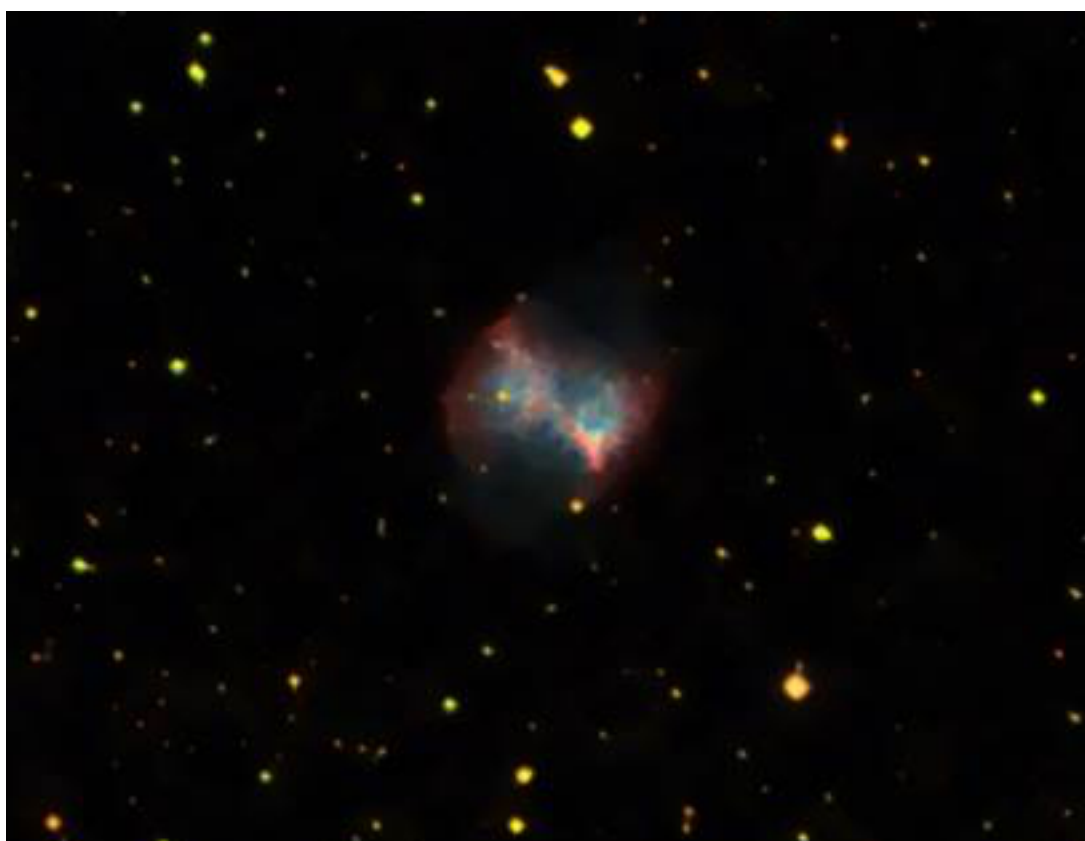




OASI News

The newsletter of the Orwell Astronomical Society



Another session with the Society's Atik Infinity camera. M27 Dumbbell Nebula.

10x 20 seconds exposures integrated. Post processed in Photoshop Elements 11.
Explore Scientific ED80 CF and HEQ5 mount. *Photo: Andy Gibbs*

Trustees: Mr Roy Adams Mr David Brown Mr David Payne
Honorary President: Dr Allan Chapman D.Phil MA FRAS

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Astrophotographs: C9 (Cave) & NGC6888 (Crescent)

by David Murton

Yet more nebulae! Taken over the nights of 20th & 22nd September. First it's the Cave Nebula in Cepheus, otherwise known as C9. 2400 light years away, It's pretty faint and was certainly difficult to find. It gets its name from the dark lane forming the appearance of a cave.





Cave Nebula in Cepheus, otherwise known as C9, wide view with Milky Way

The wide view shows that it is right in the Milky Way with numerous clouds of dust obscuring the stars to one side. It has emission, reflection and dark nebulosity present.



Then its the Crescent Nebula in Cygnus (NGC 6888).

A lot brighter and more compact it is 4700 light years away and was formed by the Central star WR136 shedding its outer envelope. The nebulosity is about 25 light years across.

Both taken with a Canon 60Da camera on a Skywatcher 190MN telescope. Skywatcher NEQ6 mount. Each one consists of 15 No 420 second exposures at ISO 400.

Society Contact details

Observatory (meeting nights only)
07967 519249

Email queries: info@oasi.org.uk

Yahoo group: <https://groups.yahoo.com/neo/groups/oasi/info>

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

Twitter: @OASlpswich

The OASI Facebook pages are now 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, 07967 519249 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

The key to the toilets in the school gym is located in the seating area in the Belvedere room.

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, rtf, 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."*?

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 2017

Chairman	David Murton	Set overall agenda for OASI, Chair committee meetings, Press and publicity, 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, Visits by outside groups, Observatory tours, Public appreciation of astronomy (jointly with Chairman).
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, Twitter
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Avtar Nagra	Newbourne Observing Group
	Matt Leeks	Safety & security, Facebook
Co-opted	Andy Willshire	Librarian

Society Notices

Welcome new members

John Barnet-Lamb Helen Cochrane Richard Knowles Nigel Gage (returning)

Committee Meeting

The next committee meeting will be on **Tuesday 21 November 2017**, Black Horse Public House, starting 8.15pm. Car park accessed off Elm St is free after 8pm.

Contacts

A printed list of Committee and other activity contacts is available from the Secretary or the Observatory. Email links are available in the A4 pdf version of this newsletter.

For general enquiries please email info@oasi.org.uk and your enquiry will be forwarded for action.

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.

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.



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 and 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
Saturday 30 Sept	Department of Physics, University of Birmingham	http://fedastro.org.uk/fas/convention/	FAS Annual Convention and AGM
Monday 2 October	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
Thursday 5 October 23:44–23:59 UT (= 00:44–00:59, 06/10/2017 BST)	TBA		Triton Occults 4UC 410-143659. https://hubble.mit.edu/www.asteroidoccultation.com/observations/NA/
Monday 9 Oct From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
13–14 October	Stoneleigh Park Stoneleigh Road, Kenilworth, CV8 2LZ, England (map)	www.ukastroshow.com	International Astronomy Show
13–20 October	Haw Wood Farm Hinton, Saxmundham Suffolk IP17 3QT	www.hawwoodfarm.co.uk/events/astromers-week/	Astronomers Week
Friday 20 October 19:55 start	Museum Street Methodist Halls,	Pete Richards lectures@oasi.org.uk	Lecture: Dr Sarah Hutton has kindly offered to come to speak to us about "AGNs (Active Galactic Nuclei)".
Friday–Monday 20–23 October	Haw Wood Farm Hinton Saxmundham Suffolk IP17 3QT	www.hawwoodfarm.co.uk/events/family-star-gazing-weekend/	Family Star gazing Weekend

Date and Time	Location	Contact	Event
Monday 23 Oct	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group +Sky Notes
Wednesday 25 Oct	Burlington House, Piccadilly		Annual General Meeting and Ordinary Meeting
Wednesday 25 Oct	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe the graze of V4190 Sgr. More info.
Saturday 28 Oct	Birmingham & Midland Institute	https://societyforthehistoryofastronomy.com	SHA AGM & Autumn Conference
Monday 13 Nov 20:00	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
Monday 13 Nov 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Friday 17 Nov 19:55	Museum Street Methodist Halls,	Pete Richards lectures@oasi.org.uk	Steve Hubbard and Malcolm Brown will be "Talk with ET? We think not."
Tuesday 21 Nov 20:15	Black Horse Public House, Ipswich	Roy Gooding secretary@oasi.org.uk	Committee meeting
Saturday 25 Nov	Birmingham and Midland Institute, Birmingham B3 3BS	https://britastro.org/meetings	Historical Section Meeting 2017
Monday 27 Nov 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group + Sky Notes + Workshop
Saturday 09 Dec 05:30	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe the graze of ZC1522. More info.
Saturday 09 Dec 13:45 for 14:30	King's College London, The Strand, London, WC2R 2LS	https://britastro.org/node/8000	BAA Ordinary Meeting and Christmas Lecture
Monday 11 Dec 20:00	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.
Monday 11 Dec 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group +Sky Notes
Wednesday 13 Dec	Newbourne Fox	Roy Gooding secretary@oasi.org.uk	Christmas Meal
2018			
Tuesday 9 January 20:00	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential.

Date and Time	Location	Contact	Event
Monday 15 Jan 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group + Skynotes
Monday 29 Jan 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Tuesday 13 Feb 20:00	Orwell Park School observatory	Paul Whiting treasurer@oasi.org.uk	Public access event. Observatory tour. Booking essential .

Newbourne Observing Group

Avtar Nagra nog@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).

The Newbourne Observing Group (The NOGs) 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.

The car park at Newbourne Village Hall has recently been much enlarged. OASI donated £100 towards this much-needed improvement.

Newbourne Observation Group Stargazer's guide

On the first meeting each month Bill Barton 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.

NOG Meetings in 2017-18

9th Oct	23rd Oct (S)	13th Nov	27th Nov (S*)
11th Dec			

* 27 November (seven weeks to cover Xmas/New Year)

2018

15th Jan (S)	29th Jan	12th Feb (S)	26th Feb
12th March (S)	26th March	9th April (S)	23th April
14th May	28th May	11th June	25th June
9th July	23th July	13th Aug	27th Aug
10th Sept	24th Sept		

We open up for all meetings at 7pm. Star Guide (S) and Workshops (W) start at 8pm.

Please check the web site diary for any changes during the year.

Astronomy Workshops

Contact Mike Whybray

Location: Newbourne Village Hall IP12 4NP

Doors open at 7:00pm.

Workshops start at 8:00pm

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.

27 November: American Eclipse report-back

After Bill Barton's Sky Notes slot at 8pm, we will have a session for anyone who made it to the 'American' Eclipse in August to share their photos, video and memories of the event with the rest of us. **Paul Whiting** has volunteered to start this off but this is an open invitation to anyone else to chip in as well. You can either let Paul or myself know in advance so we can co-ordinate running order etc. or just turn up on the night armed with a USB stick.

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

These take place in [Museum Street Methodist Halls](#), Upstairs room, Black Horse Lane, Ipswich

Free car parking at venue is 1st-come-first-served so arrive early and allow enough time to go to an alternative car park.

Please arrive on time because the hall is likely to be locked before the lecture commences (at the request of the venue care taker).

20 October NB 19:55 start

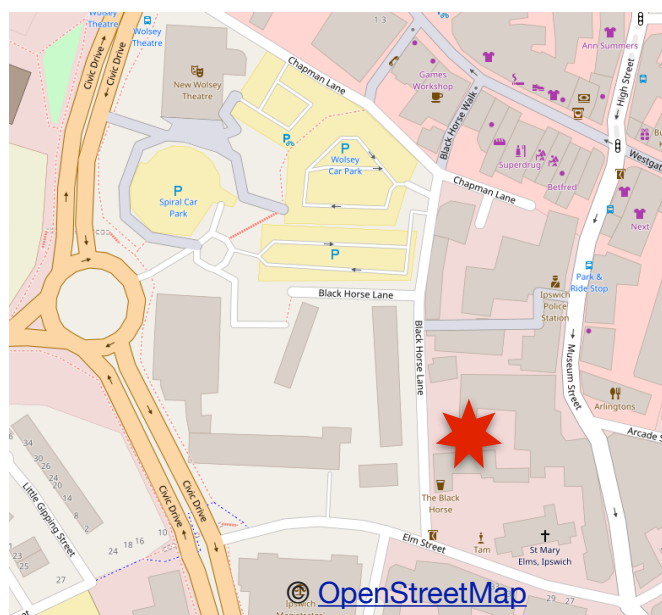
Dr Sarah Hutton has kindly offered to come to speak to us about AGNs (*Active Galactic Nuclei*).

Sarah also studies Galaxy Evolution.

She is a fully qualified teacher and lectures to primary and secondary schools and is very active in promoting the public understanding of science.

17 November NB 19:55 start

Steve Hubbard and Malcolm Brown *"Talk with ET? We think not."*



Parking

Please arrive early to ensure entry to the lecture venue. At the request of the venue's management we will lock the main entrance door before the start of the talk. The lock is a front door latch-type so it will be easy to leave the building (in an emergency for example) but you will not be able to get in.

There is fairly ample car parking at the venue and you can park in any of the marked bays except for the row with numbers painted on the ground, outside the house on the North end of the car park (the left hand side as you look from the road). Just in case you can't find a suitable parking space you can find alternative car parks at the end of Black Horse Lane and in Elm Street. These alternative car parks charge: at the time of writing; the Elm Street car park is cheaper. In both cases remember to select the night rate option at the ticket machine.

Autumn star parties at Haw Wood Farm

October 13 – 23

David Murton

At the public weekend I shall be giving the talk and leading the public opportunities for observing. If you fancy a nights observing (or more) I would welcome any offers of help. Those who did this in the last couple of years will confirm it is really worthwhile and good fun will be had by all!

Also note the serious observing weekend the previous one. I shall be attending both.

Oct 13–20 www.hawwoodfarm.co.uk/events/astronomers-week/

Oct 20–23 www.hawwoodfarm.co.uk/events/family-star-gazing-weekend/

DASH Astro Events – 2017

See <http://dash-astro.co.uk> for the latest details.

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



Date	Event
September	
30	Meeting - Members Talks - 4 Short talks by members on various subjects.
October	
14	Breckland A.S. Star Party - Haw Wood Farm
28	International Observe the Moon Night - Westleton Village Hall, Moon set 00:17 (29th) 68%
November	
11	Meeting - Paul Webb - Beginners Equipment - with Q&A "Ask the Panel"
18	Dash Observing / Workshop Session - Westleton Common / Westleton Village Hall

The Yearbook of Astronomy 2018

This will be published on 30 November 2017 and is available at a discounted price (with free delivery within the UK) to Astronomical Societies who wish to order 4 or more copies.

For further details contact Tara Moran, Marketing Executive at Pen and Sword Books

psmarketing@pen-and-sword.co.uk

Individual copies of the 2018 edition can be pre-ordered by following this link:

www.amazon.co.uk/Yearbook-Astronomy-2018-Brian-Jones/dp/1526717417

Tim Peake's latest book – *Ask an Astronaut*

It is still possible to pre-order a signed copy of Tim Peake's latest book at Waterstones.

<https://www.waterstones.com/book/ask-an-astronaut-signed-edition/tim-peake/9781785173967>

The Night Sky in October

Martin RH

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

NB GMT returns on Sunday 29 October

Times are UK clock time (BST/GMT) on the given date unless otherwise stated.



Moon

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

New Moon

1st Quarter

Full Moon

Last Quarter

19 Oct 20:12

27 Oct 23:22

05 Oct 19:40

12 Oct 13:26

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	06:56	18:32		
	31	06:48	16:28		
Moon	1	16:55	01:34		
	31	15:17	01:37		
Mercury	1	06:20	18:28	-1.3	Superior conjunction Oct-08
	31	08:19	16:43	-0.4	Aphelion Oct-29
Venus	1	04:36	17:54	-3.8	Perihelion Oct-03
	31	05:09	16:00	-3.8	
Mars	1	04:52	17:58	1.8	Aphelion-Oct-07
	31	03:42	15:31	1.8	
Jupiter	1	08:50	19:07	-1.5	Superior conjunction Oct-26
	31	06:29	16:21	-1.5	
Saturn	1	13:44	21:32	0.5	
	31	10:58	18:43	0.5	
Uranus	1	19:02	08:47	5.7	Opposition Oct-19
	31	16:02	05:42	5.7	
Neptune	1	17:49	04:28	7.8	
	31	14:50	01:27	7.9	

Asteroids

Source: <http://heavens-above.com/Asteroids.aspx>

Asteroid	Brightness	Altitude	Constellation
4 Vesta	7.8	40.7°	Virgo
1 Ceres	8.8	28.8°	Cancer

Occultations during October 2017

James Appleton

The table lists occultations during the month under favourable circumstances. The event 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. Add an hour for BST.

Date	Time (UT)	D/R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
03 Oct 2017	22:13:34	D	0.96+	-39	30	4.9	92 Aqr, χ Aqr
14 Oct 2017	02:58:26	D	0.32-	-31	27	5.7	63 Cnc, α^2 Cnc
	03:54:45	R		-23	35		
28 Oct 2017	19:01:17	D	0.58+	-23	21	6.7	ZC 3091
29 Oct 2017	19:30:56	D	0.68+	-28	24	7.5	Hip 108647
29 Oct 2017	22:31:02	D	0.69+	-49	14	7.5	ZC 3231
30 Oct 2017	20:44:05	D	0.77+	-39	28	6.7	ZC 3355

On 25 October at 18:07 UT, there is a southern limit graze of the magnitude 6.4 star V4190 Sgr. Details are on the OASI website: www.oasi.org.uk/Occs/Occ_summary_2017.php.

An observing trip will be organised if weather conditions are favourable: details will be provided via the OASI email list.

Stellar Occultation by Triton 5 October 2017

An observing challenge for those with telescopes of ≥ 14 in (350mm) aperture. See the article in the BAA Journal 127, 4, August p.194 and the North American Asteroidal Occultation Program www.asteroidoccultation.com/observations/NA/
<https://hubble.mit.edu>

Meteor Showers

Source: BAA Handbook 2017 p97-99

Shower	Limits	Maximum	ZHR at Max	Notes
Piscids	Sept – Oct	Sept 9 Sept 21 Oct 13	10 5 ?	A multiple-radiant ecliptic complex with low rates
Orionids	Oct 16–30	Oct 21–23	25	Fast meteors, many with persistent trains. Flat maximum with several sub-peaks. Good in 2007. Very favourable

Visible ISS passes $\geq 15^\circ$ max altitude

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

Times are BST. Predictions are approximate (data taken on 23 September) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Oct	-3.7	19:52:27	10°	WSW	19:55:41	59°	SSE	19:57:10	28°	E
01 Oct	-1.1	21:28:48	10°	W	21:29:48	18°	W	21:29:48	18°	W
02 Oct	-3.2	19:00:11	10°	SW	19:03:18	43°	SSE	19:06:28	10°	E
02 Oct	-3.7	20:36:22	10°	W	20:39:24	74°	WSW	20:39:24	74°	WSW
03 Oct	-3.9	19:43:56	10°	WSW	19:47:12	78°	S	19:48:57	25°	E
03 Oct	-1.3	21:20:23	10°	W	21:21:35	21°	W	21:21:35	21°	W
04 Oct	-3.7	18:51:31	10°	WSW	18:54:46	64°	SSE	18:58:02	10°	E
04 Oct	-3.9	20:27:55	10°	W	20:31:05	81°	SW	20:31:05	81°	SW
05 Oct	-3.9	19:35:25	10°	W	19:38:42	86°	SSW	19:40:36	24°	E
05 Oct	-1.4	21:11:54	10°	W	21:13:14	22°	W	21:13:14	22°	W
06 Oct	-3.8	20:19:24	10°	W	20:22:41	70°	SSW	20:22:43	70°	S
07 Oct	-3.8	19:26:54	10°	W	19:30:11	82°	S	19:32:12	21°	E
07 Oct	-1.4	21:03:25	10°	W	21:04:50	21°	WSW	21:04:50	21°	WSW
08 Oct	-3.4	20:10:51	10°	W	20:14:02	49°	SSW	20:14:21	47°	S
09 Oct	-3.6	19:18:18	10°	W	19:21:34	65°	SSW	19:23:52	18°	ESE
09 Oct	-1.3	20:55:04	10°	W	20:56:31	18°	WSW	20:56:31	18°	WSW
10 Oct	-2.5	20:02:19	10°	W	20:05:17	31°	SSW	20:06:05	27°	S
11 Oct	-2.9	19:09:41	10°	W	19:12:51	44°	SSW	19:15:43	12°	SE
12 Oct	-1.5	19:53:59	10°	W	19:56:23	19°	SW	19:58:04	13°	S
13 Oct	-2.0	19:01:07	10°	W	19:03:59	28°	SSW	19:06:50	10°	SSE
15 Oct	-1.0	18:52:49	10°	W	18:54:59	17°	SW	18:57:09	10°	S
31 Oct	-1.0	05:26:56	10°	S	05:29:08	17°	SE	05:31:21	10°	E

Iridium flares

Too many to list but see <http://heavens-above.com/IridiumFlares.aspx>

Iridium Satellites Keep the Fireworks Coming ... but Not Forever – Astro Bob

Paul's Astronomy Podcast for October

Paul Whiting FRAS Podcast, October 2017 www.oasi.org.uk/Podcasts/201710_pod.mp3

Bill's Radio Broadcast

ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. 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. www.icrfm.com

David's Radio Broadcast

On the 1st Tuesday of the month, 1.40pm on the Lesley Dolphin show on BBC Radio Suffolk.

Snippets from the Royal Astronomical Society

10 Oct 2017: RAS Public Lecture: Photographing the Universe

Photographing the Universe

Dr Marek Kukula, Public Astronomer, Royal Observatory Greenwich

1. Start Time: 10 Oct 2017 - 13:00 End Time: 10 Oct 2017 - 14:00
Venue: Geological Society Lecture Theatre - no booking required
2. Start Time: 10 Oct 2017 - 18:00 End Time: 10 Oct 2017 - 19:00
Venue: Royal Astronomical Society Lecture Theatre - booking via Eventbrite -
www.eventbrite.co.uk/e/photographing-the-universe-tickets-37647194773

Both venues are at Burlington House,
Piccadilly
LONDON W1J 0BG

Snippets from the Interweb

NASA's OSIRIS-REx Spacecraft Slingshots Past Earth

NASA's OSIRIS-REx asteroid sample return spacecraft successfully used Earth's gravity to slingshot itself on a path toward [the asteroid Benu](#), for a rendezvous in August, 2018. At 12:52 p.m. EDT on Sept. 22, the spacecraft came within 10,711 miles (17,237 km) of Antarctica, just south of Cape Horn, Chile, before following a route north over the Pacific Ocean. As a result of the flyby, the velocity change to the spacecraft was 8,451 miles per hour (3.778 kilometers per second).

Cassini Spacecraft Ends Its Historic Exploration of Saturn

NASA's Cassini spacecraft made its final approach to Saturn and [dove into the planet's atmosphere](#) on Friday, Sept. 15. Loss of contact with the Cassini spacecraft took place on Sept. 15 at 7:55:46 a.m. EDT (4:55:46 a.m. PDT).

- [Cassini's Final Images](#)
- [Image Gallery: Cassini Highlights](#)
- [Download: Cassini eBook](#)
- [Video: Cassini's Last Looks at Saturn](#)

Amateur Astronomical Observatories

Examples of small observatories that individual amateur astronomers have built for personal use.

<http://obs.nineplanets.org/obs/obslist.html>

The Faulkes Telescope Project

The Faulkes Telescope project provides access to a global network of robotic telescopes and supplies free resources for science education.

<http://www.faulkes-telescope.com>

BAA News

BAA Diary Dates

7 October 2017	Back to Basics Workshop in Kings' Lynn Norfolk. Highly recommended for all new astronomers. The line up of speakers is now confirmed. Please note that the venue had to be changed. It is now King's Lynn Academy, Queen Mary Road, King's Lynn, Norfolk, PE30 4QG
25 October 2017	Annual General Meeting and Ordinary Meeting in Burlington House, Piccadilly. The season starts again. Put this one in your diary for later.
25 November	Historical Section Meeting 2017 Birmingham and Midland Institute, Margaret St, Birmingham B3 3BS
09 December	Ordinary Meeting and BAA Christmas Lecture BAA MEMBERS & MEMBERS OF BAA AFFILIATED SOCIETIES and under 16's BOOKED BEFORE 20TH NOVEMBER – FREE NON-MEMBERS and anyone booking thereafter £5.00

For full details of all meetings please click -<https://britastro.org/meetings>

More interesting astronomical data from the dark cellars of the library:

Andy Willshire.

Exoplanet WASP-121b: Hubble finds a glowing water atmosphere.

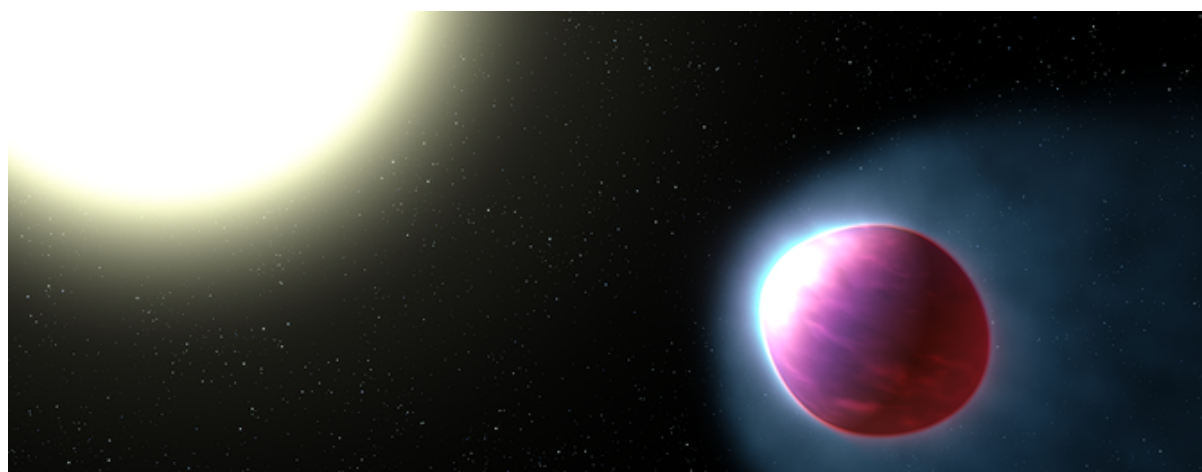


Illustration: NASA, ESA, and G. Bacon (STScI)

Evidence has been found for a stratosphere to exist on a planet orbiting another star. On Earth the stratosphere is the second major layer of our atmosphere, and is situated just above the troposphere. It contains approximately 20% of the atmosphere's mass. The higher the stratosphere goes, the warmer the layers get, which is due to the absorption of the Sun's ultraviolet radiation by the ozone layer. Conversely in the troposphere, temperature decreases with altitude. In mid latitudes the stratosphere starts approximately at 1058m to 13106m.

WASP 121b was discovered in 2015 and orbits the star WASP-121, which has an effective temperature of 6460 (+/- 140.0) K. It operates at a distance of 900 light years from Earth and is a gas giant exoplanet normally called "a Hot Jupiter".

This discovery was made by an international team of researchers led by the University of Exeter, using the Hubble Space Telescope Wide Field Camera and observing glowing water molecules in the atmosphere of WASP 121b. Time series spectra were obtained covering the 1.1 to 1.7 μm

wavelength range. Spectroscopy was used to analyse how the brightness of the planet changed at contrasting wavelengths of light. In the planets atmosphere, water vapour will respond predictably to the contrasting wavelengths of light, which is in turn water temperature dependant. Spectroscopic light curves were obtained by summing each WFC3 spectrum across the 1.122 - 1.642 μm wavelength range. The water molecules in WASP 121b's atmosphere gives off infrared light radiation as they lose energy. This infrared radiation emitted from a planet gives data about both chemical composition and vertical temperature profile of its atmosphere, the molecular features of which can be observed in emission. One facet of starlight is its ability to enter into a planet's atmosphere, which causes the gas temperature to rise. The heat formed is then radiated into space as infrared light. If however cooler water vapour is formed at the top of the atmosphere, some wavelengths are prevented by the water molecules from entering space. Conversely if the water molecules are hotter at the top of the atmosphere, light will be given off as a glow at the same wavelengths. As the temperature increases with height, light emission from water occurs.

Theoretical examples advocate that stratospheres may define a special class of very hot exoplanets, which generate significant implications for the atmospheric physics and chemistry.

Ozone traps ultraviolet radiation from the Sun in Earth's atmosphere, which subsequently raises the temperature of this layer of atmosphere. On Jupiter and Saturn, methane is responsible for heating their stratospheres. On Titan for example, the stratospheric rise in temperature is only 100 degrees Celsius, on WASP121b this temperature rises by 1000 degrees Celsius. Up to this point, it has not been fully elucidated what is causing this massive temperature rise, and therefore more research will be necessary to observe at different wavelengths. It is suggested that vanadium oxide and titanium oxide gases are nominees for the heat source, similarly seen in brown dwarfs, which have some commonalities with exoplanets. Both these gases were noted in the emission spectrum for WASP-121b. Due to the definitive spectral features viewed in emission it can be considered to be the first exoplanet with a stratosphere. This is the first time that glowing water molecules have been spotted, and can be considered as one of the missing links for scientists studying hot exoplanets.

References:

1. DETECTION OF H₂O AND EVIDENCE FOR TiO/VO IN AN ULTRA-HOT EXOPLANET ATMOSPHERE, Thomas M. Evans, David K. Sing, Hannah R. Wakeford, Nikolay Nikolov, Gilda E. Ballester, Benjamin Drummond, Tiffany Kataria, Neale P. Gibson, David S. Amund and Jessica Spake. School of Physics, University of Exeter, EX4 4QL Exeter, UK;
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4. Astrophysics Research Centre, School of Mathematics and Physics, Queens University Belfast, Belfast BT7 1NN, UK
5. Department of Applied Physics and Applied Mathematics, Columbia University, New York, NY 10025, USA
6. NASA Goddard Institute for Space Studies, New York, NY 10025, US
7. http://pure.qub.ac.uk/portal/files/61977500/Detection_of_H2O_and_Evidence_for_TiOVO_in_an_Ultra_hot_Exoplanet_Atmosphere.pdf
8. <https://arxiv.org/abs/1708.01076>

A Family Event – the Total Solar Eclipse of 2017

Neil J Short

Around a year ago I made the decision to see the total eclipse in August 2017. Visiting the USA to see the event seemed relatively easy (certainly as against earlier target sites like Indonesia and Easter Island!). The primary task was of course to confirm my viewing site. With an American wife and a wide selection of family locations this looked straightforward; alas at the time nobody was near to the line of totality. With great fortune however early this year one relation moved to the small town of Payette Idaho at the junction of the Payette and Snake Rivers. All be it a little way south of the prime totality centre line I had a home for the viewing.

Wind forward to the 21st August and my wife and I stood in a small back garden looking SE into what looked to be a fairly dark set of trees. Our family host was unconcerned and in due course the sun peeped around the trees at 10:00 in the morning local time (USA Mountain Time). It was a somewhat surreal view given the immensity of the astronomical occasion to come – an arc of chairs on a small lawn focussed on a clear blue sky. In due course the family gathered and, solar glasses in place, some four generations of family awaited the action.

My own preparation for the eclipse was initially based on the transport of telescopes and mounts from the UK for a “full” imaging experience. However, and I believe with some good-luck my US sister in law had bought and sent me the Sky and Telescope Guide to the Eclipse. The key statement within was to consider, particularly if it was to be your first total eclipse, whether you really wished to take a photo at all! The suggestion was that you may only see one total eclipse so experience it with your eyes – the couple of minutes you have will flash by so don't waste time fiddling with your imaging system! I took this to heart and limited myself to my Canon 100D camera with a Tamron 18-400 lens (fixed on 400mm). Pre-setting and pre-aligning the camera (simple camera tripod) would allow me to look at the eclipse whilst taking a sequence of shots by remote shutter operation.

The time arrived (10:10 local) and the moon began to bite into the solar disc. We had around 1 hour 15mins to await the totality – I personally felt the time dragged whilst waiting for the main event but as the time neared the environmental impact of the eclipse became clear. Yes the silence grew (both family and birds) and the world became increasingly monochrome in nature (see pictures at right – both taken by smart-phone 1 hour and 5mins before the totality).

It's 11:25 and the switch is thrown and the glory of a total solar eclipse arrives. What a view and experience – difficult to put into words. One can only repeat the oft stated view that everyone should look to see one eclipse in their life – the beauty is beyond mere words.



I took a number of shots whilst varying shutter speed only whilst in totality, drawing out corona, prominences and of course the “diamond ring”.

As predicted the totality was over in a “flash”; both literally and metaphorically and the steady return to the solar disc progressed for the next couple of hours. A great event and a great family experience.



Corona – 1/40sec, f/6.3 at 400mm



Prominences – 1/1000sec, f6.3 at 400mm



Diamond Ring – 1/200sec, f/14 at 400mm



I also managed to catch some sunspots.

Not quite in focus but a struggle to gain real focus during the eclipse squinting through my camera viewfinder! These are taken on my Canon 100D with 18-400mm lens – set to 400mm; f/6.3 ISO 200, 1/40th sec.

Neil J Short

November–December OASI News

Next month's edition will cover November and December.