



# OASI News

The newsletter of the Orwell Astronomical Society



M27 – 17x240 seconds at ISO 400. Skywatcher 200PDS and Canon 60Da camera.

*Photo: David Murton*

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

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

## Pictures

**David Murton**

A couple of shots taken last week. M33 is 23 frames of 420 seconds at ISO 400, M31 is 13 frames of 420 seconds at ISO 400 plus 2 frames of 120 seconds.

All taken with a Canon 60Da camera on skywatcher 200PDS telescope.



**M33**



**M31**

## Contents

|                                                                            |    |
|----------------------------------------------------------------------------|----|
| Cover picture: M27 .....                                                   | 1  |
| Inside cover: M33 and M31 .....                                            | 2  |
| Society Contact details .....                                              | 4  |
| Access into the School Grounds and Observatory Tower .....                 | 4  |
| Articles for OASI News .....                                               | 4  |
| Reproducing articles from OASI News .....                                  | 5  |
| Committee 2016 .....                                                       | 5  |
| Society Notices .....                                                      | 5  |
| Contacts .....                                                             | 5  |
| The Annual General Meeting .....                                           | 5  |
| Signing in and out .....                                                   | 5  |
| Welcome New Members .....                                                  | 5  |
| OASI and BAA Events .....                                                  | 6  |
| The 2016 OASI Christmas Meal .....                                         | 7  |
| Newbourne Observing Group .....                                            | 8  |
| Newbourne Observation Group Stargazer's guide .....                        | 8  |
| Astronomy Workshops .....                                                  | 8  |
| Lecture Meetings .....                                                     | 9  |
| DASH Astro Events – 2017 .....                                             | 9  |
| The Night Sky in December .....                                            | 10 |
| Moon .....                                                                 | 10 |
| Sun, Moon and planets .....                                                | 10 |
| Occultations during December 2016 .....                                    | 11 |
| Visible ISS passes $\geq 15^\circ$ max altitude .....                      | 12 |
| Iridium flares .....                                                       | 12 |
| Meteor Showers .....                                                       | 13 |
| Comets due in 2017 .....                                                   | 13 |
| Paul's Astronomy Podcast for December .....                                | 13 |
| David's Radio Broadcast .....                                              | 13 |
| Bill's Radio Broadcast .....                                               | 13 |
| OASI Member of the Year Competition .....                                  | 14 |
| Fireworks galaxy (NGC6946) and Supermoon over Orwell Bridge .....          | 14 |
| Astrophotography Competition Results .....                                 | 15 |
| From the Interweb .....                                                    | 16 |
| Newest fast radio burst hints at makeup of the cosmic web .....            | 16 |
| ESA Rosetta found some icy surprises on Comet #67P .....                   | 16 |
| This Is the Most Detailed Hydrogen Map of the Milky Way Ever Created ..... | 16 |
| Supermoon rising .....                                                     | 17 |
| A Beginner's Review of the Celestron 5 SE .....                            | 18 |
| BAA News .....                                                             | 24 |
| Star trails and Polaris .....                                              | 26 |
| Review of the Omegon Push + Dobsonian Mount. ....                          | 27 |
| Aurora Expedition – 4-7/11/16 .....                                        | 29 |

*Season's Greetings to all our readers*

## Society Contact details

Observatory (meeting nights only)  
07967 519249

contributors.

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

**Please send material for the OASI web site and newsletter e.g. observations, notices of events, general interest articles, to [news@oasi.org.uk](mailto: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](mailto: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,<br>Chair committee meetings,<br>Press and publicity,<br>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 Wilshere         | Librarian                                                                                                                                               |

## Society Notices

### Contacts

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

For general enquiries please email [info@oasi.org.uk](mailto:info@oasi.org.uk) and your enquiry will be forwarded for action.

### The Annual General Meeting

AGM, **Saturday 21 January 2017**, Museum St Methodist Church Hall, starting 7.30pm (note: start is earlier than usual).

The usual AGM items followed by a discussion on the outreach activities of the Society.

### 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

Mark Joyce

Chris Lock

Simone Leigh

## OASI and BAA Events

For the latest event details, please see [www.oasi.org.uk/Events/Events.php](http://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](mailto:oasi-subscribe@yahoogroups.com)

| Date and Time                                         | Location                                                              | Contact                                                                          | Event                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Weekly, every Wednesday, 20:15–22:00</b>           | Orwell Park Observatory                                               | Martin Cook,<br>Roy Gooding                                                      | General observation (weather permitting) using a variety of telescopes. Entry via the third gate left. NOT the main gate                                                                                                                                                |
| Monday 28 November<br>From 19:00<br>Workshop at 20:00 | Newbourne Village Hall                                                | Avtar Nagra<br><a href="mailto:nog@oasi.org.uk">nog@oasi.org.uk</a>              | Newbourne Observing Group plus workshop at 8pm by Andy Gibbs: "From Here to Infinity".<br>A user guide to OASI's new Atik Infinity camera. An introduction to Video Astronomy, followed by a demonstration of the software and real time observing, if weather permits. |
| Tuesday 13 December<br>20:00                          | Orwell Park Observatory                                               | Paul Whiting<br><a href="mailto:treasurer@oasi.org.uk">treasurer@oasi.org.uk</a> | Observatory visit.<br>Booking essential.                                                                                                                                                                                                                                |
| Wednesday 14 Dec                                      | The Newbourne Fox.                                                    | Roy Gooding<br><a href="mailto:secretary@oasi.org.uk">secretary@oasi.org.uk</a>  | Christmas Meal.                                                                                                                                                                                                                                                         |
| Monday 19 December<br>From 19:00                      | Newbourne Village Hall                                                | Avtar Nagra<br><a href="mailto:nog@oasi.org.uk">nog@oasi.org.uk</a>              | Newbourne Observing Group Christmas event                                                                                                                                                                                                                               |
| Monday 22<br>December 06:36                           | <a href="#">TBA</a>                                                   | James Appleton<br><a href="mailto:info@oasi.org.uk">info@oasi.org.uk</a>         | Field trip to observe graze of Hipparcos 63099. More info.                                                                                                                                                                                                              |
| <b>2017</b>                                           |                                                                       |                                                                                  |                                                                                                                                                                                                                                                                         |
| Tuesday 10 January<br>20:00                           | Orwell Park Observatory                                               | Paul Whiting<br><a href="mailto:treasurer@oasi.org.uk">treasurer@oasi.org.uk</a> | Observatory visit. Booking essential.                                                                                                                                                                                                                                   |
| Monday 16 January<br>From 19:00                       | Newbourne Village Hall                                                | Avtar Nagra<br><a href="mailto:nog@oasi.org.uk">nog@oasi.org.uk</a>              | Newbourne Observing Group                                                                                                                                                                                                                                               |
| Saturday 21 January<br>19:30                          | <a href="#">Methodist Church Hall</a><br>Black Horse Lane,<br>Ipswich | Roy Gooding<br><a href="mailto:secretary@oasi.org.uk">secretary@oasi.org.uk</a>  | <b>The AGM</b>                                                                                                                                                                                                                                                          |

| Date and Time                    | Location                | Contact                               | Event                                 |
|----------------------------------|-------------------------|---------------------------------------|---------------------------------------|
| Monday 30 January<br>From 19:00  | Newbourne Village Hall  | Avtar Nagra<br>nog@oasi.org.uk        | Newbourne Observing Group             |
| Tuesday 7 February<br>20:00      | Orwell Park Observatory | Paul Whiting<br>treasurer@oasi.org.uk | Observatory visit. Booking essential. |
| Monday 13 February<br>From 19:00 | Newbourne Village Hall  | Avtar Nagra<br>nog@oasi.org.uk        | Newbourne Observing Group             |
| Monday 27 February<br>From 19:00 | Newbourne Village Hall  | Avtar Nagra<br>nog@oasi.org.uk        | Newbourne Observing Group             |
| Monday 13 March<br>From 19:00    | Newbourne Village Hall  | Avtar Nagra<br>nog@oasi.org.uk        | Newbourne Observing Group             |
| Tuesday 14 March<br>20:00        | Orwell Park Observatory | Paul Whiting<br>treasurer@oasi.org.uk | Observatory visit. Booking essential. |
| Monday 27 March<br>From 19:00    | Newbourne Village Hall  | Avtar Nagra<br>nog@oasi.org.uk        | Newbourne Observing Group             |
| Monday 10 April<br>From 19:00    | Newbourne Village Hall  | Avtar Nagra<br>nog@oasi.org.uk        | Newbourne Observing Group             |
| Tuesday 11 April<br>20:00        | Orwell Park Observatory | Paul Whiting<br>treasurer@oasi.org.uk | Observatory visit. Booking essential. |
| Monday 24 April<br>From 19:00    | Newbourne Village Hall  | Avtar Nagra<br>nog@oasi.org.uk        | Newbourne Observing Group             |
| Saturday 29 July                 | UCS, Ipswich            | David Murton<br>chairman@oasi.org.uk  | <b>OASI 50th Anniversary</b>          |
| 21 August                        | USA                     | www.greatamericaneclipse.com          | Total solar eclipse                   |

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

## The 2016 OASI Christmas Meal

**Venue:** The Fox Inn, Newbourne [www.debeninns.co.uk/fox/](http://www.debeninns.co.uk/fox/)

**Date:** Wednesday 14th December

**Time:** 20:00

**Deposit** £5      **Balance:** £14:95

**Please contact Roy Gooding for any last minute queries**  
secretary@oasi.org.uk

**L 01473 462977      M 07719 621162**



## Newbourne Observing Group

**Avtar Nagra** [nog@oasi.org.uk](mailto: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.

#### Last NOG Meetings in 2016

|        |                      |        |                   |
|--------|----------------------|--------|-------------------|
| 28 Nov | Workshop (see below) | 19 Dec | Christmas meeting |
|--------|----------------------|--------|-------------------|

The December Christmas meeting has been put back by a week to avoid the Christmas meal and NOG meeting occurring within 3 days of each other.

#### NOG Meetings in 2017

|          |          |          |          |
|----------|----------|----------|----------|
| 6 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.

**28 Nov** Andy Gibbs: "From Here to Infinity". A user guide to OASI's new Atik Infinity camera. An introduction to Video Astronomy, followed by a demonstration of the software and real time observing, if weather permits.

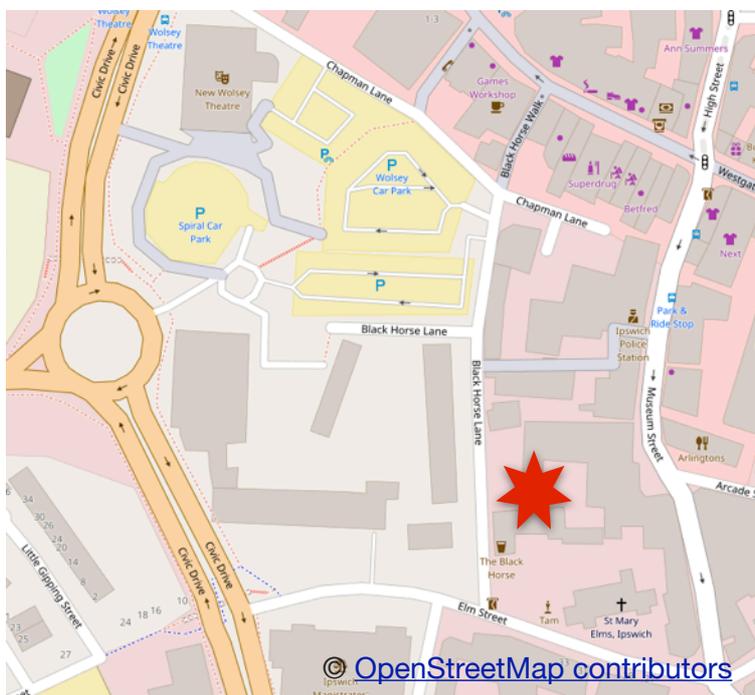
Do you have a subject you could workshop? You could do a short one, or share the effort with a partner. Drop Mike Whybray a line! [workshops@oasi.org.uk](mailto:workshops@oasi.org.uk)

## Lecture Meetings

Contact: Peter Richards [lectures@oasi.org.uk](mailto: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. There is also the spiral car park by the New Wolsey theatre.



## 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



**Don't forget the OASI AGM  
on Saturday 21 January  
Details next month**

## The Night Sky in December

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     | 1 <sup>st</sup> Quarter | Full Moon    | Last Quarter |
|--------------|-------------------------|--------------|--------------|
| 29 Nov 12:18 | 07 Dec 09:03            | 14 Dec 00:06 | 21 Dec 01:56 |
| 29 Dec 06:53 |                         |              |              |

### Sun, Moon and planets

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

| Object               | Date | Rise  | Set   | Mag. | Notes                                                            |
|----------------------|------|-------|-------|------|------------------------------------------------------------------|
| <a href="#">Sun</a>  | 1    | 07:41 | 15:47 |      | Winter solstice Dec 21, 10:44                                    |
|                      | 31   | 08:03 | 15:53 |      |                                                                  |
| <a href="#">Moon</a> | 1    | 08:57 | 17:45 |      | Apogee 27 Nov 20:09                                              |
|                      | 31   | 09:08 | 18:29 |      |                                                                  |
| Mercury              | 1    | 09:35 | 16:30 | -0.4 | Maximum eastern elongation 2016-Dec-11<br>Perihelion 2016-Dec-25 |
|                      | 31   | 07:25 | 15:34 | 3.4  |                                                                  |
| Venus                | 1    | 11:10 | 18:34 | -4.1 |                                                                  |
|                      | 31   | 10:26 | 19:58 | -4.3 |                                                                  |
| Mars                 | 1    | 12:03 | 20:55 | 0.6  |                                                                  |
|                      | 31   | 10:44 | 21:10 | 0.9  |                                                                  |
| Jupiter              | 1    | 02:45 | 13:47 | -1.6 |                                                                  |
|                      | 31   | 01:10 | 11:57 | -1.8 |                                                                  |
| Saturn               | 1    | 08:20 | 16:16 | 1.4  | Superior conjunction 2016-Dec-10                                 |
|                      | 31   | 06:40 | 14:31 | 1.4  |                                                                  |
| Uranus               | 1    | 13:50 | 03:10 | 5.8  |                                                                  |
|                      | 31   | 11:52 | 01:10 | 5.8  |                                                                  |
| Neptune              | 1    | 12:42 | 23:07 | 7.9  |                                                                  |
|                      | 31   | 10:45 | 21:12 | 7.9  |                                                                  |

## Occultations during December 2016

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**.

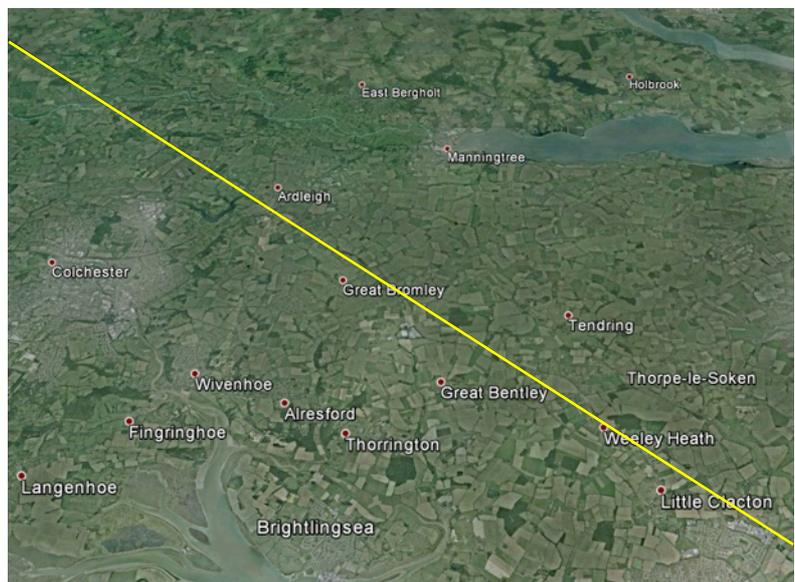
| Date   | Time (UT) | D/R | Lunar Phase | Sun Alt(°) | Star Alt(°) | Mag | Star         |
|--------|-----------|-----|-------------|------------|-------------|-----|--------------|
| 06 Dec | 17:16:52  | D   | 0.43+       | -13        | 28          | 6.5 | ZC 3313      |
| 06 Dec | 20:31:55  | D   | 0.44+       | -43        | 18          | 6.9 | ZC 3325      |
| 07 Dec | 18:35:39  | D   | 0.54+       | -25        | 33          | 7.0 | Hip 115892   |
| 09 Dec | 19:25:17  | D   | 0.76+       | -33        | 41          | 5.1 | 89 Psc,f Psc |
| 11 Dec | 17:58:15  | D   | 0.92+       | -19        | 30          | 6.0 | ZC 462       |
| 12 Dec | 21:41:28  | D   | 0.98+       | -52        | 51          | 3.7 | Hyadum I     |
|        | 22:46:46  | R   |             | -59        | 54          |     |              |
| 13 Dec | 02:08:38  | D   | 0.98+       | -51        | 38          | 3.8 | theta 1 Tau  |
|        | 03:01:50  | R   |             | -43        | 30          |     |              |
| 13 Dec | 02:20:42  | D   | 0.98+       | -49        | 36          | 3.4 | theta 2 Tau  |
|        | 02:52:27  | R   |             | -45        | 31          |     |              |
| 13 Dec | 02:22:47  | D   | 0.98+       | -49        | 36          | 5.0 | 75 Tau       |
| 13 Dec | 03:00:00  | D   | 0.98+       | -44        | 31          | 4.8 | ZC 677       |
| 13 Dec | 05:24:28  | D   | 0.99+       | -22        | 10          | 0.9 | Aldebaran    |
|        | 05:51:12  | R   |             | -18        | 6           |     |              |

On 22 December at 06:36 there is a southern limit graze of the magnitude 7.7 star Hipparcos 63099. Details can be found on the OASI website: [www.oasi.org.uk/Occs/Occ\\_summary\\_2016.php](http://www.oasi.org.uk/Occs/Occ_summary_2016.php). The event is marginally worth observing, so watch for emails on the OASI Yahoo group with news of whether or not an observing trip will be organised.

Track shown in the picture.

Details at:

[http://www.oasi.org.uk/Occs/Occ\\_summary\\_2016.php#Grazes](http://www.oasi.org.uk/Occs/Occ_summary_2016.php#Grazes)



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

Martin RH

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

All early morning passes this month.

Times are UTC. Predictions are approximate (data taken on 15 Nov) due to craft adjustments. Check the day before.

| Date   | Mag  | Start    |      |     | Highest point |      |     | End      |      |     |
|--------|------|----------|------|-----|---------------|------|-----|----------|------|-----|
|        |      | Time     | Alt. | Az. | Time          | Alt. | Az. | Time     | Alt. | Az. |
| 03 Dec | -1.7 | 18:07:59 | 10°  | SW  | 18:10:09      | 27°  | S   | 18:10:09 | 27°  | S   |
| 04 Dec | -1.6 | 17:16:31 | 10°  | SSW | 17:19:06      | 22°  | SSE | 17:20:18 | 18°  | ESE |
| 04 Dec | -0.6 | 18:51:56 | 10°  | WSW | 18:52:58      | 18°  | WSW | 18:52:58 | 18°  | WSW |
| 05 Dec | -1   | 16:25:26 | 10°  | S   | 16:27:18      | 14°  | SE  | 16:29:12 | 10°  | ESE |
| 05 Dec | -2.8 | 18:00:03 | 10°  | SW  | 18:03:04      | 49°  | S   | 18:03:04 | 49°  | S   |
| 06 Dec | -2.3 | 17:08:15 | 10°  | SW  | 17:11:18      | 36°  | SSE | 17:13:06 | 20°  | E   |
| 06 Dec | -0.9 | 18:44:18 | 10°  | W   | 18:45:46      | 24°  | W   | 18:45:46 | 24°  | W   |
| 07 Dec | -3.4 | 17:52:17 | 10°  | WSW | 17:55:34      | 71°  | SSE | 17:55:47 | 67°  | SE  |
| 08 Dec | -2.9 | 17:00:18 | 10°  | WSW | 17:03:33      | 55°  | SSE | 17:05:46 | 18°  | E   |
| 08 Dec | -1.3 | 18:36:40 | 10°  | W   | 18:38:26      | 29°  | W   | 18:38:26 | 29°  | W   |
| 09 Dec | -3.4 | 17:44:35 | 10°  | W   | 17:47:53      | 84°  | S   | 17:48:25 | 60°  | E   |
| 10 Dec | -3.2 | 16:52:30 | 10°  | WSW | 16:55:48      | 76°  | S   | 16:58:24 | 15°  | E   |
| 10 Dec | -1.7 | 18:28:58 | 10°  | W   | 18:31:04      | 36°  | W   | 18:31:04 | 36°  | W   |
| 11 Dec | -3.4 | 17:36:52 | 10°  | W   | 17:40:11      | 85°  | S   | 17:41:03 | 46°  | E   |
| 12 Dec | -3.3 | 16:44:45 | 10°  | W   | 16:48:03      | 86°  | S   | 16:51:05 | 12°  | E   |
| 12 Dec | -2.2 | 18:21:14 | 10°  | W   | 18:23:45      | 44°  | WSW | 18:23:45 | 44°  | WSW |
| 13 Dec | -3.2 | 17:29:06 | 10°  | W   | 17:32:24      | 73°  | SSW | 17:33:50 | 31°  | ESE |
| 13 Dec | -0.1 | 19:05:46 | 10°  | W   | 19:06:31      | 15°  | W   | 19:06:31 | 15°  | W   |
| 14 Dec | -3.3 | 16:36:57 | 10°  | W   | 16:40:16      | 83°  | S   | 16:43:34 | 10°  | E   |
| 14 Dec | -2.1 | 18:13:29 | 10°  | W   | 18:16:35      | 37°  | SSW | 18:16:40 | 37°  | SSW |
| 15 Dec | -2.6 | 17:21:18 | 10°  | W   | 17:24:31      | 52°  | SSW | 17:26:56 | 16°  | SE  |
| 15 Dec | -0.2 | 18:58:27 | 10°  | WSW | 18:59:38      | 14°  | WSW | 18:59:38 | 14°  | WSW |
| 16 Dec | -3   | 16:29:07 | 10°  | W   | 16:32:24      | 67°  | SSW | 16:35:41 | 10°  | ESE |
| 16 Dec | -1.1 | 18:05:51 | 10°  | W   | 18:08:33      | 23°  | SSW | 18:10:05 | 17°  | S   |
| 17 Dec | -1.6 | 17:13:30 | 10°  | W   | 17:16:31      | 33°  | SSW | 17:19:31 | 10°  | SE  |
| 19 Dec | -0.5 | 17:05:52 | 10°  | W   | 17:08:21      | 20°  | SW  | 17:10:51 | 10°  | SSE |
| 31 Dec | -0.6 | 06:39:19 | 10°  | SSW | 06:41:49      | 20°  | SE  | 06:44:20 | 10°  | E   |

## Iridium flares

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

## Meteor Showers

Source: BAA Handbook 2016 p97-99

| Shower         | Limits       | Maximum                             | ZHR at Max | Notes                                                                                                  |
|----------------|--------------|-------------------------------------|------------|--------------------------------------------------------------------------------------------------------|
| Puppids-Velids | Nov 27 – Jan | Dec 8                               | 15         | Two of several radiants in Puppis, Vela and Carina from November to January                            |
|                |              | Dec25                               |            |                                                                                                        |
| Geminids       | Dec 8 – 17   | Dec 13 <sup>d</sup> 20 <sup>h</sup> | 100+       | Richest of the annual showers, with slow meteors and a good proportion of bright events. Unfavourable. |
| Ursids         | Dec 17 – 25  | Dec 22 – 23                         | 10?        | Under-observed shower which has produced outbursts in 1945, 1982 and 1986. Favourable.                 |
| Quarantids     | Jan 1 – 6    | Jan 3 <sup>d</sup> 15 <sup>h</sup>  | 80+        | Blue and yellow meteors. Diffuse radiant except at peak. High rates in 2014. Very favourable           |

## 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.

## Paul's Astronomy Podcast for December

**Paul Whiting FRAS Podcast, December 2016 [www.oasi.org.uk/2016\\_12\\_pod.mp3](http://www.oasi.org.uk/2016_12_pod.mp3)**

With this month's podcast we have now completed 5 years and started on year 6 with the 61st such monthly podcast.

## David's Radio Broadcast

Now on 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>

## OASI Member of the Year Competition

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

| <b>Activity</b>                     | <b>Points</b> | <b>Activity</b>                         | <b>Points</b> |
|-------------------------------------|---------------|-----------------------------------------|---------------|
| 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             |

### Members' points to date

|                       |           |
|-----------------------|-----------|
| <b>Adam Honeybell</b> | <b>10</b> |
| <b>Alan Smith</b>     | <b>16</b> |
| <b>Andy Gibbs</b>     | <b>23</b> |
| <b>Bill Barton</b>    | <b>55</b> |
| <b>Joe Startin</b>    | <b>29</b> |
| <b>Joe Walsh</b>      | <b>10</b> |
| <b>Mike Nicholls</b>  | <b>20</b> |
| <b>Mike O'Mahoney</b> | <b>36</b> |
| <b>Nicky Richards</b> | <b>10</b> |
| <b>Nigel Evans</b>    | <b>6</b>  |
| <b>Ray Larson</b>     | <b>10</b> |
| <b>Rob Herring</b>    | <b>18</b> |
| <b>Steve ??</b>       | <b>10</b> |
| <b>Tina Hammond</b>   | <b>10</b> |

I'm missing a name Steve ? from the Capel St Mary evening. Let me know who you are, please.

We have some new names in the 2016–17 list.

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.

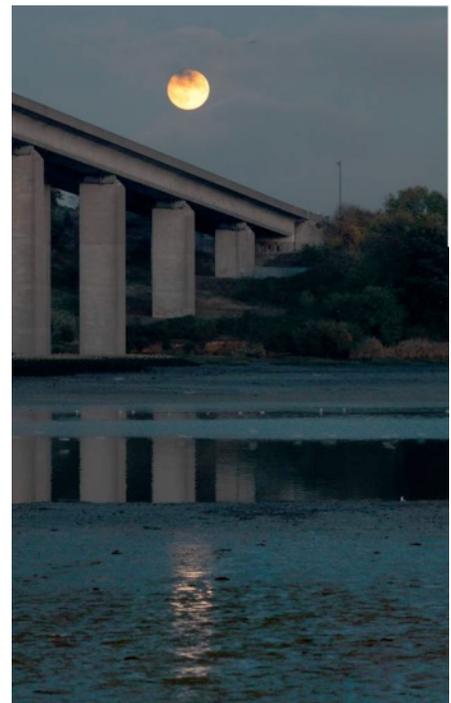
Bought some new astronomy kit? Tell us about it – successes and pitfalls.

We are all learners.

**Martin RH**

## Fireworks galaxy (NGC6946) and Supermoon over Orwell Bridge

David Murton



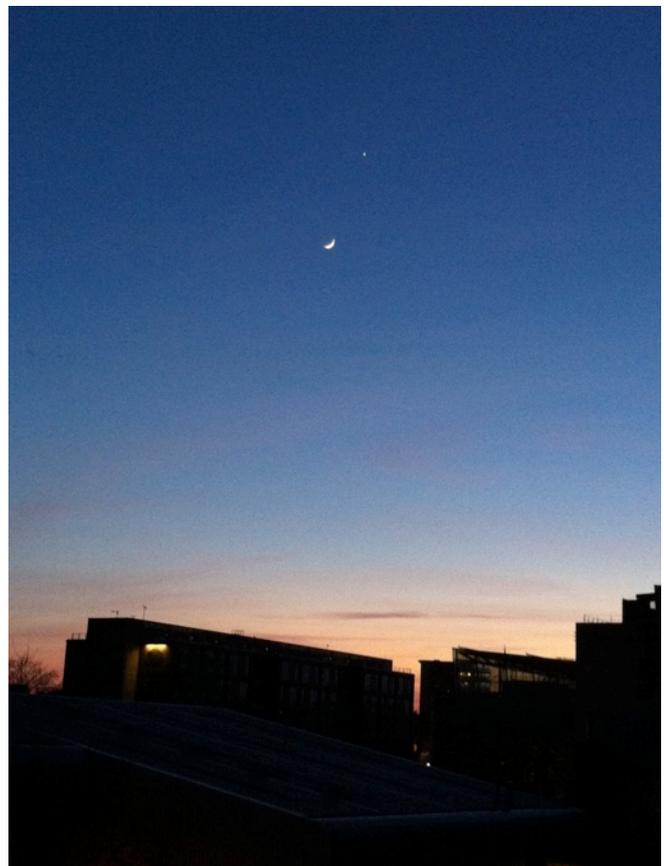
## Astrophotography Competition Results

David Murton

*Third was new member – Simone Leigh.*



*Second was Bill Barton*



*The winner of my photo competition is...*

*Jeremy Startup!!*



Thanks to all who entered. In view of the quality of the winners I have decided to let all three have the prize of the use of my observatory and equipment for an evening if they wish. They can then take away the pictures to use them how they want.

## **From the Interweb**

### **Newest fast radio burst hints at makeup of the cosmic web**

[www.astronomy.com/news/2016/11/newest-fast-radio-burst-hints-at-makeup-of-the-cosmic-web](http://www.astronomy.com/news/2016/11/newest-fast-radio-burst-hints-at-makeup-of-the-cosmic-web)

### **ESA Rosetta found some icy surprises on Comet #67P**

Never-before-seen CO<sub>2</sub> ice followed by large water ice patches.

[www.esa.int/Our\\_Activities/Space\\_Science/Rosetta/Icy\\_surprises\\_at\\_Rosetta\\_s\\_comet](http://www.esa.int/Our_Activities/Space_Science/Rosetta/Icy_surprises_at_Rosetta_s_comet)

### **This Is the Most Detailed Hydrogen Map of the Milky Way Ever Created**

[www.gizmodo.co.uk/2016/10/this-is-the-most-detailed-hydrogen-map-of-the-milky-way-ever-created/](http://www.gizmodo.co.uk/2016/10/this-is-the-most-detailed-hydrogen-map-of-the-milky-way-ever-created/)

## Supermoon rising

Mike O'Mahoney



**An image of moon rising over my hedge in Felixstowe !!  
(Canon 60Da + 200 mm lens @ 16:30 on 13/11/16).**

**Taken using 120 mm  
refractor telescope + 60Da  
Canon @19:27 On 13/11/16**



## A Beginner's Review of the Celestron 5 SE

**Rob Herring**

Well I'm not actually a total beginner, as I used to have an 80mm refractor on an alt-az mount, but that was around 25 years ago when I lived and worked in London. As a returnee to the hobby I knew I wanted a bit more aperture, but with the restrictions of a modern (read "small") back garden, ease of portability so that I could get the 'scope to better sites was also a high priority. I also happen to drive a VW Up, which is not exactly the most spacious of vehicles. The ability to store it in the house without it taking up too much room would be an additional bonus, and I would also like to take my first steps in astrophotography at some point.

***Celestron 5 SE with tripod retracted.***

***Kitchen units in background.***



The Celestron 5 SE is a Schmidt Cassegrain design, offering a 1250mm focal length with an aperture of 125mm, which gives the telescope a focal ratio of f10. The optical tube has a length of around 33cm overall, so it is suitably compact. The f10 focal ratio should be good for planetary work, but is a bit limited on deep sky objects. The Celestron 4 SE, by comparison, is a Maksutov Cassegrain design with 102mm of aperture and a focal length of 1325mm, giving a very long (and slower) focal ratio of f13. Both 'scopes come with the same tripod and mount, so I figured I'd go with the bigger aperture and slightly more general purpose focal ratio offered by the 5 SE. The tripod is fitted with a hinge mechanism that allows the alt-az GOTO mount to be turned into a sort of pseudo equatorial mount, so it will also allow me to use it for some astrophotography as my confidence builds. I have no illusions that this arrangement will be anything but a very poor second to a genuine equatorial mount, but it does at least give me the flexibility to try my hand at a simple level. The basic 'scope and tripod assembly weighs in at about 12.5 Kg (28 lbs), so it's not too much trouble to carry. I bought mine in early September 2016 for around £650 brand new. I've found that the Optical Tube Assembly complete with it's single arm mount is a snug fit in a Lowepro Flipside 500 AW padded photographic backpack with the Velcro dividers removed. Perfect for transportation and carrying.

***A snug fit in the photo backpack, especially with the bolt on piggy-back camera platform, but it's do-able. 30***



***cm ruler for scale.***

Although I still had my old copy of Norton's 2000.0 Star Atlas, I knew my knowledge of the constellations etc was going to be very rusty, so I figured that the computerised GOTO mount would be of assistance in getting me started again, provided that I also put in the effort to relearn my way around as I went. I've not yet had cause to regret that decision.

The 'scope comes as standard with a 1.25" star diagonal and a 25mm focal length 1.25" Plossl eyepiece, for a magnification of 50x and a field of view of around 1.2 degrees. The finder scope is a non-magnifying red dot type. The finder scope strikes me as being a bit plasticky, but it does hold it's alignment well, especially since I found the necessary courage to tighten it up with an extra eighth of a turn or so on the screws!

I added Celestron 40mm and 15mm standard Plossl eyepieces,(roughly £30 each), and as an astigmatic spectacle wearer who needs plenty of eye relief for his glasses, opted for the fancier Celestron X-Cel LX 9mm Plossl eyepiece and 2x Barlow lens (roughly £60 each). This gives me magnifications of approx 31x, 50x, 83x and 139x with my chosen eyepieces, each potentially doubled by the Barlow. (Basic Plossls tend to lose the amount of eye relief offered as their focal length drops, but a Barlow lens will increase the magnification whilst retaining the original eye relief of the eyepiece).

### First Light(s)

I found the initial setup for first use very simple. I lined up the finder with the main telescope on a distant TV aerial during the day, and followed the basic instructions for Celestron's "Star Align" procedure that evening. Using the handset, you have to enter the date (in U.S. format), time (nearest minute will do), and your latitude and longitude in degrees, minutes and seconds. One simply fits the 25mm eyepiece to the 'scope and selects three bright well spaced stars, in turn, to line up on. You get the first star into the view of the eyepiece with the finder, press the "Enter" button on the handset and then centre the star in the view, using the handset's arrow keys, then press "Align". You repeat this procedure for the next two stars. Once you've entered and aligned on the three stars, the computer does some calculations and announces the success or failure of the alignment. I was successful first time.

Initial impressions viewing some old favourites were very good. The Andromeda galaxy, like many small amateur telescopes, shows up as a smudge with a bright centre on low magnification. The Hubble Space Telescope has spoiled us all with it's marvelous, and no doubt cleverly processed, images!

The M57 Ring Nebula was easily picked out in Lyra, and showed up nicely at 83x with a slight green colour. Higher magnifications didn't improve the view on the night in question, so I was not able to perceive the hollowness of the sphere. Perhaps a night with better seeing will reveal more. M27, the Dumbbell Nebula required averted vision for me to perceive a waist in the object, but I wouldn't have perceived anything with my old 80mm in light-polluted London!



There was plenty to see in M45, the Pleiades, but even on low magnification the field of view didn't allow me to see the full extent of this cluster.

M13, a globular cluster in Hercules, showed up nicely with some stars and a distinct granularity to the object seen at 83x. Again better seeing conditions might improve on this.

Albireo, the head of Cygnus the swan, showed up as a beautiful yellow and blue pair, and I was able to split the double-double star that is Epsilon Lyrae. I should point out that when telling the 'scope to GOTO a new object, it is better to have the relatively wide view 25mm eyepiece fitted so that the object will appear within the field of view. One can then fine tune, centring the object in the view, and then changing to higher powers and refocusing as required. The motors that drive the 'scope are, thankfully, fairly quiet in operation.

There's been a dearth of planets to see of late, especially with a north facing garden and a house that blots out much to the south, but I was able to see Uranus as a turquoise coloured disc, that increased it's size with magnification, thus confirming it's planetary nature. I can't wait to get this telescope onto Jupiter and Saturn!

My first visit to the Newbourne Observing Group didn't go as well as planned. I had left in a rush and placed the rucksack containing the 'scope tube in the footwell of the passenger seat of my car, so the heater was blowing directly onto it. This heat made the 'scope and finder an absolute dew magnet for about an hour. The transportation also knocked the finder slightly off target, so I found that the 3 star alignment didn't work for me (the only time, as yet, that I've had this problem). I did, however, manage to do a simpler 2 star alignment once the 'scope had cooled. After this experience I did realign and tighten up the screws on the finder a little, and have not had it move since - even with transportation. The optical tube now travels in the boot to minimise the dew problem!

Images appear crisp and clean, and severely defocussing whilst looking at a star reveals a circle, rather than a misshapen blob, so I guess collimation would appear to be OK with the use I've given the 'scope so far.

### **What's not to like about the 5 SE?**

The base of the mount has space for 8 AA batteries, and these will only drive the telescope for a couple of hours before needing replacement. After this there's still plenty of power left in the batteries, for a torch or suchlike, which I find vaguely annoying. You can't even use rechargeable AA's as these are only 1.2V each, rather than the 1.5V of alkaline batteries, which isn't enough to drive the 'scope. This makes an external power supply pretty much a necessity. There are AC adapters and portable lead-acid batteries available for this purpose, but I chose to get Celestron's "Powertank" Lithium battery. This is a compact unit, of approximately 80mm diameter x 190mm long, weighing in at about a kilogram, and incorporates a two mode red lamp (normal and bright). It holds 86 Wh and uses Lithium Ferric Phosphate, allowing for an advertised 2000 charge/discharge cycles, 10 year discharged shelf life, and is even supposed to be airline safe. It attaches to the tripod with a Velcro strap. It's not cheap at £130, but should last me ages. I'm still running on my first charge at the time of writing (28/10/2016) and my battery is still showing three-quarters full after around 10 hours' of use. Unlike other lithium based batteries, it doesn't appear to self-discharge when not in use which is a big plus. I leave 8 alkaline AA's in the battery compartment so the 'scope won't lose it's settings if the power lead accidentally gets pulled out in use.

It can be a bit of a faff getting the handset back into it's slot when in use. A couple of sticky Velcro strips should solve the dangling handset syndrome though.

The front lens element can be a magnet for dew, and the 'scope doesn't have much of a built in dew shield. I bought a ready made removable dew shield, made of a flexible plastic that's lined with black velvety material, and fixes upon itself with Velcro. It stays in place nicely and unrolls flat for storage. No doubt a DIYer would be able to make something similar up for minimal cost.

Even though it seems perfectly functional, the finder scope is still plasticky!

The accessory holder plate is held in place with a metal lined knurled plastic knob, that along with a washer and a spring, screws onto a shaft and braces the tripod legs. Naturally these smaller parts could be easily lost, especially in the dark and with cold fingers!

The tripod could be taller, but I am 6'1", so this comment probably applies to most manufacturers.

There are no manual controls to move the telescope when in use. No volts = no movement, so don't run out of power!

### Added Versatility

The high focal ratio of f10 does make this 'scope favour higher magnifications and narrower fields of view. For my birthday (26th October) I did get a Celestron focal reducer/corrector. It costs around £100, but that's no more than an average pair of binoculars, and converts the 'scope so as to appear like it's an f6.3 instrument. One simply unscrews the visual back from the rear of the 'scope, screws the reducer in place, and then screws the visual back onto the back of the reducer. I've only used this once, as I only got it 2 days ago, but I can now see the Pleiades in all their magnificence on low magnification (about 20x magnification and 2.2 degrees field of view using my 40mm Plossl) with the reducer in place. Brocchi's cluster (the coat hanger) was also easily seen. The Andromeda galaxy looks much better with this setup too. A 125mm 'scope that can be either f10 or f6.3 is a versatile instrument indeed, and the reducer/corrector may eventually prove useful for astrophotography as well.



The telescope without the focal reducer.

And with the focal reducer in place.



The “Powertank” strapped in place.



The hinge mechanism for equatorial working. The sliding bar for latitude is marked in 5 degree increments.

**Canted over for illustration of equatorial mode. The author has not tried this out for real as yet.**



**All packed up and ready to go. OTA with fork arm assembly and accessory tray/ tripod leg brace in the rucksack. Tripod legs to the left. Everything else mentioned fits in the 10 litre plastic bin, along with a couple of star guides and the mains charger for the Powertank.**

**For those of us still in bachelor land, the whole lot fits behind the sofa, along with a few other bits and pieces!**



### **Summary**

Am I happy with my purchase? You bet! It's not something I would buy for a youngster who might only have a passing interest in astronomy. The financial investment, for me, would simply be too great for that. For someone who has a genuine interest, and who requires a relatively compact, transportable, and versatile general-purpose instrument, then I'd certainly recommend it for their buying shortlist.

## **BAA News**

**James Dawson, on behalf of the BAA Website Operations Team**

In recent months, the BAA's Website Operations Team has been looking for ways to build a greater sense of online community within the Association. After a busy summer's work, we are excited to announce the launch of "BAA Member Pages" [https://britastro.org/member\\_profiles](https://britastro.org/member_profiles).

These are the latest addition to the Community section of the Association's website and allow you to upload and showcase your observations. Whether you observe with the naked eye, or using equipment, this is a place where you can share your work with others.

You can put up anything that relates to your enjoyment of astronomy - from historical photographs to images of your own equipment; sketches of Mars to light curves of variable stars. You can even add a few lines of text to narrate a specific observation, or a summary of a whole observing session. All we ask is that you don't upload other people's work without their permission.

We want to encourage all members to feel part of the BAA community, whatever their experience level. So, whether you are just starting out, or have been observing for a life-time, please do share your work. Once you've uploaded your observations, you can share links to them on your own website or blog, or on Facebook or Twitter.

It is very easy to start uploading your observations: simply visit <https://britastro.org/profile> and click on "Upload image" or "Quick post". You will need to be logged into the website to create and update your members page. If you are already a BAA member but do not have a BAA website account, you can register here: <https://britastro.org/user/register>. You will find your membership number alongside your name on the address sheet of the Journal, or otherwise please contact the BAA Office for assistance. If you have any questions about the process the Website News and Help section of our online forum is a good place to find help.

BAA Member Pages are accessible to anyone else who visits the BAA's website, not just to BAA members. We therefore suggest that you do not reveal personal information on your profile, such as your exact location or personal contact details.

We still request members to submit observations to the relevant BAA Section Directors, to ensure that they can be properly analysed and archived. Each member will have a finite amount of space for their Member Page – currently set at 200MB – and we have also adopted a limit of 2MB per upload which mirrors that on the BAA's Forum. Members will be permitted to upload 10 observations per day in the first instance.

The BAA's website is still evolving and we would value your feedback on the services we provide. The Website News and Help area of our online forum is a good place to share your thoughts or to ask questions.

We look forward to seeing your observations, and to seeing and sharing the great work which is being undertaken by the BAA community.

#### **Hazel Collett**

Unfortunately Carole Haswell is now unable to give the Christmas Lecture as she has been given time on the telescope in Chile. She is using the HARPS spectrograph on the 3.6m telescope to conduct a radial velocity search for very close-in, low mass exoplanets. i.e. orbital periods < 1 day, masses <10 Earth masses. These are intrinsically rare, but I had a clever idea which allowed us to work out from the stellar spectra which stars are likely to host them. Our targets are all bright nearby stars so we can get some really beautifully precise data on these planets once we find them. One target is a naked eye star.

Dr Joanna Barstow has kindly agreed to now do the Christmas Lecture instead. Her title is 'Atmospheres on other worlds: the next step for exoplanet science'

As you are aware the Christmas meeting is over subscribed and we do have a waiting list. Please can I remind you to let us know if you have decided not to come so we can let someone on the waiting list have your place.

#### **Andrew Wilson, BAA Spectroscopy Database Manager**

To cater for the recent increase in spectroscopic capability and interest within the amateur community the BAA is pleased to announce the launch of an online spectroscopy database:

<https://britastro.org/specdb/>

The database is open for anyone to view and download spectra, while to upload spectra you will require a dedicated login. Requests for logins should be sent to the database manager ([vssdbm@britastro.org](mailto:vssdbm@britastro.org)) along with a sample 1D FITS file, your observing location and equipment details.

To be admitted to the database, spectra from slit spectroscopes are normally expected to be dark frame and flat field corrected, wavelength calibrated, instrument and atmospheric response corrected, and to be submitted as 1D FITS files conforming to the BeSS standard. Conformant spectra may be produced with ISIS and BASS analysis software among others:

[http://basebe.obspm.fr/basebe/Spec\\_spectres\\_BeSS\\_en.pdf](http://basebe.obspm.fr/basebe/Spec_spectres_BeSS_en.pdf)

It is understood that for slitless spectrographs (diffraction gratings) it may not be possible to meet the requirement for a flat field and/or response correction but such spectra may be accepted if they have been wavelength calibrated.

Although many spectra taken by amateurs are of stellar objects, the database is designed to accept spectra of any astronomical object. Any questions on how to use the database or create 1D FITS spectra should be directed to the BAA Spectroscopy Forum:

<https://britastro.org/forum/143>

## Star trails and Polaris

**Nigel Evans**

An article in Astronomy Now highlighted the passage of NEA 2003 YH1 very close to Polaris on 1/2 Nov. The sky was clear so I had a go with static cameras.

I used a 90mm aperture Megrez with Canon60Da and Canon50D with a 200mm telephoto lens.

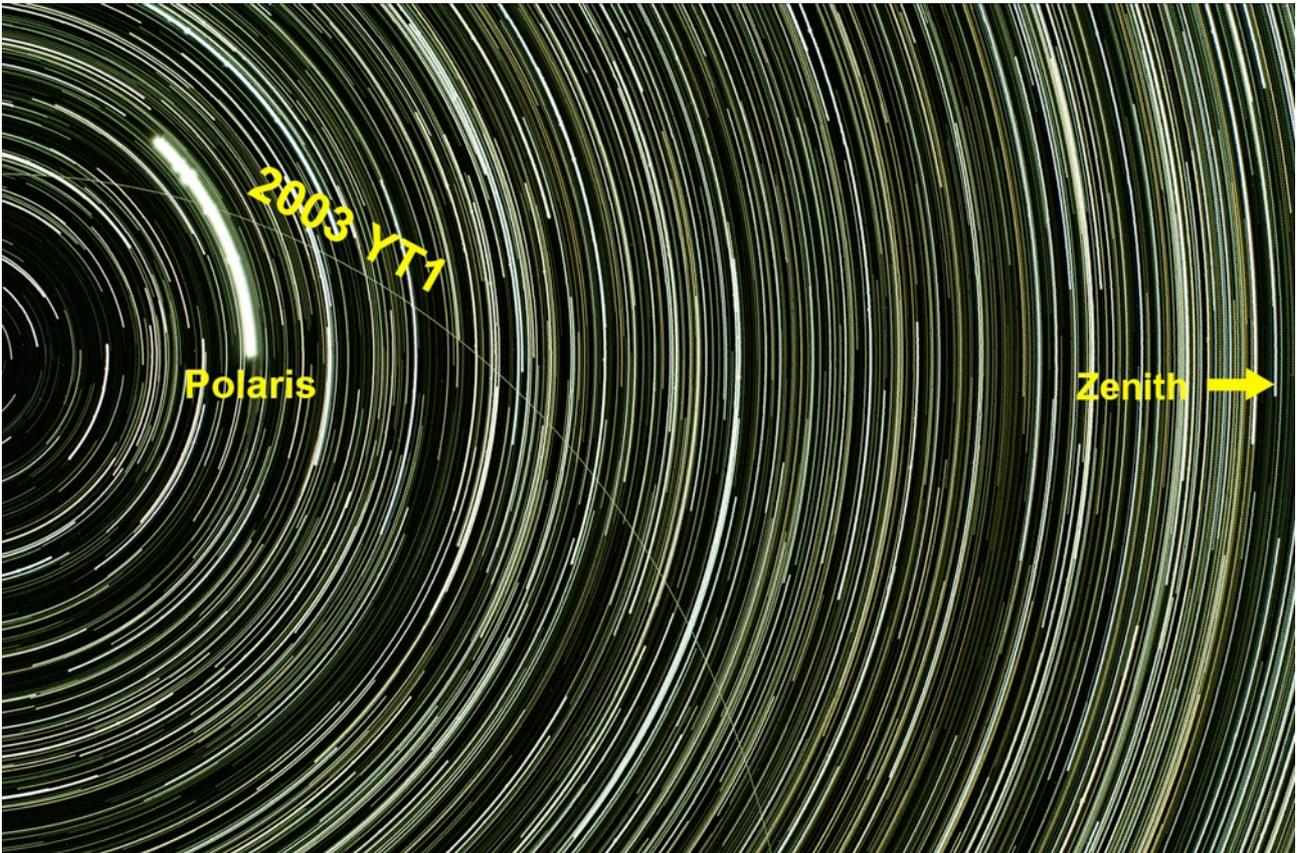
The Megrez video is available on the OASI website:

[www.oasi.org.uk/Obsvns/20161102\\_2003YT1/20161102\\_2003YT1.php](http://www.oasi.org.uk/Obsvns/20161102_2003YT1/20161102_2003YT1.php)

In the above link are 2 sequences ; the first is a straight movie of all the stills, all 341 of them. Looking at any of the stills, it is easy to see where the interloper is. In the second I have combined 10 frames into one to create a much more visible line, then advanced 3 frames to repeat the process i.e. combine frames 1-10, 4-13, 7-16 and so on, creating 111 frames in all. As a movie this does give quite a strong 'Tessa Sanderson' effect (she won gold for the UK in the javelin at the 1984 Olympics). Overall it is quite an unusual apparent motion for a celestial body to have.

My 200mm telephoto version was not so impressive. I do sometimes wonder whether I should say it is a 50mm (aperture) f/4, but I would never say I used a 5.3mm f/2.8, more commonly known as a 15mm (fisheye) lens. The asteroid is much harder to see in the individual stills (and not much better in a movie), so that I have not included it.

My attempts with the 'real 200mm', the Celestron 8 EdgeHD @f/10, were a complete failure. The polar axis of the mount is well lined up on the Celestial Pole but that does not mean the scope can look at declination of 90 - there are 2 angles that are nominally 90 degrees (polar axis to declination axis, then declination axis to the plane that the scope is bolted to). My effective field of view was only some 10 arcminutes or so, such that I never knew where I was looking! :-("



## Review of the Omegon Push + Dobsonian Mount.

**David Murton**

Having persevered with a normal Dob that I constructed a few years ago using a second hand tube, I have always thought there must be a better way! At outreach events you need to find multiple targets quickly and this isn't a strength of non go-to scopes.

Recently, various push-to Dobsonian scopes mounts have come onto the market but these have been fairly expensive due to the computerised handsets required for use and the fact that you have to buy the OTA as well. Having a perfectly good 200mm f5 reflector this seemed a waste.

However a couple of months ago an advert appeared in astronomy now for what looked like the ideal thing. It was a new Dobsonian push-to, available in both 200mm f5 OTA form and just as a mount. Crucially however it utilised your Android phone or tablet as its handset rather than supplying a dedicated one. In one step this greatly reduced the cost and made it seem worth trying, especially as it had a vixen dovetail bar attachment enabling any scope with this type of fitting to be used (as 90% do).

Made by Omegon in Germany it utilises encoders in both axis to send the scopes position via a Bluetooth link to your phone/tablet/laptop. When using an android device you need the SkySafari 4 Plus application while laptops can use Stellarium or Cartes-Du-Ceil.

In use, the scopes position is shown as a target on the sky display of the app which moves as you swing the scope. You select the object you want to observe and move the scope until the target is over it. This is so intuitive that I feel it is a game changer compared to existing handsets with their readouts of names and numbers. Initial alignment on any object takes seconds and you can then quickly move anywhere you want. Not having to wait for a mount to slew speeds things up, although obviously you then have to track things manually.

Using the dovetail mount enables you to be set up and running in seconds and any scope up to a 200mm reflector will fit, you could even use a reflector or Schmidt Cassegrain if you put the mount up on a table to increase the eyepiece height!

At present the mount is being sold for under £250. Add a second hand 200mm tube, rings and dovetail bar for about £120 or so and you can have a great set-up. Otherwise the mount can be had with a new tube for £489. I would say it's the ideal scope for beginners that you will keep for a lifetime.





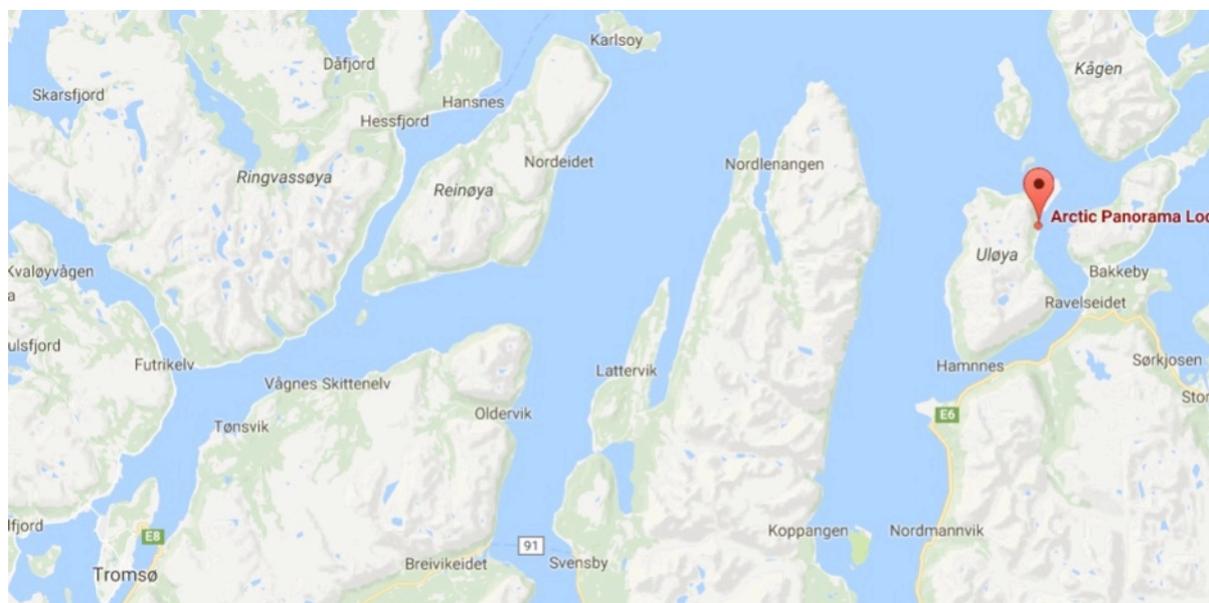
## Aurora Expedition – 4-7/11/16

**Arctic Panorama Lodge, Uløya, Norway: 69.9 °N 20.7 °E**

### Paul Whiting

For this expedition I thought it would be a good idea to try out a small boutique hotel in the wilds above Tromsø in the far north of Norway. Normally I would book a passage on the Hurtigruten coastal voyage from Tromsø to Kirkenes and back to see the northern lights but since the last time was in the midst of several force 12 blasts from remnants of American hurricanes (as I'm sure those intrepid travellers who were with me will remember!), I thought something on dry land would be better this time.

So I happened upon a remote, small (and I mean small) guest house with only 6 bedrooms. And it is remote – boy is it remote. The first clue was the transfer time quoted in the brochure – 3 hours. The second clue was the fact that they offered a helicopter transfer, but at £1500 each way I thought the 3 hour road trip didn't look so bad. The good news was that there was a direct flight from Gatwick to Tromsø as usually one has to fly via Oslo, which usually adds an overnight stay to the journey. The bad news it was with Norwegian Air – the EasyJet of the North, with very restricted legroom, still it was only a 3 hour flight.



**The fjords between Tromsø and the hotel**

So here I was in Tromsø airport expecting to meet up with 10 other guests also booked in at the hotel, ready for our transfer. No. A lady (later found to be the daughter of the hotel owners) was holding a sign aloft with my name on it. The fact she was waiting in the internal arrivals hall rather than the international arrivals hall was only a minor problem, as this sort of inconvenience is common in my travels. It was now 6.45pm.

So, a 3 hour drive with just me and my chauffeuse. No. The transfer included two car ferry journeys, and as the plane was slightly delayed we had missed the first of these ferries. This meant driving all the way round one of the fjords adding an extra 45 minutes on to the journey. That meant we would miss the second ferry to the island where the guest house was located. However all was not lost. Every community has The Guy – you know the guy who owns the only snow plough on the island, who runs the local taxi, who delivers the milk – in short the indispensable guy who does everything necessary for a community to survive this far North. Enter Rolf. He suddenly appeared at the ferry landing in his little boat – big enough for 6 passengers and took us to the island of Uløya, where his taxi van was waiting to transfer us to the hotel.

A nice little adventure and the weekend hadn't started yet! The temperature varied between -5 and -10 Celsius as we journeyed, with perfectly clear skies and some very active aurora. So a good start.

Was I going to be the only guest at this hotel? No, it was full of local revellers – a group of salmon farmers who had been working for 2 days straight, were letting their hair down. They were a friendly bunch who mostly spoke very good English.

It was now 10pm and I hadn't eaten since lunchtime (they don't feed you on Norwegian Air). Svein the genial host asked me if I had eaten and when I said I hadn't, Aud – the lady of the house – immediately prepared me some cod fillets, boiled potatoes and carrots in white sauce followed by sugar-free fruit compote with cream. Very nice. They catered for diabetics – a definite point in their favour.

11.00pm now, time to get the camera out. The hotel has an excellent view to the North and North-East, but a mountain does obscure the view westwards. Unfortunately there was only a very minor display that night, so around 1am I went to bed leaving the revellers partying until 5am. All night long all the guests and hotel staff kept telling me "you should have been here last night. The lights were fantastic". A touch of the one that got away I fear.

Saturday morning: breakfast 9 to 11am. I was the only one about at 9.30! The usual fare for breakfast: assorted meats and cheeses, salmon, pickled herring and caviar together with some excellent freshly homemade bread. I don't think I'm going to starve as lunch is at 2pm and dinner at 8pm. All home-made traditional Norwegian cooking.

Christmas has been declared as they cater for business Christmas parties from November to mid-December. The bedrooms are quite small but well appointed, but the common rooms are airy and spacious, very cosy and with excellent views across the fjord.

The entire hotel staff are very friendly and always speak English whenever I'm around – I can't believe they speak English normally! Actually they do as the staff are quite multinational.

Saturday evening so it must be Christmas Dinner Norwegian style. All the guests around the table worked for a company in Tromsø and were on a weekend Christmas break. I was the stranger in the midst. But, as with the salmon farmers, these folk were just as friendly. Norse Christmas dinner consists of dried salt lamb ribs and crispy cooked belly pork together with prunes, sauerkraut, sausages of various types, mashed swede and boiled potatoes. The special traditional Yuletide pudding (as if we had



**Mack Juleøl (Christmas Beer)**

room) was rice porridge mixed with cream and almonds with a raspberry sauce, all washed down with special yule beer from the Tromsø brewery, Mack.

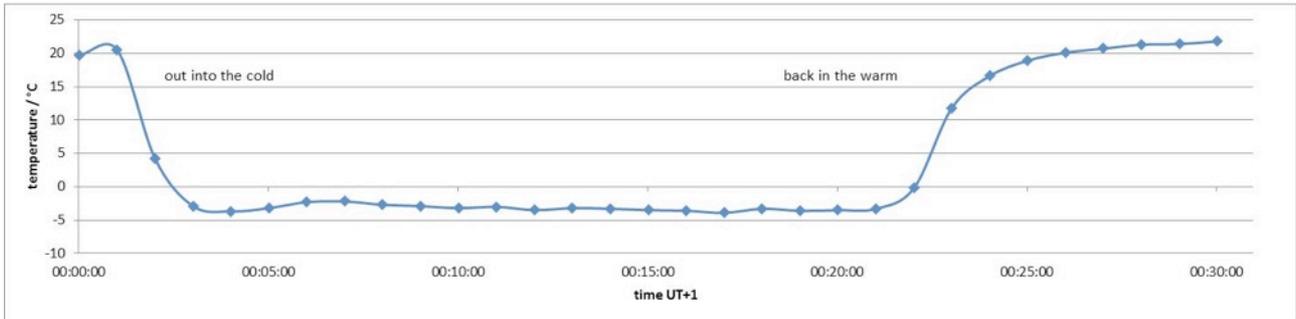
Oh yes, the northern lights! Cloudy tonight so no sign! And then it snowed.

Sunday dawns to sunshine, clear skies and eggs and bacon (plus the pickled herring, salmon and caviar). The aurora forecast is moderate for the evening, but is still at minimum currently. The

business people go home today ready for work on Monday. Will I be the sole guest Sunday evening? Yes indeed I am. I have the whole hotel to myself.

I am writing this looking out over the fjord to a small mountain range topped with newly fallen snow. The Sun is just lighting their tops. Of course being November and 70 degrees north, the Sun does not get very high in the sky.

In anticipation of a huge auroral display tonight (!), the hotel cook and I are getting our cameras ready. She is from the German / Danish border and so she too has rarely seen a good display of the lights. Night falls and there is a minor display around 7pm. Back inside for dinner. As there was only me in the hotel, I sat with the owners and staff for a real family meal of meatballs in gravy, sauerkraut and potatoes followed by more Yule rice and cream pudding. Quite wonderful company.



After dinner back outside, about -6 Celsius by now. It started slowly and surely, getting better and better as time went on. Not really energetic but masses of slow moving green filaments. I then had to go inside to change the camera battery and have a warm. When I returned outside it really kicked off. Three-quarters of the sky was covered with fast moving, really energetic curtains and rays, red and purple edges to the green could be easily seen for fleeting moments. Every time it died down and I thought it was safe to go indoors, it started off again. After two hours I had to retire as I was frozen despite the many layers of clothing I was wearing.

All-in-all this display was not perhaps the best I've ever seen, that honour rests with Finland a few years ago, but it must rank a close second.



Figure 4: aurora over the Lodge (10s f/3.2 ISO400 14mm Samyang wide-angle)



**Figure 5: aurora over the mountain (10s f/3.2 ISO400 14mm Samyang wide-angle)**



**Figure 6: aurora and the Plough (10s f/3.2 ISO400 14mm Samyang wide-angle)**