarius.

Two meteor showers are due during October, the Draconids on the nights of 6/7th and 7/8th and also the Orionids on the 20/21st. The Draconids occur when the Earth passes through the debris trail of comet 21P/Giacobini-Zinner and seem to emanate from the constellation of Draco, the dragon. You can typically expect a ZHR of about 10 meteors per hour but many more can occur in short bursts so keep watching.

The Moon should not interfere with the Orionids this year as it sets early in the evening leaving us with a dark sky for viewing meteor trails. An expected ZHR of 25 meteors per hours should make observing worth while especially around midnight. The meteors will appear to emanate from the constellation or Orion, hence their name, and are the result of Earth passing through the debris trail of Halley's comet.

Clydesdale astronomical society

Orion

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Gordon McKay (Observing)
Lyn Smith (Newsletter)
Dave Stephens (Treasurer)
Janice Stephens

Picture Left
Northern Aurora Imaged by Pete Lawrence from an "Aurora flight" from Bristol 13 March 2018

From the Chairman/Society News

We have a newly appointed committee member, Gordon McKay. As chairman, I co-opted Gordon onto the committee as our observing coordinator, and his election will be ratified at the next AGM in June 2021. Gordon has the relevant background that made him the perfect candidate to take over that role. On our website there is a picture of Gordon on the committee page. At our meeting on the 19th of October, we held a minutes silence in memory of our friend Eddie Carpenter. A short tribute was read out about Eddie Carpenter, from Bristol AS, who died suddenly at the age of 78. Eddie became part of the CAS family in recent months and will be missed by us all. Our next Zoom meeting is on the 2nd of November (details below) and on the 16th of November, we have Duncan Lunan with his talk entitled "Incoming Asteroid."

Next Meeting

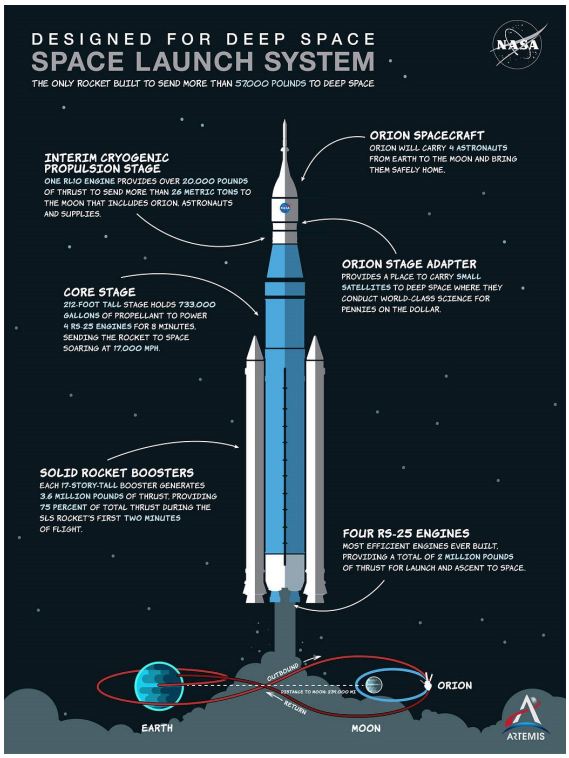
Monday 2nd November 2020 at 7.30 pm

CAS Zoom Webinar + Q & A Session

"Missions to Near Earth Asteroids"
Dr John Davis

OSIRIS-REx Mission

The NASA mission to near Earth asteroid Bennu has successfully grabbed a sample of the asteroid's surface material. It seems the space-craft grabbed too much material as the collectors lid of the sample container is wedged slightly open and some of the sample is leaking into space. It is hoped the main sample is stored safely and about 60 gms (2 oz) of material will be returned to Earth on 24 September 2023. Let's keep our fingers crossed!



NASA Moon Mission Artemis

NASA has given a commitment to landing humans back on the Moon by 2024 including the first woman lunar astronaut. Technologies and systems will be established to maintain a sustained exploration programme of the lunar surface.

A new powerful rocket system, the Space Launch System (SLS) will send astronauts aboard the Orion spacecraft to lunar orbit and then transfer at the "Gateway" to a human landing system to the lunar surface.

Missions will commence in 2021 to send hard-ware and systems to the Moon ahead of the astronauts. Artemis I and II will be test flights to test the new rocket system and Artemis III will be the mission to establish astronauts on the Moon.

The long term goal is Mars but a sustainable presence must be established on the Moon first. Interesting times ahead.

The Night Sky—November

High energy particles from a solar coronal hole hit the Earth's atmosphere a few nights ago resulting in aurora visible from northern Scotland. Now we are into the dark nights once more, don't forget to check out Aurora Watch and keep a look-out for aurora.

Mercury and Venus are both morning objects during November. Mercury is in the east south-east rising just over an hour before the Sun. By the 10th it will rise 2 hours before the Sun at greatest western elongation, mag. –0.4. Venus rises over 3 hours before the Sun and at mag. –3.9 on the 1st is pretty obvious even to the beginner. Venus is starting to move towards the Sun and inferior conjunction but will be visible all month.

Mars came to opposition on 13th October but remains bright and obvious in our southern night sky in the constellation of Pisces. Early observation is recommended as it will be mag. –2.1 at the start of November but fades to mag. –1.1 by the end of the month. Mars becomes stationary in our sky on the 16th when its apparent motion changes from west-ward to eastward due to the Earth "catching up" with Mars' orbit. As Mars recedes from us, the disc will shrink from 20 arcseconds to 15 arcseconds during the month.

Jupiter and Saturn are progressing westward, both planets seeming to converge from 5° to 2.3° separation by the end of November. Jupiter is mag. –2.0 and Saturn mag. +0.9 to the east of Jupiter. Uranus and Neptune are well placed due south for observation all month.

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Picture Left
Spiral Galaxy NGC 986 in Fornax discovered in 1826 by Scottish astronomer James Dunlop

From the Chairman/Society News

I hope everyone is still keeping safe and well, both physically and mentally. Our webinars have gone down really well so far with some great feedback. If you have missed any of them, then head to our YouTube Channel, "Clydesdale Astronomical Society Webinars" to catch up. Two meetings are not listed due to the speaker requesting they were not recorded due to publication rights etc.
Our next Zoom meeting is on the 7th December, when we have Duncan Lunan giving us part II of his talk entitled, "Incoming Asteroid". I will email the link for this in due course. The week after Duncan's talk, we will have another webinar on Monday 14th December 2020 when Dr Luke Daly will be presenting "Where do Meteorites Come From?"

Next Meeting

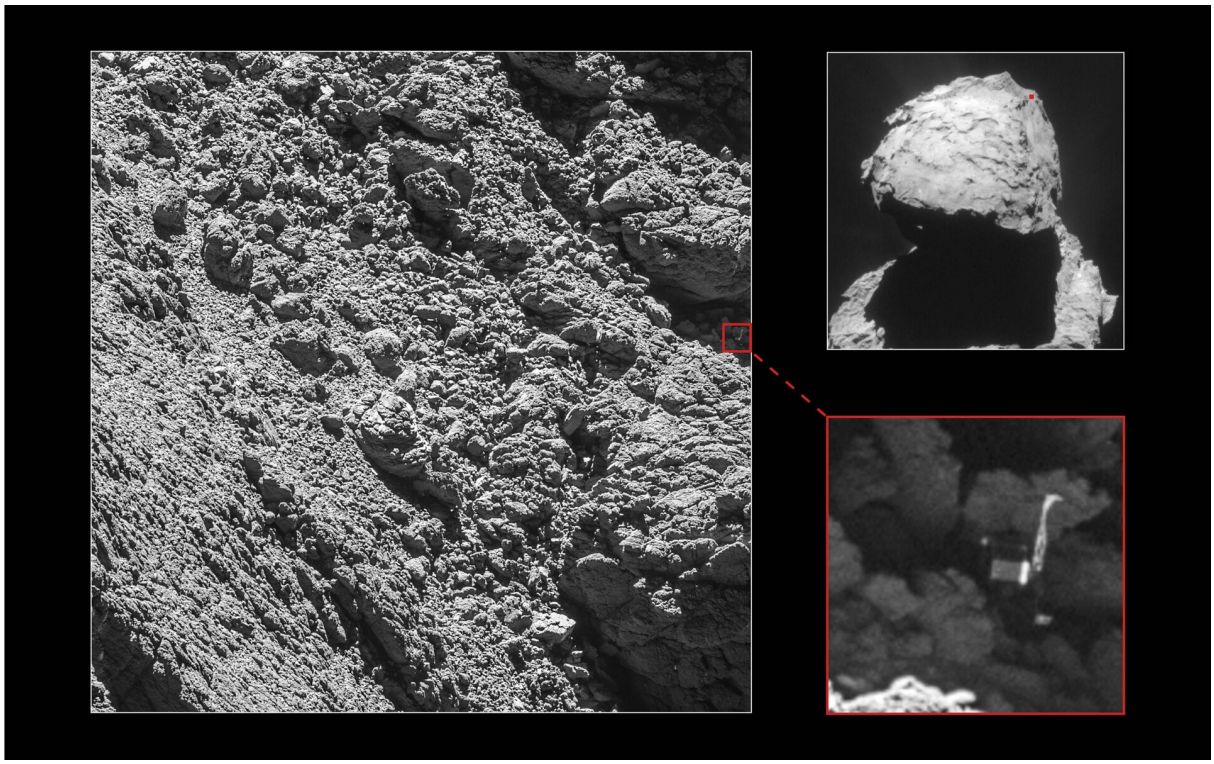
Monday 7th December 2020 at 7.30 pm

CAS Zoom Webinar + Q & A Session

"Incoming Asteroid—Part II"
Duncan Lunan

Philae Found on Comet 67P/Churyumov-Gerasimenko

Six years ago "Philae", the lander from the Rosetta spacecraft, approached comet 67P/ Churyumov-Gerasimenko to attempt a landing. Unfortunately, the probe bounced off the surface twice before landing in an unidentified place. At last, it has been located in a shadowy crevice as the picture below shows. Mystery solved! A great deal of detective work was involved using the lander's magnetometer and eventually it was found in Rosetta's archive high-resolution images. Knowing how the lander bounced and where it ended up will help scientists plan for future missions to comets and refine landing techniques.



The Night Sky—December

I'm going to start with the "day" sky as there is a huge sunspot currently on the solar disc, AR2786. Unusually large for such an early period in new Solar cycle 25, AR2786 would comfortably swallow the Earth as you can see from the Earth inset in the image below. Remember your safety routine when viewing the Sun and never look through an unfiltered telescope or binoculars.

Look out for the conjunction of Jupiter and Saturn on the 21st. At the start of the month the planets will appear 2.2° apart but by the 21st they will be a mere 6.1 arcminutes apart (the apparent diameter of the Moon being about 30 arcminutes). This is the closest the two planets have appeared in our sky since 1623 appearing as one bright object to the naked eye. Both planets should be in the same field of view in a small telescope at mag x150 or so. Between 4th—17th December the Geminid meteors will be on show, peaking on the night of 13/14 December. The shower has a ZHR of around 140 meteors per hour. Best around 00.50 UT on Dec 14th with no Moon around to spoil the view.

Huge sunspot AR2786 imaged by Philippe Tosi on 2020 November 24th