No. 551 Registered Charity 271313 **February 2019**

OASI News

The newsletter of the Orwell Astronomical Society

Lunar Eclipse at totality on 21 January 2019

Photo by Nigel Evans

Trustees: **Mr Roy Adams** **<tba>** **Mr David Payne**

Honorary President: **Dr Allan Chapman D.Phil MA FRAS**

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Society Notices

Society Contact details

Observatory (meeting nights only)
NB new number! 07960 083714

Email queries: info@oasi.org.uk

Facebook: https://www.facebook.com/groups/445056098989371/

Twitter: @OASIpswich

The OASI Facebook pages are proving very popular. Several non-members are active contributors.

Please send material for the OASI web site and newsletter e.g. observations, notices of events, general interest articles, to

news@oasi.org.uk

Other contact details will be issued to members on a separate printed list.

Access into the School Grounds and Observatory Tower

Please use the third gate into the school grounds by the gym.

Areas out of Bounds

Access to the Observatory is **only via the black door** at the foot of the Observatory tower, which leads to the staircase and thence to the spiral staircase up to the Observatory. If the black door is locked, please phone the observatory mobile, **07960 083714** during meeting hours.

Please do NOT explore other routes. When in doubt, ask or call the Observatory mobile.

Remember this is a school and straying into the main part of the school where the pupils reside would cause the society big problems and could see us losing the use of the observatory. Any member found to be anywhere other than the approved access route or the observatory area will face serious sanctions up to and including expulsion from OASI.

Please note that access time for all observatory member nights is after 20:15

Articles for OASI News

News, pictures and articles for this newsletter are always welcome. Please send them to

news@oasi.org.uk

The CLOSING date is the 15th day of the month

Please submit your articles in any of the following formats:–

Text: txt, rtf, rtfd, doc, docx, odt, Pages, pdf
Spreadsheets: xls, xlsx, OpenOffice/LibreOffice, Numbers
Images: tiff, png, jpg
Please send tables as separate files in one of the above formats.

If you don't feel up to writing a major article, perhaps you might write a short note for OASI News along the lines of *"This month I have mostly been observing/constructing/mending/reading/etc."*?

Newsletter archive www.oasi.org.uk/NL/NL_form.shtml

Authors, please note that your articles will now be publicly available worldwide!

Reproducing articles from OASI News

If you plan to reproduce an article exactly as per OASI News then please contact the Editor – otherwise, as a matter of courtesy, please seek permission from and credit the original source/ author. You may not reproduce articles for profit or other commercial purpose.

Committee 2018

Chairman	Paul Whiting FRAS	Set overall agenda for OASI, Chair committee meetings, Press and publicity, Visits by outside groups, Observatory tours, Public appreciation of astronomy, Outreach activities.
Secretary	Roy Gooding	Outreach meetings (jointly with Chairman), observatory decoration.
Treasurer	Paul Whiting FRAS	Finance, Supervision of applications for grants.
Committee	James Appleton	Committee meeting minutes, Web site
	Martin Cook	Membership, Tomline refractor maintenance & user testing
	Peter Richards	Lecture meetings, Email distribution lists
	Martin Richmond-Hardy	Newsletter, OASI @ Newbourne
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Matt Leeks	Safety & security
	Andy Gibbs	
	Andy Wilshere	Librarian

Signing in and out

Please ensure you sign in and out when visiting the Observatory and/or Newbourne. This is for fire safety precautions and also provides an historic record.

AGM

Sat 26 Jan 19:30 at Museum St Methodist Church Hall.

Next Committee Meeting

Friday 1st February 2019, at Museum St Methodist Church rooms, Black Horse Lane.

Welcome new members

Michael Urbanek Carl Baldwin John Hughes

OASI and BAA Events

For the latest event details, please see www.oasi.org.uk/Events/Events.php

There's a Google Calendar on the OASI web site with the latest dates (and corrections!). If you want to easily add OASI Events to your own computer/ phone/tablet calendar application click this button on the website Events page or use this address to access this calendar from other calendar applications.

https://calendar.google.com/calendar/ical/1jhs9db71ncki4sojo7092vfvc%40group.calendar.google.com/public/basic.ics

For other astronomy news and astro pictures try our

Twitter feed https://twitter.com/OASIpswich

Facebook page https://www.facebook.com/pages/Orwell-Astronomical/158256464287623

Subscribe to the OASI Yahoo group by emailing oasi-subscribe@yahoogroups.com

Date, Time & Location	Contact	Event
Weekly, every Wednesday, 20:15–22:00 Orwell Park Observatory	Martin Cook, Roy Gooding	General observation (weather permitting) using a variety of telescopes. Entry via the third gate left. NOT the main gate
Sat 26 Jan 19:30 Museum St Methodist Church Hall	Roy Gooding secretary@oasi.org.uk	**OASI AGM**
Fri 1 Feb 20:00 Museum St Methodist Church Hall	Paul Whiting chairman@oasi.org.uk	Committee meeting
Mon 11 Feb 2019, 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. Observing or informal talks, depending on the weather. Bring your telescope to our dark-sky site.
Tue 12 Feb 2019, 20:15 Orwell Park Observatory	Paul Whiting, FRAS treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
Mon 25 Feb 2019, 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. Sky Notes: Talk by Bill Barton on the night sky. Book swap: bring books or DVDs concerning astronomy, space-travel, sci-fi or popular science and swap them.

Date, Time & Location	Contact	Event
Sat 2 March 09:45 to 18:00 Museum St Methodist Church room.	https://britastro.org/node/14933	BAA Back to Basics Workshop– hosted by OASI See page 15
8 - 12th March		Haw Wood Spring Star Party
Sat 9 March, 09:30 Kettering Conference and Exhibition Centre, NN15 6PB	http://practicalastroshow.com/	The Practical Astronomy Show See page 15
Mon 11 Mar 2019, 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne.
Tue 12 Mar 2019, 20:15 Orwell Park Observatory	Paul Whiting, FRAS treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
Mon 25 Mar 2019, 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. Sky Notes: Talk by Bill Barton on the night sky. Book swap:
Tues 26 March	James Appleton info@oasi.org.uk	Field trip to observe graze of ZC2401. More info.
6-7th April		Kelling Heath Spring Star Party
Monday 8 April from19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne.
Tues 9 April Orwell Park Observatory	Paul Whiting, FRAS treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
Monday 22 April from19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne. 19:30 Sky notes Bookswap

Date, Time & Location	Contact	Event
Monday 6 May from19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne.
Monday 27 May from19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne. 19:30 Sky notes Bookswap
29 June Newbourne Village Hall	Pete Richards lectures@oasi.org.uk	OASI Summer BBQ
28-29th Sept		Kelling Heath Autumn Star Party
28 Oct–4 Nov		Haw Wood Autumn Star Party

Lecture Meetings

Contact: Peter Richards
lectures@oasi.org.uk

We have an exciting and interesting set of lectures by guest speakers for the Autumn.

There is a new venue for lectures this year which is:

St Augustine's Church Hall
Bucklesham Road
Ipswich IP3 8TH.

The start time for all talks will be 8pm and, as usual, the talks will be held on Friday evenings.

OASI Guest Speaker Lectures for 2019

20th September	"Monsters in the Dark: Searching for the Most Massive Galaxies in the Universe." Dr Matthew Bothwell. University of Cambridge.
18th October	"Pulsars and our understanding of the cosmos" Dr Robert Ferdman. University of East Anglia.
15th November	"Neighbours - An Introduction to the Local Group". Dr Nick Hewitt. British Astronomical Association.

OASI @ Newbourne

Martin Richmond-Hardy newbourne@oasi.org.uk

We normally meet at Newbourne Village Hall, Mill Lane, IP12 4NP on the 2nd and 4th Mondays (with a few exceptions, like December and January).

OASI @ Newbourne is a good place to start for beginners. If you are thinking of buying a scope or binoculars, come and try before you buy and talk to owners about the strengths and weaknesses of particular models. If you've already splashed the cash, bring your new scope along to use or for advice on setting-up and adjustment. All welcome, with or without telescopes. We would like visitors to join OASI to enjoy the full benefits of membership.

There are also **Stargazers' Guide (Sky Notes), Astronomy Workshops and the Book Swap.**

Stargazer's Guide

On the last meeting each month Bill Barton FRAS will give a short presentation of what can be viewed in the following 4 weeks. For armchair stargazers (on those cloudy nights) there is a small branch of the OASI Library held at Newbourne and a copy of the full catalogue.

OASI@Newbourne Meetings in 2019

14 Jan (W)	28 Jan (S+B)	11 Feb	25 Feb (S+B)
11 March	25 March (S+B)	8 April	22 April (S+B)
6 May[*]	27 May (S+B)	(both Bank Holidays)	
10 June	24 June (S+B)		

* NB 13 May is unavailable due to a Parish Council meeting.

We open up for all meetings at 7pm. Star Guide (S) at 7:30pm and Workshops (W) at 7:45pm. B = Book Swap night (see below).

Astronomy Workshops

Contact Mike Whybray **Location: Newbourne Village Hall IP12 4NP**

Doors open at 7:00pm. **Workshops start at 7:45pm**

If you are a new OASI member, or haven't been to one of these informal workshops before, they are a mixture of events of different characters including beginners talks, interactive workshops, films, etc., suitable for all. They are also a chance to chat with other members over a cup of tea and a biscuit, in a venue rather warmer than the observatory dome on a winter's night!

Given a clear night, we can make use of the field for a workshop or continue afterwards with some observing – something not possible at the previous venue, Nacton village hall.

Do you have a subject you could workshop? You could do a short one, or share the effort with a partner. Drop Mike Whybray a line! workshops@oasi.org.uk

TBA Martin Cook on Tomline Refractor Training (at the Observatory)

Astronomy Book Swap

Pete Richards

If you are anything like me you'll have a bookcase or two full of astronomy books and no room for any more but you know the next time you are at an astronomy event you'll be tempted again. OASI will be hosting an astronomy book swap event at Newbourne on a Monday evening help you to clear some space or maybe you can provide a home for someone else's unwanted books.

If you bring any books and they are not taken you will need to take them home again as OASI has no spare storage space for books.

You can take away any books you are interested in but if you have not provided any books yourself you might like to make a small cash donation to OASI.

Any cash donations will help towards running OASI @ Newbourne.

The books can be on any area of astronomy, or space exploration, or related subjects. They can be factual or works of fiction including space related science fiction. As well as books you could bring DVDs on similar subjects, or maybe you have an astronomical jigsaw puzzle you'd like to give away or exchange.

The book swap will be held at Newbourne Village Hall on Monday Star Guide/Workshop nights (a normal oasi @ newbourne night).

Other local astronomy society meetings

Athaneum Astro Soc

www.3a.org.uk/index.htm

We meet fortnightly on Thursdays, from 7.30pm, at our dark-sky site in the Walled Garden at Nowton Park, just outside Bury St Edmunds. If you're planning on joining us for the first time, please contact us in advance, just to make sure the meeting is going ahead. We recommend that you wear warm clothing (even summer nights can be chilly, especially when the skies are clear!) and bring a flask, or insulated mug, for a warm drink. We have tea and coffee-making facilities on-site. Events are listed here http://www.3a.org.uk/events.htm

LYRA Lowestoft & Yarmouth Regional Astronomers

www.lyra-astro.co.uk

LYRA Programme and Local Events 2019 – All talks (unless other wise stated) will commence at 7.30pm in the Coach House Room at Parkhill Hotel, just outside Oulton Village on the B1375 (Oulton Broad to Gt. Yarmouth Road) NR32 5DQ

All Talks £2.50 For Non Members

Feb 26	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm
March 12	A talk “Simple Astrophotography using a Digital Camera – how to do it and what to use” David Murton
March 26	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm
April 9	The LYRA President’s Lecture Dr Matthew Bothwell, Cambridge Institute of Astronomy
April 23	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm
May 14	A talk “Hunting Outbursting Young Stars with the HOYS-CAPS Citizen Science Project” by Dr Dirk Froebrich, University of Kent
May 28	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm
June 11	A talk “The Silver-On-Glass Revolution” by Bob Marriot
June 25	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm
July 9	A talk “Midsummer madness? – Astronomy versus Pseudoscience, Flying Saucers & Conspiracy Theories” by Mark Shepherd.
July 23	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm
Aug 13	Summer Social Evening at Parkhill Hotel
Sept 10	TBA
Sept 24	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm
Oct 8	A Talk “Variable Stars – being a Professional-Amateur” by Michael Poxon
Oct 22	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm
Nov 12	TBA
Nov 26	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm

DASH Astro

Darsham And Surrounding Hamlets

http://dash-astro.co.uk

All DASH Astro observing sessions will take place at WESTLETON COMMON. ASOG observing sessions and locations may be arranged at the time of observation.

Unless stated all group meetings will take place at WESTLETON VILLAGE HALL from 7:30 pm.

Note these are now on Sundays.

Feb 03	Dash Observing Session (Sunset 16:42 Moonset 15:16 1.8% Moon)
Feb 17	Meeting – Bill Barton, Myles Kelly and Anne Chapman : Titles TBC
March 03	Dash Observing Session (Sunset 17:35 Moonset 14:09 9.2% Moon)
March 17	Meeting – Nick James, Title: Modern Meteor Astronomy.
April 07	Dash Observing Session (Sunset 19:37 Moonset 21.59 5.1% Moon)
April 14	Meeting – Bob Greef Title: TBC
May 05	Dash Observing Session (Sunset 20:25 Moonset 20.59 0.5% Moon) Late one?
May 19	Meeting – AGM plus Dave Murton and Linda Gwynn
May 02	Solar Observing - Location TBA
June 16	Solar Observing Outreach - Location Sutton Hoo National Trust
June 23	International SUNday - Location Dunwich Heath
August 10	(Saturday) DASH Summer Social - confirmed. (Members and Guests only)
Sept 08	Meeting –.Dr. Sonali Shukla, Lecturer in Astronomy, Cambridge Univ.
Sept 21&22	Henham Steam Rally. Solar Observing and Displays
Sept 29	Dash Observing Session (Sunset 18:35 Moonset 19:24 1.1% Moon)
Oct 13	Meeting – Dr. Manda Banerji, Inst. of Astronomy, Cambridge Univ.
Oct 23&24	Family Stargazing Evening at Sutton Hoo N.T. Site 6-9pm
Oct 27	Dash Observing Session (Sunset 16:33 Moonset 16.46 0.9% Moon)
Nov 10	Meeting – Steve Hubbard, Ian Lomas & David Gwynn, plus “Q & A Panel” Title TBC
Nov 11	DASH Observing. “Transit of Mercury” start 12:35 ends 16:06 (sunset)
Nov 24	Dash Observing Session (Sunset 15:49 Moonset 15.10 6.7% Moon)

Dec 07(Saturday) DASH Christmas Social – confirmed. (Members and Guests only)

The Night Sky in February

Martin RH

All event times given are for the location of Orwell Park Observatory 52.0096°N, 1.2305°E

Moon

Source: http://heavens-above.com/moon.aspx

New Moon	1st Quarter	Full Moon	Last Quarter
04 Feb 21:04	12 Feb 22:26	19 Feb 15:54	26 Feb 11:28

Sun, Moon and planets

Source: http://heavens-above.com/PlanetSummary.aspx

Object	Date	Rise	Set	Mag.	Notes
Sun	1	07:36	16:42		
	28	06:44	17:32		
Moon	1	05:20	13:35		
	28	03:15	11:33		
Mercury	1	08:00	16:36	-1.3	Perihelion-Feb-25 Max eastern elongation-Feb-27
	28	07:08	19:13	-0.2	
Venus	1	04:53	13:00	-4.1	
	28	05:13	13:35	-4	
Mars	1	09:43	23:10	0.9	
	28	08:29	23:11	1.2	
Jupiter	1	04:23	12:09	-1.7	
	28	02:56	10:38	-1.9	
Saturn	1	06:20	14:07	0.6	
	28	04:43	12:35	0.6	
Uranus	1	10:02	23:50	5.8	
	28	08:17	22:09	5.9	
Neptune	1	08:51	19:38	8	
	28	07:06	17:57	8	

Paul's Astronomy Podcast for February

Paul Whiting FRAS Podcast, February 2019 www.oasi.org.uk/2019_02_pod.mp3

Occultations during February 2019

James Appleton

The table lists occultations during the month under favourable circumstances. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

The events should be readily visible in small telescopes or binoculars. The first two columns list the date and time (UT) of the occultation. Column three gives the phenomenon: 'D' denotes a disappearance and 'R' a reappearance. The table lists circumstances of disappearances and reappearances as dictated by the visibility of each phenomenon (determined by altitude, lunar phase, etc). Column four details the lunar phase ('+' for waxing and '-' for waning). Columns five and six give the altitude of the Sun and the star, both in degrees. (A negative solar altitude means that the Sun is below the horizon.) Columns seven and eight provide the star's magnitude and catalogue number.

The data relates to Orwell Park Observatory, but will be similar at nearby locations.

Please note that **times are shown in UTC**.

Date	Time (UT)	D/R	Lunar Phase	Sun Alt(°)	Star Alt(°)	Mag	Star
11 Feb	20:11:56	D	0.38+	-30	33	7.5	T639-0227-1
13 Feb	23:16:35	D	0.60+	-50	27	5.6	63 Tau
13 Feb	23:32:10	D	0.61+	-50	25	7.0	H20567
14 Feb	00:40:17	D	0.61+	-51	15	6.9	H20756
14 Feb	22:54:05	D	0.71+	-48	40	6.7	V1159 Tau
15 Feb	23:14:47	D	0.81+	-49	46	7.3	ZC969
16 Feb	01:54:03	D	0.82+	-45	23	6.5	15 Gem

Meteor showers

Source: BAA Handbook 2019 p100-101

Shower	Maximum	Normal limits	ZHR at Max	Notes
none this month				

Visible ISS passes ≥15º max altitude

Martin RH

Source: http://heavens-above.com/PassSummary.aspx?satid=25544

Times are UTC. Predictions are approximate (23 Jan) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Feb	-3.8	17:56:11	10°	W	17:59:29	86°	S	18:01:34	21°	E
01 Feb	-1.5	19:32:42	10°	W	19:34:17	25°	W	19:34:17	25°	W
02 Feb	-3.8	18:41:14	10°	W	18:44:32	71°	SSW	18:44:58	60°	SE
03 Feb	-3.8	17:49:45	10°	W	17:53:04	82°	S	17:55:41	15°	E
03 Feb	-1.8	19:26:21	10°	W	19:28:24	28°	WSW	19:28:24	28°	WSW
04 Feb	-3	18:34:48	10°	W	18:38:01	49°	SSW	18:39:10	32°	SE
05 Feb	-4	17:43:17	10°	W	17:46:35	64°	SSW	17:49:51	10°	ESE
05 Feb	-1.7	19:20:08	10°	W	19:22:44	21°	SW	19:22:45	21°	SSW
06 Feb	-2.2	18:28:25	10°	W	18:31:22	30°	SSW	18:33:42	14°	SSE
07 Feb	-2.7	17:36:48	10°	W	17:39:58	43°	SSW	17:43:07	10°	SE
08 Feb	-1.1	18:22:15	10°	W	18:24:34	18°	SW	18:26:53	10°	S
09 Feb	-1.6	17:30:24	10°	W	17:33:13	26°	SSW	17:36:01	10°	SSE
These later predictions will certainly need checking nearer the date										
24 Feb	-1	06:13:16	10°	SSW	06:15:47	20°	SE	06:18:17	10°	E
25 Feb	-1	05:22:33	10°	S	05:24:16	14°	SE	05:25:59	10°	ESE
26 Feb	-2.3	06:05:33	10°	SW	06:08:33	34°	SSE	06:11:35	10°	E
27 Feb	-1.8	05:14:27	11°	SSW	05:16:56	24°	SSE	05:19:39	10°	E
28 Feb	-1	04:24:58	16°	SSE	04:25:23	16°	SE	04:27:30	10°	ESE
28 Feb	-3.2	05:58:10	10°	WSW	06:01:24	54°	SSE	06:04:37	10°	E

Astronomy on the radio

Bill Barton's Radio Broadcast

ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. I aim to cover what there is to see in the sky and then a little bit on something topical. ICRFM is also available to listen to over the Internet and there is a listen again option on their website. http://www.icrfm.com

David Murton's Radio Broadcast

On 1st Tuesday of the month, 1.40pm on the Lesley Dolphin show on BBC Radio Suffolk – now digital (channel 10c) and FM 103.9 (Ipswich), 104.6 (west Suffolk), 95.5 (Lowestoft), 95.9 (Aldeburgh) and the internet. https://www.bbc.co.uk/radiosuffolk

BAA news

February - Star Count 2019

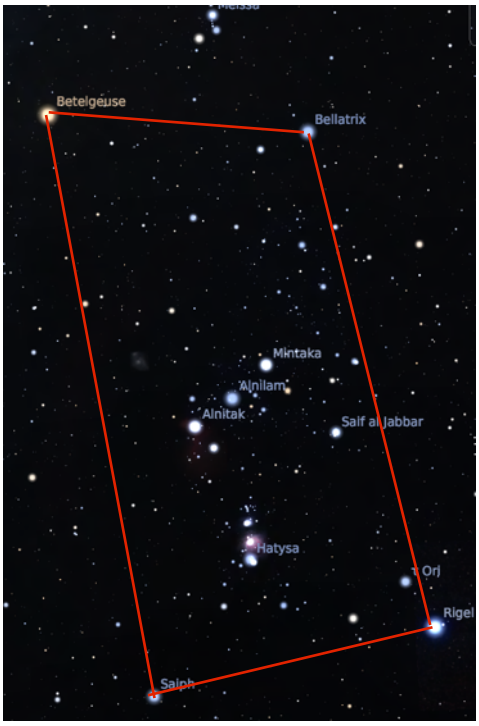


Image credit: Stellarium

We have been joined by the Campaign to Protect Rural England for Star Count 2019. This cosmic census that will help map light pollution across the country.

All you will need to do is to count the number of stars you can see (with the naked eye) within the constellation of Orion.

The national Star Count will take place from **Saturday 2 February until Saturday 23 February**, to give families a chance to take part.

How to take part:

Try to do your count on a night when the sky is clear, with no haze or clouds, then wait until after 7pm so the sky is really dark.

Looking south into the night sky, find the Orion constellation, with its four corners and 'three-star belt'. Take a few moments to let your eyes adjust, then simply count the number of stars you can see within the rectangle made by the four corner stars. You should not count the corners, but you can count the three stars in the middle (the belt).

Count and make a note of the number of stars seen with the naked eye (not with telescopes or binoculars) and then simply complete the online survey form on the CPRE website (will be available at the start of the Star Count).

Share your experiences with others on social media using #starcount2019 @CPRE @BritAstro

Check back to see the national results and see how your area compares to the rest of the country.

[Ed. Also please send your results to OASI News]

BAA meetings in March

Deep Sky Section Annual Meeting

Saturday, 2019, March 23 (All day)

Venue: The 2019 Deep Sky Section meeting will be held in Cheltenham Spa

Special General Meeting and Ordinary Meeting

Wednesday, 2019, March 27 - 17:30

Venue: The Royal Astronomical Society, Burlington House, Piccadilly, London, W1J 0DU

17:30	SGM & OM – BAA President
17:50	Dr Martin Fowler 'Adventures with a robotic telescope - from supernovae to exoplanets'
18:40	Dr Richard McKim - 'Perihelic Oppositions of Mars'
19:30	Nick James: Sky Notes
20:00	Close

Back to Basics 2019 – Hosted by OASIpswich

https://britastro.org/node/14933

Venue: Museum Street Methodist Church, 17 Black Horse Lane, Ipswich, IP1 2EF

Date: Saturday, 2019, 2 March – 09:45 to 18:00

The British Astronomical Association has designed a programme of talks and practical sessions to help you learn basic techniques and develop your interest to its full potential. Experienced people will be on hand to answer your questions.

The programme will cover:

What Equipment you need to get started, Lunar Observing, Observing Planets, Comets and Deep Sky Observing

The cost for the meeting is £9.00 BAA Members & children under 16. £12.00 for non-members. Price includes refreshments and a buffet lunch.

SPACE IS LIMITED SO ALL ATTENDEES MUST PRE-BOOK

Programme times for the day are: -

10:00	Registration – Tea/coffee
10:30	Official welcome – BAA President – Callum Potter
10:35	So what astronomy can I do? – Hazel Collett
10:45	What equipment & books do I need? – Dr Stewart Moore
11:30	Solar observing & Workshop – Peter Meadows
12:15	Lunch
13:40	Orwell Astronomical Society (Ipswich)– Andy Gibbs
14:00	Planet observing & Workshop – Michael Foulkes
14:45	Comets – Nick James
15:30	Afternoon Tea
16:00	Deep Sky observing – Callum Potter
16:45	Feedback, Q&A session & Raffle
17:00	Close.

The Practical Astronomy Show

Date: Saturday 9 March 2019 - 09:30

The Practical Astronomy Show is a free one-day event at the Kettering Conference and Exhibition Centre, Thurston Drive, Kettering, Northamptonshire, NN15 6PB.

There will be free talks about the practical aspects of astronomy, with an emphasis on using and getting the best out of astronomy products.

The show caters for all levels of practical astrophotography and visual astronomy.

Organisations involved in astronomy education, outreach and tourism will be available to meet and greet the general public.

Please note the Practical Astronomy Show is not run by the BAA, but the BAA will be present as an exhibitor.

Aurora Expedition 13th January 2019 or "Soup and Snow"

Hillesøy, Norway – 69° 38′ 1.3″ N 17° 58′ 47.6″ E

Paul Whiting

After an abortive attempt to try to get to the Arctic Lodge Hotel again in the wilds of North Norway (apparently the random 3 hour airport transfers put people off!), I ended up booking an equally nice looking boutique hotel in the Norwegian Lyngen Mountains, ever hopeful of some fantastic auroral displays just a stone's throw from a nice warm hotel bedroom. All was well until the hotel went bankrupt.

So, having booked the flights, airport hotels and train tickets (all at non-refundable "low" prices), I ended up with a last minute booking for 3 nights at a city centre hotel in Tromsø – miles from a good aurora viewing location. I had heard good reports from people going on evening "auroral safaris", which are now big business in Tromsø - very other shop advertises them. So I had also pre-booked one of these safaris for the Saturday night. This was in November. The 60 day weather forecast did not predict the massive snowfall that landed on the whole of inland Europe starting at Tromsø and going all the way to Athens. Luckily most of the snow had fallen in the days before I landed, but ours was the last flight into Tromsø before the airport closed due to blizzards and high winds. This didn't bode well for the next evening's safari.

The bus ride from the airport to the hotel went without hitch, but pulling a heavy case through 3 foot snow drifts to the hotel was not much fun. But Grandma's Soup in the hotel restaurant was a joy to eat: sweet potato soup with carrots and sprouts – wonderful. This certainly made up for being in the land of the midday dark (the Sun doesn't rise for another week or so)!

Saturday dawned. The snow had let up somewhat. The weather forecast was mediocre at best – heavy snow showers, strong winds with some clear periods. 45 of us left on a coach at 6.30pm for a two hour transfer to Takvotn, a Sami camp somewhat south and east of Tromsø. As we drove the blizzard raged around us and the guide was busily trying to manage our expectations: "Unfortunately we don't always get to see the lights", etc.

When we arrived, much to my surprise, there were a few clear patches. I set up the camera and in the 3 hours there I managed to get one shot of a miserable little bit of green (see figure 1).

Figure 1: Feeble excuse for some aurora. 2019 Jan 12
(Nikon D3200 camera with 14 mm Samyang wide-angle lens, ISO 1600, f/5.6)

Still the reindeer soup and lefsa cake went down nicely. Despite the intermittent snow fall the temperature was quite pleasant at only just below freezing. When you were dressed in as many layers as I was in this was positively balmy. I couldn't actually tell it was snowing; the first I realised was when I noticed something odd with the pictures I was taking. On checking the lens I found it was half covered in snow! After two more hours our guide decided to call it a day. Given that we had seen the micro small patch of aurora, this night was going to be claimed by the safari company as part of its 85% success rate. Mmm!

The weather forecast the previous afternoon suggested that the Sunday evening would be quite clear with widespread frost (-7°C). So I took the liberty of booking the same tour on the Sunday evening, receiving as I did a very generous £10 discount. Given the company had a selection of what they termed base camps, this time we headed for a coastal location some 60 minutes away, on the island of Hillesøy. This time we were guests of a farmer, who supplied fish soup and lefse cake. Right from the moment of arrival an auroral arc appeared above the mountain and pretty much remained intensifying and declining for the rest of the evening. So unfortunately there was little time to go and sit by the roaring camp fire. The excellent location for viewing the aurora was only marred by one thing – some of the fellow viewers. Why they think that using a flash will improve their pictures of the aurora beats me. I was also amazed that the best place to stand and stare was always just in front of my camera.

Never-the-less a good night's observing. Three reasonable elapsed frame videos in the can, and a good time had by all. A few of the best shots may be seen below, all taken with a Nikon D3200 camera with 14 mm Samyang wide-angle lens, ISO 1600, f/2.8 with a 6 second exposure.

Figure 2: 2019 Jan 13. Initial offering. Cygnus and Vega clearly visible.

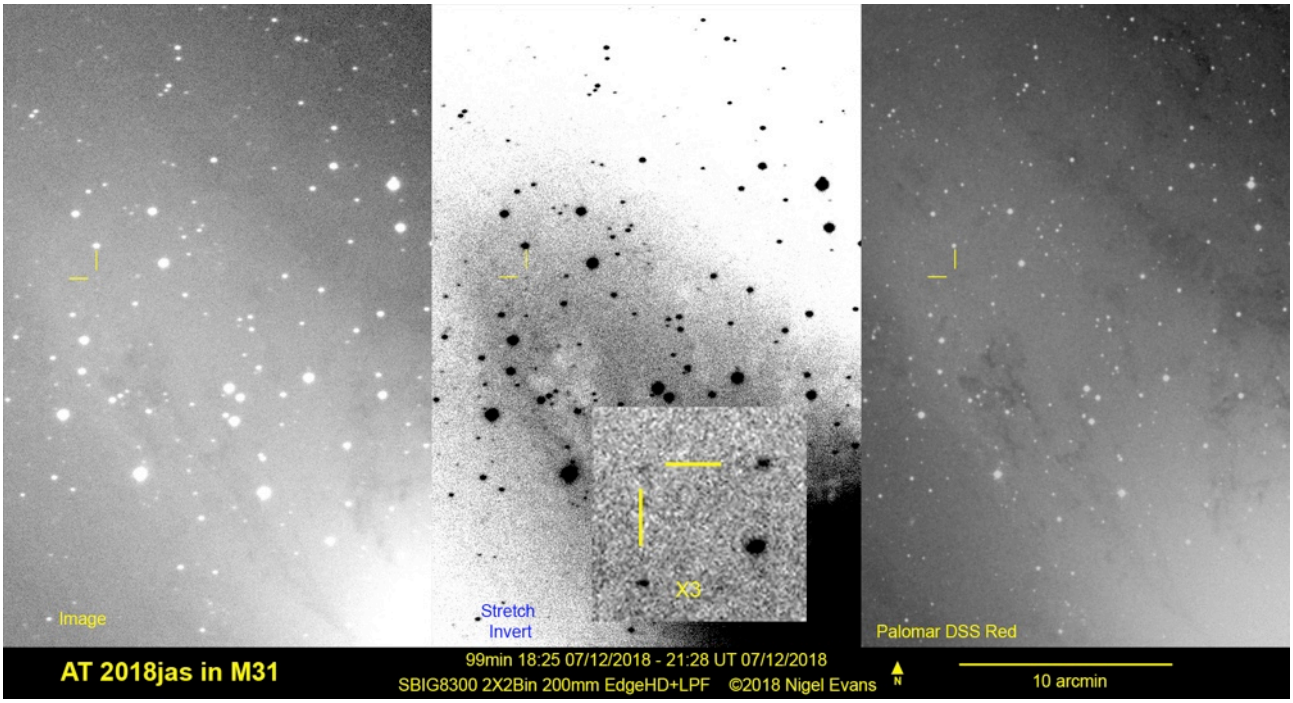
Figure 3: Getting better. This time the Plough is obvious.

Figure 4: Better still. The Plough still in shot.

Figure 5: and then it all starts to fade away.

A Nova in M31

Nigel Evans



A nova was recently reported in M31 https://britastro.org/node/16532

As M31 is virtually overhead at sunset I thought I would give this a go. A fair number of images were lost due to cloud and poor guiding.

Hmm, it really is at the limit of what I can detect, and only know it is a new object because somebody else said so.

Wouldn't It Be Good If.. (Thoughts on the Inverse Square Law)

Bill Barton FRAS

Anything that starts from a point and radiates to fill a spherical space in the universe is said to follow the 'Inverse Square Law'. That is, the intensity of the radiation or gravity field falls off not by the distance from the origin, but by the square of the distance.

Example

Two objects orbit around a star. The second is at double the distance of the first and so it will experience not 1/2, but $1/2^2$ (i.e. one quarter) of the first.

Now wouldn't it be good if there were some examples where the maths worked out to give an interesting result?

To set the benchmark, the Earth experiences a certain level of sunlight and orbits at one Astronomical Unit (AU) from the Sun, thus $1/1^2 = 1$.

Now

$0.7^2 \approx 0.5$, $1/0.5 = 2$. If there was a planet which orbited the Sun at 0.7 AU it would experience sunlight twice as bright as we receive here on Earth. There is such a planet and it is Venus.

$0.3^2 \approx 0.1$, $1/0.1 = 10$. The planet which orbits the Sun at 0.3 AU is Mercury, from which the Sun appears ten times brighter than on Earth

$10^2 = 100$, $1/100 = 0.01$. This is the planet Saturn where daylight is only 1% of what we are used to.

$33^2 \approx 1000$, $1/1000 = 0.001$. Here we find the outermost of the major planets, Neptune and light is only 0.1% of that the Earth receives.

On the 1st January 2019 the 'New Horizons' spacecraft flew passed the object popularly known as Ultima Thule some 43.4 AU from the Sun where the light levels would have been some 0.05% that of the terrestrial value.

Comet 46P Wirtanen

Martin Cook

Photo of Comet 46P Wirtanen taken on the 7-12-2018 at 21:00hr.

Canon 1100d 1600 iso. 10sec.

Strong wind and light pollution from Ipswich hospital didn't help.

The comet is currently in the constellation of Eridanus and could be seen with a pair of binoculars.

Lunar Eclipse 21 Jan 2019 – Reports

Nigel Evans

This early morning eclipse was going to be the first that I had seen from my observatory, although the latter stages would be hidden by the house. For once the last minute weather forecast promised sub-zero clear skies all night for this part of the UK, with clouds coming from the north at daybreak. The intention was to record it using a Celestron C8HD with a full frame camera, a Sony A7S. Another camera a drive would be set up elsewhere where a longer view of the eclipse would occur.

The partial eclipse was scheduled to begin at 03:33 GMT, however at around 02:20 a cloud bank appeared from the north. The Moon was still clearly visible but entire sky had become full of cloud. At this point the secondary camera was packed away, but the main scope diligently kept following the moon. By 03:15 this cloud bank had moved on and the sky became clear again. At this point I started to record the Moon every 10 seconds – the Moon was still bright so low ISO speeds were sufficient. As the Moon moved into the umbra the exposures and the ISO values were increased. By mid-totality 05:12 the exposures were 1.6seconds at ISO12800 on an F/10 instrument. I could see that I would not record the end of totality before the moon disappeared behind the roof of my house. With some 5 minutes to go the Moon rapidly slipped from view – I could not fathom out what had happened and had to go outside to see that another cloud bank had come in from the north. The clouds had arrived early and that was the premature end of my eclipse experience.

The eclipse was not particularly deep (it did not go through the centre of the Earth's shadow) but I did feel that it was quite a dark eclipse. But with the wonders of digital cameras this is what mid-totality looked like. This is uncropped.

Mike Harlow

The lunar eclipse on 21st January this year was the last chance to see the complete total phase of a lunar eclipse from the UK until 20th December 2029. There are other total lunar eclipses before then but, on 16th May 2022, the Moon sets during totality and on 7th September 2025 it rises part way through totality, both presumably in twilight [1]. So it was worth getting up early in the morning and going out in the freezing conditions to see this one.

I got up at 2:30am and was outside by 3am to see a completely clear sky and bright full Moon.

Equipment

Figure 1. Eclipse camera mounted on the main telescope 'tube'

The Moon was in the western sky and couldn't be observed with my main telescope. The run-off roof of the observatory slides off to the west and obscures the view of objects low down in that direction. However, the telescope's hexagonal tube with aluminium poles make it easy to attach other equipment so the eclipse camera was clamped to the top of the tube pointing west and easily cleared the observatory roof. The main telescope just became an equatorial platform for the camera. Figure 1 shows the set-up which comprises a Canon 550D DSLR with a 500mm fixed F/8 Tamron mirror lens. The camera is connected to an old laptop so exposure times and ASA settings can be set and the shutter opened from the on screen control panel using the mouse.

The Eclipse

The partial phase started at 3:30am but even before then the proceeding side of the Moon had started to fade. As the eclipse progressed, more and more of the moon entered the Earth's shadow as shown in the composite image in Figure 2. Initial exposures were just 1/1000th second at 200ASA but had to be gradually increased to compensate for the fading moonlight. A longer exposure deep in the partial phase started to reveal the orange/red colour of the fully eclipsed part of the Moon.

Figure 2. Four images of the partial phase of the eclipse.

Totality started at 4:41am by which time the red colour of the eclipse was very apparent, the sky was very dark and all the night time stars and constellations became visible. At this point I started taking longer exposures. Initially at 200ASA with exposures up to 15 seconds to get some nice images of the Moon itself, but I also took a few at ASA3200 to pick out the background stars. With 15 seconds at 3200ASA stars to 13th magnitude were imaged next to the limb of the totally eclipsed Moon. See Note [2] below.

At 5:12am (UT) I took the image shown in Figure 3 of the Moon at mid-totality.

Figure 3. Mid-totality at 5:12 am 21st January 2019. 15 seconds at 200ASA

The star near the Moon at top right is magnitude 7.7 SAO97570 (spectral type F8).

Soon after this I switched to a wider angle 55mm lens to look at the star field near the eclipsed Moon. Figure 4 is an approximately 10 x 7 degree field in Cancer showing the Beehive star cluster, M44, 7.4 degrees from the Moon and the bright orange star (spectral type K0) delta Cancri just below the cluster.

Figure 4. The stars of Cancer including M44, near the eclipsed Moon.

The full field image revealed two more interesting objects, see Note [3] below.

The total phase ended at 5:44am and soon after that clouds started covering the Moon. By 6:30am the sky was completely overcast so in Ipswich we were very lucky to see the event with many observers further north missing out.

So it was well worth making the effort to get up in the early hours and braving the cold which reached –8°C at eclipse time!!!

Reference + Notes

1. NASA Reference publication 1216: Fifty Year Canon of Lunar Eclipses: 1986-2035. Fred Espinak. Sky publishing corporation, 1989.
2. Time exposures were taken using the 'Bulb' setting on the camera. A piece of card was held in front of the lens and only removed 5 seconds after the shutter was opened. This allowed time for any vibration from the shutter release to die down before the exposure started giving sharp images.
3. Two carbon stars were recorded in the full frame images with the 55mm lens. T Cancri and X Cancri are shown in Figure 5 below. They are examples of stars that are even cooler and redder than red giants and show absorption bands of carbon in their spectra, hence the name. Many carbon stars are known and the Sky and Telescope web site has a comprehensive list at: https://www.skyandtelescope.com/observing/observing-carbon-stars/

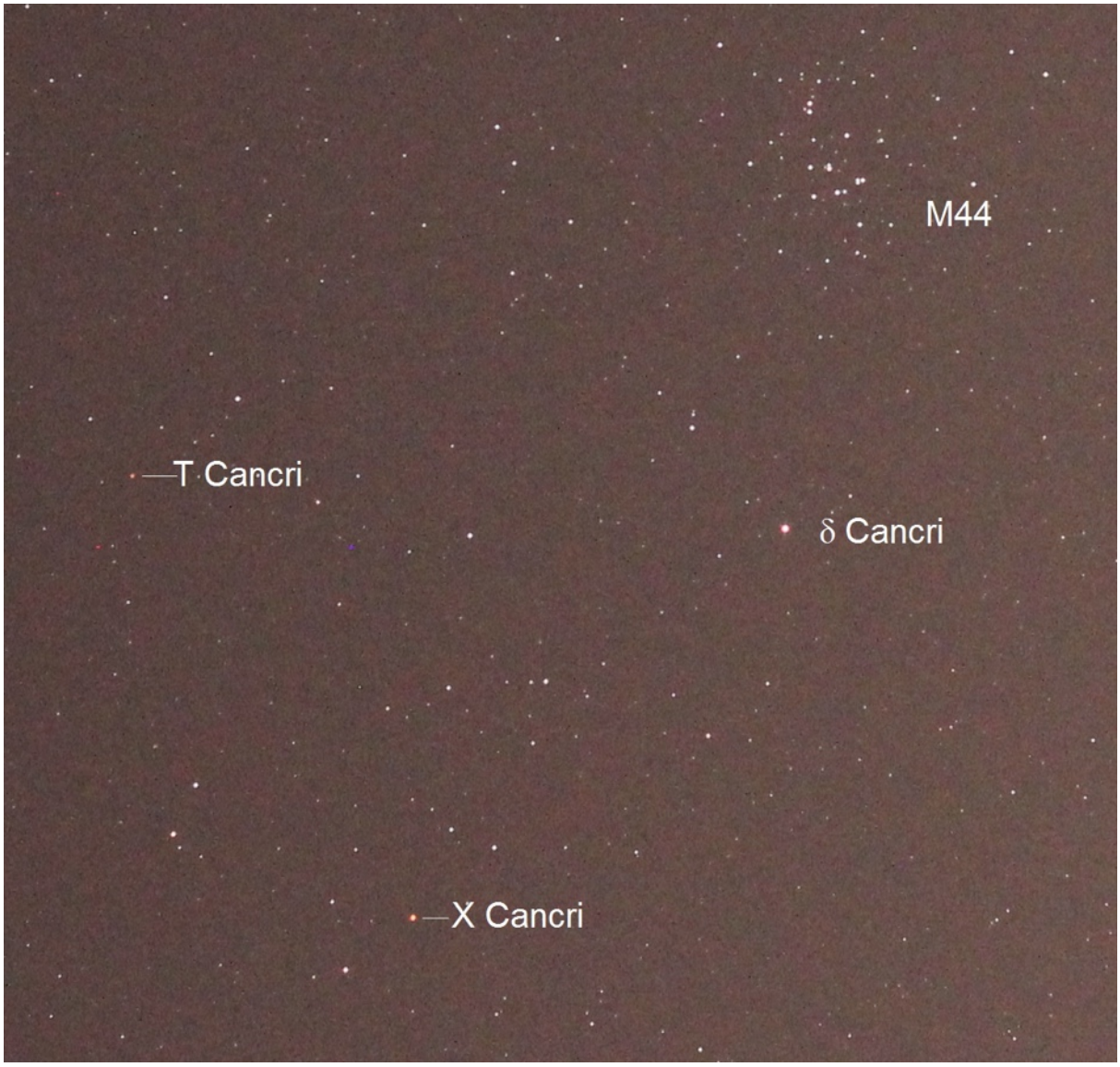


Figure 5. Carbon stars in Cancer. Field ~6 degrees square

Currently, end January, T Cancri is ~ mag 9 and X Cancri is ~mag 7; both are variable. The variable star S Cephei is another example of a carbon star and being at +78° declination can be followed all year round. Well worth a look.

Mike O'Mahony

My image taken at 05:50 UT. It was perfect viewing, quite stunning in fact.

Exposure was 1/30" @ ISO 2500. The exposure was tweaked a little in the RAW image to try and balance over/under exposed areas.

Camera was EOS 60 Da, with F7.5 refractor.

A fantastic evening.

Martin R-H

Canon EOS 500D, 200mm lens. Some focussing issues!

Time 04:45

Time 05:15

Andy Gibbs

I observed and imaged this mornings Lunar Eclipse from 03.30, when the Earth's Umbral shadow started to appear on the face of the Moon, until 05.45, at the end of Totality, when the clouds rolled in.

I used a Canon 1200D with Sigma 70-300mm lens at 300mm. This was mounted on a Skywatcher Star Adventurer Mount. At the beginning of the Eclipse my exposures were 1/125 secs at ISO 200, increasing to 2 secs at ISO 400 during Totality. I took one image every five minutes.

Attached is a image taken at 05.16, which was mid Totality. I have slightly tweaked the image in Photoshop.

I agree with Nigel, it was quite a dark eclipse, certainly darker than the eclipse I observed in 2007.

Pete Richards

I took advantage of the insomnia I've been having recently and I was up anyway and observed it naked eye!

I've seen darker and lighter lunar eclipses in the past. In my own personal observing scale I call it medium brightness :-)

The colour was a nice red. Very picturesque.

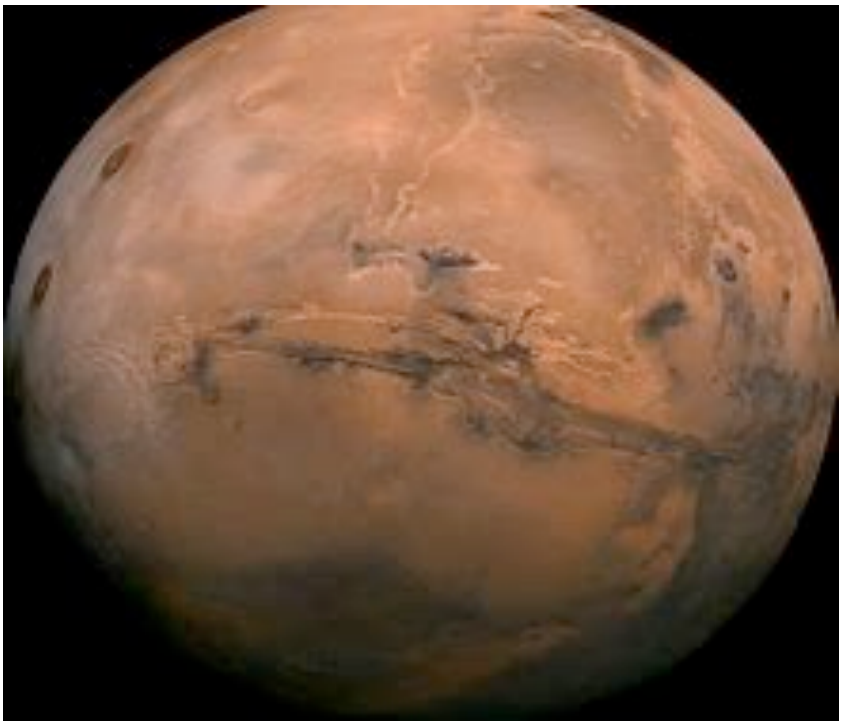
Paul Whiting

I saw the penumbral eclipse briefly at around 3:50, but then we were clouded out until it was all over here in Devon.

What Price, the Destruction of Mars

A New Years note from the library.

Andy Willshere



Photograph Credit:

mars-globe-valles-marineris-enhanced.jpg

During the latter part of the 1960's, it was proved by the United States of America that landing humans upon the moon was a viable option. This was performed by the Apollo 11 crew on 20th July 1969. There were in total six human landings between the years 1969 and 1972, with no soft landings from 1976.

Should we continue with the moon and go back and explore this body? There is mixed feeling from humankind about this. One point is certain, we have the expertise to get there, and if a scientific area was set up, experiments pertaining to further adventure into space could be carried out. This may make shooting for Mars a little safer. The rockets used by the Apollo crew are long gone, with new systems being far more powerful as well as much more capable in all facets of space flight.

We have shifted from science fiction to science possibility and already there are specific factions who are gearing themselves into the ambition of journeying to Mars, establishing a form of colonisation which would include providing food and water from the facilities and utilisation of Martian rock to provide structural support. By the time this journey is considered a scientific possibility, the number of humans on Earth will have exceeded 9.3 billion people. At present it is about 7.5 billion people.

At the moment human beings are possibly decimating their planet causing it to be on the brink of a severe environmental critical point. It is thought that unless the whole planet comes up with specific plans to alleviate these problems, disaster will be the final outcome. The main top problems are pollution, global warming and overpopulation without even considering strip mining of natural products and waste disposal. These issues are considered to be the thin end of the wedge. For almost everything that humans produce, there appears to be a negative perspective.

Should we therefore be considering moving out to another planet in our galaxy. It might be at the time the only option open to humans. At the moment, we all know that unless we change our attitudes to society, the steady destruction of the Earth will continue . So should we allow the human race to destroy somewhere else, or allow colonisation with draconian rules and control.

In 1967 The Outer Space Treaty was considered and signed by the United States of America, United Kingdom and Soviet Union, in order to control space and planetary human expansion, and as of July 2017, 107 countries have signed. This treaty forms the premise of Space law, a legal code managing all space associated affairs, at both international and domestic levels. This covers space exploration, weapons use both above and below water, environmental conservation and moral principles. There is also a section covering the legalistic control of such a law. An

example of this would be criminal and commercial law. The culmination of the 1967 treaty can be found as far back as 1954 at a Chicago Convention which agreed a countries control of its own airspace. Studying the principles of these laws allows the reader to consider whether there is a certain degree of laxness within its framework.

How do we want the control of Mars to be put into operation, for example, would we like countries that have a small foothold on Mars to be able to lay claim to existing geologic areas, or to allow the habitats set up by individual countries/ mining organisations to increase their area of occupation exponentially. The answer to this question would probably be no to both answers, however the OST (Outer Space Treaty) perhaps requires vetting and its pre ordained laws and rules supplemented to make more secure. Already there are various agencies who are gathering information about the structure of Mars. NASA for example, has been investigating the planet by using satellites and rovers, with a paper being written to consider human survival using Martian resources. Essentially this Paper identifies the presently known resources, and the current level of knowledge. This information would make colonisation safer and easier, and also reduce the costs. (Frontier In-Situ Resource Utilization for Enabling Sustained Human Presence on Mars Robert W. Moses and Dennis M. Bushnell Langley Research Center, Hampton, Virginia . NASA STI Program .) Mining robots are another facet of NASA for planetary investigation. In 2013 one system was unveiled called RASSOR (Regolith Advanced Surface Systems Operations Robot), which is now in its second scaled up birth. They are also aligned with another 14 space agencies around the world, with what is described as the 'Global Exploration Roadmap', which is a premise for human involvement in space, involving partnerships with industry. Its corps considerations are to forage for life; increase the time spent by humans away from Earth and expand their numbers; to develop technological advancements and to stimulate commercial activity.

All of the above are perfectly feasible constructs and perhaps should be considered carefully, however should we also reflect on our past history of social malfeasance and perhaps consider that enforced draconian laws may be the way forward towards planetary colonisation.

References:

1. https://en.wikipedia.org/wiki/Outer_Space_Treaty
2. https://www.mining-technology.com/features/featuresands-of-mars-digging-up-the-red-planet-5739297/
3. https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20160005963.pdf

Astrophotography Workshop on 14 January

Andy Gibbs

Image was captured and processed during the Workshop, a small amount of tweaking was applied in Photoshop when I got home.

Equipment used was my QHY 5 II L camera, through an Explore Scientific ED80 CF refractor, 2.5x Barlow, on a Skywatcher Star Adventurer mount. Image captured with Sharpcap 3.1 and processed in Registax 6.

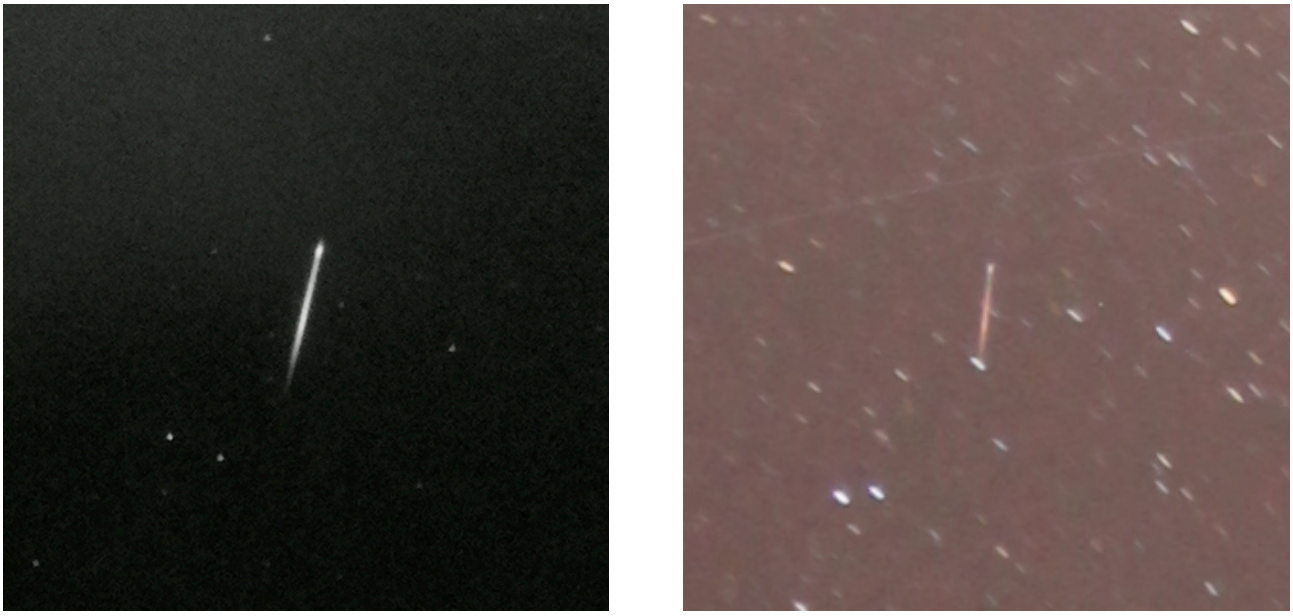
I also processed some Deep Sky images in Photoshop CC 2019 and Mike O'Mahony demonstrated Affinity Photo. (Which is very good and a genuine Photoshop alternative).

https://affinity.serif.com/en-gb/photo/.

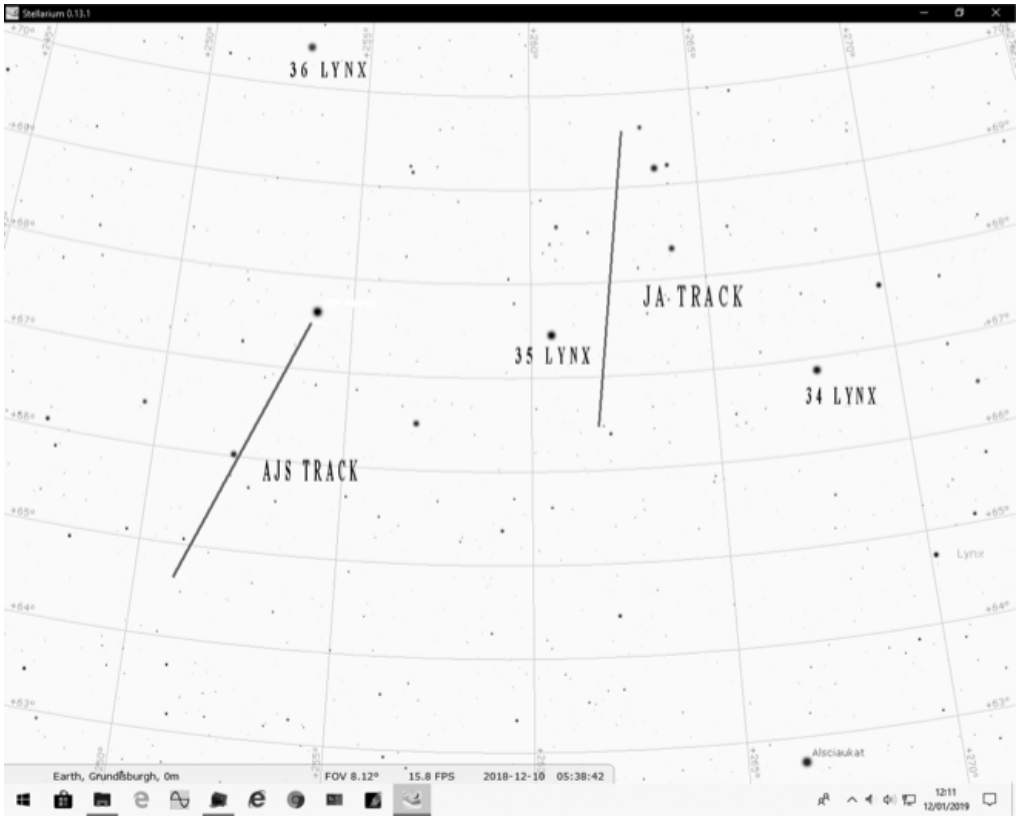
A Suffolk Meteor –The ACME-SCAM all-sky camera network

Alan Smith & James Appleton

On the morning of the 10th of December 2018 at 0538hrs, two all-sky cameras operated by members of OASI captured an image of a bright meteor in the western sky. Although the images were small, it quickly became apparent that they appeared to be in slightly different parts of the sky compared to the background stars. This suggested that the event had taken place quite close to the observers, and that it would be interesting to try and calculate the actual geographical position over which the meteor had appeared.



Images from the all-sky cameras. LH – James; RH – Alan (note faint satellite track).



Plot of the meteor trail from 2 different camera stations.

The cameras were operated by James Appleton (Appleton Camera for Meteor Evaluation: ACME) on the outskirts of Ipswich, and myself Alan Smith (Smith Camera: SCAM), in a village just to the west of Woodbridge. Although each camera is different in terms of 'speed', the meteor seemed to have become visible at the same time in each and ended with an obvious 'terminal' flare. This suggested that the object had entered the Earth's atmosphere at a steep angle, becoming incandescent very quickly, then with thermal stresses exceeding the limits that the object could withstand, exploded in a flash. The whole event would likely have been over in 1-2 seconds, and in any event could not have lasted more than 10 seconds as the image recorded by James had an exposure of only 10 seconds. The colour image captured by my camera showed a definite pink colour for the main 'trail' and a white terminal flare, and the image captured by James seemed to show a small fragment that might have survived the catastrophic terminal explosion, carrying on for a short distance.

The separation of the cameras is quite small, with only about 8 km between them which would usually be considered too small to obtain a reliable estimate of the location of a distant object. However, on this occasion, the event had taken place at almost right angles to the line between the cameras and so gave us a good chance of a reasonable result.

James and I used two slightly different approaches to calculate the path of the meteor. My approach was as follows:

1. I used a freely available computer-based star chart, Stellarium v0.13.1 [1], overlayed with a built in azimuthal grid, to read off estimates of the co-ordinates of the track (altitude and azimuth) directly for my location.
2. James used a freely available image manipulation program (GIMP v2.10.4) to overlay a magnified image of the meteor track and surrounding stars onto a star field image from 'Uranometria' [2]. This allowed him to estimate the Right Ascension (RA) and declination (dec) of points on the meteor trail by regarding the stars as fiducial points. An online resource [3] was used to convert RA and dec into azimuth and altitude bearings.
3. Once the bearings were estimated, plot a straight line from each observing site across the country using Google Earth. Where the lines cross was directly underneath the event. Measuring the distance from the crossing point back to the camera gave the measurement necessary to then calculate the height of the object using simple trigonometry.

James employed the following more complex (and potentially accurate) method -implementation is still under development.

1. Estimate the RA and dec of points on the meteor track as described above (step #2). Astrometric star positions taken from the Hipparcos Catalogue [4] for epoch J2000.0 are adjusted for precession to the equinox and equator of date.
2. Modelling the Earth as an ellipsoid of rotation, first convert the coordinates of the two observers to a Cartesian geocentric Earth-fixed framework then rotate to bring into alignment with a Cartesian geocentric equatorial astrometric coordinate framework.
3. Calculate direction vectors (DVs) from the observers' locations to points on the observed track of the meteor.
4. For each observer, define the mean plane of the DVs calculated as above.
5. The intersection of the planes for the two observers provides an estimate of the track of the meteor.
6. Convert the points on the meteor track just calculated from the frame of calculation back to the geodetic frame of the observers. Of course, there is no easy closed for solution for this (techniques for geocentric to geodetic conversion have been of interest to geographers and astrometrists for decades) so an iterative approach is adopted.

The two approaches give accordant results as follows. The beginning of the event occurred just to the south west of Sudbury close to Bulmer Tye, (Essex), at a height of between 95.8 km and

96.5 km. The terminal flare occurred just to the south of Sudbury, near Little Cornard (Suffolk) at a height of between 71.1 km and 66.4 km.

This meant that the object lost around 28 km of height in only 5.6 km of horizontal distance, at an angle of about 78.6°. Obviously this ignores any effect that the atmosphere may have had on the aerodynamic shape of the object, moving it laterally (unlikely anyway).

Close-up map of the area under the event with ground track.

References

1. http://stellarium.org/
2. Wil Tirion, Barry Rappaport, Will Remaklus, “Uranometria 2000.0: Deep Sky Atlas”, Willman-Bell Inc., 2001.
3. http://convertalot.com/celestial_horizon_co-ordinates_calculator.html
4. Perryman, M. A. C. *et al*, “The HIPPARCOS Catalogue”, Astronomy and Astrophysics, Vol. 323, p.L49-L52.