



OASI News

The newsletter of the Orwell Astronomical Society



The extended corona
Photo by Paul Whiting FRAS

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

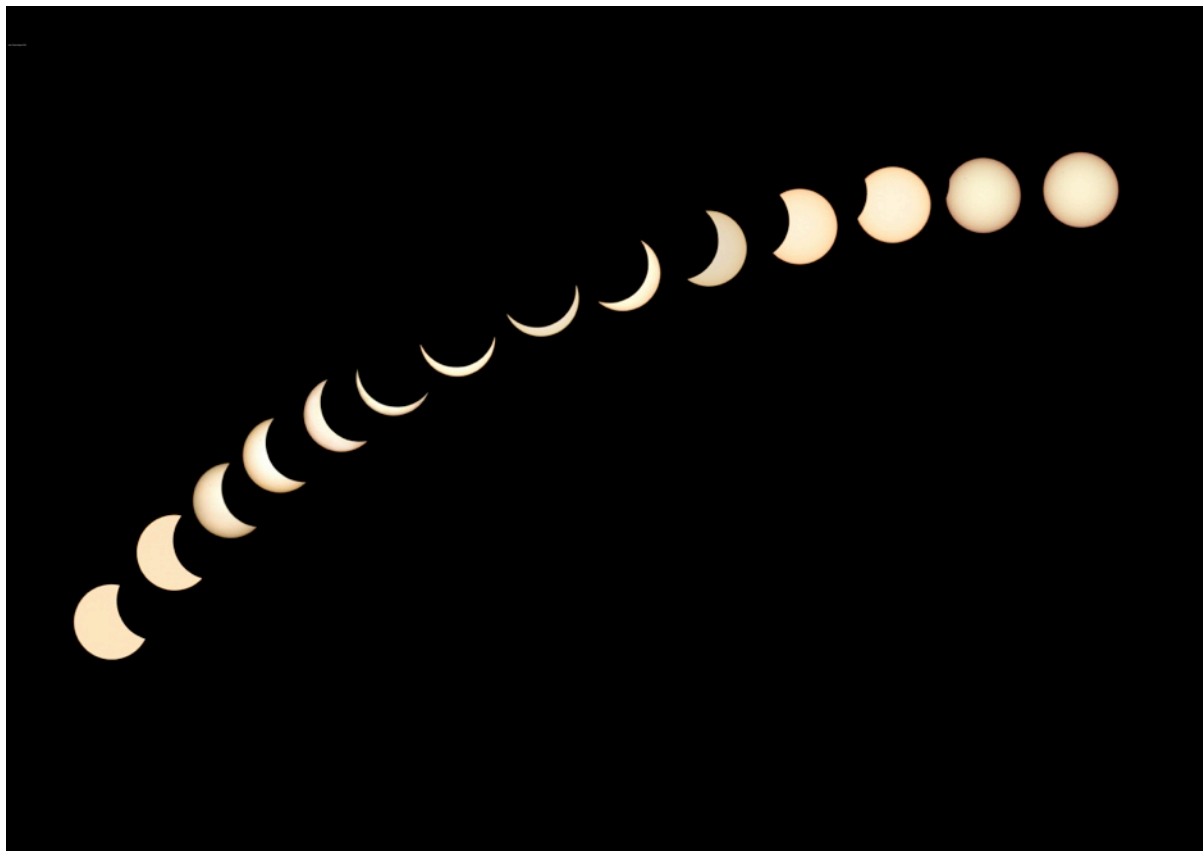
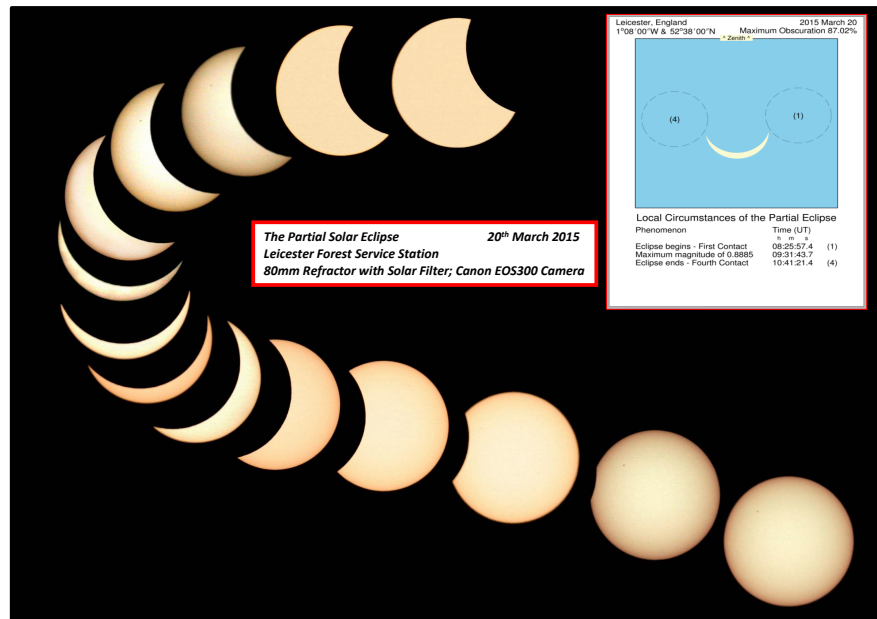
The UK Partial Solar Eclipse

Neil J Short

A mosaic from the recent Partial Solar Eclipse – no tracked mount so it was a simple manual camera mount, a very old EOS300 camera and an 80mm refractor with a glass solar filter. Then it was into Photoshop for the mosaic.

I was journeying north up the M1 (with telescope just in case) and finally hit sunshine at just

south of Leicester – so this was taken in the car park of the Leicester North Services on the M1. I had missed first contact – first picture was just before 9:00 a.m. but carried on until last contact.



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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: @OASlpswich

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.

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

Spreadsheets: xls, xlsx, OpenOffice/LibreOffice, Numbers

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

Ipswich Community Radio

Wanted: a member of OASI to take over from Neil Morley / Mike Norris on the weekly Ipswich Community Radio night sky slot. Could be a job share?

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) 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
	<i>vacant</i>	Safety & security
	Martin Cook	Membership, Tomline refractor maintenance
	Tina Hammond	Librarian
	Peter Richards	Lecture meetings, Email distribution lists
	Martin Richmond-Hardy	Newsletter
	John Wainwright	Equipment curator
	Mike Whybray	Workshops
Co-opted	Avtar Nagra	Newbourne Observing Group
	Kevin Fulcher	Newbourne Observing Group
	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.

Welcome to New Members

Peter Hughes

2015 Outreach Meetings

Contact: Roy Gooding or David Murton

Astronomy in the Park (annual solar event)

Option 1

Saturday / Sunday 16th / 17th May

Venue: Reg Driver Centre

Set up time from 10:00

Open to public from 11:00 to 16:00

Option 2

Saturday / Sunday 23rd / 24th May

Same times as for option 1

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. More details to follow, but should be the same as in 2014

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)

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

Sunday 12th September (date to be confirmed)

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

- Planck results and Jodrell Bank's contribution'. RAS talk by Prof. Richard Davis <http://www.ras.org.uk/events-and-meetings/ras-meetings/ordinary-meeting-videos/2564-planck-results-and-jodrell-bank-s-contribution>
- Evidence of liquid water found on Mars ow.ly/3xJJup
- ATel 7390: Probable Bright Supernova discovered by PSST bit.ly/1Ez5Qhn
- Rosetta & Philae find comet nucleus not magnetized http://www.esa.int/Our_Activities/Space_Science/Rosetta/Rosetta_and_Philae_find_comet_not_magnetised
- Saturn's Titan: "A Fascinating and Evolving World" goo.gl/eCxe4K
- Seen the new Moon maps from the US Geological Survey? They are quite nice. <http://io9.com/these-are-easily-the-most-gorgeous-maps-of-the-moon-eve-1698187560>

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>

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.
Monday 4 May 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group. Bring your telescope to our dark-sky site. Talks on astronomy if weather unsuitable for observing.
Monday 18 May 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
16/17 May or 23/24 if cloudy	Christchurch Park	Roy Gooding	Public Event Solar Observing events
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.

Date and Time	Location	Contact	Event
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 14
Monday 22 June 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
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		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”

Date and Time	Location	Contact	Event
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: <i>Lunatic Astronomy.</i>
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.
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: <i>The Giant Planet Jupiter.</i>
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.

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

DASH Astro Events – May

MAY OBSERVING SESSION Saturday 9th May 2015 - @Westleton Heath Join us for our last planned evening astronomy viewing event this side of the summer solstice. If this event is cancelled due to poor weather notice will be given on the day via email and on the website www.dash.moonfruit.com be sure to check. Where possible we will still meet up albeit in The Crown at Westleton for an Astro Social evening.

ASTROPHOTOGRAPHY – DAVE MURTON Saturday 23rd May 2015 - @Westleton Village Hall DASH astrophotography lead and OASI Chairman, Dave Murton has spent the past two years teaching himself astrophotography. Following on from last year's introductory talk, Dave will be

bringing us up to date with developments in the field as well as showing us how we too can get involved in this interesting area of viewing.

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

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.

Newbourne Dates for 2015

April 6th (Bank Holiday) & 20th. May 4th. & 18th. 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 found in the Newsletter.

Astronomy Workshops

Contact Mike Whybray

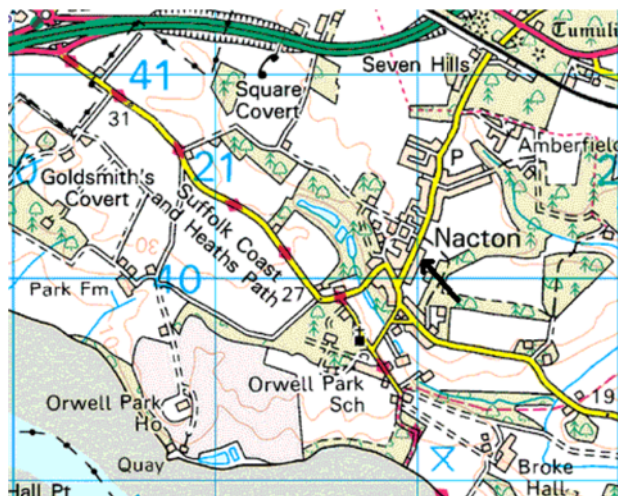
Location: Nacton Village Hall IP10 0EU

Doors open at 7:30pm.

Workshops start at 7:45pm

If you are a new OASI member, or haven't been to one of these informal workshops before, they are a mixture of events of different characters including beginners talks, 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!

Nacton Village Hall is next to the small village school, just below and left of the N in Nacton on the map. Please park on the same side of the road as the hall, but avoid parking on the white lines which mark clear spaces for various driveways and passing places. The police do occasionally check up on this!



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 — "Lunatic 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

The Night Sky in May

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
04 May 04:42

Last Quarter
11 May 11:36

New Moon
18 May 05:13

1st Quarter
25 May 18:19

Sun and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	05:26	20:19		
	31	04:42	21:04		
Mercury	1	06:01	22:20	-0.3	Maximum eastern elongation-May-07
	31	05:02	20:33	4.3	Inferior conjunction-May-30
Venus	1	07:14	00:16	-4.0	
	31	07:51	00:27	-4.2	
Mars	1	05:57	21:19	1.6	
	31	04:58	21:19	1.8	
Jupiter	1	11:46	03:01	-1.9	
	31	10:06	01:09	-1.7	
Saturn	1	22:05	06:43	0.9	Opposition-May-23
	31	19:55	04:39	0.9	
Uranus	1	04:53	17:57	5.9	
	31	02:58	16:07	5.9	
Neptune	1	03:50	14:17	7.9	
	31	01:53	12:21	7.9	

Meteor Showers

Source: BAA Handbook 2015 p97-99

Shower	Limits	Maximum	ZHR	Notes
α -Scorpiids	Apr 20 - May 19	Apr 28, May 13	5	Part of the Scorpio-Sagittarius complex. Several weak radiants. April-July
η -Aquarids	Apr 24-May 6	May 5-6	40	Fine southern shower, poorly seen from the UK. Broad maximum and multiple radiant.

Visible ISS passes $\geq 15^\circ$ 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.
19 May	-1.4	03:21:52	13°	S	03:23:26	18°	SE	03:25:44	10°	E
20 May	-2.7	04:01:33	10°	SW	04:04:37	41°	SSE	04:07:42	10°	E
21 May	-2.2	03:08:31	20°	SSW	03:09:56	28°	SSE	03:12:48	10°	E
22 May	-1.6	02:15:30	18°	SE	02:15:30	18°	SE	02:17:40	10°	E
22 May	-3.2	03:48:01	10°	WSW	03:51:11	60°	SSE	03:54:23	10°	E
23 May	-2.9	02:54:52	24°	SW	02:56:24	43°	SSE	02:59:29	10°	E
24 May	-2.3	02:01:43	29°	SSE	02:01:43	29°	SSE	02:04:30	10°	E
24 May	-3.4	03:34:27	10°	WSW	03:37:41	77°	S	03:40:55	10°	E
25 May	-3.3	02:40:55	22°	WSW	02:42:47	61°	SSE	02:45:59	10°	E
26 May	-3.0	01:47:36	42°	S	01:47:54	44°	SSE	01:51:00	10°	E
26 May	-3.4	03:20:50	10°	W	03:24:04	86°	S	03:27:19	10°	E
27 May	-1.8	00:54:11	23°	ESE	00:54:11	23°	ESE	00:55:55	10°	E
27 May	-3.5	02:26:37	16°	WSW	02:29:04	77°	S	02:32:19	10°	E
28 May	-3.4	01:33:03	37°	SW	01:34:05	62°	SSE	01:37:17	10°	E
28 May	-3.4	03:07:05	10°	W	03:10:20	85°	S	03:13:34	10°	E
29 May	-3.1	00:39:15	44°	SSE	00:39:15	44°	SSE	00:42:13	10°	E
29 May	-3.5	02:12:02	10°	W	02:15:17	86°	S	02:18:31	10°	E
29 May	-3.3	03:48:19	10°	W	03:51:30	58°	SSW	03:54:41	10°	ESE
29 May	-2.2	23:44:59	26°	ESE	23:44:59	26°	ESE	23:47:03	10°	E
30 May	-3.5	01:17:20	13°	WSW	01:20:12	78°	S	01:23:26	10°	E
30 May	-3.5	02:53:13	10°	W	02:56:27	74°	S	02:59:41	10°	ESE
30 May	-2.0	22:48:10	17°	S	22:49:12	20°	SE	22:51:40	10°	E
31 May	-3.5	00:21:54	10°	WSW	00:25:06	63°	SSE	00:28:18	10°	E
31 May	-3.5	01:58:07	10°	W	02:01:21	84°	S	02:04:35	10°	E
31 May	-2.9	03:34:25	10°	W	03:37:29	40°	SSW	03:40:31	10°	SE
31 May	-3.2	23:26:55	10°	SW	23:30:01	46°	SSE	23:33:08	10°	E

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.

Occultations during May 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 (UTC)	D/R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
22 May 2015	21:57:35	D	0.24+	-13	12	7.3	ZC 1212
24 May 2015	22:48:23	D	0.42+	-16	13	6.8	ZC 1429
26 May 2015	22:39:54	D	0.61+	-15	22	6.8	ZC 1624
27 May 2015	23:54:13	D	0.71+	-17	14	6.3	ZC 1735

Paul's Astronomy Podcast for May

Paul Whiting FRAS

[Podcast, May 2015 www.oasi.org.uk/2015_05_pod.mp3](http://www.oasi.org.uk/2015_05_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
H α	H α	H α	H α
Herschel Wedge		White light	Solar Live feed
White Light			

Children's Activities – Annaliese

Table 1	Table 2	Table 3
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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.

The Barlow Lens

Bill Barton, FRAS.

Peter Barlow (1776 – 1862), an instructor at the Royal Military Academy in Woolwich, south east London, discovered that a negative focal length (concave or diverging) lens placed inside the focal plane of a telescope objective increased the magnification of the telescope. The formula for the increase in magnification is

$$M = 1 + (x / f)$$

Where M = Barlow amplification factor

x = distance between the Barlow lens and the new focal plane, and

f = Barlow lens focal length

It goes without saying that the latter two terms are measured in the same units.

Later we will use 'd' which I would like to define now as the distance of the Barlow lens inside the original focal plane.

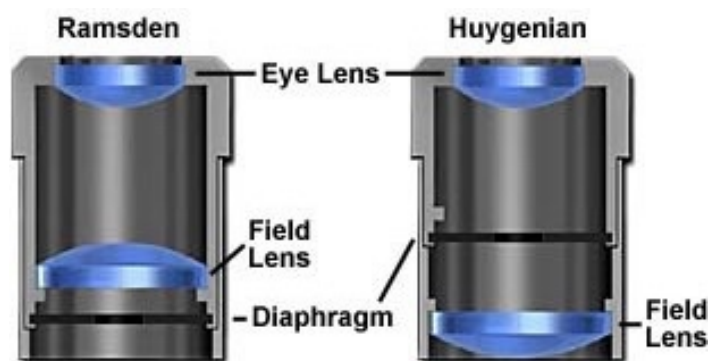
Thus, for a 2x Barlow, the length of the tube that holds the Barlow lens (strictly the distance between the centre of the Barlow lens and the eyepiece focal plane) is approximately equal to the focal length of the Barlow lens. One way of determining rather than guessing the Barlow's focal length is to measure the clear aperture of the lens and draw a circle TWICE this diameter on a piece of card. Then, when the lens is held in sunlight (the Sun is so far away that the light we get from it can be considered parallel) and the card is moved back and forth until the bright circle formed by the lens just fills the drawn circle then the distance between the lens and the card is the focal length of the Barlow lens (this trick is necessary as the Barlow lens is a diverging lens and will not form an image as a normal convex lens would do). As a rule of thumb Barlow lenses are generally 75 to 100mm (3 to 4 inches) (negative) focal length.

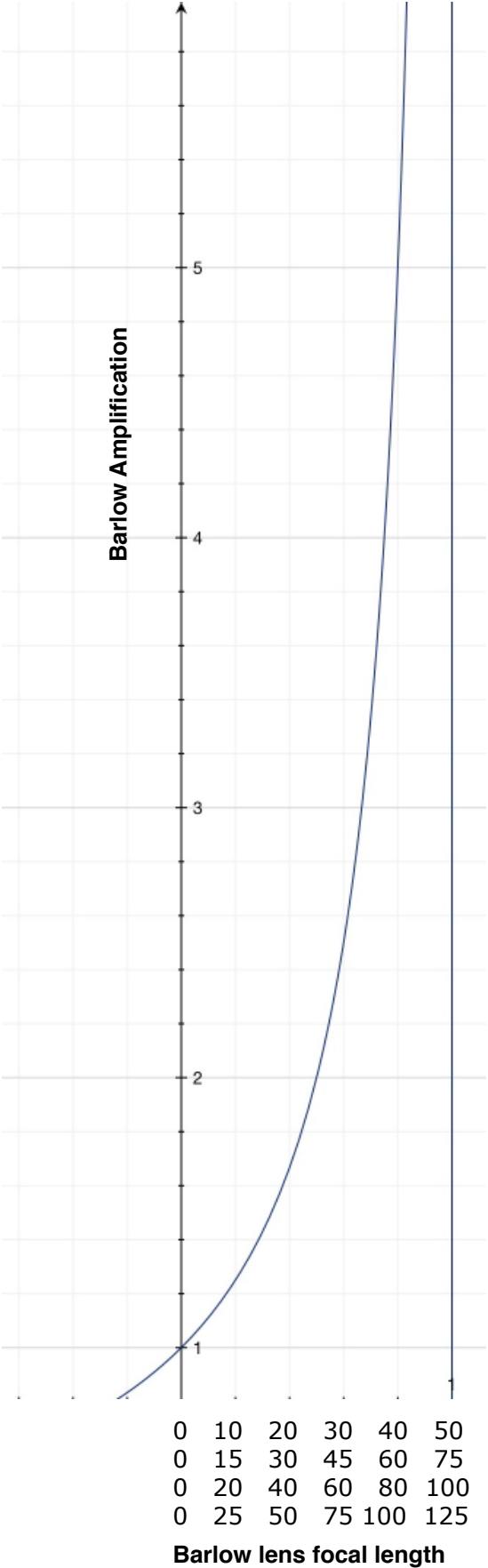
The example below shows that there is no fixed relationship between the focal plane of an eyepiece (where the 'field stop' or diaphragm is) and shoulder on the outside of the eyepiece tube that limits how far into the focuser the eyepiece fits. Thus we cannot guarantee where the eyepiece focal plane will be in relation to a Barlow lens. For this reason the Barlow amplification factor should only ever be taken as approximate.

In the Ramsden eyepiece the focal plane (at the diaphragm) is outside the field lens, but in the Huygenian it is between the two lenses.

Further if we deliberately alter the distance between the Barlow lens and the eyepiece we change the Barlow amplification factor. Increasing the distance will increase the Barlow factor and this can be done by inserting an extension tube (or star diagonal) between the Barlow lens and the eyepiece. Thus a 2x Barlow can be

changed into a 2.5x or 3x. Experimentation and measurement will be necessary to determine the new factor. As a guide a star diagonal can be expected to add a little more than the size of its fitting to this distance, thus a two inch diagonal will add around 60mm and an inch-and-a-quarter around 35mm, this is because there is always a small distance between the two tubes attached to the body of the diagonal and its vertex as well as the length of the light path through the diagonal. Decreasing the distance between the Barlow lens and the eyepiece will decrease the Barlow factor to, for example, 1.8x or 1.5x and this can sometimes be done by unscrewing the Barlow lens from its holder and screwing it directly into the end of the eyepiece barrel. Alternatively a different extension tube could be used.





Here is a graph depicting the ratio of distance inside the original focus over Barlow lens focal length on the x (horizontal) axis versus Barlow amplification factor on the y (vertical) axis. That is to say when x is 0.5 the Barlow lens is half its focal length inside the primary focus.

The limit on where the Barlow lens can be placed is a result of the following formula

$$M = f / (f - d)$$

Where M = Barlow amplification factor

f = focal length of the Barlow lens,

and d = distance of the Barlow lens inside the original focal plane

Thus as the Barlow lens approaches a distance inside the objective focal plane equal to its own focal length the (f - d) term falls to zero and, as this is divided into f, the Barlow factor becomes infinite and it is no longer possible to focus the image.

So, does the Barlow have any disadvantages? Well, yes, I can think of at least two. First is that you are placing another piece of glass between you and the object under scrutiny so a little loss of light (around 3%) is to be expected. Second is that a Barlow designed to work at 2x may not work well, or at all, at 5x, for example.

Bill Barton FRAS

There is a version of this article on the OASI website

http://www.oasi.org.uk/Telescopes/Barlow_lens/Barlow_lens.shtml

The "Flip Side" of a Barlow Lens

Bill Barton, FRAS



Barlow lenses come in tubular holders that allow the Barlow lens to sit inside the normal focal plane of the objective and holds, in turn, the eyepiece at the new focal plane of the objective and Barlow lens combination. The Barlow lens provides amplifying power to the telescopic system.

The "flip side" is that the new focal plane is always further away from the objective than the original and, I believe, there is a case where this might be an advantage.

One problem we have in using the Tomline Refractor is that the focal plane is quite close to the back end of the optic tube. This means that we cannot use a star diagonal as we do not have the facility to wind the focuser far enough into the tube to accommodate the extra light path demanded by the diagonal.

Maybe a Barlow lens would help us overcome this?

To minimise the "unwanted" amplification provided by the Barlow lens I unscrewed the lens from its tubular holder and attached it to the nose of the diagonal. The light path through the diagonal was slightly longer than

the length of the Barlow lens tube. The change was from around 110mm (the (negative) focal length of the Barlow) to approximately 130mm. This increased the power of the Barlow from two times to possibly around 2.2 times. I also used the longest focal length eyepiece available.

Now, the focal length of the Tomline objective (3895mm) divided by the focal length of the eyepiece (40mm) gives the magnification of the system without the Barlow lens as 97 times.

Knowing the focal length of both the objective and the eyepiece the, remaining, unknown Barlow factor can be evaluated. To measure this I propose using the antiquated technique of measuring the exit pupil (around 2.6mm without Barlow lens) and dividing this into the objective aperture (250mm) to find the effective magnification. A "Berthon's Dynamometer" could be used to take this measurement.

The maximum usable magnification is often quoted as 50x per inch of aperture or double the aperture in millimetres, for the Tomline this would be 500x, and knowing the focal length of the objective, gives a minimum eyepiece focal length of just under 8mm. This would equate to a Barlow amplification factor of $(40/8)$ five if we kept with the 40mm eyepiece. Alternatively, if the Barlow provides an amplification of 2.2 times the minimum focal length eyepiece we could expect to use would be just under 18mm $(3895 \times 2.2 / 500)$.

The 'downside' of this is that the Barlow lens still amplifies the magnification of the system and this raises the minimum focal length of useable eyepieces.

The ultimate in this direction would be to place the Barlow lens at its focal length inside the objective's focal plane and so produce parallel (collimated) light, a 'focal reducer' would then be necessary to re-produce the converging light (and focal plane) required by the eyepiece to produce an image. The distance where the light was parallel could, of course, be made any length required.

For Sale:

Europa 203mm (8 inch) Newtonian reflector, 800mm focal length with EQ5 equatorial mount on tripod, dual axis drive with battery pack, 10x50 right-angle finder, all made by Orion Optics
Cost £900 new in Feb 2002 Will accept £250 o.n.o.

Price includes various 31.7mm diameter coated eyepieces 6.3 to 25mm focal length including high quality lanthanum types with 7 and 13mm focal length (costing £90 and £160 new) and a Barlow x2 lens.

Telephone 01206 391311 or 07984708723

David Mackie



Sunspots 14 April ~16:00BST

Martin Richmond-Hardy



200mm Skywatcher Newtonian with white light Baader filter, on a Dobsonian mount.

Canon EOS500D ISO 100, 1/500s

Measuring ambient light levels and temperature during the partial solar eclipse of 20/3/2015

Alan Smith

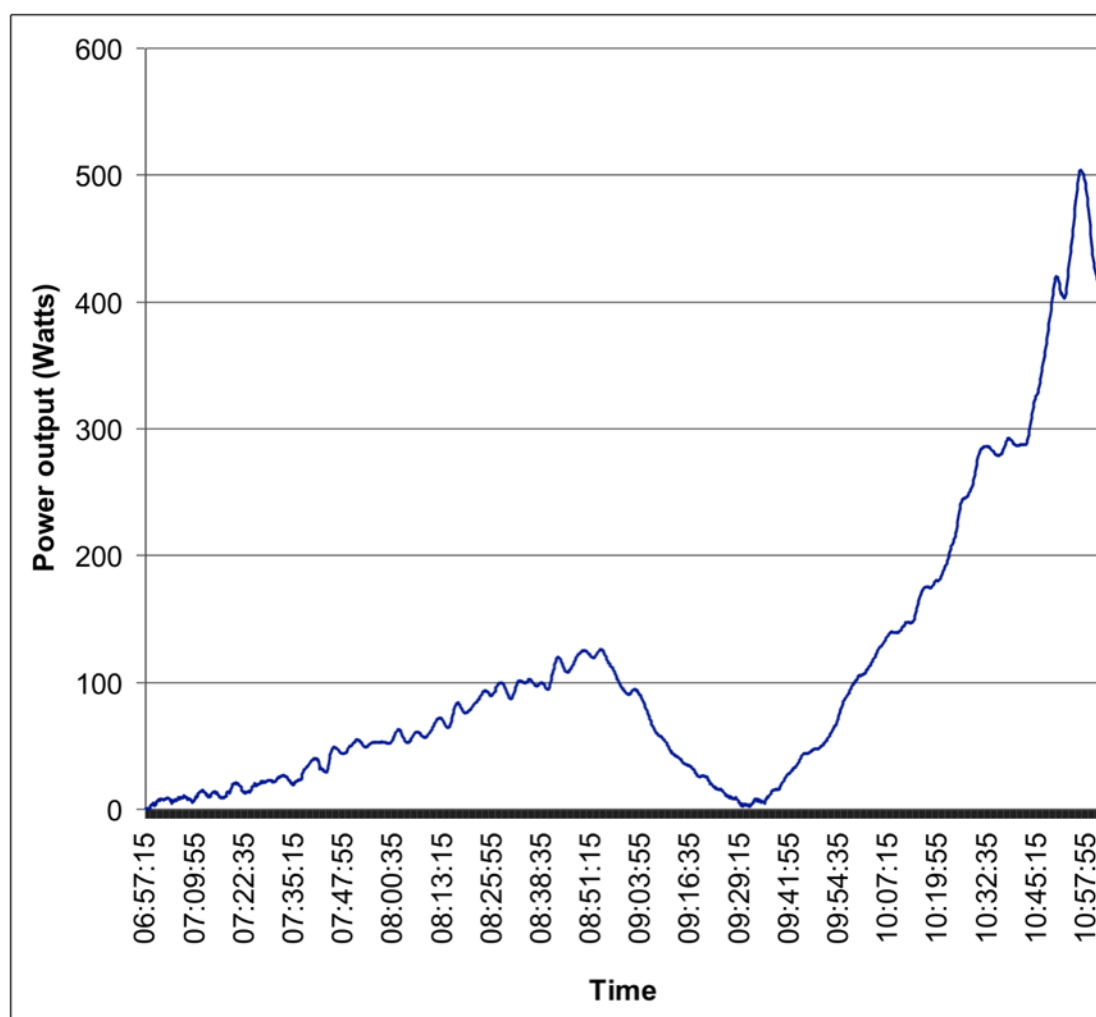
Light levels

Using a photo-voltaic solar panel array located just north of Ipswich, I managed to monitor the ambient light levels during the period of the partial eclipse.

Under 'normal' conditions, with a uniformly illuminated sky, the power produced by the array would gradually increase from dawn until around 1130hrs (the array is oriented slightly east of south and so doesn't peak at midday (1200hrs)).

As can be seen from the graph below, during the period of the partial eclipse power does indeed gradually increase from sunrise (around 0650hrs) until around 0853hrs when it slowly drops off until it reaches a minimum at about 0933hrs. Power then increases steadily until it is back to its 'normal' value by about 1043hrs.

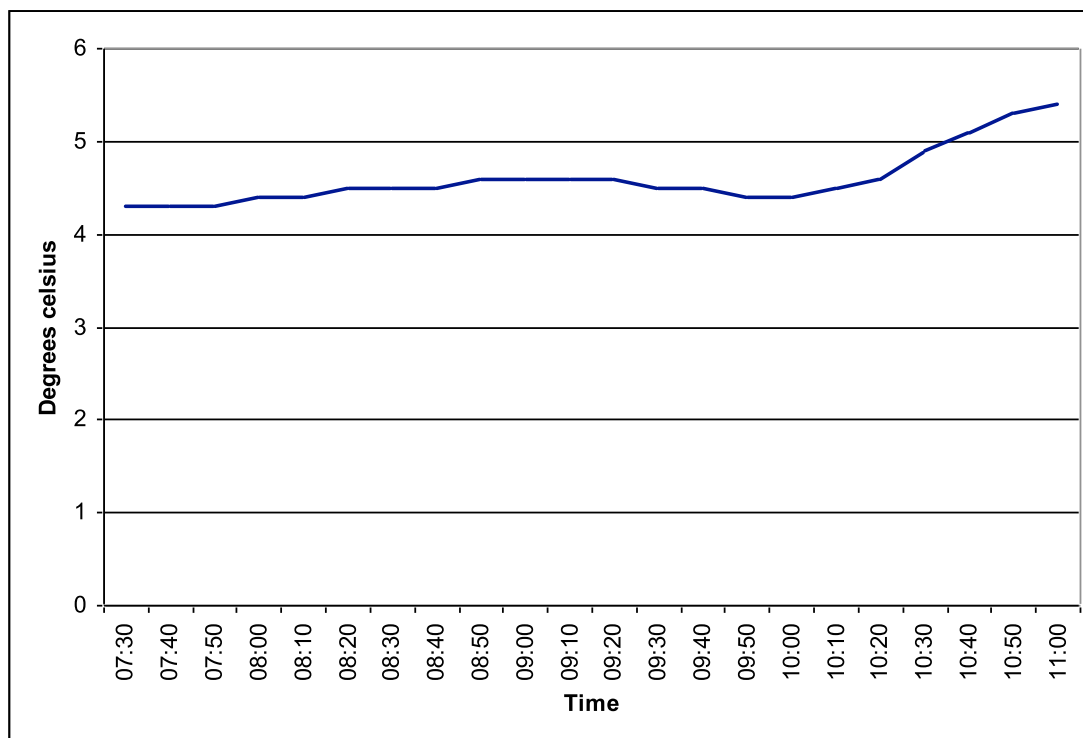
At my location, 'first contact' of the eclipse was at around 0825hrs, max eclipse (85%) was at about 0931hrs and the event finished at 1041hrs. Although the effects could have been caused by variable cloud thickness, visual observation suggested that the cloud was fairly uniform.



Graph of power output (Watts) against time.

Temperature

At the same time, Martin Cook was running a weather station on the northern outskirts of the town measuring the ambient temperature. Although not as marked a change, a similar curve showing the drop in temperature during the eclipse can clearly be seen. Again, although the effects could have been caused by factors other than the eclipse, it does seem as if the definite feel by observers that it was getting cooler was a genuine temperature drop.



Graph of temperature (in degrees Celsius) against time.

Jupiter+

Martin RH

And now for something completely different...

Some of the OASI astrophotographers may be familiar with the Yahoo group QCUIAG or the QuickCam and Unconventional Imaging Astronomy Group.

<https://groups.yahoo.com/neo/groups/QCUIAG/info>

One of their members is [Christopher Go](#), based at Cibu in the Philippines.

His web site is well worth a visit <http://astro.christone.net/> for some beautiful pictures of our solar system's biggest planet as well as Mars, Saturn, Moon and Sun.

On 2015, the International Astronomical Union officially designated Asteroid 2000 EL157 to 30100 Christophergo. This asteroid was discovered in March 11, 2000 by the Catalina Sky Survey.

Currently he uses a Celestron C14 on an AP900GTO mount and a Celestron Skyris 132M camera.

Another very active member of QCUIAG is Sylvain Weiller whose web site <http://sweiller.free.fr/> features webcam astronomy images both still and live movie.

The Astronomy Cameras (for solar, planetary, ISS, near and thermal IR, UV, 3D) Paradise !

My thanks to Gerry Pilling for alerting me to this Yahoo group.

Total Solar Eclipse – Faroe Islands 20th March 2015

Andy Gibbs

Luck was on our side

Mandy and I set sail from Southampton on the P&O ship MV Oriana on Tuesday 17 March on a two week cruise to observe the total eclipse at the Faroe Islands, then onwards to Tromsø and Alta in Norway to observe the Aurora Borealis.

Andy's Aurora pictures are on the back page. Ed.

Things didn't get off to the best of starts as Oriana arrived in Southampton, over four hours late, due to engine problems. We eventually set sail at 20.20, the Captain had decided that, to save time, we would take an alternative route via Lands End and the Irish Sea to reach the Faroe Islands. We made steady progress at over 20 knots hoping that the engines would behave themselves. We named our cabin "The Propeller Suite" in honour of the vibrations that transmitted through the decks.

Thankfully, we made it to the Faroes by eclipse day. I went out on deck at 07.00 to be greeted by overcast skies, heavy rain and strong winds. We were on the approaches to Torshavn harbour, the Faroe Islands capital. I trudged, despondently, back to my cabin, when the Captain announced that, due to the wind gusting over 30 knots, it would be unsafe to dock in the tight confines of Torshavn. We would head out to sea in the hope of finding some better weather. The plus points were that the Captain had weather radar on his bridge and the Torshavn harbour Pilot was still aboard with his knowledge of local weather conditions.

We optimistically returned to the deck at 08.00 to find that it was still raining, but somehow, the Sun was managing to peek through the clouds. These conditions continued until First Contact at 08.38. For the next twenty minutes we had reasonable views of the Partial Eclipse through our Solar viewers. From 09.00 the skies became more overcast and the rain became heavier. Things were not looking good, but at least we had managed to observe something.

By 09.30, the rain had eased off and the clouds were, miraculously, starting to thin and we were again able to glimpse the thinning crescent Sun. At 09.36, five minutes before totality, the light level was beginning to drop and prayers were offered up for the clouds to stay away.

Totality arrived at 09.41 with a dramatic drop in light, Mandy observed Bailey's Beads and the Diamond Ring as I was clicking my camera. We clearly observed a red ring of Chromosphere and some fantastic naked eye prominences as the Corona came into view. After thirty seconds I put my camera down to enjoy the view. At 09.43 totality was brought to an end by an incredible second Diamond Ring. The sky quickly brightened and we continued to observe for a few more minutes.

By 12.00 the winds had subsided and it was deemed to be safe enough for Oriana to dock at Torshavn. We went ashore and discovered that the eclipse had not been seen on the Islands. Also a film crew from Meridian Television were meant to have got on board at Torshavn and had also missed out. We had been incredibly lucky that the Captain had found a gap in the clouds approximately six miles off the East coast of the Faroe Islands. The Captain had earned ten extra Brownie points for enabling us to view the eclipse, but we had to take a few off as the ship hit the quayside at Southampton on our return in high winds!

My attempts at photographing the eclipse were spoilt by camera shake. But that didn't matter, we bought some great photos from the ship's photographer.

Andy Gibbs

<http://www.itv.com/news/meridian/story/2015-03-20/solar-eclipse-2015-millions-witness-phenomenon-but-cloud-spoils-spectacle-for-many-in-the-south/>

Total Solar Eclipse 20th March 2015

Adventdalen, Longyearbyen, Svalbard (78° 11' 59.52" N 15° 50' 10.55" E)

Paul Whiting FRAS

This eclipse was always going to have the potential to be very spectacular. Not only was it only viewable from a relatively small tract of land way up north with polar bears, but it was also a very rare eclipse event indeed. This was for several reasons:

1. It coincided with a so-called "super Moon", where the Moon is at perigee, or the closest point to the Earth in its orbit.
2. It was an arctic eclipse with the possibility of seeing aurora during the darkness of totality, the next opportunity for this being 30 March 2033.



The extended corona (see cover)

3. The eclipse may be seen at noon at the North Pole (a polar eclipse), this is a once in 400,000 year event.
4. The eclipse was on the Vernal Equinox.



In the UK the eclipse was hyped up to the eyeballs. The BBC's Star Gazing Live and National Science Week were re-arranged to include the Friday of the eclipse. The magnitude of the eclipse varied across the UK from 82% in the Channel Islands to almost 97% in Shetland.

The viewing options boiled down to three options: the Faroe Islands on land or sea, or the high arctic region of Svalbard. The weather forecast was marginally better for Svalbard, better than a 50% chance of seeing the eclipse.

So I decided to go to Longyearbyen, the capital of Svalbard, and duly booked my place some 4 years before the eclipse – accommodation would be very limited on the island. The only problem might be the cold weather,

bearing in mind the high latitude – the weather forecast 2 weeks before was for a temperature of -18°C. As it happened the temperature during totality got down to -24.4°C. So the order of the day was warm clothing, in multiple layers. Thermals and long johns and wind cheaters and jumpers and hats and gloves and fleeces ... From the amount of luggage anyone would be forgiven to think that the trip was for a lot more than the 5 days.

The journey was uneventful – flights from the new Heathrow Terminal 2 to Oslo, overnight in the Radisson Blu next to the airport, and then onward to Longyearbyen. It has to be said that the sudden onslaught of a plane load of astronomers in this hotel rather overwhelmed the check-in

staff. Longyearbyen airport is a small yet functional airport, with friendly staff, which matched the general population.

Our party was split between the Svalbard Hotel and the Svalbard Lodge guest house, with breakfasts being taken in the Svalbar (sic), a short walk (in the cold!) from the hotel. The breakfasts were excellent, including make-your-own waffles with brown cheese and, of course, Mills Kaviar. <https://www.scandikitchen.co.uk/product/mills-kaviar-190g-2/>

Evening meals were expensive, well we were in Norway and on a remote island, however they were very tasty, almost cordon bleu. The eclipse talks and briefings were given by John Mason in the local Hall, the Huset. We also ate here – once (given the extra huge expense). It was here we were reminded of the existence and possible close proximity of polar bears. We were briefed that we would have armed guards throughout the eclipse, given that the bears were unlikely to be interested in looking at the Sun rather than hunting. As it happened there was a polar bear incident some 50km east from our location, but nothing fatal.

So the morning of the eclipse dawned. The day we landed was dreary and overcast. The following day was partly cloudy and partly sunny. The day of the eclipse was total cloud free – blue sky all the way, all day. The island was heaving with visitors there for the eclipse. All the big names were there. Others who couldn't get accommodation flew in and out on the same day.

We were bussed to a location some 10km out of town, along the glacial Adventdalen valley. We were to have viewed from beside the original Auroral Observatory, but for some reason we were moved about a kilometre further down the valley. The valley was totally snow and ice covered, giving a wonderful backdrop to view the eclipse shadow and also any shadow bands that may be seen. Our site was totally bare save for a tent big enough for about 20 people at a time. There were about 50 in our party. The tent had a fire going inside, which was rather monopolised by our young armed guards chatting each other up. Still they did pass their (loaded) rifles around for us to pose and have pictures taken. There were tables and chairs in the tent, fur lined. Refreshments were provided – hot tea, coffee and Ribena and a baguette each for after the eclipse, which had totally frozen by the time it came to eat them.

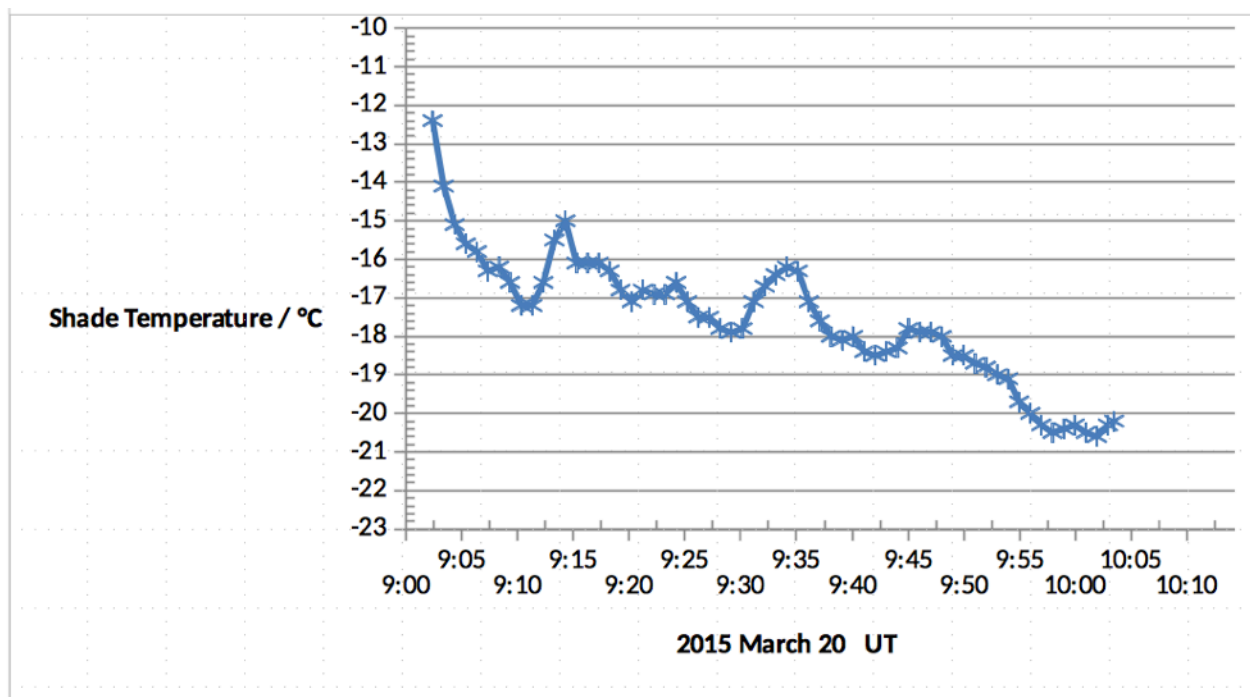
The eclipse was low down, given the high latitude and the fact we were only just out of permanent winter darkness, which is why we were in this valley. The surrounding mountains were low enough to allow the whole eclipse (1st to 4th contact) to be seen, with a dramatic back drop.

I set up my kit. This year was going to be the first time I used computer control to drive the new DSLR camera. I also planned to take the temperature on a minute by minute basis from before 1st contact to after 4th contact, to plot the temperature change. I hadn't reckoned with the effect of the extreme cold on the batteries. I had taken the precaution of keeping the camera batteries warm in my pocket until 5 minutes before totality, and I had assumed that the heat produced by my laptop would be enough to keep the computer battery going. This might have worked at the forecast -18°C, but at -24°C this was not to be. The camera worked OK, but the computer gave up the ghost about 10 minutes before totality. I didn't notice until a minute before. This threw me in to a panic and I totally forgot the number one rule – "if anything goes wrong with the equipment forget it and watch the eclipse". I had received emails the day before from various primary schools in Suffolk as well as Lesley Dolphin from BBC Radio Suffolk asking for pictures of the eclipse. I didn't want to disappoint them. Totality started. I was trying to disconnect the camera from the computer – not easy when your fingers had gone numb in the cold. I was fumbling with the camera to try to set some form of automatic setting (it was on manual for the computer control), but by now it had gone very dark and I couldn't see the dial. I tried to press the button to take some pictures, any pictures, but in the end I gave up and decided to watch the eclipse. Totality was 2m 26s, I caught the last 26 seconds! I forgot to look for the aurora and all the other things. Unforgivable. More by luck than judgement some photos did come out.

So what did I see? The shadow bands were excellent, the best I've seen. They started a good 3 minutes before totality rather than the usual 30 seconds. They really showed up on the white backdrop of the valley. There was no aurora visible, so I didn't miss anything there. There was a wonderful naked-eye red prominence visible on the upper left of the corona during totality.

Venus was visible easily, but I didn't see Mars or Mercury, which may have been visible in the darkness of the eclipse.

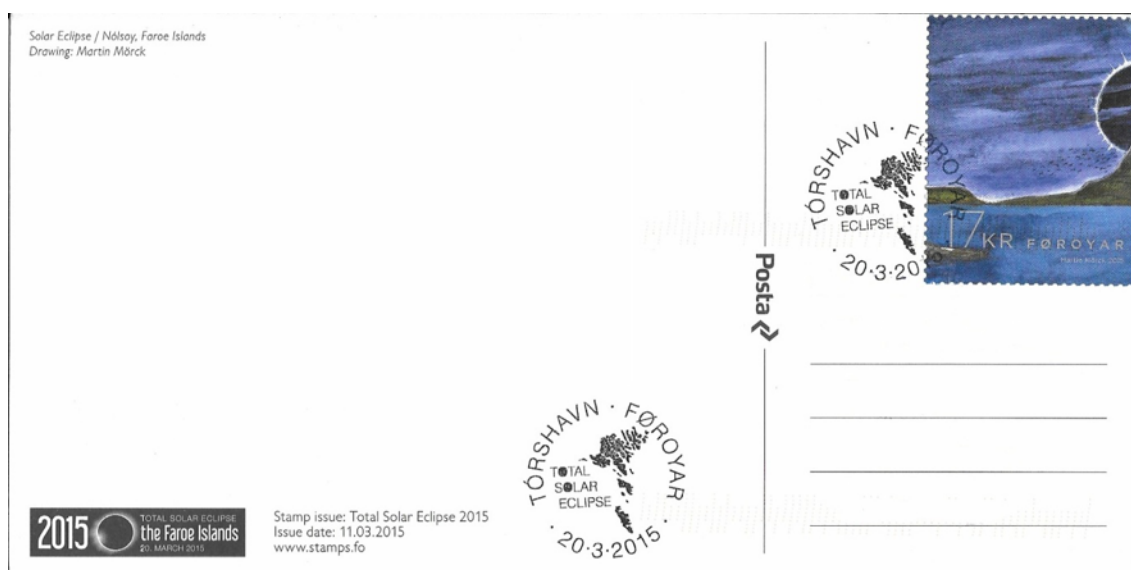
What of the temperature measurements? I did get readings right up to the point the batteries died and the laptop froze over.



Temperature Chart

So what of the Faroe eclipse chasers? Unfortunately those on the islands themselves only saw rain and cloud. The sea-borne travellers on board cruise liners fared better. I know that the P&O Oriana and the Saga Sapphire did manage to sail under a gap in the clouds to see the eclipse well. Others did not fare so well.

Both Svalbard and the Faroes issued eclipse stamps and first day covers to celebrate the event.



Faroe First Day Cover



Svalbard First Day Cover



Luckily not many of these seen

Aurora photos from Alta, Norway

Andy Gibbs

