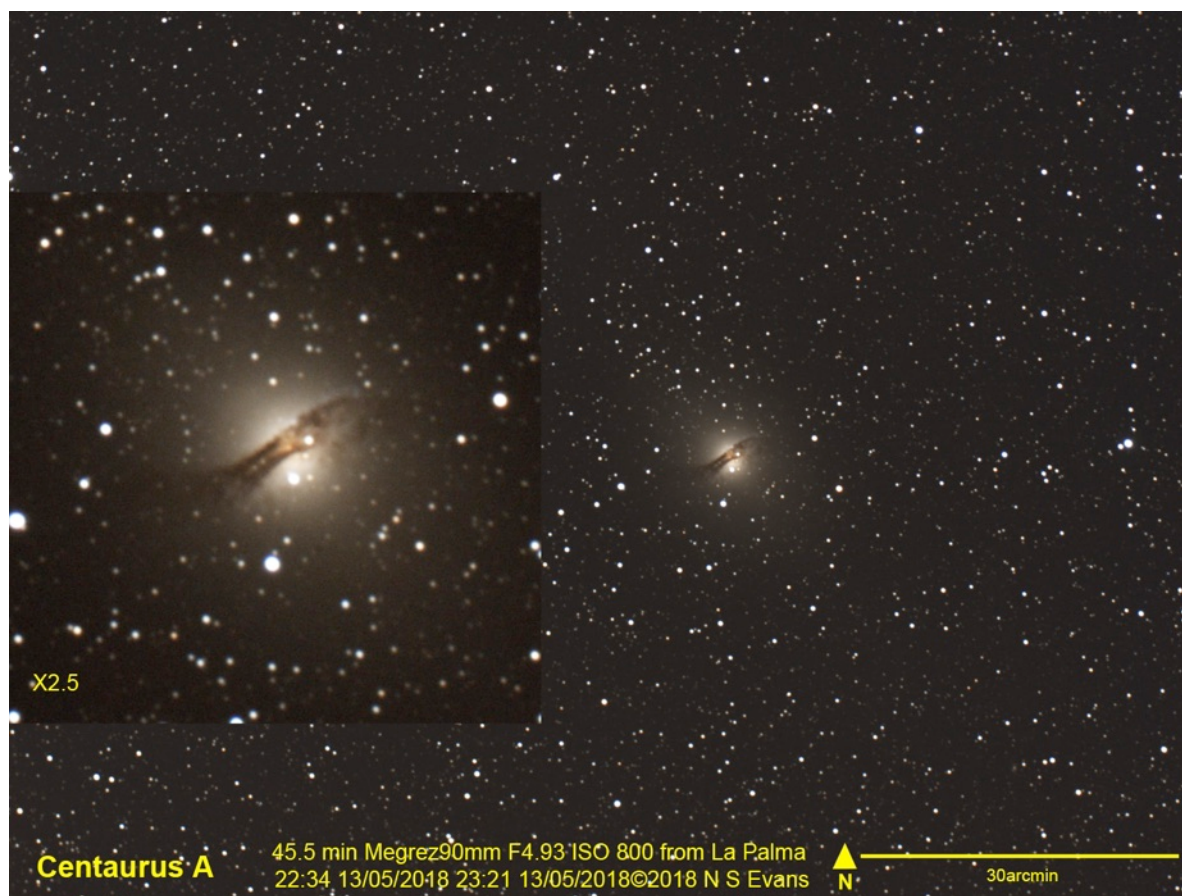




OASI News

The newsletter of the Orwell Astronomical Society



Centaurus A, well known as a radio galaxy with a rather impressive dust lane.
Not visible from the UK

Photo: Neil Short

Trustees:

Mr Roy Adams

Mr David Brown

Mr David Payne

Honorary President:

Dr Allan Chapman D.Phil MA FRAS

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Society Notices

Society Contact details

Observatory (meeting nights only)

NB new number! 07960 083714

Email queries: info@oasi.org.uk

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

Twitter: @OASlpswich

The OASI Facebook pages are 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.

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, **07960 083714** during meeting hours. **Please note this is a new number. Kindly amend the number shown on your 2018 membership card.**

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

Articles for OASI News

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

news@oasi.org.uk

The CLOSING date is the 15th day of the month

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

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

Spreadsheets: xls, xlsx, OpenOffice/LibreOffice, Numbers

Images: tiff, png, jpg

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

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

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

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

Reproducing articles from OASI News

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

Committee 2018

Chairman	Paul Whiting FRAS	Set overall agenda for OASI, Chair committee meetings, Press and publicity, Visits by outside groups, Observatory tours, 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.
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, OASI @ Newbourne
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Matt Leeks	Safety & security
	Andy Gibbs	
	Andy Wilshire	Librarian

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.

Next Committee Meeting

Friday 22 June 20:00 at Museum St Methodist Church rooms, Black Horse Lane.

Welcome to new members

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 or use this address to access this calendar from other calendar applications.



<https://calendar.google.com/calendar/ical/1jhs9db71ncki4sojo7092vfvvc%40group.calendar.google.com/public/basic.ics>

For other astronomy news and astro pictures try our

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

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
Saturday 02 June from 12:00	Kirton Recreation Ground	MartinRH	Public event: OASI @ Kirton Village Fete.
Sunday 10 June from 10:00 Set-up 09:00	Kirton Recreation Ground	chairman@oasi.org.uk	Public event: OASI @ East Suffolk Wireless Revival
Monday, 11 June 19:00	Newbourne Village Hall	Newbourne@oasi.org.uk	OASI @ Newbourne observing+Skynotes+ Book Swap
Thursday 14 June	Orwell Park Observatory	chairman@oasi.org.uk	Observatory Visit for OASI @ Newbourne
Saturday & Sunday 16 & 17 June	Sutton Hoo	Roy Gooding	Public event: Solar observing @ Sutton Hoo
Friday 22 June 20:00	Museum St Methodist Church room	Roy Gooding	Committee Meeting
Monday 25 June from 19:00	Newbourne Village Hall	Newbourne@oasi.org.uk	OASI @ Newbourne observing
Monday 2 July 01:40	http://www.oasi.org.uk/Occs/Occ_summary_2018.php#Grazes	James Appleton info@oasi.org.uk\	Field trip to observe the graze of γ Cap.
Wednesday 4 July 02:50			Field trip to observe the graze of ψ 1 Aqr.
Weekend 7 & 8 July	University of Warwick	https://britastro.org/summer2018	BAA Summer Meeting and BAA-AAVSO Joint Variable Star Meeting
Monday 9 July from 19:00	Newbourne Village Hall	Newbourne@oasi.org.uk	OASI @ Newbourne. Sky Notes + bookswap

Date and Time	Location	Contact	Event
Saturday 14 July 13:00 to late	Newbourne Village Hall	Pete Richards lectures@oasi.org.uk	OASI BBQ: Open to members and their guests
Tuesday 17 July	Sutton Hoo	Roy Gooding	Public event: Evening observing
Monday 23 July From 19:00 Workshop 19:45	Newbourne Village Hall	Newbourne@oasi.org.uk	OASI @ Newbourne Astronomy Workshop presented by Andy Gibbs: A beginners guide to astrophotography + Book swap.

* Please note OASI @ Newbourne date changes due to Newbourne Parish Council meetings.

Outreach meetings

Kirton Fete: Saturday 02 June

Venue: Kirton Recreation Ground.

OASI is putting on a stand demonstrating safe solar observing and the work of our Society.
Please bring a telescope or just yourself to help.

East Suffolk Wireless Revival: Sunday 11 June

Venue: Kirton Recreation Ground.

OASI is putting on a stand demonstrating safe solar observing and the work of our Society.
Please bring a telescope or just yourself to help.

Sutton Hoo Solar Event June 16th & 17th

Venue: Sutton Hoo Visitors Centre on the grass outside the cafe

Option 1	Saturday 16 th	Option 2	Sunday 17 th
Setup time:	10:30	Setup time:	10:30
Event time:	11:00 to 16:00	Event time:	11:00 to 16:00

There will be solar observing plus Paul will be giving some talks. More details nearer the date

Other meetings in planning

Christchurch Park solar observing – date to be arranged, ideally in June or July.

Holywells Park Family Day - usually the first Wednesday in August.

Bentley Families Day – solar observing 02 September (TBC).

Broomhill Library, 28 September. Paul Whiting is not available to attend, so asked for other members of OASI to attend and give a presentation aimed at children.

Norwich Science Festival Astronomy Day, 22 October.

Lecture Meetings

Contact: Peter Richards

lectures@oasi.org.uk

These will take place in our new venue:

St Augustines Church Hall

Bucklesham Road

Ipswich IP3 8TH

Start time 8pm.



OASI Guest Speaker Lectures for 2018

We have an exciting and interesting set of lectures by guest speakers for the Autumn. There is a new venue for lectures this year which is St Augustines Church Hall in Bucklesham Road Ipswich. For those of you using sat nav or online route planning the post code of the venue is IP3 8TH. The start time for all talks will be 8pm and, as usual, the talks will be held on Friday evenings.

Friday 21st September	"Can the World's Largest Digital Camera Answer Cosmological Questions?" Dr Lorne Whiteway, University College London,
Friday 26th October	"Imaging with a Dobsonian" Martin Lewis, Lunar and Planetary Imager,
Friday 23rd November	"Monsters in the Dark: searching for the Universe's most massive galaxies" Dr Matt Bothwell, Institute of Astronomy, University of Cambridge, Friday 23rd November.

OASI @ Newbourne

Martin Richmond-Hardy newbourne@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).

OASI @ Newbourne 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.

There are also **Stargazers' Guide, Astronomy Workshops and the Book Swap.**

Stargazer's guide

On the first meeting each month Bill Barton FRAS 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.

OASI@Newbourne Meetings in 2018

7 May (S+B)	21 May (W+B)	11 June (S+B)	25 June
9 July (S+B)	23 July	13 Aug (S+B)	27 Aug
10 Sept (S+B)	24 Sept		

We open up for all meetings at 7pm. Star Guide (S) at 7:30pm and Workshops (W) at 7:45pm. B = Book Swap night ([see below](#)).

Astronomy Workshops

Contact Mike Whybray

Location: Newbourne Village Hall IP12 4NP

Doors open at 7:00pm.

Workshops start at 7:45pm

If you are a new OASI member, or haven't been to one of these informal workshops before, they are a mixture of events of different characters including beginners talks, 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 – 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

23 July Andy Gibbs on Basic Astrophotography.

A beginners guide to Astrophotography, showing what can be achieved with very basic equipment, like Smartphones, Compact Digital Cameras and entry-level DSLR cameras.

TBA Martin Cook on Tomline Refractor Training (at the Observatory)

Special visit to the OPS Observatory for OASI@Newbourne

Thursday 14th June from 8:15pm

New members' night "up the dome", primarily as an introduction for the folk we only ever see at Newbourne. If you've not visited the Observatory for a while (or not at all), this is your opportunity for a guided tour.

Astronomy Book Swap

Pete Richards

If you are anything like me you'll have a bookcase or two full of astronomy books and no room for any more but you know the next time you are at an astronomy event you'll be tempted again. OASI will be hosting an astronomy book swap event at Newbourne on a Monday evening help you to clear some space or maybe you can provide a home for someone else's unwanted books. If you bring any books and they are not taken you will need to take them home again as OASI has no spare storage space for books.

You can take away any books you are interested in but if you have not provided any books yourself you might like to make a small cash donation to OASI.

Any cash donations will help towards running OASI @ Newbourne.

The books can be on any area of astronomy, or space exploration, or related subjects. They can be factual or works of fiction including space related science fiction. As well as books you could bring DVDs on similar subjects, or maybe you have an astronomical jigsaw puzzle you'd like to give away or exchange.

The book swap will be held at Newbourne Village Hall on Monday Star Guide/Workshop nights (a normal oasi @ newbourne night). **The next event will be held on 11 June.**

Other local astronomy society meetings

Athaneum Astro Soc

www.3a.org.uk/index.htm

We meet fortnightly on Thursdays, from 7.30pm, at our dark-sky site in the [Walled Garden](#) at Nowton Park, just outside Bury St Edmunds. If you're planning on joining us for the first time, please [contact us](#) in advance, just to make sure the meeting is going ahead. We recommend that you wear warm clothing (even summer nights can be chilly, especially when the skies are clear!) and bring a flask, or insulated mug, for a warm drink. We have tea and coffee-making facilities on-site. Events are listed here <http://www.3a.org.uk/events.htm>

- | | |
|---------|---|
| 7 June | Hertzsprung-Russell diagram and the study of stellar evolution
What's topical in astronomy |
| 21 June | Sundials and astronomy
What's topical in astronomy |

LYRA Lowestoft & Yarmouth Regional Astronomers

www.lyra-astro.co.uk

LYRA Programme and Local Events 2018 – All talks (unless other wise stated) will commence at 7.30pm in the Coach House Room at Parkhill Hotel, just outside Oulton Village on the B1375 (Oulton Broad to Gt. Yarmouth Road) NR32 5DQ

All Talks £2.50 For Non Members

- | | |
|---------|--|
| 12 June | Talk by Steve Hubbard & Malcom E Brown, "Thinking about Astronomy – a century of change and continuity" |
| 26 June | LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm |
| 10 July | Inaugural talk by President Matthew Bothwell, From Big Bang to the Big Rips! A History of Modern Cosmology |
| 24 July | LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm |

DASH Astro

Darsham And Surrounding Hamlets

<http://dash.moonfruit.co.uk>

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.

Note these are now on Sundays.

- | | |
|---------|--|
| 24 June | International SUNDAY - Location Dunwich Heath |
| 15 July | Solar Observing - Location TBA
(Sunset 21:09 Moonset 22:48 9% Moon) |



Cambridge University Library

One day conference on the life and work of George Airy, Friday June 29, 9:30am till 5:00pm (booking necessary)

SHA

Summer Picnic, Norwich Astronomical Society Observatory, Seething, Saturday 30 June, from 12pm

The Night Sky in June

Martin RH

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

Times are in BST unless otherwise stated

Moon

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

New Moon	1 st Quarter	Full Moon	Last Quarter
13 June 20:43	20 June 11:51	29 May 15:20 28 June 05:53 (Strawberry or Thunder)	06 June 19:32 06 July

Sun, Moon and planets

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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	04:41	21:05		Summer solstice Jun 21, 11:07. Sunrise 04:35; sunset 21:19 Aphelion July-06
	30	04:39	21:19		
Moon	1	23:28	07:04		Apogee 02 June 17:35, Perigee 15 June 00:53, Apogee 30 June 03:44
	30	22:44	06:44		
Mercury	1	04:29	20:29	-1.6	Superior conjunction & Perihelion Jun-06
	30	06:38	22:37	0.0	
Venus	1	06:59	23:45	-3.9	
	30	08:17	23:19	-3.9	
Mars	1	00:53	08:46	-1.2	
	30	23:21	07:03	-2.1	
Jupiter	1	18:29	03:48	-2.3	
	30	16:24	01:49	-2.2	
Saturn	1	22:53	06:41	0.2	Opposition Jun-27
	30	20:51	04:38	0.0	
Uranus	1	03:13	17:08	5.9	
	30	01:21	15:20	5.8	
Neptune	1	02:00	12:53	7.9	
	30	00:07	10:59	7.9	

Paul's Astronomy Podcast for June

Paul Whiting FRAS Podcast, June 2018 www.oasi.org.uk/2018_06_pod.mp3

Occultations during June 2018

James Appleton

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

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

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

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

Date	Time (UT)	D/R	Lunar Phase	Sun Alt(°)	Star Alt(°)	Mag	Star
24 Jun	23:33:26	D	0.90+	-14	17	5.4	44 Lib, η Lib
28 Jun	21:46:05	D	1.00-	-9	8	3.8	39 Sgr, o Sgr
	22:45:05	R		-13	13		

Meteor showers

Source: **BAA Handbook 2018 p97-99**

Shower	Maximum	Normal limits	ZHR at Max	Notes
Ophiuchids	Jun 10 Jun 20	May 19 – July	5	Weak activity from several radiants. Best for southern skies.

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

Martin RH

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

Times are BST. Predictions are approximate (28 May!) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Jun	-3	22:56:29	10°	W	22:59:23	29°	SSW	23:00:49	20°	SSE
02 Jun	-3.2	22:04:08	10°	W	22:07:15	41°	SSW	22:10:20	10°	SE
02 Jun	-1.4	23:42:03	10°	WSW	23:42:58	11°	SW	23:42:58	11°	SW
03 Jun	-1.9	22:48:50	10°	W	22:51:05	17°	SW	22:52:30	14°	S
04 Jun	-2.4	21:56:14	10°	W	21:59:01	26°	SSW	22:01:47	10°	SSE

Iridium flares

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

Astronomy on the radio

Bill Barton's Radio Broadcast

ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. I aim to cover what there is to see in the sky and then a little bit on something topical. ICRFM is also available to listen to over the Internet and there is a listen again option on their website. <http://www.icrfm.com>

David Murton's Radio Broadcast

On 1st Tuesday of the month, 1.40pm on the Lesley Dolphin show on BBC Radio Suffolk – now digital (channel 10c) and FM 103.9 (Ipswich), 104.6 (west Suffolk), 95.5 (Lowestoft), 95.9 (Aldeburgh) and the internet. <https://www.bbc.co.uk/radiosuffolk>

The next Grazes

Alan Smith

Monday 2 July	http://www.oasi.org.uk/Occs/Occ_summary_2018.php	James Appleton info@oasi.org.uk\	Field trip to observe the graze of γ Cap.
Wednesday 4 July	Occ_summary_2018.php #Grazes		Field trip to observe the graze of ψ 1 Aqr.

BAA news

New BAA Observing Challenge

The latest BAA observing challenge is posted on our website. Jupiter is in an excellent position for imaging, and as the evenings warm up a little, it is much more pleasant to be outside at night, even just to sit in the garden, with perhaps a small glass of something, and just admire its pure beauty with binoculars.

Proposed by Damian Peach, he says, "Jupiter is once again in prime viewing position this month, and this presents an ideal opportunity to try your hand at photographing the solar system's largest planet."

He continues, "It comes to opposition on May 9th 2018 and will be visible throughout the night shining brilliantly at magnitude -2.4. Today modern high speed video cameras are providing us with views of Jupiter in such extraordinary detail, that the finest amateur imagery made today approaches that taken by the world's largest mountain-top observatories. Such images in recent years have allowed the general meteorology of the Jovian atmosphere to be observed in unprecedented detail. Even small amateur telescopes equipped with a webcam can produce valuable imagery."

Good luck and looking forward to seeing lots of images and drawings appear on the BAA community pages and member pages.

BAA Diary Dates

7- 8th July 2018 - BAA Summer Meeting and BAA-AAVSO Joint Variable Star Meeting at Warwick University. Two for the price of one - two parallel events take place in two adjacent lecture theatres, covering '*Exploring Solar Systems, near and far*'. One caters for planetary astronomers and the other is more focused on variable stars. Bookings are still open for this, and it promises to be a fascinating event, with many already booked to come from overseas.

For full details of all meetings please go to <https://britastro.org/meetings>

29th September 2018 - [Observer's Workshop - Variable Stars, Photometry and Spectroscopy](#). Burlington House, Piccadilly, W1J 0DU. Details to be released soon.

A Suffolk Astronomical Centenary

Bill Barton FRAS

One hundred years ago this month a nova was discovered in the constellation of Aquila. It turned out to be the brightest object of its type in the whole of the 20th century, peaking at magnitude minus 0.5. It is currently thought that this nova, later given the variable star designation 'V603 Aquilæ' occurred in a double star when material from one component transferred to the other and suddenly illuminated.

Alice Grace Cook (1877-1958) saw it from Stowmarket at 9:30pm G.M.T. on June 8 and noted the discovery in her copy of Klein's Star Atlas. However it was first seen from Madras, India, by George Noel Bower (who was born in Norwich in 1885, later lived in Brome and died in Eye in 1951), around five hours earlier at 10:00pm Indian Standard Time (= 4:30pm G.M.T.).

Alice was born the family home of 'Woodside' thought to be somewhere on the Bury Road in Stowmarket on 18 February 1877. Her father (Francis Rider Cook, 1842-1917) ran a business trading corn, seeds and coal and came from east London. Her mother (Sarah (née Lingwood (1844-1926)) was from Battisford, which is around eight miles south of Stowmarket. Alice Grace had one sister (Sarah Mabel Cook 1876-1946) and two brothers (Francis Edward Cook 1874-1933 and Herbert Rider Cook 1878-1931) who took over their father's business. None of the ladies in this family appear to have worked. At the time of the discovery the Cooks were living at a house called 'The Rookery'. This property still stands and is now known as 15 Tavern Street.

Alice joined the British Astronomical Association (the UK national amateur astronomical society) on 23 February 1911

after attending a series of astronomical lectures given in Stowmarket by Joseph Alfred Hardcastle (1868-1917). From 1913 to around 1920 Alice had a telescope loaned to her by the BAA, it was a 5" (125mm) aperture, 7' 10" (2.4m) long refractor. A purpose built observatory was erected to house it in the garden to the back of 'The Rookery'. In later years, without a big telescope, she concentrated on observing shooting stars (meteors).

On 14 January 1916 the Royal Astronomical Society (the UK national professional astronomical society) admitted women for the first time, and Cook was one of a group of five.

From 1916 to 1919 Cook and Fiammetta Wilson (who was born in Lowestoft in 1864 and died in North London in 1920) jointly directed the BAA Meteor Section. From 1921 to 1923 Cook was in sole charge.

Grace Cook became sufficiently famous in astronomy that in 1920 she was awarded \$500US by the Harvard College Observatory in America to help her work.

After her father's death in 1917 and with through the Great Depression of the 1930's Alice appears to have struggled financially and didn't do much astronomy. Although she was still writing letters to other astronomers and encouraged the founding of the Ipswich & District Astronomical Society in 1950.

Francis Edward Cook married in 1903 and had five children. Herbert Rider Cook married in 1916, but is not known to have had any children. Neither Sarah Mabel nor Alice married. Alice died in Ipswich on 27 May 1958.



Alice Grace Cook in her observatory



‘The Rookery’. This property still stands and is now known as 15 Tavern Street.

Notes from the Library.

Accurate distance measurements to metal poor globular clusters using the Hubble Space Telescope.



Picture credit: NASA, ESA, and T. Brown and S. Casertano (STScI) ;

Acknowledgement: NASA, ESA, and J. Anderson (STScI)

The distance to Stellar populations at all redshifts are calculated by many different and in some cases inaccurate methods. Here are several methods: the 'standard candle' assumption, type 1a supernova and galaxy luminosity versus rotational velocity (Tully-Fisher), which for galaxies a great distances away breaks down, as we can only see brighter galaxies. When type 1a supernova explode, they all have a different peak luminosity making the assumption that they are a standard candle difficult to portray. Accuracy of about 8-10%. In the Tully -Fisher theory, when comparing orbital velocities to luminosities there is a lot of scatter, meaning that the relationship is quite weak, with an uncertainty of about 20%.

Cepheids as extragalactic distance indicators have been around for some time and can be described as high velocity radially- pulsating variable stars. Their spectral ranges are from 'F' to 'K', and they have a brightness at visual wavelengths that make them ideal for distance indicators. They are characterised by having a swift rise to maximum light followed by a much slower linear decline to minimum. Being able to obtain multiwavelength data has made it easier to correct for interstellar reddening. Also independent checks on the Cepheid distances within the local group have been checked using RR Lyrae stars, with an rms agreement of +/- 10 %.

Precision was the main problem to accurately measure the distances to some of the oldest stars in the universe; galaxy clusters. The above astronomical ideas combine an attempt at accuracy with uncertainty, at about the 10 - 20 %.

On March 20, 2018 a paper from a group of scientists headed by T.M.Brown at the Space Telescope Science Institute, Baltimore was published indicating that a "High-precision Trigonometric Parallax to an Ancient Metal-poor Galactic Cluster" (NGC 6397) had been obtained. The new distance of this cluster is now considered to be 7,800 light years away with only a 3% error margin. This was performed using the Wide Field Camera 3 (WFC3) on the Hubble Space Telescope, which permits the sensitive infrared detector to detect bright

objectives. During the spatial scanning exposure it does not point directly at the target, but scans across the main direction line allowing for a much greater collection of photons whilst increasing the signal to noise ratio without the possibility of saturation. Although this technique has been performed previously measuring open clusters, this is the first time using the above metal poor population. These are generally used in stellar population studies. This very precise measurement was obtained using the spatial-scanning mode of the WFC3, which obtained many hundreds of astrometric measurements for many stars in the cluster. A parallax precision of $\sim 20 - 100 \mu\text{as}$ per star was obtained. Using a technique first used by Riess et al (2014) and Casertano et al (2018) to use the HST to scan and measure the parallaxes, and therefore measure distances to Cepheid variables. This spatial scanning on HST/WFC3 gauged the parallax of 40 NGC 6397 cluster stars. Each measurement taken 6 monthly for 2 years. Combining these results produced a greater precision for distance measurements. On 28 April 2018 the European Space Agency Gaia space observatory released data from research spanning a period of 22 months of data collection including 1.3×10^9 sources of parallax, allowing the distances of stars to be measured with great accuracy. If this data is combined with the Hubble research into NGC 6397, an accuracy of nearly 1% may be obtainable.

References:

<http://iopscience.iop.org/article/10.3847/0004-637X/832/2/202/pdf>

<http://ned.ipac.caltech.edu/level5/Cepheids/Cepheids2.html>

<https://cosmos.esa.int/web/gaia/dr2>

OASI Summer Barbecue at Newbourne

**Saturday July 14th 2018 at
Newbourne Village Hall**

From 1pm until late

**Solar Observing (if the Sun is
shining!)**

**Bring your own food to
barbecue and drinks**

**In the case of bad weather
bring picnic food to eat in the
hall**

Barbecue lighting up time: 3pm

Open to all OASI members and their friends and family

Venue location: Mill Road, Newbourne, Suffolk, IP12 4NP

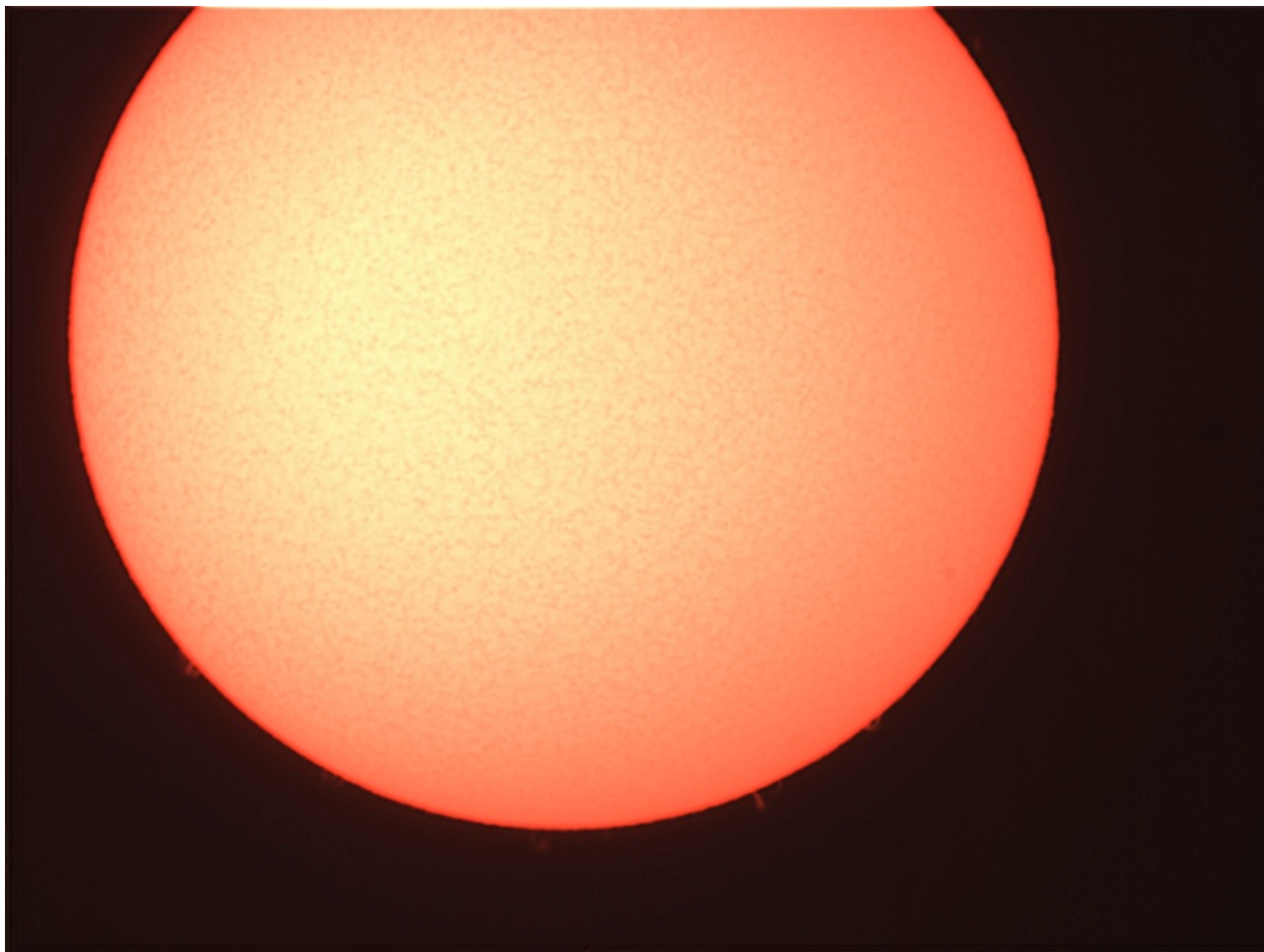


Astrophotography

Sun pictures 1

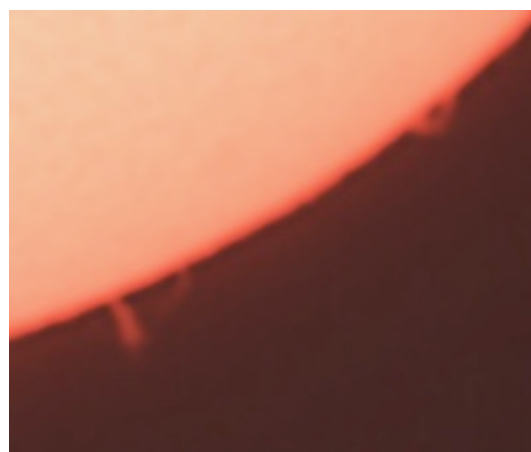
Andy Gibbs

Just got round to processing a few Sun images taken during the mini-heatwave in April.



The disc of the Sun was pretty featureless, but a few small prominences were visible around the bottom edge.

Equipment used; QHY 5 II L camera, Coronado PST Hydrogen Alpha on a Skywatcher Star Adventurer mount.



Sun pictures 2

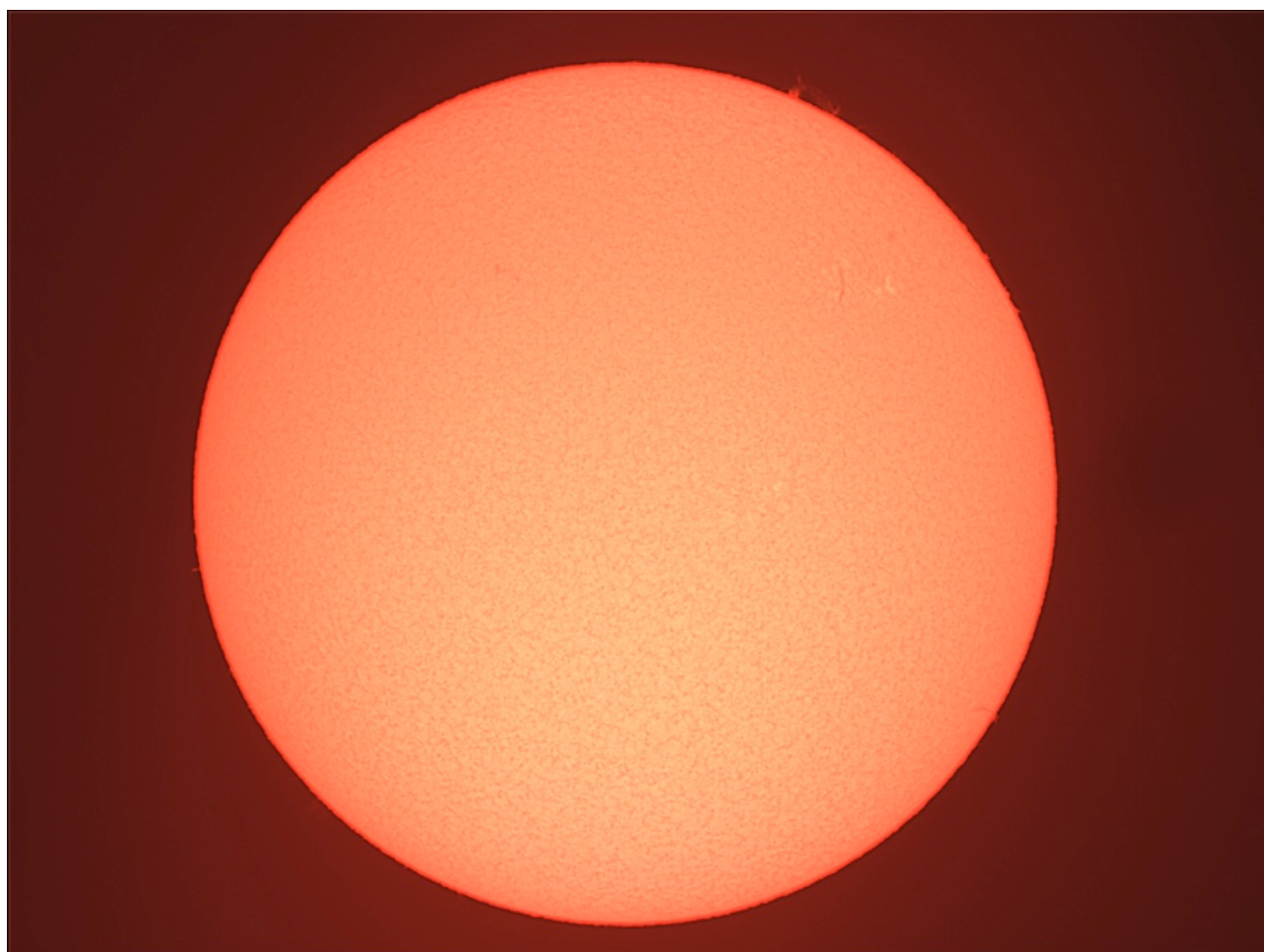
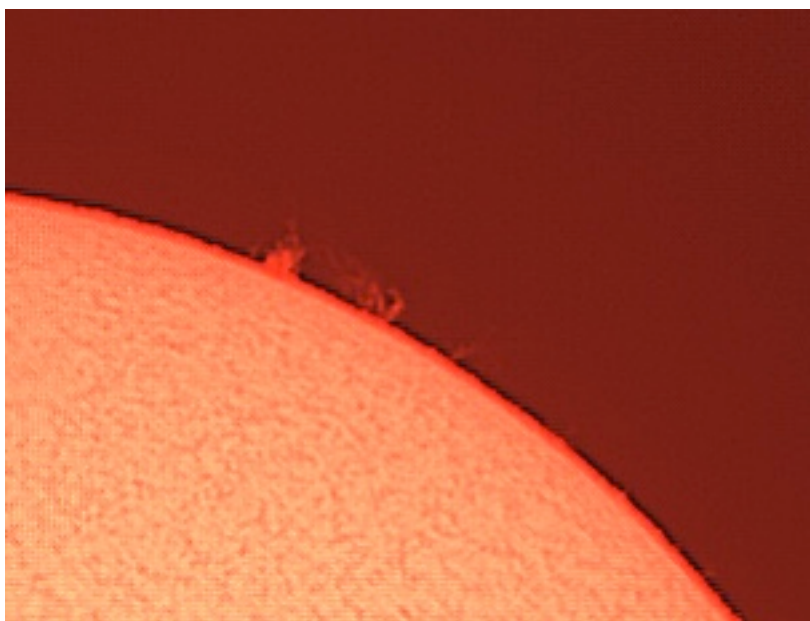
Martin Cook

Two photos of the Sun taken on the 7/5/2018 14:00h.

Lunt LS50THa B600PT H-alpha Solar Telescope and a QHY5L-II Colour camera.

You can see a flare at 1 o'clock on the full disk image.

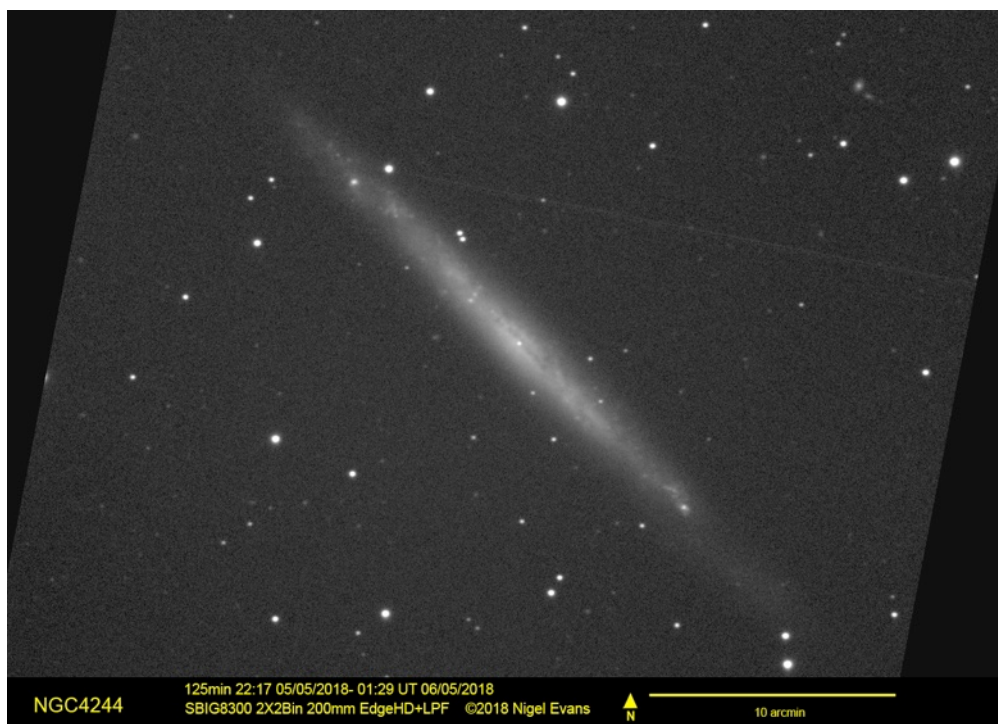
The enlarged photo shows the finer detail of the flare.



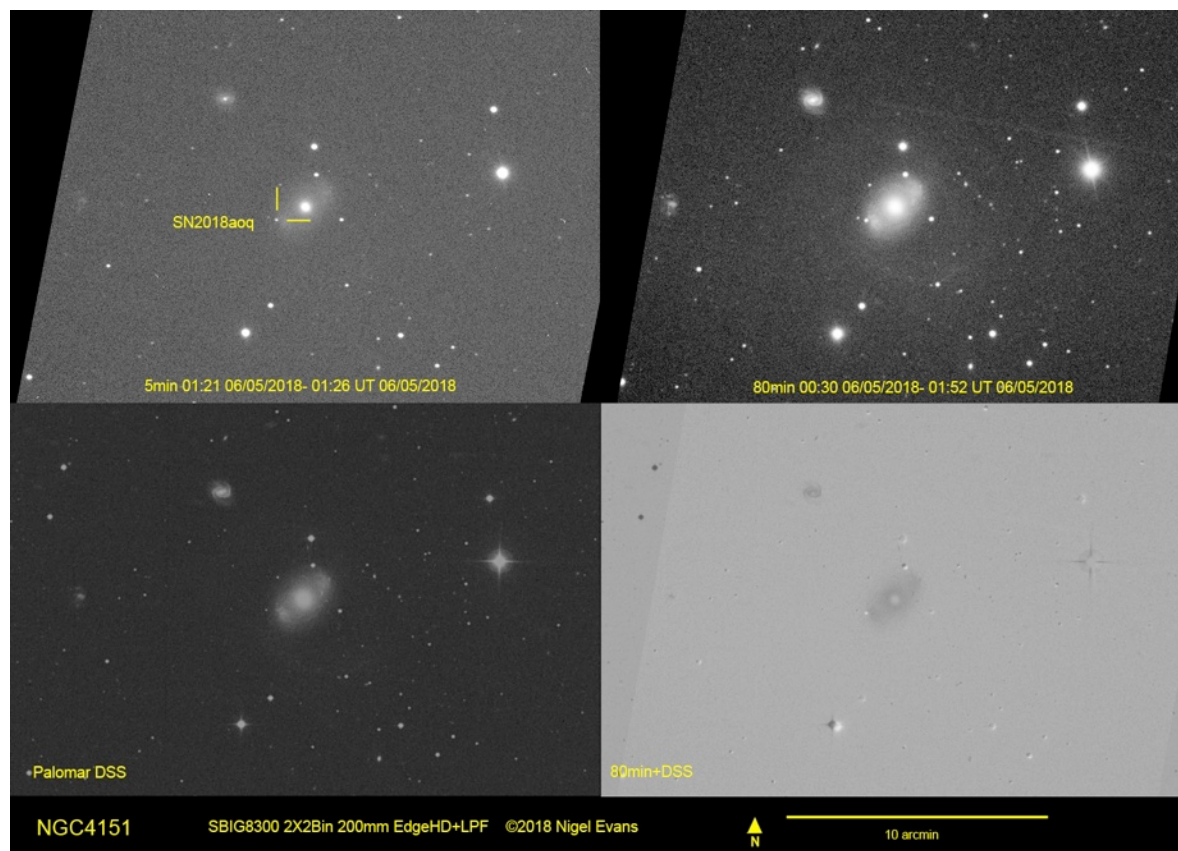
Galaxies

Nigel Evans

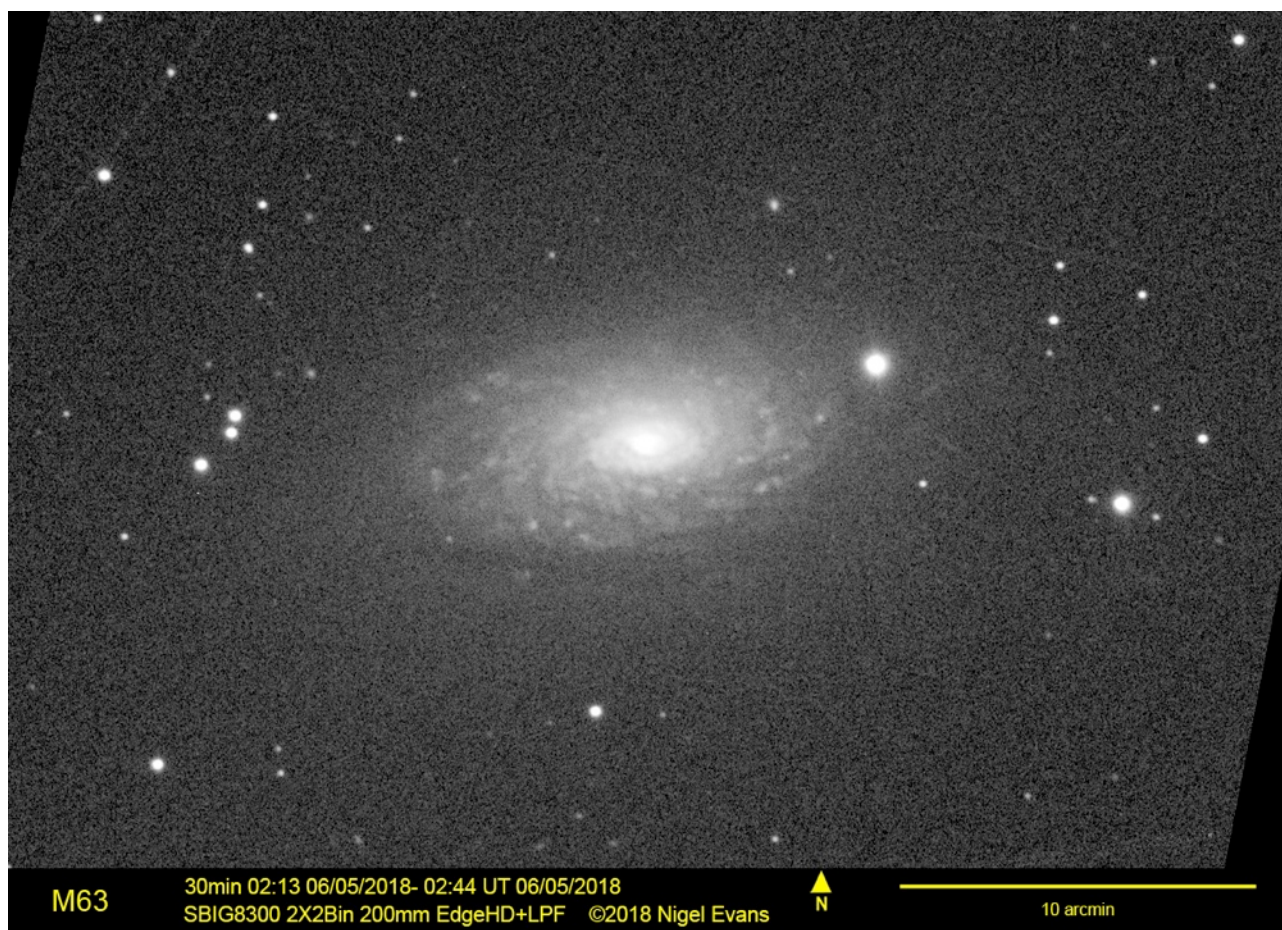
The clear nights have flushed me out, even though the gap between the start and end of astronomical is getting shorter and shorter



NGC4244 - another edge-on galaxy



NGC4151 - rather dull if it wasn't for the supernova 2018aoq in it, currently around Mag 14.5

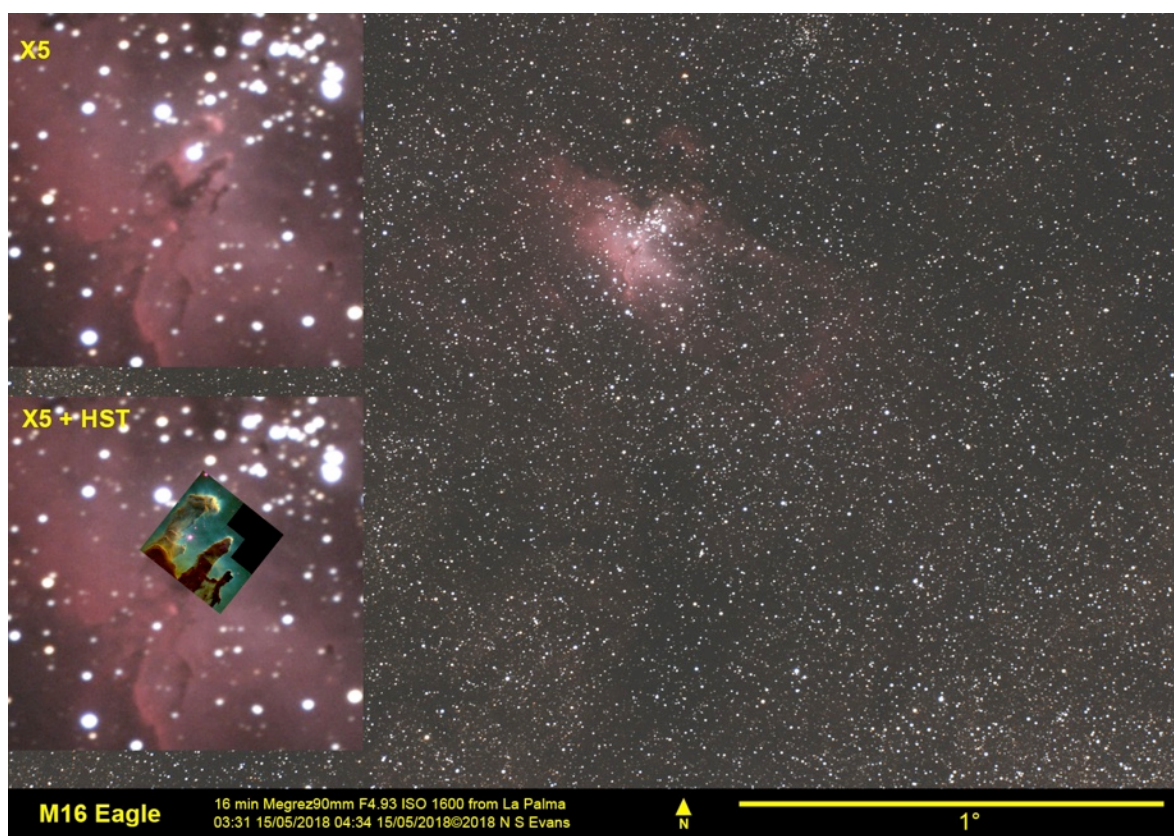


M63 - aka the Sunflower galaxy

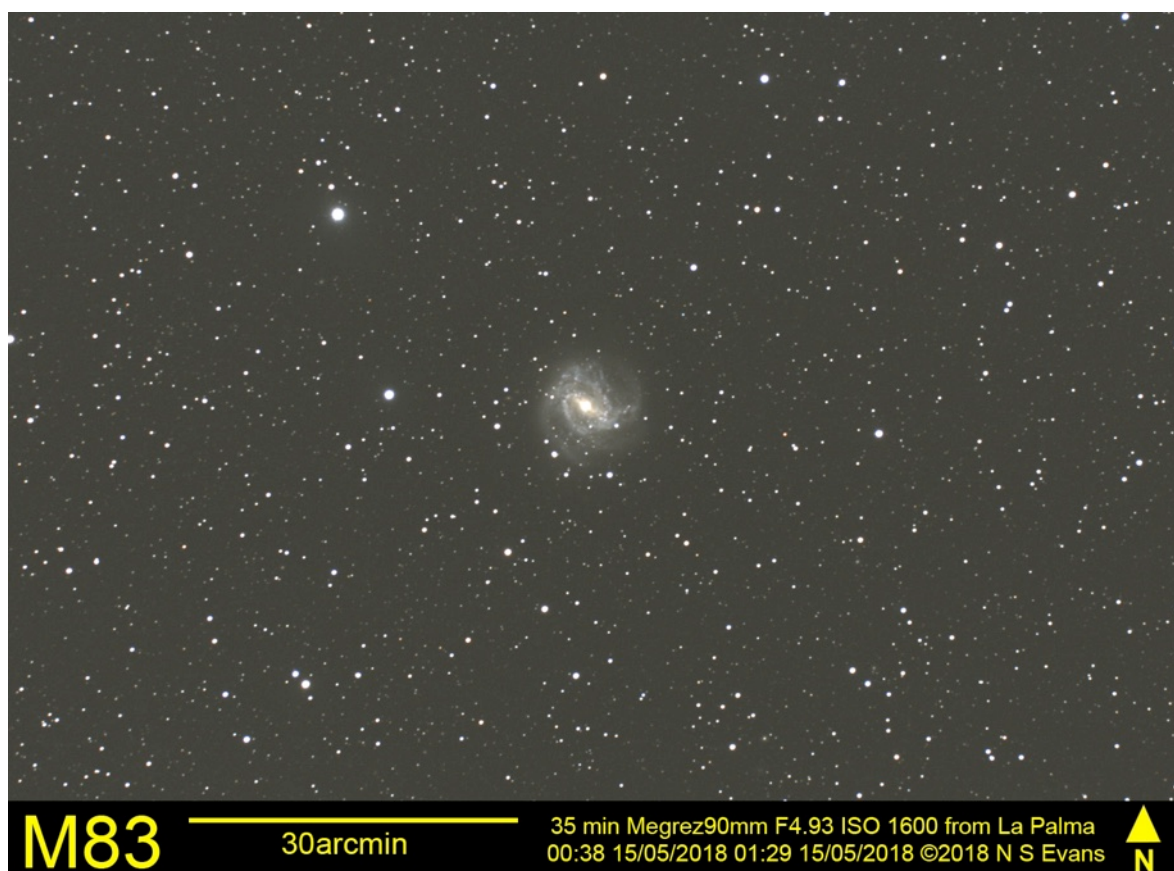
The Night Sky in La Palma

Nigel Evans

I recently got a pass for several nights to go to La Palma in the Canaries. The key attractions are the dark skies as well as being only 29degrees North. This has the advantage of seeing some hard-to-see objects more clearly than from the UK as well as some that are not visible at all from the UK. I took a Megrez 90mm scope on top of an Astrotrac, working at an effective focal length of 450mm. It worked quite well but any wind turned it into a jelly, wobbling all over the place, so the number of things I saw was fairly small.



M16 - the Eagle Nebula. Well you definitely get a better view if your telescope is bigger and in orbit!



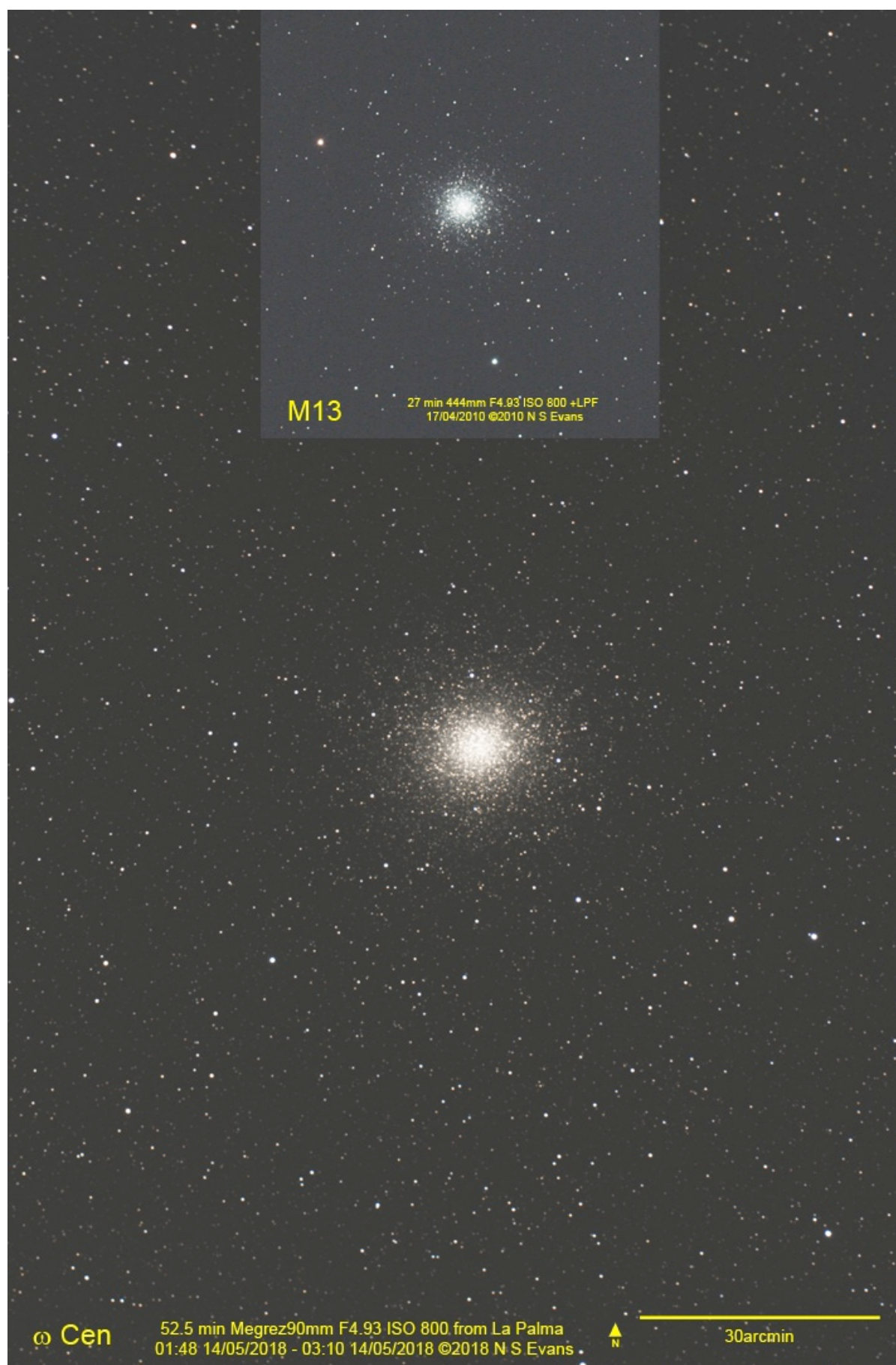
M83 - the Southern Pinwheel. It rises to only about 8 degrees from the UK.
I doubt if many folk have even made the effort to look for it.



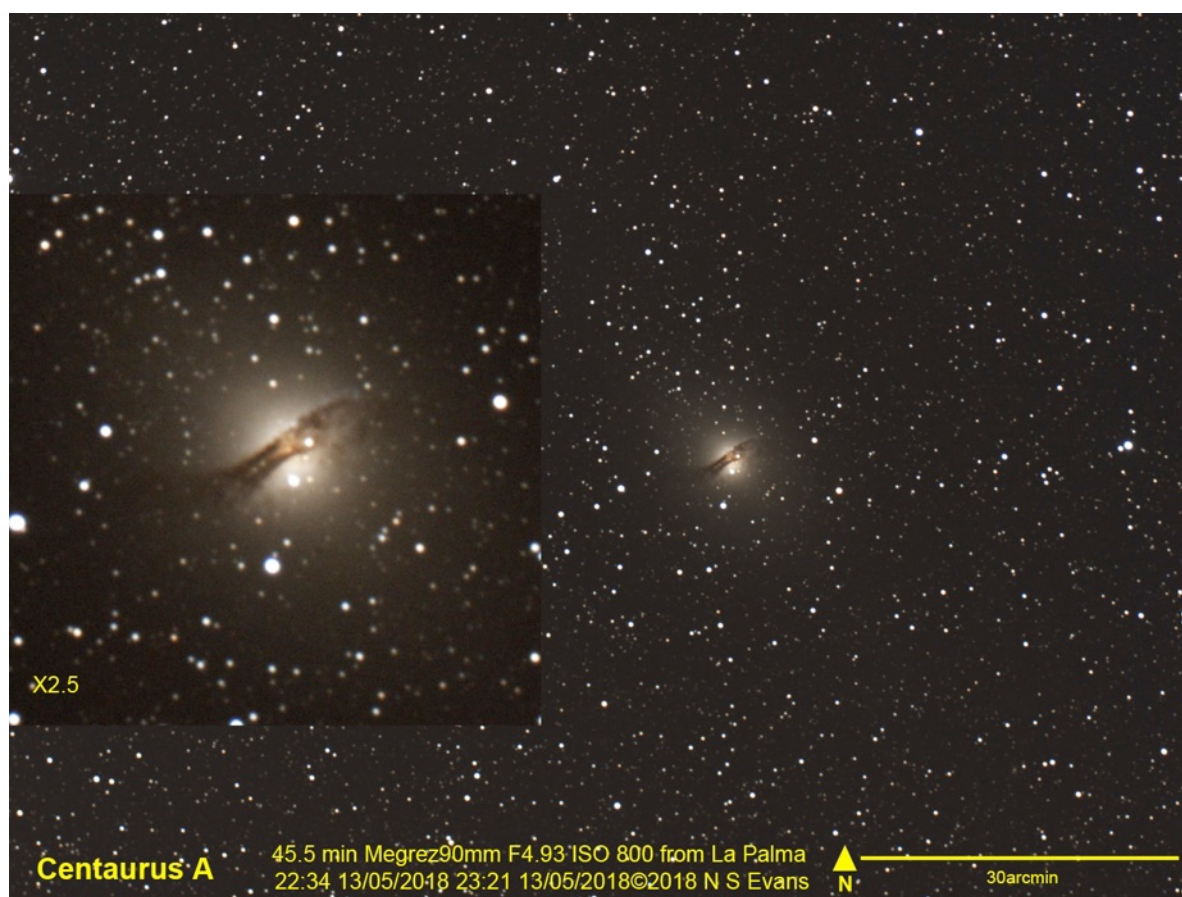
M8/M20 Lagoon and Trifid nebulas. What can I say?



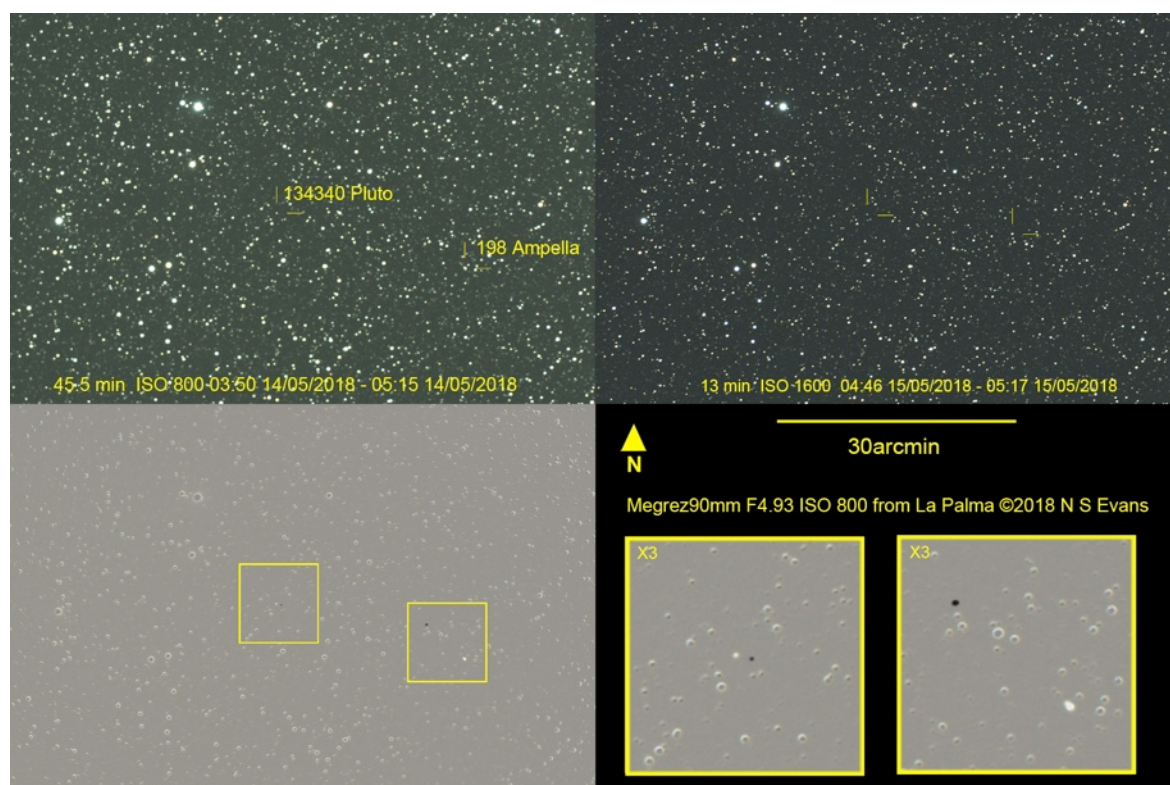
rho Ophiuchi cloud complex. Not something I would try to image from town at an altitude of 14°



**Omega Centauri - the globular cluster with the largest apparent and absolute size.
Not visible from the UK. M13 shown for comparison**



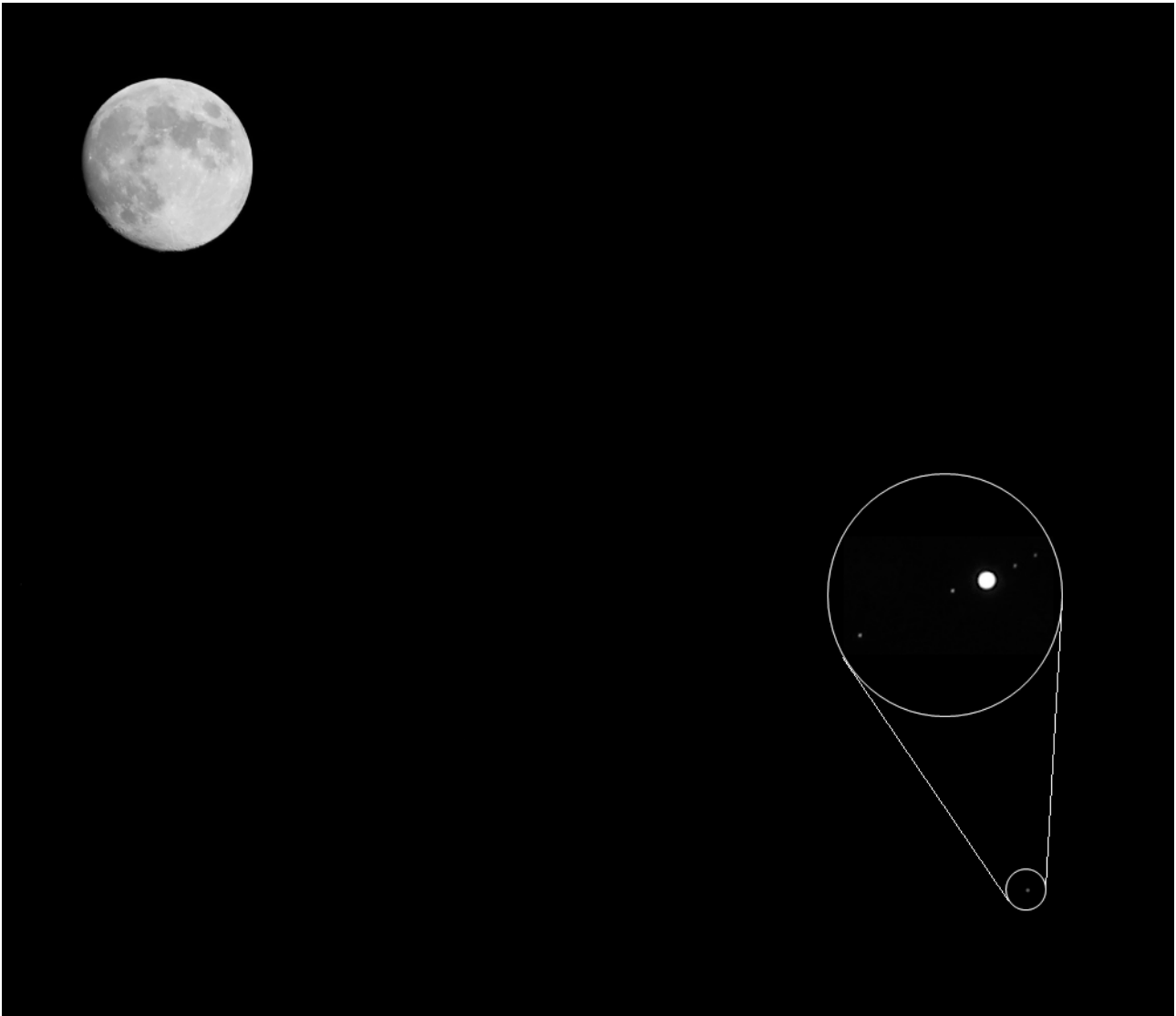
Centaurus A. Well known as a radio galaxy with a rather impressive dust lane.
Not visible from the UK



Pluto - I know you can see Pluto from the UK, but it is easier from La Palma. A main belt asteroid 198 Ampella was caught in the same field of view and shows much faster movement as it was only 1.6AU away, compared to Pluto's 33AU.

The Moon and Jupiter

James Appleton



At 21:50 UT on 27 May 2018. Approximately three hours earlier, the bodies had been in conjunction, at an apparent distance of $3^{\circ} 57'$. Canon 6D with 300 mm lens, 800 ISO. Main image: 1/1000 s. Inset: 1/10 s. The Galileans left to right are: Callisto, Ganymede, Io and Europa.

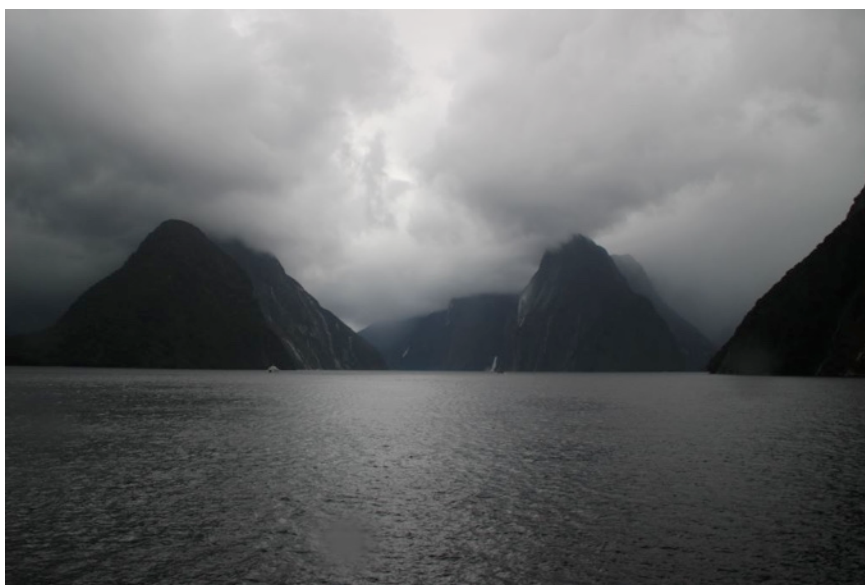
A Southern hemisphere experience

Neil J Short, 28th May 2018

Warning: Serious astro-photographers should consider carefully before reading on. A definite lack of professional astro-photographic competence and practice to follow!

After some 40 years in the aerospace industry, I finally confirmed that my savings and pension pots had achieved target aims and retirement was achieved last autumn. One of my earliest actions, following a lifetime of anticipation, was to book a holiday to New Zealand. Now to start with I must confirm that my primary visit interest lay with the landscape and wildlife. Any thoughts on astro-photography lay perhaps with a shot of the night sky as a memory picture of my visit; certainly no serious photography assets were included in my travel bag.

It's the autumn in New Zealand and, particularly in the west of South Island, dry and clear sky days are rare. Indeed on our visit, as exemplified by our day on Milford Sound, cloud was the norm (right). On a visit to Lake Tekapo there was the potential to visit an Observatory above the town. However, gale force winds removed all possibility of travelling up the mountain. Te Anau came and went with part cloudy skies (and a good number of bright lights around our hotel). Note – I



could have driven out of town - if only the beer was not so good! Wanaka arrived and our first real clear night. My Canon 100D with attached Tamron 18-200mm lens was set to an ISO of 6400

and the night sky awaited. The one clear memory of that night was my first view of the Magellanic Clouds (left). My technique was simple – find a flat surface, find something to prop up the camera at the right angle then open the shutter for a few seconds. The Magellanic Cloud photo was gained from an 8sec exposure. I struggled to hold the camera in a stable position for longer.



I also struggled to accurately focus the camera (no easy long range focus target) so I defaulted to infinity focus.

I was happy enough with my photos from Wanaka and thought little more of the night sky as we moved to New Zealand's North Island. A brief visit to the Carter Observatory above Wellington was made (perhaps a future possible Newsletter input) before a move on to Taupo.

Unfortunately, a clear night was balanced by a high degree of light pollution – an orange sky mitigated against any interest in looking for further photographs.



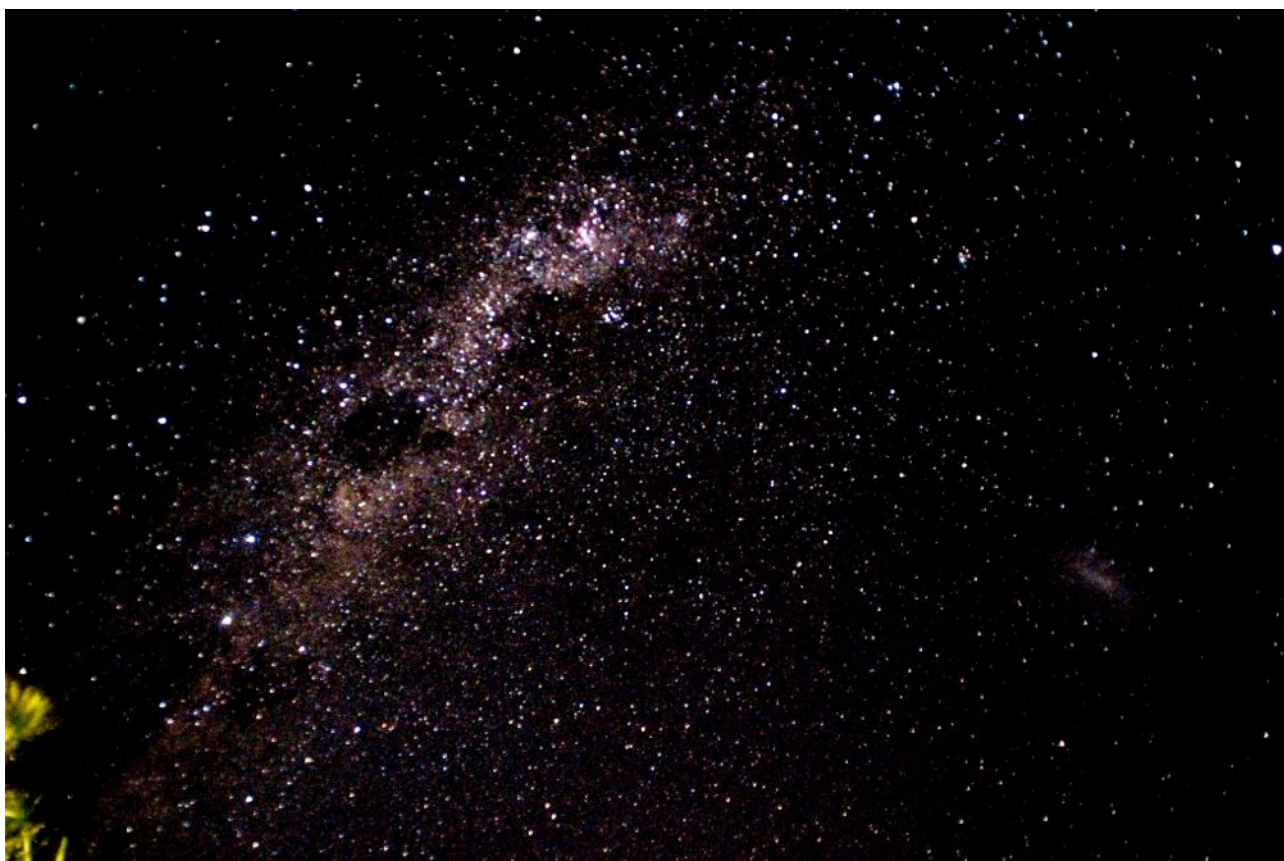
Tairua, North Island - Coalsack, Crux and Centaurus/Carina region with Large Magellanic Cloud (As from camera)

Finally it was on to the coast at Tairua on the Coromandel Peninsula for our last couple of nights in New Zealand. At last a (very) dark sky and, to the south, a clear view to the Milky Way. Following the skilled photographic process as above but with greater concentration and positioning skills I achieved a full 30sec exposure time.

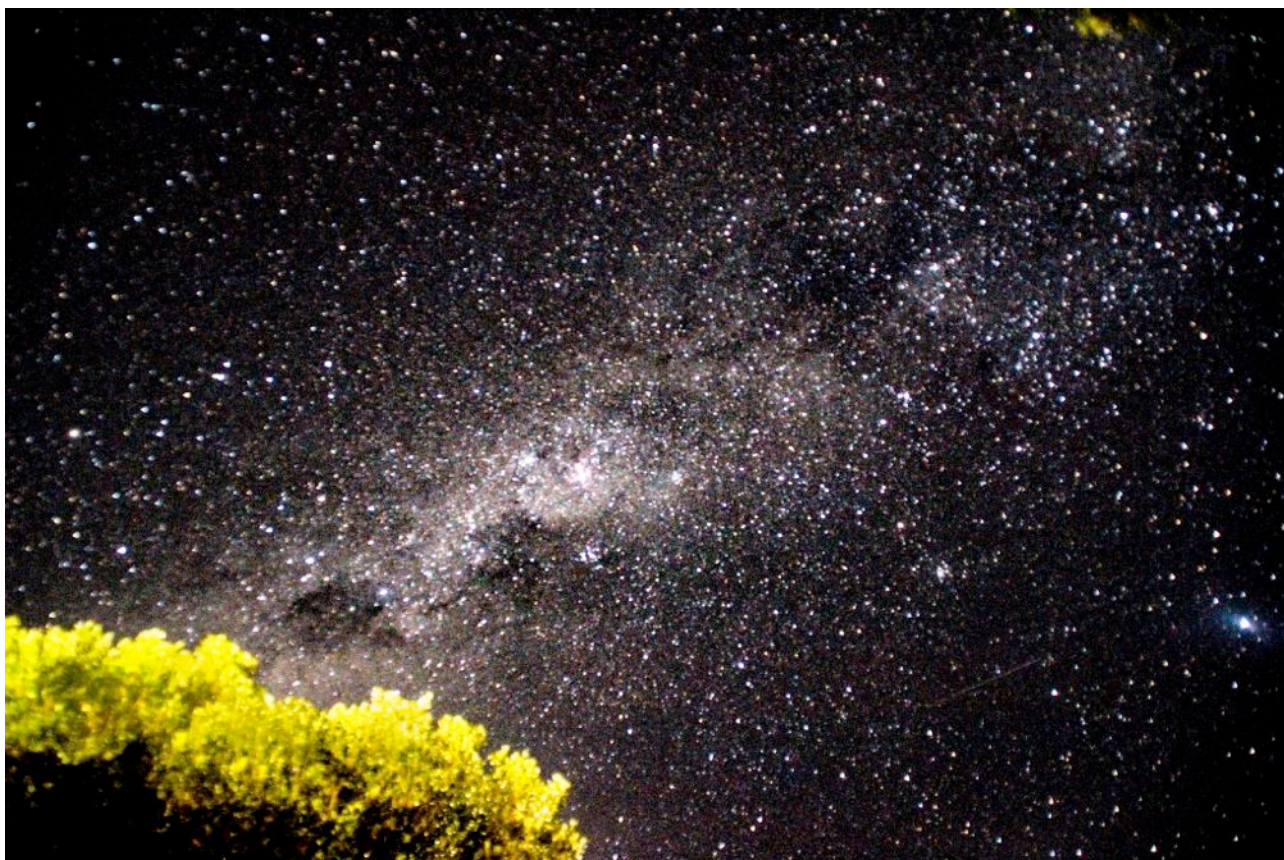
I have to say I was impressed with the photographs achieved. The example above shows the area of the Coalsack and Southern Cross (Crux) and includes a further shot of the Large Magellanic Cloud. After taking several views across the sky, including the upside down Orion constellation, I took one final shot with the lens "zoomed" to what I later found to be 135mm. I had no specific view in mind – it was a point and click.

On returning home, greater analysis of my achieved photos was made. As stated above, I was, in general, very happy with my results; after all, my primary aim was merely to obtain a memory jog. However, conversation with my good friend identified the potential to tease more out of the photographs with a little use of good old "Photoshop". This "teasing" produced the remaining photos within the Newsletter through (I am informed) use of the Camera Raw Filter facility, Histogram extension and increased clarity functions.

A final issue – the fate of my one-off final shot. Well, to my absolute astonishment, I found that I had taken an almost perfectly framed picture of the Carina Nebula (NGC 3372) and the "nearby" sparse open cluster (NGC 3114) – absolute luck only.



Enhanced (Photoshop) version of Page 29 above (different picture but of same sky area)



Tairua, Enhanced Coalsack region west – through Carina to Vela; Canopus at bottom right



Tairua, Enhanced NGC 3372 (left – Carina Nebula) and NGC 3114 (Right – Sparse Open Cluster)



Orion (Lower right) with Sirius and Canis Major at centre

Not a bad set of pictures after all!

Camera settings for the above photos:
1) ISO 6400 (All), 2) Exposure time of 30sec unless stated, 3) F/3.5 at 18mm except Carina Nebula at F/6.3 at 135mm [My thanks to Peter Marriott for the Photoshop work]

Chairman's Challenge

Paul Whiting FRAS

How about getting out of that armchair and doing some real astronomy?

Here are some observational tasks that are part of the Astronomy GCSE syllabus. Why not pick one or two and have a go over the next few months? Get the family involved. We will then have a feedback session at Newbourne when you can present your findings, possibly at the annual barbecue.

Some of the tasks may take a bit of research and thought, but they are fairly straight forward. If you get stuck there are enough people around to ask. Sadly I'm not in a position to award a GCSE, but hopefully we should all have some fun and maybe even learn something!

Here are the tasks:

1 easy: Estimating levels of light pollution

Use estimates of the magnitude of the faintest stars visible with the naked eye to conduct a survey of the astronomical effects of light pollution in an area.

1 advanced: Measuring levels of light pollution

Use estimates of the magnitude of the faintest stars visible on photographs to conduct a more detailed survey of the astronomical effects of light pollution in an area.

2 easy: Estimate the solar rotation period using drawings of sunspots

Use a series of drawings from pin hole projections to estimate the length of the Sun's average rotation period.

2 advanced: Determine the solar rotation period using photographs of sunspots

Use a series of photographs or drawings from telescopic projections of sunspots to estimate the length of the Sun's average rotation period.

3: Finding longitude using a shadow stick

Use measurements of shadow length around local noon to estimate the observer's longitude.

4: Demonstrate the range of objects in the Messier Catalogue

Use detailed drawings or photographs of objects from the Messier Catalogue to demonstrate the range of different objects it contains.

5: Calculation of the length of the sidereal day

Use long-exposure photographs of the area around the celestial pole to produce an accurate measurement of the length of the Earth's sidereal period.

Of course you could come up with your own ideas. Only one rule – enjoy yourselves!

Paul

Bring your results to the Summer BBQ!