



# The Binocular Sky

September  
2016

# Newsletter

## Introduction

Welcome to the **Binocular Sky** Newsletter for September 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 September, coupled with the fact that it now actually gets properly dark (and the night-length increases more rapidly as we approach the equinox!) 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.

The low-resolution charts are “clicky” and will take you to a higher resolution chart than is possible in the newsletter.

This month’s mini-review is of the new (-ish) Lunt 10x50 Magnesium.

If you would like to automatically receive this newsletter 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.)*

As the sky darkens at twilight, the Milky Way, always a pleasure to scan with binoculars of any size, arches overhead. 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. Even further to the south-west 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. Given the usual brightness of UK skies near the horizon, September is probably the latest you can realistically expect to see it in binoculars.

In September, 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. [M81](#) (Bode's Nebula) and [M82](#) (The Cigar Galaxy), both of which are easy in a 50mm binocular, are at a comfortable height in the northwest. 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 same can be said of [M33](#) (The

Pinwheel), which is considerably easier at the end of the month than it is at the beginning. 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. 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 throughout 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. In Aquarius, you should be able to find the magnitude +8.0 NGC 7009, the

*Saturn Nebula*. September is probably the earliest in the year that the *Helix Nebula*, NGC 7393 is observable in Britain before midnight.

*Planetary Nebulae are short-lived (generally 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.*

The two bright emission nebulae, M20 (the *Trifid*) and the larger, brighter and easier M8 (the *Lagoon*) are now sinking into the twilight; you will need a good south-western horizon if you are to have a realistic chance of observing them. 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](http://binocularsky.com/map_select.php)

<b>Binocular Double Stars for September</b>			
<b>Star</b>	<b>Magnitudes</b>	<b>Spectral Types</b>	<b>Separation (arcsec)</b>
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
δ 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
Σ1 And	7.1, 7.3	G5, G5	47
ψ-1 Psc	5.3, 5.8	A2, A0	30
π-1 Umi	6.6, 7.2	G5, G5	31

<b>Mira-type stars near predicted maximum (mag &lt; +7.5)</b>		
<b>Star</b>	<b>Mag Range</b>	<b>Period (days)</b>
R Aql	6.1 – 11.3	284
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
AR Cep	7.0-7.9	116	Semi-regular
RX Cep	7.2-8.2	55	Semi-regular
TX Psc	4.8-5.2	-	Irregular
RR Lyr	7.06-8.12	0.57d	RR Lyr
TX UMa	7.0-8.8	3.06d	Eclipsing binary
R Sge	8.0-10.4	71d, 1112 d	RV Tau
U Sge	6.5-9.3	3.38d	Eclipsing binary
DY Vul	8.4-9.7	-	Irregular
U Vul	6.7-7.5	7.99d	Cepheid
X Cyg	5.9-6.9	16.39d	Cepheid
SU Cyg	6.4-7.2	3.84d	Cepheid
AF Cyg	6.4-8.4	92.5	Semi-regular
TW Peg	7.0-9.2	90, 956	Semi-regular

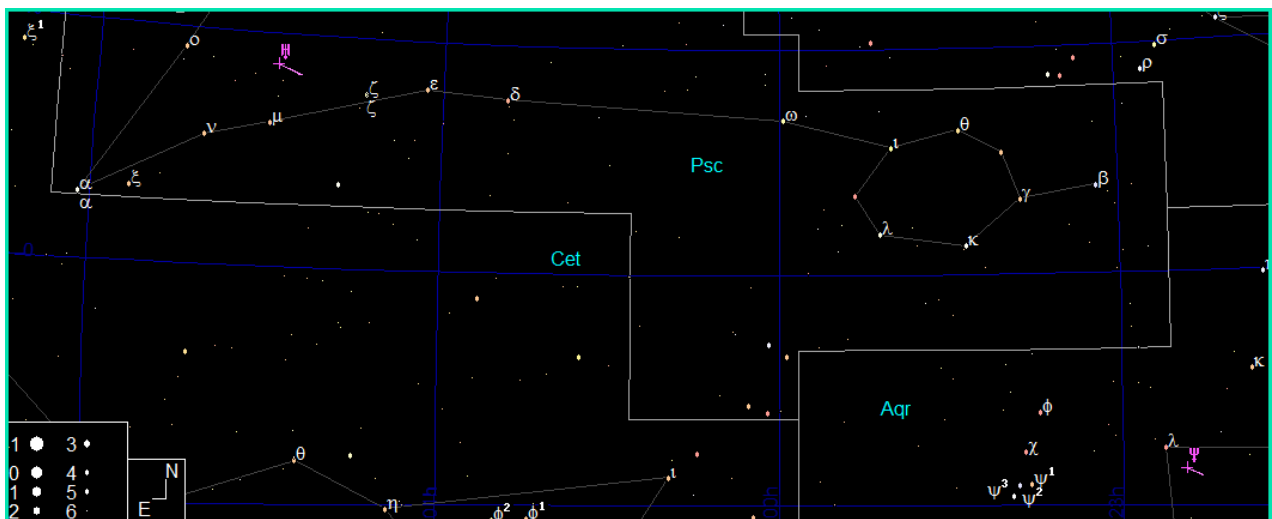
## The Solar System

### Comets

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

### Planets

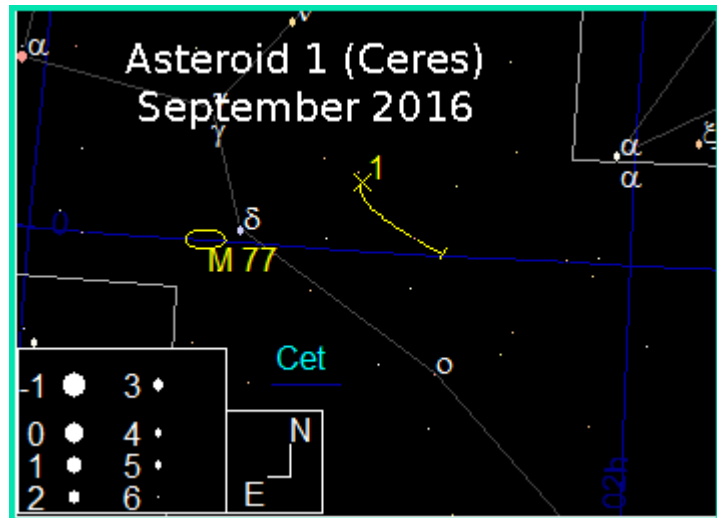
The binocular planets, **Uranus** and **Neptune**, are now available in a fully dark sky all month. Both move less than a degree (retrograde) during the month



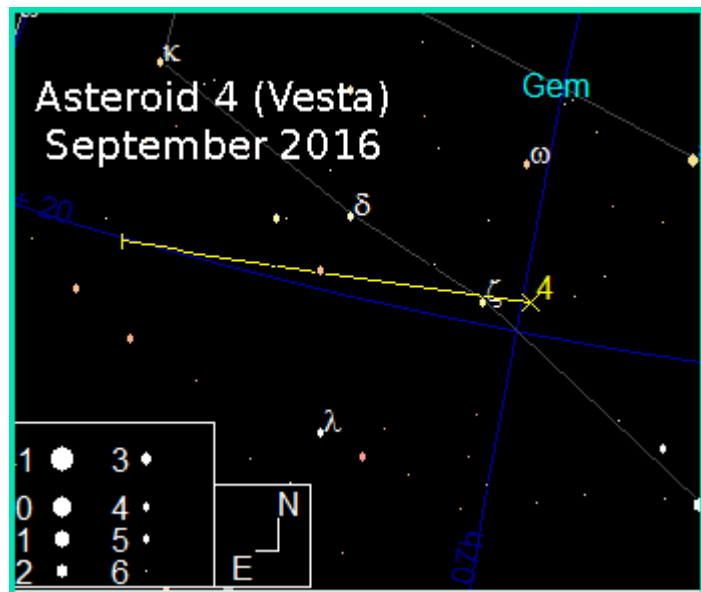
**Uranus** is at mag. +5.7 on a direct line between  $\alpha$  and  $\epsilon$  Psc.

**Neptune** is at mag. +7.8 just south of  $\lambda$  Aqr. It is at opposition on the 2<sup>nd</sup>, so may be observed throughout the hours of darkness.

**Asteroid 1 (Ceres)** starts the month as a difficult (mag. +8.3) object  $6.5^\circ$  E of  $\alpha$  Psc. It brightens to mag +8.2 as it moves  $3^\circ$  (retrograde) during the month.



At the beginning of September, **Asteroid 4 (Vesta)** is a late evening object, lying  $1^\circ$  W of  $\zeta$  Gem. It moves about  $11^\circ$  (prograde) during the month, brightening slightly from mag. +8.4 to +7.8.



## Meteor Showers

There are no major meteor showers this month

## Asteroid Occultations

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

## Lunar Occultations

As the nights lengthen, there is an increasing number of occultations of stars brighter than mag +7.0 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, September 2016, 50.9°N, 1.8°W							
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	Position Angle
Sep 11	19:45:45	D	HIP 93887	B8	6.3	23N	18
Sep 11	20:17:57	D	HIP 94040	K3	6.6	87S	88
Sep 18	21:59:49	R	v Psc	K3	4.5	34S	201
Sep 21	22:54:49	R	89 Tau	F0	5.8	81N	273
Sep 21	23:04:55	R	σ-1 Tau	A4	5.1	34S	208
Sep 21	23:18:19	R	σ-2 Tau	A5	4.7	63S	237
Sep 23	00:43:53	R	HIP 26786	M*	7.0	85S	264
Sep 23	03:41:43	R	130 Tau	F0	5.5	87S	266
Sep 24	01:57:27	R	26 Gem	A2	5.2	60S	243
Sep 25	01:09:30	R	BN Gem	O8	6.9	81N	287
Sep 27	03:08:54	R	HIP 46464	G5	6.9	60N	315
Sep 28	04:51:40	R	HIP 50792	K5	6.6	57N	323

You may also have heard that there is a daylight occultation of Jupiter on the 30<sup>th</sup>, but this occurs within 4° of the Sun, so will be **exceptionally hazardous** for observation with binoculars because of the ease with which you may accidentally point them too near the Sun; I strongly suggest that you do not attempt it!

## The Moon

September 01	New Moon
September 09	First Quarter
September 16	Full Moon
September 23	Last Quarter

## Equipment Mini-Review

### Lunt Magnesium 10x50

#### Manufacturer's Specification

Weight (g)	1340
Field of View (°)	6.5
Close Focus (m)	6
Eye Relief (mm)	20
IPD (mm)	56 - 74
Waterproof	Yes
Prism Type	Porro
UK Guarantee	5 yrs
Origin	China
Body Material	Aluminium Alloy
Armour Type	Thin synthetic "leatherette"
Nitrogen Gas Filled	Yes
Prism Material	BaK4
Prism Coating	Multi-coated
Lens Coating	Fully multi-coated with protective overcoat
Eyecup Type	Fold-down



Last April, I did a mini-review of the Lunt Magnesium 16x70, in which I declared that it had become my "grab and go" binocular of choice. The opportunity arose to acquire the 10x50 version at a very good price so, is it as good?

Like it's big sister, this is a marvellous binocular! Like it's big sister, it oozes quality, from the superb coatings to the smoothness of the hinge and eyepiece focusers, to the balance – it feels somewhat lighter than it actually is and so is easily hand-holdable.



It is remarkably sharp over most of the field. I could split *Albireo* (34 arcsec separation, magnitudes +3.1 and +4.7) to about 90% out from the centre of the field with very little vignetting towards the edge. The colour difference was easily visible – in fact, colour rendition is very good indeed.

It is very bright and very contrasty: the abrupt cut-off (due to the dust lane) on the western edge of M31 was easily apparent under mag. +5.5 skies.

Control of stray light is very good. Control of false colour is very good on axis, but becomes noticeable on bright objects (e.g. lunar limb) once they are off-axis, although it is still well-controlled and not overly obtrusive. I did not notice it at all on first magnitude stars. It is quite sensitive to eye positioning.

**Summary:** This is now my *hand-held* binocular of choice. I don't know of a better 10x50 that retails for under £700 – and this sells for half that! The UK retailer is [The Binocular Shop](#).

## Public Outreach & Talks

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

- |                    |                                      |  |
|--------------------|--------------------------------------|--|
| 5 <sup>th</sup> :  | <a href="#">Northern Ireland AAS</a> | <b>Ten Ways the Universe Tries to Kill You</b><br>(Talk) |
| 12 <sup>th</sup> : | <a href="#">Abingdon AS</a>          | <b>Binocular Astronomy</b><br>(Talk)                     |

Wishing you Clear Dark Skies,

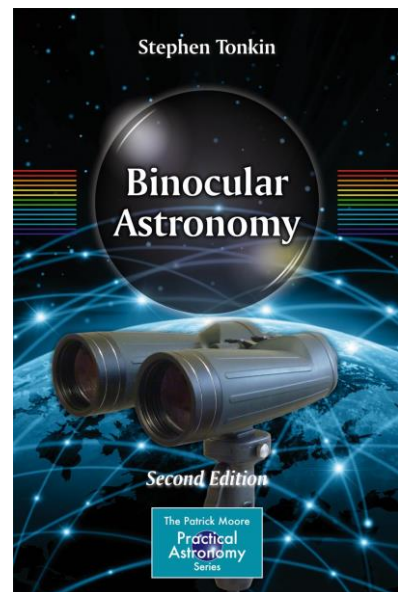
**Steve Tonkin**

*for*

**[The Binocular Sky](#)**

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](#)
- Make a small [PayPal](#) donation to [newsletter@binocularsky.com](mailto:newsletter@binocularsky.com)



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#### **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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