No. 562 Registered Charity 271313 February 2020

OASI News

The newsletter of the Orwell Astronomical Society

Penumbral Lunar Eclipse

Photo by Roger Driver

Trustees: **Mr Roy Adams** **Mr Neil Morley** **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)	07960 083714
Email queries:	info@oasi.org.uk
Facebook:	Orwell Astronomical
Twitter:	@OASIpswich
https://groups.io/g/OASI	Members-only message board

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 2020

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

Assistants

Martin Richmond-Hardy	Newsletter, OASI @ Newbourne

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.

Annual General Meeting

This was held on **Friday 17 January 2020,** 8pm at Horley Spiritualist Church, 345 London Rd, Ipswich IP2 0BG.

Full report next month.

CommitteeMeeting

This will be held on **Friday 7 February 2020,** 8pm at Horley Spiritualist Church, 345 London Rd, Ipswich IP2 0BG.

Welcome new & returning members

Nicola Rouse	Stephen Dwyer	Jaclyn Thorold
Atlanta Blair	Sam Walsh	Talya Fyne
Returning:	Bruce Bysouth	Jon Styles (r)

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 (bottom right of the calendar) 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

Key:

OASI public events *BAA & SPA events* *Other events*

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
Friday 7 Feb 20:00 Horley Spiritualist Church, 345 London Rd, Ipswich IP2 0BG.	Roy Gooding secretary@oasi.org.uk	OASI Committee meeting
10 Feb 19:00 Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne.
24 Feb 19:00 Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne.19:30 Sky Notes + talk at 19:45 by Paul Whiting "3000 years of eclipses".
Sat 29 Feb. 19.30 to 22.00, set-up from 19.00 Kirton Recreation Ground	Andy Gibbs chairman@oasi.org.uk Martin Richmond-Hardy newbourne@oasi.org.uk	**Star Party** on Kirton Recreation Ground in support of KATCAG https://www.kirtontrimleycag.com/blog
7 March 10:00–17:30 Cottingham, near Hull	https://britastro.org/meetings/2020	*BAA Back to Basics Workshop.*
9 March Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne.
14 March Sheffield, The Diamond	https://britastro.org/meetings/2020	*BAA Deep Sky Section Meeting,*

Date, Time & Location	Contact	Event
15-23 March (TBC)		Haw Wood Spring Star Party
23 March Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne.19:30 Sky Notes + talk at 19:45 by Andy Gibbs on “Poppy” Northcott (former NASA flight cntroller.
25 March 17:00–20:00 Institute of Physics, 37 Caledonian Road, London, N1 9BU	https://britastro.org/meetings/2020	*BAA Special General Meeting,.* Grant Privett “Monitoring Variable Nebulae” Dr Andreu Font Ribera “Studying the expansion of the Universe across time” Sky Notes: Richard McKim
Fri 27 Mar 2020, 19:30-21:00 Easton & Otley College, Otley Campus.	Roy Gooding secretary@oasi.org.uk	**Public access event. Star Party.** Booking not necessary. NB: This event has been postponed from 06 January. The new date is TBC.
Mon 13 Apr from 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne.
Tue 14 Apr 20:15 Orwell Park Observatory	Paul Whiting, FRAS tour@oasi.org.uk	**Public access event. Observatory tour.** Booking essential.
25th & 26th April		Kelling Heath Spring Star Party
Mon 27 Apr from 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. Talk by Bill Barton on the night sky.

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).

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.**

OASI@Newbourne Meetings

13 Jan	27 Jan (S+B)	10 Feb	24 Feb (T+S+B)
9 March	23 March (T+S+B)	13 April	27 April (S+B)
4 May[*]	25 May (B/H) (S+B)	8 Jun	22 Jun (S+B)

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).

* 1st Monday due to Parish Council meeting on 2nd Monday

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 plus a reminder of OASI events.

Astronomy Workshops/Informal talks

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.

- 24 Feb: Paul Whiting: *3000 Years of Eclipses Visible from Orwell Park Observatory*.
- 23 March: Andy Gibbs: *Frances "Poppy" Northcutt (former NASA flight controller).*
- PaulWhiting: *Wartime Astronomy*, date 13 July TBC.

Paul Whiting, Bill Barton and James Appleton have offered to lead workshops as follows:

- Paul Whiting: *Galaxy Collisions*, date TBA.
- Bill Barton: *Celestial Coordinates*, date TBA. New members at Newbourne have requested this workshop; Bill is willing to lead it but will defer if anyone else would rather do so.
- James Appleton: *Update on OASI All-Sky Meteor Cameras*, date TBA.

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

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 Outreach

Kirton Star Party

OASI – Orwell Astronomical Society (Ipswich) – will be holding a Star Party on Kirton Recreation Ground on **29 February** from 7:30pm. This is in support of KATCAG and the concern over light pollution from planned industrial development in adjacent Trimley.

If the evening is cloudy there will be talks and demonstrations of astronomy kit in the Pavilion.

Given a clear sky you can view the Moon, Venus, the Dog star (Sirius), a lion (Leo), a red giant, double stars, nebulae and galaxies through our telescopes.

If you have binoculars or a telescope, please bring them along.

Remember to wrap up warm!

OASI members: Please can you let us know, if you are willing to help out, with or without a telescope.

Other local astronomy society meetings

Athaneum Astro Society

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

DASH Astro

Darsham And Surrounding Hamlets http://dash-astro.co.uk

Meetings are held at New Darsham Village Hall and 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 from 7:30 pm. on Sundays

Note * Guest Speaker Evenings - Admission Fees:- Members Free, Non Members £ 2:00

Meetings are now on Sundays.

09 Feb	**Meeting:- Prof. Michael Rowan-Robinson – Lost Time – When giants roamed the Earth.**
15 Feb	Outreach:- Suffolk Science Festival – Bury St. Edmunds.
23 Feb	Dash Observing Session (Sunset 17:19 Moonset 17:01 0.2% Moon)
08 March*	**Meeting:- Dr. Paul Whiting – Galaxy Collisions**
22 March	Dash Observing Session (Sunset 18:10 Moonset 15.59 3.5% Moon)
05 April	Meeting:- Talk T.B.C.
26 April	Dash Observing Session (Sunset 20:11 Moonset 23:57 11.3% Moon) Late one?
10 May*	**Meeting:- AGM plus talk by Amy Rankine from I of A, Active Galactic Nuclei**
24 May	Solar Observing - Location TBA

14 June	Outreach:- International SUNday - Location Dunwich Heath
25- July	(Saturday) DASH Summer Social (Members and Guests only)
06 Sept	**Meeting:- Ian Lomas - Quantum Mechanics for Beginners**
13 Sept	Dash Observing Session (Sunset 19:14 Moonset 17:46 21.5% Moon)
19&20 Sept	Outreach:- Henham Steam Rally. Solar Observing and Displays
04 Oct*	**Meeting:- Stewart Moore – Globular Clusters**
18 Oct	Dash Observing Session (Sunset 17:50 Moonset 18:57 4.7% Moon)
01 Nov	Meeting:- Talk T.B.C.
15 Nov	Dash Observing Session (Sunset 15:59 Moonset 16.21 0.2% Moon)
29 Nov	Meeting:- Talk T.B.C.
12- Dec	(Saturday) DASH Christmas Social (Members and Guests only)

BAA news

The BAA Christmas Lecture and meeting is available on YouTube. The session gets under way 8.5 minutes in at https://www.youtube.com/watch?v=A8a_BsPN5uw

BAA meetings in March – April

7 March	10:00–17:30 Back to Basics Workshop, Cottingham, near Hull
14 March	Deep Sky Section Meeting, Sheffield, The Diamond.
25 March	17:00–20:00 Special General Meeting, Institute of Physics, 37 Caledonian Road, London, N1 9BU. Grant Privett “Monitoring Variable Nebulae” Dr Andreu Font Ribera “Studying the expansion of the Universe across time” Sky Notes: Richard McKim
3 April	19:00 The 2020 Winchester weekend at Sparsholt College, Winchester
25 April	One Day Spring Meeting - Nottingham

For full details of all meetings please go to https://britastro.org/meetings

Fading Betelgeuse

There has been a lot of news and speculation about the recent fading of the red giant Betelgeuse (Alpha Orionis). Villanova University astronomers Edward Guinan and Richard Wasatonic were the first to report Betelgeuse’s recent dimming. In a new post on The Astronomer’s Telegram, they report a further dimming of Betelgeuse.

https://www.universetoday.com/144694/betelgeuse-is-continuing-to-dim-its-down-to-1-506-magnitude/

Betelgeuse is the second brightest star in Orion, normally with a magnitude of 0.45 (and is the ninth brightest star in the night sky) but currently dimmed to 1.5,. Although Betelgeuse has the Bayer designation α Ori, Rigel (β Ori) is slightly brighter.

The Night Sky in February 2020

Martin RH

All event times (**UTC**) 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
	02 Feb 01:42	09 Feb 07:33	15 Feb 22:17
23 Feb 15:32			

Sun, Moon and planets

Source: http://heavens-above.com/PlanetSummary.aspx **Times are GMT (UTC)**.

Object	Date	Rise	Set	Mag.	Notes
Sun	1	07:36	16:42		
	29	06:42	17:34		
Moon	1	10:43	00:52		
	29	09:05	23:48		
Mercury	1	08:20	17:56	-0.9	Max. eastern elongation Feb 10 Perihelion Feb 12 Inferior conjunction Feb 26
	29	06:13	16:56	3.9	
Venus	1	09:03	20:24	-4	
	29	07:55	21:46	-4.1	
Mars	1	04:37	12:13	1.4	
	29	04:14	11:42	1.1	
Jupiter	1	06:19	13:59	-1.7	
	29	04:49	12:38	-1.8	
Saturn	1	06:57	14:58	0.6	
	29	05:16	13:24	0.7	
Uranus	1	10:10	00:17	5.8	
	29	08:22	22:28	5.8	
Neptune	1	08:56	19:51	7.9	
	29	07:07	18:06	8	

Occultations during February 2020

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(º)	Star Alt(º)	Mag	Star
01 Feb	23:33:49	D	0.48+	-54	11	6.7	ZC 393
02 Feb	17:50:13	D	0.56+	-10	51	7.5	ZC 475
03 Feb	17:37:59	D	0.66+	-8	51	5.9	ZC 610
03 Feb	23:59:07	D	0.68+	-54	27	7.5	ZC 629
04 Feb	01:42:38	D	0.69+	-50	12	6.8	ZC 643
04 Feb	21:41:19	D	0.77+	-44	53	5.3	106 Tau
05 Feb	18:49:51	D	0.85+	-19	52	7.5	Tyc 1324-1719-1
05 Feb	19:27:03	D	0.85+	-24	56	6.4	141 Tau
05 Feb	23:55:10	D	0.86+	-54	46	5.9	ZC 928
06 Feb	02:14:15	D	0.86+	-46	26	3.3	7 Gem, η Gem
	03:04:34	R		-40	18		
06 Feb	03:24:20	D	0.87+	-37	15	7.4	Hip 29867
06 Feb	21:11:15	D	0.92+	-39	59	6.0	44 Gem
07 Feb	21:19:28	D	0.97+	-40	54	5.3	10 Cnc, μ2 Cnc
08 Feb	03:53:44	D	0.98+	-32	27	5.8	ZC 1250
29 Feb	20:47:15	D	0.31+	-30	26	5.6	ZC 454
	21:50:52	R		-37	16		

Grazes during February

James Appleton

Date	Time (UT)	Limb	Dist OPO (km)	Lunar Phase	Sun Alt (°)	Star Alt (°)	Star Azi (°)	Mag	Star
14 Feb	01:19	S	16	0.70-	-49	18	132	6.6	ZC2008
27 Feb	18:37	S	22	0.14+	-11	24	243	7.4	H7156

Grazing lunar occultations.

Figure 1 illustrates the tracks of the grazing occultations through East Anglia. Further information, including plots of the tracks in Google Earth, is on the OASI web site:

http://www.oasi.org.uk/Occs/Occs.php.

Figure 1. Graze tracks, colour coding as follows:

14 February: green **27 February: red** 15 August: yellow 07 November: white.

Meteor showers

Source: BAA Handbook 2020 p100-101

Shower	Normal limits	Maximum	ZHR at Max	Notes
None this month				

For radio observation, use reflections from Graves radar on 143.050MHz or the Brams transmitter in Belgium on 49.97MHz.

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

Visible ISS passes ≥15º max altitude

Martin RH

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

Times are UTC. Predictions are approximate (25Jan) due to craft adjustments. Check the day before.

Date	Bright-ness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Feb	-3.7	17:30	10°	W	17:34	86°	S	17:37	11°	E
01 Feb	-2.7	19:07	10°	W	19:10	43°	SW	19:10	43°	SW
02 Feb	-3.4	18:20	10°	W	18:23	60°	SSW	18:24	27°	SE
02 Feb	-0.6	19:57	10°	W	19:57	13°	WSW	19:57	13°	WSW
03 Feb	-3.5	17:32	10°	W	17:35	72°	S	17:39	10°	ESE
03 Feb	-2.0	19:09	10°	W	19:12	26°	SSW	19:12	26°	SSW
04 Feb	-2.4	18:21	10°	W	18:24	36°	SSW	18:27	15°	SE
05 Feb	-2.8	17:34	10°	W	17:37	47°	SSW	17:40	10°	SE
05 Feb	-0.9	19:11	10°	WSW	19:13	14°	SW	19:15	11°	SSW
06 Feb	-1.2	18:23	10°	W	18:26	19°	SW	18:28	10°	SSE
07 Feb	-1.6	17:35	10°	W	17:38	26°	SSW	17:41	10°	SSE
09 Feb	-0.6	17:38	10°	WSW	17:39	14°	SW	17:41	10°	S
22 Feb	-0.7	05:42	10°	SSE	05:44	12°	SE	05:45	10°	ESE
24 Feb	-1.6	05:42	10°	SSW	05:44	24°	SSE	05:47	10°	E
25 Feb	-1.2	04:55	12°	S	04:57	17°	SE	04:59	10°	E
26 Feb	-0.9	04:09	12°	SE	04:09	12°	SE	04:10	10°	ESE
26 Feb	-2.8	05:42	10°	SW	05:45	43°	SSE	05:49	10°	E
27 Feb	-2.4	04:56	24°	SSW	04:58	32°	SSE	05:01	10°	E
28 Feb	-1.7	04:10	22°	SE	04:10	22°	SE	04:13	10°	E
28 Feb	-3.6	05:43	13°	WSW	05:46	68°	SSE	05:50	10°	E
29 Feb	-3.4	04:57	37°	SW	04:58	55°	SSE	05:02	10°	E

Starlink passes

https://heavens-above.com/AllPassesFromLaunch.aspx

Comets with magnitude brighter than 10

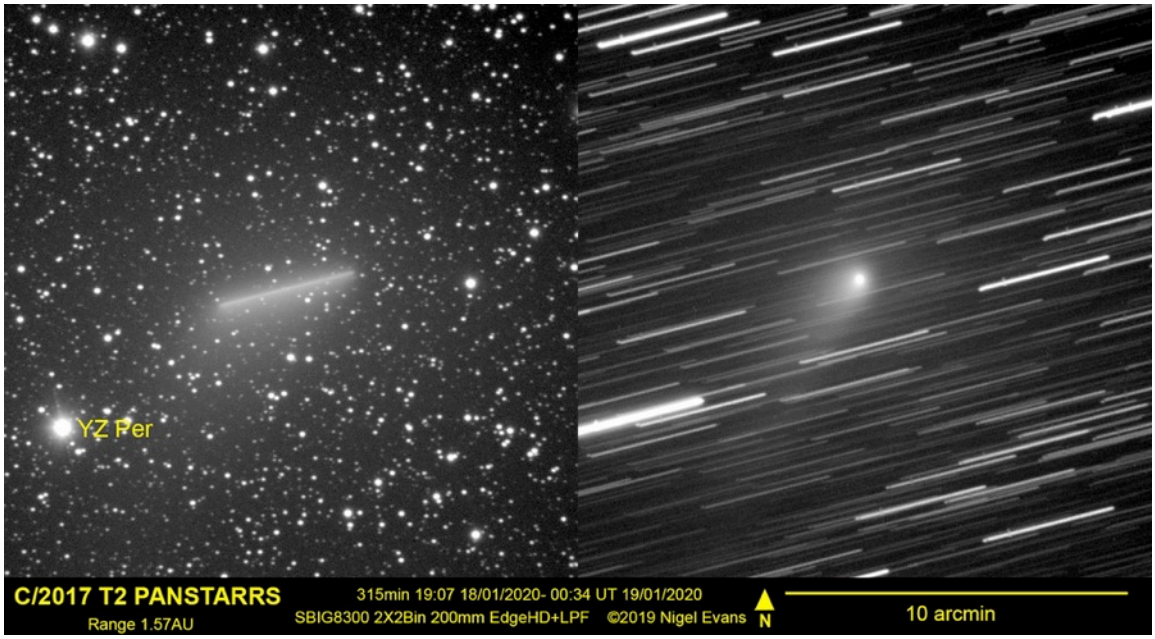
Comet	Brightness	Date of last reported observation	Angular separation from Sun	Altitude	Azimuth	Constellation
C/2017 T2 PANSTARRS	9.5	2020-Jan-13	112°	76.1°	60° (ENE)	Perseus

Comet C/2017 t2 PANSTARRS

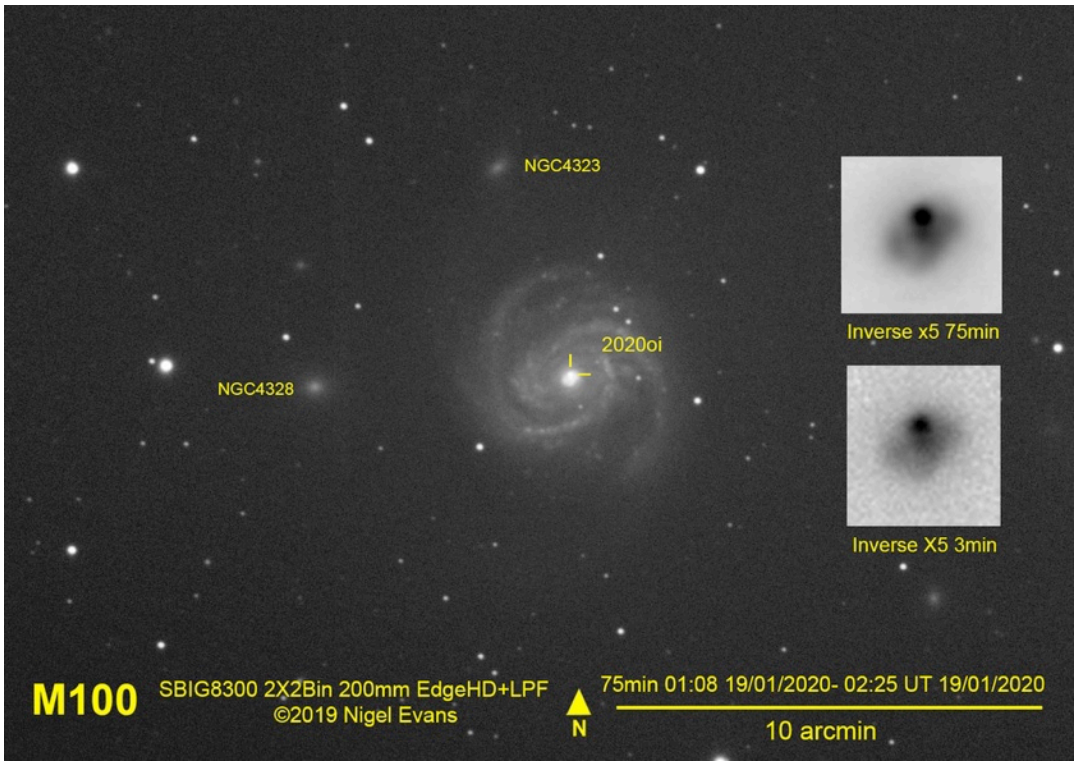
Nigel Evans

The last few nights have had some clear spells. So what is about? C/2017 T2 Panstarrs can be seen after dusk and other things pop up later.

This is currently the brightest comet about at the moment and well placed after sunset at nearly overhead. It is moving very slowly, at less than 1 arcmin per hour, through the stars of Perseus.

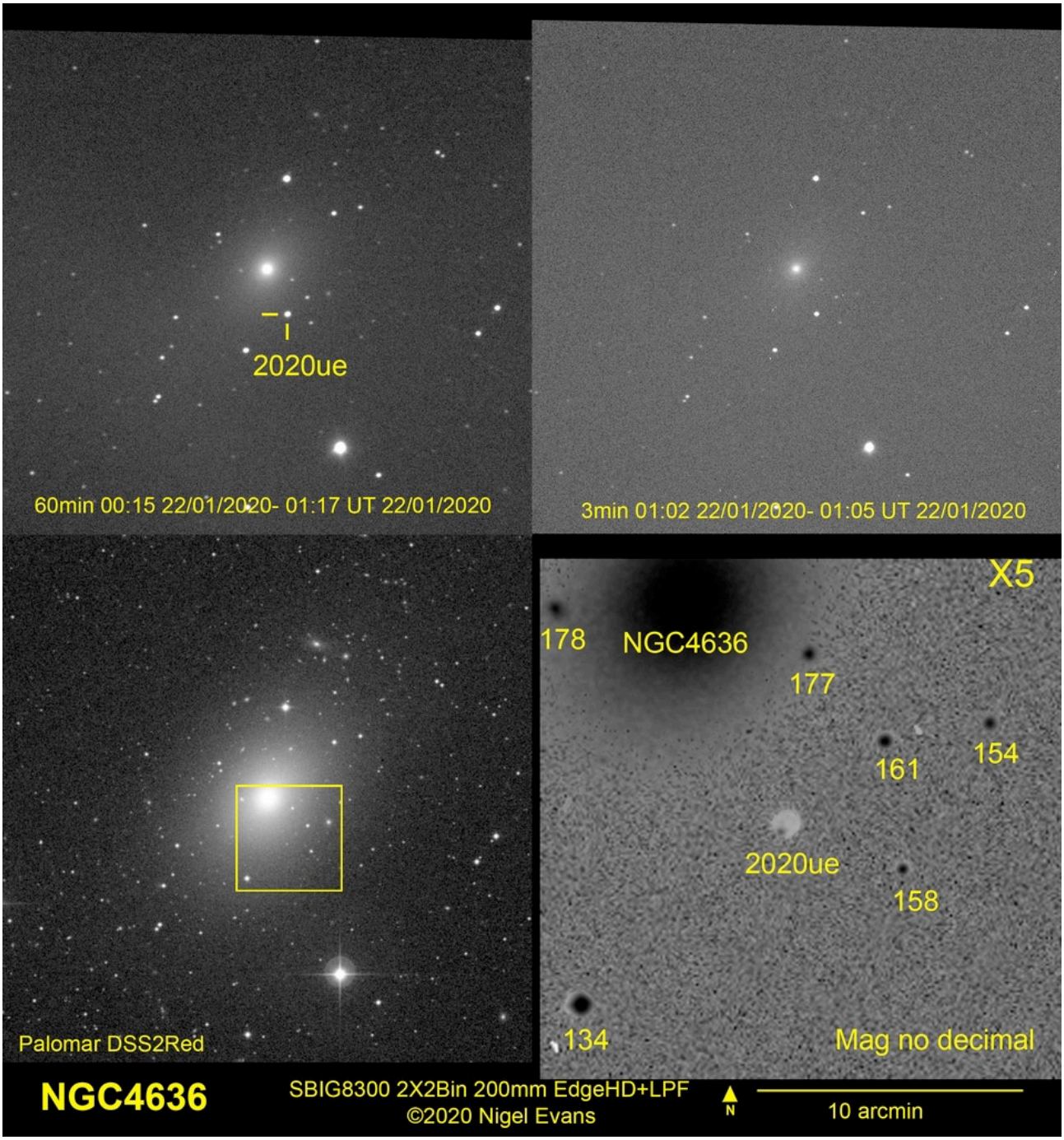


C/2017 T2 Panstarrs



SN2020oi

SN2020oi is a Type 1C supernova a few arcseconds to the north of the centre of M100. Being so close to the centre can make it difficult to distinguish from the bright core itself.



SN2020ue

SN2020ue is a Type 1a supernova much further from the centre of its host galaxy NGC4636. The Palomar DSS image of the same galaxy seems to show a star in the same position as the supernova. However this is not the supernova progenitor in a galaxy some 55 million light years from us, but merely a foreground star. Indeed, overlapping the DSS and the supernova image show that they are not coincident. This can also be seen in the AAVSO finder chart

An Encounter with the Highest Energy Gamma-Ray Burst ever seen.

Info : from the library.

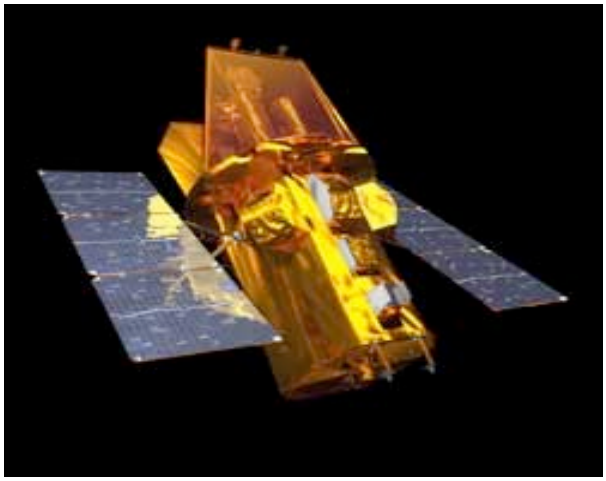
On January 14th 2019 the Gamma-ray burst known as GRB 190114C was recorded in the direction of the constellation Fornax which is situated in the Southern sky with an R.A. of 03h38m and declination of 26^{0}56'. It is a very dense galaxy approximately 2.94 * 1019 miles away from Earth.

Gamma-rays possess the greatest amount of energy of any wave within the electromagnetic spectrum and are comprised of the tiniest wavelengths, and are manufactured by such phenomena as supernova explosions and neutron stars. They have been a prime subject for astrophysical research for over the last half century, with the quality of information being improved by two major facets of investigation. The former is the use of a vast array of new satellites and the latter looks specifically at particular GRB's that have definitive attributes.

Many telescopes detected this event including NASA's Swift and Fermi (Gamma- ray) instruments and the MAGIC (Major Atmospheric Gamma Imaging Cherenkov) systems situated in the Canaries. Hubble was used to study how and why this event occurred, and from the data obtained considered that this GRB occupied a crowded habitat in the centre of a dazzling galaxy 5 billion light years away and thought to be produced by massive supernovas.

For obtaining information about GRB's, Swift is a system comprised of three sections. The first is known as BAT, which is a Burst Alert Telescope, the second is XRT which is an X-ray telescope Wolter 1 and finally UVOT, an ultra violet modified Ritchey-Chrétien scope. The main task of all three is photon counting. BAT can view up-to 16% of the whole sky at any one time, and is the bigger of all three. These systems will view in the gamma-ray, x-ray, optical and ultraviolet wavebands.

On November 20th 2004 Swift was propelled into space via a Delta 7320 rocket as part of NASA's MIDEX (Medium class Explorer) agenda. The moment the BAT system detects a burst, the XRT and UVOT apparatus will align themselves automatically so that all necessary data can be acquired (~ 50 sec.). Once this operation has been performed, the information of where the GRB exists is sent to a network of ground telescopes in real time, in order that many other scientists can view this phenomenon. Swift will also analyse the redshifts for the majority of the bursts giving data about brightness, distance and wavelength light curves.



Picture credit: https://swift.gsfc.nasa.gov

The Fermi telescope is a mix of two instruments, one is Large Area Telescope (LAT) an imaging gamma -ray detector using electron-positron pair conversion ,used for all-sky surveys, the second a function to search and record Gamma-ray bursts (GRB), using 14 scintillation detectors with a sensitivity of 150 KeV to 30MeV. It was launched on 11th June 2008 using a Delta II 7920-H rocket. At this point it was the most responsive gamma-ray equipment in low Earth orbit.

Its main objectives are to dig deeper into active galactic nuclei, supernova remnants and pulsars, and to ascertain how particle acceleration processes occur. It is also equipped to resolve how high energy gamma ray bursts take place and to investigate dark matter and micro black holes.

So, what was spotted by the banks of telescopes gazing into the universe. Well we know that the main cause of this universe gazing was due to the collapsing cores of dying massive stars. GRB's emanate from the kinetic energy conversion of ultra relativistic jet particles to radiation,

launched from these collapsing cores. Initially these are very bright and of highly variable radiation within the kilo to mega electronvolt level. This can last from milliseconds to minutes. Afterglow emissions (synchrotron radiation) are formed by electrons accelerated by the initial shock waves caused by the interaction of the jets with the surrounding gas. This is where the emission between 0.2 and 1 tera electronvolt of GRB 190114 C was noted. At 20:57 Universal time on January 14th the Gamma burst monitor within the Fermi Gamma-ray Space telescope was set off by 190114C, with the SWIFT Burst Alert telescope coming on line at virtually the same time, swinging to an R.A of 54.568^0 and Dec of -26.9467^0 (5 arcsec uncertainty). Insight HXMT was prompted at the same time recording numerous pulse, light curves. A redshift of z = 0.42 was noted. Overall at least 30 viewing and recording facilities observed this phenomena. The time interval that was covered by several of these systems at the same time was approximately 150s. (≈50s to ≈ 200s). Fermi also noted amongst its light curve data two major pulses, the first lasting about 6s post trigger and the second from 15s to 25s.

So we have now detected extraordinarily high energy photons that have plummeted towards Earth at TeV levels, and have been able to calculate from data that this radiation left its origin in Fornax and travelled at 99.99 % the speed of light.

References:

1. https://en.wikipedia.org/wiki/GRB_190114C
2. https://www.nature.com/articles/s41586-019-1750-x
3. http://tevcat.uchicago.edu/?mode=1;id=324
4. https://en.wikipedia.org/wiki/Fermi_Gamma-ray_Space_Telescope#GRB
5. 190114C: An Upgraded Legend. Yu Wang, Liang Li, Rahim Moradi, Remo Ruffini .

Penumbral Lunar Eclipse pictures

Several members took pictures of this eclipse which occurred around 19:10 on Friday 10 January.

Martin Richmond-Hardy

Canon EOS500D (w/o IR block) 200mm lens, f/11 1/125s ISO200.

Filtered and cropped in Affinity Photo.

Andy Gibbs

Three following photos of the Penumbral Lunar Eclipse on Friday 10 January.

Taken at 19.12, (2 minutes after maximum eclipse), 20.12 and 21.12, (eclipse finished).

There is a darkening around the South East Limb of the Moon and the crater Tycho.

Taken with a Canon 1200D attached to a 200mm Meade LX200. Exposures 1/125 sec at ISO 200. (Unfortunately my APS-C sensor does not produce a full disc view of the Moon with this configuration).

Roger Driver

Photographs that I took of the eclipse of the moon on the 10th of January. Photographs 1 and 2 were taken at 19.10 UTC and 3 and 4 were taken 2 hours later. Photos 1 and 3 were taken on Auto White Balance setting while photos 2 and 4 were taken on the Sunny White Balance setting, hence the differing colouration of the two pairs.

The camera was a Nikon D5500 (APS-C sensor) DSLR, attached to a Nikon 200-500mm telephoto zoom lens at 500mm. The lens setting for all 4 photographs were:-

f8 aperture 1/800 shutter speed ISO 200

and all shots were taken handheld, with image stabilisation switched on.

Photo 1: taken at 19.10 UTC, Auto White Balance.

Photo 2: taken at 19.10 UTC, Sunny White Balance

Photo 3: taken at ~21.10 UTC, Auto White Balance.

Photo 4: taken at ~21.10 UTC, Sunny White Balance

Flame and Horsehead Nebulae

Andy Gibbs

A narrowband image of the region surrounding the star Alnitak in Orion, showing the Flame and Horsehead Nebula.

A narrowband image of the region surrounding the star Alnitak in Orion, showing the Flame and Horsehead Nebula.

Dark frames taken on 19-01-20, after an equipment malfunction, then session curtailed by cloud.

Light frames taken on 20-01-20. processed in the Hubble palette, Hydrogen alpha to the green channel, Sulphur II to the red channel and Oxygen III to the blue channel.

Taken with a Atik One 6.0 camera, attached to an Explore Scientific ED80 CF refractor on a HEQ5 mount.

Processed in Atik Dawn and Photoshop CC 2020.