



The Binocular Sky

August
2016

Newsletter

Introduction

Welcome to the **Binocular Sky** Newsletter for August 2016.

The intention of this monthly offering is to highlight some of the binocular targets for the coming month. It is primarily targeted at observers in the UK, but should have some usefulness for observers anywhere north of Latitude 30°N and possibly even further south.



The longer nights of August, coupled with the fact that it now actually gets properly dark (nearly 5 hours of astronomical darkness by mid-month at the latitude of southern England) means that many more objects are visible. Uranus and Neptune are now relatively easy, and the dark skies mean that some otherwise tricky deep sky objects are more easily visible.

The asteroids Vesta and Ceres are difficult objects and will require decent skies (or big binoculars), but at least they are now available.

We also have a graze of a 6th magnitude star, visible in the north of England and Eire, on the 29th. It will be made more 'interesting' due to it occurring near the end of nautical twilight.

All the charts are "clicky" and will take you to a higher resolution chart than is possible in the newsletter.

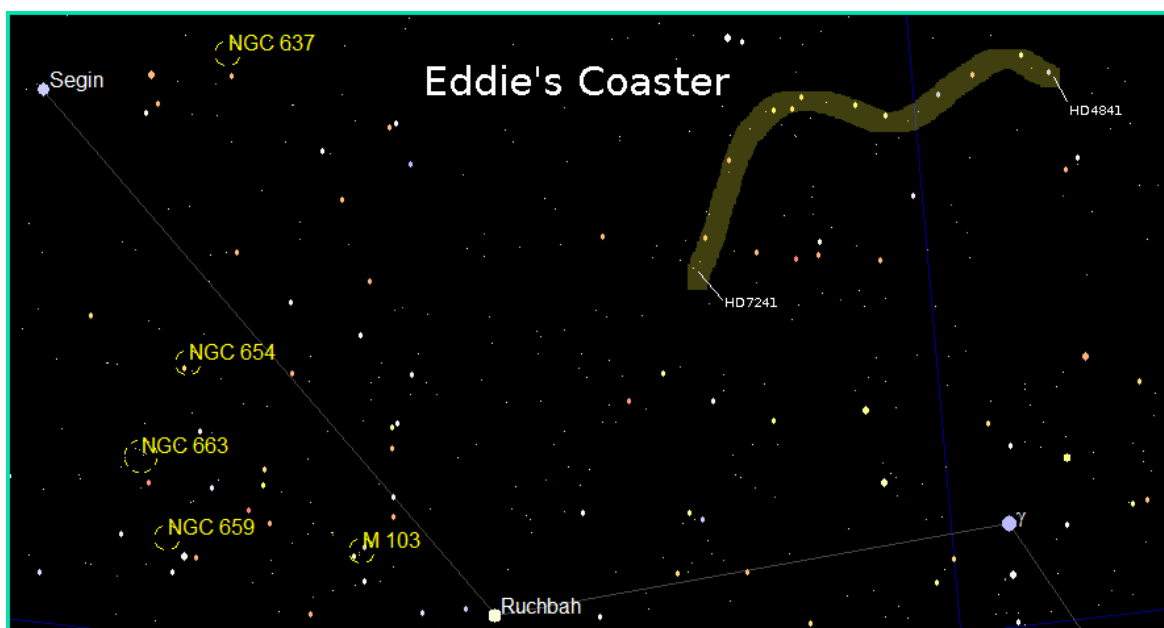
The equipment mini-review is back; not so positive this month, I'm afraid.

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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, in the North are [NGC 457 \(the Owl Cluster\)](#) and [NGC 633](#) in Cassiopeia, the [Perseus Double Cluster](#), and [Stock 2 \(the Musclemans Cluster\)](#). Also visible in Cassiopeia is "Eddie's Coaster", a lovely curve of stars that is not particularly apparent on star charts or images, but which is obvious in 10x50 binoculars. This asterism is named for Eddie Carpenter, the West Country amateur who has delighted people with it for many years. You won't find it on any star charts, so:



More open Clusters are visible in the southern sky in the region of Ophiuchus. These include [Melotte 186](#), [NGC 6633](#), [IC 4665](#) and [M11, The Wild Duck Cluster](#), all of which are easily visible in 50mm binoculars. [M11](#), which is a cluster of over a thousand stars, benefits enormously from larger apertures and the higher magnification that permits more stars, including the "V"-shaped grouping that gives it its common name, to be revealed.

[IC 4665](#) benefits enormously from larger apertures and the higher magnification that permits more stars to be revealed. You should seek out a particularly attractive curved chain of bright white stars that forms part of the greeting "Hi!" written in the sky.

Even further to the south, culminating at around local midnight, is a group of open clusters in Serpens and Sagittarius that includes [M16 \(the Eagle](#)

Nebula), M17 (the Swan or Omega Nebula), M23, M24 (the Sagittarius Star Cloud), and M25.

Also worth enjoying in this region of sky is the denser part of the Milky Way that forms the *Scutum Star Cloud* as a backdrop to this cluster.

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.

While you are in this region of sky, see if you can find Barnard's Star in Ophiuchus. This has the largest known proper motion of any star. (***Proper motion*** is motion with respect to the celestial sphere.) Although it is visible in 50mm binoculars from a dark site, it is considerably easier in larger glasses and I recommend a minimum of 70mm.

In August, 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, try M51 (The Whirlpool) and M101 which, although it is a large object, is very difficult owing to its low surface brightness. The Great Andromeda Galaxy, M31, is also rising into the sky to a reasonable altitude this month. It is large and bright enough to be able to withstand quite a lot of light pollution 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. Also visible this month is M5 in Serpens, which is one of the largest globular clusters known, being 165 light years in diameter. Its apparent size is nearly as large as a Full Moon. At a reasonable altitude from the beginning of the month are the very bright M15, M2 (which looks almost stellar at 10x50) and NGC 6934. This last cluster is very easy to see and is excellent for demonstrating how globular clusters respond to transparency. In apertures of around 70mm and upwards, almost all of them look larger as the sky

becomes more transparent. NGC 6934 displays to the greatest extent of any globular on which I have tested the phenomenon.

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. They are important for two reasons: Firstly, they contain some of the oldest stars in the galaxy, so studying them helps us understand the evolution of stars. Secondly, they are useful as "standard candles" in establishing a distance scale of the Universe, based on the assumption that the brightest stars in any globular cluster will be approximately the same brightness and that the brightest globulars in a galaxy will be approximately the same brightness.

The easiest planetary nebula, M27, the Dumbbell Nebula – although I insist that it looks more like an apple core than a dumbbell! – is visible in the evening skies in even 30mm binoculars. At the other extreme, if you have binoculars of at least 100mm aperture, see if you can find and identify NGC 6572, a planetary nebula in Ophiuchus. Even in large glasses it looks stellar, but it has the distinction of being possibly the greenest object in the sky.

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 disc-like appearance of planets.

There are two other objects which, owing to their southerly declination, are best observed this month. They are the two bright emission nebulae, M20 (the Trifid) and the larger, brighter and easier M8 (the Lagoon). They are only about a degree and a half apart, so they will fit into the same field of view of even quite large binoculars.

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

http://binocularsky.com/map_select.php

Binocular Double Stars for August			
Star	Magnitudes	Spectral Types	Separation (arcsec)
67 Oph	4.0, 8.1	B5, A	54
ρ Oph	5.0, 7.3, 7.5	B5, A, B3	151, 157
53 Oph	5.7, 7.4	A2, F	41
δ Cep	4.1, 6.1	F5, A0	41
γ Her	3.7, 9.4	F0, K	43
δ Boo	3.5, 7.8	K0, G0	105
μ Boo	4.3, 7	F0, K0	109
ι Boo	4.0, 8.1	A5, A2	38
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

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
χ Cyg	5.2 – 13.4	408
R Ser	6.9 – 13.4	356
S CrB	7.3 – 12.9	360

Selection of binocular variables (mag < +7.5)			
Star	Mag Range	Period	Type
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
V1010 Oph	6.1-7	0.66d	Eclipsing binary
RR Lyr	7.06-8.12	0.57d	RR Lyr
TX UMa	7.0-8.8	3.06d	Eclipsing binary
AF Cyg	6.4-8.4	92.5d	Semi-regular
ZZ Boo	6.7-7.4	4.99d	Eclipsing binary
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
X Cyg	5.9-6.9	16.39d	Cepheid
X Her	5.9-7.4	95d	Semi-regular

The Solar System

Comets

There are no comets suitable for binoculars and visible from the UK this month.

Asteroid Occultations

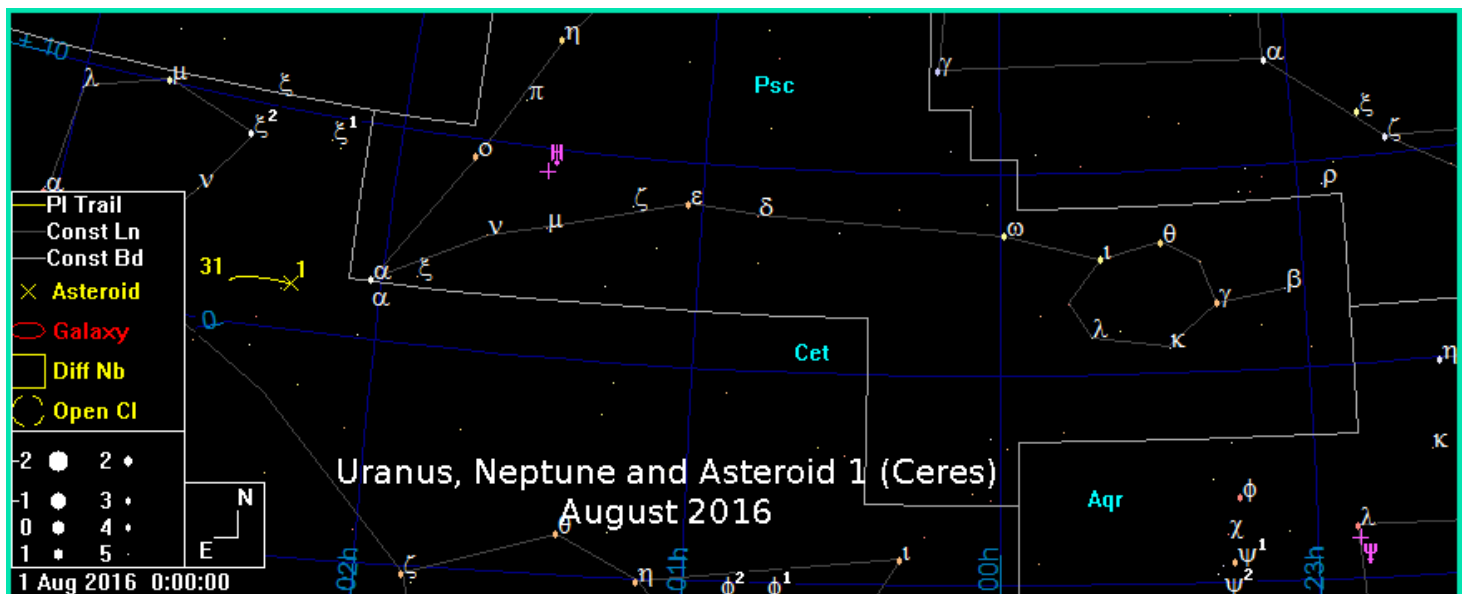
There are no asteroid occultations suitable for binoculars observable from our location this month.

Planets

The binocular planets, **Uranus** and **Neptune**, are now available in a fully dark sky all month. Both move less than a degree (retrograde) during the month

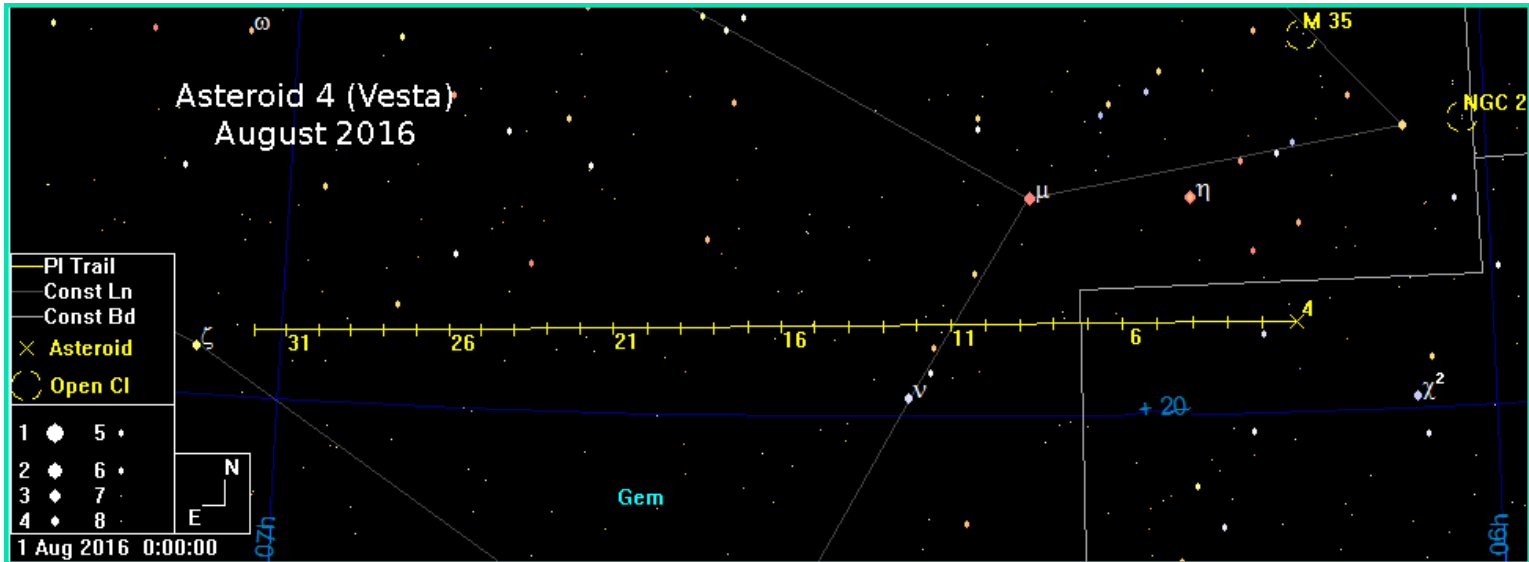
Uranus is at mag. +5.8 on a direct line between α and ϵ Psc.

Neptune is at mag. +7.8 just south of λ Aqr.



Asteroid 1 (Ceres) starts the month as a difficult (mag. +8.8) object 3.5° E of α Psc. It brightens to mag +8.3 as it moves 3° (prograde) during the month.

At the beginning of August, **Asteroid 4 (Vesta)** is a morning object, lying 3.5° S of M35. It moves about 12° prograde during the month, brightening slightly from mag. +8.5 to +8.4, and ends up less than a degree west of ζ Gem.



Meteor Showers

The waxing gibbous Moon will interfere with the Perseids, which are predicted to peak on the afternoon of the 12th. For this reason, the best time to observe will most likely be after Moonset on the 11th. The meteors are grains of dust that were left in the wake of Comet Swift-Tuttle. 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.

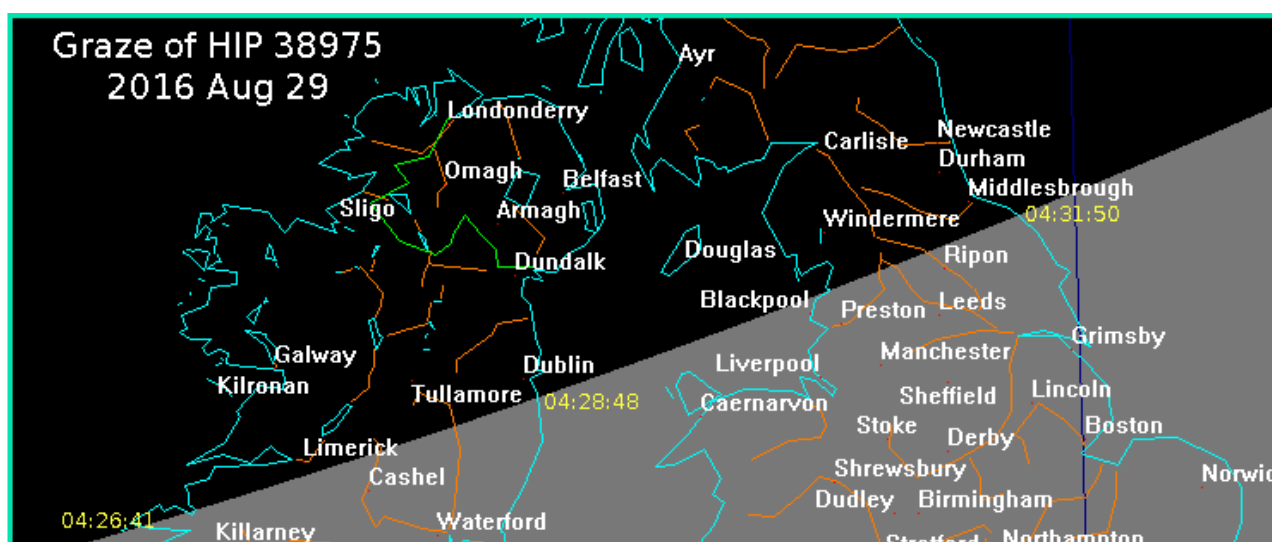
Binoculars are useful for observing the persistence of these ionisation trains that form the streak in the sky which is what we observe as a “shooting star”.

Lunar Occultations

Owing to the short evenings, there are very few occultations of stars brighter than mag +7.5 visible from the UK this month. Times and Position Angles are for my location (approx: 50.9N, 1.8W) and will vary by up to several minutes for other UK locations. The phases are **(D)**isappearance, **(R)**eappearance and **(Gr)**aze; they are all dark-limb events unless there is a **(B)**.

Lunar Occultations, August 2016, 50.9°N, 1.8°W							
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	Position Angle
Aug 15	23:57:35	D	HIP 96496	K0	5.7	61N	57
Aug 20	01:33:42	R	HIP 115257	K0	6.2	49S	209
Aug 23	00:33:14	R	HIP 302186	K0	6.4	43N	300
Aug 28	02:12:19	R	HIP 33358	K0	6.8	43N	318
Aug 29	04:31:10	Gr	HIP 38975	K0	6.1	2.2N	

The highlight is the graze of HIP 38975 at the end of nautical twilight on the 29th. It will be increasingly difficult the further east it is observed.



The Moon

- August 02 New Moon
- August 10 First Quarter
- August 18 Full Moon
- August 25 Last Quarter

Equipment Mini-Review

Levenhuk Sherman PRO 10x50

Manufacturer's Specification

Weight (g)	980
Field of View (°)	6.5
Close Focus (m)	5
Eye Relief (mm)	21
IPD (mm)	60 - 70
Waterproof	Yes
Prism Type	Porro
UK Guarantee	Lifetime
Origin	China
Body Material	Aluminium Alloy and ABS
Armour Type	Full
Nitrogen Gas Filled	Yes
Prism Material	BaK-4
Prism Coating	Multi
Lens Coating	Fully multicoated
Eyecup Type	Twist-up



I was asked by the distributor to review this binocular, which is one of their top-of-the range line Porro prism binoculars and is aimed at “*experienced hunters, extreme tourism enthusiasts and adventure seekers.*” Nothing about astronomers there!

There is a lot to like about this binocular and it is clear that an experienced user must have had significant input to the design. From the 3-position twist-up eye-cups and well-fitting tethered lens caps, to the large lugs on the right eyepiece dioptre adjustment and knurled periphery of the mounting-bush cover, the *Sherman PRO* has been designed with practicality in mind. It feels very light and well-balanced. Additionally, it is nitrogen-filled and waterproof. Mechanically, it is very good.

But what about the optics? It struggled under the harsher test of astronomical use. I could split Albireo (34 arcsec) over about the central 60% of the field of view, but the image rapidly deteriorated outside this. Stray light control, and therefore contrast, is very poor. However, colour rendition and

colour correction are both very good and, unlike many binoculars, not particularly sensitive to eye position.

Summary: OK as a general purpose binocular, mostly because it is mechanically well-designed, but the optical shortcomings mean that it cannot be recommended as an astronomical binocular.

You can read the [full review here](#).

Public Outreach & Talks

During August I will be at the following events, where I would be delighted to meet any readers of this newsletter who attend:

- | | | |
|--------------------|--|---|
| 12 th : | Fordingbridge Astronomers | Perseids Picnic
<i>(Public Outreach event)</i> |
| 16 th : | Solent Amateur Astronomers | Ten Ways the Universe Tries to Kill You
<i>(Talk)</i> |

Wishing you Clear Dark Skies,

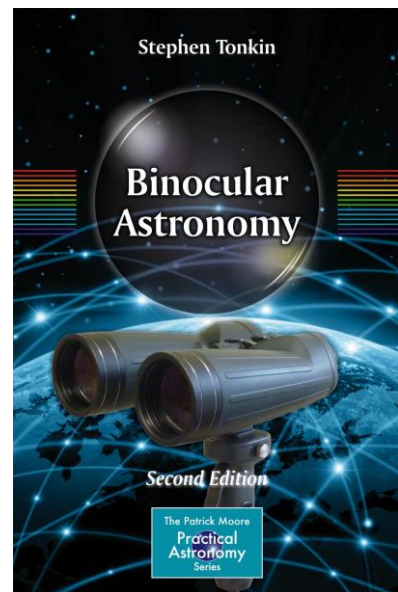
Steve Tonkin

for

[The Binocular Sky](#)

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- Purchase my book, [Binocular Astronomy](#):
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- Make a purchase via the affiliate links in the [Binocular Sky shopfront](#)
- Make a small [PayPal](#) donation to newsletter@binocularsky.com



Acknowledgments:

The charts in this newsletter were prepared with Guide v9.0 from <http://projectpluto.com>

Variable star data based on David Levy's *Observing Variable Stars*

Lunar occultation data derived with Dave Herald's *Occult*

Asteroid occultation data derived from Hristo Pavlov's *OccultWatcher*

Disclosure: Links to *Amazon* or *The Binocular Shop* may be affiliate links

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