



The Binocular Sky

No. 95
October 2019

Newsletter

Introduction

Welcome to October's **Binocular Sky** Newsletter. As most of you know, my intention here is to highlight some of the best astronomical targets for binoculars (and small telescopes!) for the coming month. Although it is primarily intended for observers in the UK, nearly all the objects can be seen from anywhere north of latitude 30°N and many of them in the southern hemisphere temperate zone.



The ice-giants, Uranus and Neptune, are only 2 hours apart in the sky, so can be observed during the same session if you time it well ([page 7](#)).

As well as the ice giants, Vesta will become an easy morning object by the end of the month ([page 8](#)).

The variable star observers not only have three Mira-type stars near maximum, one of them is actually Mira itself! ([page 5](#)).

If you want to try your hand at observing occultations, the key dates are the 19th, when a 3rd magnitude star is involved, and the 22nd, when the Moon skirts the northern edge of the beehive cluster ([page 9](#)).

Lastly, we have a mini-review of the Celestron Skymaster Pro 15x70 ([page 10](#)).

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The Deep Sky

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

As the sky darkens at twilight, the Milky Way arches overhead as it has done for the last month or so. It is richly rewarding in binoculars of any size but especially, I find, in low-power wide-field glasses. If you get the opportunity, do try these “quirky” 2-ish x 40-ish Galilean-configuration binoculars!

In the north are [NGC 457](#) (the Owl Cluster) and [NGC 663](#) in Cassiopeia and the [Perseus Double Cluster](#), from which you can easily find [Stock 2](#) (the [Muscleman Cluster](#)). [Kemble’s Cascade](#) and its “splash pool”, [NGC 1502](#) are also conveniently placed. To the East of them lie [M34](#) in Perseus and the often-overlooked [NGC 752](#) in Andromeda. More open Clusters are visible in the southern sky in the region of Ophiuchus. These include [Melotte 186](#), [NGC 6633](#) and [M11](#), [The Wild Duck Cluster](#), all of which are easily visible in 50mm binoculars. Rising in the north-east are the [Auriga clusters](#), [M36](#), [M37](#) and [M38](#). To the south of them, the [Pleiades](#) and [Hyades](#) make a welcome return to evening skies. Also look out for the nearby [NGC1647](#).

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.

In October, we are able to look out of the plane of the Galaxy during the evening. This makes more globular clusters and galaxies available for observation. Very well placed this month are [M81](#) (Bode's Nebula) and [M82](#) (The Cigar Galaxy), both of which are easy in a 50mm binocular. These can be used 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](#). If you have good skies in the early evening, try [M51](#) (The Whirlpool) and

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 technology consisted of rocks, sticks and bones.

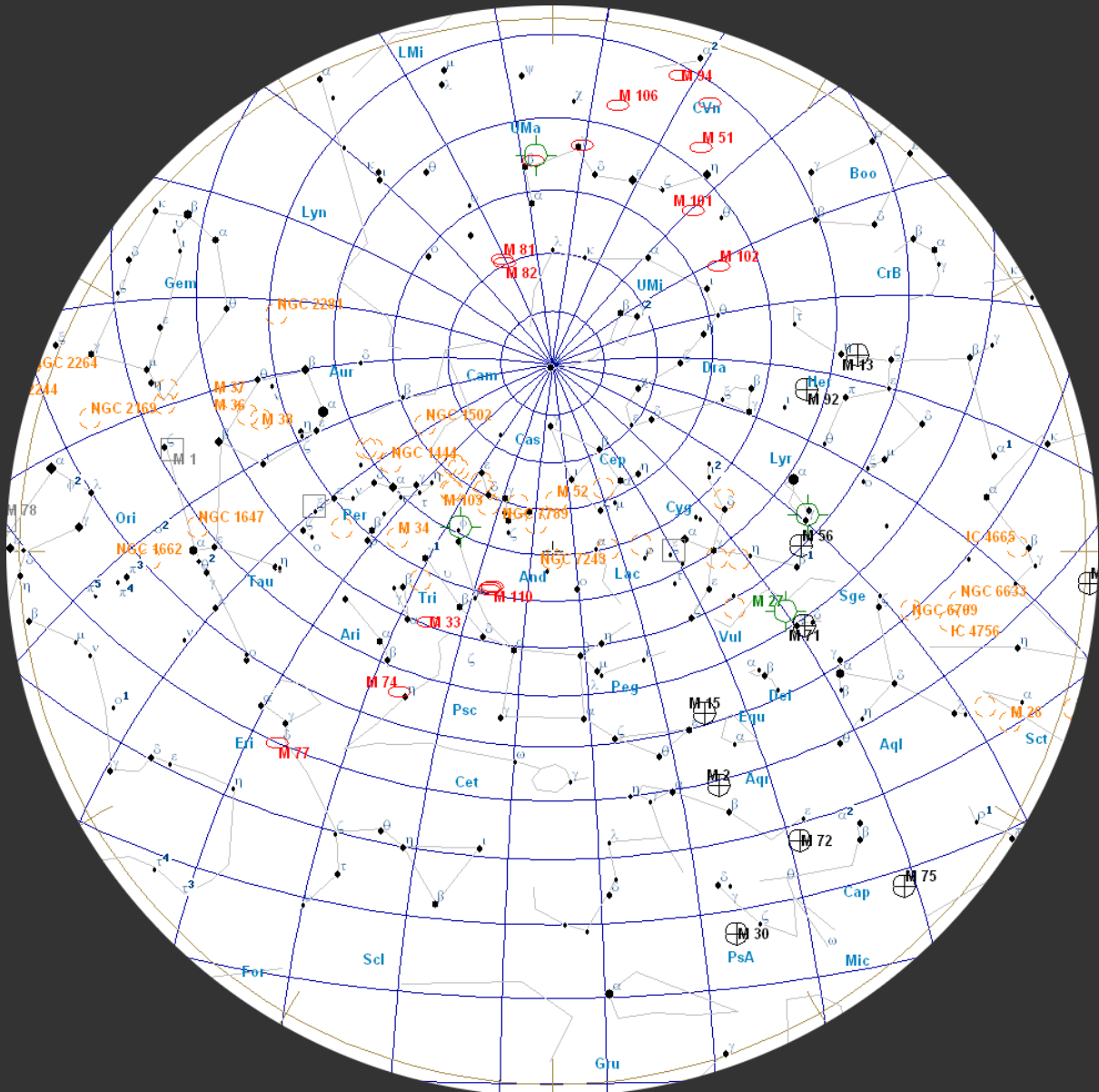
51°N

October 01, 23:00 UT

October 15, 22:00 UT

October 31, 21:00 UT

(chart is "clicky")



M101 which, although it is a large object, is very difficult owing to its low surface brightness. The same can be said of M33 (The Pinwheel), which now very well placed for observation. Because they are of such low surface-brightness, they benefit from low magnification. This generally makes them easier to see in, say, a 10x50 binocular than in many "starter" telescopes.

The Great Andromeda Galaxy, M31, is easily visible this month. It is large and bright enough to be able to withstand quite a lot of light pollution (making it available to urban observers) although, obviously, it benefits from a dark transparent sky.

The two Hercules globulars, M92 and the very impressive, and very easy to find, M13 are at a very good altitude for observation. Although M13 is clearly larger than M92, it is easier to resolve the outer stars of the latter one. M2 is easy to find and easy to see, even in small binoculars.

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.

The easiest planetary nebula, M27 (the Dumbbell Nebula – also known as the Apple Core and the Diabolo) – is visible in the evening skies in even 30mm binoculars. The Helix Nebula, NGC 7293 is now about as well-placed as it gets for observation from Britain before midnight; you'll need a decent southern horizon.

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, you can visit: http://binocularsky.com/map_select.php

October Deep Sky Objects by Right Ascension

Object	Con	Type	Mag	RA (hhmmss)	Dec (ddmmss)
M31 (the Great Andromeda Galaxy)	And	gal	4.3	004244	411608
NGC 457 (the ET Cluster, the Owl Cluster)	Cas	oc	6.4	011932	581727
M33 (NGC 598, the Pinwheel Galaxy)	Tri	gal	6.2	013351	303929
NGC 663	Cas	oc	7.1	014601	611406
NGC 752	And	oc	5.7	015742	374700
Stock 2 (the Musclemans Cluster)	Cas	oc	4.4	021434	591358
NGC 884 and NGC 869 (the Perseus Double Cluster)	Per	oc	5.3	022107	570802
M34 (NGC 1039)	Per	oc	5.2	024204	424542
M45 (the Pleiades)	Tau	oc	1.6	034729	240619
Kemble's Cascade	Cam	ast	9.0	035752	630711
Melotte 25 (the Hyades)	Tau	oc	0.5	042650	154841
M38 (NGC 1912)	Aur	oc	6.4	052842	355117
M36 (NGC 1960)	Aur	oc	6.0	053617	340826
M37 (NGC 2099)	Aur	oc	5.6	055218	323310
M81 (NGC 3031)	UMa	gal	7.8	095533	690401
M82 (NGC 3034)	UMa	gal	9.2	095554	694059
M51 (NGC 5194, the Whirlpool Galaxy)	CVn	gal	8.9	132952	471144
M101 (NGC 5457)	UMa	gal	7.7	140312	542057
M13 (NGC 6205, the Great Hercules Globular Cluster)	Her	gc	5.8	164141	362738
M92 (NGC 6341)	Her	gc	6.4	171707	430812
Melotte 186	Oph	oc	3.0	180030	025356
NGC 6633	Oph	oc	4.6	182715	063030
M11 (NGC 6705, Wild Duck Cluster)	Sct	oc	5.8	185106	-061600
M27 (NGC 6853, the Dumbbell Nebula, the Apple)	Vul	pn	7.6	195936	224318
M2 (NGC 7089)	Aqr	gc	6.5	213327	-004922
NGC 7293 (the Helix Nebula)	Aqr	pn	6.5	222938	-205013

Variable Stars

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
V CrB	6.9-12.6	357.6
UV Aur	7.3-10.9	394.4
o Cet	2.0-10.1	332

A few sources I have seen note that R Hya is also near maximum; unfortunately, it is only above the horizon during daylight!

Selection of Binocular Variables (mag < +7.5)			
Star	Mag Range	Period	Type
XY Lyr	5.8-6.4	Irreg	Irregular
U Sge	6.5-9.3	3.38d	Eclipsing binary
U Vul	6.7-7.5	7.99d	Cepheid
SU Cyg	6.4-7.2	3.84d	Cepheid
U Del	7.0-8.0	ca. 110d	Irregular
TW Peg	7.0-9.2	ca. 90d	Semi-regular
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
T Cep	6.0-10.3	388d	Mira
SS Cep	6.7-7.8	ca. 190d	Semi-regular
RZ Cas	6.2-7.7	1.195d	Eclipsing binary
R Sct	4.5-9.0	146d	RV Tau

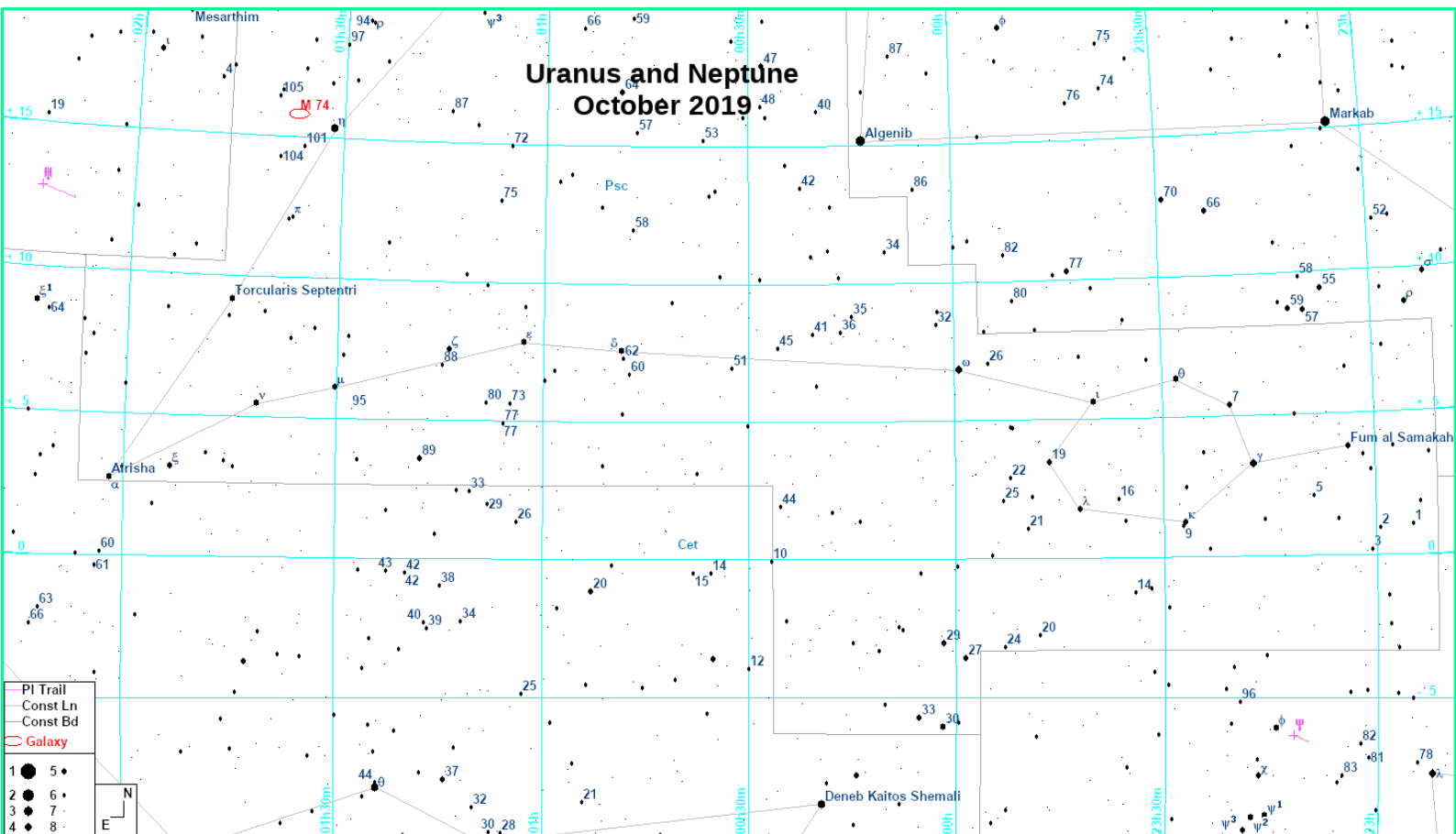
Double Stars

Binocular Double Stars for October			
Star	Magnitudes	Spectral Types	Separation (arcsec)
ζ Lyr	4.3, 5.6	A3, A3	44
β Lyr	3.6, 6.7	B8, B3	46
OΣ525 Lyr	6.0, 7.6	G0, A0	45
d Cep	4.1, 6.1	F5, A0	41
γ Her	3.7, 9.4	F0, K	43
Σ2277 Her	6,2, 8.9	A0, K	27
8 Lac	5.7, 6.3	B3, B5	22
56 And	5.7, 5.9	K0, K2	128
ΣI 1 And	7.1, 7.3	G5, G5	47
ψ-1 Psc	5.3, 5.8	A2, A0	30
14 Ari	5.0, 7.9	F0, F2	106
62 Eri	5.4, 8.9	B9, B8	67

The Solar System

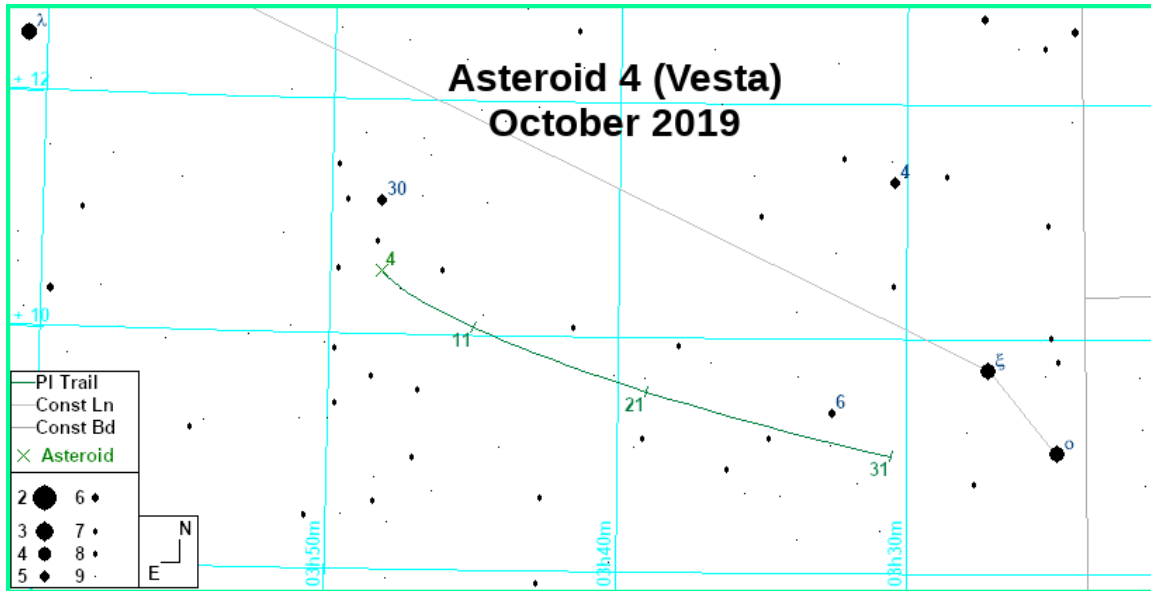
(Clicking on the charts in this section will take you to higher resolution ones)

The ice giants, **Uranus** and **Neptune**, rise in the evening but, if you want to nab both in the same session, look a couple of hours either side of midnight UT. At the beginning of the month, Neptune (mag + 7.8) transits more than an hour before midnight, and Uranus (mag +5.7) three hours later. By the end of the month, they transit two hours earlier.



Both are moving retrograde. Neptune is the easier to find: at the beginning of the month it is less than a degree from ϕ Aqr in the direction of λ Aqr. Uranus starts the month 4° from $\xi-1$ Cet in the direction of 19 Ari (which is about the same brightness as the planet). It comes to opposition on the 28th.

Further east in Taurus, **Asteroid 4 (Vesta)**, is easily visible to small binoculars. It starts the month at mag +7.2 and brightens by more than half a magnitude during the month. At the beginning of the month it is just south of 30 Tau and rises just after 03:00 UT; at the end of the month it is near ξ and *o* Tau and rises around 01:00.



The Moon

October 05	First Quarter
October 13	Full Moon
October 21	Last Quarter
October 28	New Moon

Lunar Occultations

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

Lunar Occultations, October 2019, 50.9°N, 1.8°W						
Date	Time	Phase	Star	Spectral Type	Magnitude	Cusp Angle
Oct 03	19:20:15	D	HIP 83684	A1	6.3	88N
Oct 12	01:09:32	D	HIP 118298	G5	6.6	79S
Oct 17	04:08:13	R	HIP 18267	G0	6.8	62N
Oct 17	22:09:55	R	SZ Tau	F5	6.5	39S
Oct 19	00:20:42	D(B)	Zet Tau	B4	3	-59S
Oct 19	01:10:28	R	Zet Tau	B4	3	33S
Oct 21	05:55:16	R	HIP 37579	F5	7.1	32N
Oct 22	01:30:11	R	Eta Cnc	K3	5.3	85N
Oct 22	05:04:21	R	40 Cnc	A1	6.6	36S
Oct 22	05:05:05	R	39 Cnc	K0	6.4	46S
Oct 22	05:56:20	R	HIP 42673	K0	6.9	31S
Oct 25	03:25:44	R	HIP 56079	F5	6.7	17S

Asteroid Occultations

Nov 01 (*next month, but noted here to give time to prepare*): Asteroid 12849 (1997 QD2) occults mag +7.5 HIP 25375 (Scotland, N. Ireland, Scandinavia). [Details here.](#)

Public Outreach & Talks

This month I will be at the following public events; please do come and introduce yourself if you're at any of them.

27th: [Damerham Village Hall](#)

Night Sky talk and Public Stargazing

29th: [Blashford Lakes](#)

Family Stargazing

Equipment Mini-Review

This month we look at the **Celestron Skymaster Pro 15x70**.

This binocular has a few interesting features that make it stand out from the “step up from entry level” crowd.

At heart, it is just another Zeiss-construction centre-focus 15x70, but the moment you take it out of its case, you realise that there is more to it. It is chunkier than the ubiquitous entry-level 15x70s, partly due to the robust, textured rubber armour that covers the aluminium

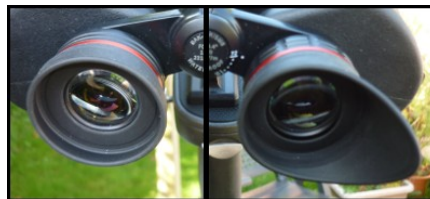


and polycarbonate shell. Both ends have tethered (but removable if you prefer) lens covers, and the rainguard-type eyepiece cover can be used with the eye-cups folded down.

Optically, the anti-reflective coatings are excellent, the light from the objectives is neither internally stopped down (as is common with budget binoculars), nor attenuated by undersized prisms. Colour correction and control of stray light are good over the central 60% of the field of view, but aberrations begin to soften the image outside this sweet spot. The hinge, focus and right eyepiece dioptre are smooth throughout their ranges and are appropriately stiff. This helps to give the binocular a good feel.

The neoprene-padded neck-strap and stiffly-padded cordura-type case are both of very good quality.

So what of the “interesting” features? The first is interchangeable eye-cups: you can choose between normal cylindrical ones or winged ones. It’s a nice idea, and both work well enough when they are in place, but the winged ones especially have a tendency to come off when you fold them up (they need to be folded down to get the eyepiece covers on).



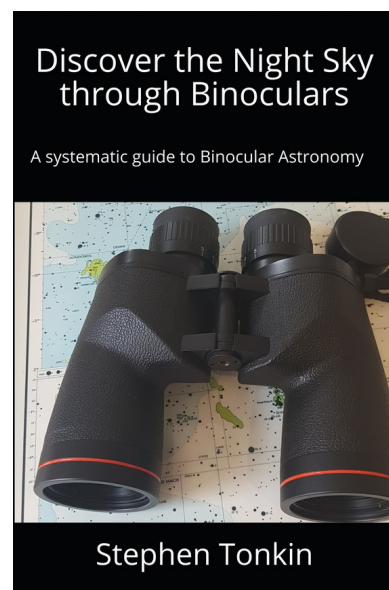
The second interesting feature is really handy. The binocular comes with a good-quality, proprietary tripod adaptor bracket. The reason it’s a proprietary one is that the binocular also comes with a detachable mounting rail for a standard Celestron or SkyWatcher red-dot finder. This is well-implemented and will be a boon to those who find that the 4.4° field of view makes it difficult to easily find target objects.

I’ve really enjoyed testing this binocular: it is better than I expected for its price, currently a mere £125 at First Light Optics. Anyone who is looking to step up from a budget/entry-level 70mm bino could do a lot worse than this!

I’ll post a fuller review on binocularsky.com over the coming weeks.

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- 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](#)
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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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