

Astronomical Society of Edinburgh

Founded 1924

www.astronomyedinburgh.org Printed on 21 July 2020

January 2020 meeting report

13 January 2020

Categories: Meeting report, News



What a really great meeting we had with Bob Mizon from Commission for Dark Skies and the BAA. Special thanks to Peter Harrison, Technical Director at Institution of Lighting Professionals, for his very valuable and knowledgeable input.

We had a fascinating Q & A session afterwards where we had some very interesting questions from the floor. Both Bob and Peter gave useful answers. We will use this meeting as a way of coming up with an ASE policy on Light Pollution. Watch this space.

We do have a [Dark Sky Edinburgh Facebook page](#).

Also at the meeting:

- The President paid tribute to Dr. Dave Gavine, who passed away recently
- Alan gave a presentation on the Sky in January.
- The [4-Steps programme](#) is progressing with [Navigating the Night Sky](#) at the ROE on 18 Feb and the next [Telescope Help Shop](#) on the 29 Feb.

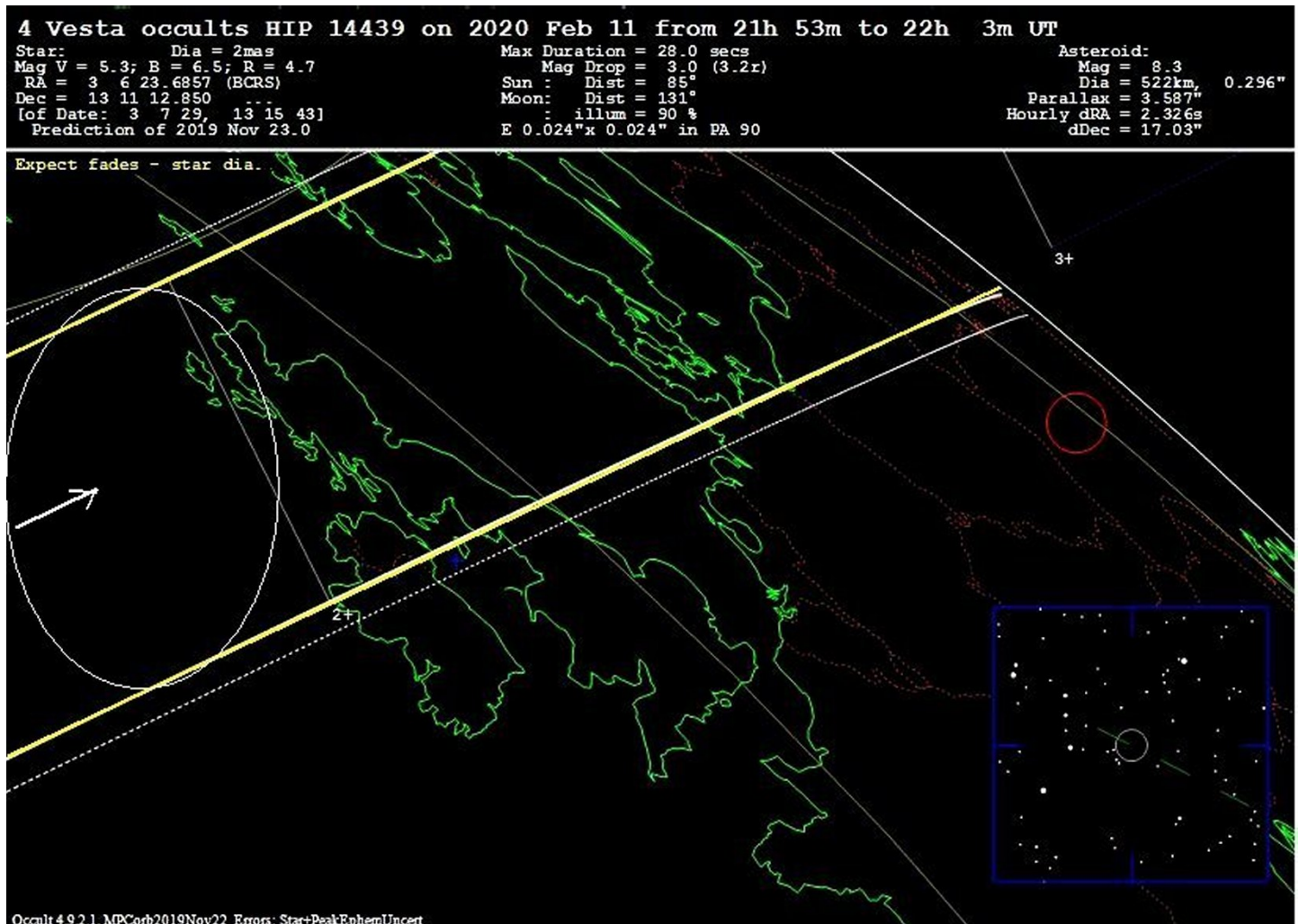


[Download the ASE slides as a PDF](#)

Occultation by 4 Vesta

19 January 2020

Categories: News



From Alex Pratt of the BAA – On the night of 11 Feb 2201-2203 UT, the second largest asteroid Vesta will occult a brightish (mag 5 – 6) star: HIP14439, SAO 93276, TYC 654-1754-1, HD19270

Predicted times at selected locations:-

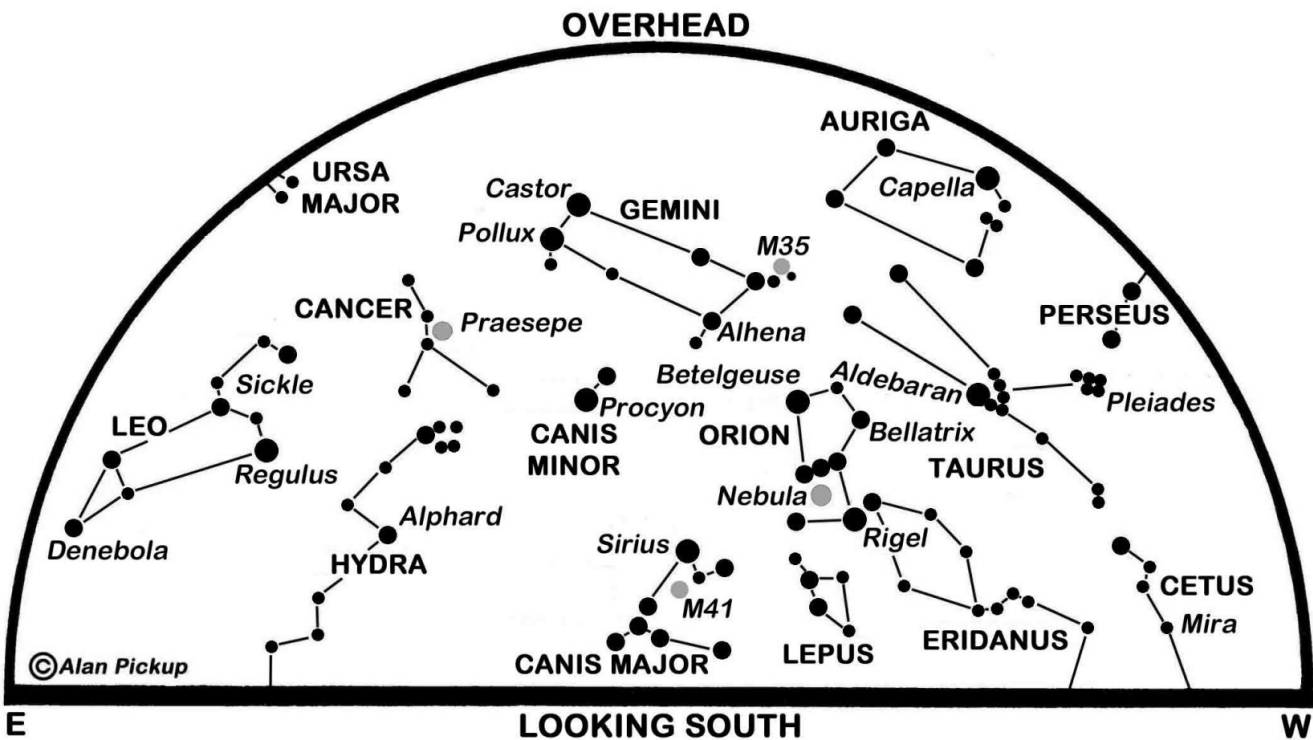
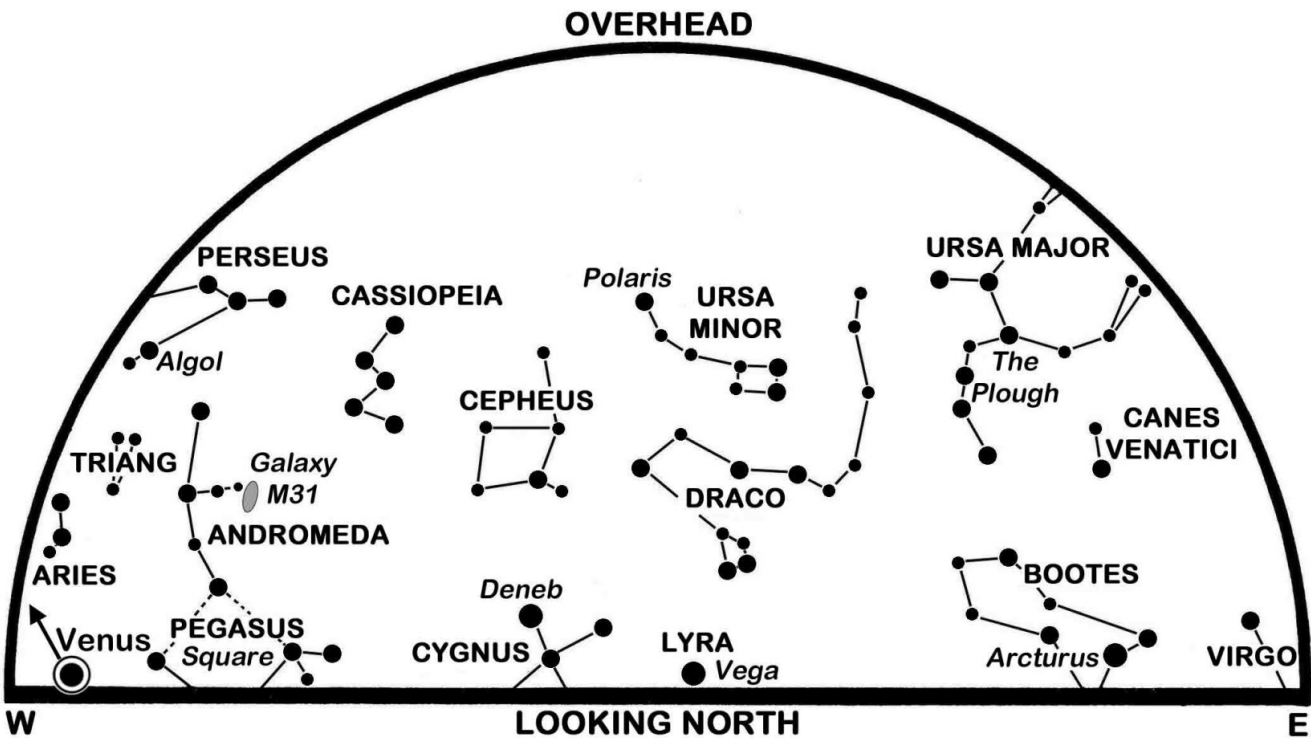
22:01:52 Inverness
22:01:52 Tarbat Ness
22:01:56 Glasgow
22:01:57 Dundee
22:01:57 Edinburgh
22:01:59 Douglas, IoM
22:02:02 Newcastle upon Tyne

Could be a good opportunity to observe an interesting event. For more information:

<http://stargazer.me.uk/call4obs/NextEvent4.htm>

Scotland's Sky in February 2020

31 January 2020
Categories: Sky Diary



Mercury joins brilliant Venus in best evening sky of 2020



Author: [Alan Pickup](#)

The maps show the sky at 22:00 GMT on the 1st, 21:00 on the 15th and 20:00 on the 29th. Venus is plotted at mid-month and its path shown by an arrow.

Our February evening sky is often lauded as our best of the year, not least because the majestic constellation of Orion is climbing through the south-east at nightfall and stands proudly in the south one hour before our star map times.

Orion brings a supporting cast of other noteworthy constellations but is of particular interest at present because one of its major stars, Betelgeuse, is misbehaving and might, just might, be about to explode.

If Betelgeuse were to become a supernova it would far surpass the planet Venus which is climbing higher and blazing ever more brilliantly in our south-west as the night begins. Its popular title of evening star dates from ancient Greece and Egypt and survived long after its true nature was recognised, to the occasional confusion of the public but the delight of writers and poets.

Venus's altitude at sunset improves from 27° to 35° during February and it brightens from magnitude -4.1 to -4.3 as it speeds through the dim constellation of Pisces. Viewed telescopically, it shows a dazzling gibbous disk that swells in diameter from 15 to 19 arcseconds as its distance drops from 162 million to 133 million km. Venus sets at Edinburgh's western horizon at 20:45 on the 1st and as late as 22:12 on the 27th when it makes an impressive sight 6° above-right of the young earthlit Moon.

February also sees the little innermost planet Mercury, sometimes also called an evening star, making its best appearance in our evening sky of 2020. In some years, Venus and Mercury stand as near neighbours in the sky and we can find the fainter Mercury by reference to the unrivalled Venus. This time, though, there is plenty of space between them and they come no closer than 24° on the evening of the 8th.

A better plan might be to find a clear and unobstructed horizon between the south-west and west and to note where the Sun sets. One hour after sunset, Mercury stands almost directly above the sunset position, its altitude improving from almost 3° on the 1st to more than 6° by the 10th when it is furthest (18°) from the Sun. Between these dates, it dims a little from magnitude -1.0 to -0.5 but should be a naked eye object in the fading twilight provided the sky is clear.

Thereafter, Mercury falls away and dims more quickly. By the 17th it is a couple of degrees lower but a quarter as bright at magnitude 1.1 so that it has become difficult to spy in the twilight, even through binoculars. It reaches inferior conjunction on the Sun's near side on the 26th.

The Sun climbs almost 10° northwards in the sky during February while Edinburgh's sunrise/sunset times change from 08:08/16:45 on the 1st to 07:06/17:46 on the 29th, leap year day. The Moon is at first quarter on the 2nd, full on the 9th, at last quarter on the 15th and new on the 23rd.

As Orion crosses the meridian, look overhead for the yellowish star Capella in Auriga, the sixteenth brightest star in Earth's night sky and the fourth brightest ever seen from Scotland. Even so, a quarter as bright as Sirius in Canis Major, which twinkles furiously below and to the left of

Seventh in the stellar premier league is the blue supergiant star Rigel at the lower-right of Orion where it represents the hunter's left knee or foot.

Opposing Rigel, on the other side of Orion's Belt, is the contrasting red supergiant Betelgeuse which pulsates in size and brightness and can occasionally surpass Rigel. Usually, though, Betelgeuse is a mid-league player, hovering around 10th place and keeping a few places brighter than the magnitude 0.9 red giant star Aldebaran, 21° away in Taurus (see chart).

Betelgeuse began to fade in October and was close to magnitude 1.5 a few days ago, putting it a full magnitude below its average brightness and at its faintest on record. Indeed, it is now around the 22nd brightest star meaning that it has relegated itself from our premier league. We can compare its brightness for ourselves by reference to Bellatrix, at Orion's other shoulder, which shines at magnitude 1.6. Will Betelgeuse dim below Bellatrix during February, or...?

Betelgeuse is likely to exhaust its nuclear fuel and "go supernova" within the next 100,000 years but, despite its current performance, astronomers are far from convinced that its disintegration is imminent. If it were to happen, Betelgeuse might flare as brightly as the full moon and be visible in broad daylight before gradually fading and disappearing from our night sky, changing forever the appearance of Orion. Fortunately, it is far enough away at 700 light years for there to be no danger to the Earth.

Mars rises at about 05:00 and continues as a morning object very low down in the south-east to south-south-east before dawn. This month it brightens from magnitude 1.4 to 1.1 as it tracks eastwards from southern Ophiuchus. Don't confuse it with the slightly brighter red supergiant star Antares in Scorpius which flashes red a few degrees to Mars' right. The planet is passing above the so-called Teapot of Sagittarius when it stands close to its most southerly point in the sky and alongside the Moon on the 18th.

The following morning sees the Moon 7° to the right of Jupiter as the latter starts to emerge as a conspicuous magnitude -1.9 object that hugs our south-eastern horizon before dawn. Saturn, fainter at magnitude 0.7, is more difficult to spot 9° to the left of Jupiter as the month ends.

Diary for 2020 February

2nd 02h First quarter

4th 07h Moon 3° N of Aldebaran

8th 11h Moon 1.3° N of Praesepe

9th 08h Full moon

9th 22h Moon 4° N of Regulus

10th 14h Mercury furthest E of the Sun (18°)

15th 22h Last quarter

16th 20h Moon 7° N of Antares

18th 13h Moon 0.8° N of Mars

19th 20h Moon 0.9° S of Jupiter

20th 14h Moon 1.7° S of Saturn

23rd 16h New moon

26th 02h Mercury in inferior conjunction

27th 12h Moon 6° S of Venus

28th 07h Moon 4° S of Venus

This is an extended version, with added diary, of Alan's article published in The Scotsman on January 31st 2020, with thanks to the newspaper for permission to republish here.

February 2020 meeting report

12 February 2020

Categories: Meeting report, News



We had a fantastic talk by Grant Miller, Zooniverse Project Manager at the University of Oxford. Grant gave a run-down of the history of the project and Planet Hunters in particular.

Also at the meeting:

- Horst described the highlights of the night sky in February
- Andrew shared dates for our [4-Steps programme: Navigating the Night Sky](#) on 18 Feb and Telescope Help Shop on 29 Feb, the latter being sold out.
- We put out a request for anyone with skills and interest in sharing astronomy with young people. We regularly get requests for help and it is something we definitely want to do.
- Jim Nisbet updated us on our Light Pollution discussions and policy development.
- Peter Black updated the meeting on the Strategy Development Workshop second mee



ASE Slides Feb 2020

- Andrew gave an overview of topics that had caught his attention in astronomy and space.
- Hugh Somerville gave a short presentation on various space topics, hardly mentioning Iridium satellites at all.

Software for astronomy

13 February 2020

Categories: News



There are so many pieces of astronomical software available to the amateur these days – often for free. We've added a list of some of them to our [Links page](#).

Many of these are used by members of our [Imaging Group](#) and we have been discussing and demonstrating them at our meetings recently. Here are some of them:

- [ASCOM](#) software standards for astronomy (free)
- [EQMOD](#) control of Skywatcher mounts (free)
- [Astrophotography Tool \(APT\)](#) image capture
- [N.I.N.A.](#) image capture (free)
- [SharpCap](#) image capture (free +)
- [Firecapture](#) planetary image capture (free)
- [Deep Sky Stacker](#) image processing (free)
- [SIRIL](#) deep sky processing (free)
- [Astro Pixel Processor](#) image processing
- [Pixinsight](#) image processing
- [StarTools](#) image processing

- [Nebulosity](#) camera control and processing
- [PHD2 Guiding](#) *the* autoguiding software (free)
- [Autostakkert](#) planetary/lunar/solar stacking (free)
- [Registax](#) planetary/lunar/solar stacking and processing (free)
- [Sequator](#) image processing and stacking for wide angle night sky images (free)
- [AstroImageJ](#) photometry/light curves/exoplanet transits (free)
- [Sky charts and virtual Moon atlas for free download](#) (free)
- [Stellarium](#) free planetarium software for Windows, Linux and OS X (free)
- Sky Safari planetarium app for iOS and Android
- [Google Sky](#) (free)

Navigating the Night Sky event report

19 February 2020

Categories: Meeting report, News



We had a great turnout at our 4-Steps event, Navigating the Night Sky at the Royal Observatory Edinburgh last night. Alan Pickup gave a very engaging talk on how to find your way around the sky and what to see there. And Betelgeuse still hasn't gone supernova...

Our [4-Steps to the Stars](#) events are aimed at helping people to get into astronomy, including online advice on buying a telescope, workshops to learn how to use a telescope, finding your way around the sky and then imaging it.

Sean Wixted, our Secretary, hosted the event and introduced the Society and our other events to the visitors. Feedback from the event has already been very positive and there is clearly an appetite for more of these sorts of events, as well as public observing and maybe another Telescope Help Shop.

We had hoped to go outside afterwards and take a guided tour with our own eyes but the weather initially seemed to be against us. However, a few hardy souls hung around and were rewarded as the clouds rolled away and we could see many of the things that Alan had been describing. We

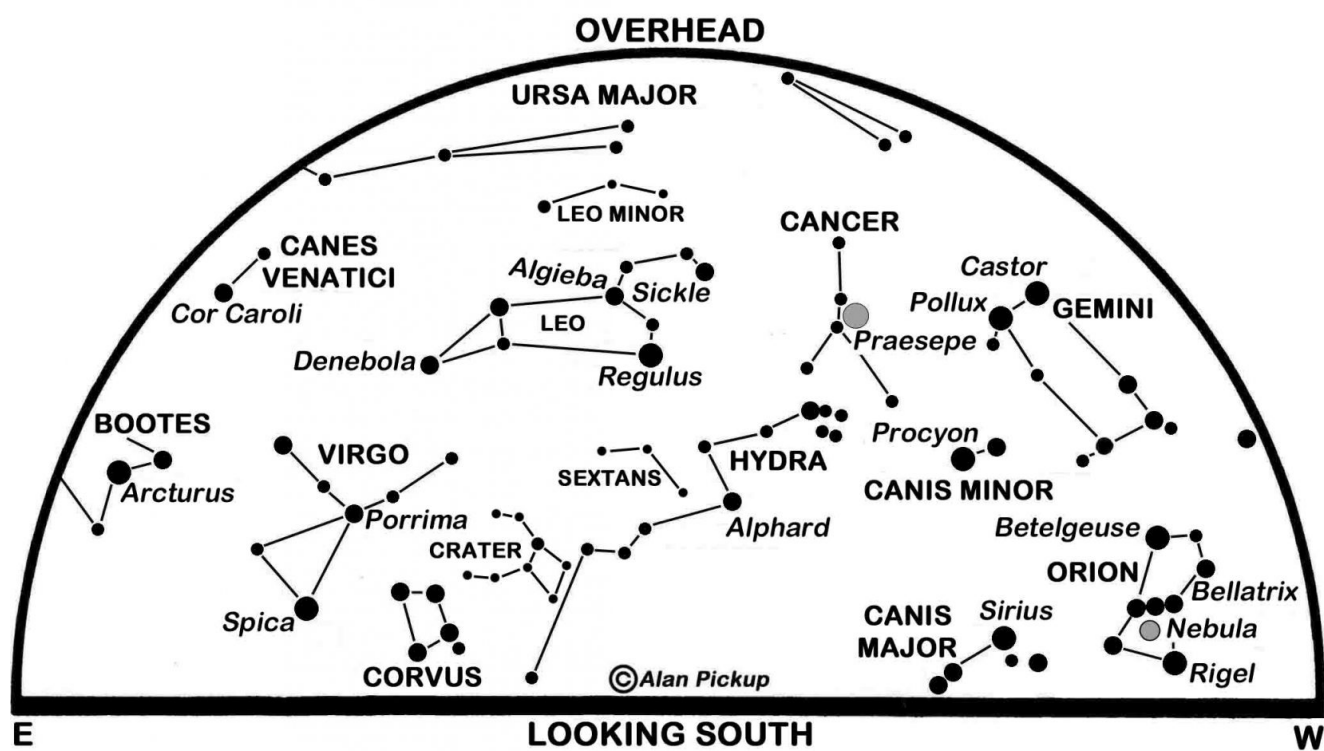
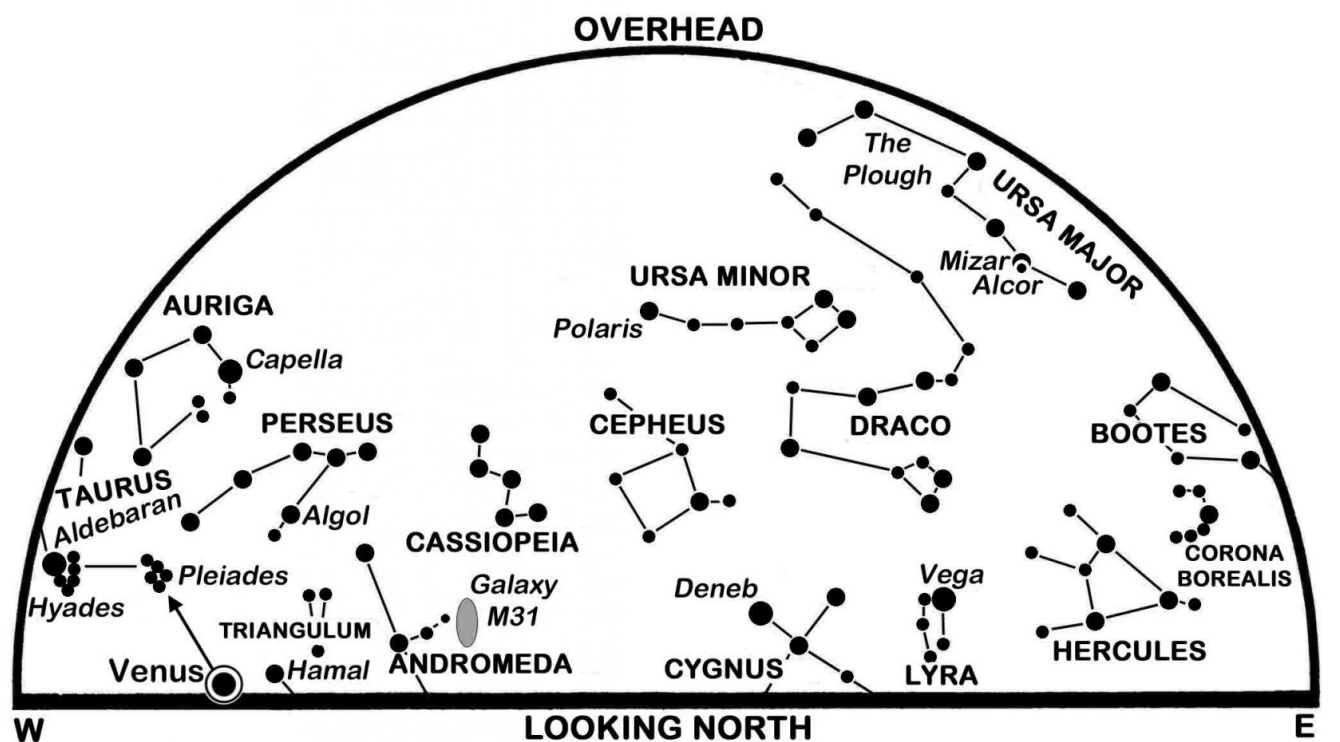
to observed the Orion Nebula and Pleiades with binoculars as well as a few other objects. It was very cold and windy though!

We are hoping to do some public observing events later this year where you can look through our telescopes – let's hope the weather helps us. Keep an eye on our website and Facebook page for details.

Many thanks to the ROE for allowing us to use their lecture theatre and especially Olivia for staying around to allow us to do this.

Scotland's Sky in March 2020

29 February 2020
Categories: Sky Diary



Venus, Earth's hellish twin, at its highest for eight years



Author: [Alan Pickup](#)

The maps show the sky at 23.00 GMT on the 1st, 22.00 GMT on the 16th and 21.00 GMT (22.00 BST) on the 31st. Venus is plotted at mid-month and its path shown by an arrow. Summer time begins at 01.00 GMT on the 29th when clocks go forward one hour to 02.00 BST.

The current evening apparition of Venus reaches its climax during March when it stands higher at sunset than it has for eight years. While Orion remains an imposing sight in the south at nightfall, it is falling lower towards the west by our star map times.

Attention, though, is still fixed on the red supergiant star Betelgeuse at Orion's shoulder, see map, which has been suffering from the deepest plunge in its brightness ever see. For much of February, the star has been close to the magnitude 1.6 of Bellatrix, the star at Orion's other shoulder, and more than a magnitude fainter than usual. Meantime, images of the star's surface using the Europe's VLT (Very Large Telescope) in Chile show an apparent change of shape, perhaps due to a giant star-spot or to obscuration by a cloud of dust ejected from the surface.

Studies of periodicities in Betelgeuse's lesser pulsations over the years had led some analysts to suggest that 21 February might bring a turning point in its fortunes. In fact, measurements show that its brightness decline may have reversed a few days earlier than this, though it has far to go to regain its former prominence.

March sees the Sun climb 12° northwards to cross the sky's equator at 03:50 GMT on the 20th, marking our vernal or spring equinox. Edinburgh's sunrise/sunset times change from 07:03/17:48 GMT on the 1st to 06:45/19:50 BST (05:45/18:50 GMT) on the 31st, after we set our clocks forward on the 29th. The Moon reaches first quarter on the 2nd, is full on the 9th, at last quarter on the 16th and new on the 24th.

Our charts show the Sickle of Leo high on the meridian as the Plough is approaching the zenith from the east and the Pleiades star cluster is sinking in the west where it lies 7° above-right of the Moon on the 1st. Between Gemini and Leo lies the dim constellation of Cancer and its Praesepe or Beehive star cluster at a distance of 577 light years. Praesepe's individual stars may be spotted through binoculars but will be swamped by the Moon when it lies just above-left of the cluster on the evening of the 6th.

Venus, brilliant and unmistakable at magnitude -4.2, stands 36° high in Edinburgh's south-west at sunset on the 1st and sets in the west-north-west at 22:22 GMT. Tracking east-north-eastwards against the stars, it brightens to magnitude -4.4, slides to the left of Hamal in Aries, and approaches to within 3° or 6 Moon-breadths of the Pleiades by the evening of the 31st. Its distance drops from 133 million to 98 million km, while, viewed telescopically, it swells from 19 to 25 arcseconds in diameter and evolves from gibbous to crescent in phase as the dazzlingly-lit portion of its disk changes from 63% to 47%.

The slim young Moon is below Venus on the 27th and near Venus and the Pleiades (again) on the 28th. Venus is furthest from the Sun (46°) on the 24th – its so-called greatest elongation –

actually highest at sunset two days later at 38.6°.

There is a curious correlation between the orbital periods of Venus and the Earth in that eight orbits of the Earth take 2922 days while 13 orbits of Venus total 2921 days. This means that this apparition of Venus is an almost exact day-for-day (or night-for-night) replay of the one it enjoyed eight years ago, in 2012, and we will not see Venus so high again in the evening until 2028.

In some respects, Venus is almost the twin of the Earth since it is 95% as wide and has 81% of its mass. However, if the ancient Romans had been aware of its true nature, they might not have chosen to name it for their goddess of love and beauty. The planet has a dense atmosphere of carbon dioxide and a surface as close to hellish as we can imagine. Any astronaut brave enough to descend through its opaque clouds, mainly of sulphuric acid, would find themselves roasted at 460°C and compressed under an atmospheric pressure 92 times that at the Earth's surface, comparable with that at an ocean depth of 900m.

Venus spins backwards on its axis in 243 earth-days and much of its surface, only really “visible” to orbiting probes via radar, appears to be blanketed by plains of lava with no sign of the plate tectonics that drive so much of our planet's geology. There are more volcanoes than on the Earth and suggestions that a handful may have been erupting as we “watch”. There are impact craters, too, but few small ones because of the shielding effect of the atmosphere. The Roman heritage lives on in that most of its surface features are names for real or mythological women – one notable exception is that its highest mountain, Maxwell Montes, is named for Edinburgh's James Clerk Maxwell.

Mercury stands furthest west (28°) of the Sun on the 24th but stays hidden from our view in the dawn twilight. The other bright planets are inconveniently low in our south-south-eastern sky before dawn. The brightest, magnitude -2.0 Jupiter, stands 8° high one hour before sunrise and is about 7° to the right of the fainter Saturn, magnitude 0.7. Fainter still is Mars (magnitude 1.0 to 0.8) which lies 10° to the right of Jupiter on the 1st but moves to pass 0.7° south of Jupiter on the 20th and 0.9° south of Saturn as the month ends. Catch the waning Moon below-right of Mars and Jupiter on the 18th.

Diary for 2020 March

1st 17h Moon 7° S of Pleiades

2nd 16h Moon 3° N of Aldebaran

2nd 20h First quarter

6th 22h Moon 1.4° N of Praesepe

8th 09h Moon 4° N of Regulus

8th 12h Neptune in conjunction with Sun

9th 15h Venus 2.4° N of Uranus

9th 18h Full moon (supermoon)

11th 20h Moon 7° N of Spica

15th 03h Moon 7° N of Antares

16th 10h Last quarter

18th 08h Moon 0.7° S of Mars

18th 10h Moon 1.5° S of Jupiter

19th 00h Moon 2.1° S of Saturn

20th 03:50 Vernal equinox

20th 06h Mars 0.7° S of Jupiter

24th 02h Mercury furthest W of Sun (28°)

24th 09h New moon

24th 22h Venus furthest E of Sun (46°)

28th 11h Moon 7° S of Venus

28th 23h Moon 7° S of Pleiades

29th 01h GMT = 02h BST Start of British Summer Time

29th 23h BST Moon 4° N of Aldebaran

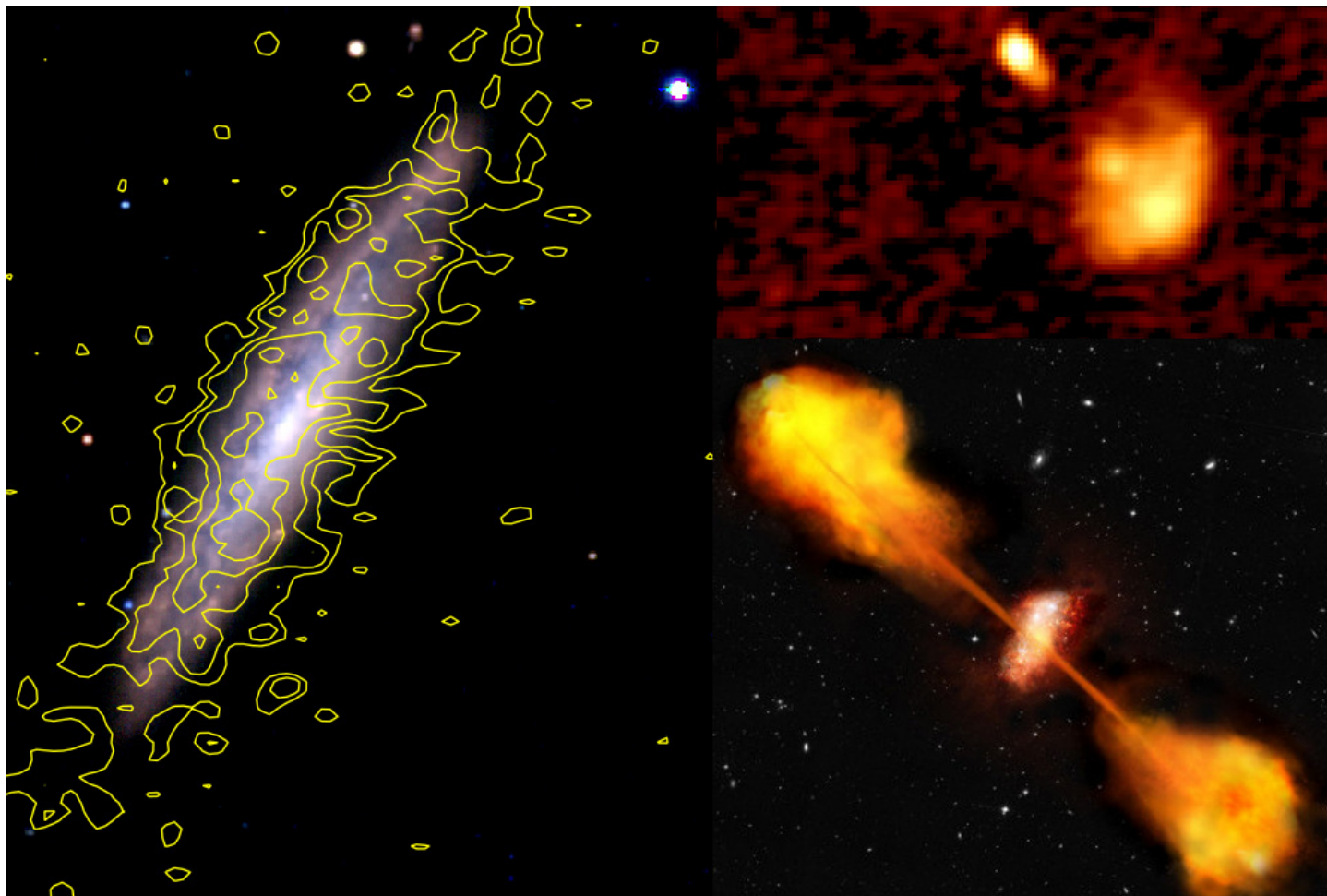
31st 12h BST Mars 0.9° S of Saturn

This is an extended version, with added diary, of Alan's article published in The Scotsman on 29 February 2020, with thanks to the newspaper for permission to republish here.

ZOONIVERSE: LOFAR

2 March 2020

Categories: Meeting report, News



In June 2019 we had a presentation by Professor Philip Best on LOFAR(Low Frequency Array Radio telescope). In Feb we had Grant Miller talk about ZOONIVERSE. There is now a project everyone can participate in that combines two of our recent talks: GALAXYZOO:LOFAR.

What are they looking for?

- Supermassive Black Holes
- Star forming galaxies

LOFAR also picks up nearby galaxies where much star formation is going on. You may not see radio jets but the shape of the radio emission follows the shape of the nearby galaxy closely.

To visualise this, the radio emissions are shown as yellow lines (called contours) in the foreground and the image from an optical telescope in the background.

The LOFAR survey has made images of hundreds of thousands of these jets and galaxies, which have been identified by an automatic “source finder” computer program.

They have built a dedicated training workflow and a step-by-step tutorial video that will guide you through the classification process. To join in visit:

<https://www.zooniverse.org/projects/chrismp/radio-galaxy-zoo-lofar/about/research>

Telescope Help Shop report

6 March 2020

Categories: Meeting report, News



On 29 January 2020 ten members and 20 guests attended our second Telescope Help Shop. Following on from last year's successful event, we had a waiting list and sufficient interest to run another one.

Our guests had brought along their telescope and we helped them with things such as setup, finder alignment, focusing and pointing. We had planned the day so that the Moon would be visible and although the weather was windy, we did get enough gaps between the clouds and showers to see the Moon through some of the scopes. As last year, we ran the event in the Gyle Hall at St. Thomas's Church Costorphine, partly because of the grassy area to the side and views to the south over the Pentlands.

In feedback from our guests, overall they gave the event a 4.8/5.0 score!

We also gave a few short talks:

- How mounts work – altazimuth and equatorial
- Eyepieces – how they work and how to choose them
- Observer's checklist

- [ASE-24: Observing List for Beginners](#)

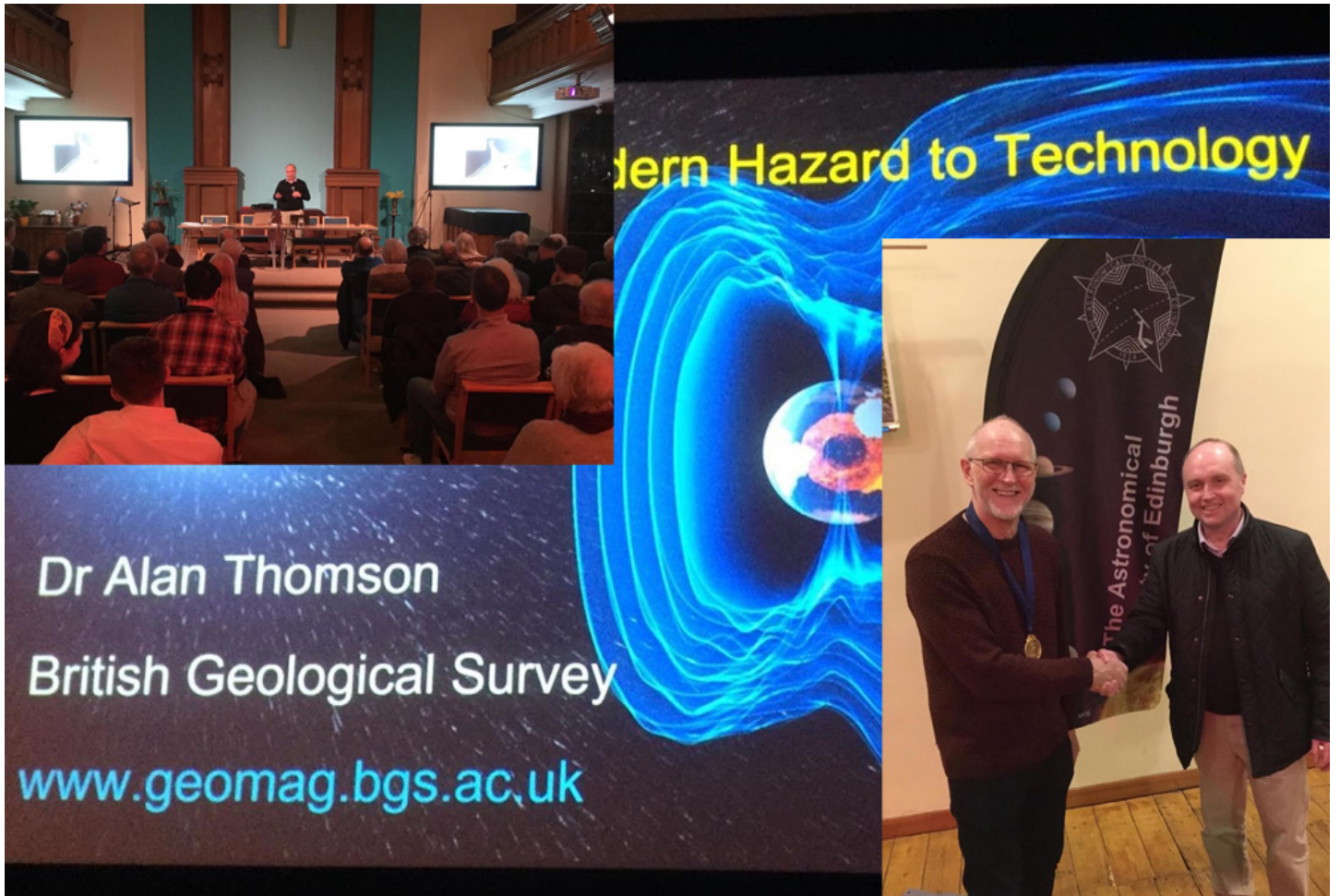
You can [view the presentations online](#).

This is part of our [4-Steps to the Stars](#) events are aimed at helping people to get into astronomy, including online advice on buying a telescope, workshops to learn how to use a telescope, finding your way around the sky and then imaging it.

March 2020 meeting report

7 March 2020

Categories: Meeting report, News



A big thank you to Dr Alan Thomson, Head of Geomagnetism, British Geological Survey for an excellent and engaging talk on Space Weather. We had a full house for this one and it was clearly really well received.

Also at the meeting:

- Alan described the highlights of the night sky in March and shared some of the latest images from our Flickr group ([see below](#)).
- Andrew and Sean updated us on the success of our two recent [4-Steps programme](#) events: [Navigating the Night Sky](#) on 18 Feb and [Telescope Help Shop](#) on 29 Feb.
- We put out another request for anyone with skills and interest in sharing astronomy with young people. We regularly get requests for help and it is something we definitely want to do.



[Download the ASE Slides as a PDF](#)

- Andrew introduced the latest Zooniverse project, [ZONIVERSE:LOFAR](#), which brings together two of our recent talks.
- CANCELLED: Sean mentioned the BAA Deep Sky meeting at Sheffield.
- He also mentioned the [Mars Encounter for National Astronomy Week](#) in November. We hope to do something for this so watch this space.
- CANCELLED: Professor Catherine Heymans, Professor of Astrophysics, University of Edinburgh, will give a talk on “The dark side of the Universe” at the Royal Scottish Society of Arts on 30 March (in Augustine United Church).
- Andrew gave an overview of topics that had caught his attention in astronomy and space.
- Hugh Somerville gave a short presentation on various space topics.

Mars Encounter in November will give best view of Mars until 2033

A National Astronomy Week (NAW) will be held in the UK from Saturday 14 November to Sunday 22 November 2020. The aim of the week is to celebrate the close approach of Mars, and to give members of the public the chance to see the Red Planet in close-up through a telescope.

Amateur and professional astronomers around the country will be holding observing events during the week. As seen through a telescope magnifying about 100 times, Mars will appear as a pale orange disc, with its markings clearly visible. It will be 80 million km away.

Although Mars is at its closest to Earth a month earlier, at that time it is only high enough in the sky to be viewed quite late in the evening. By November it is well up in the sky during the early evening, allowing younger schoolchildren a unique opportunity to get a good view of the planet. It will not be as close again until 2033. And on that occasion it will be very low in the sky as seen from the UK.

‘We are excited that National Astronomy Week will give thousands of children and their parents the chance to see Mars in close-up’ said Lucinda Offer, chairperson of National Astronomy Week and Executive Director of the Mars Society. ‘Several space missions are being launched towards the planet this year and we are looking forward to getting some amazing results.’

British scientists are among those who are involved in experiments aboard spacecraft, in particular ESA’s ExoMars mission to put a rover, named Rosalind Franklin, on the planet next year.

As well as Mars, Jupiter, Saturn and the Moon will be on show during National Astronomy Week. Details of observing events will be posted on the NAW website, astronomyweek.org.uk. During the last NAW, over 200 events were organised around the UK, and the organisers are calling upon astronomical societies, observatories and university departments to arrange even more events this time.



About National Astronomy Week

This will be the eighth NAW. The first, held in 1981, celebrated the 200th anniversary of the discovery of Uranus from Bath by William Herschel. Others have celebrated Halley's Comet in 1986, the very close approach of Mars in 2003 and the 400th anniversary of the first astronomical use of the telescope by English observer Thomas Harriot in 1609.

The week is supported by leading UK astronomical groups and organisations. For more information about the event please visit astronomyweek.org.uk.

POSTPONED: BAA Summer Meeting in Elgin 4 July

15 March 2020

Categories: News



POSTPONED!

Suns, stars and solar systems: This year the British Astronomical Association is holding its summer meeting in Elgin on 4th July, hosted by Moray's Astronomy Club SIGMA. You don't need to be BAA member to go.

You can find out more on the **SIGMA website** and you can book on the **BAA website**. Cost is £5 for members and £7.50 for non-members.

It's an impressive range of speakers and you can **find out more about the talks and speakers.**

- Prof. Moira Jardine – St Andrews University
The Sun's turbulent past – how to choose your stellar neighbours wisely



The British Astronomical Association

One Day Meeting

Saturday 4th July 2020

'The Sun and its Solar System'



Moray College UHI, Moray Street, Elgin, Moray, IV30 1JJ.

We will look at our Sun and the effect that it has on the Earth, particularly the aurora.
 We will also see how our Solar System evolved and will discuss some of the smaller members of
 the Solar System





Our speakers for the day will be:-

Prof. Marka Jankovic - 13 Andrews "Volcanic history of our own Solar System"

Dr. Colin Donaghy - "Latest news in space&ast exploration of our Solar System"

Dennis Roddy - "Binary planetary comet observation and discovery history"

Dr. John Mason - "Polar Auroras, Some Causes and Effects"

Kelvin Pratt - "Cosmic Pioneers of the BAA"



Also there will be an opportunity to meet some of
 our Section Directors:

Jessie Brindingham, Aurora, Lyn Smith: Solar and
Mike Pratt: Historical



Doors Open at 10:00 and the meeting will close at approx. 10:00

The cost for registration, including tea & coffee, is £5.00 for BAA/SIGMA affiliated society
 members and accompanied under 16s. Non-members £7.50
 An optional buffer lunch is available for £3.00 if booked in advance.

Full details can be found on the BAA website www.baa.org.uk/sign/2020
 you can book on line or by calling the BAA office on 0200 737 737

Event Organiser: Mrs Janet Collett, E. jcollett@britastro.org
 Local Co-ordinator: Mr Peter Sherman, E. pgs@britastro.org

Our thanks go to the Moray's Astronomical Club SIGMA who is
 the meeting venue for BAA and BAA Elgin

- Dr. Colin Snodgrass – Latest news in spacecraft exploration of our Solar System
- Denis Buczynski – Non-professional comet observing and discovery today
- Dr. John Mason – Polar Aurorae; Some Causes and Effects
- Mike Frost – Women Pioneers of the BAA

ASE Covid-19 Update

23 March 2020

Categories: News



This message was emailed to all members of the Society.

Dear Members of the Astronomical Society of Edinburgh

A message from the ASE Council on our response to the Covid-19 public health emergency. We would ask that you take time to read it.

Covid-19 presents a unique challenge, not only to each of us and our families, but to the Society and its operations. A challenge which the constitution and rules of the Society could never have foreseen or be expected to deal with. Therefore, the Council has decided to take a series of actions to help the Society get past this emergency and back to normal operations. In summary, they are:-

- 1. All physical ASE meetings and events are postponed until further notice.**
- 2. The ASE will seek to hold Society meetings online – with an initial test meeting this coming Friday 27 March at 7:30pm. A message for more details and further information on this will be emailed to you shortly.**
- 3. We will keep the ASE Website updated with information on how we will operate during this period, and how you can take part.**

4. **The Annual General Meeting, originally set for 5 June, is postponed until later in 2020.**
5. **In order to keep the Society operating and we can continue to serve members, the current Council will also remain in place until the public health emergency is over and an AGM can be held.**

More details on these decisions and how we are liaising with the Office of the Scottish Charity Regulator to deal with this unique situation are available on the Members Section of the ASE website.

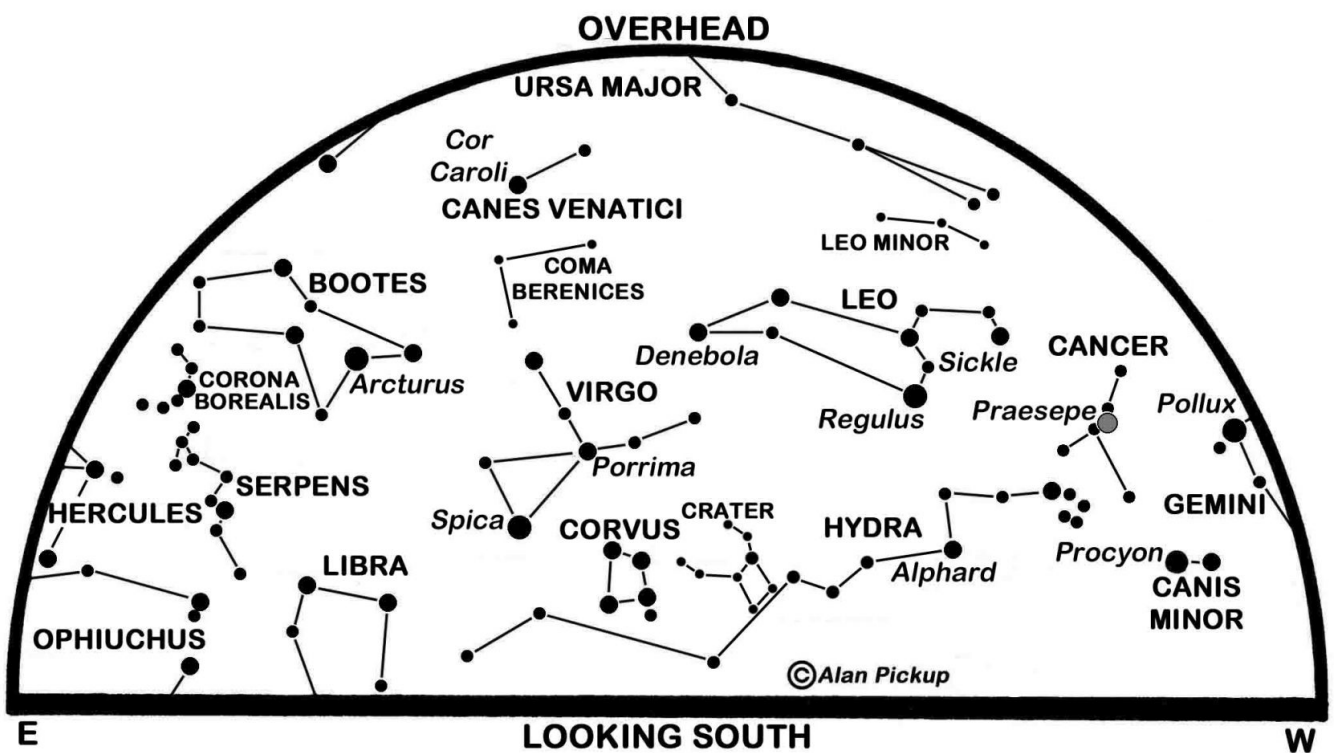
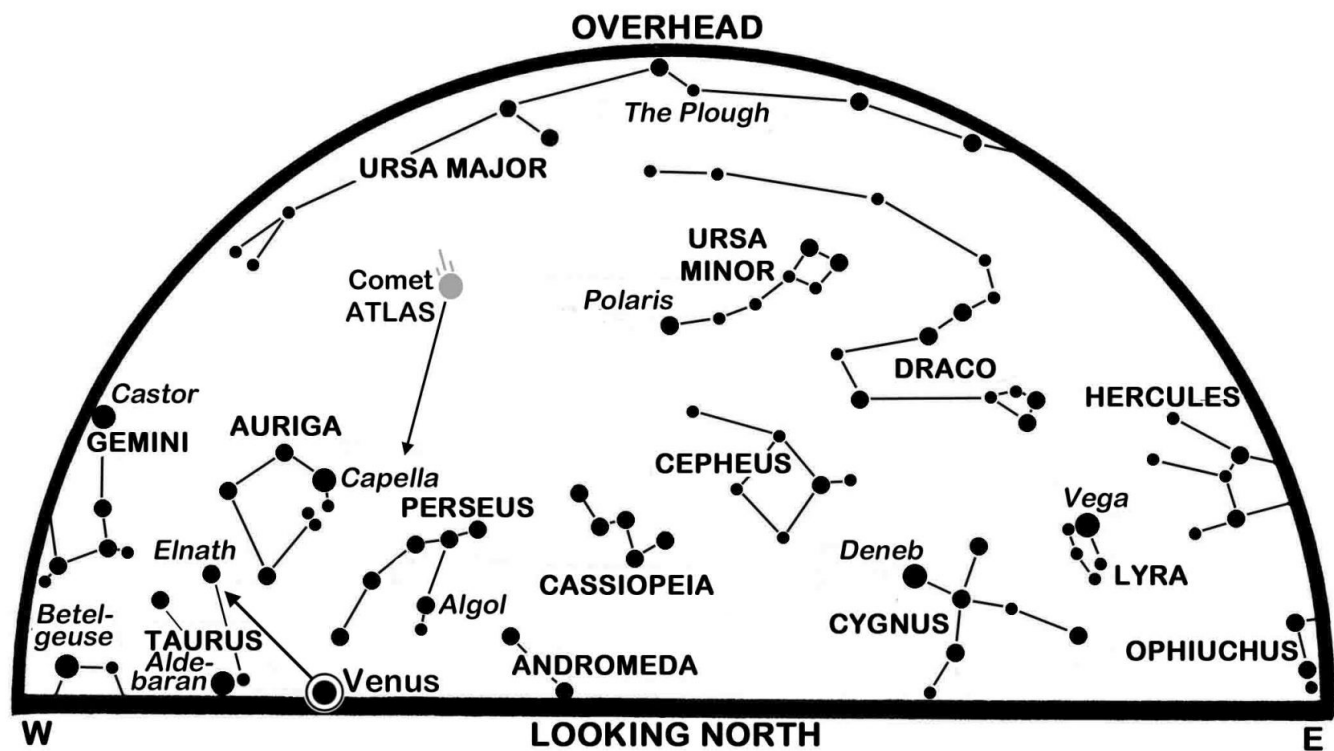
We are writing directly, via post, to those members who do not use email/internet to keep them informed of developments.

If you have any immediate questions, please email the Council using the [contact form](#) on the website.

Scotland's Sky in April 2020

31 March 2020

Categories: Featured, Sky Diary



Venus meets Pleiades as Comet ATLAS keeps us guessing



Author: [Alan Pickup](#)

The maps show the sky at midnight BST on the 1st, 23:00 on the 16th and 22:00 on 30th. Arrows shows the motions of Venus and Comet ATLAS.

In flagrant disregard for the rules of social distancing, the dazzling evening star Venus passes very close to the Pleiades, or Seven Sisters, star cluster in the first few days of April. Three other naked eye planets have congregated low down in our predawn sky while astronomers are keeping a close eye on Comet ATLAS which may become spectacular during May, or perhaps fizzle entirely.

Venus stands 38° above Edinburgh's western horizon at sunset on the 1st and sinks to set in the north-west at 00:56 BST. Blazing at magnitude -4.4, second only to the Moon in nighttime brilliance, it lies 2° or four Moon-breadths below the Pleiades on the 1st. By the 3rd, it sits only 0.3° below-left of the cluster's brightest star, Alcyone, in the closest conjunction between Venus and the Pleiades in our lifetimes. The meeting should make for a superb sight through small telescopes and binoculars and provides an ideal opportunity to test our astrophotography skills.

Venus' motion continues through Taurus to within 4° of the star Elnath, the tip of the Bull's northern horn, at the month's end. By then, Venus has fallen to 30° altitude at sunset and reached its greatest brilliancy (magnitude -4.5) as it swings closer to us around the near side of its orbit. Its distance decreases this month from 98 million to 64 million km, while, viewed telescopically, it swells from 25 to 39 arcseconds and the sunlit proportion changes from 47% to 25%. By late April its crescent form should be apparent through binoculars.

Look in the west-north-west at nightfall on the 25th for the earthlit crescent Moon when it lies below Venus, to the right of Taurus' leading star Aldebaran and to the left of the Pleiades.

The Sun climbs more than 10° northwards during April as sunrise/sunset times for Edinburgh change from 06:42/19:52 BST on the 1st to 05:30/20:51 on the 30th. The Moon is at first quarter on the 1st and full on the 8th which, because it occurs nine hours after the Moon is at its closest for the year, qualifies as a so-called supermoon. As such it is about 15% larger and brighter than an average full Moon though you might be hard-pressed to notice the difference. The Moon is at last quarter on the 14th, new on the 23rd and at first quarter again on the 30th.

Orion is leaning over in the south-west at nightfall at present but has all but set in the west by our star map times. Betelgeuse, the red supergiant at Orion's shoulder, appears to be recovering well after its surprisingly deep fade over recent months. It is now comparable with Aldebaran in brightness and more than twice as bright as it was in February. Good evidence has emerged that the dimming occurred after it ejected material from its surface which then condensed into an obscuring cloud of dust.

Our maps show the Plough in the zenith as Leo leads Virgo from the south to the south-west. Catch the Moon above Regulus in Leo on the 4th and above Spica in Virgo on the 7th-8th.

Comet ATLAS, discovered by the ATLAS survey from Hawaii at the end of last year, appears following an extremely elliptical orbit around the Sun in a period of around 6,000 years. As it

approaches perihelion, its closest to the Sun (38 million km) on May 31, it has brightened more sharply than expected. Current forecasts of its peak magnitude range all the way from magnitude 2 to -11, the latter making it one of the brightest comets on record. Its path suggests that it may be a sibling of the Great Comet of 1844, perhaps after their parent comet split during a previous return to the Sun.

Some astronomers suspect that it may crumble and disappear as it nears perihelion, but if it survives it could become an impressive sight during May. It begins April as a binocular object of the seventh or eighth magnitude, appearing as a greenish blob with an upwards pointing short tail in photographs. As it moves through the dim constellation of Camelopardalis, between Auriga and Polaris (see map) it may brighten to naked eye visibility later in the month. Try searching on the Internet for a better chart than I can provide here.

Mercury remains hidden in the Sun's glare before dawn as Jupiter, Saturn and Mars stand very low down in our south-eastern sky. Jupiter, the furthest west (right) of the trio, is conspicuous at magnitude -2.1 to -2.3 as it creeps eastwards in Sagittarius. Saturn is fainter at magnitude 0.7 in Capricornus where it is 6° to the left of Jupiter. Mars improves from magnitude 0.8 to 0.4 as it speeds from only 1° below Saturn on the 1st to lie 19° left of Saturn on the 30th. Although all three are below 10° in altitude in Scotland's morning twilight, they reach high up in the east for observers in the southern hemisphere.

Meteor watchers may care to watch for medium-swift meteors of the Lyrids shower which lasts from the 14th to the 30th and is expected to peak under moonless (and, hopefully, clear) skies on the morning of the 22nd. The meteors, some of them very bright, diverge from a spot that lies to the right of Vega in Lyra as it climbs in the east following our map times. Large numbers of meteors are not expected, though there have been fine displays in the past, the last in 1982. Its meteoroids were released from Comet Thatcher which follows a 415-year orbit of the Sun and was last seen in 1861.

Diary for 2020 April

Times are BST

- 1st 11h First quarter
- 3rd 08h Moon 1.6° N of Praesepe
- 3rd 21h Venus 0.3° S of Pleiades
- 4th 20h Moon 4° N of Regulus
- 8th 04h Full moon (supermoon)
- 8th 08h Moon 7° N of Spica
- 11th 13h Moon 7° N of Antares
- 15th 00h Moon at last quarter and 2.0° S of Jupiter
- 15th 10h Moon 2.5° S of Saturn
- 16th 06h Moon 2.0° S of Mars
- 22nd 01h Peak of Lyrids meteor shower
- 23rd 03h New moon
- 25th 06h Moon 7° S of Pleiades

- 26th 05h Moon 4° N of Aldebaran
- 26th 10h Uranus in conjunction with Sun
- 26th 16h Moon 6° S of Venus
- 30th 15h Moon 1.9° N of Praesepe
- 30th 22h First quarter

This is an extended version, with added diary, of Alan's article published in The Scotsman on 31 March 2020, with thanks to the newspaper for permission to republish here.

Intro to Astro-Imaging part 1

1 April 2020

Categories: Knowledge, Meeting report, News



We held the first part of our Introduction to Astro-imaging course this evening via Zoom and YouTube.

This is the 4th part of our [4-Steps programme](#). The first part of it covered basic imaging techniques. You can watch the video of the session on our YouTube channel, and also embedded below.

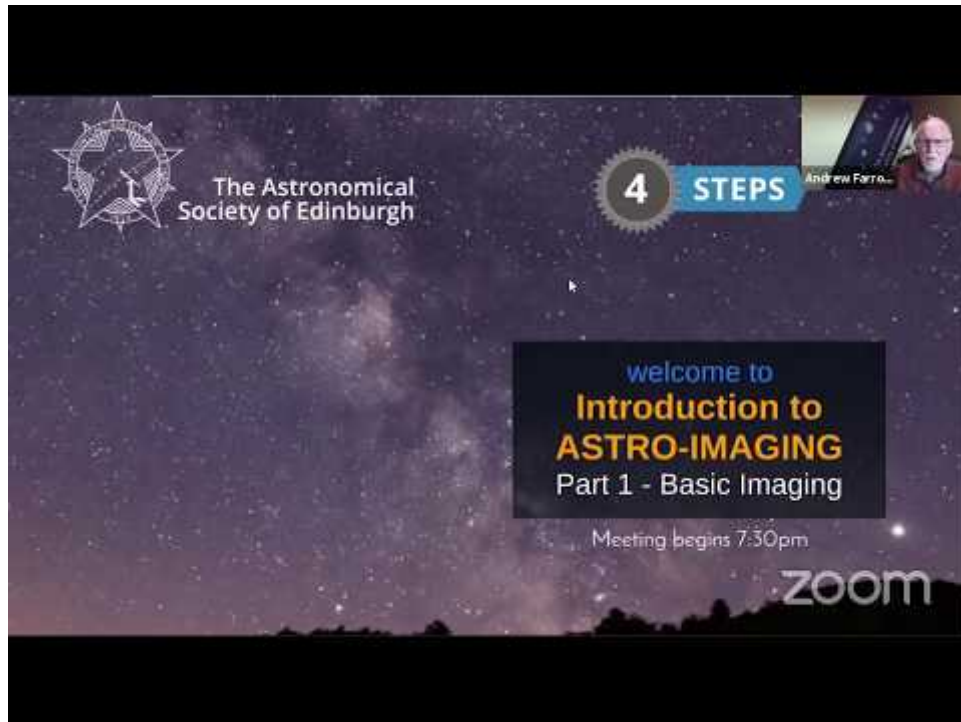
You can download sample data to try out the processing techniques yourself. Links to software are on our [links page](#). Better yet, go out and take your own pictures with whatever equipment you've got. It's very satisfying!

[Download sample data »](#)

These are unprocessed frames of the Moon, Sun and widefield stars (saved as JPEGs for simplicity) so that you can try to process them and get similar – or hopefully better – results than Andrew and I did.

YouTube video player

 <https://youtube.com/watch?v=Pxe4Ju23XJQ>



Software

The software we used and mentioned were:

- Adobe Lightroom (£) – well known to photographers
- Adobe Photoshop (£) – *probably* the best general image processing
- Registax (free) – for sharpening (wavelets are the best!) and basic image manipulation, normally used for lunar and planetary stacking and processing
- GIMP (free) – a free alternative to Photoshop, has many of the same features but interface may be a little trickier and not so full-featured

3 April 2020 Meeting Report

4 April 2020

Categories: Meeting report, News

We had our first proper online talk from Prof. Giles Hammond on Friday about Longitude and Clocks. We had a good crowd on both Zoom and YouTube. Special thanks to Giles for being prepared to do that for us and lead the way.

Giles answered questions afterwards, both live and submitted in chat.

Also at the meeting, Alan Pickup gave a brief overview of the night sky this coming month. You can watch the whole of the meeting on the video on our [YouTube channel](#).

Stargazing: look up during lock down

12 April 2020

Categories: News



Which way does your window look? North, South, East or West? Whatever the way there's something in the sky to marvel at and perhaps now is the opportunity you needed to find out more about the wonders of your universe. So what are you waiting for?

We live in unprecedented times, we're often told, but the Sun, Moon and stars are still there, never-changing, ever-changing, as they perform their daily dance across our sky.

Perhaps you have some binoculars sitting in a cupboard, rarely used – or even a telescope, given to you as a gift that you never got round to using? Or if all you have are your eyes then look out – and up – and breathe!

It's quieter outside now – eerily so at times – and peering into the vastness of space and time takes on a whole new feeling, a whole new meaning. The beauty and serenity of the night sky puts everything into perspective. Time? Yes! Your eyes are a time machine. As you look at a star you're seeing it as it was hundreds or even thousands of years ago, when those photons started on their travels, ending their journey at the back of your little eye.

The Sun may give us light and warmth but it's also a dangerous place. So never look at it – with anything – even your eyes, unless you really know what you're doing and have the right protective equipment. But the Moon – now that's a different matter altogether. It's in our skies for a fair bit of every month, and often during the daytime too. A treasure-trove of seas, craters, mountains, valleys, shadows and light. Even with the naked eye you can make out the maria – the dark patches that are seas of ancient volcanic lava flows – and large impact craters with rays of ejected material, thousands of miles long, spewing out across the scarred Lunar landscape. Your binoculars will show you even more, but through a telescope it's a dazzling sight, once seen never forgotten. One to be shared with others – though perhaps not just yet...



At night, we may suffer badly from light pollution, where buildings, monuments and bridges, car parks, driveways and shopping centres are carelessly and wastefully floodlit. But you can still make out many of the constellations from our city centres. And surely you must have noticed the beautiful, bright evening star Venus, high in the West after sunset, dazzling and outshone only by the Sun and Moon.

Use a planetarium app on your phone to learn what it is you're seeing. Many of them you can hold up to the sky as a star map and see just what you're actually pointing at. Learn the constellations, make friends with them and know their stories: Orion the Hunter with his dogs, Cassiopeia the vain Queen of Greek mythology, Perseus the hero, rescuing the beautiful Andromeda from the sea monster. Enjoy finding out the names of the brighter stars: Rigel, Betelgeuse, Algol the Demon star, Antares the rival of Mars, Aldebaran eye of the bull and follower of the Pleiades, the Seven Sisters – also visible without aid. Maybe you just enjoy the star-lore or perhaps you want to know more: how far, how hot, how large, chemical composition, evolutionary stage. The information is easy to find.

One of our members, Alan Pickup has been writing about the night sky for many decades. His articles are published every month in the Scotsman and [on our website](#). He'll tell you where the planets are, what constellations are rising in the sky as it gets dark and any special events that are happening – maybe a new comet, meteor shower, eclipse or conjunction, where distancing has a different meaning.

We have a great opportunity to learn more about our place in the Universe and put our current troubles into a cosmic perspective. There's no doubt things are difficult, tragic for many, uncomfortable for others, life-saving, life-changing even, but maybe we can look up sometimes instead of always down, while we have the chance. I don't think you'll be disappointed.

See our [ASE-24: Observing list for beginners](#)

Article and images by Mark Phillips

Intro to Astro-Imaging part 2

15 April 2020

Categories: Knowledge, Meeting report, News

4 STEPS

The Astronomical Society of Edinburgh

Welcome to
**Introduction to
ASTRO-IMAGING**
Part 2 - Stacking and EAA

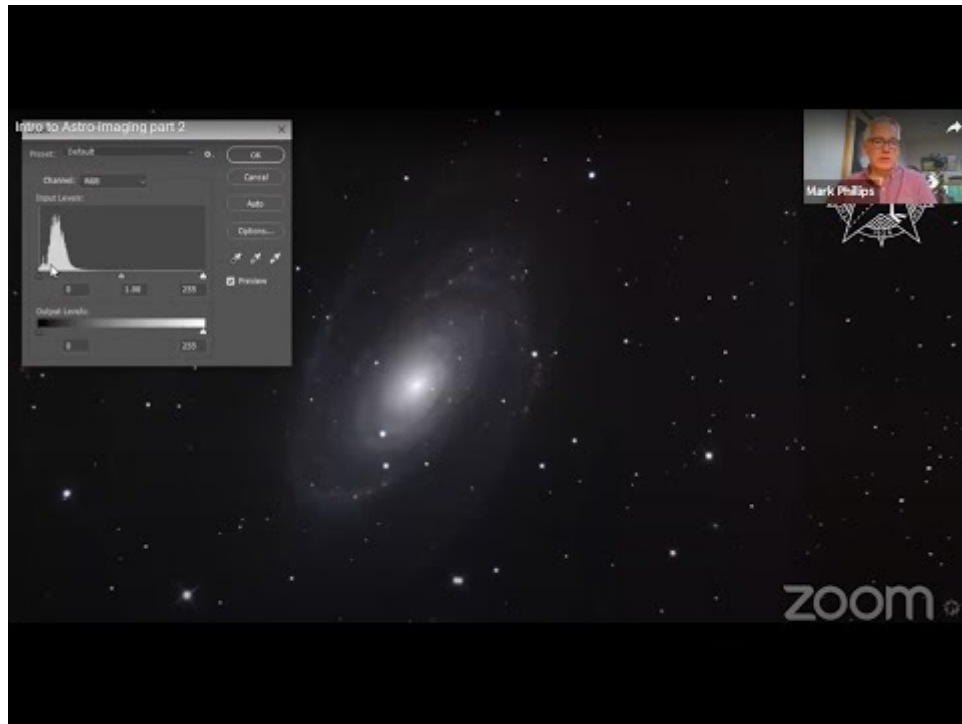
- Part 1 - Basic Imaging
- **Part 2 - Stacking and EAA**
- Part 3 - Lunar, planetary solar video
- Part 4 - Deep Sky long exposures

We held the second part of our Introduction to Astro-imaging course this evening via Zoom and YouTube.

This is the second part of the 4th step in our [4-Steps programme](#). The second part covered tracked wide-field imaging, stacking and EAA. You can watch the video of the session on our YouTube channel, and also embedded below.

YouTube video player

 <https://youtube.com/watch?v=4zpxZz8AGLg>



Software

The software we used and mentioned were:

- Adobe Photoshop (£) – *probably* the best general image processing
- [Atik Infinity](#) – proprietary to Atik cameras
- [SharpCap](#) – probably the best known and most -used software for EAA
- [Sequator](#) (Windows) – for wide-field image stacking
- [Starry Landscape Tracker](#) (Mac) – also for wide-field stacking

ARIEL and ExoClock talk

18 April 2020

Categories: Meeting report, News

We had a fantastic online talk from Anastasia Kokori and Angelos Tsiaras last night on the ARIEL space mission and ExoClock projects. Special thanks for doing this for us at short notice and what a great way for amateurs to get involved in leading-edge exoplanet research using their own equipment.

You can watch the video of the talk on our [YouTube channel](#).

You can find out more about the mission and project from these links:

- [Exoworlds Spies](#)
- [ExoClock project](#)
- [ARIEL mission](#)

Using robotic telescope for astro-imaging

25 April 2020

Categories: Meeting report, News

We had a fun and informative online talk from ASE VP Peter Black on Friday explaining the options and how to use the various remote robotic telescopes there are available to amateurs.

You can see the video on our [YouTube channel](#).

Here are some relevant links that Peter referred to in his talk:

- Slooh Education
<https://www.slooh.com/guestDashboard>
- MicroObservatory – Information and Photos
<https://mo-www.cfa.harvard.edu/MicroObservatory/>
- iTelescopes
<https://www.itelescope.net>
- Schulman Telescope Mount Lemmon Arizona
<http://skycenter.arizona.edu/>
- Bradford Robotic Telescope – Now OU
Open University – Astronomy with an online telescope
<https://www.open.edu/openlearn/science-maths-technology/astronomy/astronomy-online-telescope>

Offset solar filter

29 April 2020

Categories: Knowledge, News



Archie Howitt shows us how he created an offset solar filter for his Celestron 8-inch SCT.

Here I will describe how I made an Offset Solar Filter for my Celestron C8 Schmidt-Cassegrain (SCT) telescope, why I chose this design and the materials used.

Design

1. The Celestron C8 SCT has an 8 inch diameter aperture, housing a corrector lens. This is a large piece of glass which has to be protected from the heat of the Sun's rays, along with the internals of the telescope. For telescopes with apertures larger than 8 inches, offset solar filters are recommended. This gave me my first design objective.
2. I had made a full aperture solar filter before for my 4 ½ inch Tal-1 Newtonian telescope using an A4 sheet of BAADER AstroSolar Safety Film and had a small piece left over for this project. Although this film is fairly robust, great care must be taken in its use. I store my Tal-1 filter in a box and test

pin holes or scratches before using it. THIS IS AN ESSENTIAL SAFETY PRECAUTION – DO NOT USE THE FILM IF IT IS DAMAGED IN ANY WAY!

3. Corrugated cardboard would be used in the construction since I had a large cardboard box from a recent printer purchase. I decided to make the filter round with a flange overhang to give shading to the telescope tube. The ideal size was 12 inches diameter – not too big to be cumbersome and not too small to be ineffective.

4. The offset filter aperture size would be governed by the leftover piece of film and although the secondary mirror mount and the edge of the corrector lens fixing may not affect the image outcome, I decided to keep the aperture within the unobstructed corrector lens area.

5. Insulation would be provided by covering the filter body with aluminium kitchen foil. Two 12-inch diameter discs would be required, one to carry the main body of the filter and the AstroSolar film, the second to provide an extra insulation layer on the front of the filter body.

Construction

Parts:

- Corrugated cardboard
- UHU Glue
- Aluminium kitchen foil
- BAADER AstroSolar Safety Film
- Felt tip pen
- Duct tape

Procedure:

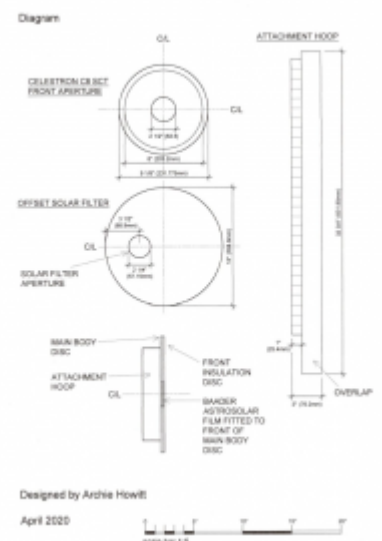
1. Cut two 12-inch diameter discs from corrugated cardboard using a suitable template such as a large dinner plate or table mat.

2. From the edge of each disc measure in 3 ½ inches and cut an aperture 2 ¼ inches diameter in each disc where the AstroSolar film will be fixed (DO NOT FIX THE FILM ON AT THIS STAGE)

3. Cut a 3 inch wide strip of corrugated cardboard the circumference of the outside of your telescope aperture plus a 4 inch overlap and roll it flat with a rolling pin. This will make it easier to form the hoop to attach the filter to the front of the telescope. ($C + 4 = 2\pi r + 4 \cong 32 \frac{3}{4}$ inch where outside diameter = 9 ⅛ inch)

4. Draw a line the length of the cardboard strip 1 inch from the edge, mark 1 inch increments along the edge and cut tabs from each mark to the line.

5. Fold the tabs over and form a hoop with the strip, tabs facing outwards.



6. With the hoop the correct circumference for your telescope aperture bezel, glue the overlap ends together. A couple of paper clips may help to hold them until the glue sets.
7. Glue the hoop tabs to one of the discs to form the filter body keeping the hoop equidistant from the edge of the disc.
8. Cover the outside filter body with aluminium foil keeping the inside of the hoop and the back of the disc uncovered. This will prevent any foil catching when attaching or removing the filter from the telescope. Glue the foil around the outside of the hoop and the back edge of the disc.
9. Carefully cut a star shape in the foil covering the aperture. Poke and glue the foil through to the back of the disc.
10. Cover one side of the second disc with foil gluing a small tuck over edge to the back of the disc. As before, cut the foil covering the aperture, poke the foil through to the back of the disc and glue.
11. Place both discs together and align their apertures. With a felt tip pen mark their edges to indicate their relative position.
12. Attach a generous piece of BAADER AstroSolar Safety Film across the outside of the main filter body disc aperture with duct tape to provide a light tight seal all round.
13. Replace the second disc on top of the main body disc aligning it with the marks made earlier and fix them securely together around the edges with tape.
14. Test there are no flaws in the film material by holding the filter up to a light – NOT THE SUN!
15. If all is well, attach the filter to the telescope and cut out a notch in the hoop to clear the Vixen dovetail bar.
16. The filter is now complete and ready for use.

Solar Observing

!!WARNING: NEVER LOOK DIRECTLY AT THE SUN THIS WILL CAUSE PERMANENT DAMAGE TO YOUR EYES!!

Care must be taken when observing the sun or using a telescope in daylight hours. Sunlight through a telescope can cause internal damage due to rapid excessive overheating. Instant blindness would also be the result if you were to look through the telescope eyepiece, the job of which is to concentrates the image to a focal point. It is therefore recommended, to avoid accidents, not just to cover up your finderscope but to remove it completely along with any eyepiece in the telescope focuser. The telescope aperture cover should only then be removed to be replaced immediately with a solar filter.

With the offset solar filter in place, and all the above precautions taken, point the telescope at the Sun and use the telescope shadow to obtain alignment. Remove the focuser dust cap and



into the focuser. You will see in the centre an image of your eye looking back at you from the secondary mirror. Gently move the telescope in both azimuth and altitude until you see a bright disc appear to one side of your eye image. Keep moving the telescope until this disc is as bright as it can get. This

indicates that the Sun is aligned with the BAADER AstroSolar Safety Film aperture. Insert an eyepiece and centre the Sun image. I have a 40mm lens which gives me a complete viewing image of Sun's disc.

Unfortunately, there were no sunspots in April 2020 when I took this image. When sunspots reappear and I have an opportunity to capture one I will update this guide. I do not know how long the solar minimum will last, but it will be fun to keep looking for sunspots to return.

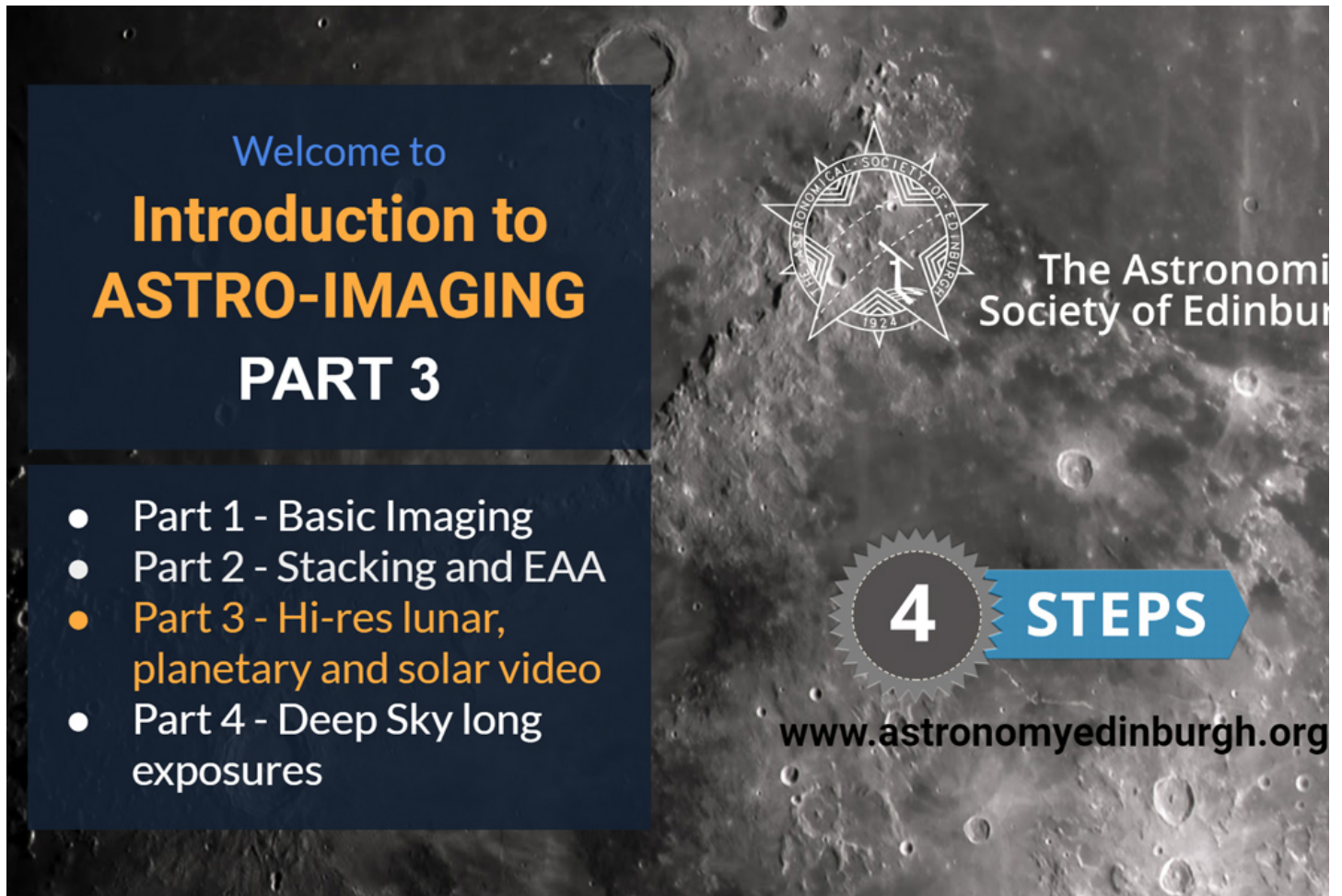


Images and text by Archie Howitt

Intro to Astro-Imaging part 3

29 April 2020

Categories: Knowledge, Meeting report, News



Welcome to

Introduction to ASTRO-IMAGING PART 3

- Part 1 - Basic Imaging
- Part 2 - Stacking and EAA
- **Part 3 - Hi-res lunar, planetary and solar video**
- Part 4 - Deep Sky long exposures

The Astronomical Society of Edinburgh

4 STEPS

www.astronomyedinburgh.org

We held the third part of our Introduction to Astro-imaging course this evening via Zoom and YouTube.

This is the third part of the 4th step in our [4-Steps programme](#). The third part covered hi-res lunar, solar and planetary imaging capture and processing techniques. You can watch the video of the session on our [YouTube channel](#), and also embedded below.

YouTube video player

 <https://youtube.com/watch?v=RdsOtzxIKek>



Software

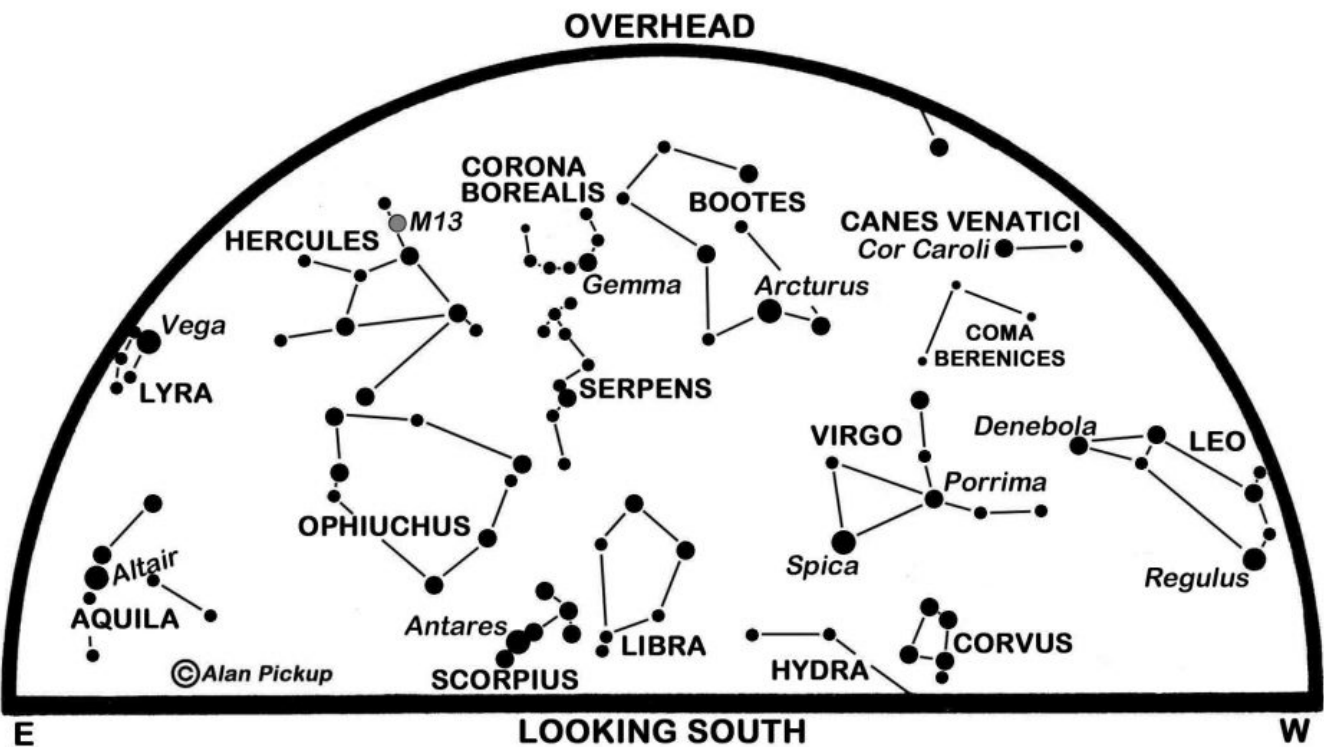
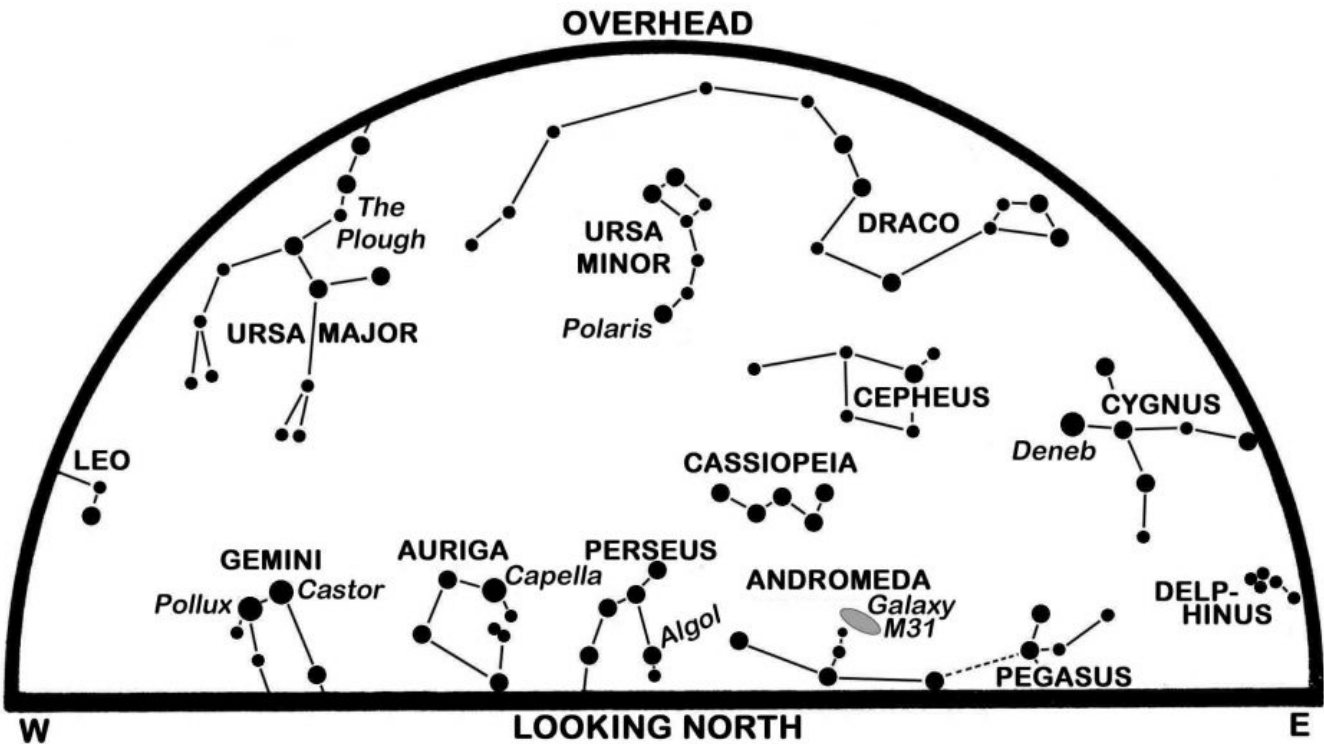
The software we used and mentioned were:

- Adobe Lightroom (£) – one of the best image editors
- [FireCapture](#) (free) – probably the best capture app for lunar & planetary. Currently works on Mac for some makes of camera (QHY and ZWO).
- [SharpCap](#) (free) – Also very good capture app
- [AutoStakkert](#) (free) – the easiest and best for stacking videos
- [MS ICE](#) (free) – Image Composite Editor, for mosaics
- [Registax](#) (free) – planetary wavelets sharpening, also stacking

Scotland's Sky in May 2020

30 April 2020

Categories: Featured, Sky Diary



Venus ends its evening spell with a steep fall in the west



Author: [Alan Pickup](#)

The maps show the sky at 01:00 BST on the 1st, midnight on the 16th and 23:00 on the 31st.

Given the lockdown, it is too much to hope that we could all enjoy clear views of the western and northwestern sky this month. If we do, then we can follow the dazzling evening star Venus as it plunges towards its inferior conjunction on the Sun's near side on June 3. On the way, Venus and Mercury have a brief encounter, with Venus serving as the perfect guide to spotting its fainter sister planet.

Less ideal for stargazing in Scotland is the fact that Sun climbs 7° northwards during May to within 1.4° , or less than three Sun-breadths, of its latitude at our summer solstice. The result is that our nights contract and night-long twilight increasingly swamps the fainter stars. Edinburgh's sunrise/sunset times change from 05:28/20:53 BST on the 1st to 04:36/21:46 on the 31st. The Moon is full on the 7th, at last quarter on the 14th, new on the 22nd and at first quarter on the 30th.

The Moon is close to first quarter on April 30, lying high in the south-west as the twilight fades and less than 4° above-left of the Praesepe (Beehive) star cluster in Cancer which is best viewed through binoculars. May 1 sees it above-right of Regulus, the leading star of Leo the Lion which squats high on the meridian (in the south) at nightfall as the Plough sails overhead. On the 5th, look for the Moon above-left of Spica in Virgo while the 8th finds it above-left of the strikingly red supergiant Antares in Scorpius, deep in our southern sky.

Our charts, for the period around midnight, show Leo dipping into the west as Antares gimmers low in the south-south-east. The brightest star visible at the time is Arcturus in Bootes, high in the south, which precedes the distinctive arc of Corona Borealis the Northern Crown. The latter is shaped more like a half-crown or diadem, with its main jewel sometimes called Alphecca or, more aptly, Gemma.

Venus is brilliant at magnitude -4.5 in our evening sky where it lies a few degrees below and right of Elnath, the star at the tip of the northern horn of Taurus. From 30° above Edinburgh's western horizon at sunset on the 1st, it sinks to set at our northwestern horizon more than four hours later at 01:17. However, as it moves around the near side of its orbit, it stands lower each evening and sets earlier. Its altitude at sunset drops to 15° by the 20th and as little as 3° by the 31st when it is half as bright at magnitude -3.8 and all-but-disappeared into the Sun's glare in the north-west.

Its distance, meantime, falls from 63 million to 43 million km, its disk inflates from 39 to 58 arcseconds in diameter, and the illuminated portion of its disk narrows from 24% to the merest sliver of 0.3%. Binoculars already show it as a crescent and, no doubt, some sharp-eyed individuals may claim to see this with their naked eyes before the month is out.

As it emerges from the Sun's far side, Mercury lies 14° below and right of Venus on the 15th and climbs to shine at magnitude -0.6 when it passes 1.4° below Venus on the 21st. On the 24th, Mercury sits 5° above-left of Venus and the same distance to the right of the extremely slender earthlit Moon.

When Venus last made a precipitous exit from May's evening sky, in 2012, Mars stood to the right of Regulus and Saturn was above-left of Spica. Now both Mars and Saturn are morning objects,

very low in our south-east where they are outshone by the giant world, Jupiter.

The latter rises in the south-east less than two hours after our map times and is conspicuous (magnitude -2.3 becoming -2.6) but only 10° high before dawn. It lies in Sagittarius while Saturn, fainter at magnitude 0.6 to 0.6, is 5° to its east (left) in Capricornus. Both are edging eastwards against the stars but, as they are overtaken by the swifter-moving Earth, they appear to reverse their progress at so-called stationary points on the 11th for Saturn and 14th for Jupiter. The waning Moon lies below-right of Jupiter on the 12th.

Mars rises in the east-south-east for Edinburgh at 03:48 on the 1st and by 02:26 on the 31st as its distance to the east of Jupiter increases from 25° to 45°. Although no higher than Jupiter before dawn, it does brighten this month from magnitude 0.4 to 0.0.

A month ago, we were getting somewhat excited by the prospect that Comet ATLAS, the final comet to be discovered in 2019, might become a spectacular object as it approached perihelion, its closest point to the Sun, on May 31. I warned, though, that it might disintegrate on the way and it is disappointing to report that it is doing so. As its fragments disperse, the comet has already fallen below easy binocular visibility.

Let us hope that the same fate does not befall Comet SWAN which was discovered by an instrument on the solar-observing SOHO spacecraft on March 25, although it was mid-April before we could be reasonably sure about its path. It reaches perihelion on May 27 when it is near Mercury's orbit and 65 million km from the Sun. Becoming visible in our east-north-eastern predawn sky in mid-May, I suspect it may reach the fourth magnitude as it sweeps close to Algol in Perseus on the night of the 20th-21st and lies 2° right of Capella in Auriga as the month ends. Our maps show Algol and Capella low in the north but, even with binoculars, we may be lucky to spot the hazy smudge of Comet SWAN against the twilight.

Diary for 2020 May

Times are BST

- 2nd 04h Moon 4° N of Regulus
- 4th 23h Mercury in superior conjunction
- 5th-6th Peak of Eta-Aquarids meteor shower
- 7th 12h Full moon
- 8th 23h Moon 6° N of Antares
- 11th 10h Saturn stationary (motion reverses from E to W)
- 12th 11h Moon 2.3° S of Jupiter
- 12th 19h Moon 2.7° S of Saturn
- 14th 15h Last quarter
- 14th 19h Jupiter stationary (motion reverses from E to W)
- 15th 03h Moon 2.8° S of Mars
- 22nd 09h Mercury 0.9° S of Venus
- 22nd 19h New moon

- 24th 04h Moon 4° S of Venus
- 24th 12h Moon 2.8° S of Mercury
- 27th 20h Moon 2.0° N of Praesepe
- 29th 10h Moon 4° N of Regulus
- 30th 04h First quarter

This is an extended version, with added diary, of Alan's article published in The Scotsman on 30 April 2020, with thanks to the newspaper for permission to republish here.

1 May 2020 meeting report

2 May 2020

Categories: Meeting report, News

We had fascinating and challenging talk from Prof. Franz Muheim on Neutrinos in particle physics and astronomy at our meeting last night.

You can watch the video from the event on our [YouTube channel](#).

Also at our meeting:

- Andrew welcomed 5 new members bringing our membership to 112
- Horst told us about the sky in May
- Andrew informed us of upcoming online meetings (see our [event calendar](#) for more details)

1. ROE Monday 4th May 2020 7:00pm

[Helping Scotland Launch to Space!](#)

(Matjaz Vidmar and Karina Wardak)

2. Wed 6 May 7:30pm Imaging Group

All ASE members welcome

3. Fri 8 May 7:30pm

Tosh White – [Ramblings of an Astron*ut](#)

4. Wed 13 May 7:30pm

Jim Nisbet – Personal reflections on Manned Spaceflight

5. Fri 15 May 7:30pm

Dr Dirk Froebrich (University of Kent)

[Hunting Outbursting Young Stars intro & update](#)

Hunting Outbursting Young Stars talk 15 May 2020

15 May 2020

Categories: Meeting report, News

Dr Dirk Froebrich of the University of Kent gave us a very absorbing talk on the HOYS project. A good crowd and lots of questions. It's a great project for using your imaging skills in real astronomical research.

You can watch the video of the talk on our [YouTube channel](#). Part 5 of our Introduction to Astro-imaging course will include a section on imaging for projects – specifically including HOYS. So if you want to take part in the project keep an eye open for that.

You can find more out about the HOYS project:

- [HOYS website](#)
- [HOYS Facebook page](#)

Members talks 8, 13, 20, 22 May 2020

22 May 2020

Categories: Meeting report, News



We had four great talks from ASE members. You can watch them on our [YouTube channel](#) or below.

YouTube video player

 <https://youtube.com/watch?v=ooZNRv2Rsk0>



YouTube video player

 https://youtube.com/watch?v=tfJcuoK3_rQ



YouTube video player

 https://youtube.com/watch?v=qE9Aj0q_kcE



YouTube video player

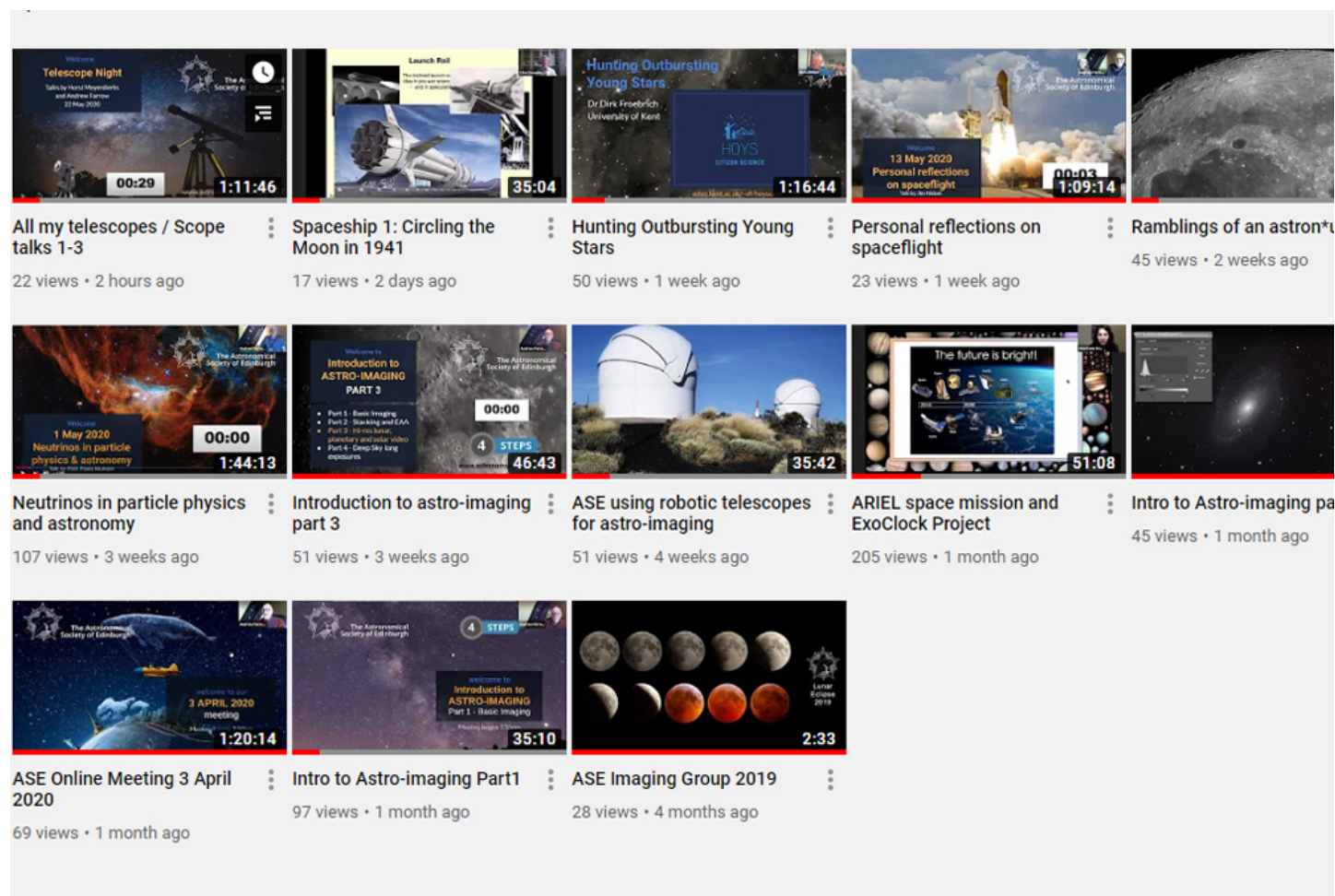
 <https://youtube.com/watch?v=wFwOW944Hic>



ASE YouTube channel

22 May 2020

Categories: News



The screenshot displays the ASE YouTube channel's video grid. Each video thumbnail includes a title, a view count, and an upload time. The videos cover a range of topics from telescope nights and space exploration to astrophysics and astro-imaging tutorials.

Video Title	Views	Upload Time
Telescope Night	22 views	2 hours ago
Launch Rail	17 views	2 days ago
Hunting Outbursting Young Stars	50 views	1 week ago
Personal reflections on spaceflight	23 views	1 week ago
Ramblings of an astron*	45 views	2 weeks ago
Neutrinos in particle physics and astronomy	107 views	3 weeks ago
Introduction to astro-imaging part 3	51 views	3 weeks ago
ASE using robotic telescopes for astro-imaging	51 views	4 weeks ago
ARIEL space mission and ExoClock Project	205 views	1 month ago
Intro to Astro-imaging pa	45 views	1 month ago
ASE Online Meeting 3 April 2020	69 views	1 month ago
Intro to Astro-imaging Part1	97 views	1 month ago
ASE Imaging Group 2019	28 views	4 months ago

We now have a very active YouTube channel where you can watch all our past public talks since lockdown started.

<https://www.youtube.com/c/AstronomicalSocietyofEdinburgh>

Report and video from Speed of Light and other Stellar Effects talk

27 May 2020

Categories: Meeting report, News

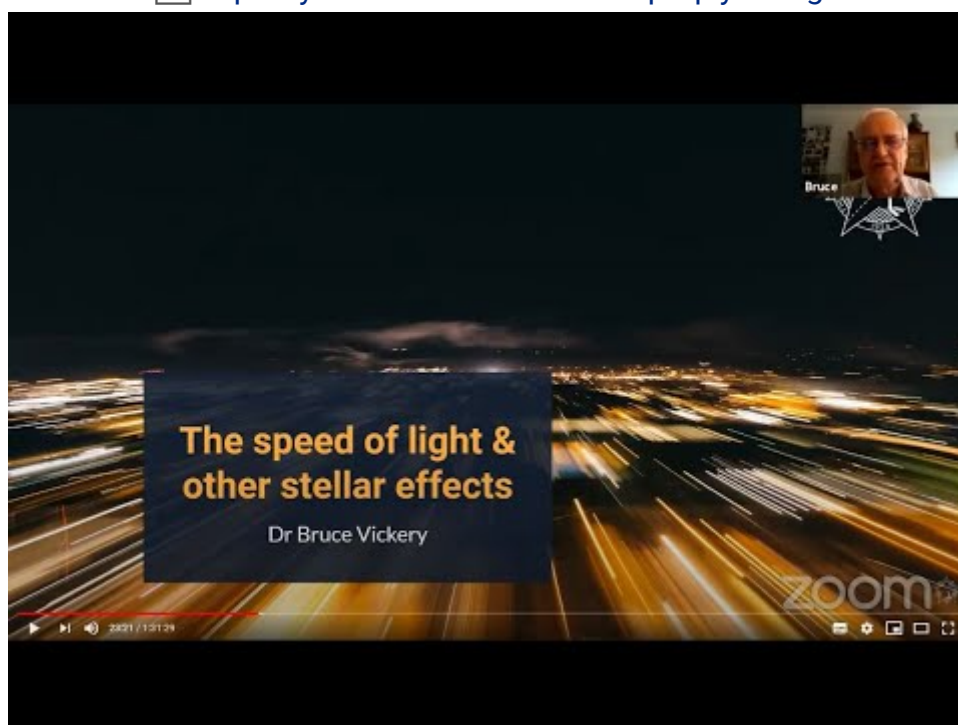
Despite a few early technical troubles, we had a great talk from ASE member Dr Bruce Vickery on a variety of historical topics such as James Bradley, parallax and the Aberration of Light.

You can watch the video of the talk on our [YouTube channel](#).

Bruce wrote an [article in our Journal in 2014](#) about this talk. You can have a look at it to remind yourself about some of the material.

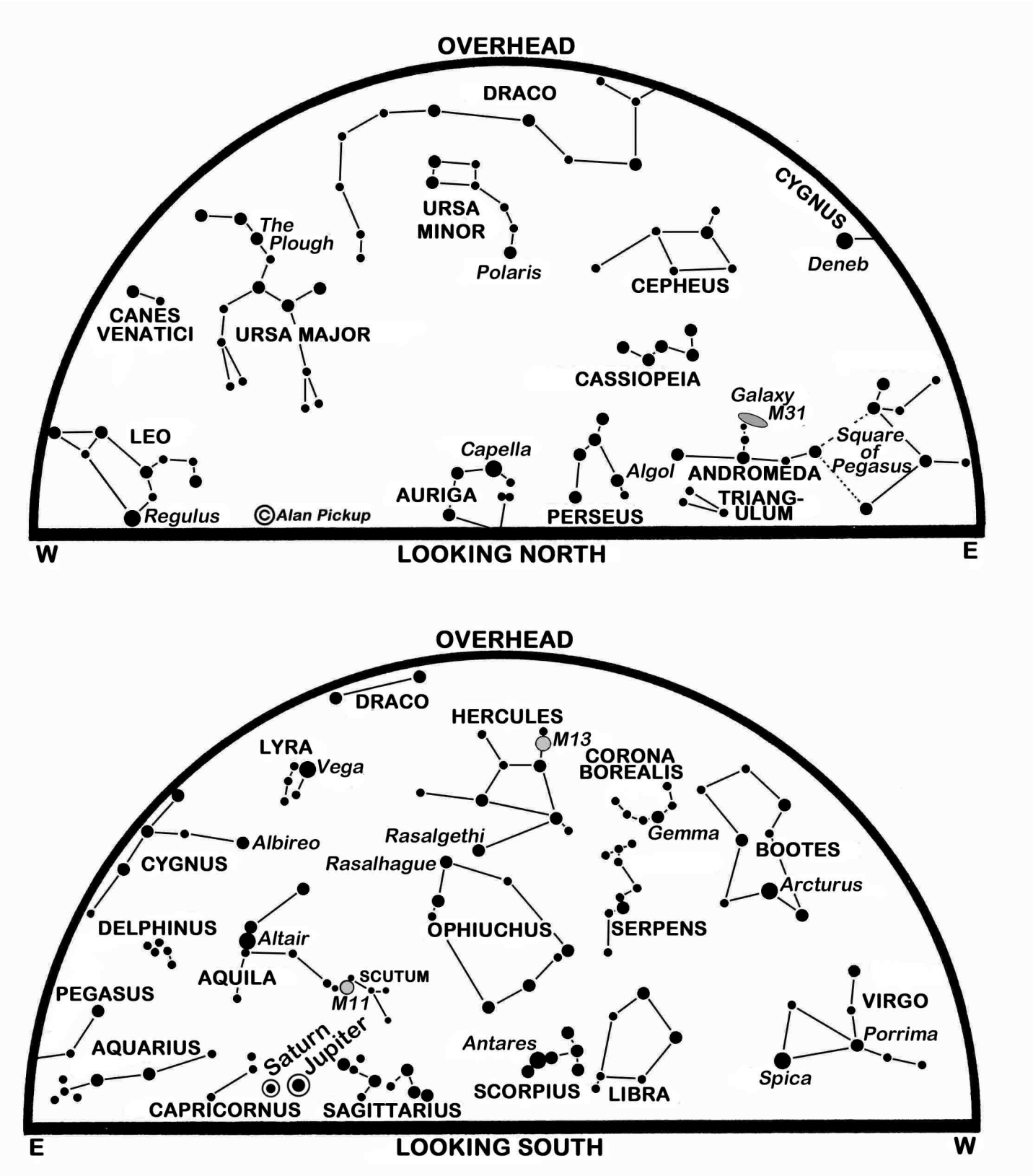
YouTube video player

 <https://youtube.com/watch?v=xp2q0yEh8Lg>



Scotland's Sky in June 2020

30 May 2020
Categories: Sky Diary



The Sun is at its highest as sunspots hit their 11-year low



Author: [Alan Pickup](#)

The maps show the sky at 01:00 BST on the 1st, midnight on the 16th and 23:00 on the 30th.

For would-be star and planet observers, June is probably not the month to take up astronomy as a hobby, at least from the latitude of Scotland. The summer solstice at 22:44 BST on the 20th marks the culmination of the Sun's climb northwards in the sky, meaning that our days are at their longest and our nights are brief and mired throughout by a twilight that hides the fainter stars. Indeed, from northern Scotland it may be a challenge to spot even the brighter stars depicted on our star maps.

In many years, the Sun itself provides some compensation for observers fascinated by the changing patterns of sunspots on its dazzling surface. It is unfortunate, though, that 2020 is coinciding with the minimum in the Sun's roughly 11-years cycle of sunspot activity so that weeks are passing with little to view beyond a pristine, and relatively boring, solar disk. On the other hand, the first spots of a new cycle of activity, the 25th since regular records started in the mid-18th century, are being sighted and their numbers are expected to ramp up towards the next sunspot maximum, currently forecast for July 2025. We just need to be patient.

I must stress that direct observation of the Sun through binoculars or a telescope, even for a moment, is hazardous to our eyes and can result in blindness. Projection of the Sun's light through a small telescope or binoculars allows the solar disk to be viewed on a white card, although many people are turning to inexpensive but certified sheets of "solar filters" which can be acquired on line and allow safe solar observation provided their instructions are followed carefully.

Edinburgh's sunrise/sunset times change from 04:35/21:48 BST on the 1st, to 04:26/22:03 at the solstice on the 20th, and to 04:31/22:02 on the 30th.

The Sun's shallow dip below our northern horizon overnight does mean that we are enjoying the optimum period for viewing noctilucent clouds, or NLCs. These "night shining" clouds are the highest of the Earth's clouds and occur at altitudes of between 76 and 85 km where they are composed of tiny ice crystals forming during the summer months around particles of dust, some of which may be meteoric in origin. High enough to be lit by the Sun long after run-of-the-mill lower level clouds are in darkness, NLCs are usually bluish and often cluster as wispy cirrus-like structures low down in our northern sky between one hour after sunset and one hour before sunrise.

The bright star Capella in Auriga, which moves from low in the north-north-west at nightfall to the north-north-east before dawn, serves as a handy guide to where they are most likely to appear. Outstanding displays can reach much higher, and they have even been glimpsed from as far south as southern Europe. The first NLC of 2020 was spotted unusually early on 17 May by NASA's AIM satellite which was launched to study them thirteen years ago. With luck, they will be an occasional highlight of our nights until mid-August.

The southern half of the Moon passes through the northern periphery of the Earth's shadow moon on the 5th, but the resultant penumbral lunar eclipse results in very little dimming and

case, is almost over by the times of moonrise and sunset for Edinburgh. The Moon's last quarter comes on the 13th while new moon on the 21st brings an annular solar eclipse when the Moon is too distant to hide the Sun's disk. Instead, a dazzling ring of sunlight is seen along a narrow track that runs from East Africa to China and beyond. No eclipse at all is visible from Britain. First quarter occurs on the 28th.

The gibbous Moon stands above Spica in Virgo on the 1st and moves onwards to lie above Antares in Scorpius on the 4th as the red supergiant twinkles barely 8° above Edinburgh's southern horizon at our map times.

Those maps plot Jupiter and Saturn low down in the south-east as they climb to lie almost 13° high towards the south before dawn. Jupiter, brighter than any star at magnitude -2.6 to -2.7, lies 5° to the right of Saturn, magnitude 0.4 to 0.2. When the Moon sits below Saturn on the morning of the 9th, Saturn's rings span 41 arcseconds around its 18 arcseconds disk, while the cloud-banded disk of Jupiter is 46 arcseconds across.

A third morning planet, though of a very different nature, is Mars which rises at Edinburgh's eastern horizon at 02:23 BST on the 1st and by 00:55 on the 30th after it speeds 19° eastwards (to the left) from Aquarius to Pisces. Improving from magnitude 0.0 to -0.5, it is becoming more obvious in the south-east before dawn and is 10 arcseconds in diameter when it lies above the last quarter Moon on the 13th.

Venus has dominated our evening sky and these notes over recent months but is now lost in the Sun's glare as it moves to pass just north of the Sun, and 43 million km from the Earth, at inferior conjunction on the 3rd. Thereafter it makes a slow reappearance in our predawn sky, its altitude in the north-east at sunrise being only 5° on the 19th when it blazes at magnitude -4.3 and lies 2.4° left of the very slender waning Moon. Venus met Mercury on 22 April and Mercury is still visible low down in the north-west after sunset. It shines at magnitude 0.6 and stands furthest from the Sun, 24° , on the 4th but may be lost a week later as it fades and sinks lower.

Comet SWAN, following the example set by Comet ATLAS, appears to have fizzled out as a promising object as it approached the Sun. It lies 1° below-right of Capella on the 1st but its fuzzy head may be too faint for binocular visibility in the twilight and is expected to dim sharply as it slants downwards and to the left through Auriga.

Diary for 2020 June

Times are BST

- 2nd 03h Moon 7° N of Spica
- 3rd 19h Venus in inferior conjunction
- 4th 14h Mercury furthest E of Sun (24°)
- 5th 09h Moon 6° N of Antares
- 5th 20h Full moon and penumbral lunar eclipse
- 8th 18h Moon 2.2° S of Jupiter
- 9th 03h Moon 2.7° S of Saturn

- 12th 13h Mars 1.7° S of Neptune
- 13th 01h Moon 2.7° S of Mars
- 13th 07h Last quarter
- 18th 19h Moon 7° S of Pleiades
- 19th 10h Moon 0.7° N of Venus
- 20th 22:44 Summer solstice
- 21st 08h New moon and annular solar eclipse
- 24th 02h Moon 2.1° N of Praesepe
- 25th 16h Moon 4° N of Regulus
- 28th 09h First quarter
- 29th 09h Moon 7° N of Spica

This is an extended version, with added diary, of Alan's article published in The Scotsman on 30 May 2020, with thanks to the newspaper for permission to republish here.

Intro to Astro-imaging Part 4 online

3 June 2020

Categories: Knowledge, Meeting report, News

Welcome to

Introduction to ASTRO-IMAGING PART 4

- Part 1 - Basic Imaging
- Part 2 - Stacking and EAA
- Part 3 - Hi-res lunar, planetary and solar video
- **Part 4 - Deep Sky long exposures**
- Part 5 - Imaging for projects

The Astronomical Society of Edinburgh

4 STEPS

www.astronomyedinburgh.org

The fourth part of our Intro to Astro-imaging course covered long exposure deep sky imaging this evening at our online Zoom meeting, also broadcast on YouTube.

You can watch the video below or on our [YouTube channel](#).

YouTube video player

 <https://youtube.com/watch?v=tsl55Kx3dDs>



One of the questions concerned CR3 raw files and which apps can use them. DSS can't but APP, SIRIL (as far as I can see), Photoshop, Lightroom, can. APT and CCDCiel can support CR3 but not NINA currently. The others I haven't checked yet.

These are some of the applications mentioned:

The Field of View tool is on the [Astronomy Tools website](#).

Image capture:

- [APT](#)
- [N.I.N.A.](#)
- [CCDCiel](#)
- [SharpCap](#)

Image processing:

- [Deep Sky Stacker](#)
- [Nebulosity](#)
- [SIRIL](#)
- [Astro Pixel Processor](#)
- [StarTools](#)
- [Pixinsight](#)

ASE-24 guided tour in Stellarium

13 June 2020

Categories: Knowledge, Meeting report, News

If you have access to a computer running Windows, MacOS or Linux, then why not download our guided tour scripts, which are designed to operate with the popular, free, open-source planetarium software, Stellarium.

Follow the straightforward installation process and you'll be able to take tour of the above objects at the click of a button – you can choose from the full tour, any of the 6 parts, or just the teaser trailer.

Of course, you will also have to install a copy of Stellarium first of all, but you will find this software invaluable as a companion to help you navigate the night sky.

You can:

- [review the installation/user guide »](#)
- [download the guided tour scripts »](#)

Stellarium can be found at: www.stellarium.org

Be sure to install the latest version, at least v0.20.0

Please do [get in touch](#) to send us any feedback or questions on the tour, using the Subject of “ASE-24 Guided Tour”.

Article and scripts: Neil Martin

Watch the [video of the whole meeting](#).

‘THE SCRIPTS ARE PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND. USE THEM AT YOUR OWN RISK.’

Exploring Alien Atmospheres

17 June 2020

Categories: Featured, Meeting report, News

What a fantastic, engaging talk we had by Dr Hannah Wakeford of the University of Bristol. Lots of viewers both on Zoom and YouTube with many good questions afterwards.

If you want to hear more from Hannah, she co-hosts [Exocast: The Exoplanet Podcast](#).

You can watch the video again on our [YouTube channel](#).

Astro-navigation talk video

20 June 2020

Categories: Meeting report, News

ASE member Jim Anderson gave us a fascinating and very clear talk on the complex subject of astro-navigation at sea.

You can watch the video of our [YouTube channel](#).

Three Scope and Shed talks

27 June 2020

Categories: Meeting report, News

ASE members Tosh White, Mike McGovern and Peter Black gave us some very interesting and informative Scope and Shed talks on Wednesday evening. The aim of these SCoPe Talks is to give you an insight into what each bit of kit is like to own that will hopefully inform your own purchases.

Watch them on our [YouTube channel](#).

James Bradley and others FACT CHECKED!

27 June 2020

Categories: Meeting report, News

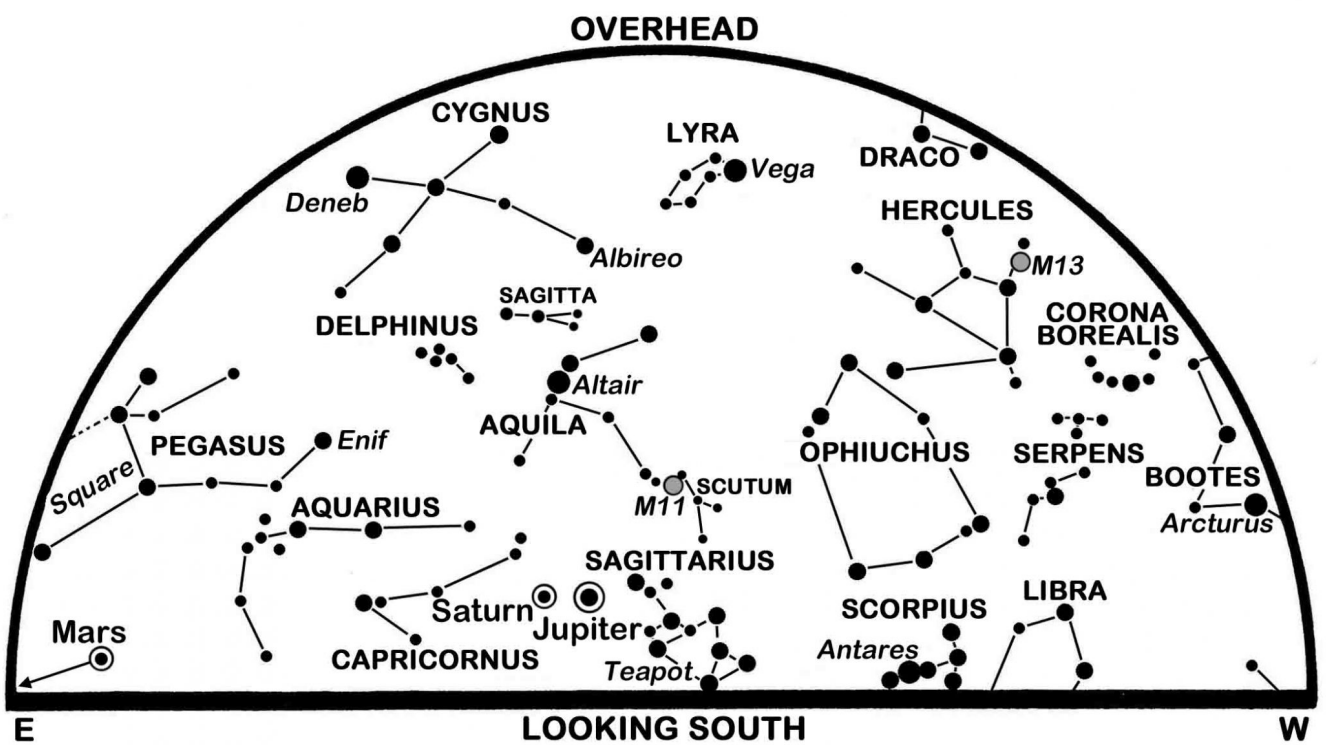
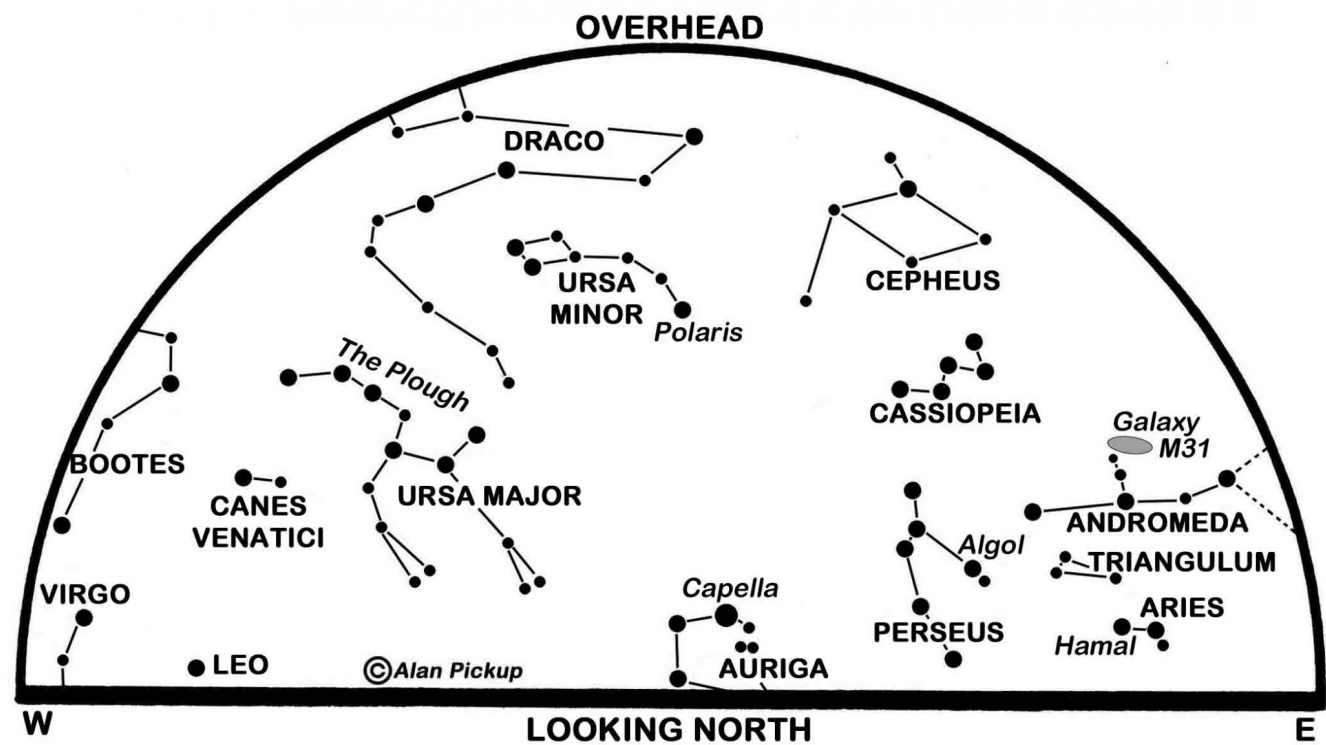
ASE member Dr Bruce Vickery followed on from his previous talk by looking into some historical fake news about dates and the calendar in general and give us a very informative and entertaining talk as always.

Watch the video above if you missed it on our [YouTube channel](#).

Scotland's Sky in July 2020

30 June 2020

Categories: Featured, Sky Diary



Jupiter partners with Saturn in our southern night sky



Author: [Alan Pickup](#)

The maps show the sky at 01:00 BST on the 1st, midnight on the 16th and 23:00 on the 31st. An arrow depicts the motion of Mars.

Now that the Sun is edging southwards following our summer solstice, it also begins to dip slightly further below our northern horizon in the middle of the night. One welcome result, at least for astronomers, is that we can look forward to darker nights and the emergence of the fainter stars from Scotland's night-long twilight.

The Summer Triangle takes its rightful place high in our southern night sky at our star chart times. Its corners are marked by the bright stars Vega in the constellation Lyra, Deneb in Cygnus and Altair in Aquila and it is destined to be a feature of our nights until well into the autumn.

This summer, though, it has a dual purpose in pointing downwards to the Sun's two largest planets, Jupiter and Saturn. These gas giants lie side by side and come to opposition in the constellation Sagittarius this month when they stand 180° away from the Sun so that they rise at about sunset and set at sunrise. They also reach their highest in the middle of night and, being at their closest for the year, are at their best for viewing through a telescope. Their low altitude, though, does mean that we can't expect the sharpest of views.

Jupiter is unmistakable, being brighter than any star in our summer night sky and shining at magnitude -2.8 at opposition in Sagittarius on the 14th. Its distance then is 619 million km and telescopes show its cloud-banded disk to be 48 arcseconds broad, around one fortieth of the apparent size of the Moon.

Spots and streaks in its clouds progress from east to west (left to right) as it rotates in just under ten hours. Foremost is the Great Red Spot, an anticyclonic storm that has raged in Jupiter's southern hemisphere for centuries and was once as large as three Earths. Now it is barely one Earth wide and last year there were fears that it might be in its death throes as some of its material appeared to spin away – a process that seems to have paused for now. Even binoculars are sufficient to give views of the four main Jovian moons which line up to east and west of the disk, changing their configuration as they orbit in periods from 1.8 to 17 days.

For all the fascination of Jupiter, nothing can compare with the beauty of Saturn. The ringed planet shines at magnitude 0.1 and is at opposition at a distance of 1,346 million km on the 20th. Its polar-flattened disk is then 18 arcseconds wide and its rings span 42 by 15 arcseconds, their north face being tipped 22° in our favour. Saturn's cloud bands are more subdued than those of Jupiter and noticeable spots are rare. Perhaps the most famous is a white spot in Saturn's northern hemisphere discovered in 1933 by the English comedian Will Hay, who was also a skilled amateur astronomer. A similar disturbance has been sighted several times since, and there are predictions that one will appear in 2020.

Saturn lies 6° to the left (east) of Jupiter as the month begins, a separation that grows slightly as both planets creep westwards at different rates. Look for the Moon below Jupiter on the 5th. Mars rises in the east just before our map times and is tracking eastwards near the Pisces/

border below the Square of Pegasus. Conspicuous at magnitude -0.5, and brightening to -1.1, its rusty surface lends it an orange hue and, as it approaches from 122 million to 96 million km, its disk swells from 11 to 15 arcseconds.

July sees the intended launch of three more missions to Mars including a Mars orbiter, Hope, built by the UAE and due to be launched on a Japanese rocket on the 14th. China plans to dispatch the Tianwen-1 orbiter, lander and rover on the 23rd while NASA is targeting the 22nd for the launch of its Perseverance rover. The latter carries a small experimental drone helicopter called Ingenuity.

Venus is now established as a brilliant morning star in the east-north-east. Its altitude thirty minutes before sunrise improves from 7° to 21° over the month as its distance grows from 58 million to 91 million km and the diameter of its crescent shrinks from 43 to 27 arcseconds. Catch it just below the waning earthlit Moon on the 17th, with Aldebaran in Taurus to their right. Mercury is just emerging as morning star, lower and to Venus' left in the twilight, and lies 3° below-right of the Moon on the 19th.

Edinburgh's sunrise/sunset times for July change from 04:32/22:01 BST on the 1st to 05:16/21:21 on the 31st. The full Moon on the 5th grazes the southern edge of Earth's outer shadow in yet another penumbral lunar eclipse, the third and least noticeable of four this year. The event is only just underway when the Moon sets and the Sun rises for us. Last quarter occurs on the 12th, new moon on the 20th and first quarter on the 27th.

As I mentioned last time, the Sun's shallow dip overnight means that conditions are optimum for spotting noctilucent (night shining) clouds. We have been treated to plenty of displays over recent weeks, usually in the form of cirrus-like wisps or rippled banks of electric-blue cloud that are high enough, at around 82 km, to catch the sunlight after our all-too-traditional lower level clouds are in darkness. Comprised of ice freezing around particles of meteor debris, they are Earth's highest clouds and are usually glimpsed low down between the north-west one hour after sunset to the north-east one hour before sunrise.

Diary for 2020 July

Times are BST

- 1st 04h Mercury in inferior conjunction
- 2nd 18h Moon 6° N of Antares
- 4th 13h Earth farthest from Sun (152,095,296 km)
- 5th 06h Full moon and penumbral lunar eclipse
- 5th 23h Moon 1.9° S of Jupiter
- 6th 10h Moon 2.5° S of Saturn
- 11th 21h Moon 2.0° S of Mars
- 12th 08h Venus 1.0° N of Aldebaran
- 13th 00h Last quarter
- 14th 09h Jupiter at opposition at distance of 619m km
- 16th 04h Moon 7° S of Pleiades
- 17th 03h Moon 4° N of Aldebaran

- 17th 08h Moon 3°N of Venus
- 19th 05h Moon 4° N of Mercury
- 20th 19h New moon
- 20th 23h Saturn at opposition at distance of 1,346m km
- 22nd 16h Mercury furthest W of Sun (20°)
- 22nd 22h Moon 4° N of Regulus
- 26th 15h Moon 7° N of Spica
- 27th 14h First quarter
- 30th 00h Moon 6° N of Antares

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