No. 506 Registered Charity 271313 March 2015

OASI News

The newsletter of the Orwell Astronomical Society

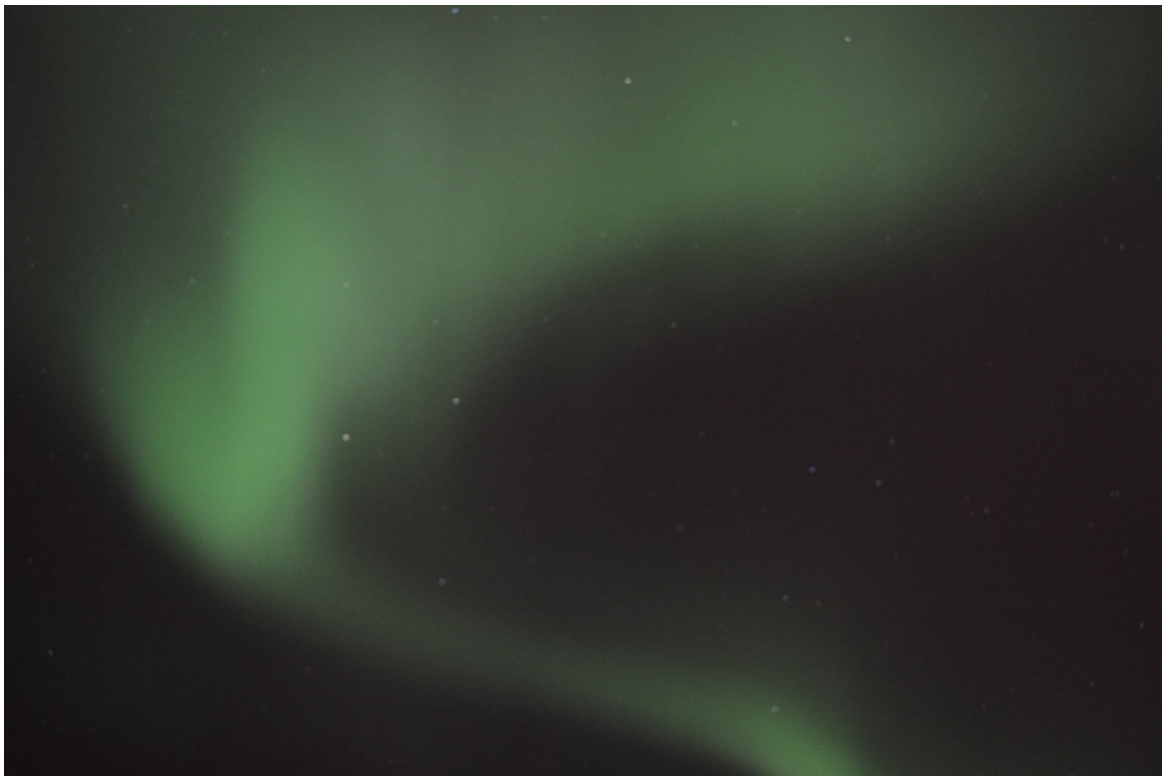
Aurora in Norway, 15 February 2015 by Trevor Boyd

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

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

Norway aurora over Tromsø

Paul Whiting FRAS



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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.

Areas out of Bounds

Access to the Observatory is **only via the black doo**r 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.

The Newsletter

We now 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
	vacant	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
	Avtar Nagra	Newbourne Observing Group
	Kevin Fulcher	Newbourne Observing Group
Co-opted	Pete Richards	Lecture co-ordinator

Society Notices

From the Membership Secretary

A gentle **reminder** that **subs are due by the end of February**

A orange renewal form was sent out early January, please return form with monies.All membership classes are now £20. The new membership can be treated as the old family membership.

Martin Cook

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.

Welcome to New Members

Michael Ferland Sir William Botson Ms Jayne Eames

AGM minutes

These are out for review and will appear in next month's issue

2015 Outreach Meetings

Contact: Roy Gooding or David Murton

Christchurch Park Star party

Option2: Saturday 28th February Set up time from 18:30
Alternative if cloudy
Venue: Westerfield Road gate

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 form 11:00 to 16:00

Option 2
Saturday / Sunday 23rd / 24th May
Same times as for option 1

Debenham Street Fair

Sunday 28th June. More details to follow, but should be the same as in 2014

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

Partial Solar Eclipse Event

Friday 20th March

We are organising a solar eclipse event by kind permission of Isaacs on the Quay, Ipswich on 20th March for the best eclipse visible locally for many years. It will be 85%. As it is a Friday morning, members are advised to get it in their diaries now, especially those who have to book leave from work. OASI members who attend will be given a free pair of certified solar glasses to use and keep, plus these will be available for the public to purchase on the day at a very reasonable price.

We are also considering a parallel event at the Observatory as the pupils will not yet have left for half term.

Please contact David Murton if you are able to help on the day at either location.

OASI

Orwell Astronomical Society (Ipswich)

Charity Registered in England. No 271313.

Solar Eclipse Observing at Isaacs on Ipswich Waterfront

Friday 20th March 8.30am to 10.30pm

OASI will be having a free solar eclipse observing day outside Isaacs on the 20th March for anyone interested in observing this great spectacle. This will be an opportunity to observe the eclipse safely through specialist telescopes.

This will be the largest eclipse (85%) to be visible locally for many years. Don't miss this opportunity to view it safely. The maximum event will be at approx. 9.40am.

www.oasi.org.uk

Obviously this event will be dependent upon the weather. If the forecast is for no sun there will be a display of various telescopes and astronomical information!

WARNING!! Never look directly at the sun through anything other than specialist equipment. Doing so, even for a fraction of a second will lead to blindness!!!

International Sun Day

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 next 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.

Nowton Park, Bury St Edmunds

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

Holywells Park Family Day

5 August.

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
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.
Friday/Saturday 27/28 Feb	TBA	James Appleton info@oasi.org.uk	Graze of the magnitude 6.3 star ZC970. More info.
Saturday 28 Feb Set up 18:30 Open to public from 19:00 to 21:00	See 31 Jan	Roy Gooding	*Public outreach (option 2) Only if 31 Jan was cloudy*
Wed 04 Mar, 19:45	Hadleigh Library, 29 High Street, Hadleigh, IP7 5AG NB: NOT the usual venue!	workshops@oasi.org.uk	Astronomy Workshop: Neil Norman - Comets Through The Centuries.

Date and Time	Location	Contact	Event
Saturday, 7 March 10:00	Shurdington Social Centre, Bishop Road, SHURDINGTON, Cheltenham, Gloucestershire, GL51 4TB	http://britastro.org/meetings	BAA Deep Sky Section Annual meeting
Monday 9 March	Newbourne Village Hall	Kevin Fulcher & Avtar Nagra, email both via nog@oasi.org.uk	Newbourne Observing Group.
Tue 10 Mar, 20:15	Orwell Park Observatory	Paul Whiting, FRAS treasurer@oasi.org.uk	**Public access event.** Observatory tour. **Places must be booked.** Further info and book a place.
Wed 11 Mar, 19:45	Nacton Village Hall	Mike Whybray and Ray Larsen workshops@oasi.org.uk	Astronomy Workshop: Checking and Adjusting Binocular Alignment.
Tuesday 17 March 20:15	Orwell Park Observatory	Paddy O'Sullivan & Dave Robinson email both via ston@oasi.org.uk	Small Telescope Observing Night
Friday 20 March 08:30 - 10:30	Outside Isaacs, 7 Wherry Quay, Ipswich IP4 1AS	Roy Gooding secretary@oasi.org.uk	**Public access event:** Partial Eclipse viewing (maximum eclipse at 09.47 am)
Monday 23 March	Newbourne Village Hall	Kevin Fulcher & Avtar Nagra, email both via nog@oasi.org.uk	Newbourne Observing Group.
Wednesday, 25 March 17:30	Burlington House Piccadilly London W1J 0DU	http://britastro.org/meetings	BAA Special General Meeting and Ordinary Meeting Prof. Jonathan Rawlings (UCL): "Dust formation & novae" Bill Sheehan (USA): "100 years of Pluto" Dr Stewart Moore: "Charles Messier - from Birth to Death" Dominic Ford: Sky Notes
Friday, 27 March Saturday 28 March 19:30	Orwell Park Observatory	Roy Gooding	**Public access event** OASI Open evenings

Date and Time	Location	Contact	Event
Saturday 28 March 19:00	TBD	James Appleton info@oasi.org.uk	Field trip to observe graze of Hip 37685 and possibly ZC 1183. More info.
Sunday 29 March 02:00			**British Summer Time begins**
Monday 6 April (Bank Holiday)	Newbourne Village Hall	Kevin Fulcher & Avtar Nagra, email both via nog@oasi.org.uk	Newbourne Observing Group.
Tuesday 7 April 20:15	Orwell Park Observatory	Paddy O'Sullivan & Dave Robinson email both via ston@oasi.org.uk	Small Telescope Observing Night
Friday, 10–12 April	Sparsholt College, Hampshire	http://britastro.org/meetings	BAA Winchester Weekend
Tuesday 14 April 20:15	Orwell Park Observatory	Paul Whiting, FRAS treasurer@oasi.org.uk	**Public access event.** Observatory tour. **Places must be booked.** Further info and book a place.
Monday 20 April	Newbourne Village Hall	Kevin Fulcher & Avtar Nagra, email both via nog@oasi.org.uk	Newbourne Observing Group.
Saturday, 25 April	Ashford	http://britastro.org/meetings	BAA Spring Meeting: "Amateur and Professional collaboration"
16/17 May or 23/24 if cloudy	Christchurch Park	Roy Gooding	Solar Observing event
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

Date and Time	Location	Contact	Event
Sunday 21 June Time TBC	Minsmere visitor centre	David Murton chairman@oasi.org.uk	**Public access event.** OASI, DASH, LYRA and Breckland AS combined event to mark International Sun Day.
Sunday 28 June	Debenham Street Fair	Roy Gooding	**Public access 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 access event.** Observing the sun safely.
Wed 5 August	Holywells Park, Ipswich	David Murton chairman@oasi.org.uk	**Public access event.** Observing the sun safely during Holywells Park Families Day. Booking not necessary.
15 or 16 August 11:00 – 16:00	Landguard Fort	Roy Gooding	Public Solar Event (TBC)
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"
Saturday 19 Sept	Nowton Park, Bury St Edmunds	David Murton chairman@oasi.org.uk	**Public access event.** Star party for International Observe the Moon Night". Booking not necessary.
Fri 02 Oct, 01:00	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe graze of ZC 618. More info.
Sat 07 Nov, 19:00	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	**Public access event.** Lecture Meeting. Damien Peach: *The Giant Planet Jupiter*. DATE AND TIME To BE CONFIRMED.
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 – March

Spectrsocopy – Barrie Allsop	28 Feb
DASH Observing session	14 March
Stargazing live – with DASH and RSPB Minsmere	20 - 21 March
How to build an observatory – Jim Slight and Roy Birnie	28 March

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

For a pdf DASH Events 2015

Dark Skies – Square of Pegasus Survey

Please continue to send in your reports to Paul Whiting.

Location (Town/village, Street and postcode rather than "my back garden")

Date & Time Number of stars seen General conditions Your name

Newbourne Observing Group

michael.norris17@btopenworld.com omahony.mike@gmail.com

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

Monday 9th March	Monday 23rd March
Monday 6th April (Bank Holiday)	Monday 20th April

All the above meetings start at 7pm

Newbourne Committee:

Mike Norris Mike O'Mahony Kevin Fulcher Avtar Nagra

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.

2015 March 17 Apr 7

These will be organised by Paddy O'Sullivan and Dave Robinson from now on

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.

Gerry Pilling

TWO Astronomy Workshops in March

(One in Hadleigh, one in Nacton)

Contact Mike Whybray

Doors open at 7:30pm. Workshop starts 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!

> *Please note that the first workshop is in Hadleigh which is Neil Norman's home ground – please support him with a big turnout.*

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

Comets Through The Centuries - Neil Norman

(rescheduled from 28th Jan - NOT in Nacton!)

4 March in Hadleigh Library.

29 High Street, Hadleigh, IP7 5AG

A journey through the ages with the heavens' most maverick of visitors; from the ancient Chinese astronomers recording "broom stars" to the landing of a probe on a comet . Along the way we will see how these objects were feared by the ancients, determined by Newton to assist with his laws of gravity, predicted by Halley to return on repeated perihelia passages and all the way to modern times.

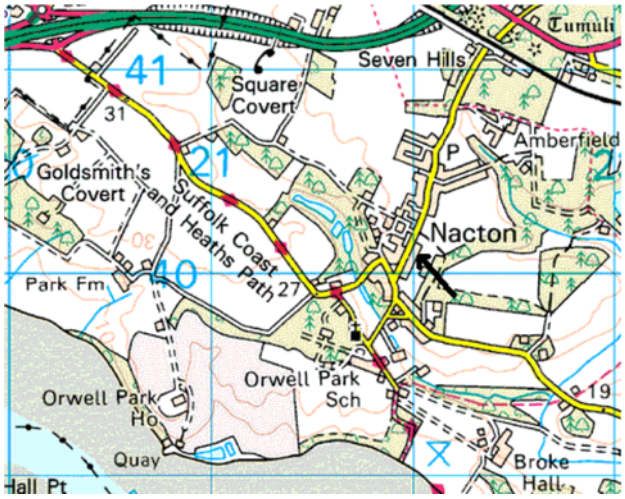
Neil says about himself - I began my interest in comets when as a 14 yr old I observed Halley's comet in 1986. In August 2013 I created the Facebook group Comet Watch and also currently provide visual observations for both NASA and ESA as they continue their collective catalogues of cometary data. I guest blogged for the US magazine "Astronomy" recently on the discovery of comet C / 2014 Q2 Lovejoy, discovered by my good friend Terry Lovejoy in August this year. I have done also 2 Internet radio shows for Astronomy.Fm's Under British Skies , write a monthly piece in my local community magazine about astronomy in general and now co-host a monthly radio Internet show for Astronomy.fm called Cometwatch.

Astronomy.FM http://astronomy.fm/2014/02/16/astronomy-fm-meets-the-comet-experts/

Checking and Adjusting Binocular Alignment

Mike Whybray and Ray Larsen

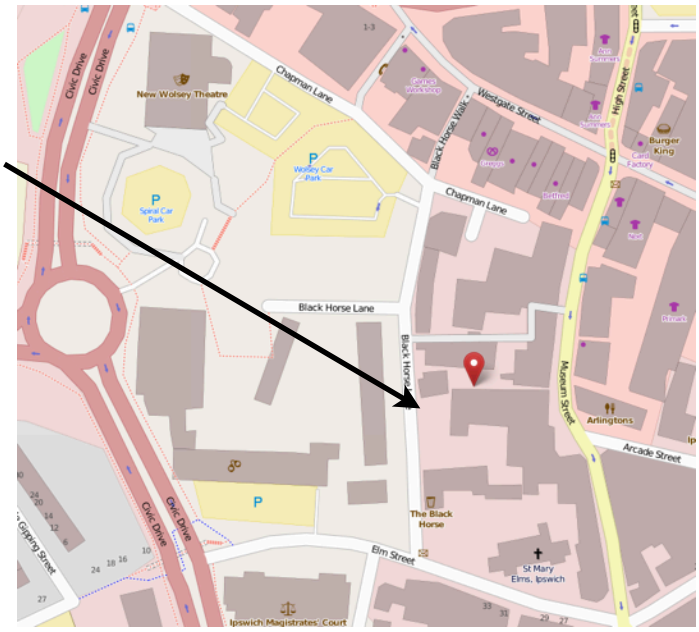
11 March in Nacton Village Hall IP10 0EU



Do your binoculars give you double vision, or eye strain? If so they are probably out of alignment i.e. the two optical axes are pointing in different directions like Marty Feldman! Mike and Ray have investigated and built kit to check and adjust alignment by various means, from simple checks you can do yourself up to an optical bench. We'll explain the theory and practice of binoculars, various ways to align them including demonstrations, and after a tea break will happily check and adjust any that you care to bring along (time permitting).

Lecture Meetings

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



Saturday 7th November:

Damian Peach

"The Giant Planet Jupiter"

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

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.

Cosmology latest

Is Dark Energy An Artifact Of Decoherence?

Stephen Hawking described it as the most spectacular failure of any physical theory in history. Can a new theory of information rescue cosmologists?

One of the biggest puzzles in science is the cosmological constant paradox. This arises when physicists attempt to calculate the energy density of the universe from first principles. Using quantum mechanics, the number they come up with is 10^94 g/cm^3.

And yet the observed energy density, calculated from the density of mass in the cosmos and the way the universe is expanding, is about 10^-27 g/cm^3. In other words, our best theory of the universe misses the mark by 120 orders of magnitude.

That's left cosmologists somewhat red-faced. Indeed, Stephen Hawking has famously described this as the most spectacular failure of any physical theory in history. This huge discrepancy is all the more puzzling because quantum mechanics makes such accurate predictions in other circumstances. Just why it goes so badly wrong here is unknown.

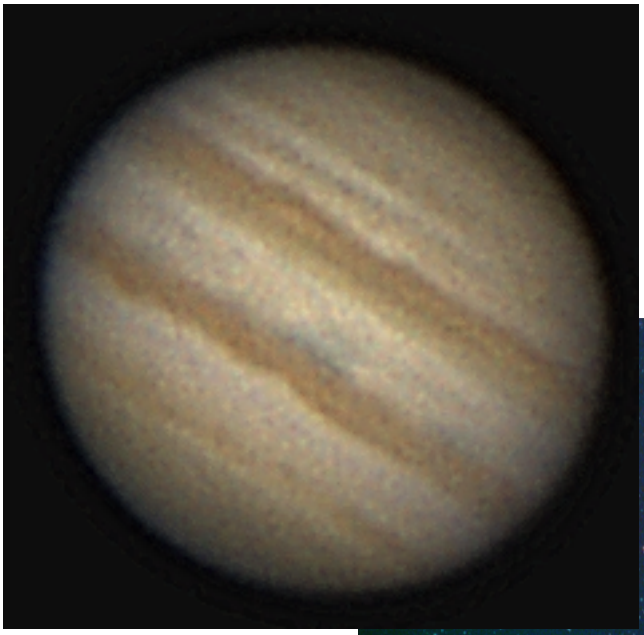
Chris Fields, an independent researcher formerly with New Mexico State University in Las Cruces, puts forward a simple explanation. His idea is that the discrepancy arises because large objects, such as planets and stars, behave classically rather than demonstrating quantum properties. And he's provided some simple calculations to make his case.

Read more here https://medium.com/the-physics-arxiv-blog/how-the-nature-of-information-could-resolve-one-of-the-great-paradoxes-of-cosmology-8c16fc714756

And here http://arxiv.org/abs/1502.03424

Jupiter & Comet Lovejoy C/2014 Q2

David Murton



First go using my 4× Powermate last night [Wednesday 18 Feb]. Conditions weren't brilliant as it was quite hazy but quite pleased with the results GHY5L-II camera and 200PDS.

Get the One Minute Astronomer's guide to Jupiter by Brian Ventrudo here:

http://oneminuteastronomer.com/10664/jupiter-observing-guide-for-2015/

Comet C / 2014 Q2 Lovejoy – Photo by David Murton, 2015-02-18 540sec,iso400

The Night Sky in March

Martin RH

Times are UTC 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
05 March 2015 18:05	13 March 2015 17:48	20 March 2015 09:36	27 March 2015 07:43

Sun and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	06:42	17:34		Spring equinox 20 March 22:45.
	31	06:33	19:27		British Summer Time begins 29 March 02:00
Mercury	1	06:01	14:52	0.2	
	31	06:35	18:20	-1.0	
Venus	1	07:41	20:18	-3.8	
	31	07:41	22:54	-3.8	
Mars	1	07:34	19:58	1.3	
	31	07:13	21:10	1.5	
Jupiter	1	14:53	06:04	-2.3	
	31	13:43	05:01	-2.3	
Saturn	1	01:18	09:47	1.1	
	31	00:19	08:49	1.0	
Uranus	1	07:47	20:37	5.9	
	31	06:52	19:49	5.9	
Neptune	1	06:46	17:05	8.0	
	31	05:50	16:14	8.0	

Meteor Showers

Source: BAA Handbook 2015 p97-99

Shower	Limits	Maximum	ZHR	Notes
				None this month. Next showers are in April

Visible ISS passes ≥15º max altitude

Martin RH

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

Passes for night workers this month. Click on the date to get a star chart and other details.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
11 Mar	-0.5	05:34:53	10°	S	05:36:42	14°	SE	05:38:35	10°	ESE
13 Mar	-1.3	05:22:04	10°	SSW	05:24:44	24°	SSE	05:27:27	10°	E
14 Mar	-0.8	04:29:15	12°	S	04:30:51	15°	SE	04:32:53	10°	ESE
15 Mar	-2.2	05:09:57	12°	SW	05:12:40	38°	SSE	05:15:43	10°	E
16 Mar	-1.7	04:17:58	24°	S	04:18:37	25°	SSE	04:21:23	10°	E
17 Mar	-3.0	04:58:24	19°	SW	05:00:29	58°	SSE	05:03:42	10°	E
18 Mar	-2.6	04:06:13	40°	SSE	04:06:17	40°	SSE	04:09:22	10°	E
19 Mar	-0.6	03:13:57	16°	E	03:13:57	16°	E	03:14:55	10°	E
19 Mar	-3.4	04:46:28	26°	WSW	04:48:10	79°	SSE	04:51:25	10°	E
20 Mar	-3.0	03:54:07	57°	SE	03:54:07	57°	SE	03:57:02	10°	E
20 Mar	-3.3	05:26:53	10°	W	05:30:09	85°	N	05:33:24	10°	E
21 Mar	-0.6	03:01:43	16°	E	03:01:43	16°	E	03:02:35	10°	E
21 Mar	-3.4	04:34:14	30°	W	04:35:42	88°	N	04:38:58	10°	E
22 Mar	-2.8	03:41:47	58°	E	03:41:47	58°	E	03:44:29	10°	E
22 Mar	-3.4	05:14:19	10°	W	05:17:35	87°	S	05:20:50	10°	E
23 Mar	-0.4	02:49:18	15°	E	02:49:18	15°	E	02:49:58	10°	E
23 Mar	-3.4	04:21:48	34°	W	04:23:03	86°	N	04:26:19	10°	E
24 Mar	-2.5	03:29:17	48°	E	03:29:17	48°	E	03:31:44	10°	E
24 Mar	-3.3	05:01:47	11°	W	05:04:49	69°	SSW	05:08:02	10°	ESE
25 Mar	-3.5	04:09:15	43°	W	04:10:13	86°	S	04:13:28	10°	E
26 Mar	-1.9	03:16:44	36°	E	03:16:44	36°	E	03:18:49	10°	E
26 Mar	-3.0	04:49:14	14°	W	04:51:47	48°	SSW	04:54:56	10°	SE
27 Mar	-3.4	03:56:44	58°	WSW	03:57:09	68°	SSW	04:00:23	10°	ESE
28 Mar	-1.3	03:04:18	23°	ESE	03:04:18	23°	ESE	03:05:41	10°	ESE
28 Mar	-2.5	04:36:48	19°	W	04:38:32	31°	SSW	04:41:27	10°	SE
29 Mar	-2.7	04:44:27	40°	SSE	04:44:27	40°	SSE	04:46:59	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.

Occultations during March 2015

James Appleton

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

Date	Time (UT)	D/R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
01 Mar 2015	00:01:32	D	0.80+	-46	36	7.3	Hip 34947
01 Mar 2015	01:49:16	D	0.81+	-41	20	6.8	ZC 1104
01 Mar 2015	23:14:21	D	0.87+	-44	47	7.3	ZC 1212
03 Mar 2015	03:32:14	D	0.94+	-29	15	4.3	Alpha Cnc
24 Mar 2015	21:11:09	D	0.25+	-26	20	7.2	ZC 618
29 Mar 2015	20:21:22	D	0.74+	-18	51	6.3	ZC 1281
30 Mar 2015	02:04:44	D	0.75+	-28	11	5.6	45 Cnc

On the evening of 28 – 29 March, the tracks of two grazing occultations cross East Anglia.

Details are in the following table.

Date	Time (UT)	Limb	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
28 Mar	20:54	S	0.65+	-22	48	7.3	Hip 37685
29 Mar	00:45	S	0.66+	-34	17	7.3	ZC 1183

The track of the earlier and later events pass respectively 30km and 45km from Orwell Park Observatory. The tracks, which cross near Sandy, Beds, traverse the locations listed below. Full details including a url to activate a Google Earth map of the events are available on the OASI website. See also OASI News, Jan 2015, p23.

- Hip 37685: Elmdon, Elder Street, Great Bardfield, Stisted, Pattiswick, Coggeshall, Birch Green, Peldon, and out to sea off Mersea Island.
- ZC 1183: Royston, Henham, Great Easton, Felsted, Great Leighs, Terling, Broad Street Green, and out to sea off Osea Island.

Weather permitting, the usual band of OASI graze observers will attempt to observe one, the other or both events. Please contact Alan Smith if you are interested in joining the observing party.

James Appleton

Paul's Astronomy Podcast for March

Paul Whiting FRAS

Podcast, March 2015 www.oasi.org.uk/2015_03_pod.mp3

The Dawes Limit

Bill Barton

The Reverend William Rutter Dawes (19 March 1799 - 15 February 1868), over the course of his astronomical observing career owned a considerable number of telescopes. Perhaps the most notable is the instrument currently known as the 'Thorrowgood Refractor' (after a subsequent owner), but now owned by the Royal Astronomical Society, and on loan to the Cambridge University Institute of Astronomy. It is an eight inch aperture refractor of 114 inches focal length.

Like his contemporary the Reverend Thomas William Webb (14 December 1807 - 19 May 1885) Dawes was interested in deep sky objects. Dawes compared the performance of his many telescopes and derived the formula now known as 'The Dawes Limit'.

Simply put this limit describes the finest detail that can be observed through any particular telescope. Here is the formula

Simply put this limit describes the finest detail that can be observed through any particular telescope. This is also known as 'resolving power'. Here is the formula

> R = 4.56/D when D is in inches & R in arcseconds
>
> R = 11.6/D when D is in centimetres & R in arcseconds
>
> Where D is the diameter of the main lens or mirror (aperture) and R is the resultant resolving power of the instrument.

For the Tomline Refractor this equates to 0.46 arc seconds. Thus a double star with, say, components 0.5 arc seconds apart will be seen as two stars, but a similar double with 0.33 arc seconds separation will only be seen as a single star.

For those not familiar with angular measure there are sixty arcseconds in one arcminute and sixty arcminutes in a degree. One arcsecond is, therefore, 1/3600 of a degree or 0.000 28 degrees in decimal. There are 1 296 000 arcseconds in a complete circle, an arcsecond is therefore a very small unit!

But what does this mean when we look at an extended object (i.e. one that presents a definite angular size and not just a 'point of light')? Well, we just have a right angled triangle with our 0.46 arc second angle vertex here with us in the Tomline Refractor, an adjacent side the distance of the object we are interested in and an opposite side with the smallest detail visible on the object.

Approximating that the Moon is 250 000 miles away we come up with 0.6 (miles) as the opposite side.The finest detail observable on the Moon with the Tomline is thus just over 1/2 mile.

As another example here are the figures for Jupiter assuming that it is 5 Astronomical Units away and that an Astronomical Unit is 93 million miles.

Tan (4.56/10/60/60)*(5*93,000,000) = 1028 miles

Where the first bracketed term is the Dawes Limit of the Tomline expressed in degrees and the second bracketed term is the adjacent side of a right triangle the length of Jupiter's orbital approximate radius and the initial 'Tan' function converts adjacent side and angle into opposite side.

Thus the minimum resolvable detail at the distance Jupiter is just over one thousand miles and anything smaller than this will not be seen through the Tomline, but can be with a bigger aperture (i.e. The 28 inch Great Equatorial at Greenwich).

Now

Io = 4528 miles dia.

Europa = 1938 miles dia.

Ganymede = 3272 miles dia.

Callisto = 2994 miles dia.

Which explains why we never see any detail on these bodies, as we now know, (from spacecraft visits) that there are no features bigger than our one thousand mile limit at the approximate distance of Jupiter.

Whereas Jupiter has a diameter of 86 918 miles, so we can see detail down to approximately 1% of its size.

Objects nearer than Jupiter will have corresponding finer linear detail visible and those further off will not be able to be observed as closely unless you employ a greater aperture.

If you are more familiar with kilometres than miles then you need to multiply the above mileages by eight and divide by five to convert to km.

Bill Barton

The Public Life of Climate Change: the First 30 Years

UCS Academy Lecture Series 14-15 - Professor Mike Hulme

Date and Time: 14/5/2015 17:30 - 20:00

Location: The Auditorium, UCS Waterfront Building, Ipswich

More details at:

http://www.ucs.ac.uk/About/Events/Event-details-page.aspx?id=23254

Mike Hulme is one of 5 academics centred around UEA in Norwich who had their emails hacked in the 'Climategate' scandal of November 2009.

The UCS Academy Lectures are free, but you need to apply by email in advance. Seats are limited to 150. (The star turn this year is Rowan Williams, on 8th July, and I recently heard his lecture is now waiting list only.)

The lectures are very civilised affairs. You are allowed to park in the old 'Suffolk College' car park across the road. The lecture actually starts at 1800, with tea or coffee served beforehand. If you stay afterwards you will be offered a (small) drink, and canapes as good as you will find anywhere.

Joe Startin

Arcturus

Mike Norris

Arcturus the third brightest star in the sky, the second brightest for most northern observers was the star that opened the Chicago World Fair in 1933. At that time it was thought that Arcturus was forty light-years away and another World Fair had been held in Chicago in 1893 just forty years earlier. Light from the star was focused on a photocell that activated a switch turning on the lights of the fair - light that had left Arcturus at the time of the previous exposition. Or so it was thought; more recent measurements show Arcturus to be thirty-six light years away.

OASI Visit to North Norway

Paul Whiting FRAS

The fourteen months since a trip to see the aurora was suggested at a Newbourne observation evening went by with all too alarming rapidity. The day dawned with reasonably clement weather at Gatwick, where most of the fourteen travellers had stayed overnight (we had gained and extra person who had booked independently). Following a straightforward check-in we all met at the departure gate, full of excitement but all unaware of what was to come.

Our Germania Airlines chartered flight took off on time, with typical German punctuality, and headed north over Ipswich towards Tromsø, our destination. Little did we know that the remnants of Hurricane Ole awaited us. It soon made its presence felt as we started our descent. At first a

little buffeting was experienced – perfectly normal as we were flying over mountains. The turbulence got steadily worse, and started to include sudden drops of several tens of feet. Visibility was zero due to the total white out outside. Just as I made the throw away comment that I hoped the pilot was trained on landing by instruments, the plane started lurching from side to side due to wind shear and cross-winds. A hush settled over the plane, and then you could have heard a pin drop, or you could have done if the engines hadn't suddenly roared into full power as the plane aborted the landing and fought to regain height. Several screams were heard from the rear of the aircraft. After a while the Captain came on the tannoy and told us that the hurricane force winds had meant the previous landing had not been possible. We were circling whilst he decided whether we should go on to another airport. This of course would have thrown all our plans into disarray. Luckily he decided to have another go. The conditions hadn't seemingly improved at all. Was that the sound of rosary beads I heard? I think everyone was quite nervous. Just before we did land there was a lurch to one side, but in the end it was one of the smoothest landings I've known. You might moan about the lack of leg room on Germania (I had to leave my legs in the overhead locker) but their pilots are excellent.

So we arrived and were met by a fleet of coaches to take us to the boat. As we passed by the hotel we would end up in after the cruise, the MS Kong Harold came in to view. We boarded and quickly found our cabins. I think the general consensus was that they were good. The food on board was generally very good too, especially the second night when we had an all you can eat buffet, although I'm not sure it was meant to be all you can eat!

We set sail and, given it was far too cloudy to see any aurora, we retired at a reasonable time. Overnight we called in at our first minor port of call. Little did we know that this would be our last land fall for two days. More hurricane force 12 gusts prevented us from landing at Havoysund (much to the regret of the passengers who wanted to get on and off!). In fact the Captain announced that we would sit out the winds in the harbour while he decided whether we should go any further north or not. In the end he decided to risk the trip up to Kirkenes, although he did state that it would be a direct trip with no stops at the intervening ports. We managed to get past Nordkapp (the most northerly point in mainland Europe) and got halfway across the top of Norway to Kirkenes. However after several hours of buffeting and a 45 degree tip due to side winds, he decided to return south make a run in to a protected fjord and tie up at Alta for a day or so. This we did. The tour guide at Alta said that they don't normally see the Hurtigruten ships in Alta, but we were the fourth that week.

From Alta we started the voyage back to Tromsø. The storms had now abated and the passage was much as it should have been all along – as smooth as I had promised everyone! After the first cloudy night we did see aurora every night from then on. The aurora prediction was moderate every night except for the last night on land in Tromsø, which was active. I had pre-booked a trip up the mountain cable car to the restaurant, dinner followed by a trip in to the wilderness to see the aurora. This trip into the wilderness turned out to be a trip to the observation deck overlooking the city – complete with every sort of light pollution you can imagine. Some of the others had booked a true wilderness safari – an hour away from the sodium lights into real darkness. The crystal clear night and the aurora all played their part in giving some truly spectacular auroral displays (see Trevor Boyd's pictures). I would like to claim credit for booking the clear skies and the aurora for the group. So I will.

The journey back was far less eventful than the journey there. I think everyone had enjoyed themselves, judging by their various comments. The first landing had been forgotten, as had the lurching of the ship. Cameras were full of aurora pictures, and there's just the credit card bill to look forward to now.

How about a nice dry land trip to Iceland next year?

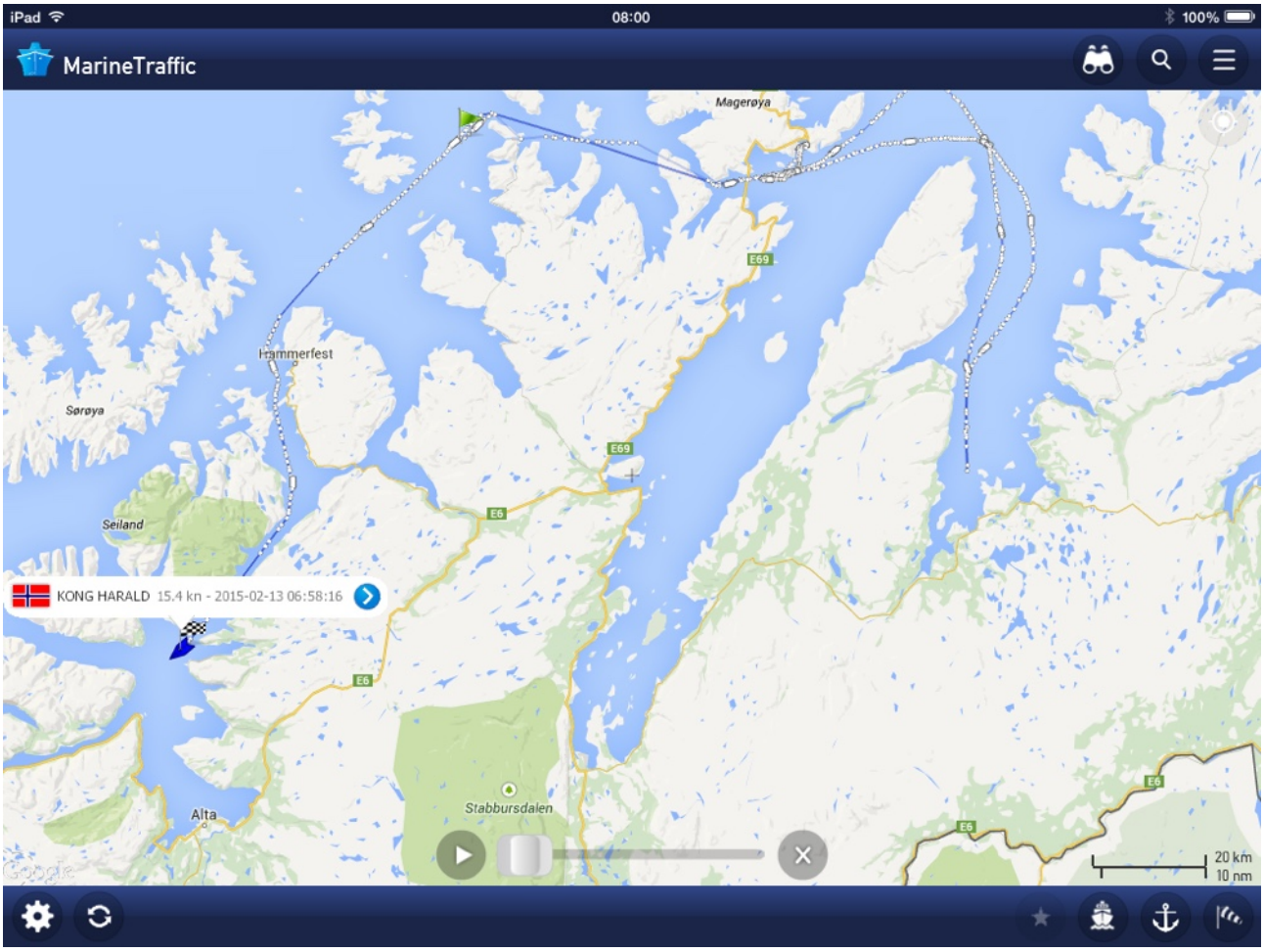
Paul Whiting

Aurora in Norway

Martin Richmond-Hardy

Paul Whiting organised an excellent trip to north Norway, from which we all returned safely on Monday evening. The trip featured an exciting second attempt landing at Tromsø airport in strong cross winds, Force 12 hurricane aboard M/S Kong Harald and some fantastic aurorae.

We sailed from Tromsø, stopping at a couple of ports during the night. The ship is also the mail and supply boat as well as accommodating up to 550 passengers. After a brief stop at Honningvåg, we were told that the trip to the North Cape was off due to the roads being blocked by snow. Heading off out to sea the ship intended to go to Kirkenes, close to the Russian border but the sea became so rough (37m/s wind?) that the the captain decided to take shelter in a fjord. We eventually turned back and docked at Alta for a few hours sightseeing.



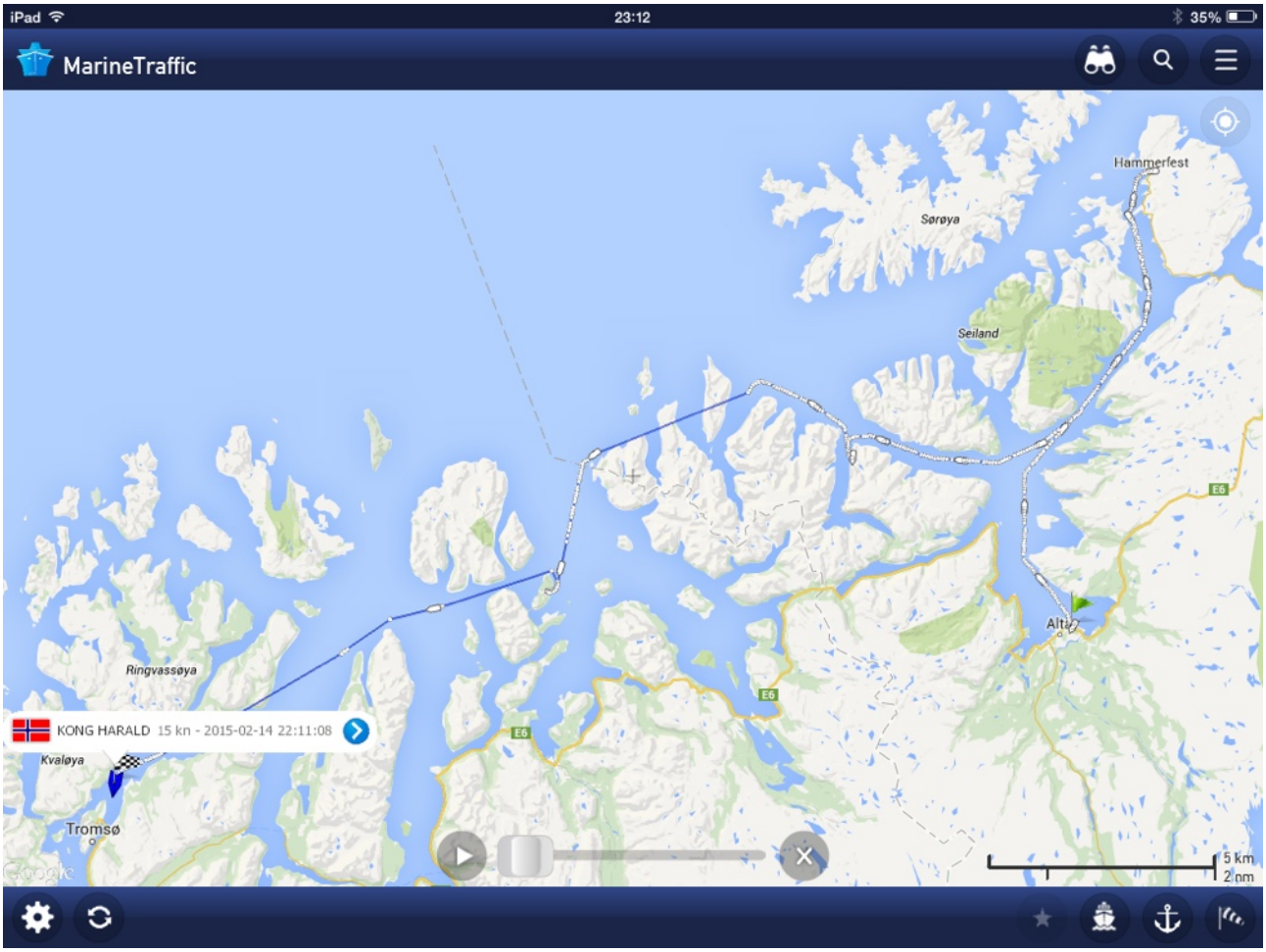
The ship then returned to Hammerfest (One chain of the Struve Geodetic Arc, now on the World Heritage List, is located at Fuglenes in Hammerfest) where we had time for some more exploring before setting off, via a very brief stop at Øksfjord, for Tromsø, arriving back about 11:30pm Saturday. Cloudy, no aurora.

The second map shows our return to Tromsø.

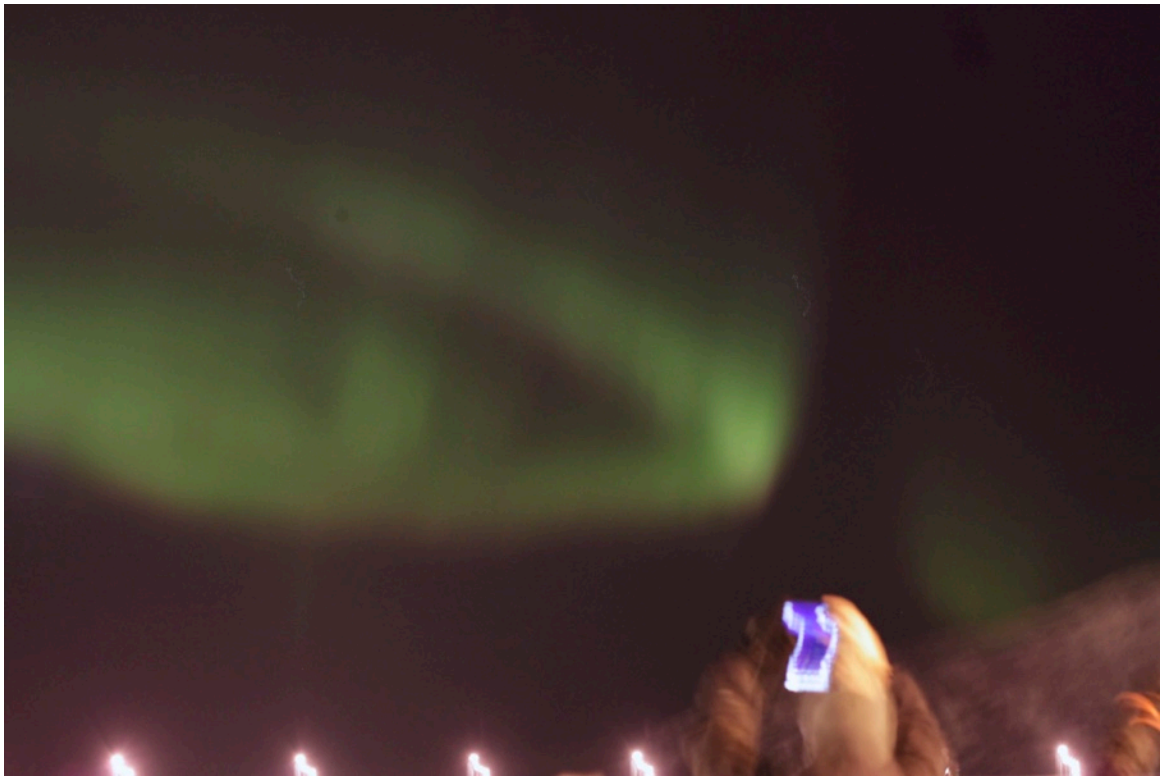
Sunday was a free day in Tromsø and various members of the party indulged in dog-sledging, restaurants, cable car trips and aurora trips out into the wilderness.

My aurora pictures are a bit disappointing as we were by the docks and there was a lot of light pollution and only a walking pole as monopod. Nevertheless, the display was beautiful.

Trevor Boyd has, however, provided an excellent collage for the front cover (apparently destined for his loo wall ...).



Aurora from the dockside



Aurora from Tromsø dockside

Sunset at 4pm outside the university museum

More pictures and stories next month from the other travellers?

MartinRH