
Journal

of the

Nottingham Astronomical Society

January 2021

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Thursday, 7th January

8pm: **ONLINE**

Tonight we will be holding our

ANNUAL GENERAL MEETING

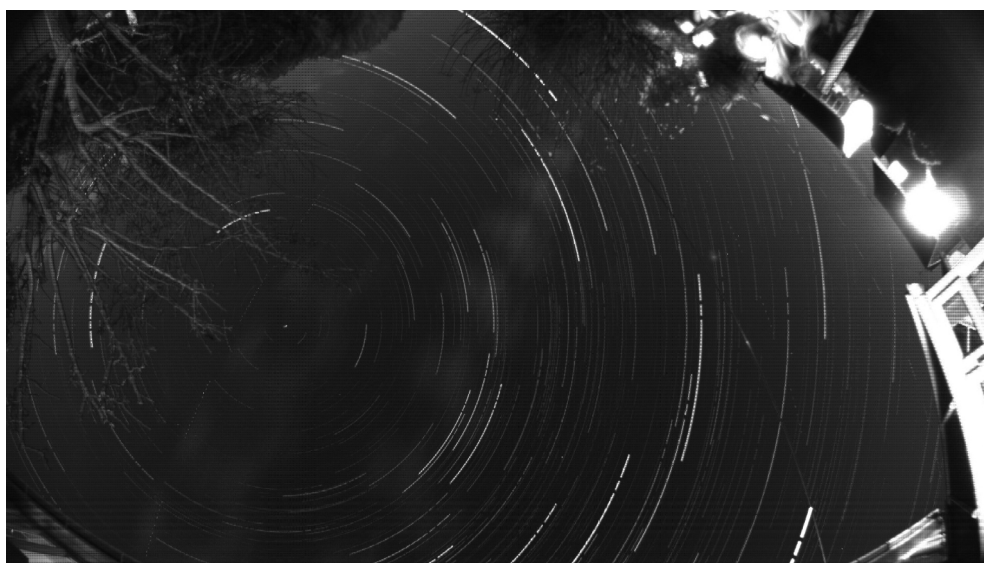
2019-2020

(delayed from November 2020)

This will be a members-only event

Participants will need to have
Zoom software (free to download)
installed on their device

**Members will be emailed the
Zoom login details for the meeting**



Herbel Pabla took this star trail image using a ZWO ASI462 camera with an all sky lens. 15-second exposures were captured over a 2 hour period and processed using StarStax software

Chairman's Message – January 2021

Dear all,

I hope you all had as good a Christmas as conditions allowed and really hope that next year's will make up for whatever you've missed!

It's been a year to forget in many ways, but thanks to our efforts and the magic of the internet our Society has continued to thrive. Our speakers have been able to deliver their talks online and these have been a very enjoyable alternative. I want to thank all those who have made this wonderful achievement possible. Due to the continuing restrictions we look likely to continue our online meetings at least until the spring, so I would ask that if there are any 'IT capable' members who would like to help, to please contact the Secretary.

Next year's speaker programme is in the Journal. I hope everyone enjoys some exciting topics, hopefully 'live' by mid-year. Membership renewal for 2021 will be available after the AGM on January 7th. New or returning members are very welcome; please contact the Membership Secretary.

This will be my last 'Chairman's Bit' as I will be retiring at the AGM, after 15 years on the committee. My thanks and best wishes go to the new committee. I thank you all for your continued support of our Society and hope to see you in the not too distant future.

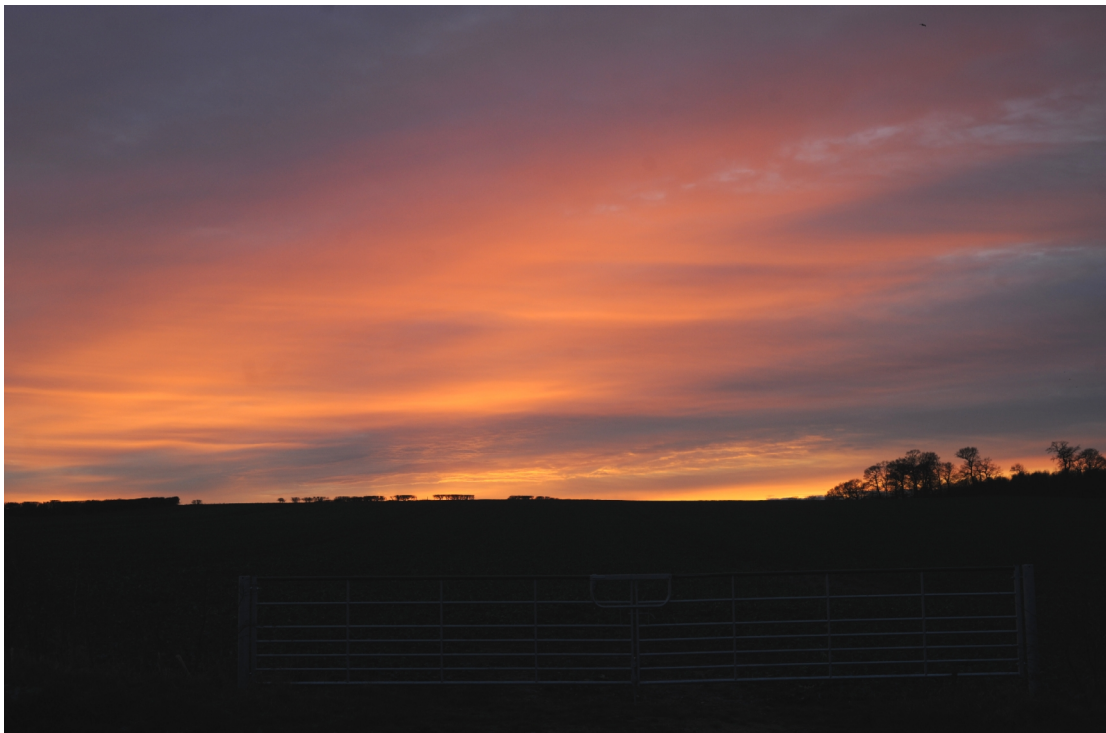
Happy New Year!

Please take care, and stay safe.

John

John Hurst, Chairman

P.S. My best shot at the Great Conjunction: it's behind the lovely sunset clouds, taken at about 5pm on Christmas Day



The NAS Journal Archive – a Plea for Help

If you visit the NAS website, www.nottinghamastro.org.uk, and follow the “Our Journal” link to the archive, you will notice that it is far from complete. Every issue back to November 2001 can be accessed, with the sole exception of January 2004. But prior to November 2001 there are no entries until you get back to 1952*. Prior to that we have scanned copies of some issues (originally called the Bulletin) dating back to 1946, the year the Society was founded.

It would be great to have a more complete archive of the Journal. We realise that this is a BIG ASK, but there are several possible routes to filling some of the gaps.

1. It was around the turn of the millennium that the Journal began to be emailed to members (although a stack of printed copies continued to be available at meetings). If you were a member of the NAS around that time, it's just possible that you have an old disk somewhere with a Journal or two on it. Would you mind checking? You might even find the Jan 2004 issue.
2. If your membership of NAS goes back to the 1990s (as is the case with a few of us) – or even the 80s – it's just possible that somewhere (e.g. in an attic, loft, garage, shed, storage box, etc) you might still have copies of the Journal from that era.
[*Confession: I've recently discovered three copies of the Journal dating from 1993 and 1996 in an old file. I've scanned these and they have now been added to the archive].
3. It is possible that someone reading this, who is no longer a member of the NAS, or was never a member, might still have contact with someone who came to one or more of our meetings prior to November 2001. If so, would you be willing to make a few enquiries for us?

If you find that you have access to an electronic copy of any missing Journal, please email it to the Secretary or Journal Editor (email addresses on the final page of this issue).

If you discover any printed copies of missing Journals and have access to a document scanner, please send the scans to us. If you don't have use of a scanner, please contact us.

Many thanks.

Roy Gretton
Editor

The Nottingham Astronomical Society: E - SERVICES

Whether or not you are a NAS member, you can keep up to date with details of the Society's meetings and other events by visiting the NAS website: www.nottinghamastro.org.uk

NAS on Facebook

You are welcome to connect with other members and friends of the NAS on Facebook by going to:
<http://www.facebook.com/nas.org.uk>

NAS on Twitter

The Society has a Twitter account at <https://twitter.com/NottinghamAstro>

NAS Journal e-mailing list

To register for your monthly e-mailed link to the NAS Journal, and a copy of our SkyNotes, just e-mail secretary@nottinghamastro.org.uk

You don't have to be a Society member to take advantage of this service.

If you happen to change your email address, please remember to inform the Society by emailing us at treasurer@nottinghamastro.org.uk

Sky Notes

January 2021



Compiled by Roy Gretton

All times given below are in Universal Time (Greenwich Mean Time)

Earth will be at **perihelion** on the afternoon of January 2nd, when we shall be 0.983 AU from the Sun.



THE GLORIOUS WINTER NIGHT SKY

Looking south at 8:30pm on January 12th, a few hours before the New Moon

Mars now about the same brightness as ***Capella*** and ***Rigel***

PHASES OF THE MOON

<i>Phase</i>	<i>Date</i>
Last Quarter	January 6 th
New Moon	January 13 th
First Quarter	January 20 th
Full Moon	January 28 th

This month the Moon is closest to Earth on the 9th, and furthest on the 21st.

THE PLANETS

This month is unusual in that only one of the naked-eye planets (Mars) will be visible in a dark sky. (*I don't regard Uranus as a naked-eye planet from anywhere in light-polluted Nottinghamshire!*)

At such times one is inclined to recall memorable occasions when ALL FIVE naked-eye planets were on show on the same occasion. One such time was in late March and early April, 2004. On the evening of April 4th, starting from the western horizon, we could see (in order) Mercury, Venus, Mars, Saturn and Jupiter.



Looking southwest at 8:30pm on 4th April 2004

Five naked eye planets visible – six if you include the Earth you're standing on

But fast-forward to January 2021...

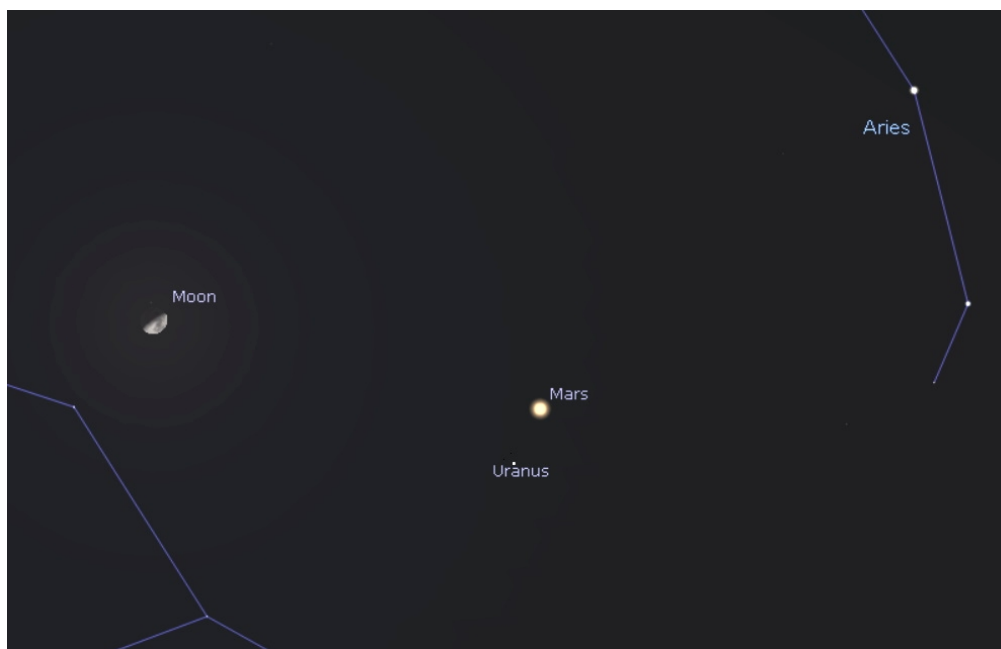
Mercury puts in an evening appearance this month, with greatest eastern elongation (19 degrees) occurring on January 24th. It begins the month more than 24 degrees south of the celestial equator but moves steadily northward to end the month at declination -11 degrees, but still not an easy target for UK observers.

Venus, having made an impressive spectacle in the morning sky since last summer, finally disappears into the solar glow this month. Superior conjunction will occur on March 26th, after which Venus won't become prominent again until it climbs into the evening sky in late spring.

Mars, moving steadily eastward, this month crosses over from Pisces (where it has lurked since last July) into Aries, where it will be passing Uranus on the 20th–22nd (see below). During January its angular diameter diminishes from 10 arcseconds to 8 arcseconds (little more than a third of its size back in early October), and its magnitude fades from -0.3 to $+0.4$.

Jupiter and **Saturn**, though still theoretically visible in the evening sky as the month begins, both reach conjunction with the Sun in the last week of January, **Saturn** on the 24th and **Jupiter** on the 29th. Not much more can be said about these gas giants until spring arrives!

On the evening of January 21st, **Mars** (magnitude +0.2) will be passing just to the north of **Uranus** (magnitude +5.9). With the two planets less than two degrees apart, this will be **an opportunity for owners of binoculars, or small telescopes without GoTo capability, to easily find Uranus**, and for wide-field astro-imagers to capture the two planets in the same field of view.

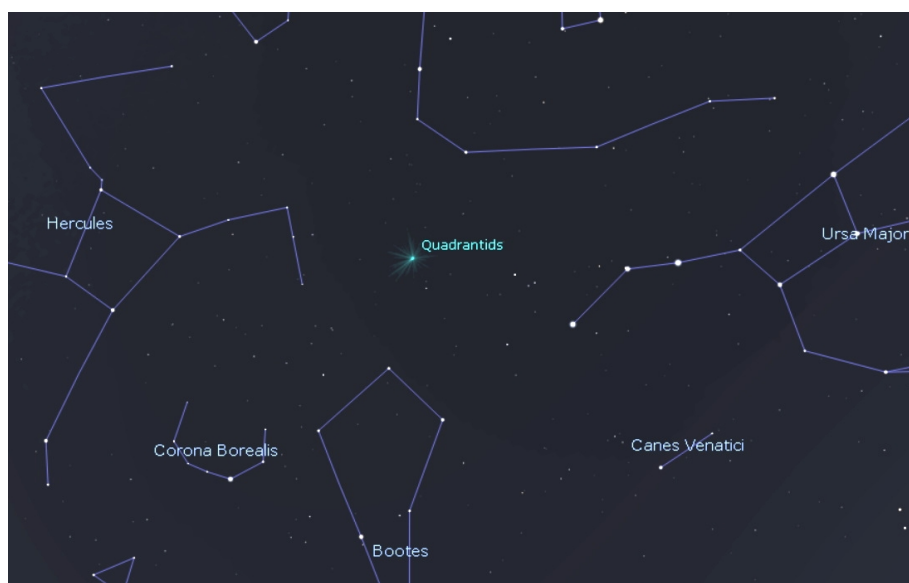


Mars, Uranus and the Moon on the evening of January 21st

Neptune, (magnitude 7.8) in the constellation of Aquarius, will be setting at 10pm on January 1st, and at 8pm by the end of the month.

METEORS

January's best shower, the **Quadrantids**, peaks in daylight on the 3rd, and also has to compete with a bright gibbous Moon, so unfortunately will not be seen to best advantage this year.



The radiant of the Quadrantids

DIARY DATES 2021

Monthly Meetings of the Nottingham Astronomical Society

**There will be no meetings at
Gotham or Plumtree until further notice**

*We nevertheless continue to display our pre-arranged programme of speakers
in the hope that it may be possible to livestream these talks.*

***Members of the Society will receive further updates
each month from the Chairman***

Date	Topic	Speaker
January 7 th	Annual General Meeting for 2019-2020 <i>with election of Committee for 2021</i>	
February 4 th	NAS New Year Special: The World According to Physics	Prof Jim Al-Khalili Well-known author and broadcaster
March 4 th	Exploring Mars <i>Planning the next missions</i>	Dr Steve Banham Imperial College, London
April 1 st	Astronomical Adventures in Tenerife	Dave Eagle
May 6 th	Extremophiles <i>Why there must be life elsewhere in the Universe</i>	Dr Martin Braddock AstraZeneca UK
June 3 rd	Harbingers of Doom? Comets	Prof Ian Morison Emeritus Gresham Professor of Astronomy
July 1 st	The JUICE Mission <i>Exploring Jupiter's icy moons</i>	Dr Chris Arridge Lancaster University
August 7 th <i>(Saturday)</i>	Annual Barbecue at the Observatory <i>(Members and their guests only)</i>	
September 2 nd	The Vikings at Barsoom Part 2: The Search for Life	Paul Money FRAS, FIBS
October 7 th	Fiat Lux 3 <i>The Large Synoptic Survey Telescope</i>	Dr Steve Barrett University of Liverpool
November 4 th	Annual General Meeting with a Wine and Cheese Social	
December 2 nd	The NAS Christmas Lecture <i>to be confirmed</i>	

Social and Practical Astronomy, Plumtree, January 2021

For the December Plumtree meeting we were privileged to have a talk by Mary McIntyre, an amateur astronomer and astrophotographer who in more recent years has been sketching what she sees at the eyepiece. Julian kindly chaired the meeting.



Mary is based in Oxfordshire and maybe best known for her deep sky astrophotography, but it was sketching and drawing she came to talk to us about.

Few of us make drawings based on observations, and Mary gave us lots of tips on how we could start. One thing I'd not considered before was that drawing or sketching the contents of a photograph or electronic image is a good place to start as this can be undertaken in the day time, in the warm and at a leisurely pace. Drawing something from an existing image allows the observer to rehearse the techniques of setting the overall framing and structure of the target in question, get an idea about proportions and how to use light and shade. Mary's work is amazing, and her talk is very inspirational, so if you've not yet watched it, I strongly recommend that you do so.

For the last few years the main (Gotham) meeting in **January** has been a quiz, but as the AGM is being held in January 2021, Julian and I are planning an online quiz for Plumtree. We'll let you know more about this early in the New Year.

It's been a challenging year but I hope you've enjoyed the online Plumtree meetings and they've helped you keep in touch with the Society and your astronomy friends. I'm grateful to all who have contributed and helped with Plumtree.

Here's to a more conventional 2021.

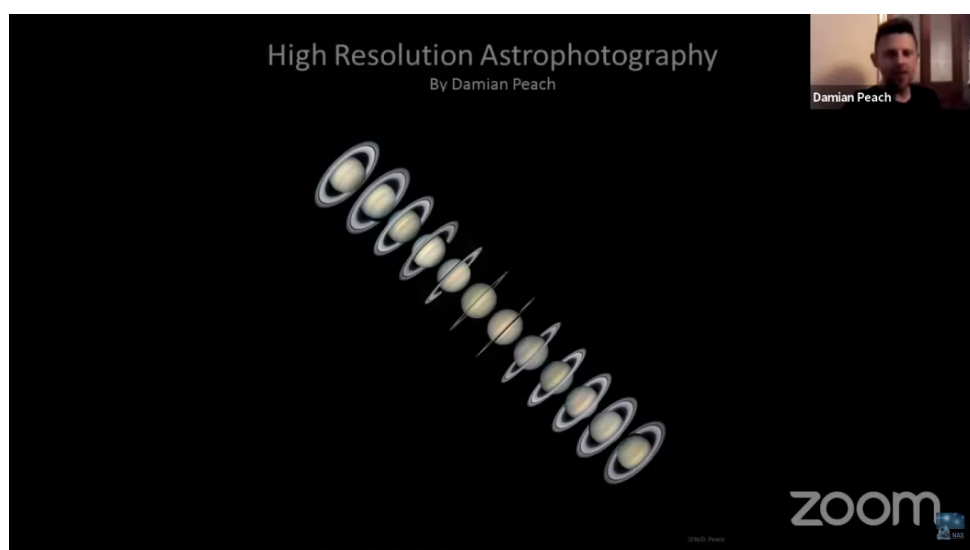
James Dawson, NAS Helpdesk & Plumtree Meetings
helpdesk@nottinghamastro.org.uk

Our 2020 Annual Prestigious Lecture on YouTube

Nottingham Astronomical Society's Annual Prestigious lecture was held on Thursday 5th November. It was given Live by Damian Peach, on High Resolution Astrophotography. We had a record NAS attendance 118 people tuned in live with over 1,400 people having subsequently watched the meeting on our YouTube channel.



Damian is one of the world's best astrophotographers, capturing stunning images of the planets. We were privileged he agreed to give our 2020 lecture, following in the footsteps of previous high profile speakers like Professor Dame Jocelyn Bell Burnell and Professor Lucie Green to give our annual prestigious lecture. Before the meeting we showed a selection of Damian's fantastic images taken over the last decade. I'm sure like me, many members would have found his advice timely with the current imaging campaign of Mars, during the planet's 2020 apparition.



If you missed our 2020 Annual Prestigious Lecture a recording can be found on the [NAS YouTube Channel](#).

Richard Severn

Observing the Geminids, 2020

Maximum activity for the Geminid meteor shower was predicted to occur at 8 pm on Sunday, December 13th. New Moon occurred at 16:17 the following afternoon, so with regard to moonlight, the conditions this year were near-perfect. However, the weather conditions were another matter! Most of that Sunday had been very wet and windy, with heavy showers continuing well into the evening, so I wasn't optimistic. But there were breaks in the cloud overnight, and I went out to observe at about 10pm, taking advantage of a clear slot for the following hour. After 11pm the sky clouded over again, although I presume there were other clearances in the small hours, after I'd retired to bed.

I saw about ten bright meteors over a period of 40 minutes in the quarter of the sky that I had in view, lounging against the wall of my garage and looking southeastwards. That would have corresponded to about one bright event per minute if I could have watched the whole sky at the same time.

The Geminids that I observed were bright, relatively slow-moving and didn't leave any visible trails. At the same time I had my tripod-mounted Canon 450D camera set up to take continuous 20-second images in the hope of capturing a meteor. The one below was imaged at about 10:45pm as it streaked across the constellation of Taurus. On the right side of the image you can see cloud starting to encroach from the southwest.



A Geminid captured on a 20-second exposure at ISO 1600
The meteor was as bright as the brightest stars, but doesn't look as bright on the image because it passed by in less than a second

My experience confirms what we have known for a long time: that the Geminids are currently the richest shower of the year, with a high proportion of bright events. If the sky is clear even a casual observer can hardly fail to see a number of these bright meteors within a few minutes near the peak of the shower. If you missed this year's display, the conditions in 2021 unfortunately will be much less favourable, with the peak of the shower coinciding with a waxing gibbous Moon.

Roy Gretton

The Great Conjunction of 2020

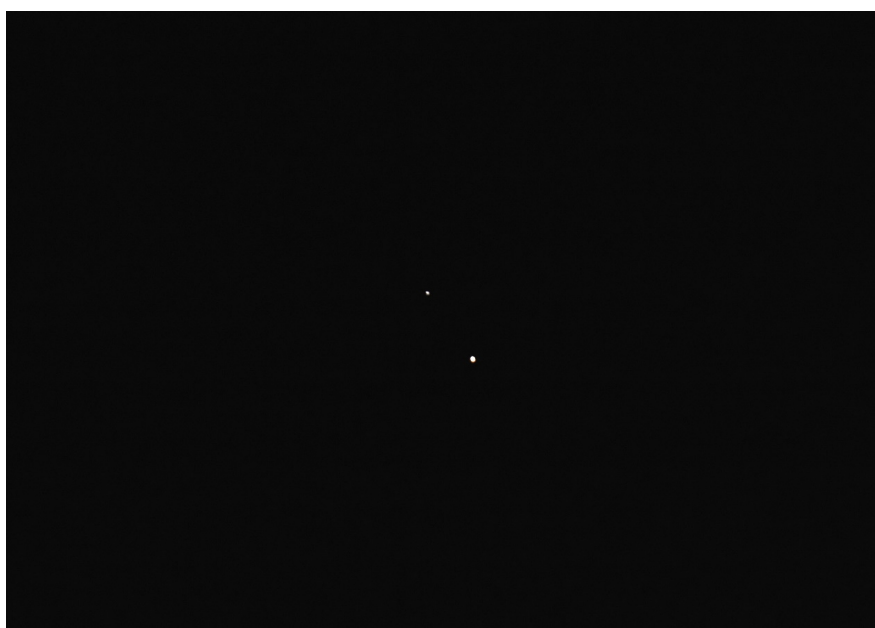
Conjunctions of the Solar System's two giant planets, Jupiter and Saturn, occur at roughly 20-year intervals, a consequence of the fact that Jupiter orbits the Sun in just under 12 years, while Saturn takes nearly 30 years to complete an orbit. One of these "great conjunctions" occurred last month, on December 21st. In order to see the two planets close together it was necessary to choose an observing location with a clear view to the southwest, and be ready to observe them as the Sun was setting. They remained visible as the sky darkened, but soon thereafter sank below the horizon. In Nottinghamshire we had our best views of the planets on December 20th, the day before the conjunction, but unfortunately on the date of minimum separation our skies were generally overcast.

A selection of images taken by NAS members is displayed below.

1. Images taken from Gedling Country Park by **Marcus Stone**, using a Canon 60Da camera between 5:15pm and 5:45pm on the 19th and 20th December



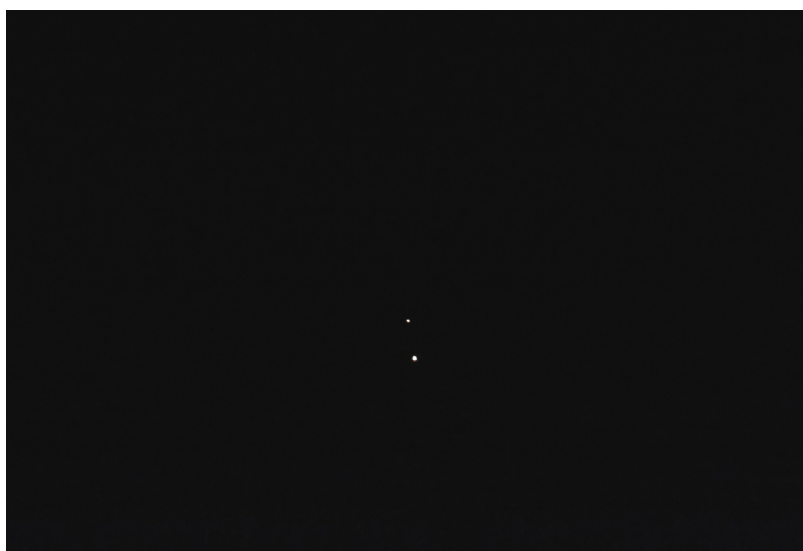
December 19th, using 75mm lens



December 19th, using 300mm lens



December 20th, using 75mm lens



December 20th, using 300mm lens

2. Images taken by **David Buxton** from Radcliffe-on-Trent, using a Pentax K50 camera, exposure 0.7sec at F7, ISO 6400.

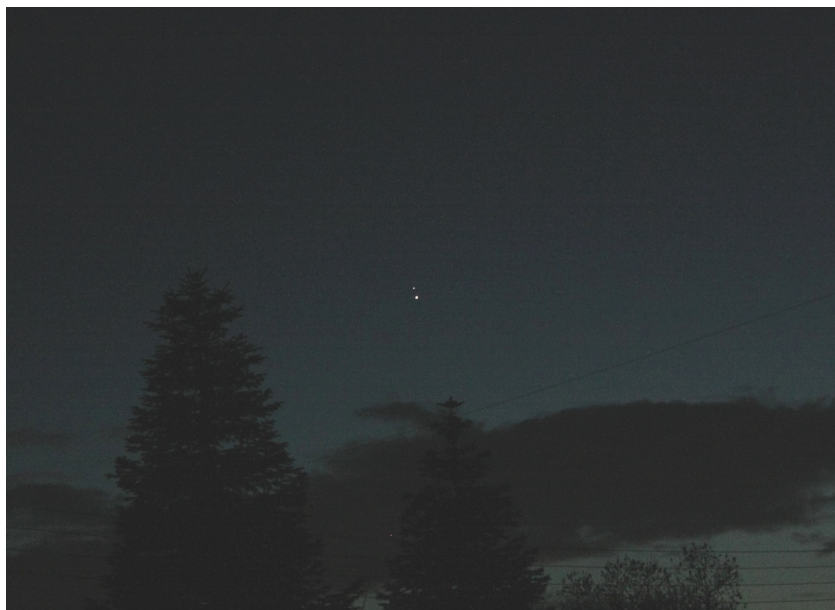


20th December

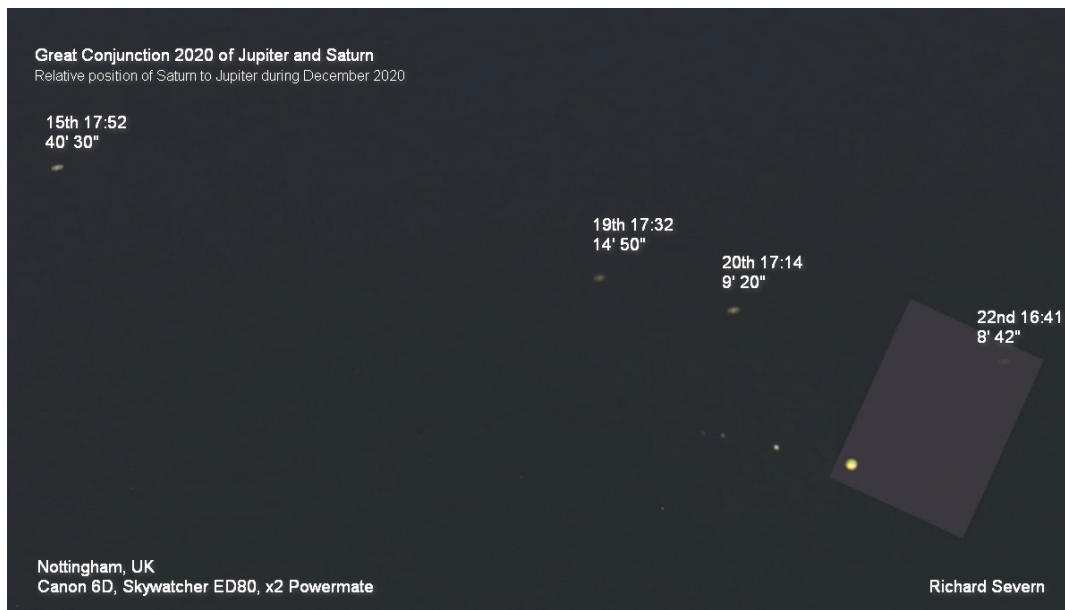


24th December

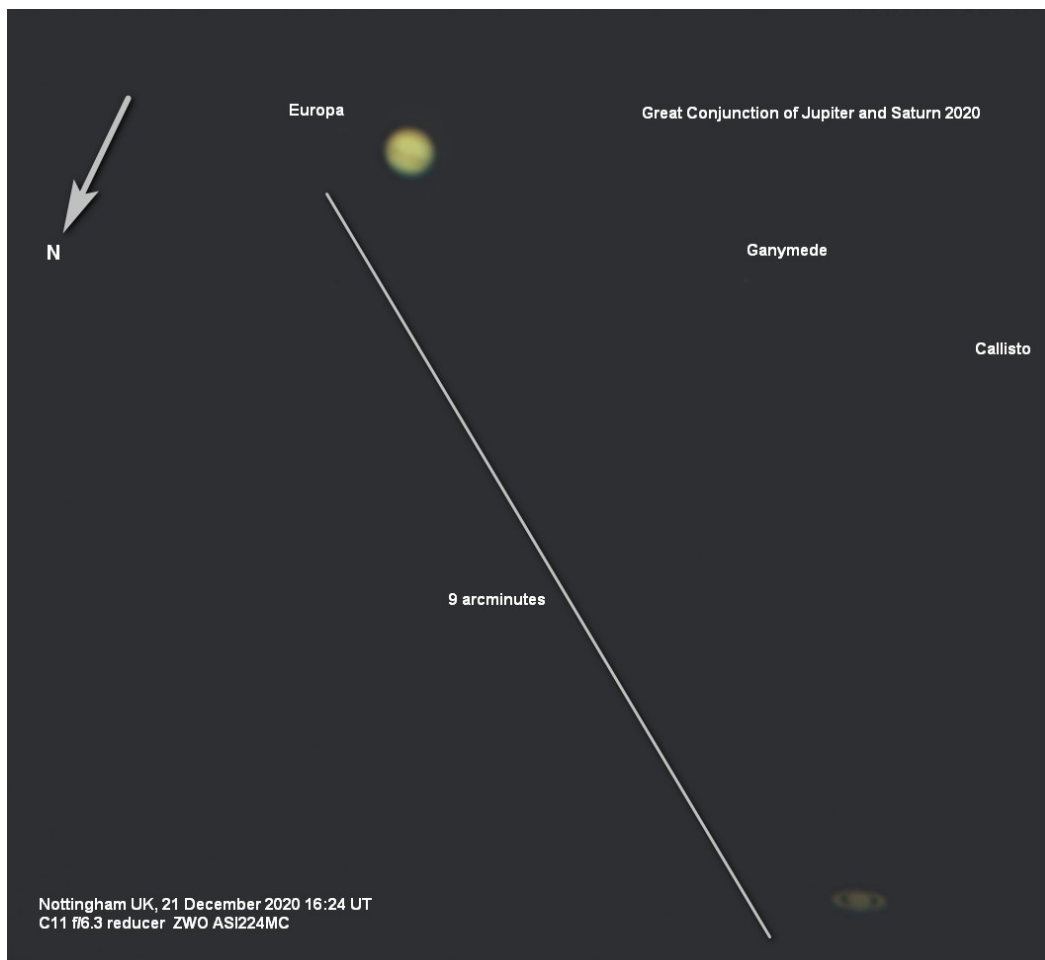
3. Images taken on December 20th from Langar by **Roy Gretton** using a Canon 450D camera set at ISO 1600.



4. Images taken by **James Dawson** and **Richard Severn**



Composite captured over four nights from December 15th to 22nd
using a Canon 6D camera attached to an ED80 telescope with x2 Powermate



A stacked planetary image taken on 20th December (day before closest approach)
with a C11 telescope and ZWO camera using a focal reducer



A single exposure to show the Galilean moons taken with a Canon 6D camera
on an ED80 telescope and a x2 Powermate

A Lunar Halo

Brian Carrington imaged this lunar halo on the evening of December 27th



Observing Sirius B

Here are a few notes on visually observing Sirius B. Readers will have seen Richard's and Gareth's image of Sirius in last month's Journal, and I'd like to encourage visual observers to have a go.

Sirius is a double star with a separation of (currently) 11 arcseconds, which is set to increase slightly over the next few years. So we are now well placed to split it, and indeed splitting it ought to be a cinch, given that any decent telescope can easily split each of the two pairs in Epsilon Lyrae (the "Double-Double"), each of which has a separation of just over 2 arcseconds. However, Sirius A is 10,000 times brighter than its companion (the white dwarf Sirius B), and the intense glare from A usually defeats any attempt to see B.

After several years of trying, I was coming to the conclusion that observing Sirius B was Mission Impossible in the unsteady skies over the UK, but I finally managed it a few months ago, and I'd like to share some tips with you.

I used a Celestron CPC1100 (an 11-inch Schmidt-Cassegrain) on its own integral fork mount and fitted with a Tele Vue Delos 12 mm eyepiece, giving a magnification of x233. As Sirius B is currently to the east (left) of A, and as the SCT (with diagonal) reverses the image from left to right, one expects B to appear to the right of A. I positioned the scope so that A was just outside the left edge of the field of view and very carefully adjusted this until B appeared as a little white "bump" just inside the field. There was significant glare from A even though I couldn't see it directly, but this wasn't enough to stop B making a very demure appearance.

If you want to have a go, my advice is:

- (1) If using a reflector, ensure that it is properly collimated.
- (2) Use your highest power (shortest focal length) eyepiece. Some people use an occulting bar, which can be a piece of aluminium tape stuck over the inside of the eyepiece, but you can manage without, especially if using a good-quality eyepiece with good internal baffling to cut down light scattering.
- (3) Ensure that your mount is properly aligned and is able to track accurately and steadily.
- (4) Choose a time when Sirius is at or near its highest altitude in the sky. When viewed from the Nottingham area, it reaches a maximum of about 20 degrees.
- (5) Choose a night when the seeing is exceptionally steady. If you can see reasonable surface details on Mars, then you are in with a chance.
- (6) Try to avoid getting any roofs under the line of sight, as the convection currents from them will disturb the seeing.
- (7) Position the scope as described above, let your eye settle down, and BE PATIENT.
- (8) Continue making tiny adjustments to the mount and look for the little white "bump" in approximately the 3 o'clock position. A Newtonian reflector, or an SCT or refractor with diagonal, will reverse the image, so that you can expect to find Sirius B in this position.

(9) When making fine adjustments to the pointing of the mount, try to make it move in the direction which minimises backlash. Your mount's instruction manual should explain all about this.

Best of luck !

Sam Boote

 **Nottingham Astronomical Society**

Watch recordings of our online meetings on the NAS website www.nottinghamastro.org.uk or go to the NAS YouTube Channel.

2 nd April	Galaxies: One Gigayear at a time Dr Julian Onions	16 th April	Venus J Dawson, G Davies, R Severn, J Onions
7 th May	Variable Star Astronomy & Cataclysmic Variables Dr Jeremy Shears	21 st May	Backyard Astronomy NAS members
4 th June	Wonders of the Southern Sky Professor Ian Morison	18 th June	Foundations of Astrophotography Dr James Dawson
2 nd July	Mars in 2020 Dr Richard McKim	16 th July	A Life Time of Astronomical Observations Alan Heath
6 th August	Centenary of The Great Debate Dr Nick Hewitt	20 th August	Deep Sky Astronomy Callum Potter
3 rd September	The Plumes of Enceladus Dr Chris Arridge	17 th September	Live Telescope Stream Jupiter & Saturn
1 st October	Legacy of the Hubble Space Telescope Dr Steve Barrett	27 th September	Live Telescope Stream Moon & Mars
		15 th October	Astronomy & Physics of the autumn sky

 YouTube  @NottinghamAstro  nas.org.uk nottinghamastro.org.uk

Advertisements

Skywatcher Heritage-114 Virtuoso telescope



Little used and in new condition, with eyepieces.

Current price new £182

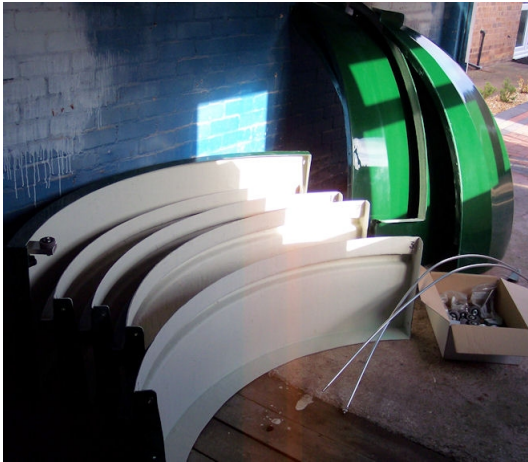
Reasonable offers invited

email : grahammarch2@btinternet.com

FOR SALE

Pulsar 2.1-metre Observatory Dome and Track in Racing Green

Made by the leading UK manufacturer of GRP observatory domes.
The dome and the track are each fabricated in four segments that bolt together.
The track is intended to be fixed to a flat roof (and could be used for converting a roll-off roof observatory into a domed one).
The complete kit was purchased in 2008.



The dome and track sections as delivered from Pulsar



The track fitted to a flat-roofed shed



The dome mounted on the track

The original price of the dome and track was **£2000**

Suggested price **£500**
but any offer will be considered

Contact **Roy Gretton** on 07483868162 or journal@nottinghamastro.org.uk

Nottingham Astronomical Society

Affiliated to the **British Astronomical Association**
Member of the **Federation of Astronomical Societies**
Supporters of the **Commission for Dark Skies**

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David Buxton

Observatory line: 07726 940700 (line open during observing sessions)

Meetings

Under normal circumstances our formal meetings, often with an illustrated talk by a guest speaker, are held on the first Thursday of each month (except in August) at:

Gotham Memorial Hall

Gotham

Nottingham NG11 0HE

Doors open 7.00pm

Meetings start 8.00pm

Meetings end 10.00pm

These meetings are open to the public, and visitors are welcome to attend.

Annual subscriptions 2020

Full	£30
Joint rate for partners living at the same address	£45
Under-18s and full-time students	£5

Subscriptions become due on 1st January. Half-price subscription is charged if joining after 30th June (minimum subscription £5).

Please make cheques payable to:
Nottingham Astronomical Society.

If you would like more information about the **Nottingham Astronomical Society**, or would like to become a member, please contact the Secretary secretary@nottinghamastro.org.uk or speak to any NAS committee member at one of the regular monthly meetings. A membership application form is inside this issue of the Journal.

The Nottingham Astronomical Society

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