No. 532 Registered Charity 271313 May 2017

OASI News

The newsletter of the Orwell Astronomical Society

Jupiter 15 April 2017 at 19:55 with left to right Europa, Callisto, Io and Ganymede.
Altair GPCAMV2 IMX224 camera on skywatcher 190MN telescope. *Photo: David Murton*

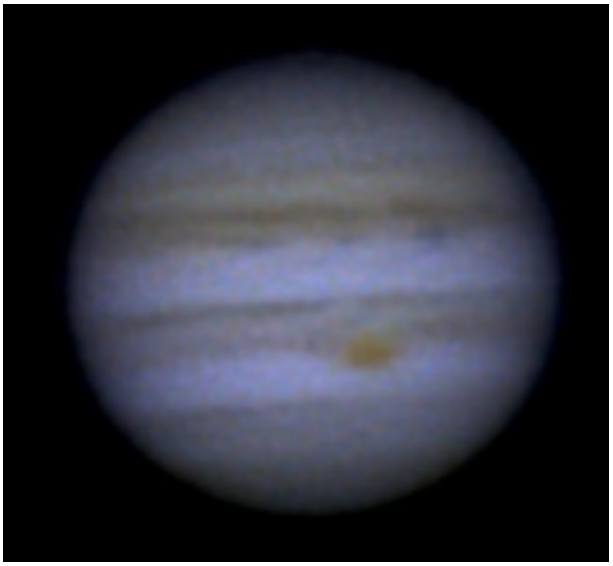
It's OASI's 50th Anniversary on 29 July

Get you tickets now!

See page 15

Jupiter and the GRS rotation

by David Murton

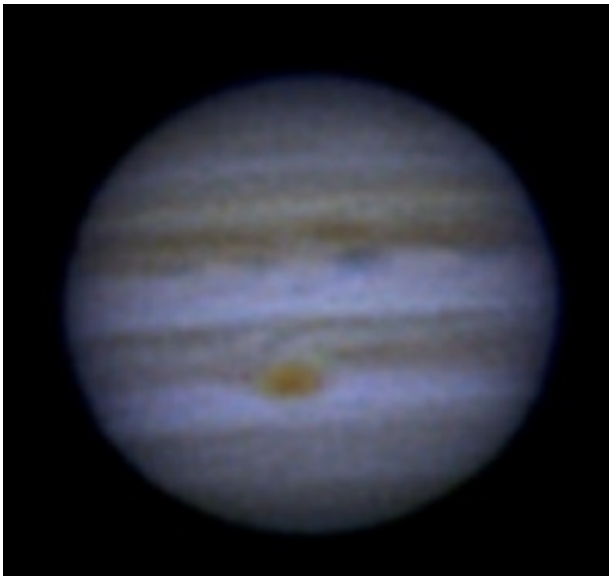


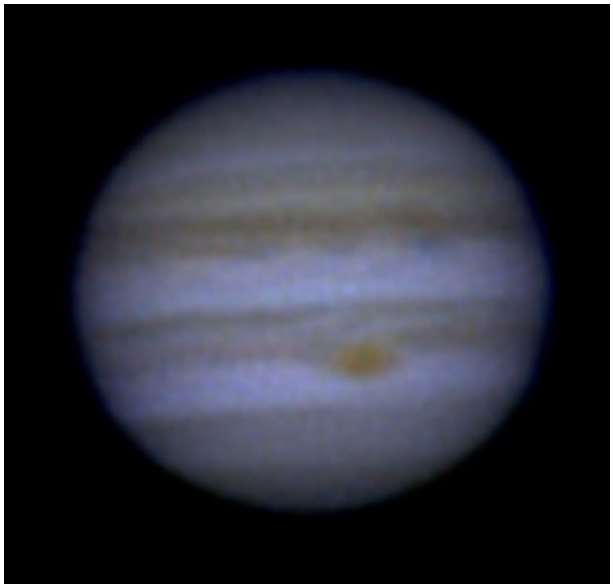
Spent a couple of hours on Jupiter on Thursday (13 April) night to get the great red spot as it rotated around.

Altair GPCAMV2 IMX224 camera + 4x powermate on Skywatcher 190MN telescope.

Each the best 5% of 1200 frames.

SharpCap[1] + Registax. Processed in gimp.





1 There's now a user manual for SharpCap. See page 26 for details.

Contents

Society Contact details

Observatory (meeting nights only)
See page 17 07967 519249

Email queries: info@oasi.org.uk

Yahoo group:https://groups.yahoo.com/neo/groups/oasi/info

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

Twitter: @OASIpswich

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

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

news@oasi.org.uk

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

Access into the School Grounds and Observatory Tower

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

Areas out of Bounds

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

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

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

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

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

Articles for OASI News

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

news@oasi.org.uk

The CLOSING date is the 15th day of the month

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

Text: txt, rtf, rtfd, 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 25.

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

Newsletter archive 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

Committee 2017

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

Society Notices

Welcome new members

Committee Meeting

The next committee meeting will be on Tuesday 25 April at 8pm, location TBA.

Contacts

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

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

Signing in and out

Please ensure you sign in and out when visiting the Observatory and/or Newbourne.

This is for fire safety precautions and also provides an historic record.

Orwell Astronomical Society Annual General Meeting – 2

This is the remaining part of the full minutes which will be made available online.

Saturday 21st January 2017

Present

Roy Gooding	David Murton	James Appleton	John Wainwright	Alan Smith
Martin Cook	Mike Whybray	Andy Willshere	Mike O' Mahony	Andy Gibbs
Merlyn Adams	Roy Adams	David Brown	Joe Walsh	Stuart Debman
Ian Hastie	John Barbrook	Tina Hammond	Jeremy Startup	Alex Sinclair
Roger Driver	Graham Brundle	Adam Honeybell	Mike Norris	

1 Apologies

Matthew Leeks	Nicky Richards	Pete Richards	Martin Richmond-Hardy
Avtar Nagra	Neil Morley	Eric Sims	Paul Whiting

2–4Matters Arising, Minutes of Last Meeting, Chairman's Report

See last month's magazine.

5 Secretary's Report

Roy Gooding

As usual my report will cover OASI meetings in 2016. I have included meetings and events listed on our calendar for 2016.

The Observatory Opening

The observatory was opened 91 times in the year.

Paul Whiting

Paul Whiting organised 20 Group Visits which totaled 440 visitors and 8 open evenings which totaled 82 visitors. These brought in total donations too the value of £1115. Paul would like to thank Bill Barton, John Wainwright and Eric Simms for the help with these events. Bill is the main supporter of these visits, with John and Eric helping out as and when required. Paul also opened the observatory for two Orwell Park School events

New Bourne Observers Group (NGOs)

Newbourne Observing Group hosted 23 meetings in the year.

Public Outreach observational meetings

Star Parties:

- Christchurch Park events were abandoned because of inclement weather
- Holy wells Park in March. An estimated 400 to 500 people cane to this event. This was the busiest event OASI had run since the Halley's comet event back in 1986
- Capel [St Mary] in September
- Nowton Park in March and October
- Felixstowe Golf Club in November

Solar events:

- Christchurch Park in May
- International Sun Day in June outside the University of Suffolk admin. block
- Jimmy's farm in July
- Spa Pavilion Felixstowe in July
- Holy wells Family Day in August
- Eastbourne Priory in August

Outreach Lecture Meetings

Paul Whiting has continued with his public Outreach lectures during the year.

4 talk to various OASI events, these included Norton Park and Cedarwood School

8 talks at various school's and youth groups

14 talks at various adult groups

Paul also ran an astronomy course given at Ipswich Institute over 10 weeks

Lectures

Why Observe Variable Stars ?	by Roger Picard	14-10-16
Aliens Are They Out There?	By Malcolm Brown	19-11-16

Committee meetings

One AM and 6 normal committee meetings.

Astronomy Workshops

Eight workshop meetings were held in the year at the new permanent venue of Newbourne village hall.

I will leave it to Mike to give a more detailed account of these

Field trips

Five graze occultation field trips were organised in the year.

Society Social Events

The society's social events are now well supported. As usual, we held two, one in the summer and one on the winter. The Summer Barbecue was held again at Newbourne Village Hall 16th July

The year's last event was the annual Christmas meal, which was held at The Fox at Newbourne on December 14th

Other Events and Meetings Attended

Through out the year many members attended a number of outside astronomical meetings and conventions:

- Astrometry
- Various SHA meetings
- Various BAA meetings
- About a dozen members attended the Brian Cox lecture at the Regent, in December.

Overseas Visits

Paul Whiting went to Norway to observe the Aurora and for an Eclipse to Indonesia

Radio

David Murton has a monthly astronomical spot on BBC Radio Suffolk.

In 2016 we held an estimated 131 meetings and events of various types.

6 Treasurer's Report

2016 has once again been a good year financially; with the final balance roughly the same as last year, despite some major purchases. Income continued to be healthy. This was helped by the usual tax refund and the continued income from visit donations. The Gift Aid tax reclamation facility continued to be a major income source. We reclaimed a tax refund from eligible membership subscriptions this year, in addition to the ability to claim a tax refund on non-specific, anonymous donations. We received the sum of £822.68, and should hopefully receive a similar amount next year. In summary visits and donations raised over £1500 for the club; £200 up on last year.

So what did we spend our money on this last year? We continued to pay the licence fee of £100 to the School. There was the usual expenditure on memberships, magazines, periodicals and book purchases. Also general running costs such as room hire, speakers, insurance and the newsletter. Hall bookings were again a major expenditure; however the expenditure of £750 was roughly the same as last year, thanks to using free locations for committee meetings. However I still believe this expenditure is well worth it.

There were several major purchases in the year.

- A star diagonal for the Tomline Refractor
- An Atik CCD camera
- A new heater for the library and Belvedere

Once again the Society did not touch its reserve account at all during the year, and despite falling interest rates, it attracted £4.45 in interest.

Current Account
brought forward 6575.80
2016 adjust (112.13)
carry forward 6463.67

The 582 Fund
brought forward 1125.40
2016 adjust 0.00
carry forward 1125.40

Reserve Account
brought forward 1196.14
2016 adjust 4.45
carry forward 1200.59

Cash in Hand
brought forward 185.84
2016 adjust 73.24
carry forward 259.08

Grand Total 7923.34

Credits

Credit	January	February	March	April	May	June	July	August	September	October	November	December	Line Balances
Subscriptions	1502.36	317.36	40.00	180.00	40,00	13.32	14.00		28.00	27.00			**2162.04**
Grant													**0.00**
GifAid tax refund					822.68								**822.68**
Donations	124.00	223.20	1208.14	205.00	12.00		10.00	55.00	22.00	271.25	246.00	68.42	**1458.87**
582 fund													**0.00**
Open Weekend													**0.00**
BBQ / Social							37.00					25.00	**62.00**
Key fobs													**0.00**
Misc sales					70.00								**70.00**
Clothing	8.00											32.00	**40.00**
Current interest													**0.00**
Reserve interest	0.46	0.46	0.43	0.46	0.44	0.46	0.44	0.44	0.30	0.30	0.30	0.10	**4.45**
Current Balances	**1634.82**	**541.02**	**262.43**	**1208.43**	**122.44**	**32.74**	**61.44**	**55.30**	**50.30**	**298.55**	**246.30**	**125.52**	**4620.04**

Debits

Debit	Jan	Feb	Mar	April	May	June	July	August	Sept	Oct	Nov	Dec	Line Balances
Safety & Security					70.00		61.10						**131.10**
General Maintenance			14.99									105.71	**120.70**
Key fobs / Keys	15.00						5.00						**20.00**
Special Maintenance	20.55								8.38				**28.93**
Lecture speaker expenses					19.26	50.00				50.00			**119.26**
Room Hire		200.00	25.00		25.00	225.00		75.00		125.00	75.00		**750.00**
Newsletter	35.00	38.00	33.00	30.00	30.00	35.00	30.00	30.00	30.00	30.00	30.00	30.00	**381.00**
Stamps postage	66.80	54.00	60.00	9.60					3.84	60.00			**309.24**
OPS Licence	100.00												**100.00**
Internet									53.00				**53.00**
Photocopying /. Printing								33.00					**33.00**
Open Weekend												63.87	**63.87**
Astronomical Equipment			809.00		192.38		366.81		120.76				**1488.95**
Subscriptions Mags. etc.	20.00				42.03	40.00		193.74				20.00	**316.20**
FAS PLI Insurance	58.00												**58.00**
Books Library	4.00							23.50		42.00		47.24	**116.74**
Social events	12.98					20.00	25.00					20.00	**77.98**
582 fund													**0.00**
Clothing													**0.00**
Misc. Computer	34.48	4.65	100.00	17.48	43.03				286.87				**486.51**
Debit Balance	**366.81**	**296.65**	**1041.99**	**57.08**	**422.15**	**370.00**	**542.91**	**355.22**	**502.85**	**307.00**	**105.00**	**286.82**	**4654.48**
Overall Balances	**1268.01**	**244.37**	**-779.56**	**1151.06**	**-299.71**	**-356.22**	**-481.47**	**-299.92**	**-452.55**	**-8.45**	**141.30**	**-161.30**	
To Reserve fund	0.46	0.46	0.43	0.46	0.44	0.46	0.44	0.30	0.30	0.30	0.30	0.10	**4.45**
To cash in hand	4.92	48.55	124.00	-58.58	18.00	-60.00	18.51	-8.50	-34.84	-71.00	116.00	-23.82	**73.24**
To 582 fund													**0.00**

7 Trustee's Report

Inspection carried out 16th January Roy Adams and David Brown

Stair Well and Bottom Room

- The millennium telescope is not now stored under the stair well
- One tripod is stored under the stairs.
- The space could be used as an overflow storage area for the Belvedere room
- The room in the lift shaft houses a lot of equipment
- The walls are dry
- Some plaster is flaking from the walls in places
- THe walls in the lift shaft room are dry but the walls still need attention
- The window sash bars are bowed at the top and bottom. 10 to 12 mm
- An air gap in the window frame gives some ventilation
- The drain in the outside sill of a stair well window has been cleared

Belvedere Room

North West Balcony:

- No obvious change since last year
- The pipe extending across the roof seemS sound

West Balcony:

- Window continues to deteriorate
- The sign on the window"Do Not Open" has faded and needs renewing

South West Balcony:

- The rotten hole in top left corner of the is still door filled with a plastic bag

South East and South Balcony:

- Little has changed on these two balconies, with cracks in the stonework and cornicing above.
- The hight of the trees are not yet causing a problem.
- The arch above the window has a crack. This has been here for decades but not cause for worry

Belvedere Room Annex:

- Wall floors and ceiling seem OK
- 1st Aid box OK
- Display board shows copy of licence, charity status
- Emergence phone does not call out (this phone is not a "Pay As You Go" only receiving incoming calls. Most members have phones with them)

Library

- The walls were in good condition and the room was tidy
- The heater was in good order
- The left had side of the sash window are held in by screws
- The beading around part of the window is missing

Equatorial Room

- Three of the windows are basically OK
- The bottom of one window is rotten and needs urgent attention. The glass is also cracked
- One window has a gap between the glass and the frame
- All the wheels were in contact with the dome when it was rotated
- The bearings of the dome wheels need lubricating

Tomline Telescope

- The lens looked a little cloudy
- The RA drive wheel looked clean

Telescope Turing Torque

Telescope direction	Worm wheel clockwise force (kg)	Eyepiece clockwise force (kg)	Eyepiece Anticlockwise force (kg)
NE	16.5	5.5	5.5
E	15.0	5.0	4.5
SE	12.0	4.0	6.0
S	9.0	3.0	5.5
SW	9,0	3.0	4.0
W	13.5	4.5	5.0
NW	16.0	5.3	6.0

These torque values showed an improvement from the measurements done last year.

Transit Room

- The walls, ceiling and floor were dry
- There were small patches of and plaster flaking from the walls
- The telescope was pointing straight upwards
- The north and south shutters were fully closed. No gaps were visible.
- The telescope lens looks a little cloudy
- The telescope had a well fitting lens cap
- A number of ladybirds were hibernating in the room

Computer Room

- The room needed tidying
- A large white board and a stick to the left and above the window may cause a hazard

Fire Extinguishers

- Fire Extinguishers were all in date
- The smoke detector outside the Belvedere door was tested, OK

The waste bins in the observatory need emptying

A laminated A4 sheet mentions that “the 582 Fund” is for renovation. May be more prominence should be given to this fact.

On that note may we finish with the message of thanks to all concerned for last years work. Finally for the continuing success to the Orwell Astronomical Society during its 50th anniversary year. Lets make it a good one.

8 Other Reports

8.1 Membership & Maintenance

Martin Cook

- At the end of 2016 we had 126 members including honoraries.
- As of today I have 72 paid up members including honoraries.
- With the membership renewal form a questionnaire on member's interest / activities was also sent out.
- Replies are ranging from blank form to 2 page essay!
- The number of members having printed newsletter is now down to 33 (4 are non-members)
- Mike Norris will contact new members to personally welcome them to OASI.

Maintenance

We looked at the cost of fitting encoders to the Tomline telescope and it was about £2000.

We are now looking at far cheaper DIY options.

8.2 Workshops & OPS Astronomy Club

Mike Whybray

Workshops

There have been nine workshops since the last AGM:

14/03/16	Gravity Waves and Black Holes.	Mike Whybray
28/03/16	Observing Reports of the Solar Total Eclipse of 09 March 2016	Paul Whiting, FRAS & Nigel Evans
25/04/16	Astrophotography With a DSLR	David Murton & Mike O'Mahony
09/06/16	Amateur Construction of Rockets.	Rod Stevenson of EARS
08/08/16	Update on the Rosetta Mission to Comet 67P.	Paul Whiting, FRAS
12/09/16	Binocular Observing	Bill Barton, FRAS
31/10/16	Assembly and Use of the Millennium Telescope	Mike Whybray & David Murton
28/11/16	From Here to Infinity: a Guide to OASI's Atik Infinity Camera	Andy Gibbs
15/01/17	Basic milky way and supermoon photography using a camera and tripod	David Murton

Attendance is typically in the 15 to 30 range with often several members turning up who would not normally attend the observatory or NOG, so there is still an appetite for these events, and they bring additional variation to the bi-weekly Newbourne observing evenings.

Where available, the slides used at a workshop are available to download from the Workshops link at the bottom of the OASI Events web page.

As always I welcome anyone interested in stepping forward to run or to jointly run a workshop based on whatever personal astronomy based interests you may have, or want to investigate further and share with everyone. As a workshop event is easily combined with general observing (weather permitting of course!), short topics as well as in-depth ones will work so don't be shy – have a chat with me or any committee member.

Orwell Park School Astronomy Club

OASI volunteers run this club for children at Orwell Park School 6:45 to 7:45pm on Tuesdays in term time during the winter and spring, but only if there is a good prospect of clear skies. Normal attendance is about a dozen children from the school – usually a mix of new children and ones who have been up to the observatory before.

Largely due to cloud cover on most of the available nights we only managed a couple of evenings last year. Here's hoping for clear Tuesday evenings this year!

My thanks to all who help with the workshops and the school astronomy activities.

8.3 Library

Andy Wilshire

- There are now 558 books in the library
- 8 books were donated in the year.
- The library book list spread sheet will be available on the OASI web site

8.4 Web Site

James Appleton

The OASI website (www.oasi.org.uk) continues to provide a "shop window" for the society, offering a channel by which many new members make initial contact. It also hosts the publicly accessible OASI archive, include Newsletters back to edition 1, reports of observations back to 1972 and much other historical material.

Site traffic during 2016 amounted to over 1.2m hits with over 216GB of data downloaded.

Of course, the website is only as interesting as the material that it hosts, so my thanks are due to all members of OASI who supplied material during the last year. You are too numerous to mention individually. Please keep the material coming!

The site is hosted by Strato and has been reliable during 2016 with no known outages. The cost is £86.40 per annum. However, I'm beginning to exhaust available disk space and anticipate by the end of 2017 having to upgrade to a bigger package, which will increase the cost to £144.00 per annum.

8.5 Newsletter & Twitter

Martin Richmond-Hardy

- OASI News: 50 printed copies a month.
- Twitter: We currently have 459 followers and are following 364.

8.6 Safety

Matt Leeks

- The staircase steps have had two coats of anti slip paint applied.
- I have replaced old floor heaters in the seating area with a fixed curtain heater and this also removes any trip hazards.
- I have had the annual fire extinguishers serviced and some replaced.
- The heater for the library has also been replaced as old one had stopped working.
- I have carried out this years safety check.
- Points for the new year will be to have a updated copy of who has fobs for the observatory as last date.

8.7 Lectures

Pete Richards

There were 2 lectures held in 2016.

- Why Observe Variable Stars ? by Roger Pickard 1st October
- Aliens Are They Out There By Malcolm Brown 19th November

8.8 Equipment

John Wainwright

- Celestron C11" has been donated the society by Bruce Bloom. To make the telescope and mount more manageable, wheels will be added the legs of the telescope mount.
- The C 11 will eventually be housed at Newbourne
- Two electric fires have been purchased . One to replace the broken in the library and wall mounted one, in the seating area in the Belvedere room

- Adam Honeybell investigating the feasibility of installing Dec and RA encoders on the Tomline telescope.

8.9 Newbourne

Avtar Nagra

There were 23 meetings at Newbourne village hall during 2016. Potential new members are now directed to Newbourne and we have managed to get most to join OASI. On average, there are about 20 members attending the meetings. The summer month meetings have had good attendances despite the light nights.

Newbourne has been successfully used for hosting the workshops this year (see Mike Whybray's report).

The "mobile lending library" facility at Newbourne was not a success and has been discontinued. A hard surface parking area, to alleviate the problem of cars getting stuck in the soft ground in wet weather, is now complete.

Thanks to all the members for helping in the setting up and clearing on club nights.

9 & 10 Elections

See last month's magazine.

11 Events

- BBC Stargazing Live 28, 29, 30 March
- The SPA Convention on 1st April at the Institute of Astronomy Cambridge
- Framlingham 8th , 9th April
- Stonham Barns 30th April and 1st May Mid & West Suffolk Show
- No event at Debenham this year
- Holywells Family Day 9th August

12 Projects

- Field trips to observe graze occultations are planned during the year.

13 2018 Subscriptions

This will be left to the 2017 committee to decide

14 Wish List Equipment and Acquisitions for 2017

- New eyepieces for the Millennium telescope
- New finder and eyepiece holder for the Millennium telescope.
- Budget for the push to for the Tomline. May be a few hundred pounds.

15 Outreach Events 2017

- This year outreach meetings will more centred around existing outside events
- Out reach events will be limited to 4 star parties and 4 solar
- Proposal to set up a sub committee to manage outreach events
- Small outreach events could be undertaken with only 1 or 2 telescopes, such as at supermarket car parks on the foot path.
- Mike O'Mahony suggested returning to previously used venues
- A new gazebo has been purchased. This one should be more weather resistant the previous one.
- Roy Adams mentioned that we should tell local community Radio about our events.

- John Barbook said that when he was 16 he saw a poster advertising astronomy lectures, which he attended. Perhaps we should advertise OASI by this method. (the majority of advertising is now done online)

16 Newbourne Matters

Proposal to purchase a 10' container for Newbourne.

The container will need to insulated, have mains electrics and be secure

Mike O'Mahoney asked if will we have to pay rent on the container

John Wainwright asked about the container security and its proposed location at the end of the Newbourne Village Hall car park.

17 2017 50th Anniversary Events

A 50th anniversary commemorative badge will be distributed to all members. Mike Norris will organise this.

There is still a large amount of organisational work to be done before the event.

18 Any Other Business

No items brought up.

19 Date of Next Committee Meeting

Date and venue to be decided. The Golf Hotel and Arlingtons were suggested.

The OASI 50th Anniversary - Tickets

As you probably know, OASI is celebrating its 50th anniversary this year. To celebrate this milestone we have organised a mini "Astrofest" type convention to be held on Saturday 29th July 2017 at the University of Suffolk Waterfront Building. The convention will take the form of an exhibition, which is free and open to all, and two lecture streams (morning and afternoon) with five big name speakers. We do have to charge for the lecture streams, but members receive a huge discount against the general public price, providing tickets are purchase before the day. The door price will be the same for both members and non-members.

To order tickets you can either use PayPal via our website or buy your tickets in person from the Treasurer at any club meeting. Buying in person will save you a further £1 against the PayPal price.

Full details of the event and booking details can be found on the front page of our web site at www.oasi.org.uk.

We have arranged for free parking for the day in the University's car park opposite the Waterfront Building. The University coffee shop and cafe will be open, and there are several pubs and restaurants close by on the waterfront.

Weather permitting there will also be solar observing outside.

Paul Whiting

treasurer@oasi.org.uk

OASI and BAA Events

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

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

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

For other astronomy news and astro pictures try our

Twitter feed https://twitter.com/OASIpswich

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

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

Date and Time	Location	Contact	Event
Weekly, every Wednesday, 20:15–22:00	Orwell Park Observatory	Martin Cook, Roy Gooding	General observation (weather permitting) using a variety of telescopes. Entry via the third gate left. NOT the main gate
Sunday & Monday 30 April–1 May **Set-up 08:30.** No cars on site after 09:00.	Stonham Barns www.stonhambarns.co.uk/whats-on/mid-west-suffolk-show/	Roy Gooding secretary@oasi.org.uk	**OASI display & Public Solar observing at Mid & West Suffolk Show**
Monday 15 May From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Monday 29 May From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Wednesday 31 May 17:30	Burlington House Piccadilly London W1J 0DU	https://britastro.org/	Special General Meeting and Ordinary Meeting
Saturday 3 June 10:00	Cambridge	https://britastro.org/	Webb Deep-Sky Society Annual Meeting, Cambridge
Saturday 3 June 12:00–16:00 Set-up from 10:00	Kirton Recreation Ground IP10 0PW	Martin Richmond-Hardy g8bhc68@gmail.com	**OASI stand & solar observing at** Kirton & Falkenham Fete
Sunday 11 June 09:30	Kirton Recreation Ground IP10 0PW www.eswr.org.uk	Martin Richmond-Hardy g8bhc68@gmail.com	**OASI stand & solar observing at** E Suffolk Wireless Rally Admission £2
Monday 12 June From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Saturday 17 June (all day)	Burlington House Piccadilly London W1J 0DU	https://britastro.org/	Comet Section meeting

Date and Time	Location	Contact	Event
Monday 26 June From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group + Workshop: Binocular collimation with Ray Larsen
Monday 10 July From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Saturday 15 July	Chelmer Valley High School, Chelmsford CM1 7ER	https://northessexastro.wordpress.com	**NEAS Starfest**
Monday 24 July From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Saturday 29 July 09:00–17:30	UCS, Ipswich	David Murton chairman@oasi.org.uk	**Public access event.** Major event to mark OASI's 50th anniversary. Lectures by big-name speakers, exhibitions, trade stands and much more.
Monday 14 August From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
21 August	USA	www.greatamericaneclipse.com	Total solar eclipse
Monday 28 August From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Wednesday 30 August	Felixstowe Ferry Golf Club		OASI 50th Anniversary Dinner
Monday 11 Sept From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Friday 20 October 20:00	Museum Street Methodist Halls,	Pete Richards lectures@oasi.org.uk	Lecture: Dr Sarah Hutton has kindly offered to come to speak to us about "AGNs (Active Galactic Nuclei)".
Monday 25 Sept From 19:00	Newbourne Village Hall	Avtar Nagra nog@oasi.org.uk	Newbourne Observing Group
Friday 17 Nov 20:00	Museum Street Methodist Halls,	Pete Richards lectures@oasi.org.uk	Steve Hubbard and Malcolm Brown will be "Talk with ET? We think not."
Sat 09 Dec 2017, 05:30	TBC	James Appleton info@oasi.org.uk	Field trip to observe the graze of ZC1522. More info.

Newbourne Observing Group

Avtar Nagra nog@oasi.org.uk

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

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

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

Newbourne Observation Group Stargazer's guide

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

NOG Meetings in 2017

16 Jan	30 Jan	13 Feb	27 Feb (S)
13 March	27 March	10 April	24 April(S+W)
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**

Binocular collimation – Monday 26 June

Run by: Ray Larsen and Mike Whybray

Do your binoculars give you double vision, with the images refusing to merge seamlessly into one? At previous workshops, Ray has described the design of his optical bench for collimating pairs of binoculars, and realigned a few for people. I've persuaded Ray to give you another chance to have your binoculars tested for collimation accuracy, and where possible adjusted for free to bring them back into alignment. Note that this is at your own risk - but what use are a pair that gives you double vision anyway? We will give a brief introductory talk for those who haven't seen this all before. Mike W.

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

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

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

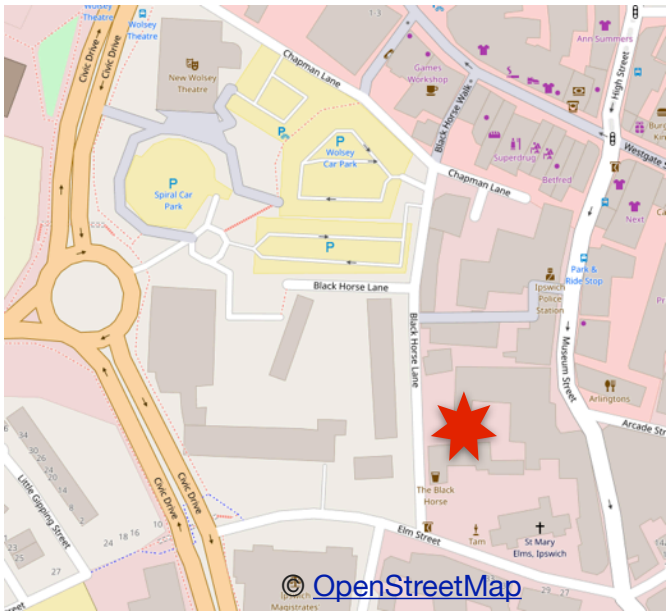
Lecture Meetings

Contact: Peter Richards **lectures@oasi.org.uk**

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

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

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



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

20 October

Dr Sarah Hutton has kindly offered to come to speak to us about *AGNs (Active Galactic Nuclei)*.

Sarah also studies Galaxy Evolution.

She is a fully qualified teacher and lectures to primary and secondary schools and is very active in promoting the public understanding of science.

17 November

Steve Hubbard and Malcolm Brown *"Talk with ET? We think not."*

DASH Astro Events – 2017

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

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

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

Date	Event
13.05.2017	Dr. Malcolm Brown & Dr Steve Hubbard Talk with ET? I think not!
03.06.2017	Dr Paul Whiting – Report on the New Horizon space mission

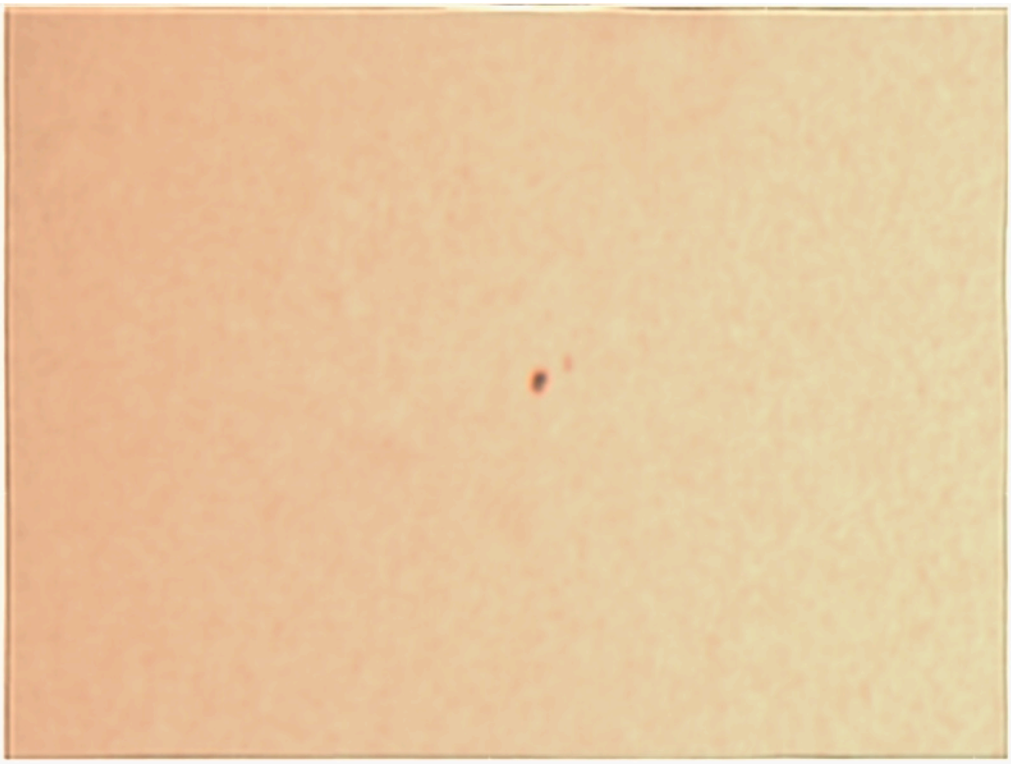
M51 and a sunspot

Andy Gibbs

I made another attempt at imaging M51 on 31-03-17.

This time I increased the imaging time to 5x 300 seconds lights and darks with autoguiding.

I used an Atik Titan camera with an Explore Scientific ED80 CF refractor on a HEQ5 mount.



On 24-03-17 I made an unsuccessful attempt to image Venus on the day before inferior conjunction. However, as I was so close to the Sun I decided to have a look in white light. Just one sunspot (AR 2643) was visible. This had appeared after 15 spotless days at the beginning of the month.

I used a QHY5 II L camera with a Meade 200mm LX200 and OASI's Kendrick white light solar filter.

There is a large sunspot group visible at the moment but, unfortunately, it looks like it will disappear from view before our solar event at Framlingham.

The Night Sky in May

Martin RH

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

Times are in BST (GMT+1) unless otherwise stated.

Moon

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

New Moon	1st Quarter	Full Moon	Last Quarter
25 May 20:45	03 May 03:47	10 May 22:43	19 May 01:33

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	05:25	20:20		
	31	04:42	21:05		
Moon	1	09:54	00:59		
	31	11:08	01:06		
Mercury	1	05:07	18:29	2.4	06 May-06 Aphelion
	31	04:06	18:48	-0.1	18-May Max. western elongation
Venus	1	04:12	16:27	-4.4	
	31	03:13	16:30	-4.2	
Mars	1	06:31	22:41	1.8	
	31	05:44	22:26	1.9	
Jupiter	1	17:38	04:53	-2.2	07 May Jupiter will come within 90 arcseconds south of the Moon in the evening
	31	15:28	02:51	-2.1	
Saturn	1	00:11	08:00	1.1	
	31	22:01	05:55	1.0	
Uranus	1	05:04	18:38	5.9	
	31	03:09	16:49	5.9	
Neptune	1	03:56	14:39	7.9	
	31	01:59	12:44	7.9	

Asteroids

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

Vesta fading from magnitude 7.2 is currently visible in Gemini.
See http://heavens-above.com/MinorPlanet.aspx?desig=4&

Ceres fading from magnitude 9.1 in Aries http://heavens-above.com/Asteroids.aspx

Occultations during May 2017

James Appleton

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

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

Please note that times are shown in UTC. Add an hour for BST.

Date	Time (UT)	D/R	Lunar Phase	Sun Alt(°)	Star Alt(°)	Mag	Star
04 May 2017	23:19:52	D	0.69+	-21	28	5.7	49 Leo, TX Leo
07 May 2017	23:57:58	D	0.92+	-21	29	6.0	46 Vir

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**
- 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.

Meteor Showers

Source: BAA Handbook 2016 p97-99

Shower	Limits	Maximum	ZHR at Max	Notes
η-Aquarids	Apr 24 – May 20	May 5–6	40	Fine southern shower, poorly seen from the UK. Broad maximum and multiple radiant.
α-Scorpiids	Apr 20 – May 19	Apr 28 – May 12	5	Part of the Scorpio-Sagittarius complex. Several weak radiants April–July.

Visible ISS passes ≥15º max altitude

Martin RH

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

Lots of passes this month but mainly in the small hours.

Times are BST. Predictions are approximate (data taken on 16 April) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
09 May	-1.8	04:15:36	10°	SSW	04:17:59	19°	SE	04:20:22	10°	E
11 May	-2.7	04:06:25	11°	SW	04:09:10	31°	SSE	04:12:07	10°	E
12 May	-2.1	03:15:43	18°	S	03:16:48	21°	SSE	03:19:23	10°	E
13 May	-3.4	03:57:35	12°	SW	04:00:24	49°	SSE	04:03:35	10°	E
14 May	-3	03:06:47	26°	SSW	03:07:57	35°	SSE	03:10:59	10°	E
15 May	-2.3	02:15:56	24°	SE	02:15:56	24°	SE	02:18:16	10°	E
15 May	-3.8	03:48:33	11°	WSW	03:51:40	70°	SSE	03:54:56	10°	E
16 May	-3.7	02:57:38	27°	SW	02:59:08	54°	SSE	03:02:21	10°	E
17 May	-3.3	02:06:42	39°	SSE	02:06:42	39°	SSE	02:09:43	10°	E
17 May	-3.9	03:39:39	10°	W	03:42:56	84°	S	03:46:12	10°	E
18 May	-1.9	01:15:42	19°	ESE	01:15:42	19°	ESE	01:17:00	10°	E
18 May	-3.9	02:48:18	21°	WSW	02:50:20	74°	S	02:53:36	10°	E
19 May	-3.8	01:57:14	50°	SSW	01:57:45	59°	SSE	02:00:59	10°	E
19 May	-3.9	03:30:52	10°	W	03:34:10	86°	S	03:37:26	10°	E
20 May	-2.9	01:06:05	34°	ESE	01:06:05	34°	ESE	01:08:20	10°	E
20 May	-3.9	02:38:41	13°	W	02:41:31	85°	S	02:44:49	10°	E
21 May	-1.6	00:14:50	15°	E	00:14:50	15°	E	00:15:37	10°	E
21 May	-4	01:47:24	30°	WSW	01:48:53	78°	S	01:52:10	10°	E
21 May	-3.9	03:22:02	10°	W	03:25:19	74°	S	03:28:35	10°	ESE
22 May	-3.9	00:55:54	58°	SSW	00:56:15	64°	SSE	00:59:31	10°	E
22 May	-3.9	02:29:23	10°	W	02:32:40	84°	S	02:35:57	10°	E
22 May	-3.3	04:05:52	10°	W	04:08:58	39°	SSW	04:12:03	10°	SE
23 May	-3.7	00:03:47	48°	SSE	00:03:47	48°	SSE	00:06:50	10°	E
23 May	-4	01:36:42	10°	W	01:40:00	86°	S	01:43:18	10°	E
23 May	-3.8	03:13:09	10°	W	03:16:23	55°	SSW	03:19:36	10°	ESE
23 May	-3.2	23:08:02	10°	SW	23:11:04	34°	SSE	23:14:05	10°	E
24 May	-4	00:44:02	10°	W	00:47:19	81°	S	00:50:37	10°	E
24 May	-4	02:20:28	10°	W	02:23:44	70°	SSW	02:27:00	10°	ESE
24 May	-2.7	03:57:08	10°	W	03:59:52	24°	SSW	04:02:36	10°	SSE
24 May	-2.7	22:15:50	10°	SSW	22:18:32	24°	SSE	22:21:14	10°	E
24 May	-4	23:51:22	10°	WSW	23:54:39	69°	SSE	23:57:55	10°	E

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
25 May	-4	01:27:47	10°	W	01:31:04	82°	S	01:34:21	10°	E
25 May	-3.3	03:04:17	10°	W	03:07:20	35°	SSW	03:10:22	10°	SE
25 May	-3.8	22:58:46	10°	WSW	23:01:59	53°	SSE	23:05:12	10°	E
26 May	-4	00:35:04	10°	W	00:38:21	86°	S	00:41:40	10°	E
26 May	-3.7	02:11:32	10°	W	02:14:43	50°	SSW	02:17:54	10°	SE
26 May	-3.3	22:06:16	10°	SW	22:09:21	38°	SSE	22:12:26	10°	E
26 May	-4	23:42:21	10°	W	23:45:38	83°	S	23:48:56	10°	E
27 May	-4	01:18:47	10°	W	01:22:04	66°	SSW	01:25:19	10°	ESE
27 May	-2.6	02:55:32	10°	W	02:58:09	22°	SSW	03:00:43	10°	SSE
27 May	-3.9	22:49:39	10°	WSW	22:52:55	73°	S	22:56:12	10°	E
28 May	-4	00:26:03	10°	W	00:29:21	79°	S	00:32:31	11°	ESE
28 May	-2.9	02:02:36	10°	W	02:05:01	30°	SW	02:05:01	30°	SW
28 May	-3.8	21:56:58	10°	WSW	22:00:13	58°	SSE	22:03:28	10°	E
28 May	-3.9	23:33:18	10°	W	23:36:37	86°	S	23:39:54	10°	E
29 May	-3.6	01:09:47	10°	W	01:12:56	45°	SSW	01:13:03	45°	SSW
29 May	-3.9	22:40:33	10°	W	22:43:51	85°	S	22:47:09	10°	E
30 May	-3.9	00:17:00	10°	W	00:20:15	61°	SSW	00:21:32	32°	SE
30 May	-3.9	21:47:48	10°	WSW	21:51:05	77°	S	21:54:23	10°	E
30 May	-3.9	23:24:14	10°	W	23:27:31	76°	S	23:30:10	15°	ESE
31 May	-2.4	01:00:49	10°	W	01:02:46	24°	WSW	01:02:46	24°	WSW

Iridium flares

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

Paul's Astronomy Podcast for May

Paul Whiting FRAS Podcast, April 2017 www.oasi.org.uk/2017_05_pod.mp3

David's Radio Broadcast

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

Bill's Radio Broadcast

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

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

Snippets from the Interweb

There's now a user manual for SharpCap, the image capture application designed primarily for astrophotography and video astronomy (Windows only)

http://downloads.sharpcap.co.uk/docs/SharpCapUserManual_v29.pdf

Southwold Arts Festival – Shakespeare & Astronomy

Michael Rowan-Robertson, with the help of an actor, will demonstrate that Shakespeare's allusions to astronomy show that he had a deep knowledge of the night sky and its motions". This takes place on Wednesday June 28 at 11am at St Edmund's Hall. Tickets are £7.50. The box office is now open Tuesdays to Fridays from noon to 3pm. Phone 01502 722572.

OASI Member of the Year Competition

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

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

Top 4 Members' points to date

Bill Barton	94
Andy Gibbs	62
Rob Herring	46
Joe Startin	45

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

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

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

New: You now get 2 points for a published astrophoto.

Martin RH

The Observatory telephone

The observatory telephone has been having problems lately.

NB The phone should NEVER be switched off!

We apologize if you called but no-one answered.

If you arrive at 8–8:15 there should be someone in the car park who can let you into the observatory door. The mobile phone signal can be weak around the school.

How Much Atmosphere Do You Look Through?

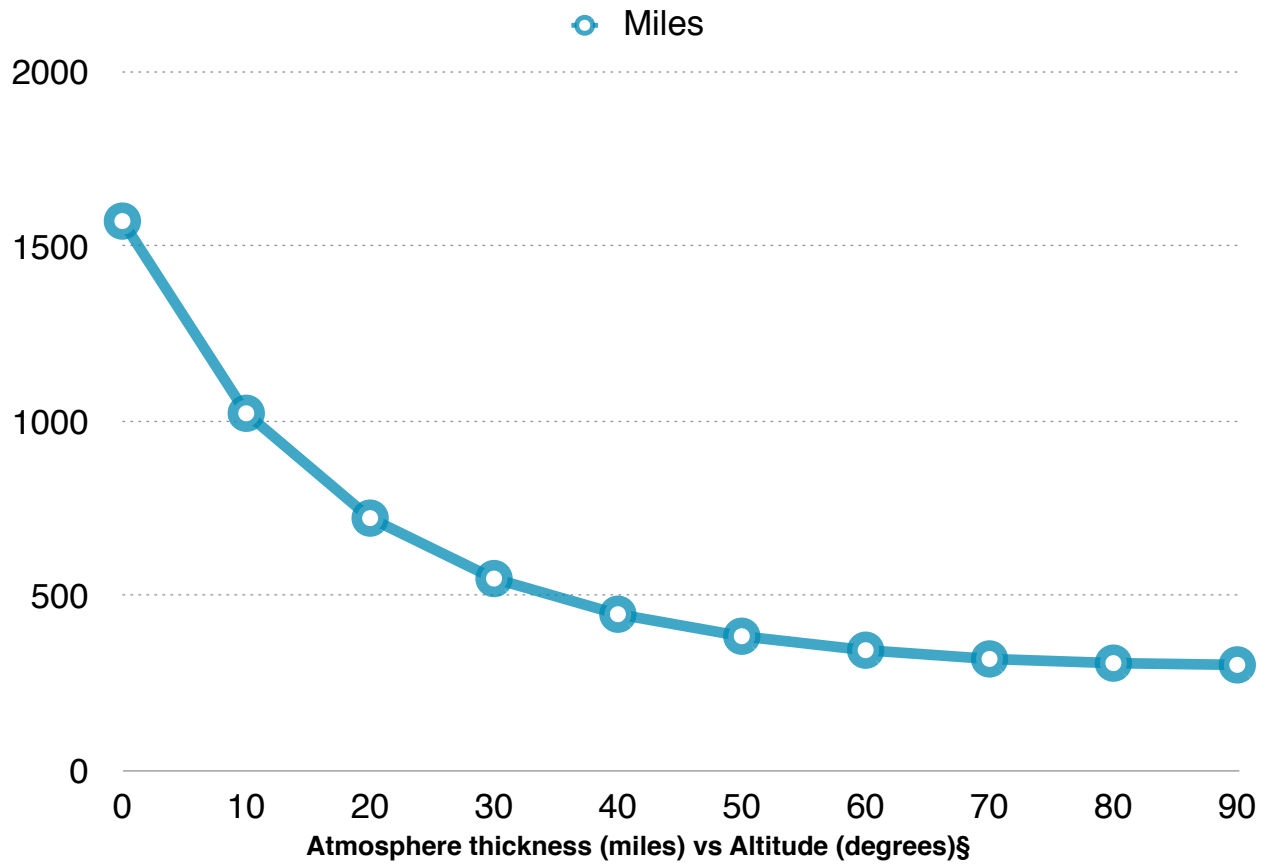
Bill Barton FRAS

When an object in the sky is observed directly over your head, you will be looking through a minimum thickness of the Earths atmosphere (approx 300 miles (480km)).

As you look away from the zenith you have to look through an ever greater thickness of air. Below 30 degrees altitude the thickness has doubled and at the horizon it is over five times as much.

Given that the Earth's radius is 3959 miles and that our atmosphere is something like 300 miles deep.

Altitude (degrees)	Thickness (miles)	Thickness (units)
90	300	1.00
80	304	1.01
70	317	1.06
60	342	1.14
50	382	1.27
40	445	1.48
30	547	1.82
20	720	2.40
10	1020	3.40
0	1570	5.23



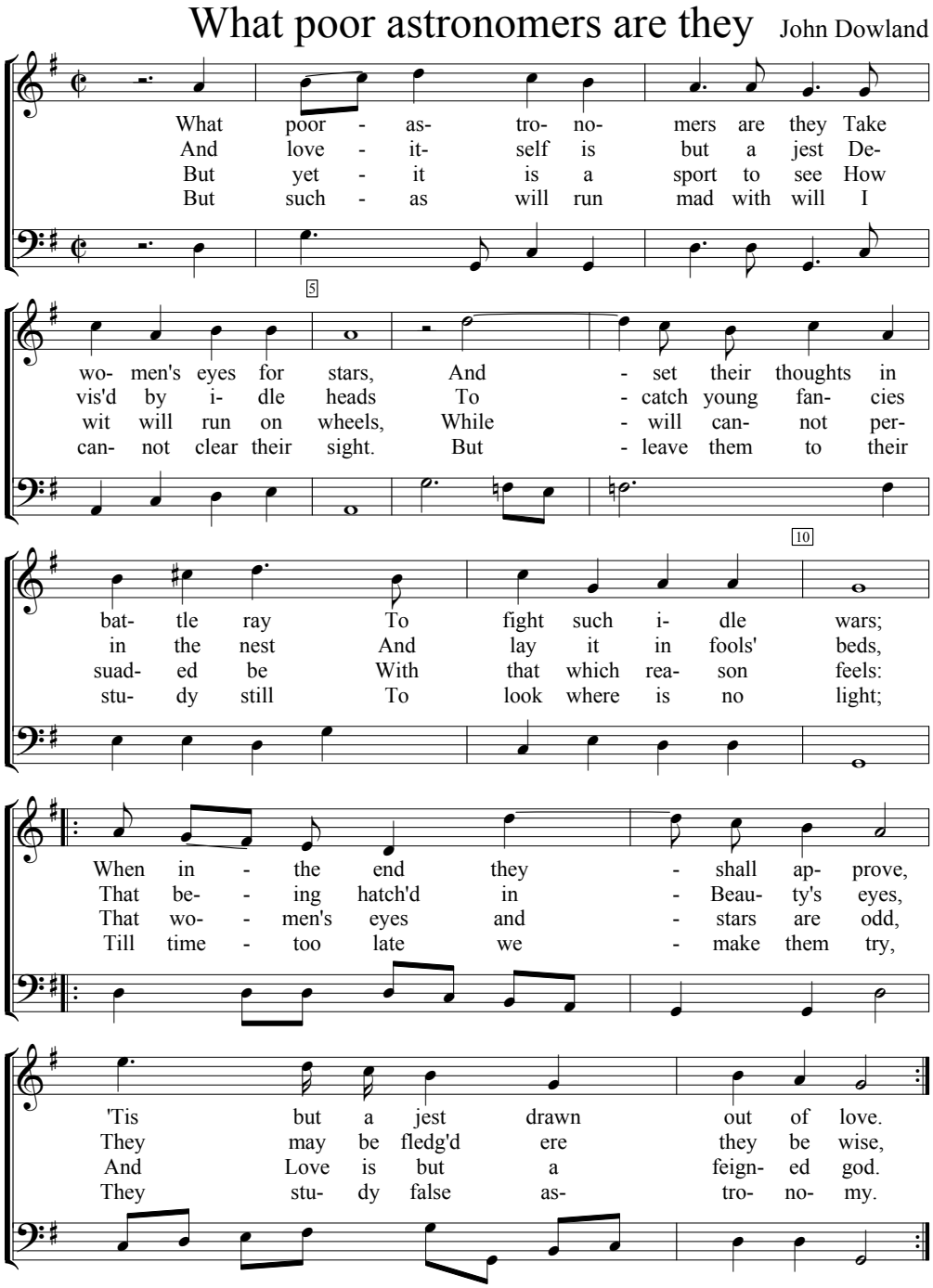
What poor Astronomers are they

Martin Richmond-Hardy

I came across this madrigal by John Dowland while searching http://www.learnchoralmusic.co.uk for some other music.

This link will give you a MIDI file which you can play on your computer.

What poor astronomers http://www.learnchoralmusic.co.uk/Madrigals-etc/Dowland/whatpoor.mid



Third book of ayres (1603), #20. Encoded and edited by Sarge Gerbode.

Using StarSense with the Celestron NexStar 8SE

Joe Startin

I had previously borrowed the club's Celestron NexStar 8SE telescope, and written about it in the November 2016 Newsletter.

The optical tube has an 8 inch reflector, with a focal length of 2032 mm. Because of the Schmidt-Cassegrain configuration it is remarkably compact. The mount enables use as an Alt-Azimuth, 'Go To' telescope. (The club did not buy the equatorial wedge.)

My practical experience with it had been encouraging, and now I thought I'd try the telescope using a facility which Celestron call StarSense. This has a camera which clips onto the side of the optical tube, and connects to the 'Aux' socket on the mount. A different version of the hand control must also be plugged into the mount. Once the telescope has been through a first time set-up ('calibrate centre'), it should mean that the alignment process becomes entirely automated.

Place the telescope where you want it to be, check that the view is reasonably unobstructed, and confirm that the tripod is roughly level. Trigger the auto-align. The telescope moves around of its own accord, and the StarSense camera scans the night sky as if it were the telescope's eyes. After about two minutes of apparently demented movements the telescope is aligned, and ready to accept 'Go To' instructions from the hand control.

The camera cannot be assumed to point in precisely the same direction as the centre line of the optical tube, and a first-time set-up process, 'calibrate centre', deals with this. Essentially, you go through the auto-align, and then use the hand control to select and 'Go To' a suitable guide star. Based on the information the camera has just collected, the telescope will move until the camera considers itself to be pointing at that star straight on. The telescope, however, will be pointing somewhere very slightly different. To calibrate, you look through the eyepiece and use the hand

control to edge the telescope to a position where it centres the guide star exactly. You can fine-tune by switching to a higher magnification eyepiece. Pressing 'Align' on the hand control makes the camera 'look' once again, and work out the offset. It will respond with a message 'Solution found'. You accept the offset by pressing 'Enter'. Perform another auto-align as confirmation, and the job should be done.

You can change the telescope back to conventional use by swapping to the standard hand control, and disconnecting the StarSense camera. Even if you completely detach the camera from the telescope, it is claimed that you can revert to StarSense very easily. The physical registration the camera has with the optical tube when it is reattached is claimed to be sufficiently robust for recalibration not to be necessary. Just remember to swap back the hand control as well.

In my first session I used 32 and 15 mm eyepieces to do a 'calibrate centre' with Capella. After the confirmatory auto-align, I tried the 'Go To' for Aldebaran, M42 (trapezium), M31, and Uranus, using the higher magnification eyepiece, 15 mm (133x). All objects were reasonably well centred in the field of view, although M31 and Uranus did prompt warning messages on the hand control before the telescope found them anyway.

In my second session, over three months later, I did the auto-align, but forgot to remove the cap from the camera! (The camera can be 'blinded' permanently by the Sun, so the cap is important.) I soon noticed my mistake, but left the system get on with things to see what would happen. The telescope waved around for about four minutes before I put it out of its agony. When I removed the cap and auto-aligned again I noticed that the 'calibrate centre' from the first session had not been preserved. 'Go To' was able to locate Arcturus and Jupiter in the lower magnification eyepiece, but they were out of field in the higher mag eyepiece (this time, 12 mm, 167x). The reason for failure could be connected with the three month interruption, or it could be to do with leaving on the camera cap. Anyway, I had to do 'calibrate centre' again.

I had carefully set up the time of day at the beginning of the session, to allow 'Go To' for the planets. When I saw that Jupiter was the only planet to appear in the list on the hand control I had thought there must have been a problem. Then I realised the telescope was working as any 'Go To' should - only Jupiter was visible at that time.

I did some provocative tests, auto-aligning after each one, to see how the system coped. These tests were:

Disconnect and reconnect the 'Aux' lead to camera.

Physically detach the camera from the optical tube, and reattach.

Interrupt the battery power to the whole telescope

Although one auto-align completely screwed up on its first attempt, and another was obviously incomplete because Arcturus failed to appear in the list of stars on the hand control, one repeat of the auto-align was enough to get the 'Go To' working satisfactorily. The 'calibrate centre' correction was always preserved. I tried 'Go To' with many objects, and the results in the high magnification eyepiece were good, but not always bang in the centre. This is probably attributable to the mechanical backlash in the mount. The user manual explains some features and techniques which can mitigate backlash, but I did not explore them.

My location for these sessions had quite limited horizons, and the seeing conditions for the second session were not quite as good as for the first. This may have led to the occasional auto-align failures I saw. By and large, though, the StarSense facility is impressive.

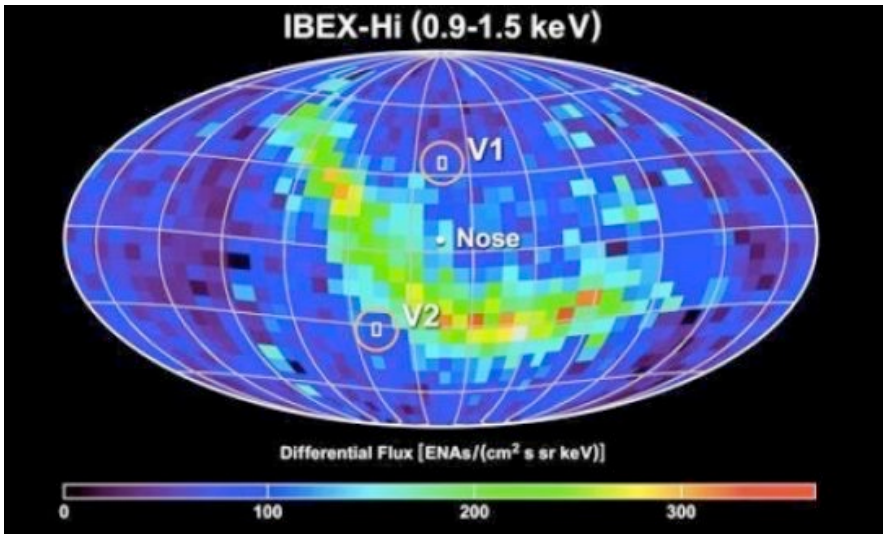
NASA's IBEX Spacecraft

Andy Willshire

I was again looking at the Hubble site, and thought that this little information section may be of interest

In October 2008, NASA launched a spacecraft called IBEX, or Interstellar Boundary Explorer. It was planned that IBEX would map interactions occurring up to 10 billion miles away, where the heliosphere comes into contact with interstellar space. It travels around Earth on an eight day looping orbit and uses its detectors to watch regions some distance away. The solar winds fast moving protons eventually end up at the edge of the heliosphere, where these protons catch hold of a small quantity of electrons from interstellar atoms that surround them. There is at this point a charge exchange and electrically neutral hydrogen atoms are formed, that are no longer bound to the magnetic fields. They then at great speed, head off in all directions from the interstellar boundary. Some of these heading in Earth's direction, and as they zing past they are recorded by IBEX. The two detectors on board record energy and quantity of atoms arriving from small packets of sky, about 7 degrees across. Ibex always points towards the sun and so will slowly rotate through Earth's orbit, 360 degrees every 6 months.

One project that IBEX looked at was how some solar winds charged particles are neutralised by gas that is escaping from Earth's atmosphere. Energetic Neutral Atoms or ENA's enter an area outside the borders of Earth's magnetosphere where almost immobile solar wind protons act together with an indistinct haze of hydrogen atoms in the Earth's atmosphere. IBEX can also detect solar wind particles at the magnetopause, which is about 35,000 miles away. Here ENA's are formed as well due to the solar wind electrons grabbing electrons from hydrogen atoms in the exosphere. It was found that this far out there are only about 8 hydrogen atoms per cubic centimetre, demonstrating how flimsy the outer exosphere really is. The IBEX maps thus formed show that ENA's are much less diffuse away from positions of maximum intensity. This occurs because of the teardrop shape of the magnetopause. One thought for space scientists is that the solar winds crash into our moon freely. At this point absorption of most of the particles by solar dust occurs. It is thought that perhaps the moon has captured large amounts of the isotope helium-3 which could be used for further exploration as a fuel. Results from IBEX show that only 10% of the solar wind particles escape as ENA's.



NASA's Interstellar Boundary Explorer (IBEX) mission science team constructed the first-ever all-sky map of the interactions occurring at the edge of the solar system, where the sun's influence diminishes and interacts with the interstellar medium.

This boundary can now be mapped with clarity. In 2009 results showed that a large ribbon shaped band occurred at the boundary which was the result of particles from inside the solar system bouncing off, and neutral atoms from that collision rushing inwards. A paper was

produced in 2013 by Schwadron & McComas, providing a new explanation for this phenomenon. It suggested that the ribbon forms at the point, where atoms of neutral hydrogen from the solar wind, cross the neighbourhood magnetic field. The mechanism for ion retention diminishes the activity of ions near the centre of the IBEX ribbon and as such ion retention becomes a spatial effect. The ENA results demonstrate characteristic fluctuations of the solar winds showing a slower solar wind source at low latitudes and a faster wind at higher latitudes during the solar minimum.

References:

The Astrophysical Journal, 764:92 (11pp), 2013 February 10 Schwadron & McComas SPATIAL RETENTION OF IONS PRODUCING THE IBEX RIBBON

N. A. Schwadron1,3 and D. J. McComas2,4 1 Department of Physics and Space Science Center of the Institute of Earth, Oceans, and Space, University of New Hampshire, Durham, NH 03824, USA 2 Southwest Research Institute, San Antonio, TX 78228, USA Received 2012 August 26; accepted 2012 December 14; published 2013 January 29

https://www.nasa.gov/mission_pages/ibex/news/ribbon-explained.html

Credit: NASA/Goddard Space Flight Center Scientific Visualization Studio

The Sombrero Galaxy

David Murton

M104 the sombrero galaxy 15x480 seconds at iso400. Canon 60Da camera.

Repairing a laser collimator - a learning experience

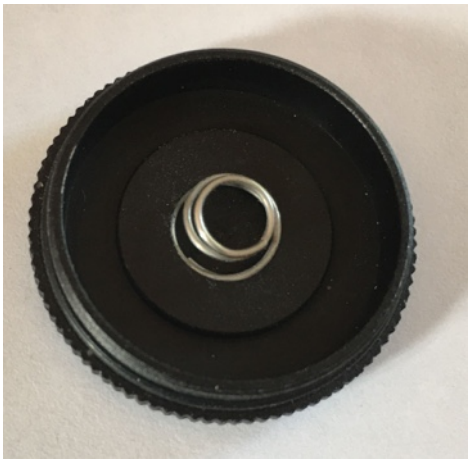
Martin Richmond-Hardy

I bought one of these a few years ago for about £25 and it has been very useful in checking the collimation of my Newtonian scope. Recently the switch knob (on the left in the picture) became loose. How to take it apart?

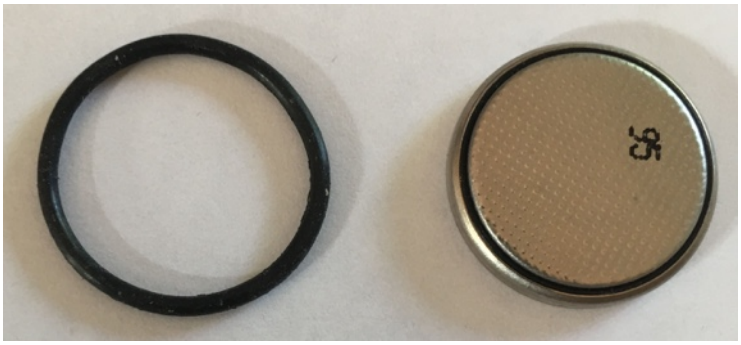
Lesson 1:

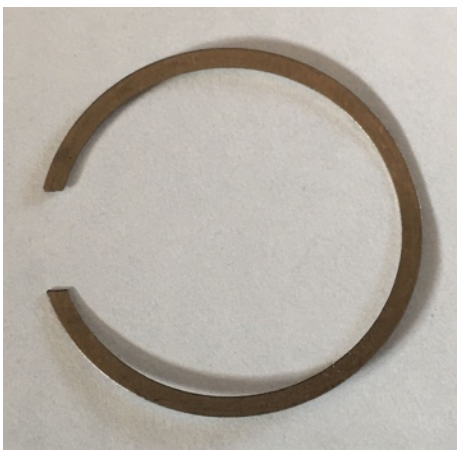
Do **not** dig out the plastic filler covering the three grub screws (one is under the label). These are used to align the red laser unit and do not hold the two parts of the body together.

Lesson 2: Finding the culprit



Unscrew the battery cap and remove the battery (coin cell) and the neoprene ring around the battery spring.





Lesson 3:

Note the position of the circuit board relative to the markings on the housing **before** you remove it!

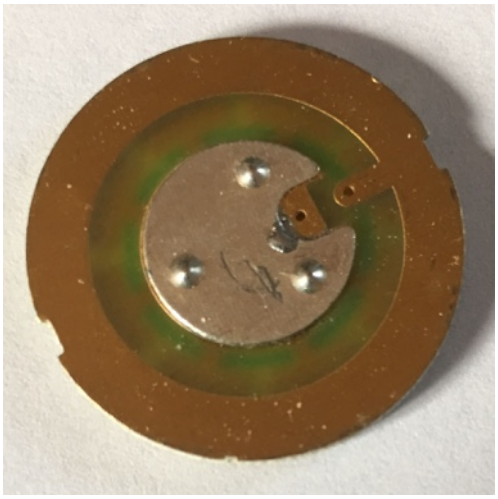
Remove the clip holding in the battery spring. Try not to bend the clip!

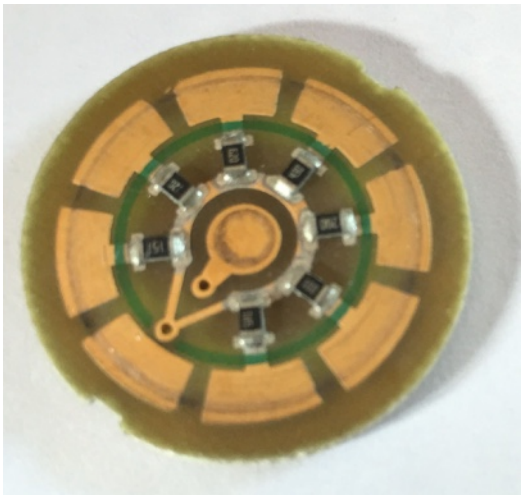
Remove the battery spring. This will release the printed circuit board. **STOP!**

Lesson 4:

Note that the two lugs on the spring locate in the two notches on the circuits board.

The underside of the circuit board has the switch contacts and resistors for the brightness settings.





You will now see the two contacts which connect the switch circuit board to the laser unit. This circuit board is held in place by a thin steel plate (which forms the switch detent mechanism) and four crosshead screws.

All four cross-head screws had become loose.

Lesson 5:

Tighten the screws, don't remove them.

If you do feel the urge to remove them, note the position of the contacts in relation to the body. They should point towards #1 on the case markings. There are three ways of getting this wrong!

Lesson 6: Re-assembly is fiddly.

The most difficult bit is refitting the spring clip whilst maintaining alignment of the switch circuit board. I couldn't get the clip to seat in its groove, with the result that the battery cover didn't fully screw in.

Lesson 7: If all else fails...

Buy a new one, preferably of a better design!

OASI 1967 – 2017

50th Anniversary Convention, 29 July 2017

On Saturday 29 July 2017, we will celebrate the 50th anniversary of OASI with an astronomy convention. The venue is the Waterfront Building, University of Suffolk. There will be lectures by prominent astronomers, displays by astronomy societies and trade stands.

Venue: The Waterfront Building is an ideal venue in a central location on the popular waterfront area of Ipswich. It boasts large lecture theatres together with abundant exhibition space on two levels. There is a café on site and a plentiful selection of eateries and bars nearby. Green marker.

Car Parking: Car parking is available at £4.50 for the day at postcode IP3 0AQ, less than five minutes walk from the venue. Map on web site. Many other car parks are available in town: see Parkopedia.

Accommodation: Many hotel chains are nearby, with a range of prices to suit all pockets.

Tickets: Entrance to the convention (displays and trade stands) will be free. Tickets for the lectures will be on sale in advance and at the door.

Further details will be advised on our website oasi.org.uk

Speakers

Dr Allan Chapman, FRAS, of Wadham College, Oxford, is an accomplished speaker, TV presenter and author. He is a founding member and president of the Society for the History of Astronomy and Honorary President of OASI.

Nick James has been a member of the BAA from the age of 12. He was papers secretary for many years and is currently Director of the Comet Section.

Nik Szymanek has been the premier UK astro-imager for over two decades. He often collaborates with professional astronomers and his work frequently appears in the pages of astronomy magazines.

Dr John Mason is former President of the BAA and currently Director of the Meteor Section and Public Relations Officer. He has led trips all over the world to observe solar eclipses and aurorae.

Dr Nick Hewitt is a trustee of the BAA, former Director of the Deep Sky Section and President. He is a keen eclipse chaser and observer of the deep sky, Mars and active galactic nuclei.

Programme

09:00 – 18:00	Displays area (foyer)
09:30 – 10:45	Nick James
11:00 – 12:30	Nik Szymanek
13:00 – 14:15	Dr John Mason MBE
14:30 – 15:45	Dr Nick Hewitt
16:00 – 17:30	Dr Allan Chapman

Trade Stands

The Widescreen Centre

Sneezums, Bury St Edmunds

Space Rocks UK

Display Stands

Athenaeum Astronomy Society

Breckland Astronomical Society

DASH Astro

LYRA Lowestoft and Yarmouth Regional Astronomers

British Astronomical Association

Commission for Dark Skies

Kesgrave High School Space Club

Geo Suffolk

Comet Watch, Neil Norman FRAS

OASI Clothing

Time to get kitted out for the OASI 50th Anniversary!

The Society now carries a stock of OASI clothing as below:

Order from Mike Norris **michael.norris17@btopenworld.com**

Tel: 01473 726596

Sweatshirt

by Maddins, easycare, crew neck, raglan sleeve. In Oxford Grey or Navy with Embroidered OASI Logo in Yellow. Sizes Small, Medium, Large & Ex Large.

£18.00

Fleece Zip Jacket Front Pockets, Navy.

Small, Medium, Large & Ex.Large

£23.00

Thinsulate Beanie

in 100% soft feel fabric Thinsulate lining Non-ribbed turn up in Dark Graphite with OASI embroidered in matching yellow.

£9.00

Base Ball Cap: Navy/Stone **£8.00**

Russell Ultimate Pique Polo Shirt

In 100% combed cotton with flat knit collar and taped neck. Embroidered with OASI logo in Yellow. Sizes Small, Medium, Large & Ex.Large. Colours Black, White, Burgundy, Azure Blue & Sky Blue.

£17.00

These prices do not include postage, which is always a bit unknown. I try to gather orders for a few pieces and then will collect to save this cost. If you want an item for a specified date then postage will be added.

OASI at The Framlingham Show

A huge thanks to all those who helped over the weekend especially Bill Barton who like myself did both days.

I think we all agreed it was a massive success with huge crowds especially today and great weather.

We had many appreciative comments from visitors and the show organisers who have asked us back next year.

We had scopes showing the sun in both Ha and white light plus Bills 4" refractor showing a lovely crescent Venus, plus dispay boards, photo boards, information sheets and games for the kids.

We had lots interested in coming to Newbourne and made some good contacts. Plus we all made friends with an owl today!

Again thanks again to everyone and lets hope that Stonham Barns at the end of the month goes as well.

Matt Leeks, Martin Cook, Alan Smith, Bill Barton, Joe Startin

Nicky & Pete Richards