



OASI News

The newsletter of the Orwell Astronomical Society



NGC 2237, The Rosette Nebula

Photo by Andy Gibbs

Trustees:

Mr Roy Adams

Mr Neil Morley

Mr David Payne

Honorary President:

Dr Allan Chapman D.Phil MA FRAS

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Society Notices

Advice regarding Coronavirus COVID-19

Dear Members,

Following the 16 March Press Conference from the Prime Minister and leading Scientists from Public Health England, it is clear that the number of Coronavirus cases in the UK is accelerating rapidly.

One of the key points was to “Avoid any non-essential social contact”. The time has come to protect the health of our members and their families, therefore, I regret that we will be suspending all OASI activities until further notice. This includes our meetings at Orwell Park and Newbourne, plus all outreach events.

I will send an email to all members when the Committee decides it is safe to resume our activities, hopefully, in the not-to-distant future.

Let’s all keep in touch during the OASI “lockdown”, one bonus of being forced to stay at home means more time for star gazing and astrophotography!

Thank you,

Andy Gibbs, Chairman

Society Contact details

Observatory (meeting nights only)

07960 083714

Email queries: info@oasi.org.uk

Facebook: Orwell Astronomical

Twitter: @OASIpswich

<https://groups.io/g/OASI>

Members-only message board

Other contact details will be issued to members on a separate printed list.

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

Access into the School Grounds and Observatory Tower

The Observatory is closed.

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 2020

Chairman	Andy Gibbs	Set overall agenda for OASI, Chair committee meetings, Press and publicity,
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, Outreach activities.
Committee	James Appleton	Committee meeting minutes, Web site
	Martin Cook	Membership, Tomline refractor maintenance & user testing
	Matt Leeks	Safety & security
	Peter Richards	Lecture meetings, Email distribution lists
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Andy Wilshire	Librarian
	Avtar Nagra	OASI @ Newbourne

Assistants

Martin Richmond-Hardy Newsletter, OASI @ Newbourne

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.

Committee Meeting

This may be held on **Friday 22 May**, 8pm by Skype. Join the **OASImembers** Skype group to attend.

Welcome new & returning members

Alan Theobald

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 (bottom right of the calendar) or use this address to access this calendar from other calendar applications.



<https://calendar.google.com/calendar/ical/1jhs9db71ncki4sojo7092vfvc%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

Key:

OASI public events

BAA & SPA events

Other events

Date, Time & Location	Contact	Event
Weekly, every Wednesday, 20:15–22:00 Orwell Park Observatory	Martin Cook, Roy Gooding	OBSERVATORY CLOSED Possibly meet via Skype.
Mon 13 Apr from 19:30	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne meet via Skype. Note change of time
Tue 14 Apr 20:15	Paul Whiting, FRAS tour@oasi.org.uk	Observatory tour CANCELLED.
25th & 26th April		Kelling Heath Spring Star Party CANCELLED
Mon 27 Apr from 19:30	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne meet via Skype. Note change of time.
Mon 4 May from 19:30	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne meet via Skype.
Fri 22 May 2020, 20:00	Andy Gibbs chairman@oasi.org.uk	Depends on COVID-19 situation. Possibly meet via Skype.
Mon 25 May from 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. Depends on COVID-19 situation Talk by Bill Barton on the night sky.
Mon 8 June from 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. Depends on COVID-19 situation

Date, Time & Location	Contact	Event
Sunday 14 June 09:30 – 16:00 Kirton Recreation Ground, Back Rd, Kirton IP10 0PW	Martin Richmond-Hardy newbourne@oasi.org.uk	East Suffolk Wireless Revival Depends on COVID-19 situation Public access event (small admission charge). Solar observing.
Mon 22 June from 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. Depends on COVID-19 situation Talk by Bill Barton on the night sky.
Saturday 27 June	Pete Richards lectures@oasi.org.uk	Summer BBQ, open to members of OASI and their guests. Barbecue lighting time: 3.00pm. Bring your own drinks and food to barbecue; in case of bad weather, bring picnic food to eat in the hall. Solar observing (if the sky is clear!)

Please note that the listed events may change depending on the progress of the pandemic.

Meeting via Skype

Martin RH

I've set up an OASImembers group on Skype. To join, please first contact **Martin Cook** with your Skype name.

Seven of us had our first video meeting on Monday 23 March.



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). **BUT In view of the COVID-19 situation all meetings at Newbourne are suspended. If OASI members would like to meet up via Skype on those evenings, please first contact Martin Cook with your Skype name to receive an invitation. Members only, please.**

OASI@Newbourne Meetings

13 April

27 April (S+B)

4 May[*]

25 May (B/H) (S+B)

Subsequent meetings will be assessed in line with the current Government Guidelines in place at the time. Thank you for your understanding.

8 Jun

22 Jun (S+B)

July 13 (W)

July 27 (S+B)

Aug 10

Aug 24 (S+B)

Sept 14

Sept 28 (S+B)

Oct 12

Oct 26 (S+B)

Nov 9

Nov 23 (S+B)

Dec 14

Dec 28 (S+B)

We open up for all meetings at 7pm. Star Guide (S) at 7:30pm and Workshops (W) at 7:45pm.

* 1st Monday due to Parish Council meeting on 2nd Monday

Stargazer's Guide

On the last meeting each month Bill Barton FRAS will give a short presentation of what can be viewed in the following 4 weeks plus a reminder of OASI events. During the COVID-19 isolation period these will be available on our website and in OASI News. See page 15 of this issue.

Astronomy Workshops/Informal talks

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.

- Paul Whiting: *Wartime Astronomy*, date 13 July TBC.

Paul Whiting, Bill Barton and James Appleton have offered to lead workshops as follows:

- Paul Whiting: *Galaxy Collisions*, date TBA.
- Bill Barton: *Celestial Coordinates*, date TBA. New members at Newbourne have requested this workshop; Bill is willing to lead it but will defer if anyone else would rather do so.
- James Appleton: *Update on OASI All-Sky Meteor Cameras*, date TBA.

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

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 Augustine's Church Hall
Bucklesham Road
Ipswich IP3 8TH.

The start time for all talks will be 8pm and, as usual, the talks will be held on Friday evenings.

Friday 25th September

Nik Szymanek

"Adventures in Deep Sky Astrophotography"

Friday 23rd October

Sonali Shukla

"Brown dwarfs: Linking stars and planets"

Stars and planets are fundamentally different astronomical objects yet the formation processes for each of these types of objects are heavily intertwined. Brown dwarfs straddle the realm of both stars and planets, exhibiting characteristics of both but not fully fitting into either category. I will explore the history, discovery and latest results from our study of brown dwarfs and relate them to our lowest mass dwarf stars and biggest known planets. Understanding brown dwarfs can lead us to better understand how stars and planets form in tandem, both in our solar system and beyond.

Friday 20th November

Matt Bothwell:

"Big bangs to big rips: a history of 20th century cosmology"



OASI Outreach

Kirton Star Party

OASI – Orwell Astronomical Society (Ipswich) – held a Star Party on Kirton Recreation Ground on **29 February** from 7:30pm.

It was a clear but cold night. Paul Whiting ran two astrotalk sessions and we had a selection of telescopes outside, manned by Olaf Kirchner, Ian Hastie, Pete & Nicky Richards, Andy Gibbs, Mike O'Mahoney and Martin RH. There were a number of positive comments on the village Facebook page. Thanks to all who helped.

Other local astronomy society meetings

Athaneum Astro Society

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>

LYRA Lowestoft & Yarmouth Regional Astronomers

www.lyra-astro.co.uk

No information for 2020.

DASH Astro

Darsham And Surrounding Hamlets <http://dash-astro.co.uk>

Meetings are held at New Darsham Village Hall and 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 from 7:30 pm. on Sundays

Due to the Corona Virus, and on UK government Advice we have cancelled the meeting on 5th April . Subsequent meetings will be assessed in line with the current Government Guidelines in place at the time. Thank you for your understanding at this time. Stay Safe.

Note * Guest Speaker Evenings - Admission Fees:- Members Free, Non Members £ 2:00

Meetings are now on Sundays.

- | | |
|----------------|---|
| 26 April | Dash Observing Session (Sunset 20:11 Moonset 23:57 11.3% Moon) Late one? |
| 10 May* | Meeting:- AGM plus talk by Amy Rankine from I of A, Active Galactic Nuclei |
| 24 May | Solar Observing - Location TBA |
| 14 June | Outreach:- International SUNDAY - Location Dunwich Heath |
| 25- July | (Saturday) DASH Summer Social (Members and Guests only) |
| 06 Sept | Meeting:- Ian Lomas - Quantum Mechanics for Beginners |
| 13 Sept | Dash Observing Session (Sunset 19:14 Moonset 17:46 21.5% Moon) |
| 19&20 Sept | Outreach:- Henham Steam Rally. Solar Observing and Displays |
| 04 Oct* | Meeting:- Stewart Moore – Globular Clusters |
| 18 Oct | Dash Observing Session (Sunset 17:50 Moonset 18:57 4.7% Moon) |
| 01 Nov | Meeting:- Talk T.B.C. |
| 15 Nov | Dash Observing Session (Sunset 15:59 Moonset 16.21 0.2% Moon) |
| 29 Nov | Meeting:- Talk T.B.C. |
| 12- Dec | (Saturday) DASH Christmas Social (Members and Guests only) |

BAA news

Starting out in Astronomy

Calling all beginners, young and old! The BAA has a long history of supporting not just the experienced observer but also those starting out in this subject. Long-time member (joined in 1972) and seriously experienced observer, David Basey draws our attention to the collected tutorials available on the [BAA website](#) covering areas such as, 'The Sky Above', 'Naked Eye Observing', 'Choosing and Using a telescope', 'Finding Objects in the Sky', 'Telescopic Observing', and finally 'Astronomical Photography'. These are written and contributed by many of our more experienced observers, who are kind enough to share their time and knowledge with those who were not born with their necks permanently craning upwards!

David Arditti's articles and advice on instruments will ensure no wasted investments, Paul Abel's course for Absolute Beginners is an easy to follow series that has appeared in the JBAA, and is now a published booklet. Various Section Directors have also contributed easy-to-follow essays on how to get into observing in their particular field - Noctilucent Clouds from Sandra Brantingham, Solar Observing from Lyn Smith and how to observe the Moon from Bill Leatherbarrow supported by James Dawson, who has also contributed an excellent piece on imaging star trails.

There is an [Observer's challenge. A fistful of red stars](#) posted by Callum Potter, Director Deep Sky Section, and which can be done naked-eye or with binos, so a really good opportunity for beginners to get started on something.

Historical Section

The Spring [Historical Section Newsletter](#) [only available to BAA members] has also just been circulated. Opening with an introduction to the new **Deputy Editor, Bill Barton**, the newsletter then informs us about the proposals and background story to a new statue in honour of Jeremiah Horrocks, considered by many as the father of English astronomy, back in the 17th century. There is also an interesting article by Mike Frost on the importance of the 1919 eclipse as presented by Arthur Eddington to the RAS that November.

BAA meetings in April–June

A decision has been made to cancel or postpone all the Association's meetings scheduled for March and April. This includes the Ordinary meeting, and the SGM, the Winchester weekend and the Spring Meeting in Nottingham. Moving into May the Venus and Mercury section meeting in York and the VSS meeting have been postponed, probably to a similar time next year, subject to venue availability.

- | | |
|---------------|--|
| Sun, May 3 | SPA 'Starting from Scratch' astrophotography workshop
Course postponed until further notice
Humfrey Rooms, Castilian Terrace, Northampton NN1 1LD
This SPA workshop covers all aspects of astrophotography at a beginner's level.

The SPA Council are currently considering their programme in the light of the Covid-19 outbreak. Please check their website before setting out for any meeting. |
| Wed., May 27 | 17:00 BAA Meeting & George Alcock Memorial Lecture |
| Sat., June 20 | Advanced Planetary Imaging Workshop
Institute of Physics, 37 Caledonian road, London N1 9BU
A one-day workshop on high speed video imaging of the planets |

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

For Sale

FOR SALE on behalf of member's widow:

Meade DS-2114S 114mm reflector, drive, tripod and autostar controller.

2x Barlow, 6.4mm, 4mm, 9mm & 25mm eyepieces.

Unopened packet Baader solar filter film.

2 solar eclipse viewers.

£100 the lot.

Contact Paul Whiting

From the Interweb

Starlink

The Low Earth Orbit Satellite Population and Impacts of the SpaceX Starlink Constellation

<https://planet4589.org/space/papers/starlink20.pdf>

Black hole spotted

[Chandra Press Room :: Record-Breaking Explosion by Black Hole Spotted :: 27 February 2020](#)

The Night Sky in April 2020

Martin RH

All event times (**BST unless otherwise stated**) are for the location of Orwell Park Observatory 52.0096°N, 1.2305°E.



Moon

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

New Moon	1st Quarter	Full Moon	Last Quarter
23 April 03:26	01 April 10:21 30 April 21:38	08 April 03:35	14 April 23:56

Sun, Moon and planets

Source: <http://heavens-above.com/PlanetSummary.aspx> Times are BST (UTC+1).

Object	Date	Rise	Set	Mag.	Notes
Sun	1	06:29	19:30		
	30	05:27	20:19		
Moon	1	10:50	03:04		Perigee 07 April 19:09
	30	10:49	02:41		Apogee 20 April 20:01
Mercury	1	06:05	16:45	0.1	
	30	05:27	19:41	-1.5	
Venus	1	07:40	00:04	-4.3	1–3 April: Venus will pass “through” the Pleiades.
	30	06:40	00:18	-4.4	
Mars	1	04:25	12:30	0.8	
	30	03:22	12:29	0.4	
Jupiter	1	04:00	11:58	-2	
	30	02:13	10:17	-2.2	
Saturn	1	04:18	12:33	0.7	
	30	02:27	10:45	0.6	
Uranus	1	07:19	21:31	5.9	Superior Conjunction Apr-26
	30	05:28	19:46	5.9	
Neptune	1	06:03	17:07	8	
	30	04:11	15:18	7.9	

Occultations during April 2020

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
02 Apr	00:05:33	D	0.56+	-33	23	6.2	58 Gem
03 Apr	21:41:44	D	0.76+	-25	53	7.0	ZC 1377
04 Apr	01:39:18	D	0.77+	-28	22	7.2	ZC 1392
05 Apr	03:27:50	D	0.87+	-17	11	7.3	Hip 51133
27 Apr	22:09:47	D	0.20+	-20	13	7.5	Tyc 1864-1990-1
28 Apr	20:28:54	D	0.29+	-10	36	7.2	Hip 33757
29 Apr	23:11:27	D	0.40+	-23	19	6.8	7 Cnc

Meteor showers

Source: BAA Handbook 2020 p100-101

Shower	Normal limits	Maximum	ZHR at Max	Notes
April Lyrids	Apr 14–30	Apr 22	15	Normally rather moderate activity, but fine displays in 1803, 1922, 1982. Very favourable.
η-Aquarids	Apr 19 – May 28	May 6	40	Fine southern shower, poorly seen from the UK. Fast meteors, many with persistent trains. Good in 2013.

For radio observation, use reflections from Graves radar on 143.050MHz or the Brams transmitter in Belgium on 49.97MHz.

Astronomy on the radio

During virus isolation these slots will either be reports read by the host or via phone to the studio.

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>

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 (19 March) due to craft adjustments. Check the day before.

Date	Bright -ness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Apr	-3.5	19:56:56	10°	W	20:00:16	61°	SSW	20:03:35	10°	ESE
01 Apr	-1.8	21:34:08	10°	W	21:36:38	20°	SW	21:36:59	19°	SSW
02 Apr	-2.2	20:46:25	10°	W	20:49:18	27°	SSW	20:51:29	14°	SSE
04 Apr	-1.2	20:48:55	10°	WSW	20:50:42	14°	SW	20:52:29	10°	S
29 Apr	-1.2	04:13:07	10°	SSE	04:14:24	12°	SE	04:15:41	10°	ESE

Starlink passes

<https://heavens-above.com/AllPassesFromLaunch.aspx>

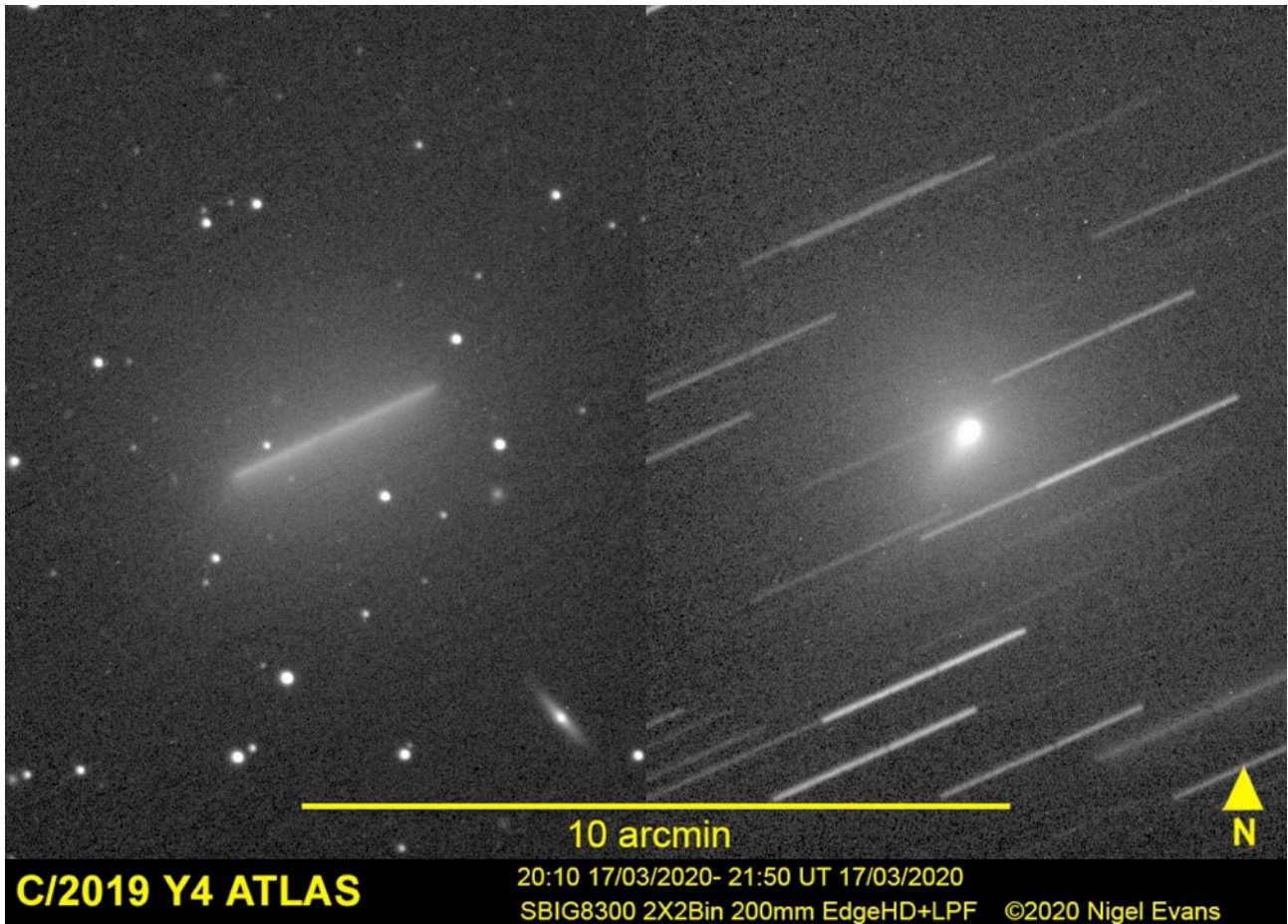
Comets with magnitude brighter than magnitude 10

Comet	Brightness	Angular separation from Sun	Altitude	Azimuth	Constellation
C/2017 T2 PANSTARRS	8.5	71°	76.1°	358° (N)	Cassiopeia
C/2019 Y4 ATLAS	9.0	106°	44.1°	32° (NNE)	Ursa Major
C/2019 Y1 ATLAS	9.5	36°	59.3°	254° (WSW)	Andromeda

Comets – 2019 Y4 ATLAS

Nigel Evans

2017 T2 Panstarrs has been high up in the evening skies for quite some time - and it is still there. But there is a new kid on the block - 2019 Y4 ATLAS in Ursa Major. It too is high up in the evening skies and is actually circumpolar -this evening it transits at 21:30 at an altitude of 75 degrees. It is not quite as bright as 2017 T2 - indeed it currently does rather look like another small fuzzy blob that moves. However it does have more promise, as mentioned in <https://britastro.org/node/20911> in that it 'may' turn into something more striking at the end of May.

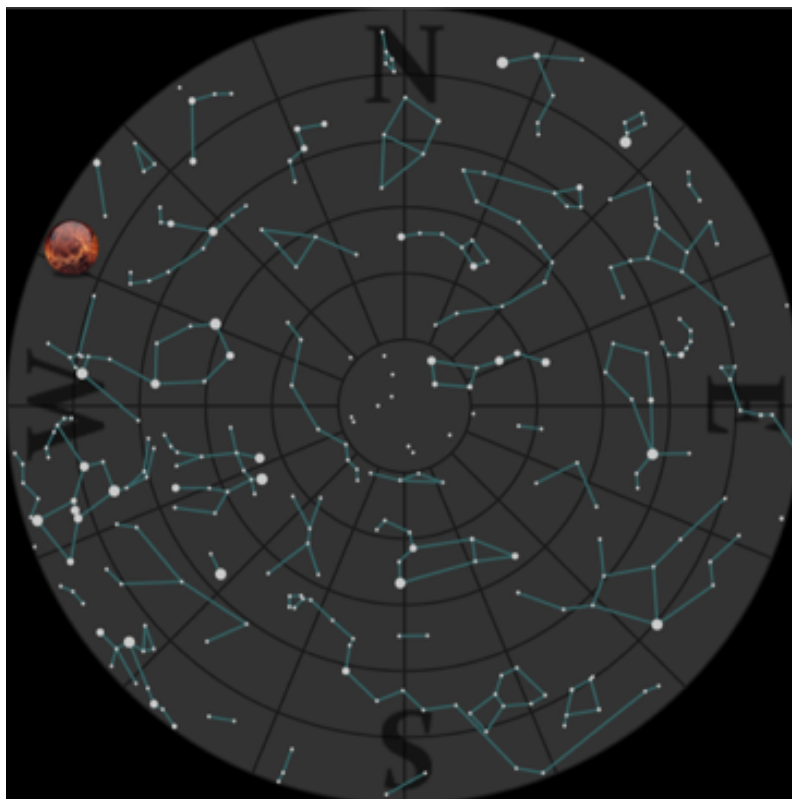


What's Up? – March 23 to April 27

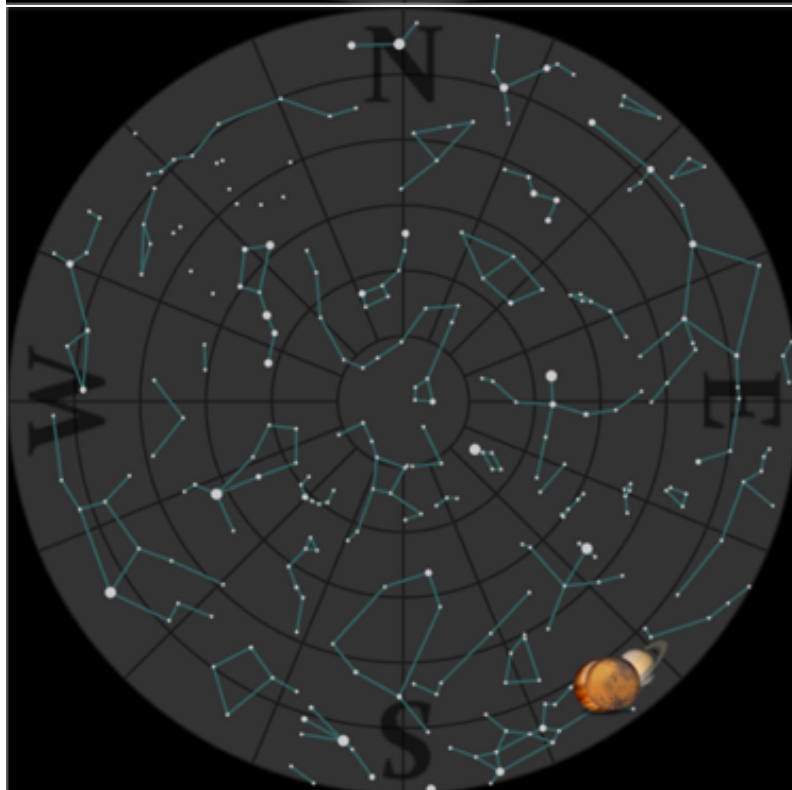
Bill Barton FRAS

This is the talk that was scheduled for 23 March at Newbourne.

The sky at 22:00 on 23 March



The sky at 05:00 on 24 March



Inner Solar System

Sun

Declination increasing, Equinox March 20, Solstice June 20

Mercury

In morning sky, greatest western elongation on March 24 (28°)

Superior conjunction on May 04

Today, rise 05:10, transit 10:20, set 15:25

Venus

In evening sky, greatest eastern elongation March 24 (46°)

Inferior conjunction on June 03

Today, rise 06:55, transit 14:50, set 22:45

Earth

Time

00:00UT $\approx$ 12:04ST today

Equinox March 20, 03:50am, BST from 01:00 29 March 2020

23 March sunrise 05:50, transit 12:00, sunset 18:10

End of period sunrise 05:30, transit 12:50, sunset 20:10

Moon

New, March 24, April 23

First Quarter, April 01

Full, 08 (Egg or Fish Moon)

Last Quarter, 14

Meteors

Only weak activity this period

Outer Solar System

Mars

Opposition October 13. Today, rise 03:40, transit 07:35, set 11:35

Jupiter

Opposition July 14. Today, rise 03:25, transit 07:30, set 11:30

Saturn

Opposition July 20. Today, rise 03:45, transit 08:00, set 12:10

Uranus

Solar conjunction April 26, opposition October 31. Today, rise 06:50, transit 14:00, set 21:10

Neptune

Opposition September 11. Today, rise 05:35, transit 11:05, set 16:40

Fifty Years Ago Next Month

Apollo 13

Launch: April 11 1970 19:13 UTC, KSC, Florida

Explosion: April 14 1970 03:06 UTC 55:55 into flight

Return: April 17 1970 18:08 UTC, South Pacific Ocean

NGC 2237, The Rosette Nebula

Andy Gibbs

The Rosette Nebula in narrowband, taken on 2 March 2020. I captured 7x 420 second exposures in Ha, S II and O III, plus darks.

Equipment used Atik One 6.0 camera and Explore Scientific ED 80 CF refractor on a HEQ5 mount. All equipment connected to a Primaluce Lab Eagle 3 and controlled remotely from my house, no more sitting in a cold garden!

Processed in the Hubble Palette, (Ha green, S II red and O III blue).

Software used: Sequence Generator Pro, Atik Dawn and Photoshop CC 2020.



Yet more Starlink satellites!

Nigel Evans

From the UK the belt of geostationary satellites appear as a stationary ring with a declination of about -7.5° – anyone who has tried to photograph the Orion Nebula will have no doubt recorded horizontal streaks through their images, as the telescope follows the nebula and the stationary satellites seemingly drift by. A typical magnitude is about 12

In the days around 1 March (and 12 October), the Sun is also at a declination of -7.5° . If any satellite sits 'upright' in its orbit then the shiny body panels and solar arrays can give specular reflection of the Sun. This is most pronounced just at the point when the satellite enters the Earth's shadow (at these times of year the satellites do get eclipsed by the Earth).

The brightness of satellites can increase considerably, up to magnitude 3 – Yes, you could see a geostationary with the naked eye!

In the early evening of 1 Mar 2020 I took the opportunity to try and record this phenomenon using a Sony A7S camera and a 100mm lens on a driven, but unguided mount. The star fields in Sextans are reasonably uninspiring and the entry point into the Earth's shadow was at RA 10h 45m and a declination of -7.5°

In the two hour period before clouds came in, about 39 geosats were recorded, the vast majority on the equatorial belt with an inclination of zero. In the video the brightest star is probably in the bottom right: λ Hydrae at 3.6. Quite a few satellites seemingly became brighter than that. The majority of stars shown seem to be about 5.5 to 7.0.

If satellites are the bane when photographing deep sky objects, then aircraft are the bane of wide field video photography. Here aircraft would cross in 6 or 7 frames. About 6 percent of frames featured aircraft – they had to be edited out by hand

In the still photograph, it was unintentionally realised that the field of view was sufficiently wide that the exit from the Earth's shadow was also recorded at RA of 11h



A Basic Wander into America's Space Launch System

This months article from the library.

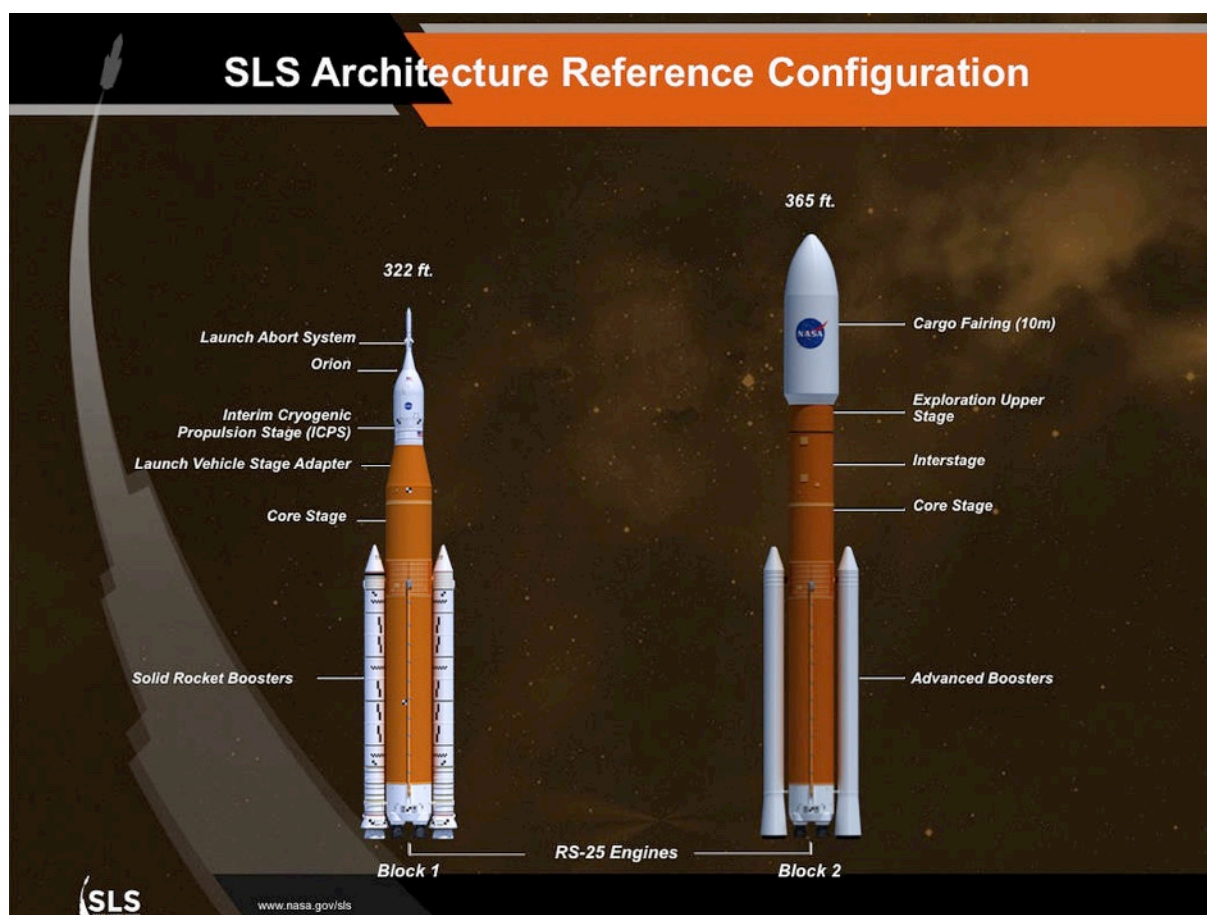
Major countries are looking towards the stars to fulfil their future scientific investigation needs. America is no different in this endeavour, with NASA and specific commercial space flight groups, working to set up a human settlement which will be self supporting by 2028, leading eventually to humans being sent to Mars. They have developed a sophisticated Space Launch System (SLS), which will push human exploration well beyond Earth's orbit. The rocket used to launch missions skywards has a myriad of capabilities and tremendous power, and thus can send the Orion spacecraft, with or without crew and with a full load, to the Moon in one event. NASA hopes to have returned to the moon with a human cargo within the next five years, and for them to visit areas of the moon not yet investigated, and to carry out experiments and test new techniques that could extend how far human life can traverse into the universe.

Artemis 1 is the name given to the first journey of the SLS (launch 2022) and the Orion multi-purpose crew transportation, which will stand with a vertical height of 100m, and will weigh about 5.75×10^6 lbs. The name Artemis is taken from Greek mythology and is the daughter of Zeus. This flight is proposed to take 26 days, be crewless, and will launch the Orion spacecraft into an orbit 40,000 miles beyond the Moon. The rationale of this is to check that all sections will function efficiently and that when crewed, the astronaut safety will be paramount. Artemis II missions and above will be crewed.



Picture credit: NASA Space Flight.com

For America to reach deep space, they will have to develop the SLS capabilities to produce more power which will accommodate their wishes of a multi-functional system. Each SLS design will utilise four RS-25 engines with the core stage, which reaches 65m tall with a base diameter of 8.4m. Sixteen RS-25 engines are being upgraded by a firm in California to the SLS requirements. 26 metric tons will be lifted into orbits further than the moon by the first SLS vehicle and a configuration known as block 1. It will have twin five-segment solid rocket boosters and four RS-25 engines using liquid propellant. Each RS-25 is 14.3m * 2.5m in size with a thrust of $512 * 10^3$ lbs. This stage also contains control systems necessary for flight and the flight computers, and is designed to run for about 500 seconds. During this time, a speed of Mach 23 will be reached and a height of 16,154m, prior to separation of Orion and upper stage. During lift off the 70 metric ton SLS design it will have a thrust of 8.8 million pounds. Looking into the future, NASA is considering selective laser melting, which is a form of 3D printing, which produces parts that are quicker to make, stronger and cheaper.



Picture credit:

https://www.nasa.gov/exploration/systems/sls/multimedia/gallery/sls_architecture.html

The point at which space is reached, an interim cryogenic propulsion stage (ICPS) will transport Orion to the Moon. This stage is the first segment of the SLS built just above the core stage of the main thrusters. This configuration will be used for the first three Artemis operations. During the flight, the four RS-25 engines will supply approximately 2 million lbs of thrust. The next phase for the development of the SLS is the Block 1B crew transport, which will furnish more power to enable more enterprising exploration. The Artemis IV mission will use the Block 1B system as well as the added power of the next exploration upper stage. Planning has reached the prototypes of the Block 2 system which has been designed to boldly go with humans into the galaxy.

NASA has also provided a water barge called 'Pegasus' which will ferry the core stage from the Michoud Assembly facility, New Orleans East, to all other centres for trials and for space launches. It was initially built in 1999 to transport the external tanks used by the space shuttles, and has subsequently been revamped for SLS work.

In the plans for Artemis, there is a 'Lunar Orbital Platform', known as 'Gateway' which is a lunar orbiting space station facility using solar power to facilitate laboratory experiments, communications and to provide storage and short term human recuperation. This is another collaborative system with NASA and commercial companies, with the intention that 'Gateway' in the future, could act as a staging point for onward flight to Mars.

The initial part of the Artemis programme is in three stages:

- Artemis 1. To access and maintain viability of the total system. Un-crewed. (2022). To initiate 'Gateway' . Place power and propulsion section into lunar orbit. (December 2022).
- Artemis 2. Exploration assignment. Crewed. (planned 2023). 21 days with 4 astronauts.
- Artemis 3. To the Moon. (planned launch 2024) <30 days.

References:

1. <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20170005323.pdf>
2. <https://www.nasa.gov/launching-science-and-technology.html>
3. <https://www.nasa.gov/feature/goddard/lunar-icecube-to-take-on-big-mission-from-small-package>

Some things to do while self-isolating

101 Home photography projects

<https://photography.kartra.com/page/101-photography-projects>

Fettle your telescope

<https://www.instructables.com/id/12-improvements-for-a-cheap-telescope/>

Top 20 astronomy tips

<https://www.youtube.com/watch?v=UPoh76f60kA>

Watch Astronomy lectures

E.g. <https://livestream.com/esa>

Stay connected – Join the OASImembers Skype group

We meet online on the scheduled OASI@Newbourne nights from 7:30pm.

and, of course, Observing!

We wish all our readers and their families good health during this difficult time.

Clear skies!

Messier 81 (Bodes Galaxy), Messier 82 (Cigar Galaxy) and NGC3077

John Hughes

Here is my rendition of Messier 81 (Bodes Galaxy), Messier 82 (Cigar Galaxy) and NGC3077 captured across the nights of the 1st, 2nd and 12 March.

The image was taken using my William Optics Z103 refractor, ZWO ASI1600mmPro camera and is made up of 5 separate master images capturing the Luminance, Red, Green and Blue channels as well as emissions in Hydrogen Alpha. Overall this image represents 6.7 hours of exposure time.



Messier 81, 82 & NGC3077 - 1st, 2nd & 12th March 2020 - North Essex, UK

© John Hughes

Messier 81 (Bodes Galaxy), Messier 82 (Cigar Galaxy) and NGC3077

Equipment

William Optics Z103 APO Refractor
ZWO ASI1600mm Pro Cool camera
ZWO Filter Wheel
Sesto Senso Focuser
Pegasus Astro Ultimate Powerbox V2
Skywatcher HEQ6R Pro mount
William Optics 50mm Guidescope
ZWO ASI290mm mini Guide Camera

Filters used

Chroma LRGB
Chroma Ha 3nm

Software

Captured using Sequence Generator Pro
Processed using PixInsight

Data

L 19 x 120s & 98 x 60s Bin 1x1

R 10 x 60s Bin 2x2

G 10 x 60s Bin 2x2

B 15 x 60s Bin 2x2

Ha 46 x 300s Bin 1x1

Gain/Offset 139/21

Camera Sensor Temperature set at -20°C

Calibration Frames

50 Dark frames for each exposure/bin setting

50 Flat frames for each filter/night session

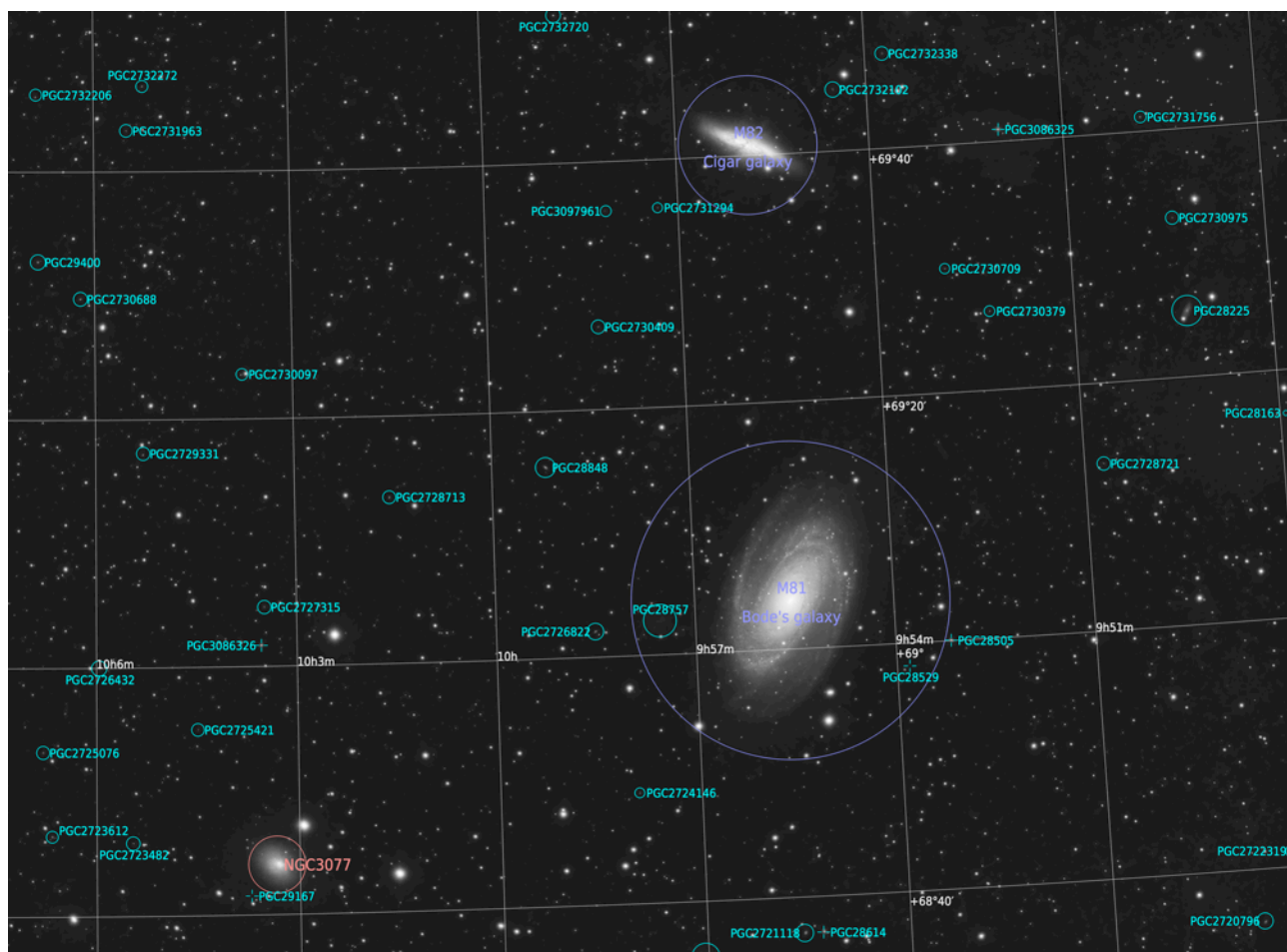
50 Dark flats for each filter/night session

I had some issues here with artefacts and also as this was my first attempt at combining LHaRGB the calibration of the lights with flats, darks and dark flats was a challenge. [Warren A. Keller](#), author of Inside PixInsight was very helpful in an earlier question I put out to the PixInsight for Beginners Group on FaceBook and cleared up my confusion over calibration.

[Ron Brecher](#) presentation on The Astro Imaging Channel on YouTube helped with a dust mote that wasn't entirely cleared by my master flat (Pixel Math section "if the pixels are this, do this, or do nothing"). Using this method helped me to slightly raise the brightness of pixels in the offending area leaving the rest of the image untouched.

The artefact? Well, as hard as I tried I couldn't remove a lightish smudge to the left of Messier 81. I checked on the Astrobin website at other Messier 81 images and thought, "Hmmm, I'm gonna plate solve this before I go any further". Turned out it was the galaxy PGC28757! So, no adjustment was necessary.

This was very much a challenging project using five filters and the additional complication of imaging across multiple nights though it was well worth the time put in.



Annotated plate-solve