



OASI News

The newsletter of the Orwell Astronomical Society



View through the Athenaenum telescope's finder scope

See page 17

Trustees:

Mr Roy Adams

Mr David Brown

Mr David Payne

Honorary President:

Dr Allan Chapman D.Phil MA FRAS

Pictures of Orion

By Kevin Fulcher



A couple of shots from 24 Oct. Orion with a 24mm pancake lens and then the belt stars, with a hint of horse head nebula, using a 70-300mm lens at about 200mm f5.6.

Both shots are stacked on DSS, tweaked in Lightroom, shot on my Canon 70D and tracked via iOptron sky guider, 4x 60 second exposures on both.



My first proper attempt at a planet.

Jupiter using my 8" newt 2x Barlow and guide camera.

Captured using Sharpcap then stacked using Registax.



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Society Contact details

Observatory (meeting nights only)
07967 519249

Email queries: info@oasi.org.uk

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

Twitter: @OASlpswich

The OASI Forum has been decommissioned as usage had dwindled to just one contributor

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 or emailed directly to those who only receive the e-version of the News.

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 now 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."*?

Articles win points! See page 16.

The full colour version is available from the OASI web site.

[Newsletter archive](http://www.oasi.org.uk/NL/NL_form.shtml) 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 2015

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
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Avtar Nagra	Newbourne Observing Group
Co-opted	Matt Leeks	Safety & security
	Pete Richards	Lecture co-ordinator
	Andy Willshire	Librarian

Society Notices

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.

Next Committee Meeting

Tuesday 26 January 2016, *Shepherd and Dog*, starting 8.00pm. This is an open meeting.

Annual General Meeting

Saturday 30 January 2016, 8pm at Museum St Methodist Church Hall.

Written reports to the Secretary (Roy Gooding) soonest, please, for distribution to members prior to the AGM.

New Members

Michael Simmonds

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.

Society Events Diary

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

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/OASlpswich>

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

Discussion Forum <http://forum.oasi.org.uk/index.php>

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

Date and Time	Location	Contact	Event
Weekly, every Wednesday, 20:15	Orwell Park Observatory	Martin Cook, Roy Gooding	General observation (weather permitting) using a variety of telescopes.
27–29 Nov	Madingley Hall, Cambridge	www.ice.cam.ac.uk/Galaxies-Weekend	Exploring Galaxies. See last month's News p13
Tuesday 1 Dec 20:15	Orwell Park Observatory	ston@oasi.org.uk	STON: Small Telescope Observing Night. See p8.
Tuesday 08 Dec 20:15	Orwell Park Observatory	Paul Whiting FRAS treasurer@oasi.org.uk	Public access event. Observatory tour. Places must be booked. Further info and book a place.
Wednesday 09 Dec	The Fox Inn , Newbourne	Roy Gooding secretary@oasi.org.uk	Christmas meal. Booking CLOSED
Saturday 12 Dec, 14:30	UCL, Christopher Ingold Building, 20 Gordon St, LONDON WC1H 0AJ	https://britastro.org	BAA Christmas Lecture
Thursday 17 Dec, 18:00	Clopton Village Hall See p9	James Appleton info@oasi.org.uk	Special Newbourne Observing Group. Field trip to observe graze of Tycho 5248-0249-1. The grazing occultation will occur at around 2015 hrs so anyone wishing to observe should bring along a telescope (minimum 6" OG) and be set up and ready by 1945 hrs. More info.
2016			
Tuesday 5 January 20:15	Orwell Park Observatory	ston@oasi.org.uk	STON: Small Telescope Observing Night

Date and Time	Location	Contact	Event
Monday 11 January 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group and Workshop. At 20:00, Astronomy Workshop, Paul Whiting, <i>New Horizons of Pluto</i> .
Tuesday 12 January 20:15	Orwell Park Observatory	Paul Whiting FRAS treasurer@oasi.org.uk	Public access event. Observatory tour. Places must be booked. Further info and book a place.
Saturday 23 January, 14:30 - 18:30	Burlington House, LONDON W1J 0DU	https://britastro.org	BAA Ordinary Meeting James Appleton - Rømer Revisited: A modern estimation of the speed of light from observations of Jupiter's Galilean satellites. Tom Kellestein - The search for near-Earth asteroids. Dominic Ford - MeteorPi: A DIT kit for video meteor triangulation. Callum Potter - Sky notes
Monday 25 January 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Tuesday 26 January 20:00	Shepherd & Dog	Roy Gooding secretary@oasi.org.uk	OASI Committee Meeting
Saturday 30 January 20:00	Museum St Methodist Hall, Black Horse Lane, Ipswich	Roy Gooding secretary@oasi.org.uk	ANNUAL GENERAL MEETING
Tuesday 2 February 20:15	Orwell Park Observatory	ston@oasi.org.uk	STON: Small Telescope Observing Night
Tuesday 16 February 20:15	Orwell Park Observatory	Paul Whiting FRAS treasurer@oasi.org.uk	Public access event. Observatory tour. Places must be booked. Further info and book a place.
Saturday 27 February	Rugby	https://britastro.org	BAA Deep Sky Section meeting
Tuesday 1 March 20:15	Orwell Park Observatory	ston@oasi.org.uk	STON: Small Telescope Observing Night
Saturday 05 March	Cheltenham	https://britastro.org	BAA Back to Basics Workshop
Tuesday 15 March 20:15	Orwell Park Observatory	Paul Whiting FRAS treasurer@oasi.org.uk	Public access event. Observatory tour. Places must be booked. Further info and book a place.
Saturday 19 March, 10:00 - 17:30	Northampton	https://britastro.org	BAA Variable Star Section Meeting
Wednesday 30 March, 17:30 - 20:00	Burlington House, LONDON W1J 0DU	https://britastro.org	BAA Ordinary Meeting & Special General Meeting
Friday - Sunday 1-3 April	Sparsholt College, Winchester SO21 2NF	https://britastro.org	BAA Winchester Weekend

Date and Time	Location	Contact	Event
Tuesday 05 April 20:15	Orwell Park Observatory	Paul Whiting FRAS treasurer@oasi.org.uk	Public access event. Observatory tour. Places must be booked. Further info and book a place.
Saturday 30 April, 10:00 - 17:30	Broomfield, Nr Chelmsford	https://britastro.org	BAA One Day Spring Meeting
Monday 9 May 2016, 11:00	Orwell Park Observatory	Martin Cook membership@oasi.org.uk James Appleton info@oasi.org.uk	Observation of the Transit of Mercury
Saturday 21 May	Quaker Meeting House, Liverpool	https://britastro.org	BAA Historical Section Meeting
Wednesday 25 May	Burlington House, LONDON W1J 0DU	https://britastro.org	BAA Ordinary Meeting & George Alcock Memorial Lecture
Saturday 18 June, 10:00 - 17:30	Institute of Astronomy, Cambridge	https://britastro.org	BAA Webb Deep Sky Society AGM
Saturday 02 July 11:00	York	https://britastro.org	BAA Summer Meeting
Saturday 09 October			International Observe the Moon Night
Friday-Sunday 9 -11 September	Dundee	https://britastro.org	BAA Autumn Weekend Meeting <i>Stars: Theory, Physics and Effects.</i>
Friday - Sunday 9 -11 September	Horncastle, Lincolnshire	https://britastro.org	Horncastle Astronomy Weekend
Saturday 24 September, 10:00 - 17:30	Burlington House, LONDON W1J 0DU	https://britastro.org	BAA Observers' Workshop Asteroids & Remote Planets
Friday 14 October 20:00	Methodist Church Hall Black Horse Lane, Ipswich	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Roger Pickard (Director of Variable Star Section of the BAA), <i>Why Observe Variable Stars?</i>
Saturday 15 October	Chichester	https://britastro.org	BAA Back to Basics Workshop
Wednesday 26 October, 17:30 - 20:00	Burlington House, LONDON W1J 0DU	https://britastro.org	BAA Annual General Meeting

The Diary includes BAA meetings and other non-local astro events which may be of interest.

DASH Astro Events – December

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

Small Telescope Observing Nights (STONs)

Contact: Paddy O'Sullivan and Dave Robinson Email: ston@oasi.org.uk

These evenings enable members to gain hands-on experience of using the society's telescopes and to practice locating astronomical objects. They are organised by Paddy O'Sullivan and David Robinson and currently take place at Orwell Park Observatory. They are held on the first Tuesday

of the month, starting at 20:15, *but only when there is a demand from members*. To ensure there will be an organiser in attendance, members should email the above address.

If members cannot gain access due to lack of Fob, etc., please ring the observatory telephone number **07967 519249**.

Newbourne Observing Group

Avtar Nagra nog@oasi.org.uk Kevin Fulcher

We normally meet at Newbourne Village Hall, Mill Lane, IP12 4NP

BUT this month –

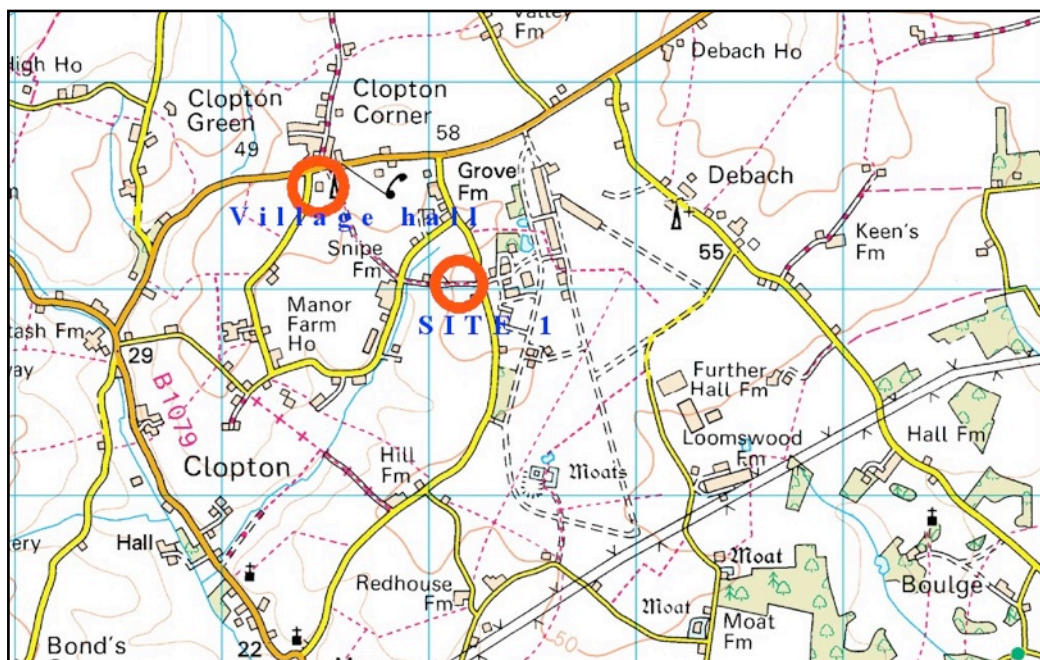
To graze or not graze (that is not the question)

Thursday 17th December at Clopton

Mr Smith invites you to a lunar graze. He will lead you down the path (to the field) for you to feast on astral and lunar delights. If that doesn't float your boat, then stay at the village hall and gaze through the telescope and enjoy Christmas titbits. Either way come and enjoy the NOG Christmas do as NOG goes to Clopton.

As we are all aware, the very successful meetings at Newbourne can sometimes be somewhat fraught. The light pollution, midges and very muddy car park do occasionally cause problems. So, at the AGM held in January of 2015, I was asked if I could suggest a suitable replacement site for NOGS. I have arranged a hire of Clopton Village Hall to coincide with a grazing occultation event, which will take place on 17th December 2015.

The hall will open at 1900hrs (as usual) and has all the facilities that we enjoy at Newbourne, minus the midges and mud!



The grazing occultation will occur at around 2015 hrs so anyone wishing to observe should bring along a telescope (minimum 6" OG) and be set up and ready by 1945 hrs. Although the hall is not at the predicted best 'line of observation' the occultation should still be a spectacular event. See page 10 for more details.

This replaces the advertised NOG meeting of Monday 14th December.

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.

NOG Meetings in 2016 (back to Newbourne)

2016

Jan. 11th & 25th

We open up for all meetings at 7pm.

Observations of Grazing Lunar Occultations

By Alan Smith and James Appleton

The last of this year's grazing occultations will occur at about 20:15 UT on 17/12/15 (a Thursday evening) The track is conveniently placed close to Ipswich, the altitude of the moon is favourable, the time of the event is favourable but the 'north limb' apparition usually gives a less spectacular view and the star is faint!

A brief explanation, by James Appleton, of a grazing occultation follows:

A lunar occultation occurs when the Moon appears to pass in front of a star, hiding it from view. If the moon appears to pass centrally in front of the star, it can obscure the star for more than an hour. However, generally the moon's path will be such that the centre of the visible disk passes to the north or south of the star, in which case the star is obscured for a shorter period. In the limit, the north or south polar limb of the moon briefly obscures the star – this case is termed a grazing lunar occultation, or simply a graze.

During a graze, mountains and valleys on the lunar limb can appear to pass in front of the star, alternately obscuring and revealing it. When this happens, the star can appear to flash on and off. For a graze of any given star, such an effect is visible only along a path across the Earth's surface at most few kilometres wide: this path is referred to as the graze track. Generally, a south polar graze is more spectacular to observe than a north polar graze because the moon's south limb is the more rugged of the two.

Although the lunar limb profile was not known with great accuracy until recently, a Japanese satellite (Kaguya) launched in 2007 has mapped the surface of the moon using lasers. This has given us a detailed (although still incomplete) limb profile.

An observation of a graze establishes a relationship between several quantities: the location of the observer, the position of the moon, the position of the star and the topography of the lunar limb.

A team of observers from OASI (the usual suspects) will attempt to observe this event. If you would like to join us, please be aware that you will need a 'reasonable' telescope capable of handling a fairly high power (*100 ?) magnification.

The graze track can be seen on the OASI web site

(www.oasi.org.uk/Occs/Occ_summary_2015.php) and you will notice that it passes very close to Ipswich and surrounding villages. We are going to observe from a site close to Clopton village hall, which has been booked as a 'NOGS' event for the evening. Clopton village hall itself is very close to the line of 'uncertainty' and is a very dark site with lots of car parking and the availability of a cup of tea and some biscuits! If you would like to join us (and check out Clopton as a possible replacement for the NOGS events should Newbourne be unavailable in the future) please be at the hall by 1900hrs. The 'best' site is off the B1078 on 'Drabbs Lane' on a public footpath. The Google Earth coordinates are: 52° 08' 22.10" N, 1° 15' 36.83" E). We would aim to meet at about 19:30 hrs (GMT) at the site. This gives us time to set up telescopes and 'get our eye in'.

If you would like to join us, please contact me to get further details of the 'pre-event' conference call and any other details you might need.

WANTED: OASI History

I'm trying to locate any photos from the early days of the society, and specifically pictures showing 'old style' open days when they were held in the old gymnasium at Orwell Park (from mid '70s to 'late '80's).

Alan Smith

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!

Newbourne Village Hall is our new location for occasional workshops, which will be held on dates booked for normal NOG (Newbourne Observing Group) meetings. If you aren't interested in the workshop you can still just use the hall facilities and the field for observing – but please be quiet so as not to disturb the workshop!

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

Monday 11 January: New Horizons of Pluto – Paul Whiting

Paul will present the problems and highlights of the amazing views of Pluto that were sent back by the New Horizons spacecraft in July.

Lecture Meetings

These take place in Museum Street Methodist Halls, Upstairs room, Black Horse Lane, Ipswich

There is some parking at the venue but if there is no space at the venue you can drive to the end of Black Horse Lane and turn left to find a pay and display car park which charges (at the time of writing) £2 for parking between 6pm and 6am. There is also the spiral car park by the New Wolsey theatre.

Why Observe Variable Stars?

Friday 14 October 2016 20:00

Roger Pickard (Director of [Variable Star Section of the BAA](#)),

Why Observe Variable Stars?

Institute of Astronomy, Cambridge

www.ast.cam.ac.uk/public

For the Public: Open Evenings. We host weekly public open evenings every Wednesday during the Winter season (October - March).

We are gearing up to the 2015/16 season which will kick off on 7 October 2015.

[Find out what's involved](#); and a list of [what talks were on during the last season](#).

The Night Sky in December

Martin RH

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

Moon

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

Full Moon	Last Quarter	New Moon	1st Quarter
25 December 11:12	03 December 07:40	11 December 10:29	18 December 15:14

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	07:40	15:47		Winter solstice Dec 22, 04:48
	31	08:03	15:53		
Moon	1	21:57	11:38		
	31	22:53	10:58		
Mercury	1	08:37	15:54	-0.4	Maximum eastern elongation-Dec-29
	31	09:21	17:21	-0.4	
Venus	1	03:32	14:12	-4.1	
	31	04:55	13:34	-3.9	
Mars	1	02:13	13:42	1.5	
	31	01:52	12:14	1.3	
Jupiter	1	00:21	13:07	-1.8	
	31	22:31	11:13	-2.0	
Saturn	1	07:30	15:47	1.4	Saturn was at superior conjunction on Nov-30
	31	05:50	14:00	1.4	
Uranus	1	13:46	02:49	5.8	
	31	11:48	00:50	5.8	
Neptune	1	12:41	22:58	7.9	
	31	10:44	21:03	7.9	

Meteor Showers

Source: BAA Handbook 2015 p97-99

Shower	Limits	Maximum	ZHR	Notes
Puppids-Velids	Nov 27 - Jan	Dec 9, Dec 27	15	Two of several radiants in Puppis, Vela and Carina from November to January
Geminids	Dec 8 - 17	Dec 14	100+	Richest of the annual showers, with slow meteors and a good proportion of bright events. Very favourable.
Ursids	Dec 17 - 25	Dec 22 - 23	10?	Under-observed shower which has produced outbursts in 1945, 1982 and 1986. Unfavourable.

Occultations during December 2015

James Appleton

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

Date	Time (UT)	D/R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
16 Dec 2015	19:40:12	D	0.30+	-35	15	7.5	Hip 109236
19 Dec 2015	20:37:24	D	0.63+	-43	37	6.4	ZC 109
20 Dec 2015	21:35:50	D	0.74+	-51	41	7.0	ZC 269
23 Dec 2015	18:11:22	D	0.96+	-21	29	0.9	Aldebaran
	19:13:45	R		-30	39		
24 Dec 2015	04:56:19	D	0.98+	-27	12	5.5	ZC 741
31 Dec 2014	18:25:51	D	0.80+	-22	46	7.4	Hip 14329

Lunar Graze: 17 December

At 20:18 on 17 December, there is a graze of the magnitude 8.5 star Tycho 5248-0249-1. The Sun is at altitude -41° , the star at 20° , the event takes place on the north limb and the lunar phase is 0.41 waxing. The track passes Orwell Park at a distance of only 13km, traversing the following locations: Hunsdon, The Hallingburies, Takeley, Shalford, Boxford, Elmset, Claydon, Henley, Saxmundham and out to sea midway between Sizewell and Dunwich.

Weather permitting, the usual band of OASI graze observers will attempt to observe the event. If you would like to join us, please [contact Alan Smith](#) to get further details of the 'pre-event' conference call and any other details you might need.

This will also be a NOG event – see pp 9,10.

Alan Smith & James Appleton

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

Martin RH

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

Visible passes only for early birds this month.

NB predictions are approximate. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
06 Dec	-0.7	18:31:43	10°	SSW	18:32:31	15°	SSW	18:32:31	15°	SSW
07 Dec	-1.5	17:38:49	10°	S	17:41:10	19°	SE	17:41:14	19°	SE
08 Dec	-1.7	18:20:29	10°	SW	18:22:27	30°	SSW	18:22:27	30°	SSW
09 Dec	-2.1	17:27:12	10°	SW	17:30:06	30°	SSE	17:31:01	25°	ESE
09 Dec	-0.2	19:02:59	10°	WSW	19:03:36	15°	WSW	19:03:36	15°	WSW
10 Dec	-1.4	16:34:09	10°	SSW	16:36:38	20°	SE	16:39:09	10°	E
10 Dec	-2.7	18:09:24	10°	WSW	18:12:07	52°	SSW	18:12:07	52°	SSW

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
11 Dec	-2.7	17:15:53	10°	SW	17:19:02	47°	SSE	17:20:35	25°	E
11 Dec	-0.6	18:52:02	10°	W	18:53:09	20°	W	18:53:09	20°	W
12 Dec	-2.1	16:22:29	10°	SW	16:25:27	32°	SSE	16:28:26	10°	E
12 Dec	-3.4	17:58:21	10°	WSW	18:01:35	79°	S	18:01:35	79°	S
13 Dec	-3.2	17:04:41	10°	WSW	17:07:56	66°	SSE	17:10:00	20°	E
13 Dec	-1.1	18:41:00	10°	W	18:42:33	25°	W	18:42:33	25°	W
14 Dec	-3.5	17:47:16	10°	W	17:50:33	86°	S	17:50:58	66°	E
15 Dec	-3.3	16:53:31	10°	W	16:56:48	82°	S	16:59:22	15°	E
15 Dec	-1.7	18:29:54	10°	W	18:31:55	34°	W	18:31:55	34°	W
16 Dec	-3.4	17:36:07	10°	W	17:39:23	82°	S	17:40:21	43°	ESE
17 Dec	-3.3	16:42:19	10°	W	16:45:36	86°	S	16:48:48	10°	E
17 Dec	-2.3	18:18:42	10°	W	18:21:23	44°	SW	18:21:23	44°	SW
18 Dec	-3.1	17:24:52	10°	W	17:28:07	67°	SSW	17:29:54	24°	ESE
18 Dec	-0.2	19:01:31	10°	W	19:02:28	15°	WSW	19:02:28	15°	WSW
19 Dec	-3.2	16:31:02	10°	W	16:34:18	80°	S	16:37:34	10°	ESE
19 Dec	-1.9	18:07:29	10°	W	18:10:28	33°	SSW	18:11:05	30°	S
20 Dec	-2.4	17:13:33	10°	W	17:16:43	47°	SSW	17:19:51	10°	SE
21 Dec	-0.9	17:56:21	10°	W	17:58:53	21°	SW	18:01:23	10°	SSE
22 Dec	-1.4	17:02:13	10°	W	17:05:09	31°	SSW	17:08:04	10°	SE
24 Dec	-0.4	16:51:00	10°	W	16:53:25	19°	SW	16:55:49	10°	SSE

There's an app for that: Try [ISS Spotter](#) for iPad/iPhone, which alerts you to impending passes of the ISS. For Android-based phones/tablets there's [ISS Detector](#). If you use Twitter @twisst or @ISS_spotter will send you a tweet when the international space station (ISS) will be visible at your location.

Iridium flares

Too many to list but see [Iridium Flares http://heavens-above.com/IridiumFlares.aspx](http://heavens-above.com/IridiumFlares.aspx)

Paul's Astronomy Podcast for December

Paul Whiting FRAS

Podcast, Dec 2015 www.oasi.org.uk/2015_012_pod.mp3

OASI Logo Clothing

It's getting colder and Christmas is coming...

Sweatshirts, Grey or Navy

Small, Medium, Large & Ex.Large £18.00 ea.

Cotton Pique Polo Shirt

White, Azure Blue, Sky Blue & Black

Small, Medium, Large & Ex.Large £16.00 ea.

Fleece Zip Jacket Front Pockets

Navy.

Small. Medium, Large & Ex.Large £22.00 ea.

Thinsulate Beanie Hat

Dark Graphite £9.50 ea.

Base Ball Cap

Navy/Stone £8.00 ea.

Beanie Hats, Base Ball Caps & Sweat Shirts usually in society stock.

Other items to special order, usually about 2 weeks.



See Mike Norris for details.

Christmas Prize Raffle

Tickets are still on sale (£1 per ticket) for a bottle of malt whisky (Bowmore Legend, single Islay malt, retail £29.99). The winning ticket will be drawn at the OASI Christmas Dinner.



Tickets from Paul Whiting.

Observatory repairs

One of the trickier maintenance operations in the Tomline observatory.

Thanks to those who helped carry the scaffold tower up the observatory stairs

Matthew Leeks and Martin Cook replacing the shutter opening rope.

Photo by John Wainwright



OASI Member of the Year Competition

- Open to any non committee member (at time points earned)
- Runs from 1st September to 31st August each year
- Winner gets a free membership for the following year
- The points table will be posted in the newsletter
- It is the members responsibility to check that they have been credited the points for a particular event

Activity	Points	Activity	Points
Helping at an OASI outreach event	10	Writing a newsletter article (per page)	3
Giving a workshop	20	Introducing a new member	5

<u>OASI, Society member of the year competition</u>											
NAME	EVENT										
	5-Sep	19-Sep	23-Oct	Oct	Nov	26-Oct	Dec				Total
	Bentley	Nowton	Chantry	News	News		News				
Pete Richards	10	10		\							20
Nicky Richards	10	10	10	\							30
Mike Nichols	10	\		\							10
Bill Barton	10	\	10	15	3						38
Mike O'Mahoney	\	10		\							10
Joe Startin	\	10		\	3						13
Charlie Green						20					20
Alan Smith	\	\		3	6		3				12
Mike Norris	\	\		3							3
Neil Short							3				3

Equipment for sale

John Wainwright

There are a couple of OASI telescopes surplus to requirements, one in need of some refurbishment. Ideal for a beginner project or starter scope.

Reasonable offers considered.

Contact me equipment@oasi.org.uk

Visit to the Athenaeum

by Roy Adams

The main structure of this building is in very good decorative condition and welcomes one to explore its facilities on lower floors – there's a lot going on here. Our particular interest, of course, was the Observatory on top of the building, the cap of which is clearly visible. The whole frontage presents a majestic appearance when approached from the north along Angel Hill (from Mustow Street)

We were offered coffee (or tea) on being invited into a spacious room with walls adorned with pictures of historical military and other figures.

As there was quite a number others visiting – at least 12 of us – we gathered in another room after our refreshment and were treated to a brief but interesting history of the complex. Some of this was a duplication of leaflets available in the refreshment room and we were able to ask any questions during this

presentation and later, when individual groups of four or five of us had our turn going up into the observatory itself, which, thankfully, was in daylight with the twin flap shutters open as the weather was favourable.

In all there were three groups, Merlyn and myself being in the second, with Pete and Nikki.

It was because there is room only for about six people at a time and maybe some concern that the floor would be quite capable of taking our weight that the split up had to occur. Certainly the predominantly wooden structure of the observatory gave us no concern. In old buildings I automatically check for woodworm of any sort and, as I commented to Richard our host, I could see no evidence of any having been in occupation there. The enclosure was, Richard said, also watertight in a storm. The segmented dome's support and resting location rings were apparently sound and the roof was turnable directly by hand.



By all accounts the Observatory hasn't had a great deal of use in its history. There is and was no lift to its floor. Access is by quite narrow staircases, open and quite steep but there are handrails recently provided and, so long as one is mindful of low roof points, it is reasonably easy to get up there and back down again.

As for the main telescope it is well constructed and though only 4 inches in diameter its resolution, looking at a distant brick wall, is very good. The maker was Troughton & Sims as of the Orwell Park 10 inch but a couple of decades older.

Photos by Martin Richmond-Hardy



The base of its heavy iron vertical pillar was in touching contact with the wooden floor so, with some deliberate movement of an observer or two, the field of view could be persuaded to move a perceptible amount. But with care it can surely be a very useful set up. There is a very finely toothed main Right Ascension gear which is very much a miniature of the one at Orwell Park and good Declination gear. At a guess I'd say there were about 15 teeth to an hour of RA.



The mechanical drive for the telescope was a weight controlled by a flyball governor. What condition this was in was uncertain to me. Indeed I did not ask – maybe someone else in our party did?

There were plenty of adjustment screws around the mounting and it was thus possible to use the instrument as a very serviceable one. There was a small finder scope and even a small eyepiece slider bar solar filter set – something expectedly rather frowned upon and avoided these days but solar observation was obviously within the design and make up remit.

Brief other details I managed to remember were that there are holes about half an inch diameter in the horizontal wooden part of the support ring for what Richard told us were for the application of graphite. Side guide small rollers, also at frequent intervals, were on vertical axes and quite accessible.



Merlyn took a couple of photos up there and Richard was kind enough to take another of us on our camera. No doubt other photos were taken by members of other groups and I'd be surprised if we were the only ones in our group that took some. Pete or Nikki may have also.

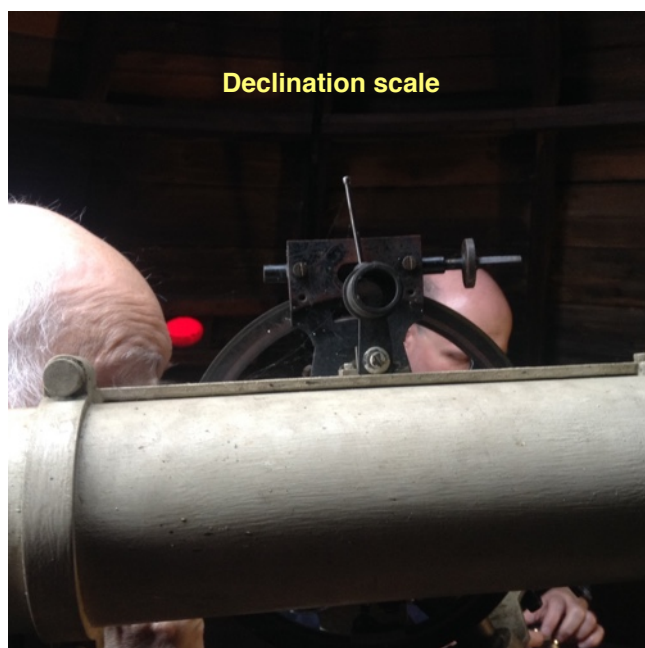
Before going up to the telescope we were given an interesting preview by Pat, a lady who is well versed in the history of the Athenaeum as a whole. There was also a time after our journey upstairs to the telescope to have discussion about what

can be done to further the best interests of the Observatory and other activities at the Athenaeum. Mentions have been made in our journal regarding possibilities of a Bury St Edmunds astronomical group and involvement of our society. On my asking, we were told that the local council owns the building and insures it. Somewhat surprisingly the last use of the telescope was probably about ten years ago by someone who worked in a local camera shop who had a key.

There is a proposal on the board but the people in charge of the Athenaeum have been informed that unless an astronomical club can be started, interested in using the observatory, funding for necessary restoration seems non-forthcoming.

On the day of our visit, however, good news came that Stour group were interested.

Part of the reuse/restoration proposal was arranging transmission down from the observatory to the reading room. I was surprised to see in one of the A4 leaflets that, owing to street lighting and safety regulations, it can, sadly, no longer be used. This somewhat contradictory information obviously needs further looking into. Not having ever been to the observatory before, let alone at night, and having not even been to Angel Hill or around the area at night I can't tell what the lighting effects would be, but there are filters that can, to an extent, combat street lighting conditions and as for H&S or similar source (often over saucy) regulations, I personally don't see why or how there could or should be what seems on the other hand a possible total embargo on using the telescope, roof rotation shutter, opening, etc., by responsible and reasonably able-bodied people at least.



I have omitted in the above the fact that the mount is an equatorial one – it almost goes without saying – but it is worth mentioning that the small cone mounting for Right Ascension seems very adequate for the existing original telescope. Other data can be gleaned from the two leaflets I picked up.

Merlin and I would like to add our thanks to Pete Richards for organising this visit for OASI folk interested and to Neil Morley for offering to take us, also to our hosts Pat and Richard of the Athenaeum.

To end I'd just like to say we hope others in our whole party found a nice lunch place and that we found after feeding the car park slot machine a couple of extra coins (parking in Bury St Eds is cheaper than Ipswich) we found a very nice small Portuguese restaurant in Mustow Street and much enjoyed a very

reasonable meal. *Obligada, Bon dia!*

Roy Adams

The Athenaeum

Martin Richmond-Hardy

An original mediaeval building on this site still leaves its traces in some of the timbers recently uncovered during alterations and restoration. From around 1674 we have a fairly good record of all that has taken place with regards to the building and its uses.

The Grade 1 listed building was built by Frederick Sands, the same architect who worked on Ickworth House. Originally a private house, it was in the time of Daniel Defoe's visit to Bury St Edmunds in the 1720s, a public hall and used for 'Assemblies'. Balls attended by such as Lady Bristol were held there during the annual fair at the end of September when as many as 400 people would attend.

When this became less popular by 1807 James Oakes, the local banker, together with 12 other local men, purchased the building paying £500 each to enable building work to be done at the name, still above the portico today, was given *The New Subscription Rooms*.

With changing times, Lord Arthur Harvey encouraged the Mechanics' Institute, the Young Men's Institute, the Archaeological Society and the Museum Service to get together to form the *Bury St Edmunds Institute* (or Athenaeum). This is eventually opened in Guildhall Street but then the club purchased *The New Subscription Rooms* for £2,500 and renamed the building *The Athenaeum*.

In October 1858 Donati's Comet was streaking across the night sky – an amazing phenomena and unknown in origin at that time– and the astronomer Royal, George Airy (a man with Suffolk connections) came to give a lecture and from this he inspired Lord Arthur Harvey and the committee that it would be a good idea to obtain a telescope built into an astronomical dome for the use of the club.

The telescope, which was a good example in its day, is still in the observatory but at the moment needs some cleaning and repair. Note the deceased spider and bent cross-hairs in the finder scope! →

👉 ***The Drawer of Curiosities.* Photo by Mike Whybray**



It is the aim of the present club to look at ways and means of bringing this valuable asset back into the public domain and once again with the aid of modern technology providing interest for the people of Bury St Edmunds and beyond.

Source: notes from the Athenaeum Club.

<http://athenaeumbse.co.uk>

Mars, Venus and Jupiter alignment.

Neil J Short

At 04:15 in the morning of 29 October I was woken by a bad cough. Looking due east out of the window I made out two bright “stars” shining through the trees and bushes in our garden in central Chelmsford. I was instantly reminded of the coverage on the BBC that a 3-planet alignment was due so went out into the garden to look if indeed the two bright objects were indeed Venus and Jupiter and whether Mars was also visible. Fortunately a gap in the trees allowed a clear and bright view of the 3 planets (below). Back inside for my camera and the results are attached; nothing special, I am sure, re astro-photography, taken with Canon 50HS (hand-held) set on auto. The above picture (same set up) was taken at higher zoom to confirm the unmistakable red of Mars.



New Research Explains Moving Meridian Mystery

Source: US Naval Observatory

www.usno.navy.mil/USNO/tours-events/new-research-explains-moving-meridian-mystery

A paper recently published in the Journal of Geodesy has now answered a long-standing question asked by navigators, academics, and London tourists: *Why doesn't zero longitude run through the Royal Observatory, Greenwich?*

In 1884, the International Meridian Conference recommended that the prime meridian “to be employed as a common zero of longitude and standard of time-reckoning throughout the globe” pass through the “centre of the transit instrument at the Observatory of Greenwich”. This instrument, erected by Astronomer Royal George Biddell Airy in 1835, is now augmented by a brass and steel strip in the pavement marking the meridian line and is one of the most popular tourist attractions in London.

However, a GPS receiver will indicate a longitude of 00° 00' 05.3"W, when placed over the meridian line so that visitors must walk east approximately 102 meters before their navigation devices indicate zero. Most explanations of this longitude offset at Greenwich — particularly those aimed at the general public — acknowledge it, but do not assign a cause, or offer incorrect explanations.

The scientific reasons for this offset have now been addressed through the collaborative effort of researchers working with government, academic, and commercial organizations: Stephen Malys and Nikolaos K. Pavlis of the National Geospatial-Intelligence Agency (NGA), John H. Seago of Analytical Graphics, Inc. (AGI), P. Kenneth Seidelmann of the Astronomy Department, University of Virginia, and George H. Kaplan, a contractor with the U. S. Naval Observatory in Washington, DC. These authors attribute the difference to a change from astronomical to geodetic coordinates in the Terrestrial Reference System.

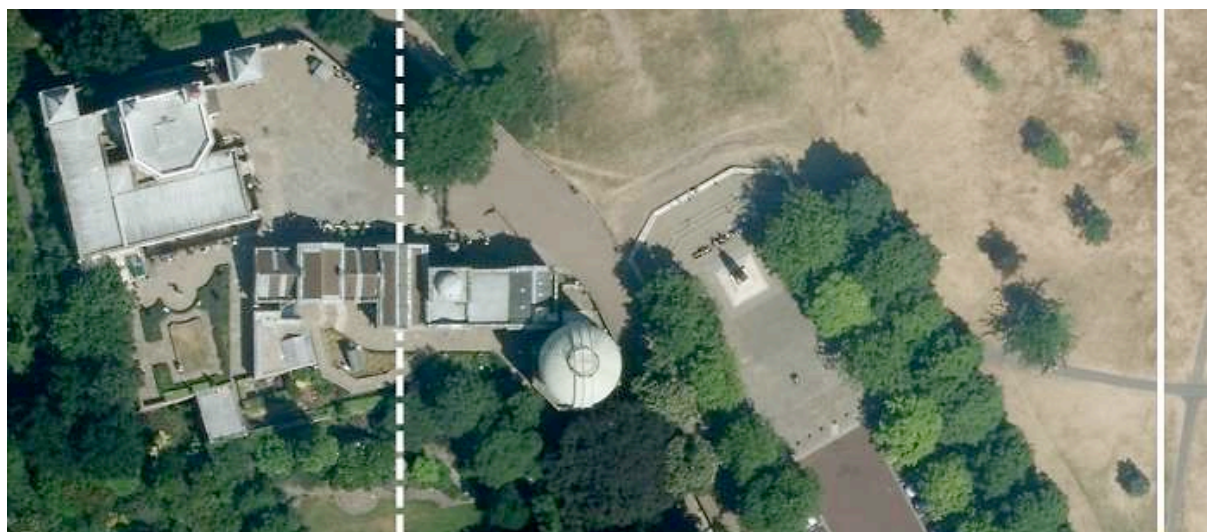
Astronomical time (determined by the rotation rate of the Earth) was originally measured by astronomical instruments like the Airy Transit Circle. These optical devices used mercury basins to establish a local vertical plane of reference aligned to local gravity.

By the 1980s, however, space-age techniques like satellite-navigation receivers, satellite and lunar laser-ranging, and Very Long Baseline Interferometry replaced the older technology of transit instruments. These systems were not affected by gravitational anomalies at the surface of the Earth. In 1984, the *Bureau International de l'Heure* (BIH, International Bureau of Time) fully converted from using “astronomical” station coordinates based on local gravity, to a “geocentric” system of station coordinates, based on verticals going through the rotation axis of the Earth as opposed to locally-measured verticals. There was also the requirement that continuity be maintained in the measurement of astronomical time through that transition. This BIH Terrestrial Reference System provided the basis for orientation of subsequent geocentric reference frames, including the World Geodetic System 1984 (WGS 84) used by GPS.

The 102-meter offset at Greenwich can be attributed to the difference between astronomical and geodetic coordinates, called the deflection of the vertical, in the east-west direction at the Royal Observatory. High-resolution global gravitational models of the Earth confirm that the direction of gravity at Greenwich is of the proper sign and magnitude to support this interpretation, conclusive to ± 10 meters in longitude using the most recent vertical deflection model. Specifically, the gravitationally deflected meridian plane originally observed by Airy's Transit must be translated about 102 meters to the east if that directional plane is to pass through the axis of the Earth and maintain the same astronomical time as would have been observed from the old observatory site.

For supporting evidence, the authors also analyzed the differences between astronomical and geodetic coordinates of many observatories contributing to the global determination of astronomical time during the 20th century. This analysis affirms that no significant global rotation of longitudes occurred between the former astronomical system, based on the Airy Transit Circle, and the current geocentric system, used by GPS. Instead, the differences in the local coordinates

of old astronomical stations are simply a localized gravity effect due to the deflection of the vertical.



**The Airy meridian marked as the “Prime Meridian of the World” (dotted line),
and the ITRF Reference Meridian indicating zero longitude using GPS (solid line).
Imagery © 2014 Google Maps, Infoterra Ltd & Bluesky**



**The UK, Eire at night and aurora from the ISS
Picture: Andre Kuipers / ESA / NASA / Rex Features**

Orion's Belt and M45

David Murton

Photos from Shingle Street taken on 7th November.

Canon 60Da camera.

Canon 90-300 lens at 190mm focal length.

4 shots stacked.

Iso 1600, f.5.6, 120 seconds.

Skywatcher Star Adventurer mount.

Unguided.

