



The Binocular Sky

No. 89
April 2019

Newsletter

Introduction

Welcome to April's **Binocular Sky** Newsletter.



As regular readers will know, my intention is to highlight some of the binocular targets for the coming month. This is intended primarily for 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.

April nights continue to shorten, but this is compensated for by the wealth of galaxies that are now on view soon after the end of astronomical twilight. Take these last opportunities to enjoy the Taurus/Orion region; they eventually become lost in twilight later this month.

We have a couple of Mira stars near maximum, for those of you who enjoy observing these stars.

The binocular planets, Uranus and Neptune are effectively out of our range until late summer mornings, but we do have Asteroid 2 (Pallas) available to users of small binoculars..

I've at last been able to write my review of Bill Cook's new book on collimating binoculars (page 8). It's a bit of a niche book, but one from which we can all learn.

If you would like to receive the 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](#).

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.

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, although the imagination of it being a ribbon waterfall plunging into a splash-pool needs some gravity-defying modification because, during spring evenings, the waterfall flows diagonally upwards!

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 at astronomical dusk and later.

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

*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!*

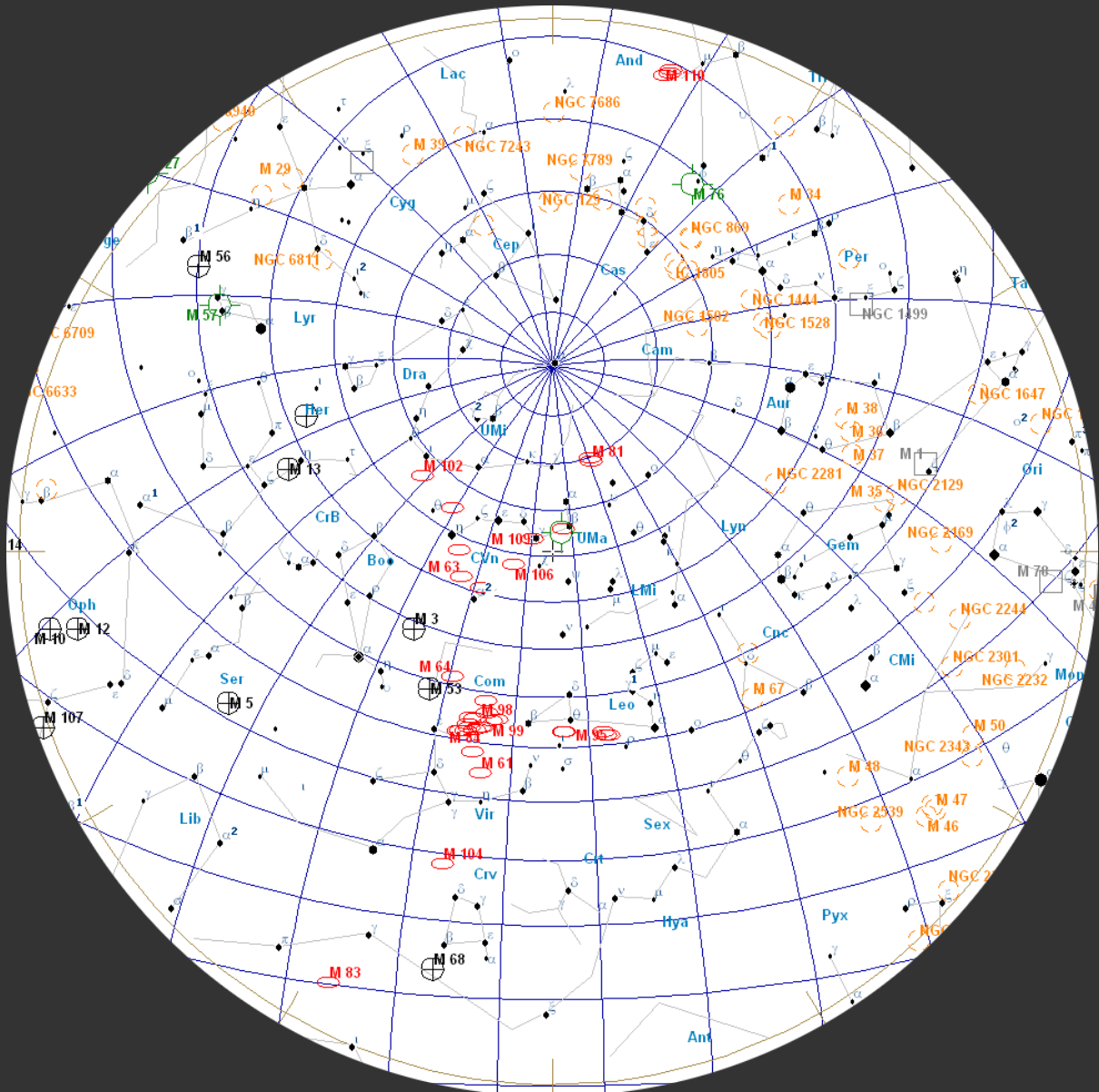
51°N

April 01, 23:00 UT

April 15, 22:00 UT

April 31, 21:00 UT

(chart is "clicky")



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 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.

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.

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 (α 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 for a couple of months. In particular, enjoy the pretty groups of stars within the rectangle bounded by β , δ , θ , and η Leonis, and, later this month, the region just to the south of σ Virginis.

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.

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

http://binocularsky.com/map_select.php

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

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

Variable Stars

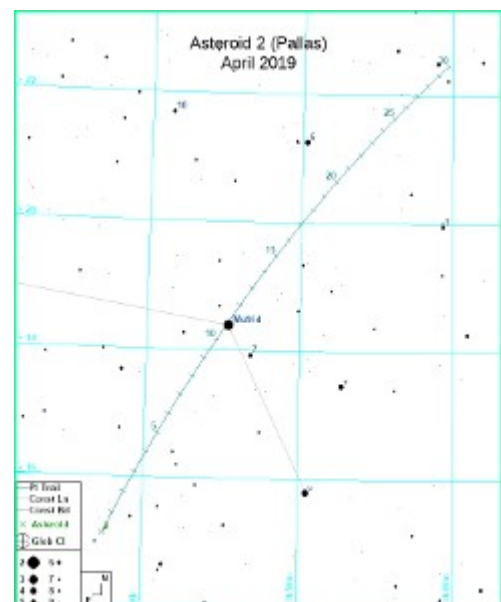
Selection of Binocular Variables (mag < +7.5)			
Star	Mag Range	Period	Type
AA Cam	7.5-8.8	Irreg	Irregular
Y Lyn	7.2-7.8	110d	Semi-regular
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
X Cnc	5.6-7.6	165d	Semi-regular
R Cnc	7.1-8.6	90d	Semi-regular
TX UMa	7.0-8.8	3.06d	Eclipsing binary
R Vir	6.9-11.5	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)
W And	6.7-14.6	397
U Ori	4.8-13.0	377

The Solar System

The binocular planets, the ice giants **Uranus** and **Neptune**, cannot be satisfactorily observed with binoculars this month. However, **Asteroid 2 (Pallas)** is well-placed in Boötes during April, fading from mag. +7.9 to +8.1. It reaches opposition on the 10th, when it also passes 1.6 arcmin from η Boo.

(The chart is “clicky”)



Asteroid Occultations

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

The Moon

April 05	New Moon
April 12	First Quarter
April 19	Full Moon
April 26	Last Quarter

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, Mar 2019, 50.9°N, 1.8°W						
Date	Time	Phase	Star	Spectral Type	Magnitude	Cusp Angle
Apr 09	20:12:32	D	HIP 21923	G5	7.1	13N
Apr 09	21:31:42	D	HIP 22176	K4	6	46N
Apr 09	22:27:24	D	HIP 22349	G2	7	68N
Apr 10	22:41:17	D	Y Tau	N4	6.9	67N
Apr 13	20:41:35	D	HIP 42542	A9	6.8	48N
Apr 13	23:16:04	D	HIP 42970	F2	6.8	85N
Apr 16	02:38:44	D	53 Leo	A2	5.3	88N
Apr 22	01:23:06	R	HIP 79605	K1	6.3	72S

Public Outreach & Talks

This month I will be at the following public events; please do come and say "Hello" if you attend any of them.

8 th :	West of London Astronomical Society	Ten Ways the Universe Tries to Kill You (lecture)
11 th :	StarQuest Astronomy Club	Pseudoastronomy: Hollow Moon and Flat Earth (lecture)
13 th :	Bournemouth Natural Science Society	Solar Observing (Spring Fair and Open Day)

Book Review

Understanding and Attaining 3-axis Binocular Collimation

by **William J. Cook**

ISBN-13: 978-1790983780

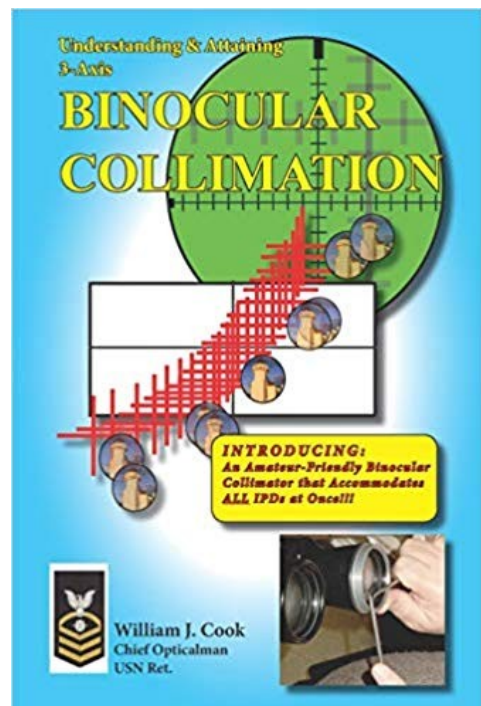
Paperback, 83pp

Available from:

[amazon.co.uk](https://www.amazon.co.uk) (£15.79)

[amazon.com](https://www.amazon.com) (\$19.95)

I have been an admirer of Bill Cook's work ever since we "met" on the Amateur Telescope Making forum some decades ago. Bill has a happy knack, born of thorough experience, of getting to the nub of optical issues so, when he announced his new book, I knew I had to read it. The endorsements on the back cover from admired optical and astro-binocular gurus, such as Dick Buchroeder and Phil Harrington, merely reinforced this view.



In the introduction and first chapter, Bill gets a few bugbears, mostly relating to ultracrepidarian “internet experts”, off his chest. The next few chapters define terms. This is crucially important, because any misunderstanding of the words and phrases that he uses will just create difficulties. Possibly the most important of these is the distinction between “full collimation” and “conditional alignment”, the latter being a phrase introduced by Bill many years ago and which, if internet forums are any measure, is one that is still not well understood.

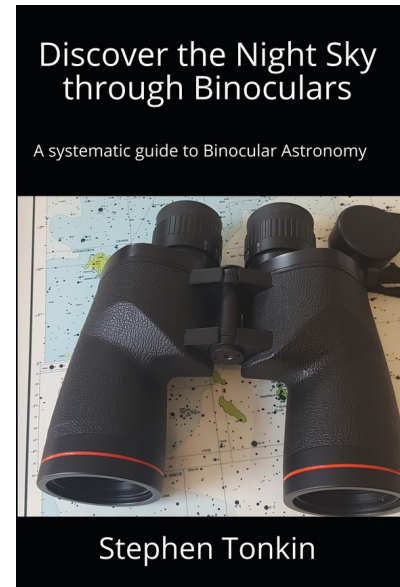
He describes various collimators (mostly military), collimation conventions (eccentric ring, prism-tilt, etc.), and collimation tolerances, before going into some detail of the collimation process using the US Navy Mk 5 Collimator. If you’re intending to collimate a binocular properly, study it well. The next chapter shows you how to make, mostly out of readily available materials, augmented by plastic fresnel lenses and a low-power scope, your own Mk 5 type collimator.

I’ve always assumed that, unless I was willing to get into more complication and expense than I felt was warranted, I was going to have to content myself with conditional alignment. Bill’s book has changed that perception, and I suspect that I’m going to be making a Cook-version Mk5 for myself this summer.

Any book that changes the reader’s perception must be a worthwhile effort; these 80-ish pages of concentrated common sense do just that. If you tweak binoculars, you’ll value this book.

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 one of my books, **Binocular Astronomy** or **Discover the Night Sky through Binoculars**. Click on the cover image for more information.
- Make a purchase via the affiliate links in the [Binocular Sky shopfront](#)
- Make a small [PayPal](#) donation to newsletter@binocularsky.com



Wishing you Clear Dark Skies,

Steve Tonkin

for

The Binocular Sky

Acknowledgements:

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Variable star data based on *The International Variable Star Index*
Occultation data derived with Dave Herald's *Occult*

Disclosure: Links to *Amazon* or *First Light Optics* may be affiliate links

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