



OASI News

The newsletter of the Orwell Astronomical Society



Volkssternwarte_80cm reflector, Munich

Photo: James Appleton

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

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

Bawdsey Battle of Britain Day, 2nd August

I would like to thank you and your colleagues from the Orwell Astronomical Society for joining us yesterday on such a glorious sunny day – which I am sure helped the viewing! I was fascinated by what I saw and I sure everyone else that visited you was. We had over 200 visitors and I hope that you found the day enjoyable. I attach a photo of the group.

Kind regards, Miriam Stead



OASI solar observing at Bawdsey Radar Museum



M13 by David Murton

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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

Forum: forum.oasi.org.uk/index.php

Please send material for the OASI web site and newsletter

e.g. observations, notices of events, general interest articles, to

news@oasi.org.uk

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

Access into the School Grounds and Observatory Tower

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

Areas out of Bounds

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

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

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

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

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

Articles for OASI News

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

news@oasi.org.uk

The CLOSING date is the 15th day of the month

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

Text: txt, rtf, 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.

The Newsletter

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

[Newsletter archive](http://www.oasi.org.uk/NL/NL_form.shtml) www.oasi.org.uk/NL/NL_form.shtml

Authors, please note that your articles will now be publicly available worldwide!

Reproducing articles from OASI News

If you plan to reproduce an article exactly as per OASI News then please contact the [Editor](#) – otherwise, as a matter of courtesy, please seek permission from and credit the original source/author. You may not reproduce articles for profit or other commercial purpose.

Committee 2015

Chairman	David Murton	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.
Co-opted	Avtar Nagra	Newbourne Observing Group
	Kevin Fulcher	Safety & security, Newbourne Observing Group
	Pete Richards	Lecture co-ordinator
	Andy Willshire	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 and your enquiry will be forwarded for action.

Next Committee Meeting

Tuesday 8 Sept 2015, starting 8.00pm. at the Shepherd & Dog.

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

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
- Winner gets a free membership for the following year
- The points table will be posted in the newsletter
- 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	20	Introducing a new member	5

2015 Outreach Meetings

Contact: Roy Gooding or David Murton

Nowton Park, Bury St Edmunds

19 September

Stargazing: Observe the Moon Night (see p16)

Bentley Village Family Day - Solar observing

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

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

Bury St Edmunds Branch of OASI?

Interested in setting up a branch for the western end of Suffolk? Contact David Murton.

Astronomy Course for Beginners

Paul Whiting FRAS

There will be a 9 week astronomy course for beginners held at the Ipswich Institute in Ipswich, starting in October. The course is open to anyone – you don't have to be a member of the Institute. The course runs on a Monday night between 6.30 and 8.30pm from 19th October 2015 to 14th December 2015. Week 3 is a guided visit to the Observatory, on Tuesday 2nd November.

The details are as follows:

- Week 1: History of Astronomy
- Week 2: The Solar System Family
- Week 3: Visit to Orwell Park Observatory
- Week 4: Earth Based Phenomena
- Week 5: The Big Bang and the History of the Universe
- Week 6: Exo-planets and life
- Week 7: Telescopes and Satellite Communication
- Week 8: Radio Astronomy and Radio Telescopes
- Week 9: The Night Sky

The cost will be £63.

Now the bad news – I will be your tutor!

If you would like more details or would like to book, please contact the Ipswich Institute via:

www.ipswichinstitute.org.uk/course.php?id=221&cat=5&public=1

Library & Reading Room, Library/Office: 01473 253992 library@ipswichinstitute.org.uk

15 Tavern Street, Ipswich, IP1 3AA

Society Events Diary

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

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



For other astronomy news and astro pictures try our

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

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

Discussion Forum <http://forum.oasi.org.uk/index.php>

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

Date and Time	Location	Contact	Event
Weekly, every Wednesday, 20:15	Orwell Park Observatory	Martin Cook , Roy Gooding	General observation (weather permitting) using a variety of telescopes.
Monday 31 Aug 10:00 - 16:00	Alnesbourne Priory	Mike Norris michael.norris17@btopenworld.com	Public access event. Observing the sun safely. Booking not necessary (but lunch booking advisable)
Friday Sept 4 - 19:00 to Sunday Sept 6 - 12:00	Rutherford Appleton Laboratory, near Didcot	http://britastro.org/meetings	BAA Autumn Weekend Meeting "Astronomy in Space"
Sunday 6 Sept	Bentley	Roy Gooding	Public Solar Event Bentley Village Family Day
Tuesday 8 Sept 20:00	Shepherd & Dog	Roy Gooding	OASI Committee meeting
Friday 11 September	Institute of Astronomy Observatory Building, Madingley Road, CB3 0HA	See more at: www.opencambridge.cam.ac.uk/events/open-observatory#	The neo-classical styled Cambridge Observatory (built in 1823) will be open to visitors. Inside there will be a small display of historic astronomical books and stereoscopes. In the grounds, are two 19th century telescopes, the Thorowgood (1864) and the famous Northumberland (1838).
Friday 11 September 16:00 - 18:00	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Andrew Lound: <i>Lunatic Astronomy.</i>

Date and Time	Location	Contact	Event
Monday 14 Sept 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group. Bring your telescope to our dark-sky site. (Talks on astronomy if weather unsuitable for observing.)
Tuesday 15 Sept 19:30	Bucklesham Village Hall	David Murton	Beginner's Guide to the Night Sky
Saturday 19 Sept	Nowton Park, Bury St Edmunds	David Murton chairman@oasi.org.uk	Public event. Star party for International Observe the Moon Night". <i>Booking is necessary.</i> Book a place via the West Suffolk website. See https://www.whatsonwestsuffolk.co.uk/whats-on/event/2480/the-nowton-park-star-party
Monday 28 Sept from 00:11			Total Lunar eclipse. See p12 or online Diary for timings.
Monday 28 Sept. 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group and Workshop: David Murton - Building my new observatory
Friday 02 October 01:00	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe graze of ZC 618. More info.
Friday 02 October 20:00	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Professor Michael Rowan-Robinson: <i>Night Vision: Exploring The Infrared Universe.</i>
Monday 12 October 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Friday 23 October 18:00	Chantry Library	Paul Whiting FRAS treasurer@oasi.org.uk	Public event. Talk and telescopes evening. Talk at 18:00, telescopes at 19:00.
Monday 26 October 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.

Date and Time	Location	Contact	Event
Sat 31 Oct	Northampton Natural History Society	Paul Hyde RAGg4csd@yahoo.co.uk	BAARAG one-day workshop on Meteor Scatter. Joint meeting with the BAA Meteor Section. Open to non-BAA members.
Sat 07 Nov, 19:00 Note earlier start time.	Methodist Church Hall	Pete Richards lectures@oasi.org.uk	Public event. Lecture Meeting. Damien Peach: <i>The Giant Planet Jupiter.</i> Access is free to members of OASI; £2 per head for non-members.
Monday 9 November 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Monday 23 Nov. 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Monday 14 Dec. 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
Thu 17 Dec, 18:00	Location TBD	James Appleton info@oasi.org.uk	Field trip to observe graze of Tycho 5248-0249-1. More info.
2016			
Monday 11 January 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group. Plus Workshop on Pluto
Monday 25 January 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group.
9 May 2016	Orwell Park Observatory	Martin Cook membership@oasi.org.uk James Appleton info@oasi.org.uk	Observation of the Transit of Mercury

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

DASH Astro Events – September

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

Newbourne Observing Group

Avtar Nagra nog@oasi.org.uk Kevin Fulcher

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

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

Newbourne is also the new location for OASI Workshops.

Sept. 14th & 28th

Oct. 12th & 26th

Nov. 9th & 23rd

Dec. 14th

Jan. 11th & 25th

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

Small Telescope Observing Nights (STONs)

Contact: Paddy O'Sullivan and Dave Robinson

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

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

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

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

Astronomy Workshops

Contact Mike Whybray

Location: Newbourne Village Hall IP12 4NP

Doors open at 7:00pm.

Workshops start at 8:00pm

!!! Note that the day, start time and the location of workshops have all changed !!!

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!

Newbourne Village Hall is our new location for occasional workshops, which will be held on dates booked for normal NOG (Newbourne Observing Group) meetings. If you aren't interested in the workshop you can still just use the hall facilities and the field for observing – but please be quiet so as not to disturb the workshop!

Given a clear night, we can make use of the field for a workshop or continue afterwards with some observing – something not possible at the previous venue, Nacton village hall.

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

Monday 28th September: Building my Observatory – David Murton.

David will give an illustrated talk on the building of his new observatory detailing how it was done and the lessons learned.

October (Date to be confirmed): The Large Hadron Collider – Charlie Green

Charlie will tell us about his working visit to the Large Hadron Collider at CERN, Switzerland.

Monday 11th January: New Horizons of Pluto – Paul Whiting

Paul will present the problems and highlights of the amazing views of Pluto that were sent back by the New Horizons spacecraft in July.

Lecture Meetings

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.

Andrew Lound – "Lunatic Astronomy" (an historic talk).

Saturday 11th September at 8pm

Professor Rowan-Robinson, Imperial College – "Night Vision: Exploring The Infrared Universe"

Friday 2nd October at 8pm

Damian Peach – "The Giant Planet Jupiter"

Saturday 7th November

7pm start – earlier than usual

Members – free Non-members £2-00

There is some parking at the venue but if there is no space at the venue you can drive to the end of Black Horse Lane and turn left to find a pay and display car park which charges (at the time of writing) £2 for parking between 6pm and 6am. There is also the spiral car park by the New Wolsey theatre.

Read about planetary photographer, Damian Peach, here:

www.damianpeach.com/about.htm

Roger Pickard "Why observe variable stars?"

14th October 2016. Note this is next year.

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

Short articles for OASI News

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."*?

The Night Sky in September

Martin RH

Times are **BST** (unless otherwise stated) at Orwell Park Observatory 52.0096°N, 1.2305°E

Moon

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

Full Moon	Last Quarter	New Moon	1st Quarter
28 Sept 03:51	05 Sept 10:54	13 Sept 07:41	21 Sept 09:59

28 Sept Total Lunar eclipse

P1 00:11:46 UT (first penumbral contact)
 U1 01:07:12 UT (first umbral contact)
 U2 02:11:11 UT (beginning of totality)
 U3 03:23:07 UT (end of totality)
 U4 04:27:06 UT (last umbral contact)
 P4 05:22:23 UT (last penumbral contact)

Bill Barton

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	06:06	1943		Autumn Equinox Sep 23, 09:20
	30	06:54	18:36		
Moon	1	21:03	09:34		New Moon 13 Sept
	30	20:06	09:47		Full Moon and Total Lunar Eclipse 28 Sept
Mercury	1	08:50	20:09	0.3	Mercury is at max eastern elongation on 4 Sept.
	30	07:10	18:14	4.8	
Venus	1	04:28	18:00	-4.2	
	30	03:03	16:54	-4.4	
Mars	1	03:50	18:59	1.9	
	30	03:41	17:42	1.8	
Jupiter	1	05:45	19:35	-1.5	
	30	04:26	17:52	-1.6	
Saturn	1	13:40	22:21	1.2	
	30	11:57	20:32	1.3	
Uranus	1	20:50	10:05	5.8	
	30	18:54	08:05	5.7	
Neptune	1	19:41	06:07	7.8	Neptune is at opposition on 1 Sept
	30	17:46	04:09	7.8	

Occultations during September 2015

James Appleton

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

Date	Time (UT)	D/R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
05 Sep 2015	01:00:41	D	0.54-	-29	27	3.8	Theta 1 Tau
	01:47:19	R		-26	34		
05 Sep 2015	01:11:18	D	0.54-	-29	29	5.0	75 Tau
	01:49:16	R		-26	34		
05 Sep 2015	01:54:52	D	0.53-	-26	35	4.8	ZC 677
	03:02:00	R		-19	44		
05 Sep 2015	04:53:06	D	0.52-	-4	54	0.9	Aldebaran
06 Sep 2015	01:00:57	D	0.43-	-30	20	5.0	111 Tau
	01:57:50	R		-26	28		
06 Sep 2015	02:45:48	D	0.42-	-21	35	5.8	117 Tau
	03:40:59	R		-14	43		
08 Sep 2015	03:45:21	D	0.23-	-14	28	3.6	Lambda Gem
19 Sep 2015	19:16:40	D	0.34+	-12	11	7.2	Hip 80570
21 Sep 2015	19:32:05	D	0.54+	-15	17	7.1	6272-0830-1
21 Sep 2015	20:30:43	D	0.55+	-23	13	7.4	6273-0422-1
21 Sep 2015	21:03:48	D	0.55+	-27	10	6.7	ZC 2649

Meteor Showers

Source: BAA Handbook 2015 p97-99

Shower	Limits	Maximum	ZHR	Notes
Piscids	Sept - Oct	Sept 9	10	Other maxima on 21 Sept and 13 Oct

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

Martin RH

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

NB predictions are approximate. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
11 Sep	-0.9	05:24:12	10°	S	05:26:21	17°	SE	05:28:33	10°	E
13 Sep	-1.8	05:12:31	13°	SSW	05:14:53	27°	SSE	05:17:43	10°	E
14 Sep	-1.3	04:20:57	18°	SSE	04:21:14	18°	SE	04:23:35	10°	E
15 Sep	-2.6	05:01:52	24°	SW	05:03:25	42°	SSE	05:06:31	10°	E
16 Sep	-1.8	04:10:11	28°	SE	04:10:11	28°	SE	04:12:34	10°	E
16 Sep	-3.3	05:42:44	11°	WSW	05:45:48	77°	S	05:49:03	10°	E
17 Sep	-3.2	04:51:00	40°	SW	04:51:56	62°	SSE	04:55:09	10°	E

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
18 Sep	-1.7	03:59:14	30°	ESE	03:59:14	30°	ESE	04:01:13	10°	E
18 Sep	-3.4	05:31:47	15°	W	05:34:20	86°	S	05:37:36	10°	E
19 Sep	-3.5	04:40:01	64°	WSW	04:40:25	79°	S	04:43:40	10°	E
20 Sep	-1.2	03:48:13	25°	E	03:48:13	25°	E	03:49:43	10°	E
20 Sep	-3.4	05:20:46	21°	W	05:22:49	84°	S	05:26:05	10°	E
21 Sep	-3.4	04:29:00	80°	ESE	04:29:00	80°	ESE	04:32:06	10°	E
21 Sep	-3.1	06:01:57	10°	W	06:05:09	55°	SSW	06:08:20	10°	ESE
22 Sep	-0.6	03:37:14	17°	E	03:37:14	17°	E	03:38:07	10°	E
22 Sep	-3.4	05:09:48	31°	W	05:11:12	71°	SSW	05:14:26	10°	ESE
23 Sep	-2.4	04:18:06	44°	ESE	04:18:06	44°	ESE	04:20:27	10°	E
23 Sep	-2.6	05:50:39	12°	W	05:53:23	37°	SSW	05:56:25	10°	SE
24 Sep	-3.2	04:59:00	47°	SW	04:59:26	52°	SSW	05:02:37	10°	ESE
25 Sep	-1.1	04:07:27	21°	ESE	04:07:27	21°	ESE	04:08:40	10°	ESE
25 Sep	-2.0	05:40:02	17°	WSW	05:41:28	23°	SSW	05:44:07	10°	SSE
26 Sep	-1.9	04:48:36	27°	SSE	04:48:36	27°	SSE	04:50:33	10°	SE
27 Sep	-1.3	05:29:54	14°	SSW	05:29:54	14°	SSW	05:31:11	10°	S

There's an app for that: Try [ISS Spotter](#) for iPad/iPhone, which alerts you to impending passes of the ISS. For Android-based phones/tablets there's [ISS Detector](#). If you use Twitter @twisst or @ISS_spotter will send you a tweet when the international space station (ISS) will be visible at your location.

Paul's Astronomy Podcast for September

Paul Whiting FRAS

Podcast, August 2015 www.oasi.org.uk/2015_09_pod.mp3

Solar observing at Felixstowe



Solar observing at Landguard Fort, Felixstowe on Sunday 16 August: Photo by Mike O'Mahoney
Not a single sunspot (but lots of prominences seen in H α) and then the clouds rolled in.

Brownie Stargazers Badge

Martin Richmond-Hardy



We were recently invited to take some Brownies through their Stargazers badge while they were on camp at Hallowtree. The original number was 9 but this turned out to be a typo and 29 were expected! In the end there were 19 girls so I enlisted the help of Mike Norris, Kevin Fulcher and my wife Jen (a Guide & Rainbow Leader).

It turned out to be a reasonably clear evening with only slight haze enhancing the light pollution from Ipswich and Felixstowe, so Plan B (laptop + projector) was not required, which was fortunate as

we had no access to mains electricity. Mike and Kevin each brought a small refractor and I had the 200mm Dobsonian.

The requirements of the badge are:

1. With an adult you know, go outside when it is dark and do the following.
 - **Look at the stars.
 - **Point out the Plough and use it to find the North Star. [Ursa Major pointing to Ursa Minor]
 - **Point out two other constellations. [I suggest [Cassiopeia](#) and [Cygnus](#) (though you might want to read what the Greek gods got up to before suggesting this for item 2) or [Bootes](#) which contains the red giant star Arcturus]
 - **Look at the stars through a telescope or binoculars. Know what are good conditions for stargazing. [8pm in August is not too good]
2. Tell other Brownies the stories behind the two constellations you pointed out in clause 1.
3. Visit a planetarium, observatory, museum or website with an astronomy section. Tell the tester four things you found out.
4. Make a mobile or draw a picture to show the phases of our moon.
5. Name the planets in our solar system. Find out some facts about four of them and use this to make a game or puzzle for other Brownies.
6. Explain why sailors in ancient times needed to know about the stars.

Saturn was visible (which ticked an item off one of the leader's bucket list) and we even managed a fuzzy Andromeda galaxy and the Ring Nebula (just!). They now know how to find the Plough and the Pole Star.

Lots of difficult questions from the Brownies and we had to remind ourselves that inflation and quantum mechanics were perhaps best left for another day.

I received this email from the Brownie Leader:

Hi Martin, we just wanted to say a huge thanks to you, and to Mike, Kevin and Jen for coming along on Saturday and introducing us and the girls to some amazing sights. We all loved it and the girls were talking the next day about how you could see the ring around Saturn. It was so kind of you to bring along those incredible telescopes, information and the laser pointing beam, which I found fantastic as I definitely knew I was looking at the right stars! The girls were all delighted that you could come along and teach them about the stars. I heard them talking about having seen an exploded (or was it dead) star, sorry I meant to write it down at the time, as I do forget exactly what was said.

Please keep in touch, it has been a pleasure to meet you and Jen.

Once again thank you so much.

Best wishes

Sophie & Caleb.

International Observe the Moon Night



Saturday 19 Sept

**Nowton Park,
Bury St Edmunds**

**Public event. Star party for
International Observe the Moon
Night**

Booking is necessary.

**Book a place via the West Suffolk
website.**

See <https://www.whatsonwestsuffolk.co.uk/whats-on/event/2480/the-nowton-park-star-party>

An Observing Opportunity: Vesta

Bill Barton, FRAS.

Let's begin a little historical background.

Over two hundred years ago on the night of the 13 March 1781, the observing strategy of a certain William Herschel (15 November 1738 – 25 August 1822) in systematically pointing his telescope to the night sky and recording what he saw paid off, he came across a mystery object that moved only very slowly against the background stars.

Cometary discovery was then in vogue (Charles Messier (26 June 1730 – 12 April 1817) had published his list of fuzzy objects ten years earlier) and this is what William thought he had discovered. Continued observation proved this initial supposition wrong for two reasons.

- i, the usual coma and tail were not seen
- ii, it was orbiting in a nearly circular orbit of very large radius

The radius turned out to be approximately twice that of Saturn, the then most distant planet known. This new discovery of the planet we now call Uranus doubled the size of the known universe.

Although the Titius-Bode Law of planetary orbits was known before Uranus' discovery it was now given conformation by the fact that the error between the Law's prediction and the true value of this new planet's orbital radius was a mere 2%. However, there was a problem, the Law predicted a planet between Mars and Jupiter where one didn't exist.

Nineteen years later in 1800 Baron Franz Xaver von Zach (4 June 1754 – 2 September 1832) asked prominent astronomers in Europe to join an effort with the aim of tracking down the miscreant, the group became known as the "Himmelspolizei", or Celestial Police, its headquarters was at an observatory in Lilienthal, Lower Saxony, Germany. Members included William Herschel,

the British Astronomer Royal, Nevil Maskelyne (6 October 1732 – 9 February 1811), Charles Messier, and Heinrich Olbers (11 October 1758 – 2 March 1840). To increase the chance of success and to prevent duplication of effort the society assigned one hour of Right Ascension along the ecliptic to each astronomer to search for the missing planet.

Within a year, the Celestial Police were beaten to it by Giuseppe Piazzi (16 July 1746 – 22 July 1826) working in Palermo, Sicily, who happened to find a tiny object in an orbit near the 2.8 AU radius predicted by the Titius–Bode Law. An AU is the Astronomical Unit, a distance equal to the Earth's orbital radius. Subsequent observation showed the error was within 1% of the value predicted. Piazzi also initially thought it was a comet, but, again its lack of coma proved it was a planet. He named the new planet Ceres, after the Roman goddess of the harvest and patron of Sicily.

Fifteen months later, Heinrich Olbers 'upset the apple cart' as he found a second object whilst observing Ceres. He named it Pallas.

Numbers three and four soon followed. (3) Juno was discovered on 1 September 1804, by the German astronomer Karl Harding (29 September 1765 – 31 August 1834) working at the observatory at Lilienthal. (4) Vesta was a second discovery for Heinrich Olbers on 29 March 1807. Defeated French troops, retreating from the Russian front toward the end of the Napoleonic wars, burnt Lilienthal town and ransacked the observatory. This brought the first period of asteroid discovery to an end.

(5) Astraea was found thirty-eight years later, and by the mid-nineteenth century new objects were being found at an increasing rate. Currently there are around 692,000 asteroids or minor planets with accurately known orbits, the majority of which have been numbered or named. The total number of objects larger than 1 km in the Main Belt between Mars and Jupiter probably exceeds two million.

Now to look at what's coming up at the end of September.

On 29 September 2015, the minor planet (4) Vesta comes to opposition, this means that it will be:-

- i. due south at midnight (Universal Time) or about 1.00 a.m. local time.
- ii. brightest due to the angle between it and the Sun reaches a maximum.

As the orbital period of this body is greater than the Earth's it only comes to opposition every sixteen months, so if you miss it this time you will need to wait until 17 January 2017.

Vesta orbits in the main asteroid belt between Mars and Jupiter, with a period of 3.6 Earth years. The orbit is tilted with respect to the ecliptic (the plane of the Earth's orbit round the Sun) at 7.1° , a value similar to that of the planet Mercury. The orbit is also eccentric (0.09 the same as Mars and five times that of Earth's 0.017), where a value of zero would define a circle.

It's visual magnitude varies between 5.4 and 8.5, so at its brightest it can be seen with the naked eye.

This year the Moon is full on the 28 September, just about the time Vesta comes to greatest brilliancy so could make seeing it difficult, although the best chance may well come in the first week of October as the Moon rises an hour later each evening and so the observing window between sunset and moonrise will get longer as each day passes.

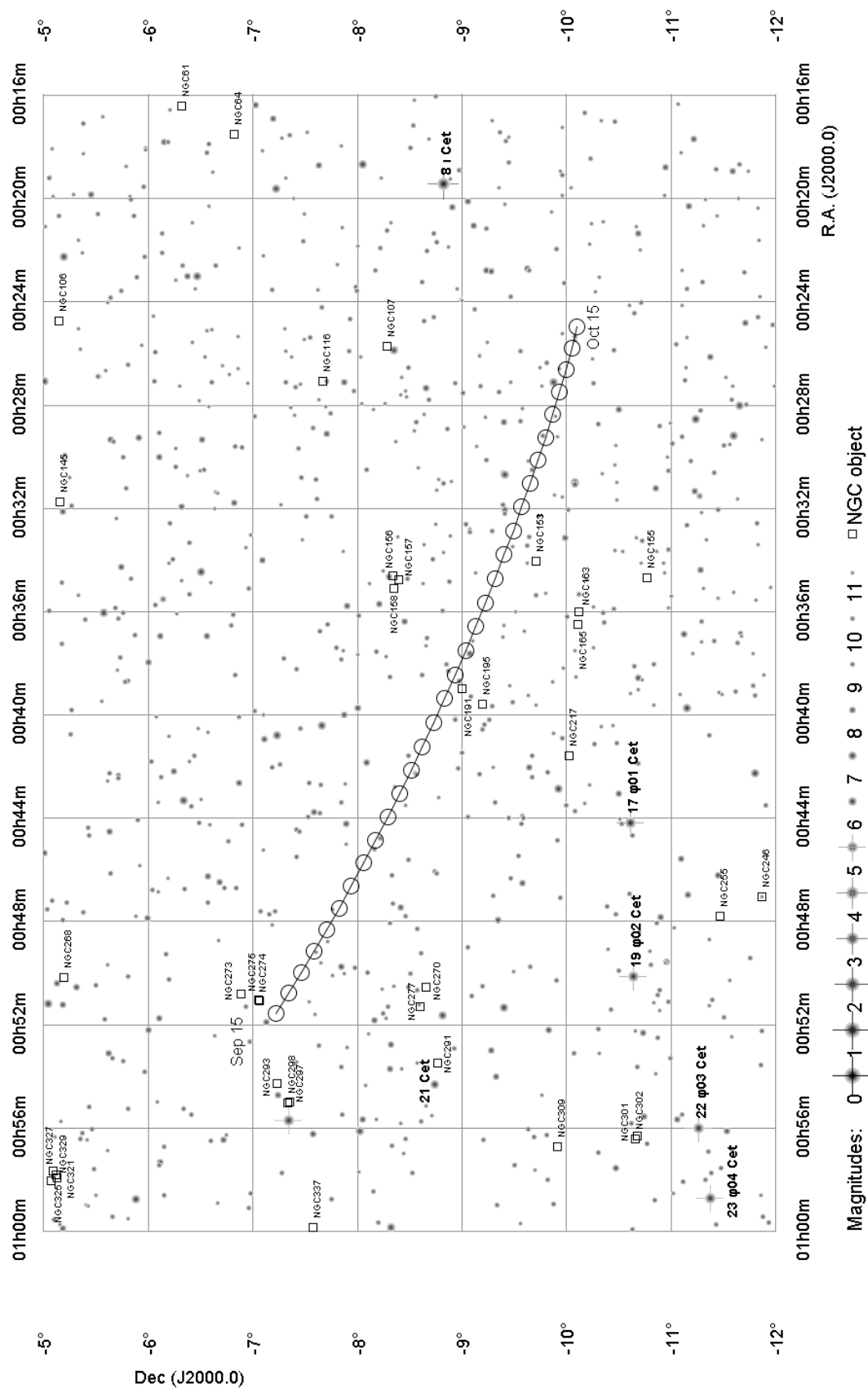
Steve Harvey, the Director of the British Astronomical Association Computing Section has kindly provided finder charts to assist in locating Vesta, which will appear as a star-like point in the eyepiece of a telescope or binoculars. During September and October this year it is in the constellation of Cetus before moving into Pisces, it will slowly sink southwards and move westwards against the background stars as time goes on. On the night of opposition it will transit (i.e. due south) at an altitude of around 30° .

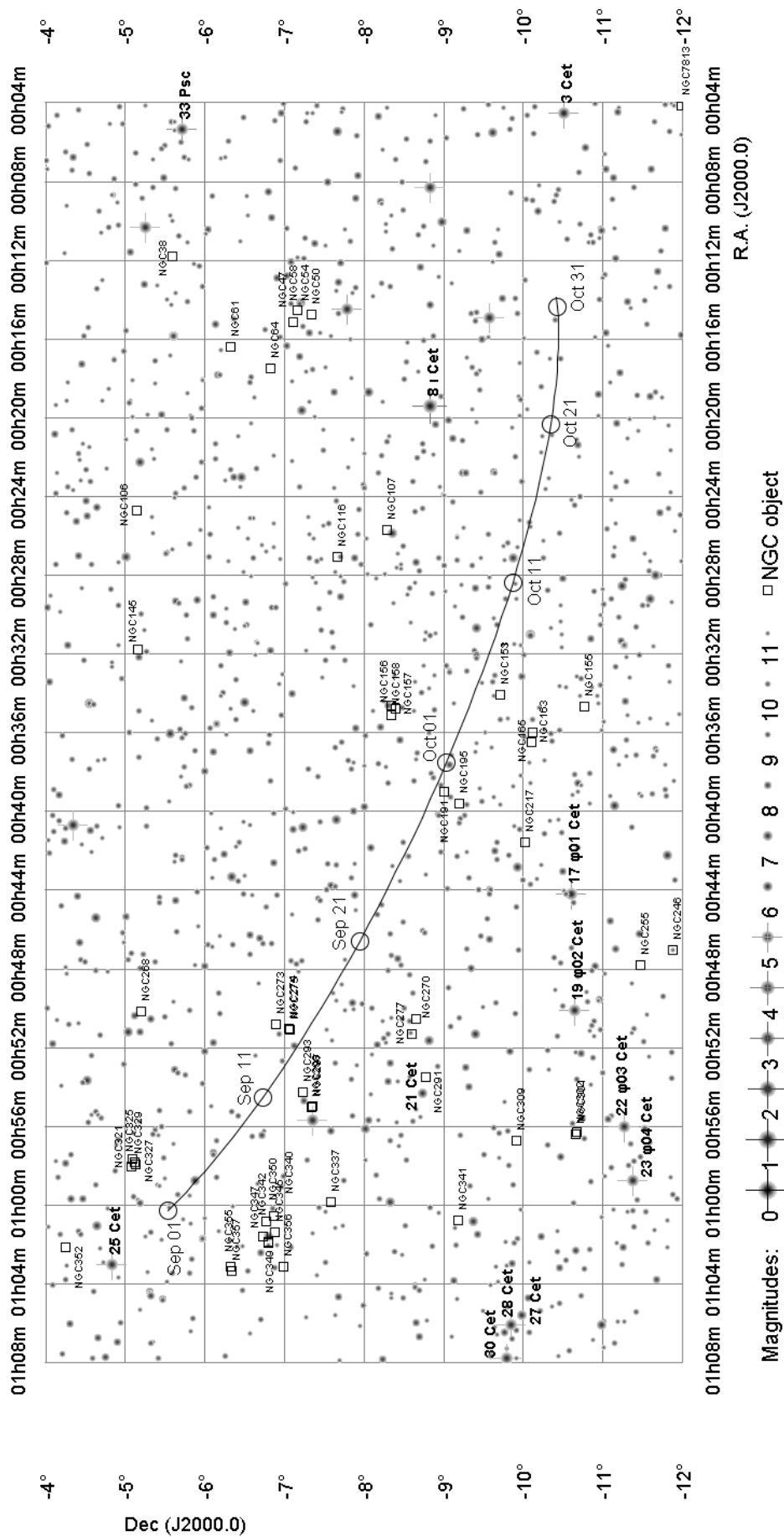
Vesta ephemeris and charts follow.

Vesta Ephemeris

Delta = planet's distance from Earth
R = planet's distance from the Sun
El = elongation of the planet from the Sun (combination of angular separation in RA & Dec)
Ph = Fraction of the planets disk that is illuminated
V = Visual Magnitude
P.A. = Position Angle measured in degrees from North (zero) through East (90) South (180) and West (270). In this case it tells us the angle that Vesta is moving against the background sky.

Date	R.A.	Decl.	Delta	r	El.	Ph.	V	Sky Motion	Object	(Vesta)	Sun	Moon
MM:DD	hh mm	ss.s dd mm ss						"/min	P.A.	Azi. Alt.	Alt.	Phase Dist. Alt.
09:15	00 51	30.2 -07 13 33	1.438	2.405	159.2	8.6	6.4	0.59	238.3	159 29	-35	0.03 169 -40
09:16	00 50	43.0 -07 20 54	1.436	2.406	160.1	8.2	6.3	0.59	239.0	161 29	-35	0.07 164 -40
09:17	00 49	54.8 -07 28 13	1.434	2.407	161.1	7.8	6.3	0.60	239.6	162 29	-36	0.12 153 -39
09:18	00 49	05.5 -07 35 30	1.432	2.408	162.0	7.4	6.3	0.61	240.2	164 29	-36	0.19 142 -36
09:19	00 48	15.4 -07 42 44	1.431	2.409	162.8	7.1	6.3	0.62	240.8	165 29	-36	0.27 130 -32
09:20	00 47	24.4 -07 49 54	1.429	2.410	163.7	6.7	6.3	0.62	241.4	166 29	-37	0.36 118 -26
09:21	00 46	32.6 -07 57 01	1.428	2.411	164.5	6.4	6.3	0.63	242.0	168 30	-37	0.46 105 -19
09:22	00 45	40.1 -08 04 03	1.427	2.412	165.2	6.1	6.3	0.63	242.5	169 30	-38	0.57 092 -11
09:23	00 44	46.9 -08 11 00	1.427	2.413	165.9	5.8	6.3	0.64	243.1	170 30	-38	0.67 079 -03
09:24	00 43	53.2 -08 17 51	1.427	2.414	166.5	5.6	6.2	0.64	243.6	172 30	-38	0.77 065 +06
09:25	00 42	58.9 -08 24 37	1.427	2.415	167.0	5.4	6.2	0.64	244.2	173 30	-39	0.86 051 +15
09:26	00 42	04.2 -08 31 15	1.427	2.416	167.4	5.2	6.2	0.64	244.7	175 30	-39	0.93 037 +24
09:27	00 41	09.2 -08 37 46	1.427	2.416	167.7	5.1	6.2	0.64	245.3	176 29	-39	0.98 023 +32
09:28	00 40	13.8 -08 44 10	1.428	2.417	167.9	5.0	6.2	0.64	245.8	177 29	-40	1.00 012 +39
09:29	00 39	18.2 -08 50 26	1.429	2.418	168.0	4.9	6.2	0.64	246.4	179 29	-40	0.99 016 +43
09:30	00 38	22.4 -08 56 33	1.431	2.419	167.9	5.0	6.2	0.64	246.9	180 29	-41	0.95 029 +44
10:01	00 37	26.5 -09 02 31	1.432	2.420	167.8	5.0	6.2	0.64	247.5	181 29	-41	0.88 043 +42
10:02	00 36	30.6 -09 08 20	1.434	2.421	167.5	5.1	6.2	0.64	248.0	183 29	-41	0.80 057 +37
10:03	00 35	34.7 -09 13 59	1.436	2.422	167.1	5.3	6.3	0.63	248.6	184 29	-42	0.70 071 +31
10:04	00 34	38.9 -09 19 27	1.439	2.423	166.6	5.5	6.3	0.63	249.1	186 29	-42	0.59 084 +23





Ich Muss Diese Deutschen Verben zu Lernen

James Appleton

Although native English speakers frequently assert that the best way to ensure that *Johnnie Foreigner* understands one is simply to speak English VERY DELIBERATELY AND VERY LOUDLY, it can nevertheless oil the wheels of daily existence in foreign climes to possess a modest command of the local language and to have a few stock phrases to hand. For example, the following phrases can ease travel in Western Europe:

FR	<i>Je voudrais une bière s'il vous plaît - une grande.</i>	<i>I'd like a beer please – a large one.</i>
IT	<i>Mi dispiace signora che io sono in grado di obbligare, ma io sono un uomo sposato.</i>	<i>I'm sorry Madam that I'm unable to oblige, but I'm a married man.</i>
ES	<i>Su burro festivo se ve muy gay.</i>	<i>Your festive donkey looks very gay.</i>
GW	<i>Hey Jimmy, see us a hauf an a hauf.</i>	<i>Good day, good man, I wish to avail myself of a refreshing alcoholic beverage.</i>

FR=French, IT=Italian, ES=Spanish, GW=Glaswegian.

2015 saw a summer holiday to Munich, stimulating efforts to revive some German originally acquired on business trips to the country in the early 1990s then largely forgotten. Hence, *ich muss diese deutschen Verben zu lernen...* The astronomical highlight of the trip was a visit to the *Bayerische Volkssternwarte München* (Bavarian Community Observatory, Munich).

The *Volkssternwarte* is located in SE Munich, housed on two levels of a building that began life as a WWII air raid shelter. On the fourth floor of the building is the entrance lobby, an exhibition hall, meeting room, lecture room and planetarium. The telescopes are mounted on the roof of the building (the antecedents of which mean that the mount provided is very stable), accessed via an internal, wide, spiral staircase. The main telescopes (complementing several smaller instruments) are as follows:

- an 80 cm Cassegrain reflector (eyepiece at the Nasmyth focus),
- a 25 cm folded refractor (focal length 4 m, physical length approximately half that figure),
- a 40 cm Meade LX200 Schmidt-Cassegrain reflector,
- an 18 cm refractor.

The *Volkssternwarte* is run by a group of approximately 500 amateur astronomers of whom, discussion with one of the members revealed, approximately 10% are active. (A similar proportion to OASI!) The group runs the facility primarily for public education in astronomy and, for this purpose, opens it to the public five days a week during school term time and six days a week during school holidays (clearly, a very significant commitment of time and effort). In addition to general visits, the group hosts school visits and also makes the facility available for private functions – apparently children's birthday parties are popular. The group is funded by entrance fees (€5 adults, €3 concessions) and an annual grant from the city of Munich in recognition of services to education in astronomy.

My visit to the *Volkssternwarte* began at opening time, 9.00pm on a Monday evening. On Mondays, proceedings are conducted in English, so I had no need after all to embarrass myself in German in front of fellow astronomers. Approximately 60 visitors arrived, most Germans, a few French and Italian, and the British contingent of three, comprising me and mine. The arrival of approximately 60 visitors is, apparently, not atypical of an evening and the organisers split us into two groups of approximately 30 people each, touring the facility in different orders. The group of which I was a member first visited the telescopes on the roof, then the exhibition space, and finally the planetarium. There was an opportunity for a second visit to the telescopes later in the evening (around midnight) but, as I had an early start the following morning, I had to forego the opportunity.

Waiting for the facility to open, the lobby provided a welcoming entrance, with astronomical display materials to keep visitors amused. Following the inevitable cash desk and a selection of astronomically-themed items for sale, I was assigned to my group for the evening, and then ushered upstairs to see the telescopes.

All the main telescopes benefit from computer control providing accurate celestial tracking. On my visit, several objects were under observation and I was able to compare views of Saturn in the 80 cm, 40 cm and 26 cm telescopes and also observed M13 with the 40 cm instrument. The site suffers from very bad light pollution but the light-gathering power of the 80 cm instrument was nevertheless apparent as it easily showed four of the small moons of Saturn against a bright sky. Similarly, the view of M13 against a bright sky in the 40 cm instrument was testament to the light-gathering capabilities of that instrument. The 80 cm instrument was acquired in 2005 and since that time has benefitted from much development, including improvements to the drive system, the capabilities of which were convincingly demonstrated when the instrument successfully tracked a passage of the ISS from horizon to horizon, keeping the object within the FoV at x300 magnification. At this time, I was in the control room, where the system developer was explaining the operation of the controlling software in tracking such a fast-moving object.

After viewing the telescopes, the group was taken to the exhibition hall. This houses a number of permanent exhibits including two observatory chronometers, meteorites in display cases (which were removed and handled under supervision), a scale model of the solar system and various other material (the space is also used for temporary exhibits and *ad hoc* meetings). After our guide had explained the scale of the solar system (using the scale model), we passed briefly through the lecture room (which can accommodate an audience of approximately 70 in comfort) to reach the planetarium. The planetarium is small, accommodating only 30 guests; however, in practice the small size created a refreshing intimacy and immediacy often absent from larger facilities. The planetarium projector is by Zeiss; it is a small model providing sharp images (aided no doubt by the small scale of the projection dome), benefitting from little false projection (internal reflection) of bright objects such as the Sun and Moon.

If you visit Munich, I highly recommend a visit to *Bayerische Volkssternwarte München*; it will provide an entertaining and informative evening. Further information is available from the website www.sternwarte-muenchen.de/

As always after visiting an astronomical facility, I asked myself: *What are the lessons for OASI?* These appear to be threefold:

- Organisation. The *Volkssternwarte* offers facilities and exhibits in addition to looking through telescopes, which helps to keep the queues for the latter small. OASI could create some display material for Orwell Park Observatory, showing recent observations and activities by our members, to keep visitors occupied at Open Days while waiting to look through a telescope.
- Public funding for educational activities. Many members of OASI now put much time and effort into promoting public appreciation of astronomy. Perhaps the time has come to apply for official funding to recognise the importance of this work and enable it to be put on a more formal footing.
- Programmes. OASI Open Days could be better timetabled and provide a wider range of activities for visitors.

A selection of photos is on Page 23.

James Appleton



Photos taken at the *Volkssternwarte*

The photos (L–R, T–B) show respectively: the queue at the entrance lobby at opening time, the operator setting up tracking of the 80 cm telescope to follow the ISS, waiting for the planetarium show to begin, and the 80 cm, 26 cm and 40 cm instruments.

Perseids, Milky Way and Andromeda

David Murton & Kevin Fulcher

