



The Binocular Sky

April
2018

Newsletter



Introduction

Welcome to April's **Binocular Sky** Newsletter. For those who are new to it, the intention of this monthly offering is to highlight some of the binocular targets for the coming month. It is primarily targeted at binocular observers (although I know that many small-scope observers use it as well) in the UK, but should have some usefulness for observers anywhere north of Latitude 30°N and possibly even further south.

I am delighted that the Binoculars for Astronomical Outreach appeal that I started in February has far exceeded my expectations. The project is now the proud owner of a dozen good-quality hand-held binoculars and a parallelogram-mounted 20x80. There is an Astro Devices parallelogram on the way (yes, expect a review) and, when I have a clear idea of what else I will need with it, I will get another large binocular for it. Thank you, all those who so generously supported this appeal.

If you perhaps want to use one of the funded binoculars, I will be conducting workshops later in the year; details on page 8.

This month, we have a couple of Mira variables near maximum, and, because the Milky Way is near the horizon in the evening, lots of galaxies and globular clusters available. If you like meteor showers, the Moon just about co-operates with the fireball-producing Lyrids.

If you would like to receive this newsletter automatically each month, please complete and submit the subscription form. You can get "between the newsletters" alerts, etc. via  and .

The Deep Sky

(Hyperlinks will take you to finder charts and more information about the object.)

The [Pleiades \(M45\)](#) and the [Great Orion Nebula \(M42\)](#) culminate before Civil Twilight ends, but are still fine sights in binoculars early in the month, as are the [trio of open clusters in Auriga and M35 in Gemini](#). While you are looking at M35, also see if you can identify two smaller open clusters, [NGC 2158](#), which is half a degree to the SE, and the slightly more difficult [IC 2157](#), which is a degree to the ESE. Also high are [M44 \(Praesepe\)](#) and [M67](#), two fine open clusters in Cancer. Lower in the southern sky are more open clusters [M46, M47](#) and, near Sirius, [M41](#).

The rather indistinct open cluster, [NGC1502](#), is brought to prominence by an asterism, that is named [Kemble's Cascade](#), in honour of Fr. Lucian Kemble, a Canadian amateur astronomer and Franciscan friar, who discovered it with a 7x35 binocular. He described as "a beautiful cascade of faint stars tumbling from the northwest down to the open cluster [NGC 1502](#)." It is one of the most pleasing objects in small and medium binoculars.

Open (also called 'Galactic') Clusters are loosely packed groups of stars that are gravitationally bound together; they may contain from a few dozen to a few thousand stars which recently formed in the galactic disk.

One of the best objects for small binoculars is [Melotte 111](#), the cluster that gives *Coma Berenices* its name. In Greek mythology, it is the hair of Queen Berenice, but the Romans saw it as the veil dropped by Thisbē in [Ovid's tale of star-crossed lovers](#). In early April it is suitably placed from about midnight.

In April, we are able to look out of the plane of the Milky Way during the evening. This makes other galaxies available for observation. Look out for the two galaxy trios in Leo ([M95/96/105](#) and [M65/66/NGC3628](#)) and [Markarian's Chain](#) in Coma Berenices. A galaxy in this region that is often ignored, owing to the lack of nearby bright stars, is [NGC 3521](#), which is bright enough to be sometimes visible with averted vision in a 10x50, although I suggest a minimum of 70mm for ease of observation. It is considerably larger than any of the [M95/96/105](#) trio

*Galaxies are gravitationally bound "island universes" of hundreds of billions of stars at enormous distances. The light that we see from [M31](#), for example, left that galaxy around the time our ancestors of the genus *Homo* were just evolving!*

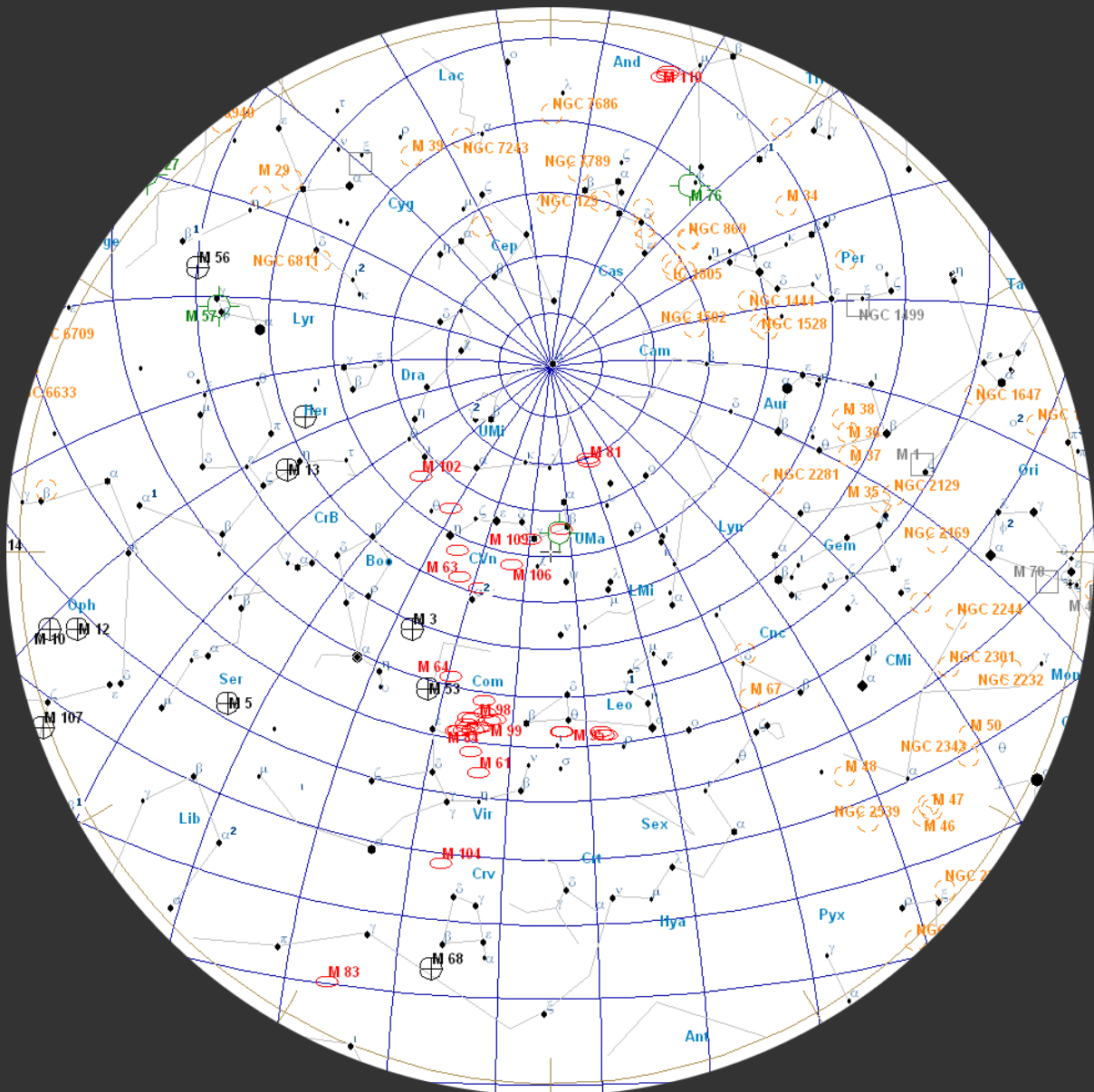
51°N

April 01, 23:00 UT

April 15, 22:00 UT

April 31, 21:00 UT

(chart is "clicky")



and is as bright as M96. If you have a big binocular, also observe the edge-on NGC4565 (Berenice's Hair Clip), which is next to Melotte 111, the cluster that gives Coma its name.

High in the northern sky, M81 (Bode's Nebula) and M82 (The Cigar Galaxy) easy are conveniently placed for most of the night. You should find M81 easy in a 50mm binocular. You can use this pair as a good demonstration of averted vision: if you have them both in the same field of view, you may see that the core of M81 becomes more apparent if you look

at M82 and that each becomes brighter when you look at the other.

If you have good skies, try M51 (The Whirlpool), M101, M94 and M63 (The Sunflower). M63 really needs a 70mm or larger binocular in anything other than pristine skies. On the other hand, M101 is big but has low surface brightness, and can be seen, as a slightly brighter patch of sky, in 10x50s.

Also visible as we look away from the plane galaxy are the globular clusters. M3 is a good one to start with during an April evening's observing. Later in the evening, the two Hercules globulars, M92 and the very impressive, and very easy to find, M13 are at a better altitude for observation. M53, just next to *Diadem (a Com)*, is easy to find

Globular clusters are tightly-bound, and hence approximately spherical, clusters of tens, or even hundreds, of thousands of stars that orbit in a halo around almost all large galaxies that have been observed.

but a bit more difficult, but is another object you can use to practice your averted vision: centre it, then look back at *Diadem* to see the cluster appear to grow and develop a more distinct core. Lastly, wait until M5 has attained a decent altitude and you'll bag another; it's nearly as big and bright as M13.

If you have binoculars of 70mm aperture or (preferably) greater, see if you can find and identify The Ghost of Jupiter (NGC 3242), a planetary nebula in Hydra. It is a difficult object because it is low in the sky, even from southern Britain.

Planetary Nebulae are short-lived (a few tens of thousands of years) masses of gas and plasma that result from the death of some stars. They have nothing to do with planets, but get their name from the fact that, in early telescopes, they had the appearance of giant ghostly planets.

If you missed it last month, take this opportunity to appreciate Herschel's Garnet Star, μ Cep, which is at a comfortable elevation early in the evening. The wide field of medium-sized binoculars enables you to hold it in the same field as *Alderamin (a Cep)*, so you can appreciate the colour difference.

Lastly, the colourful star-fields around the "back" of Leo that we looked at last month are still on view. In particular, enjoy the pretty groups of stars within the rectangle bounded by β , δ , θ , and *93 Leonis*.

April Deep Sky Objects by Right Ascension

Object	Con	Type	Mag	RA (hhmmss)	Dec (ddmmss)
NGC 884 and NGC 869 (the Perseus Double Cluste	Per	oc	5.3	022107	570802
M45 (the Pleiades)	Tau	oc	1.6	034729	240619
M38 (NGC 1912)	Aur	oc	6.4	052842	355117
M42 (NGC 1976, The Great Orion Nebula)	Ori	en	4.0	053517	-052325
M36 (NGC 1960)	Aur	oc	6.0	053617	340826
M37 (NGC 2099)	Aur	oc	5.6	055218	323310
M35 (NGC 2168)	Gem	oc	5.1	060900	242100
M41 (NGC 2287)	CMa	oc	4.5	064559	-204515
M47 (NGC 2422)	Pup	oc	4.4	073634	-142846
M46 (NGC 2437)	Pup	oc	6.1	074146	-144836
M44 (NGC 2632, Praesepe, the Beehive Cluster)	Cnc	oc	3.1	083957	194020
M81 (NGC 3031)	UMa	gal	7.8	095533	690401
M82 (NGC 3034)	UMa	gal	9.2	095554	694059
NGC 3242 (the Ghost of Jupiter)	Hya	pn	8.6	102446	-183833
M95 (NGC 3351)	Leo	gal	10.6	104357	114211
M96 (NGC 3368)	Leo	gal	10.1	104645	114912
M105 (NGC 3379)	Leo	gal	10.5	104749	123449
NGC 3521	Leo	gal	10.0	110548	-000215
M65 (NGC 3623)	Leo	gal	10.1	111855	130526
M66 (NGC 3627)	Leo	gal	9.7	112015	125924
Melotte 111	Com	oc	1.8	122430	260122
Markarian's Chain	Vir	gal	9.9	122611	125647
NGC 4565 (Berenice's Hair Clip)	Com	gal	9.9	123620	255914
M94 (NGC 4736)	CVn	gal	8.2	125053	410717
M53	Com	gc	7.6	131255	181010
M63 (NGC 5055, the Sunflower Galaxy)	CVn	gal	8.6	131549	420159
M51 (NGC 5194, the Whirlpool Galaxy)	CVn	gal	8.9	132952	471144
M3 (NGC 5272)	CVn	gc	6.2	134211	282233
M101	UMa	gal	7.7	140312	542957
M5	Ser	gc	5.7	151833	20459
M13 (NGC 6205, the Great Hercules Globular Clust	Her	gc	5.8	164141	362738
M92 (NGC 6341)	Her	gc	6.4	171707	430812
μ Cep (Herschel's Garnet Star)	Cep	vs	4.0	214330	584648

For interactive maps of Deep Sky Objects visible from 51°N, please visit:

http://binocularsky.com/map_select.php

Variable Stars

Selection of Binocular Variables (mag < +7.5)			
Star	Mag Range	Period	Type
AA Cam	7.5-8.8	Irreg	Irregular
Y Lyn	7.2-7.8	110d	Semi-regular
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
X Cnc	5.6-7.6	165d	Semi-regular
R Cnc	7.1-8.6	90d	Semi-regular
TX UMa	7.0-8.8	3.06d	Eclipsing binary
R Vir	6.9-11.5	145d	Mira
ZZ Boo	6.7-7.4	4.99d	Eclipsing binary

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
X Oph	6.8-8.8	329
U Ori	6.3-12.0	368

Double Stars

Binocular Double Stars for April			
Star	Magnitudes	Spectral Types	Separation (arcsec)
τ Leo	5.0, 7.4	K0, G5	89
δ Cep	4.1, 6.1	F5, A0	41
ι Cnc	4.0, 6.0	G5, A5	31
ν Boo	5.0, 5.0	K5, A2	628
DN & 65 UMa	6.7, 7.0	A3, B9	63
π -1 Umi	6.6, 7.2	G5, G5	31
ν Dra	4.9, 4.9	A5, A5	62
39 Dra	5.1, 7.9	A2, F8	89

The Solar System

Neptune is unavailable until late May/early June.

Uranus is unavailable until mid-June.

Comets

There are no comets suitable for small to medium binoculars this month.

Meteor Showers

The Lyrids start on the 16th and peak on the 22nd. They are best in the pre-dawn for a day either side of the peak, by which time the first quarter Moon will have set, so will not interfere. The meteors are grains of dust that were left in the wake of Comet C/1861 G1 (Thatcher). As these particles enter the atmosphere, they compress and heat the air in front of them. This heat causes the surface of the particle to ablate and ionise. Binoculars are useful for observing the persistence of these ionisation trains that form the streak in the sky which is what we observe as a "shooting star". That said, the Lyrids are notable for not producing persistent trains, although they are noted for fireballs. The ZHR is only 18, so this one is primarily for meteor aficionados.

Asteroid Occultations

There are no predicted asteroid occultations of stars mag +7.5 or brighter, visible from mainland UK, this month.

Lunar Occultations

Data are for my location and may vary by several minutes for other UK locations. The types are (**D**)isappearance, (**R**)eappearance and (**Gr**)aze; they are all dark-limb events unless there is a (**B**).

Lunar Occultations, Apr 2018, 50.9°N, 1.8°W							Position Angle
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	
04 Apr	02:08:22	R	eta Lib	A6	5.4	65S	253
08 Apr	03:19:46	R	pi Sgr	F2	2.9	82N	271
20 Apr	20:01:52	D	68 Ori	B9	5.8	67N	70
24 Apr	00:26:04	D	HIP 45874	A1	6.6	62N	80
26 Apr	21:26:20	D	HIP 58377	M4	6.7	90S	1122

The Moon

April 08	Last Quarter
April 16	New Moon
April 22	First Quarter
April 30	Full Moon

Public Outreach & Talks

During April I will be at the following public events; please do come and say "Hello" if you attend:

7 th :	<u>Battlesteads Dark Sky Observatory</u>	Ten Ways the Universe Tries to Kill You (Talk) + Binocular Stargazing Masterclass
8 th :	<u>Battlesteads Dark Sky Observatory</u>	Two Eyes are Better than One (Talk) + Binocular Stargazing Masterclass
10 th :	<u>West Yorkshire Astronomical Society</u>	Two Eyes are Better than One (Talk)
17 th :	<u>Fordingbridge Astronomers</u>	Pseudoastronomy 3: Hollow Moons, Cold Stars and Flat Earths (Talk)
20 th :	<u>Swindon Stargazers</u>	How Old Is It? (Talk)

Later in the year, in August at Built Wells, Powys, I will be offering a *Binocular Astronomy Workshop* as part of the **SolarSphere festival**:

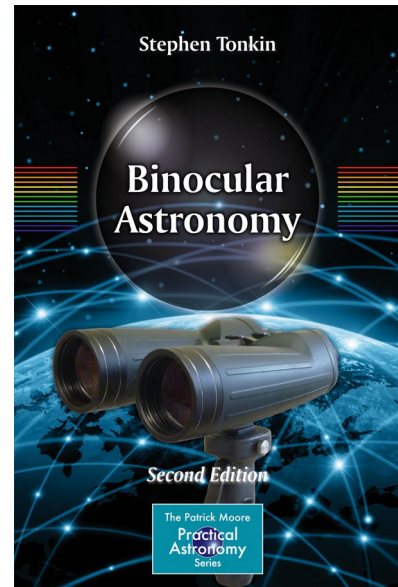


For those who like to mix music, camping and astronomy, **SolarSphere** boasts a good dark site (with a "red light only" camping option for observers), decent showers/loos, good craic, and is very family-friendly.

I'll also be giving a talk (*Pseudoastronomy – Planet X, Zetans and Lost Civilisations*).

The **Binocular Sky Newsletter** will always be free to anyone who wants it, but if you would like to support it, there are a number of options:

- Purchase my book, [Binocular Astronomy](#):
Click on the image for more information
- Make a purchase via the affiliate links in the [Binocular Sky shopfront](#)
- Donate to my [Binoculars for Astronomical Outreach](#) crowdfunder.



Wishing you Clear Dark Skies,

Steve Tonkin

for

[The Binocular Sky](#)

Acknowledgements:

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Variable star data based on David Levy's *Observing Variable Stars*
Occultation data derived with Dave Herald's *Occult*

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