No. 509 Registered Charity 271313 June 2015

OASI News

The newsletter of the Orwell Astronomical Society

The Transit of Venus commemorative plate

See page 21

Trustees: **Mr Roy Adams** **Mr David Brown** **Mr David Payne**

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

M42 and Jupiter

by Mike O'Mahoney

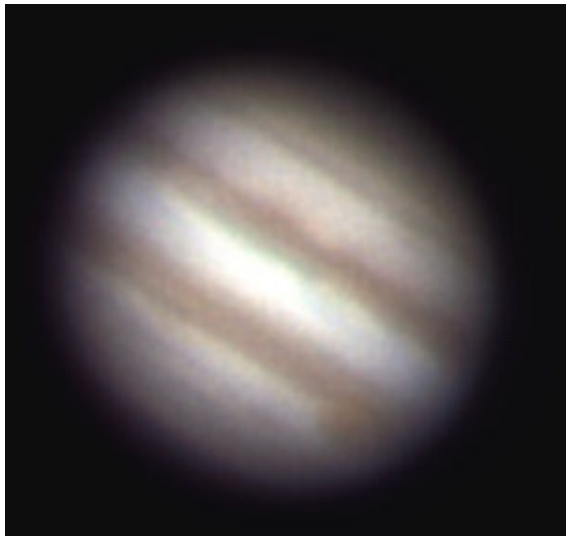
17 February: A beautiful night and one to try - M42 - when it returns in November.

230 mm SCT, (20 sec @ ISO 1600) x 20, DSS

21 February Jupiter and the Great Red Spot

Not as good as I hoped, but Jupiter has to be done.

230 mm SCT + 2.5x Powermate; 60 frames/sec @ 1/30 sec exposure. Stacked in Lynkeos (Mac)



Andy Gibbs

I managed to take several Jupiter images on Saturday. 21 Feb. It was cold and the seeing was pretty good.

Equipment used Meade LX200 ACF 200mm, 2.5 Barlow = f25. QHY II L colour camera, captured using Firecapture software, original AVI at 52 fps. Processed with Registax 6 and Photoshop Elements 11.

The size of Jupiter's disc was 44.91 arcseconds, magnitude was -2.54.

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Society Contact details

Observatory (meeting nights only) 07967 519249
Email queries: info@oasi.org.uk
facebook.com/pages/orwell-astronomical
Twitter: @OASIpswich
Forum: forum.oasi.org.uk/index.php

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, rtfd, doc, docx, odt, Pages

Spreadsheets: xls, xlsx, OpenOffice/LibreOffice, Numbers

Images: tiff, png, jpg Please send tables as separate files in one of the above formats.

OASI on BBC Radio Suffolk

Lesley Dolphin has asked David Murton to do a monthly spot on her afternoon show once a month starting in May. Initially it is standing in for Tom Bowles for a few months then possibly having a separate monthly slot.

She has said he is welcome to plug OASI events (& DASH ones!), talk about a couple of upcoming astronomical events plus a general talk about something else each month.

The Newsletter

We use an outside printer. The cost of doing so means that only the cover pages can be printed in colour. **The full colour version is now available from the OASI web site.**

Newsletter archive http://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	Chair committee meetings, represent OASI to external bodies
Secretary	Roy Gooding	Respond to enquiries, Press & publicity, Outreach meetings, Open days
Treasurer	Paul Whiting FRAS	Finance, Visits by outside groups, Supervision of applications for grants, Taster evenings, Public appreciation of astronomy.
Committee	James Appleton	Web site
	Bill Barton FRAS	Librarian TBC
	Martin Cook	Membership, Tomline refractor maintenance
	Tina Hammond	Publicity TBC
	Peter Richards	Lecture meetings, Email distribution lists
	Martin Richmond-Hardy	Newsletter
	John Wainwright	Equipment curator
	Mike Whybray	Workshops
	Avtar Nagra	Newbourne Observing Group
	Kevin Fulcher	Safety & security, Newbourne Observing Group
Co-opted	Pete Richards	Lecture co-ordinator

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 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 2 June 20:00 at the Shepherd & Dog.

This is an open meeting, any member is welcome to attend.

Welcome to New Members

None this month

2015 Outreach Meetings

Contact: Roy Gooding or David Murton

International Sun Day

(see also page 15 for programme details)

OASI along with DASH, LYRA and Breckland are organising a large solar event at the Minsmere visitor centre to coincide with International Sun Day on 21st June this year. There will be solar scopes, lectures, a solar video link onto a large screen, displays, etc. Anyone who can help please let David Murton know. Please note that only scopes with propriety solar filters will be allowed, Unfortunately no homemade filters or solar projection will be allowed due to health and safety restrictions.

The Guest Speaker is Dr Helen Mason OBE

Reader in Solar Physics at the Department of Applied Mathematics and Theoretical Physics

Dr Helen Mason is a Reader in Solar Physics at the Department of Applied Mathematics and Theoretical Physics. She has been based at Cambridge University for over 35 years. She obtained a BSc (First Class Honours) and PhD at the University of London. She has taught at Cambridge University, London University and for the Open University. She has been a Tutor at StEds for many years and was Senior Tutor from 2006-2011. She has also served on most of the College committees.

Helen's field of research is solar physics, in particular the ultraviolet and X-ray spectrum of the Sun. She has worked on many joint UK, NASA, ESA and Japanese space projects including Skylab, the Solar Maximum Mission, Yohkoh, SoHO (Solar and Heliospheric Observatory), Hinode and SDO (Solar Dynamics Observatory). Recent solar space observations have completely changed our view of the Sun. In 2010, the CHIANTI team, of which Helen is a founder member, was awarded the Royal Astronomical Society's Group Achievers' Award for Geophysics.

Helen has always been keen to convey her passion for solar physics to the general public and to school students. She has given many lectures to schools, and has even worked at summer music festivals, including Glastonbury. In 2013 she gave one of the Friday Evening Discourses at the Royal Institution, which can be found on Youtube
www.youtube.com/watch?v=vbI6TDHCfe4

She has written articles for science magazines and participated in several radio and TV programmes, most recently the BBC4 program 'Seven Ages of Starlight'.

Helen is keen to promote education in developing countries. She has visited South Africa twice to work on astronomy projects with teachers and students in the former townships. She has also worked in India, with schools in the rural areas of Tamil Nadu.

She has produced an educational web site for teachers and students (11-16 year old) called Sun|trek (www.suntrek.org) which is used extensively in the UK, USA and worldwide. Her outreach work was recognised in 2010 when she was nominated as one of the six 'Women of Outstanding Achievement'.

Her portrait now hangs in the London headquarters of the Institute of Physics.

In 2014, Helen was awarded an OBE for her services to Higher Education and to Women in Science, Engineering and Technology.

Debenham Street Fair

Sunday 28th June. Event details are the same as last year. With the exception that hopefully, we may have bettter weather

The address of the event is the High Street, Debenham, IP14 6QL. The post code is for the Angel Inn which is in the middle of the High street. Debenham is located on the B1077 going North out of Ipswich via Westerfield.

The road will be closed from 10:00 – 18:30 and the event duration is 12:00 – 17:00. We ask exhibitors to have stall/stand ready by 11:30 with all vehicles off the high street. There will be a car park provided on the day.

We can set up our kit just up the road from Chancery Lane, on the right where there is a grassy area.

Nowton Park, Bury St Edmunds

11 July (12th if cloudy)	Solar Day
19 September	Stargazing

Holywells Family Day

Wednesday 5th August

Landguard Fort Solar Event (TBC)

This has now been confirmed

We have been asked NOT to set up anything in front of the the main entrance to the fort

Venue Landguard Fort (the Fort's moat will probably be our location)

Date **15 or 16 August** (depends on which day has the best weather)

Time 11:00 to 16:00 Setup time from 10:00

Bentley Village Family Day

The Bentley Family Fun Day is on **Sunday 6th September** (date confirmed) 11:00 to 15:00

Set up time from 09:30. The playing field is at the bottom of Case Lane. There is parking in the field..Location to be arranged on the day. It will probably be down the left hand side of the field.

Telescope Training

Bill Barton

Anyone one interested in being trained to use the Tomline Refractor please contact me on barton.bill@hotmail.com or ask me at Newbourne or any other club event so I can set up another training schedule.

Snippets from the Twittersphere @OASIpswich

- Found: giant spirals in space that could explain our existence https://twitter.com/pttu/status/598730600808206336
- Astronomical instrument and compass w/ vertical quadrant scale (wood block), Japan, 19th/early 20thc.? https://twitter.com/hist_astro/status/598531689573326848
- A Guide to Saturn Through Opposition 2015: Getting closer… https://twitter.com/hist_astro/status/598236249833349120
- From @IdolsOfTheCave - a javascript / SVG #astrolabe -- with planets. alexboxer.com/astrolabe https://twitter.com/hist_astro/status/598236249833349120

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/OASIpswich
Facebook page	https://www.facebook.com/pages/Orwell-Astronomical/158256464287623
Facebook Group	https://www.facebook.com/groups/1558395534430623/
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.
Wednesday, 27 May 17:30	Burlington House Piccadilly London W1J 0DU	http://britastro.org/meetings	BAA Ordinary Meeting and George Alcock Memorial Lecture Denis Buczynski: "George Alcock Memorial Lecture" Title to be confirmed Tony Freeth: "The Antikythera Mechanism - A machine to predict the future" Nick James: Sky Notes
Tuesday 2 June 20:00	Shepherd & Dog	Roy Gooding	OASI Committee meeting
Monday 8 June 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Sunday 21 June 10:30 – 17:00	Minsmere visitor centre	David Murton chairman@oasi.org.uk	**Public Solar Event.** OASI, DASH, LYRA and Breckland AS combined event to mark International Sun Day. Guest speaker Dr Helen Mason, OBE, St Edmund's College, University of Cambridge. See Page 15
Monday 22 June 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.

Date and Time	Location	Contact	Event
Sunday 28 June	Debenham Street Fair	Roy Gooding	**Public Solar Event** Observing the sun safely during village street fair street party. Booking not necessary.
Sunday 11 July or 12th if cloudy	Nowton Park, Bury St Edmunds	David Murton chairman@oasi.org.uk	**Public Solar Event** Observing the sun safely.
Monday 13 July 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Monday 13 July 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Saturday 18 July	Newbourne Village Hall	Pete Richards lectures@oasi.org.uk	OASI BBQ
Wed 5 August	Holywells Park, Ipswich	Roy Gooding	**Public Solar Event** Observing the sun safely during Holywells Park Families Day. Booking not necessary.
Monday 10 August 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Saturday 15 August 11:00 – 16:00	Landguard Fort	Roy Gooding	**Public Solar Event** (TBC) If cloudy postpone to 16th.
Friday Sept 4 - 19:00 to Sunday Sept 6 - 12:00	Rutherford Appleton Laboratory, near Didcot	http://britastro.org/meetings	BAA Autumn Weekend Meeting “Astronomy in Space”
Sunday 6 Sept	Bentley	Roy Gooding	**Public Solar Event** Bentley Village Family Day
Friday 11 September	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Andrew Lound: *Lunatick Astronomy*.
Saturday 19 Sept	Nowton Park, Bury St Edmunds	David Murton chairman@oasi.org.uk	**Public event.** Star party for International Observe the Moon Night". Booking not necessary.

Date and Time	Location	Contact	Event
Monday 28 Sept from 00:11			Total Lunar eclipse. See online Diary for timings
Friday 02 October 01:00	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe graze of ZC 618. More info.
Friday 02 October 20:00	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Professor Michael Rowan-Robinson: title TBC.
Friday 23 October 18:00	Chantry Library	Paul Whiting FRAS treasurer@oasi.org.uk	**Public event.** Talk and telescopes evening. Talk at 18:00, telescopes at 19:00.
Sat 07 Nov, 19:00 Note earlier start time.	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	**Public event.** Lecture Meeting. Damien Peach: *The Giant Planet Jupiter*. Access is free to members of OASI; £2 per head for non-members.
Thu 17 Dec, 18:00	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe graze of Tycho 5248-0249-1. More info.
2016			
9 May 2016	Orwell Park Observatory	Martin Cook membership@oasi.org.uk James Appleton info@oasi.org.uk	Observation of the Transit of Mercury

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

DASH Astro Events – June

See http://dash.moonfruit.co.uk/events-calendar/4585090668 for the latest details.

Athenaeum Observatory

You may not be aware that atop a building in central Bury St Edmunds is an astronomical observatory built in 1859. The building is the Athenaeum, built early in the 18th century as Assembly Rooms where people could play cards and attend balls[1]. It became the Athenaeum in 1854 and the inspiration for building the observatory was a visit from Sir George Biddle Airy and the presence in the night sky of Donati's Comet. The Athenaeum Club are hoping to raise funds and awareness of the observatory. I've been in touch with the Athenaeum Club to arrange a

visit from OASI. The visit is most likely to be arranged for daytime on a weekend. If you are interested in visiting the Athenaeum observatory email me (Pete Richards) on p.r.richards@btinternet.com or speak to me on a Wednesday evening at the observatory. If you don't have access to email and don't visit the observatory you can phone me on 01473 659806.

Our Late Chairman Ken Goward co-authored, with Martin Mobberly, an article about the history of the Athenaeum observatory published in the Journal of the British Astronomical Association of October 2005. There is a piece about it in the June 2007 OASI Newsletter (OASI Newsletters are available to view on the OASI website).

1. http://www.localhistories.org/burysteds.html

Newbourne Observing Group

Avtar Nagra nog@oasi.org.uk **Kevin Fulcher**

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

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.

Please note that Newbourne is also the new location for OASI Astronomy Workshops.

June 8th & 22nd July 13th. & 27th August 10th. & 24th

We open up for all meetings at 7pm. Although we have light evenings this might give opportunities for some evening solar observing and it seems most members enjoy an early cuppa!.

Small Telescope Observing Nights (STONs)

Contact: Paddy O'Sullivan and Dave Robinson

These currently take place at Orwell Park Observatory on the most moonless Tuesday in the month, starting at 20:15. See online Diary

These are organised by Paddy O'Sullivan and Dave Robinson.

If the weather looks unsuitable those wishing to attend may need to check with Paddy or Dave as the evening may possibly be abandoned.

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

Astronomy Workshops

Contact Mike Whybray **Location: Newbourne Village Hall IP10 0EU**

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

We have moved! 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, interactively 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 workshops. Given a clear night, we can make use of the field for a workshop or continue after the workshop with some observing.

Do you have a subject you could workshop? Give Mike Whybray a call! workshops@oasi.org.uk

Lecture Meetings

These take place in The 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.

Andrew Lound — "Lunatick Astronomy" (an historic talk).

Saturday 11th September at 8pm

Professor Rowan-Robinson of Imperial College.

Friday 2nd October at 8pm

Damian Peach – "The Giant Planet Jupiter"

Saturday 7th November

7pm start – earlier than usual

Members – free Non-members £2-00

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.

Read about planetary photographer, Damian Peach, here:

www.damianpeach.com/about.htm

Roger Pickard "Why observe variable stars?"

14th October 2016. Note this is next year.

Roger is director of the variable stars section of the BAA.

Solar Observing in Christchurch Park Saturday 16 May

Solar observing in Christchurch Park, Saturday 16 May - awaiting the rush.

Projection, filtered white light and H_α telescopes plus solar binoculars

The Night Sky in June

Martin RH

Times are **BST** (unless otherwise stated) at 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
02 June 17:19	09 June 16:42	16 June 15:05	24 June 12:03

Sun and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	04:41	21:05		Summer solstice Jun 21, 17:37. Sunrise 04:35, Sunset 21:19
	30	04:39	21:19		
Mercury	1	04:58	20:25	4.3	Aphelion Jun 02
	30	03:33	19:21	0.1	Maximum western elongation-June 24
Venus	1	07:53	00:26	-4.2	Maximum eastern elongation-June 06
	30	08:35	23:15	-4.4	
Mars	1	04:56	21:18	1.8	Superior conjunction-June 14
	30	04:19	20:58	1.9	
Jupiter	1	10:03	01:06	-1.7	Venus-Jupiter conjunction 30 June
	30	08:37	23:18	-1.6	
Saturn	1	19:51	04:35	0.9	
	30	17:47	02:35	1.0	
Uranus	1	02:54	16:03	5.9	
	30	01:02	14:14	5.9	
Neptune	1	01:49	12:17	7.9	
	30	23:51	10:23	7.9	

Meteor Showers

Source: BAA Handbook 2015 p97-99

Shower	Limits	Maximum	ZHR	Notes
Ophiuchids	May 19 - July	June 10 June 20	5	Weak activity from several radiants. Best for southern observers. Favourable.

Occultations during June 2015

James Appleton

No lunar occultations occur during the month under favourable circumstances.

Visible ISS passes ≥15º max altitude

Martin RH

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

Click on the date to get a star chart and other details. NB predictions are approximate.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Jun	-3.5	-3.5	10°	W	01:19:53	86°	S	01:23:07	10°	E
01 Jun	-3.2	02:52:56	10°	W	02:56:05	49°	SSW	02:59:14	10°	SE
01 Jun	-2.9	22:45:49	10°	SW	22:48:49	37°	SSE	22:51:51	10°	E
02 Jun	-3.5	00:21:43	10°	W	00:24:57	83°	S	00:28:11	10°	E
02 Jun	-3.5	01:58:00	10°	W	02:01:13	67°	SSW	02:04:25	10°	ESE
02 Jun	-2.1	03:34:34	10°	W	03:37:09	22°	SSW	03:39:44	10°	SSE
02 Jun	-2.3	21:51:19	10°	SSW	21:54:00	25°	SSE	21:56:43	10°	E
02 Jun	-3.5	23:26:46	10°	WSW	23:29:59	71°	SSE	23:33:12	10°	E
03 Jun	-3.5	01:03:01	10°	W	01:06:15	80°	S	01:09:29	10°	E
03 Jun	-2.7	02:39:23	10°	W	02:42:20	33°	SSW	02:45:17	10°	SE
03 Jun	-3.3	22:31:50	10°	WSW	22:35:00	54°	SSE	22:38:10	10°	E
04 Jun	-3.5	00:07:59	10°	W	00:11:13	86°	S	00:14:27	10°	E
04 Jun	-3.2	01:44:16	10°	W	01:47:25	48°	SSW	01:50:32	10°	SE
04 Jun	-3.5	23:12:53	10°	W	23:16:07	83°	S	23:19:21	10°	E
05 Jun	-3.5	00:49:10	10°	W	00:52:22	66°	SSW	00:55:10	13°	ESE
05 Jun	-1.8	02:25:44	10°	W	02:27:30	20°	SW	02:27:30	20°	SW
05 Jun	-3.4	22:17:46	10°	WSW	22:20:59	72°	SSE	22:24:12	10°	E
05 Jun	-3.5	23:54:01	10°	W	23:57:14	80°	S	00:00:28	10°	ESE
06 Jun	-2.6	01:30:22	10°	W	01:33:03	32°	SW	01:33:03	32°	SW
06 Jun	-3.4	22:58:48	10°	W	23:02:02	86°	S	23:05:17	10°	E
07 Jun	-3.2	00:35:06	10°	W	00:38:13	47°	SSW	00:39:05	36°	SSE
07 Jun	-3.4	22:03:33	10°	W	22:06:47	84°	S	22:10:01	10°	E
07 Jun	-3.4	23:39:49	10°	W	23:43:01	65°	SSW	23:45:16	18°	ESE
08 Jun	-1.5	01:16:24	10°	W	01:17:41	17°	WSW	01:17:41	17°	WSW
08 Jun	-3.5	22:44:30	10°	W	22:47:44	79°	S	22:50:57	10°	ESE
09 Jun	-2.6	00:20:51	10°	W	00:23:47	32°	SSW	00:23:57	32°	SSW
09 Jun	-3.1	23:25:24	10°	W	23:28:32	47°	SSW	23:30:14	23°	SE
10 Jun	-3.3	22:29:58	10°	W	22:33:10	64°	SSW	22:36:22	10°	ESE

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
11 Jun	-2.4	23:10:50	10°	W	23:13:45	32°	SSW	23:15:14	21°	SSE
12 Jun	-2.9	22:15:13	10°	W	22:18:20	46°	SSW	22:21:26	10°	SE
13 Jun	-1.7	22:56:12	10°	W	22:58:42	21°	SSW	23:00:13	15°	S
14 Jun	-2.3	22:00:18	10°	W	22:03:14	31°	SSW	22:06:07	10°	SE

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.

Paul's Astronomy Podcast for June

Paul Whiting FRAS

Podcast, June 2015 www.oasi.org.uk/2015_06_pod.mp3

International SUNday, RSPB, Minsmere, 21 June 2015

The Plan

Assuming the Centre could accommodate approx. 30 people when divided, and 60 overall.

Two levels of talk, one aimed at Families and children, and another at an INTERMEDIATE level going deeper, principally for adults.

Two programmes, one for GOOD observing weather and one for BAD.

The Talks

Good weather version

The Sun – An Overview of its Structure and Features

30 min, 30 people max.

Description of:

Brecklands: Select from. Internal structure Sun, core, RZ, CZ, photosphere, chromosphere, corona. (maybe use all for Bad Weather program)? You decide.-

OASI: Surface Feature: sun spots, filaments, prominences, plages, flares, CME's

Bad weather version

The Sun – An Overview of its Structure and Features

45 min, 30 people max.

As above but with additional material e.g.:

- solar wind
- aurora
- space weather
- other topics as chosen by guest speaker/OASI/Brecklands.

Note: The content is for guidelines only but please adhere strictly to the timings for smooth running of the day.

Programmes

The event runs from 10.30am till 5.00pm.

Guest Speaker: Dr Helen Mason OBE, Cambridge University. [see p6]

GOOD Weather Programme

10.30 – 10.45	Introduction/safety
10.45 – 11.15	Families (Dr Mason)
	JOIN PEOPLE OUTSIDE FOR OBSERVING
11.45 – 12.15	Intermediate (OASI) see above details for content.
12.30 - 13.00	Families (Dr Mason)
13.00 - 13.30	Lunch/break/observing/chat with public
13.30 – 14.00	Families (Dr Mason) re- run of first talks if numbers require it or Space weather.
14.15 – 14.45	Intermediate (Brecklands) see above details for content.
15.00 – 15.30	Families/intermediate (Dr Mason) Any subject depending on demand.
4.00 – Finish	Open slot by OASI/Brecklands/activities depending on demand.

One screen/equipment for continuous live camera feed of the Sun (Brecklands will provide)

BAD Weather Programme

10.30 – 10.45	Introduction/safety
10.45 – 11.30	Families (Dr Mason)
11.45 – 12.30	Intermediate (OASI) see above for content.
12.30 - 13.30	Families (Dr Mason)
13.30 -14.00	Lunch/break/observing/chat with public
14.00 – 14.45	Families (Dr Mason) re run of first talks if numbers require it or Space weather.
14.45 – 15.30	Intermediate (Brecklands) see above for content.
15.30 – 16.15	Families/intermediate (Dr Mason) Any subject depending on demand.
1615 – 1700	Open slot by OASI/Brecklands/activities depending on demand.

Brecklands will use their own screen and equipment for continuous live web feed of the Sun.

Activities Outside – Good Weather

OASI	LYRA	DASH	BRECKLANDS
Hα	Hα	Hα	Hα
Hershel Wedge		White light	Solar Live feed
White Light			

Children's Activities – Annaliese

Table 1	Table 2	Table 3

Educational Table

Courses, books, societies, BAA, SPA , further information, etc.

PUBLIC SAFETY

Each society will be responsible for public safety when using their equipment.

Equipment MUST NOT be left unattended without it being fully decommissioned/made safe.

When using the centre's screen we MUST use the centre's lap top and OUR OWN disc/memory stick.

An Attempt at a "Twin" Graze

Alan Smith

For the first time in the history of OASI grazing occultation observations (41 years and counting) a single evening with two events occurred over the nights of 28/29th March 2015 (there has been an occurrence when 2 grazes happened in one 24 hr period but spanning 2 different nights). At around 2100hrs on the 28th, HIP 37685 and then at about 0045hrs on the 30th, ZC1183 would be 'grazed' by the moon. Although the graze tracks were some distance away south of Ipswich, this was an opportunity not to be missed.

James Appleton and I performed our usual double act to identify potential observing sites. James calculated the graze tracks, producing them as .kml files to be overlaid directly on Google Earth digital maps. Using Google Earth and OS maps we examined the tracks and identified a shortlist of half a dozen potential observing sites, choosing them to be off-road, away from sources of light pollution and with an unobstructed southern aspect. The sites chosen were well into North Essex around the Witham area. After negotiating the totally unnecessary traffic restrictions on the A12, I surveyed the sites a couple of weeks prior to the event, and quickly found them to be most unsatisfactory. For the first graze, only a site close to a busy road, with no shielding from traffic was the best I could find, and for the second graze, although a perfect location was found (on a farm), the date coincided with the farm managers birthday, so it was going to be too busy! The secondary sites were found to be heavily gated with no access for cars or telescopes. Back to square one!

Checking the tracks again on Google Earth, I found another couple of possible sites, one on the banks of Abberton reservoir and one in deepest, darkest Essex in the middle of Dengie Marshes. Again I negotiated the A12 and found that yes, the reservoir site was pretty good. We would however have to park on one side of a little used road, transfer the telescopes across the road, through a gate onto a very good path close to the side of the reservoir. Screened by a beech hedge, it wasn't going to be totally away from any passing traffic, but still pretty good. The site for the second graze, was another 50Km away so I decided that I would leave the survey until the night of the graze (just like the old days before Google Earth).

Unfortunately the date of the graze was the same as the second evening of the OASI open weekend, and some of our usual observers were involved in that. With a day to go to the graze, clear skies gave the first of the open evenings great opportunities for the visitors, but the day after gave way to drizzle and was totally overcast.

Our standard practice for occultation observations is to hold a telephone conference on the evening of the event to make a go/no-go decision. At 5.00pm on Saturday the 29th March we held the conference, and the decision to continue was postponed for an hour or so, as using satellite images I predicted that a clear weather window would open just in time. At 1830hrs, against my protestations that the weather window would arrive, the group decision was that the weather wasn't good enough and that the event should be scrubbed.

Martin Cook dashed from the conference call to the observatory, open up, set out visitor signs and then got ready for the open evening.

Of course, exactly as I had predicted, the weather window did open, with the moon and both stars clearly visible! However, a bitterly cold north easterly wind had also (as forecast) sprung up, and probably would have caused some considerable difficulty in being able to view the graze (high wind usually causes a lot of telescope shake in even the most robustly mounted portable telescopes) with both sites being in such exposed positions.

A missed opportunity?!

But……just like buses, you wait for ages for one to come, and then two arrive together! In January next year, another opportunity to observe a twin graze appears to be on the cards. Watch this space!

The Curious and Confounding Story Of How Arcturus Electrified Chicago

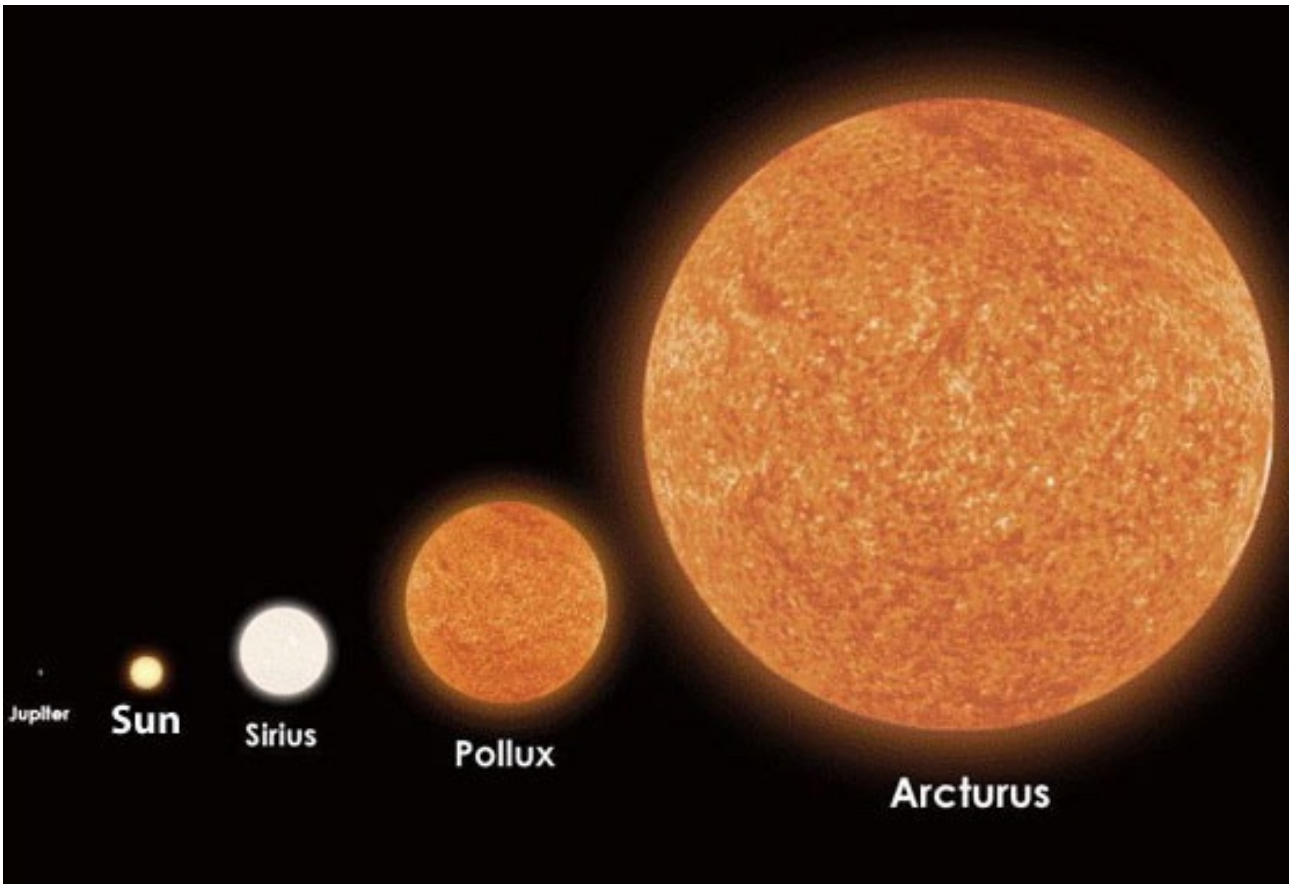
by Bob King on March 19, 2013

www.universetoday.com/100799/the-curious-and-confounding-story-of-how-arcturus-electrified-chicago/

Every star has a story but some are more curious than others. The star Arcturus has an electrifying story with a mysterious twist involving the 1933 World's Fair.

If you step out on a clear night in mid-March and follow the curve of the Big Dipper's handle toward the eastern horizon, you'll come face to face with Arcturus, the 4th brightest star in the sky. Pale orange and fluttering in the low air like a candle in the breeze, Arcturus is a bellwether of spring. By late May it shines high in the south at the onset of night. For the moment, the star hunkers down in the east, sparking through tree branches and over neighborhood rooftops.

The name Arcturus comes from the ancient Greek word *"arktos"* for bear and means "Bear Watcher". That's easy to remember because he follows **Ursa Major the Great Bear**, the brightest part of which is the Big Dipper, across the spring sky.



Arcturus is 37 light years from Earth and classified as an orange giant star. It spans 25 times the sun's diameter and shines 113 times more brightly

It was another spring 80 years ago on May 27,1933, that the city of Chicago opened its **Century of Progress Exposition** as part of the World's Fair highlighting progress in science and industry. 40 years prior in 1893 the city had hosted its first big fair, the World's Columbian Exposition.

In the early 1930s astronomers estimated Arcturus' distance at 40 light years. Edwin Frost, retired director of the Yerkes Observatory in Williams Bay, Wis., home to the world's largest refracting telescope, hit upon the idea of using Arcturus to symbolically link both great fairs which were separated by a span of 40 years.

At the time, the **photocell**, a device that produces an electric current when exposed to light, was all the rage. Clever entrepreneurs had figured out how to take advantage of light's ability to knock electrons loose from atoms to open doors and count shoppers automatically. They're still in wide use today from burglar alarms to toilets that magically flush when you step away.

Technological innovation through scientific progress was the theme of the 1933 fair. What better way, thought Frost, to highlight the benefits of science and link both great events than by focusing the light of Arcturus onto a photocell and using the electric current generated to flip a switch that would turn on the lights at the fair's opening.

Though we now know Arcturus is 37 light years away, at the time it was thought to be about 40. The light that left the star during the first world's fair in 1893 would arrive just in time 40 years later to open the next. Arcturus was not only at the right distance but bright and easy to see during May at the fair's opening. Could a more perfect marriage of poetry and science ever be arranged?

Although **Yerkes Observatory** was picked for the job, backups were needed in the event of cloudy skies. In the end, telescopes at the **University of Illinois Observatory in Urbana**, **Harvard College Observatory** and **Allegheny Observatory** in Pittsburgh all participated in the grand event.

On May 27, 1933 shortly before the appointed time, Century of Progress Fair president Rufus C. Dawes spoke to a crowd of some 30,000 people assembled in the courtyard at the Hall of Science:

> *"We recall the great Columbian Exposition of 1893. Never will its beauty be surpassed. Never will there be held an exposition of more lasting value to this city. It was for Chicago a great triumph."*
>
> *"We remind ourselves of that triumph tonight by taking rays of light that left the star Arcturus during the period of that exposition and which have traveled at the rate of 186,000 miles a second until at last they have reached us. We shall use these rays to put into operation the mysterious forces of electricity which will make light our grounds, decorate our buildings with brilliant colors, and move the machinery of the exposition."*

Above the speaker's platform hung a large illuminated panel, the bottom half of which displayed a map of the eastern U.S. with the locations of the four observatories. The top half contained the instruments that completed the circuit from Arcturus to a searchlight in the Hall of Science.

At 9:15 p.m. each of the four observatories borrowed bits of Arcturus' light, focused them onto their respective photocells and sent the electric current by Western Union telegraph lines to the Chicago fairgrounds.

In the book *Fair Management – The Story of a Century of Progress,* author Lenox Lohr described what happened next. One of the speakers, probably Philip Fox, director of Chicago's Adler Planetarium, stepped to the podium to issue the final instructions :

"Harvard, are you ready?"
"Yes."

A red glow ran across the map from Cambridge to Chicago.

"Is Allegheny ready?"
"Ready."
"Illinois ready?"
"Yes."
"Yerkes?"
"Let's go."

The switch was thrown, and a searchlight at the top of the Hall of Science shot a great white beam across the sky."

The crowd went bananas. It was such a huge hit, nearby **Elgin Observatory**was pressed into operation to light the fair in similar fashion every night for the remainder of the season.

Harnessing a distant star for mankind's benefit. We marvel at the 1933 fair promoters and astronomers for conceiving of this most ingenious way of linking past and present.

That would be the end of a wonderful story if it wasn't for one **Ralph Mansfield**. Mansfield, a student at the time at the University of Chicago, worked as a guide at Chicago's **Alder Planetarium**, which was also involved in the lighting ceremony. Before passing away in 2007, Mansfield shared the story of how ***he*** was the one to point the telescope at Arcturus and fire up the fairground lights.

I learned this while reading an **article by Nathan B. Myron, PhD** on the topic in which Mansfield sought to set the record straight. In **his version**, then-director of the Adler Planetarium, Philip Fox. was apprehensive about cloudy skies, so he arranged for Mansfield to set up a telescope in the balcony of the Hall of Science. As Fox delivered opening remarks, Mansfield used the Dipper's Handle to find Arcturus in a lucky break in the clouds, and at the key moment, fed its light to the photocell. The spotlight fired up and the day was saved.

So which is the true story?

"It's a bit of a mystery," said Richard Dreiser, public information officer for Yerkes Observatory. "No one really knows absolutely."

His sentiments were echoed by Bruce Stephenson, current curator at the Adler Planetarium: "The truth as far as we can ascertain it today is not really known. These things happened long ago."

Most historical accounts indicate that four observatories participated, but Mansfield's story remains. Will the real version please stand up?

[For more pictures, please see the source article. OASI is grateful to Bob for permission to reproduce his article and to Bill Barton for obtaining that permission. Ed.]

About Bob King

I'm a long-time amateur astronomer and member of the American Association of Variable Star Observers (AAVSO). My observing passions include everything from auroras to Z Cam stars. Every day the universe offers up something both beautiful and thought-provoking. I also write a daily astronomy blog called Astro Bob.

http://astrobob.areavoices.com/

The Ken Goward Collection

I visited Lorraine Goward a few weeks ago as she has moved and is trying to reduce many years of personal possessions (a problem shared by many others, no doubt!).

There are some BAA Handbooks (2006 and 2009) which anybody who is interested may have upon contacting me and arranging a mutually convenient time and place to collect.

However, the *pièce de résistance* is the limited edition designer plate made of fine English bone china that Ken commissioned from Caz Ceramics in Norfolk to commemorate the (very successful) viewing of the Transit of Venus from Orwell Park Observatory on 8 June 2008.

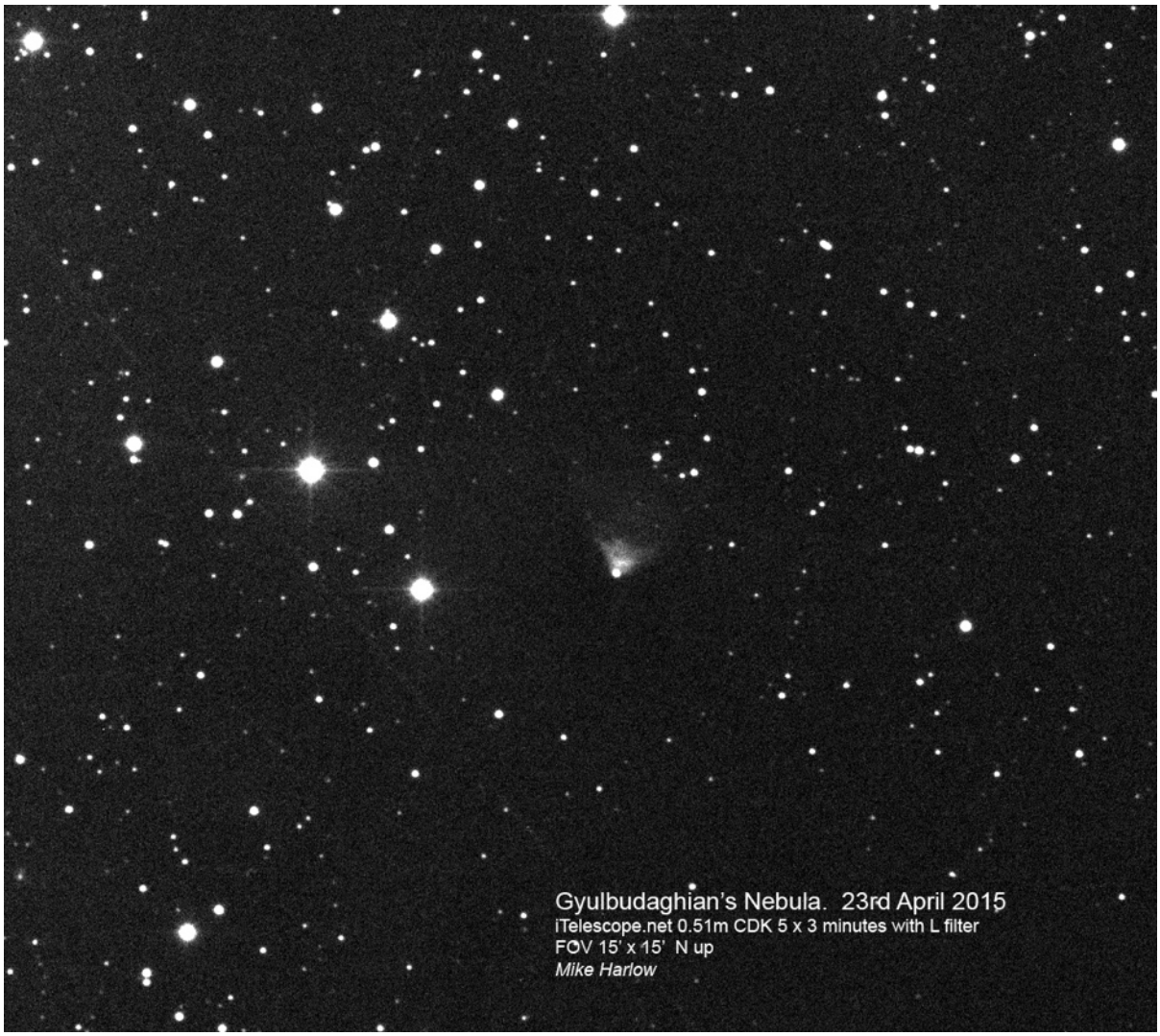
Only 50 plates were made and Lorraine would like £100. Beautifully presented in a sturdy white cardboard box, the 26.5 cm/10.5 inch diameter plate sits on a sea of blue material to display or safeguard or display it well.

The following photographs do not do it justice as my phone camera does not do close-ups well, and the closer it gets the more blurred the image.

Lorraine wishes me to be the intermediary so if you are interested in adding this to your collection pleas contact me on tinah1@talktalk.net or call me on 07825 699 539.

Tina Hammond

Gyulbudaghian's Nebula, 23rd April 2015



A rather grainy image from my last remote observing session. Same general shape as last month.

The home telescope upgrade is going well so hopefully my next image will be from the end of the garden rather than New Mexico...

Mike Harlow

Measures of the solar power reaching the Earth during the partial eclipse of 20 March 2015

James Appleton

The May 2015 edition of the OASI Newsletter (pages 21-22) contained summary reports by Alan Smith and Martin Cook of measures of the solar power reaching the Earth during the partial eclipse of 20 March 2015. These showed a significant drop in the total power around the time of greatest eclipse, and a dip in the ambient temperature lagging by approximately 20 minutes. Unfortunately, comparison of the two measures was hampered by what can best be described as an *awkward* choice of scale for the abscissa of the power graph and lack of alignment of the two graphs!

I've recently re-drawn the graphs and added a third measure, by Martin, of the total luminosity during a portion of the latter part of the eclipse. By showing all the data on a single graph with aligned scale, the three measures can be easily compared. Note that, at Ipswich, 1st contact

occurred at approximately 08:25 UT, maximum eclipse (85%) at 09:31 UT and 4th contact at 10:41 UT.

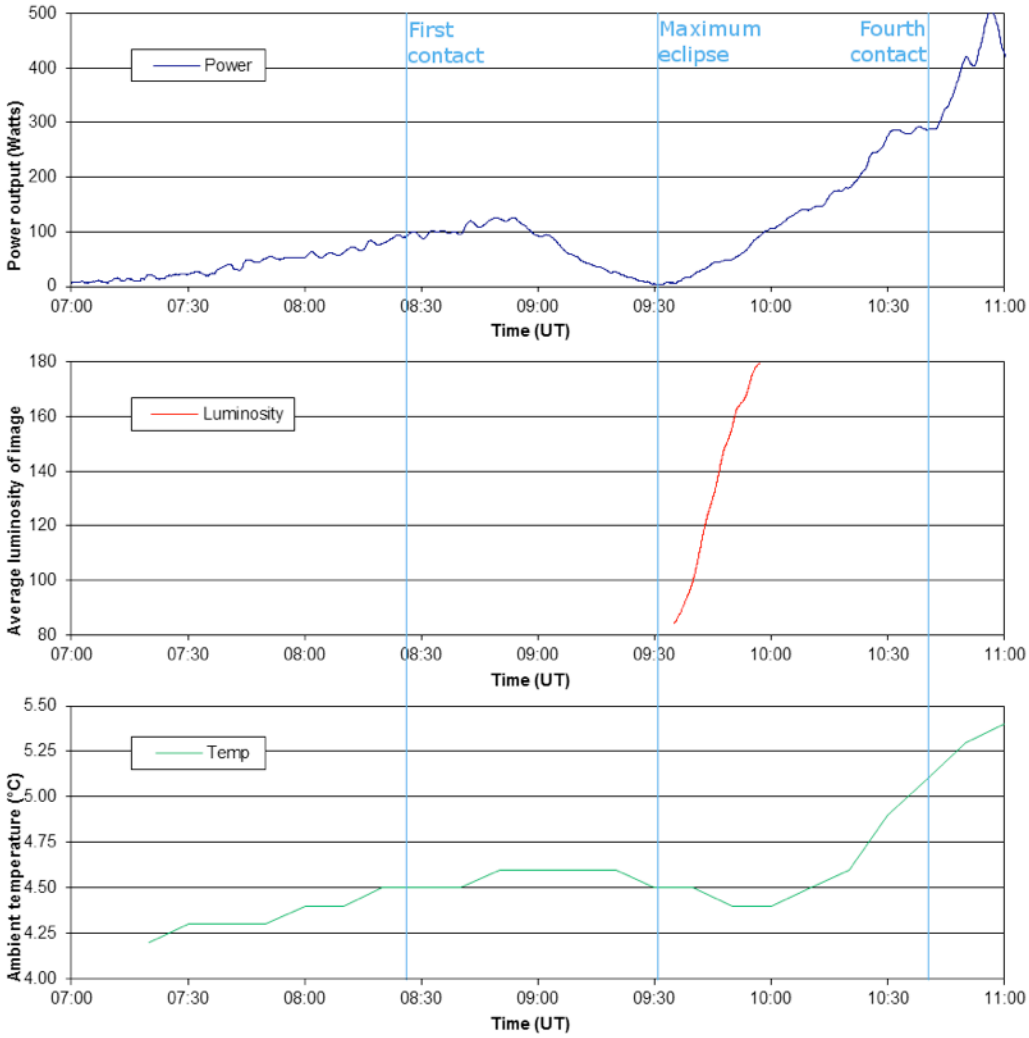
Alan used a photo-voltaic solar panel array located just north of Ipswich to monitor the ambient light level. Under typical conditions, with a uniformly illuminated sky, the power produced by the array would gradually increase from dawn until around 11:30 UT (the array is oriented slightly east of south so the power doesn't peak at midday). During the eclipse, the power increased from approximately one hour after sunrise (which was at 05:59 UT) until around 08:54 UT when it slowly dropped off, reaching a minimum at about 09:33 UT, then increased steadily, regaining its "normal" value by about 10:43 UT. Although the variation could have been caused by changes in cloud cover, visual observation suggested that the latter was fairly uniform throughout the period in question.

On the east side of Ipswich, Martin used a camera in a fixed position to record an image of his garden every 10 seconds from 09:35 to 09:57 (i.e. slightly over 20 minutes starting shortly after maximum eclipse). Analysis of the images using the GIMP *Histogram* function provided the mean image (per pixel) luminosity, showing a steady increase over the period in question. (The scale of luminosity runs from 0 for pure black to 255 for pure white.) Amusingly, the data are slightly corrupted near the start of the sequence of images thanks to the *Cook Hound* running through the field of view!

The *Cook Hound* (behind and to the left of the telescope), cause of data corruption!

Meanwhile, Martin's weather station recorded the ambient temperature in the shade. This shows a clear dip around 20 minutes after greatest eclipse, although the change is not as marked as for power of the solar array. This confirms the impression of observers at Ipswich waterfront that the temperature dropped around this time.

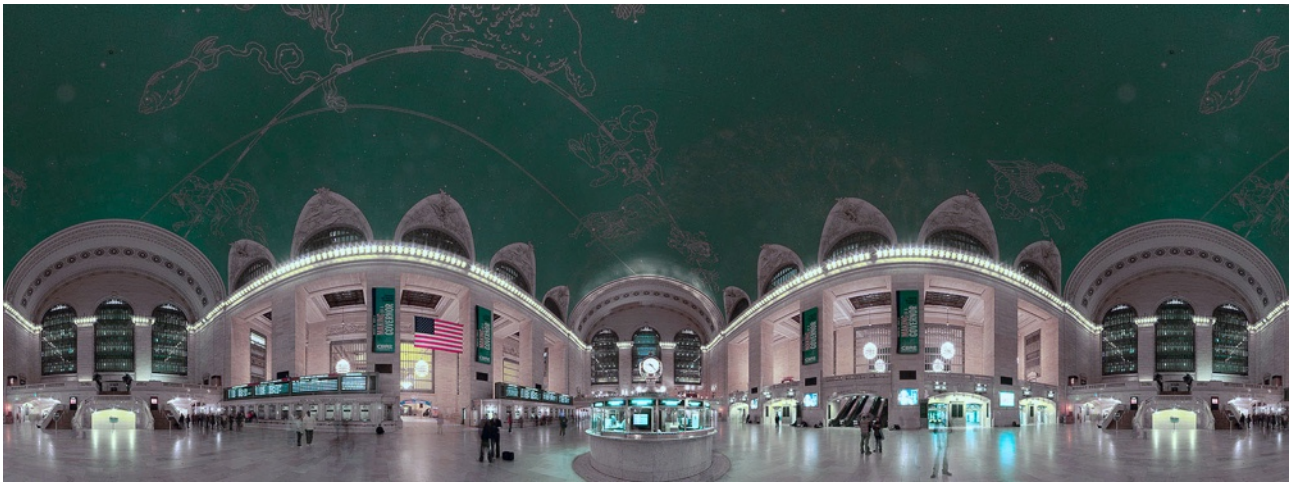
James Appleton



Grand Central Terminal, New York

Bill Barton, FRAS.

Perhaps the most iconic Beaux Art building (an architectural style that originated in France in 1700 and lasted to 1950 – maybe a more familiar example might be that of the Casino at Monte Carlo) to be found anywhere in the world is the Grand Central Terminal of the Metro-North Railroad located at the junction of East 42nd Street and Park Avenue in New York, USA. It is just over one hundred years old, officially opening to great fanfare at 12:01am on Sunday February 2nd 1913 with the first train leaving twenty-five minutes later. Now that air transportation has the monopoly on long distance travel the station only serves local commuter traffic. However this still amounts to around three quarters of a million people passing through each work day (thats five times the entire population of Ipswich) on just under three hundred departures from its world record 44 tracks (platforms). The 1913 station replaced an earlier one built in 1871. In total it is double the size of the United Kingdom's largest station at Waterloo in London, which is 25 acres.



But, if you pause there a while, as I recently did, and look up what do you see? A beautiful blue painted barrel vaulted ceiling 125 feet (38m) above you with a view of the night sky. To give you

an idea of the scale of this part of the building the floor is 275 feet (84m) long by 120 feet (37m) wide. This equates to 3/4 acre or 0.3 hectare.

Only part of the sky is shown, that which can be seen from the latitude of New York (or Southern Europe) during the winter months of October through March. Some 2500 stars are depicted, as is the Milky Way. Lines showing the location of the celestial equator and ecliptic plane are also included. The brightest sixty-three stars are marked by individual electric lamps. A team of fifty painters worked under the direction of one of the buildings architects Whitney Warren (1864-1943) to produce the artwork.

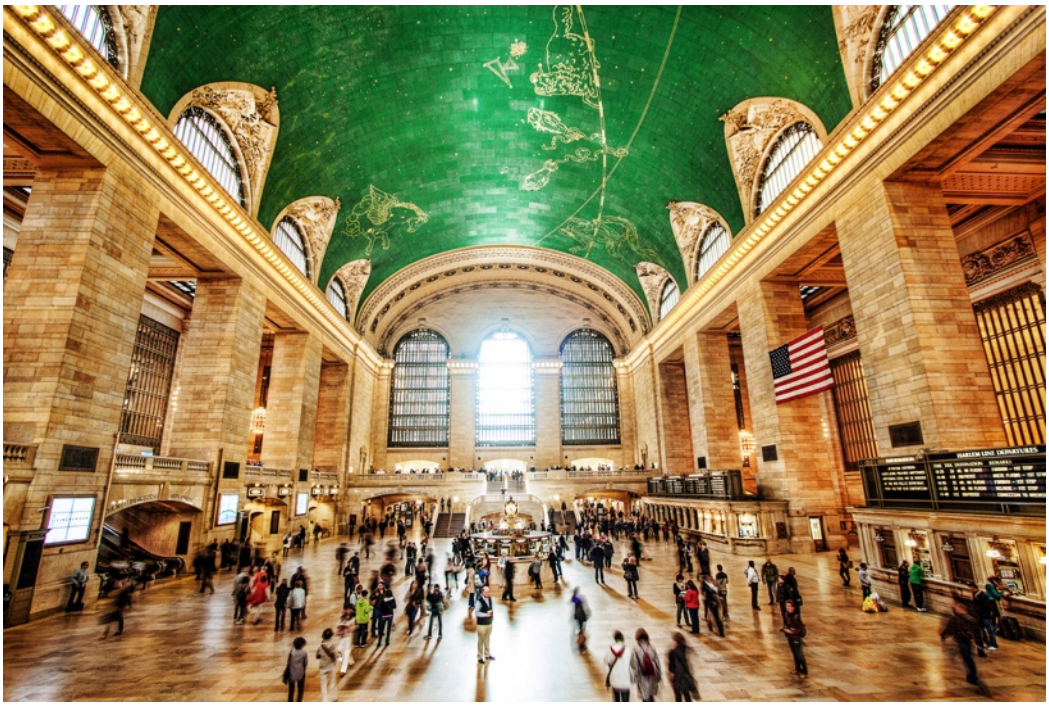
Classical figures are painted in for the following zodiacal constellations:-

Aquarius	Pisces
Aries	Taurus, with the Pleiades shown separately
Gemini	Cancer

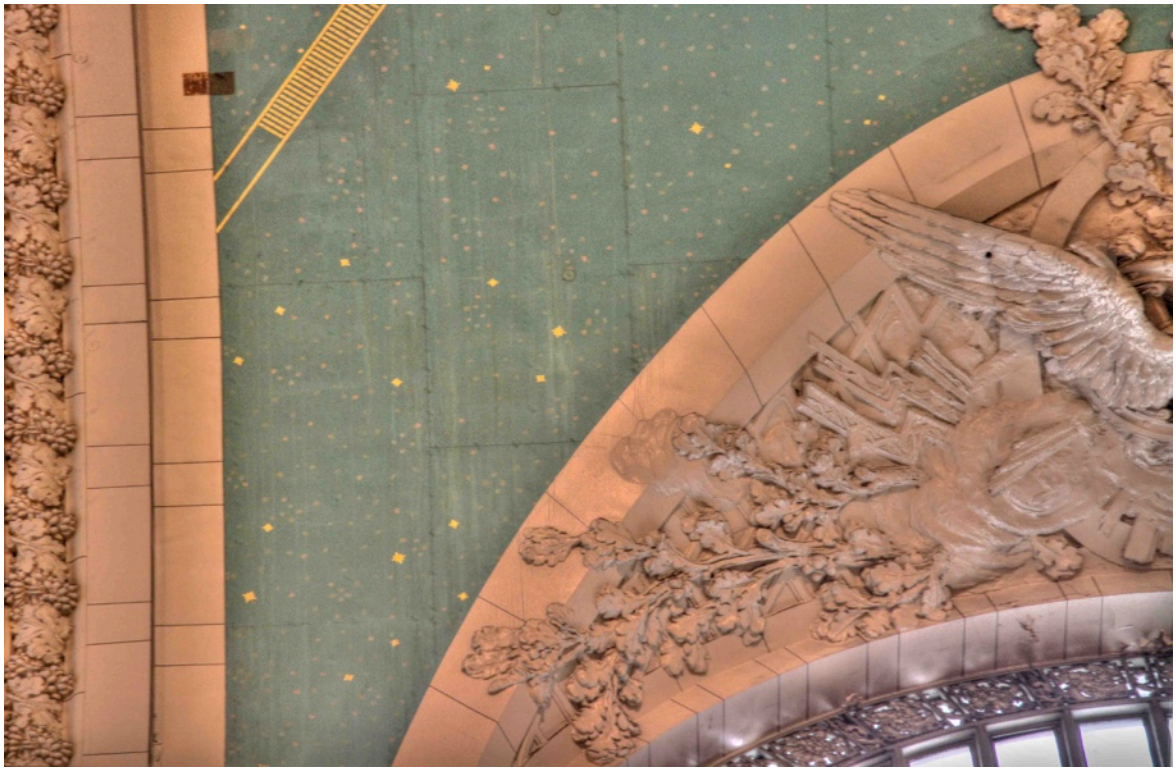
Some non-zodiacal figures are also shown:-

Pegasus	Orion	Triangulum

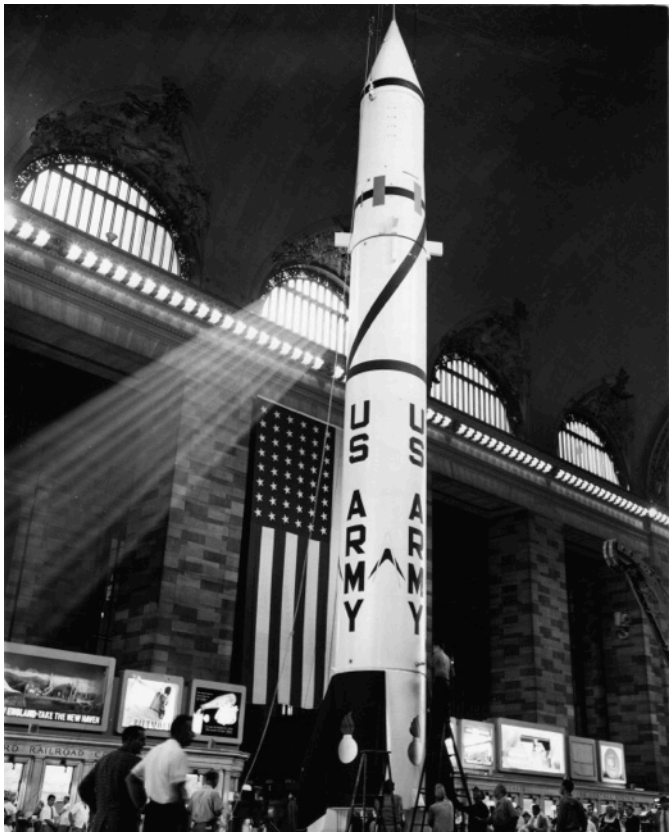
Sadly, the depiction of the sky is very far from the appearance of the real thing. While the stars within some constellations appear correctly as they would from the Earth, other constellations are reversed left-to-right, as is the overall arrangement of the constellations on the ceiling. For example, Orion, is correctly and beautifully rendered, but the adjacent constellations Taurus and Gemini are reversed both internally and in their relation to Orion, with Taurus near Orion's raised arm where Gemini should be. An harassed railroad official attempted to explain the errors by stating that the overall ceiling design might have been based on the medieval custom of depicting the sky as it would appear to God looking in at the celestial sphere from outside, but that would have reversed Orion as well. A more likely explanation is partially mistaken transcription of the sketch supplied by the Columbia Astronomy professor Harold Jacoby (1865-1932) where some artists worked from plans placed against the ceiling while others work from plans placed below them. Though the astronomical inconsistencies were reported in the New York Times on the 23rd March 1913 only a few weeks after opening based on an observation by an astronomically savvy commuter from New Rochelle, they have not been corrected.



The original ceiling was replaced in the late 1930s to correct falling plaster. More recently during a twelve year renovation programme that finished in 1996, the ceiling was found to be covered by a layer of black grime, thought to be diesel fumes and soot. Chemical analysis revealed it, however, to be tar and nicotine from tobacco smoke. A single dark patch was left unrestored above the Michael Jordan Steakhouse as a reminder of the grime that once was.



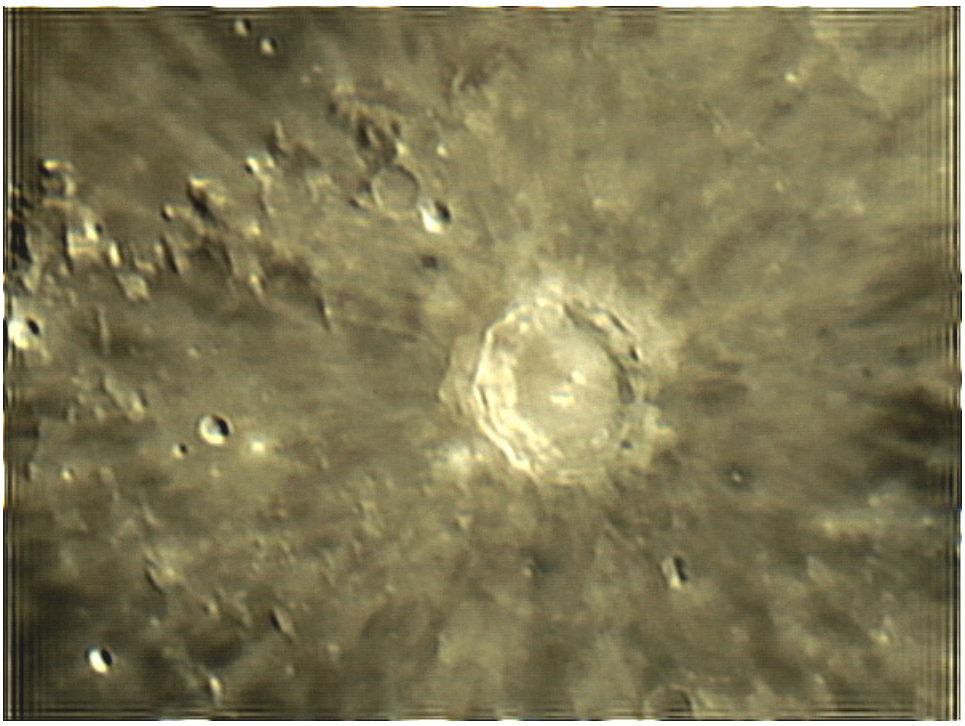
Specific damage occurred in 1957 when a six inch diameter (152mm) hole was cut amid the stars above the image of Pisces. This was to enable a Redstone rocket to be set up in the concourse to counteract feelings of American insecurity spawned by the launch of the Soviet Sputnik spacecraft. With no other way to erect the missile, the hole was cut so the rocket could be lifted into place. Historical preservation dictated that this hole remain (as opposed to being repaired) as a testament to the many uses of the Terminal over the years. Following the 9/11 attacks in 2001 a large 'Stars and Stripes' was hung from the ceiling in memory of the victims.



In the photos the solid line is the celestial equator and the dashed line is the ecliptic. Where the two lines cross used to be called the 'First Point of Aries', now the 'Vernal Point'. This is the zero point for measurement in Right Ascension (longitude in the sky). Due to the precession (wobble) of the Earth's axis this point is now in the constellation of Pisces.

Should you ever find yourself in New York you might to find time to visit too, and gaze upwards. Grand Central Terminal is to be found at the meeting of the Metropolitan Transportation Authority 4, 5, 6, <6>, 7, <7>, & S lines in Eastern Central Manhattan. The < > symbol (locally pronounced as 'diamond') denote express trains. Unlike the London Underground trains that stop at all stations along a particular line the New York MTA operates 'express service' which only stop at certain limited stations, and 'local service' which stop at every station.

Copernicus

Mike O'Mahoney

Copernicus crater taken with moon phase of 90% on 2nd March 2015. Diameter of main crater 93 km, depth 3.8 km. 230 mm SCT + EOS 60 D, 640x480 movie + Lynkeos to stack.