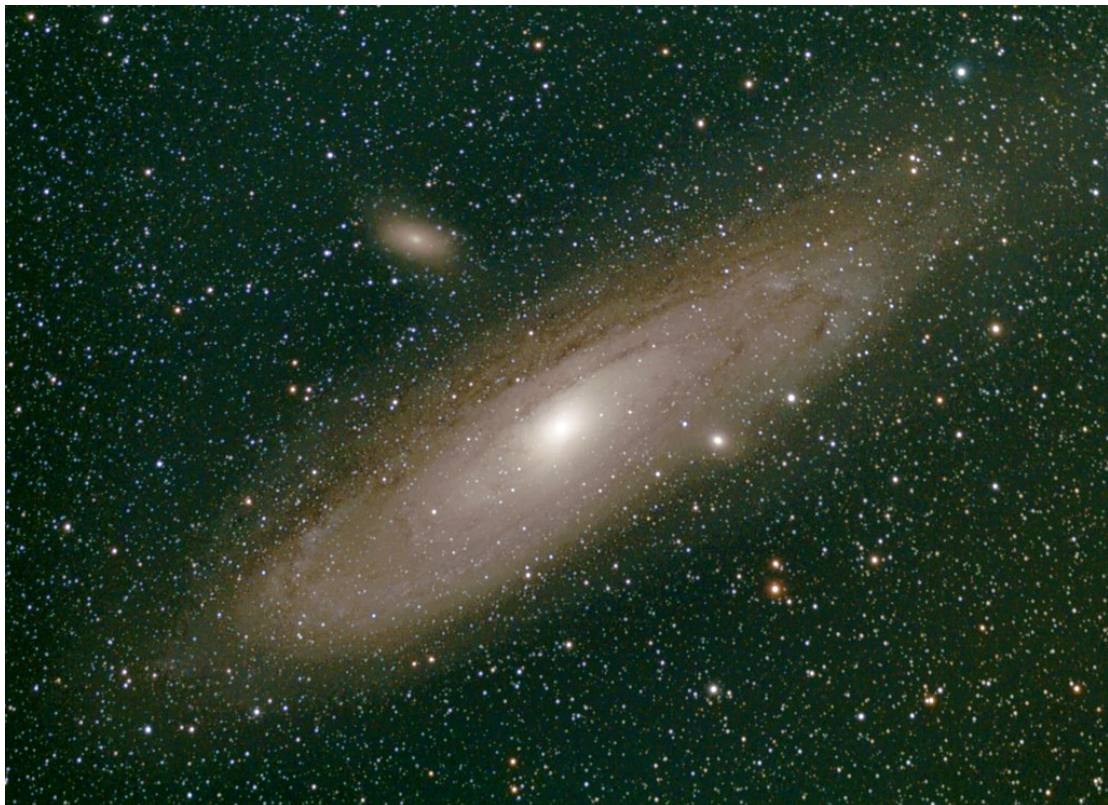




OASI News

The newsletter of the Orwell Astronomical Society



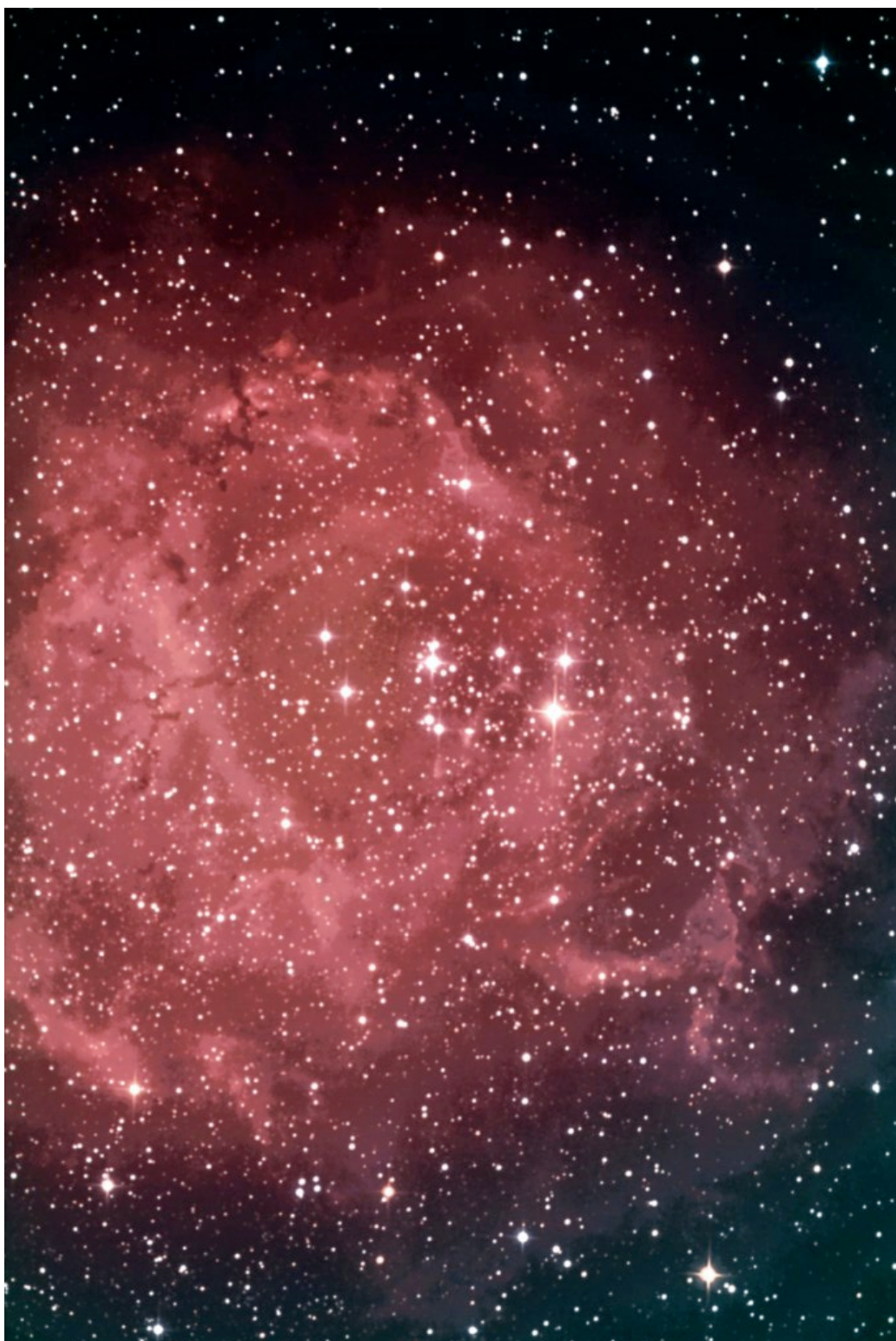
M31/M32 & M101, this time using the William optics 71ed scope and Canon 60Da camera.
120 minutes worth of exposures (15x480 seconds) @ iso 400 plus darks, flats and bias frames.

Photo: David Murton

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

NGC2237, the Rosette nebula

David Murton



Took advantage of the clear (if cold!) skies 14 Jan. Another favourite, NGC2237 the Rosette Nebula in Monoceros.

Over 2 hours of light frames plus darks, flats and bias frames. Canon 60Da camera and Skywatcher 200pds telescope on NEQ6 mount. Processed in DSS and GIMP.

Image rotated 90° Ed.

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Society Contact details

Observatory (meeting nights only)

07967 519249

Email queries: info@oasi.org.uk

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

Twitter: @OASlpswich

The OASI Facebook pages are now proving very popular. Several non-members are active contributors.

Please send material for the OASI web site and newsletter e.g. observations, notices of events, general interest articles, to

news@oasi.org.uk

Other contact details will be issued to members on a separate printed list or emailed directly to those who only receive the e-version of the News.

Access into the School Grounds and Observatory Tower

Please use the third gate into the school grounds by the gym.

Areas out of Bounds

Access to the Observatory is **only via the black door** at the foot of the Observatory tower, which leads to the staircase and thence to the spiral staircase up to the Observatory. If the black door is locked, please phone the observatory mobile, 07967 519249 during meeting hours.

Please do NOT explore other routes. When in doubt, ask or call the Observatory mobile.

Remember this is a school and straying into the main part of the school where the pupils reside would cause the society big problems and could see us losing the use of the observatory. Any member found to be anywhere other than the approved access route or the observatory area will face serious sanctions up to and including expulsion from OASI.

Please note that access time for all observatory member nights is after 20:15

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

Articles for OASI News

News, pictures and articles for this newsletter are always welcome. Please send them to

news@oasi.org.uk

The CLOSING date is the 15th day of the month

Please submit your articles in any of the following formats:–

Text: txt, rtf, rtf, doc, docx, odt, Pages, pdf

Spreadsheets: xls, xlsx, OpenOffice/LibreOffice, Numbers

Images: tiff, png, jpg

Please send tables as separate files in one of the above formats.

If you don't feel up to writing a major article, perhaps you might write a short note for OASI News along the lines of *"This month I have mostly been observing/constructing/mending/reading/etc."*

Articles win points! See page 15.

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

[Newsletter archive 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 2016

Chairman	David Murton	Set overall agenda for OASI, Chair committee meetings, Press and publicity, Public appreciation of astronomy, Outreach activities.
Secretary	Roy Gooding	Outreach meetings (jointly with Chairman), observatory decoration.
Treasurer	Paul Whiting FRAS	Finance, Supervision of applications for grants, Visits by outside groups, Observatory tours, Public appreciation of astronomy (jointly with Chairman).
Committee	James Appleton	Committee meeting minutes, Web site
	Martin Cook	Membership, Tomline refractor maintenance & user testing
	Peter Richards	Lecture meetings, Email distribution lists
	Martin Richmond-Hardy	Newsletter
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Avtar Nagra	Newbourne Observing Group
	Matt Leeks	Safety & security
Co-opted	Andy Wilshire	Librarian

Society Notices

Membership Renewal: (50th Anniversary Year)

You should have received a blue membership renewal form and a questionnaire in January. Please complete the forms and return to me at the address shown on the form. Thank you

Martin Cook
Membership Secretary

Contacts

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

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

Signing in and out

Please ensure you sign in and out when visiting the Observatory and/or Newbourne. This is for fire safety precautions and also provides an historic record.

Welcome new members

Richard Loose Susan Kent

OASI and BAA Events

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

There's a Google Calendar on the OASI web site with the latest dates (and corrections!). If you want to easily add OASI Events to your own computer/phone/tablet calendar application click this button on the website Events page.



Download the OASI 2016 year planner from the web site. An A3 printer is advised.

For other astronomy news and astro pictures try our

Twitter feed <https://twitter.com/OASIpSwich>

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

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

Date and Time	Location	Contact	Event
Weekly, every Wednesday, 20:15–22:00	Orwell Park Observatory	Martin Cook, Roy Gooding	General observation (weather permitting) using a variety of telescopes. Entry via the third gate left. NOT the main gate
Monday 30 January From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Sun 05 Feb 18:00	tbd	James Appleton info@oasi.org.uk	Field trip to observe the graze of 81 Tau. More info.
Tuesday 7 February 20:00	Orwell Park Observatory	Paul Whiting treasurer@oasi.org.uk	Observatory visit. Booking essential.
Monday 13 February From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Monday 27 February From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Saturday 4 March	Newbury	https://britastro.org/	BAA Deep Sky Section Annual Meeting
Saturday 11 March	Swinton, Mexborough S64 8PZ	https://britastro.org/	BAA Back to Basics Workshop
Monday 13 March From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Tuesday 14 March 20:00	Orwell Park Observatory	Paul Whiting treasurer@oasi.org.uk	Observatory visit. Booking essential.
Monday 27 March From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Wednesday 29 March 17:30	Burlington House Piccadilly London W1J 0DU	https://britastro.org/	Special General Meeting and Ordinary Meeting
Friday 7 April	Sparsholt College, Winchester	https://britastro.org/	BAA Winchester Weekend
Monday 10 April From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group

Date and Time	Location	Contact	Event
Tuesday 11 April 20:00	Orwell Park Observatory	Paul Whiting treasurer@oasi.org.uk	Observatory visit. Booking essential.
Monday 24 April From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Saturday 29 April 10:00	The Birley Centre, 49 Carlisle Rd, Eastbourne BN21 4JR	https:// britastro.org/	One Day Spring Meeting - "Planets in our solar system and beyond"
Monday 15 May From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Monday 29 May From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Wednesday 31 May 17:30	Burlington House Piccadilly London W1J 0DU	https:// britastro.org/	Special General Meeting and Ordinary Meeting
Saturday 3 June 10:00	Cambridge	https:// britastro.org/	Webb Deep-Sky Society Annual Meeting, Cambridge A short AGM for Society members followed by a full day of talks by leading amateur and professional astronomers and astrophysicists
Monday 12 June From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Saturday 17 June (all day)	Burlington House Piccadilly London W1J 0DU	https:// britastro.org/	Comet Section meeting
Monday 26 June From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Saturday 29 July	UCS, Ipswich	David Murton chairman@oasi.org.uk	Public access event. Major event to mark OASI's 50 th anniversary. Lectures by big-name speakers, exhibitions, trade stands and much more.
21 August	USA	www.greatamericaneclipse.com	Total solar eclipse
20 October 20:00	Museum Street Methodist Halls,	Pete Richards lectures@oasi.org.uk	Lecture tba
17 November 20:00	Museum Street Methodist Halls,	Pete Richards lectures@oasi.org.uk	Steve Hubbard and Malcolm Brown will be "Talk with ET? We think not."

Later 2017 NOG dates, up to the end September, are on the website.

Newbourne Observing Group

Avtar Nagra nog@oasi.org.uk

We normally meet at Newbourne Village Hall, Mill Lane, IP12 4NP on the 2nd and 4th Mondays (with a few exceptions, like December and January).

The Newbourne Observing Group (The NOGs) is a good place to start for beginners. If you are thinking of buying a scope or binoculars, come and try before you buy and talk to owners about the strengths and weaknesses of particular models. If you've already splashed the cash, bring your new scope along to use or for advice on setting-up and adjustment. All welcome, with or without telescopes. We would like visitors to join OASI to enjoy the full benefits of membership.

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

Newbourne Observation Group Stargazer's guide

On the first meeting each month Bill Barton will give a short presentation of what can be viewed in the following 4 weeks. For armchair stargazers (on those cloudy nights) there is a small branch of the OASI Library held at Newbourne and a copy of the full catalogue.

NOG Meetings in 2017

16 Jan	30 Jan	13 Feb	27 Feb
13 March	27 March	10 April	24 April
15 May	29 May	12 June	26 June
10 July	24 July	14 Aug	28 Aug
11 Sept	25 Sept		

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

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

Astronomy Workshops

Contact Mike Whybray

Location: Newbourne Village Hall IP12 4NP

Doors open at 7:00pm.

Workshops start at 8:00pm

If you are a new OASI member, or haven't been to one of these informal workshops before, they are a mixture of events of different characters including beginners talks, interactive workshops, films, etc., suitable for all. They are also a chance to chat with other members over a cup of tea and a biscuit, in a venue rather warmer than the observatory dome on a winter's night!

Given a clear night, we can make use of the field for a workshop or continue afterwards with some observing.

Do you have a subject you could workshop? You could do a short one, or share the effort with a partner. Drop Mike Whybray a line! workshops@oasi.org.uk

Lecture Meetings

Contact: Peter Richards lectures@oasi.org.uk

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

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.

NB The spiral car park by the New Wolsey theatre is CLOSED.

Please note that we have to be out of the building by 10pm

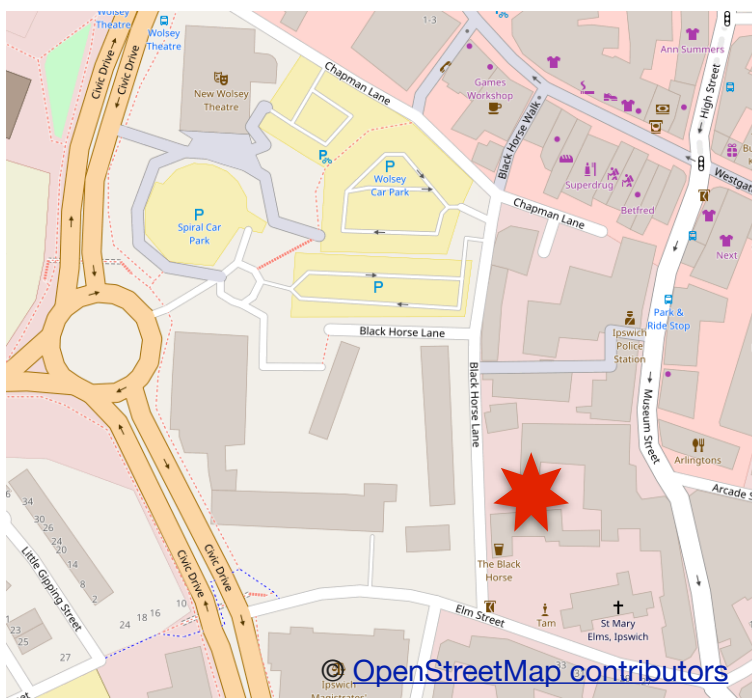
20 October

TBA

17 November

Steve Hubbard and Malcolm Brown

"Talk with ET? We think not."



DASH Astro Events – 2017

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

All DASH Astro observing sessions will take place at WESTLETON COMMON. ASOG observing sessions and locations may be arranged at the time of observation.

Unless stated all group meetings will take place at WESTLETON VILLAGE HALL from 7:30 pm



Date	Event
11.02.2017	Meeting - Bill Barton - A history of the Royal Observatory (part 2) Followed by David Murton - Astrophotography
25.02.2017	Dash Observing Session - Westleton Common

The Night Sky in February

Martin RH

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

Times are in UTC(GMT).

Moon

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

New Moon	1st Quarter	Full Moon	Last Quarter
26 Feb 14:58	04 Feb 04:19	11 Feb 00:33	18 Feb 19:33

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	07:35	16:43		
	28	06:43	17:33		
Moon	1	09:38	22:14		Perigee 368,816 km 06 Feb 14:03
	28	07:41	20:00		Apogee 404,376 km 18 Feb 21:14
Mercury	1	06:47	14:34	0.0	Aphelion 2017-Feb-07
	28	06:51	16:48	-1.0	
Venus	1	08:53	21:02	-4.4	Perihelion 2017-Feb-20
	28	07:02	20:53	-4.4	
Mars	1	09:15	21:23	1.1	
	28	08:00	21:32	1.3	
Jupiter	1	23:12	09:55	-2.0	Aphelion 2017-Feb-17
	28	21:21	08:09	-2.2	
Saturn	1	04:49	12:38	1.4	
	28	03:12	11:01	1.3	
Uranus	1	09:46	23:03	5.9	
	28	08:02	21:23	5.9	
Neptune	1	08:41	19:12	8.0	
	28	06:56	17:31	8.0	

Asteroids

Vesta, magnitude 6.2 is currently visible in Gemini.

See <http://heavens-above.com/MinorPlanet.aspx?desig=4&>

Ceres, magnitude 8.8 is in Pisces.

See <http://heavens-above.com/MinorPlanet.aspx?desig=1&>

Occultations during February 2017

James Appleton

The table lists occultations during the month under favourable circumstances. The events should be readily visible in small telescopes or binoculars. The first two columns list the date and time (UT) of the occultation. Column three gives the phenomenon: 'D' denotes a disappearance and 'R' a reappearance. The table lists circumstances of disappearances and reappearances as dictated by the visibility of each phenomenon (determined by altitude, lunar phase, etc). Column four details the lunar phase ('+' for waxing and '-' for waning). Columns five and six give the altitude of the Sun and the star, both in degrees. (A negative solar altitude means that the Sun is below the horizon.) Columns seven and eight provide the star's magnitude and catalogue number.

The data relates to Orwell Park Observatory, but will be similar at nearby locations.

Please note that **times are shown in UTC**.

Date	Time (UT)	D/R	Lunar Phase	Sun Alt(°)	Star Alt(°)	Mag	Star
02 Feb 2017	19:04:04	D	0.34+	-21	35	4.4	106 Psc, v Psc
	20:11:51	R		-32	27		
04 Feb 2017	18:05:12	D	0.56+	-12	51	4.1	5 Tau, f Tau
	19:10:05	R		-22	50		
05 Feb 2017	19:02:23	R	0.68+	-20	54	3.4	78 Tau, 02 Tau
05 Feb 2017	17:52:15	D	0.68+	-10	50	3.8	77 Tau, 01 Tau
	19:00:01	R		-20	54		
05 Feb 2017	18:38:00	D	0.68+	-17	53	6.6	ZC 672
	18:52:29	R		-19	54		
05 Feb 2017	19:11:00	D	0.68+	-22	54	6.5	ZC 680
05 Feb 2017	19:12:53	D	0.68+	-22	54	4.8	ZC 677
	19:57:25	R		-29	54		
05 Feb 2017	19:39:03	D	0.68+	-26	54	6.0	85 Tau
05 Feb 2017	20:50:57	D	0.69+	-37	50	6.6	ZC 685
05 Feb 2017	23:04:51	D	0.69+	-51	34	5.8	89 Tau
07 Feb 2017	03:02:51	D	0.81+	-40	10	5.5	130 Tau
08 Feb 2017	02:53:42	D	0.89+	-41	20	6.3	ZC 1040
08 Feb 2017	03:02:38	D	0.89+	-39	18	7.3	Hip 32532
08 Feb 2017	23:02:42	D	0.95+	-50	55	5.0	74 Gem, f Gem

On 05 February at 19:23 there is a southern limit graze of the magnitude 5.5 star 81 Tau. Details are on the OASI website: http://www.oasi.org.uk/Occs/Occ_summary_2017.php. An observing trip will be organised if weather conditions are favourable: details will be provided via the OASI email list.

Figure 1 shows the graze track

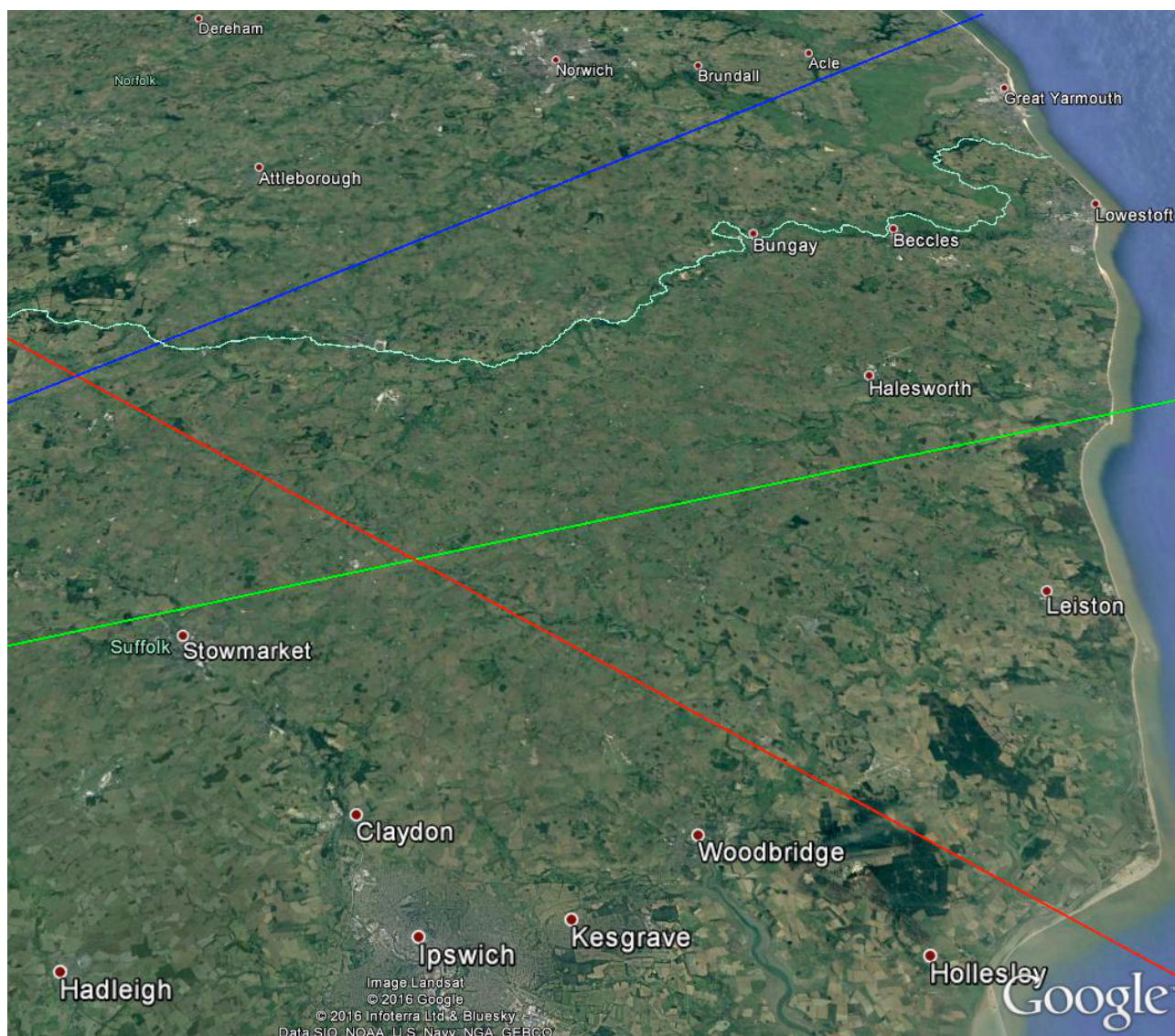


Figure 1. Graze tracks. (81 Tau green; V4190 Sgr blue; ZC1522 red.)

Meteor Showers

Source: BAA Handbook 2016 p97-99

None during February.

Comets due in 2017

Bill Barton

Here are the comets listed in the BAA Handbook with single figure peak magnitudes:-

- 45P/Honda-Mrkos-Pajdusakova, peak magnitude 6 in January and **visible from the UK from January to May**
- 2P/Encke, peak magnitude 5 in March and **visible from the UK from January to February**.
- 41P/Tuttle-Giacobini-Kresak, peak magnitude 3 in April and **visible from the UK from January to July**.
- Johnson (2015V2), peak magnitude 7 in June and **visible from the UK from January to July**.
- 96P/Machholtz will peak at magnitude 2 in October, but will not be visible from the UK.

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

Martin RH

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

Times are UTC. Predictions are approximate (data taken on 19 Jan) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Feb	-2	18:07:34	10°	SSW	18:10:25	28°	SSE	18:11:35	22°	ESE
01 Feb	-0.5	19:43:21	10°	WSW	19:44:15	17°	WSW	19:44:15	17°	WSW
02 Feb	-3.1	18:51:05	10°	WSW	18:54:08	59°	S	18:54:08	59°	S
03 Feb	-2.7	17:58:54	10°	SW	18:02:03	45°	SSE	18:03:58	20°	E
03 Feb	-1	19:35:07	10°	W	19:36:38	25°	W	19:36:38	25°	W
04 Feb	-3.5	18:42:47	10°	WSW	18:46:03	79°	S	18:46:26	66°	ESE
05 Feb	-3.2	17:50:27	10°	WSW	17:53:42	66°	SSE	17:56:12	16°	E
05 Feb	-1.6	19:26:51	10°	W	19:28:51	34°	W	19:28:51	34°	W
06 Feb	-3.4	18:34:29	10°	W	18:37:46	86°	S	18:38:37	47°	E
07 Feb	-3.3	17:42:05	10°	W	17:45:22	82°	S	17:48:22	12°	E
07 Feb	-2.3	19:18:33	10°	W	19:21:01	46°	W	19:21:01	46°	W
08 Feb	-3.4	18:26:08	10°	W	18:29:25	81°	S	18:30:47	32°	ESE
08 Feb	-0.2	20:02:41	10°	W	20:03:26	15°	W	20:03:26	15°	W
09 Feb	-3.3	17:33:42	10°	W	17:37:00	86°	S	17:40:17	10°	E
09 Feb	-2.6	19:10:12	10°	W	19:13:14	47°	SSW	19:13:14	47°	SSW
10 Feb	-3	18:17:45	10°	W	18:21:00	63°	SSW	18:23:05	20°	ESE
10 Feb	-0.5	19:54:33	10°	W	19:55:45	16°	WSW	19:55:45	16°	WSW
11 Feb	-1.8	19:01:53	10°	W	19:04:48	30°	SSW	19:05:39	26°	S
12 Feb	-2.3	18:09:20	10°	W	18:12:28	43°	SSW	18:15:35	10°	SE
13 Feb	-0.8	18:53:46	10°	W	18:56:05	18°	SW	18:58:23	10°	S
14 Feb	-1.3	18:00:58	10°	W	18:03:48	26°	SSW	18:06:36	10°	SSE
16 Feb	-0.4	17:52:54	10°	WSW	17:54:58	16°	SW	17:57:01	10°	S

Iridium flares

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

Paul's Astronomy Podcast for February

Paul Whiting FRAS Podcast, February 2017 www.oasi.org.uk/2017_02_pod.mp3

David's Radio Broadcast

On the 1st Tuesday of the month, 1.40pm on the Lesley Dolphin show on BBC Radio Suffolk – now digital (channel 10c) and FM 103.9 (Ipswich), 104.6 (west Suffolk), 95.5 (Lowestoft), 95.9 (Aldeburgh).

Bill's Radio Broadcast

ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. I aim to cover what there is to see in the sky and then a little bit on something topical.

ICRFM is also available to listen to over the Internet and there is a listen again option on their website. <http://www.icrfm.com>

BAA News

All BAA Journals on 3 DVDs

The BAA is pleased to announce the publication of a new, revised edition of the three-disk DVD set containing searchable PDFs of all the issues of the BAA Journal since its founding in 1890. The new edition is substantially revised and corrected, including many pages that were accidentally missed from the previous version, and rescans of badly rendered pages. The third disk also includes the Journals from the four years since the previous set was published, so this edition is now complete until the end of 2015. A new index to all three disks is also included.

BAA members are eligible to buy the DVDs at half the normal price.

Please ensure you are logged into the website when you order to have this discount applied. Prices to BAA members are as follows: 1 disk £20, 2 disks £35, 3 disks £45. All prices include VAT and post and packing in the UK.

The DVDs may be ordered from the BAA shop at

<https://www.britastro.org/journal-dvds>

(If you previously purchased the first edition, you are eligible to buy the second edition at heavily discounted prices: please contact the BAA Office for more details, or return the form received by post.)

We would like to record our thanks to Carl Bowron, Nick James, Richard McKim and Sheridan Williams for help with the creation of this 2nd edition of the BAA Journal DVD archive.

Happy Christmas everyone, and best wishes for clear dark skies for all in 2017.

Hazel McGee, Journal editor

2016 December 21

Mars: monitoring for major dust storm activity

Mars is now well placed again in our evening skies, but its diameter is less than 6 arcseconds. The S. polar cap is tiny, and the martian skies are free from any major dust activity according to our latest observations. At the present time, the areocentric longitude (Ls) of the planet is 300 degrees, corresponding to the first half of the summer season in the southern hemisphere. According to our past records, the latest seasonal date at which any planet-encircling dust storm began was at Ls = 311 degrees, towards the end of the 1924-25 apparition, when the Rev. T.E.R. Phillips had been the first to see a bright streak of dust breaking out from the west of the Hellas basin. Days later the whole planet was covered in an impenetrable yellow veil.

We are keen to know if any such event will occur in the current martian year, but owing to the smallness of the disk the number of observers has lately become very small. If you are able to get any decent images over the next few weeks please do send them to the Mars Section. Likewise any observer able to view the planet at the eyepiece could also make a useful contribution. On January 14 the Director made his 100th drawing of the current apparition: despite the tiny disk, the major features in the longitude of the Syrtis Major and Hellas were still distinctly visible with a magnification of at least x250. To achieve our objective, we shall need to observe a little way beyond Ls = 311 degrees, which means at least until mid-February. The planet cannot be observed for long after sunset, so observations from around the world are necessary to build a full picture over all longitudes of the planet. On average, planet-encircling dust storms occur once in

every three martian years, but so far no-one has succeeded in accurately predicting them. What will happen this time round? Your work could help to answer the question.

Dr Richard McKim (Director, Mars Section)

richardmckim@btinternet.com

2017 January 16

OASI Member of the Year Competition

- Open to any non committee member (at time points earned)
- Runs from 1st September to 31st August each year
- It is the members responsibility to check that they have been credited the points for a particular event

Activity	Points	Activity	Points
Helping at an OASI outreach event	10	Writing a newsletter article (per page)	3
Giving a workshop/monthly sky notes	20/10	Introducing a new member	5
Astro photo published	2		

Members' points to date

Adam Honeybell	20
Alan Smith	25
Andy Gibbs	33
Bill Barton	71
Chris Lock	10
Ian Hastie	10
Joe Startin	29
Joe Walsh	10
Mandy Gibbs	10
Mike Nicholls	30
Mike O'Mahoney	36
Nicky Richards	20
Nigel Evans	6
Ray Larson	10
Rob Herring	28
Steve ??	10
Tina Hammond	10

Come and help at one of our outreach events and earn 10 points. You don't need to be an expert!

Write a short article for the magazine, e.g.

Bought some new astronomy kit? Tell us about it – successes and pitfalls.

New: You now get 2 points for an astrophoto. We are all learners.

PS Still trying to identify "Steve" who attended an event at Capel St Mary. Are you Cates, Steele or Shapland? Please let me know!

Martin RH

2017 Star Parties at Haw Wood



Haw Wood is a Milky Way class Dark Sky Discovery Site.

Naked eye visibility 5.73, averted 5.99 best SQM reading 21.75



SPRING

Wednesday 22nd to Thursday 30th March

AUTUMN

Friday 13th Friday 20th October

Pitches £12 per night including hook up



Haw Wood Farm

Book with Daniel or Georgina.

01986 784 248 Mobile 07 990 594 294

Haw Wood Farm Caravan Park, Hinton, Saxmundham. IP17 3QT

daniel@hawwoodfarm.co.uk

What are Gravity Waves?

Andy Wilshire

These are classed as 'ripples' in space time fabric. They are caused by a massive and violent release of energy in the universe. They were predicted by Albert Einstein in the general theory of relativity of 1916. It was his mathematical skill that showed that wildly accelerating bodies would throw space- time into disorder and produce waves that radiated from the source. An example of this is a pebble thrown into a pool of water and its subsequent motion of the circular waves. These travelling waves sped at the speed of light ($299\,792\,458\text{ m / s}$) through the Universe conveying data about their origins and also gravity.

These calamitous releases of energy can be caused by, for example , colliding black holes or supernovae . Although their prediction occurred in 1916, proof didn't arrive until 1974, when two astronomers at the Arecibo Radio Observatory in Puerto Rico observed a binary pulsar. They knew that this type of system should according to Einstein's theory radiate gravitational waves. It took eight years to produce data that showed that the two stars were moving toward each other at the speed decreed by general relativity. This system has been viewed since then and has conclusively shown that gravitational waves are being generated. Pulsar wave timing has been studied since that date by many astronomers, each time confirming the original data. However this was only mathematically proved, but at 20:15 on September 14, 2015 real gravitational waves were seen, using LIGO (laser interferometer gravitational observatory) equipment. The stimulus to this was 1.3×10^6 light years away in the guise of two colliding black holes.

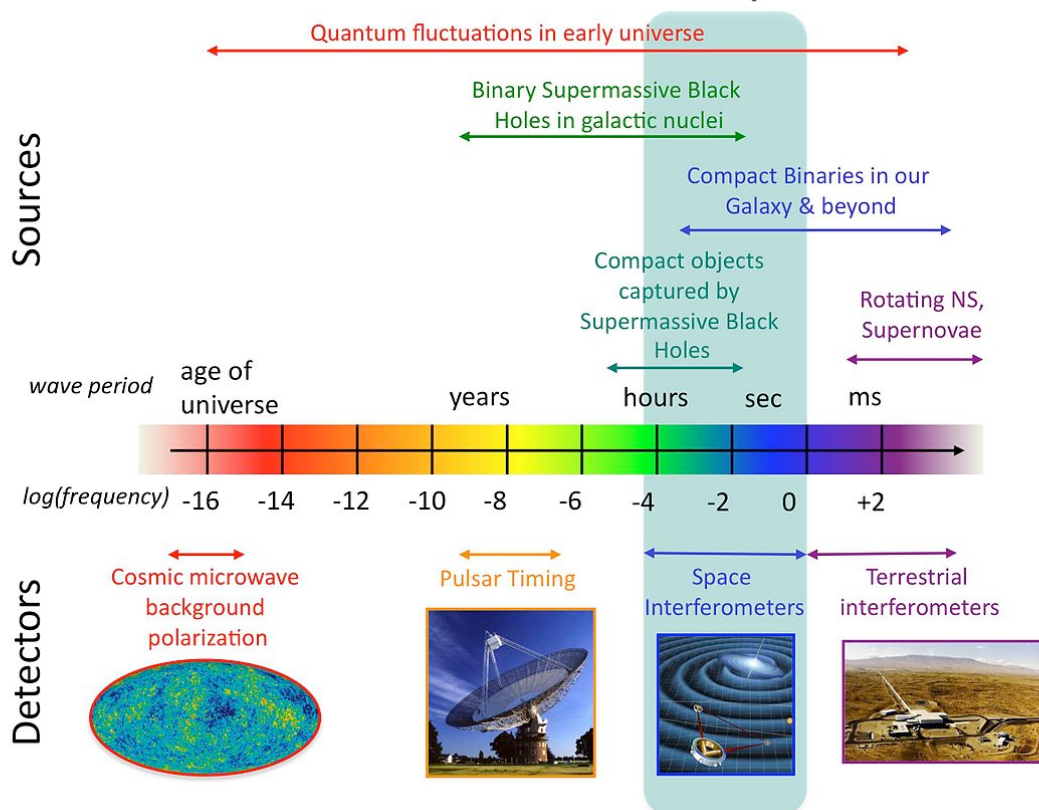
Two interferometers 3000 km apart, hence the 7 ms time signal difference, stationed at Handford and Livingston; both American observatories ; had picked up the signal in which the arms of the equipment had lengthened and then reduced as the wave passed by. This showed pictorially the distinct upward curve, its shape and colour which denotes its duration, its wave frequency and its energy intensity. This curve shape is definitive as the characteristic movement of space time. Data analysis continued at a frenetic pace and four days later the signal was transformed into an audible sound. This was then compared to audible mathematically precise simulations prepared many years prior, with the result sounding identical. All data was then systematically checked and re-checked over a period of 5 months, which validated all. They then began to analyse what had caused LIGO to respond. First the shape of the signal was diagnosed as being formed when two very large objects like a binary system coalesce. Secondly the signal frequency confirmed a black hole system. Thirdly a mathematical best estimate from data obtained prior to LIGO was produced and generated into a waveform. This was matched to that obtained from LIGO and the result was virtually identical.

As Einstein had predicted, gravitational waves existed and had been recorded. Since then, a second binary system black hole coalescence has occurred and again confirmed by LIGO. This second observation verifies the earlier detection.

Reference:

<https://www.ligo.caltech.edu/>

The Gravitational Wave Spectrum



The gravitational wave spectrum with sources and detectors.

Credit: NASA Goddard Space Flight Center

2017 SPA Convention

Saturday 1 April 2017, 10 am - 5.30 pm

Institute of Astronomy, Cambridge

www.popastro.com/meetings/convention/index.php

The SPA Convention is held every two years and is a great opportunity for members and indeed anyone interested in astronomy to get together, hear some great lectures from world-class astronomers and meet many of our section directors.

Everyone is welcome, whether or not they are an SPA member. There is no admission fee, but you will need to apply for a ticket.

The theme of this year's Convention is *What We Have Learnt From....* We have a superb line-up of speakers for you, covering a range of topics at the cutting edge of astronomy (see the programme below). And as usual there will be tours of the IoA telescopes, trade stands and exhibits from the SPA's observing sections, with the chance to meet many of the section directors and other SPA people.

A grazing occultation of HIP60399

(or Grumpy Wellards Weeley good adventure)

The last of this years' grazing occultations was predicted to take place during the early morning of Thursday 22nd December 2016.

Again, this graze has been plotted using a freely available software suite (Occult 4.0), which produces detailed plots of the lunar topography and draws a Google Earth line showing the very narrow path of visibility across the Earth. This graze was predicted to pass south of Ipswich into mid Essex.

As is now usual, a search along the line was made to find the most promising location for us to set up our telescopes, away from vehicles, light pollution and too much interference. Essex is a difficult area to find suitable sites, but fortunately the graze line passed close to the front entrance of a local authority building on the outskirts of Weeley.



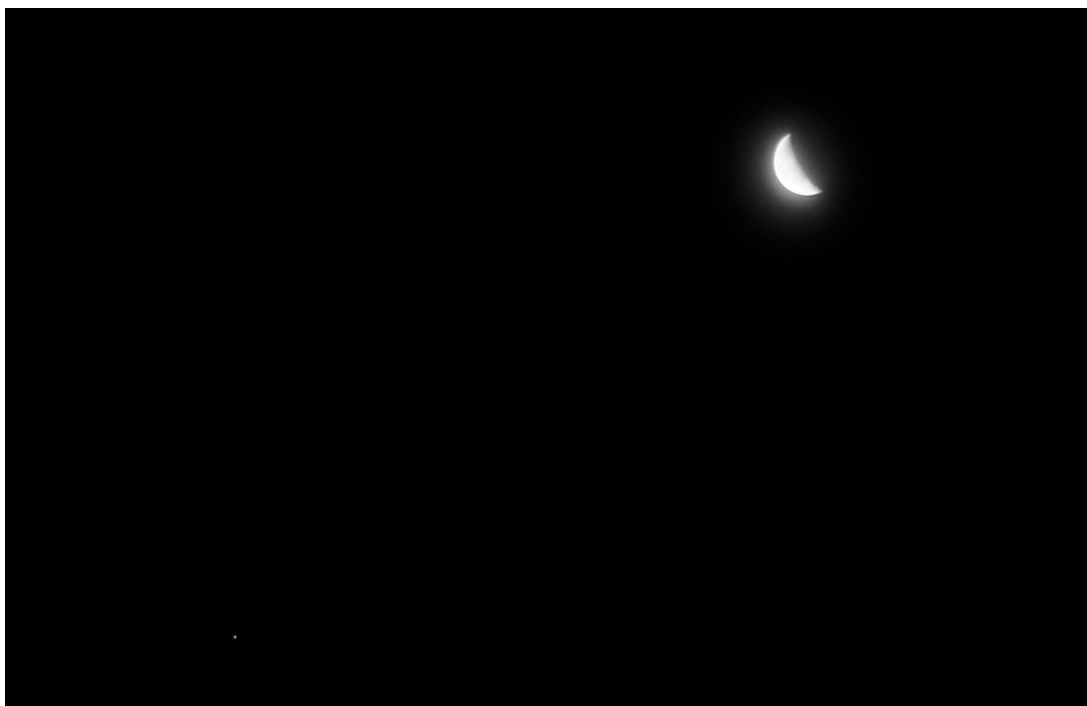
This particular graze was only just 'admissible' as a possibility: at magnitude 7.7 it is almost on the limit to be visible against the glare of the moon, it was in 'astronomical twilight', low down in the south western sky and would mean travelling over 60km (returning during the rush hour).

Usually, there are at least half a dozen intrepid observers who are available (and willing) to attend, but on this occasion, work commitments meant that a couple of the usual suspects would be unable to get from the site and into work north of Ipswich (the notorious traffic conditions at the A12 Copdock Mill interchange). All the other potential observers decided that although both BBC and ITV forecasts, and the infrared satellite images showed promise, I was the only person up for it. The normal 'go/no-go' conference call set up for 23:00hrs on the 21st of December, was abandoned as everybody was in attendance at the Wednesday evening 'club night'. In the event, as I was to be the lone observer, Billy Nomates held a conference around the kitchen table with himself. After duly consulting the fir cones and holding a wet finger in the air, it was unanimously agreed that an attempt should be made if the sky was clear.

I set off for the site at 0430hrs with only light cloud and sparse ground mist.

A nasty hand injury the week before, meant that I was unable to load my usual 250mm Dobsonian mounted Newtonian reflector (too heavy to risk re-opening the wound), so I decided to use a 400mm (equivalent to about 640mm on my Canon 1100D camera), F6.3 telephoto lens with 3 times convertor (total about 1900mm) mounted on an ordinary camera tripod, to try to image something.

The moon was higher in the sky than expected, with only a light haze and closely attended by Jupiter and Spica



Moon and Jupiter (Spica out of frame). 85mm lens on Canon 1100D

As the graze time approached (0636hrs) the sky was clearing although there were some bands of light cloud.

Given my lack of telescope, all I could do was to fire off various shots at different ISO values and exposure times and hope for the best. Live-view did not show the Magnitude 7.7 star so I was not hopeful !

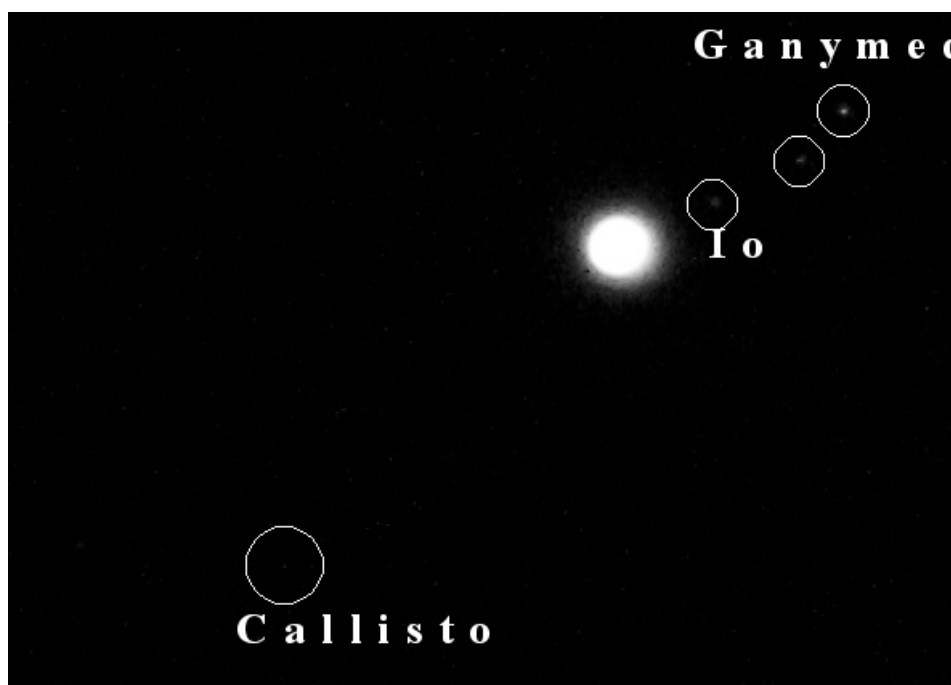


**Closeup of lunar southern limb at 0632hrs.
Note that limb profile can be clearly seen. ISO800 1/10 sec.**



**Closeup of lunar southern limb at 0648hrs.
Even at ISO6400 1/10th sec. the star is not visible.**

To give some idea of the 'sensitivity' of the camera/lens setup, I took pictures of Jupiter and all four Galilean moons. Note that Io at Mag. 5 and Ganymede at Mag. 4.6 are clearly visible, but Callisto at Mag. 5.5 can only just be picked out.



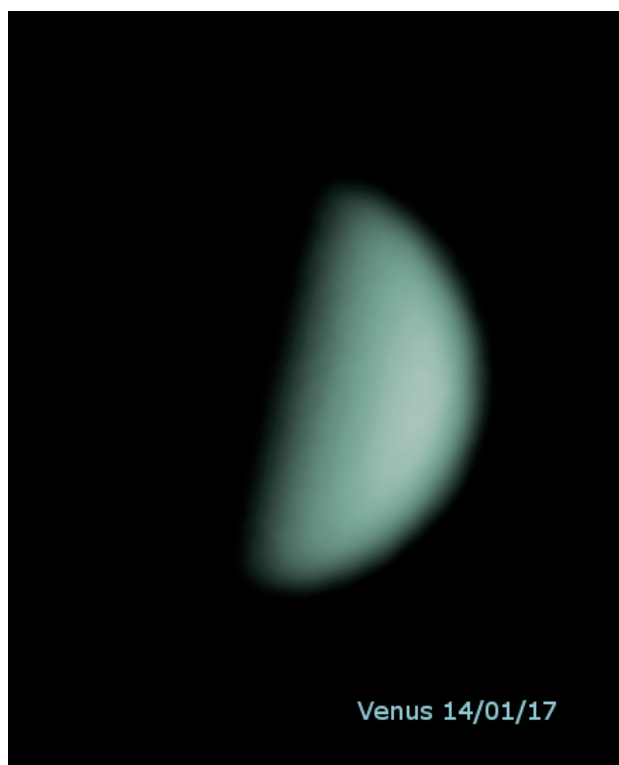
Jupiter at 0700hrs. ISO6400, 1/25 sec.

As there was no-one around to take the usual group photo, I packed up and went before I was discovered by any early arrivals of the building staff. Arrived home with a clear blue sky and my solar panels already generating!

Billy Nomates (AKA Alan Smith)

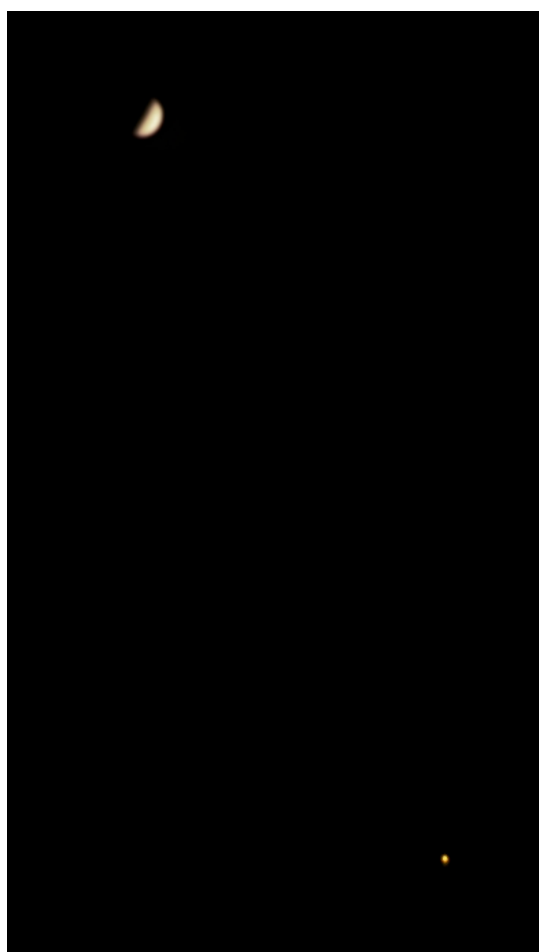
Astrophotography

David Murton



Venus 17 Jan. Altair GPCAMV2 IMX224 camera on Skywatcher 200pds telescope + 4xpowermate.

Then Venus and Hydor one of the stars forming Aquarius. Same setup without the powermate.

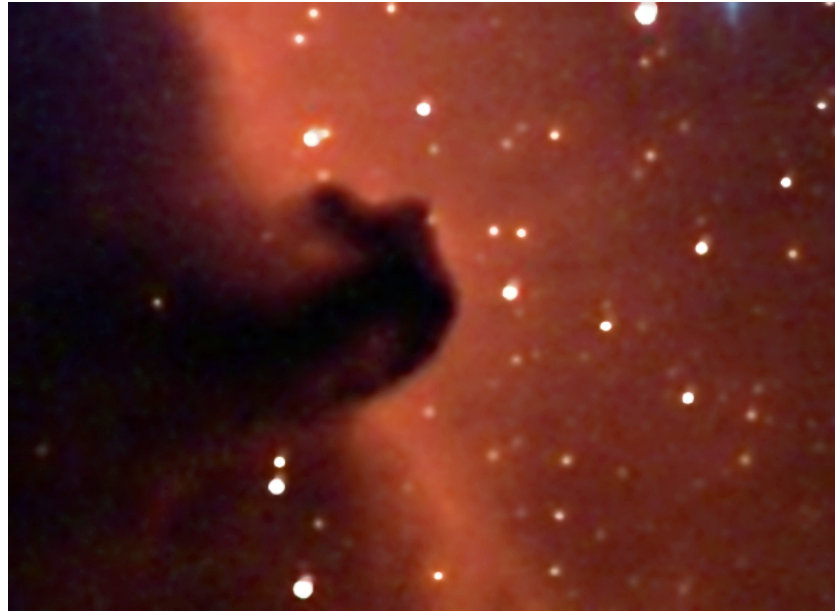


A few re-edits and crops of previous subjects.

First IC405 the Flaming Star nebula showing the areas of reflection nebulosity then Barnard 33 commonly known as the Horsehead nebula, then the Cone nebula otherwise known as S2-273 together with the open cluster NGC2264 the Christmas tree cluster. The whole area is also known as the Fox Fur Nebula. A lot of emission nebulosity in Ha together with some reflection components from the cluster stars.

All Canon 60Da camera on Skywatcher 200pds telescope.





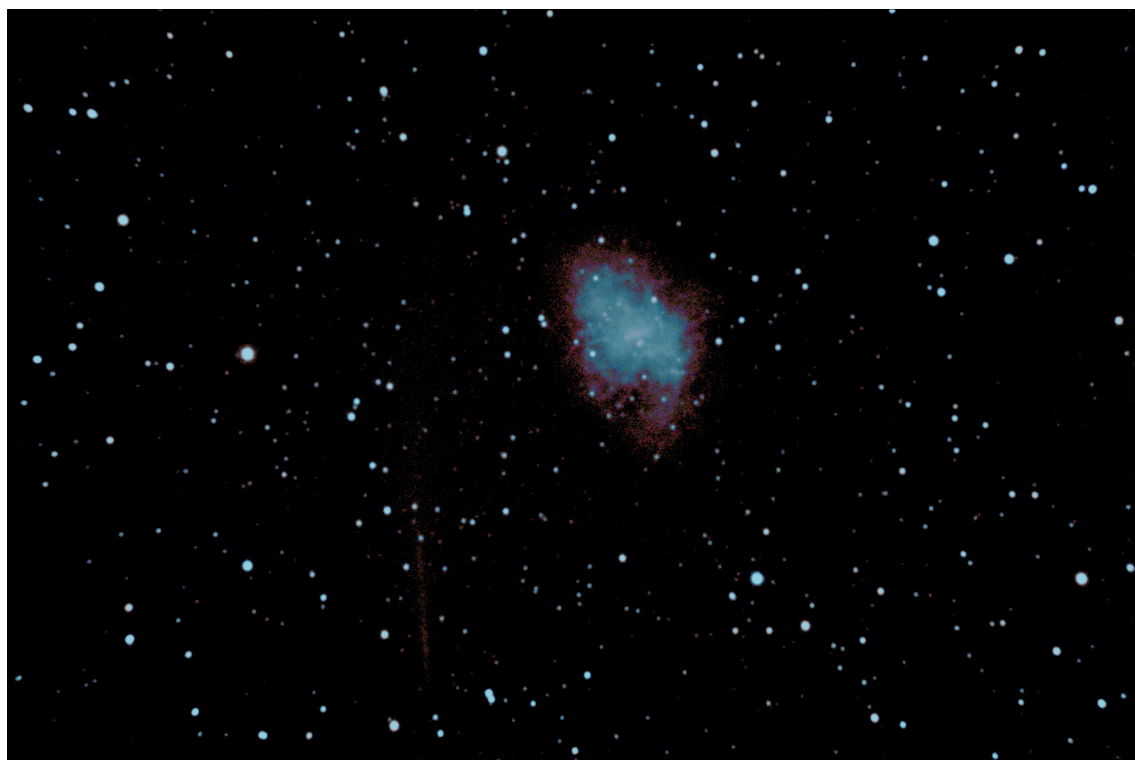
Barnard 33 The Horsehead nebula



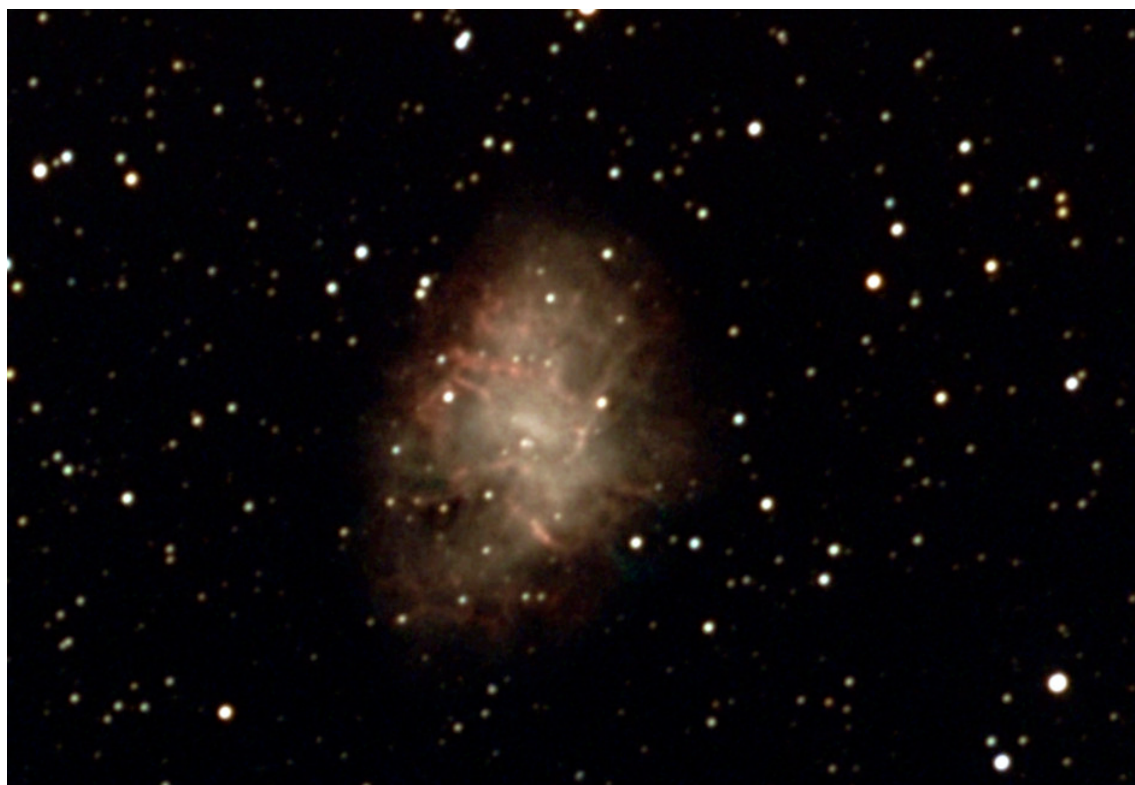
Cone nebula otherwise known as S2-273 together with the open cluster NGC2264, the Christmas tree cluster

Two views of M1 - the Crab Nebula

Mike O'Mahoney & David Murton



Mike O'Mahoney: Celestron SCT 235 mm f10 + Canon 60Da + HEQ5 mount
45 x 30" x ISO 4000 taken at 21:00 hrs on 26/12/16; M1 was at altitude of 51 degrees.



Not an easy one! M1 the crab nebula. Very small and faint.
16x480 seconds at iso400. Canon 60Da and Skywatcher 200pds telescope.