



The Binocular Sky



October
2015

Newsletter

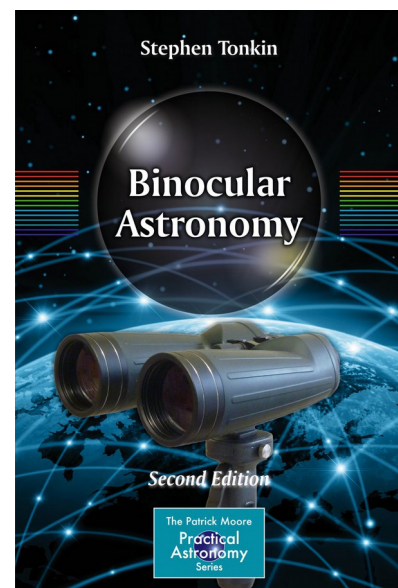
Introduction

Welcome to the **Binocular Sky** Newsletter of October 2015. 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.

Solar-system charts are clickable and will take you to a (usually) larger chart that may be more useful as well as being downloadable to your computer, tablet or smartphone.

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If you would like to support this Newsletter, the simplest way is to purchase my book, [Binocular Astronomy](#). Click on the image for more information.



The Deep Sky

As the sky darkens at twilight, in the North are [NGC 457 \(the Owl Cluster\)](#) and [NGC 633](#) in Cassiopeia and the [Perseus Double Cluster](#). To the East of them lie [M34](#) in Perseus and the often-overlooked [NGC 752](#) in Andromeda. More open Clusters are still visible in the south-western 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 [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 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.

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!

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. 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. 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 (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.

Variable Stars

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
R Aql	6.1-11.5	284
V CrB	7.5-11.0	358

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

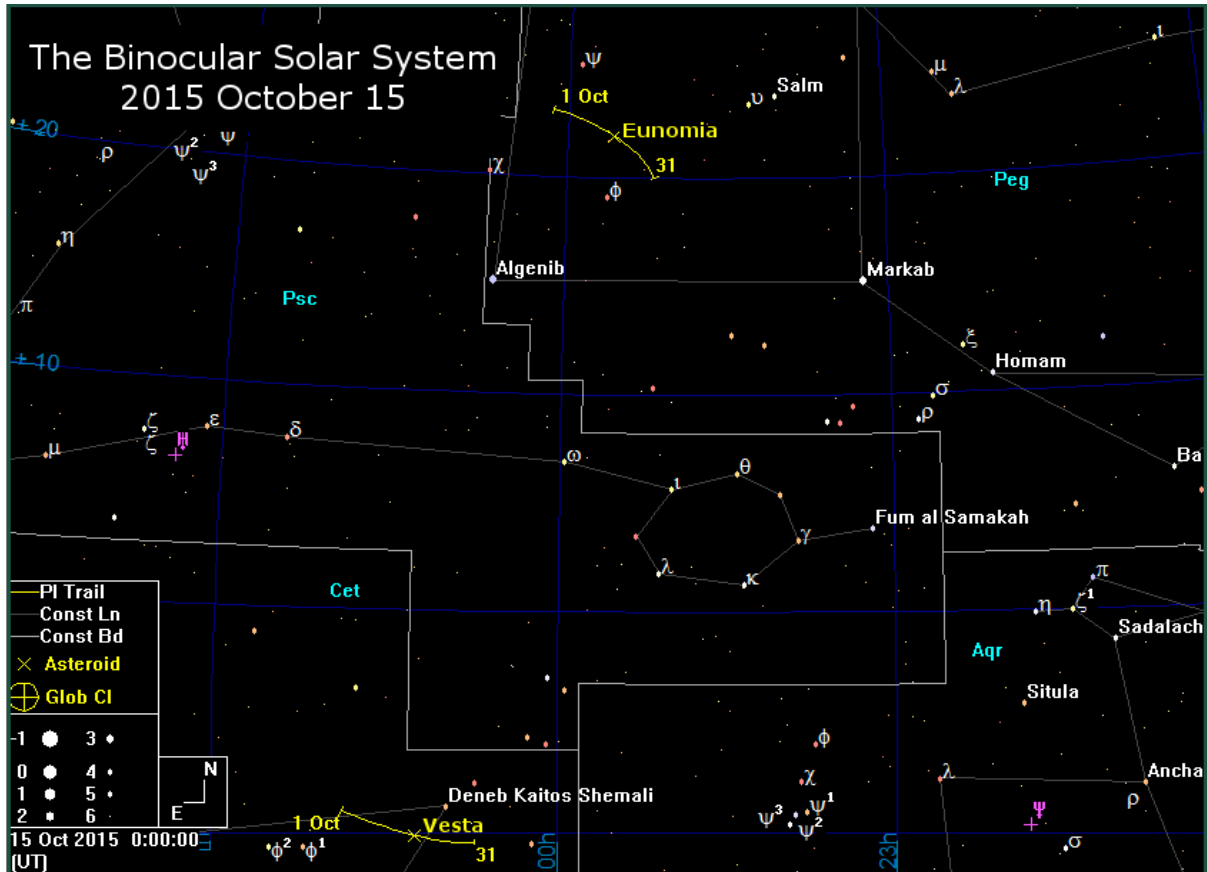
Double Stars

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
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
Σ11 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

Minor Planets

Asteroid 4 (Vesta) is observable in Cetus as it fades half a magnitude from +6.3 during the month. Owners of larger binoculars (or dark skies) also have an opportunity to observe **Asteroid 15 (Eunomia)**, which hovers around 8th magnitude all month. Both culminate before midnight (UT) by mid-month.



Planets

The binocular planets, **Uranus** and **Neptune**, also culminate before midnight by mid-month, and are both above the horizon when evening twilight ends. **Uranus** is at magnitude +5.7 and just SW of ζ *Psc*. It moves just over a degree to the south-southwest during the month.

Neptune lies between λ and σ *Aqr*, but is much fainter than Uranus at magnitude +7.8, but it moves just half a degree in the direction of σ during the month.

Comets

There are no bright comets visible from our location.

Meteor Showers

The Moon is favourable for the Orionids (peak 21st/22nd, ZHR 15-70). The meteors are grains of dust that were left in the wake of Comet P1 (Halley). 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".

Asteroid Occultations

There are no asteroid occultations of stars visible from the UK and suitable for binoculars this month.

Lunar Occultations

There are several occultations of stars brighter than mag +7.5 visible from the UK this month, notably just after midnight on the 29th, when the Moon passes through the Hyades.

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 types are (**D**)isappearance,

(**R**)eappearance and (**Gr**)aze; they are all dark-limb events unless

there is a (**B**).

Lunar Occultations, Sep 2015, 50.9°N, 1.8°W					
Date	Time	Type	Star	Mag	PA (°)
Oct 01	02:54	R	SAO 93327	6.1	248
Oct 18	17:47	D	SAO 160909	6.5	12
Oct 19	18:47	D	SAO 161935	6.8	99
Oct 20	18:03	D	SAO 162980	6.9	50
Oct 23	22:08	D	67 Aqr	6.4	88
Oct 26	18:47	D	μ Psc	4.8	107
Oct 29	19:26	R	θ2 Tau	3.4	218
Oct 29	19:31	R	θ1 Tau	3.8	241
Oct 29	20:21	R	SAO 93975	4.8	270
Oct 29	21:40	R	SAO 94004	6.6	266
Oct 29	22:44	R	Aldebaran	0.9	281
Oct 31	01:50	R	SAO 94760	7	243
Oct 31	05:18	R	130 Tau	5.5	282

The Moon

Oct 04 Last Quarter
Oct 13 New Moon
Oct 20 First Quarter
Oct 27 Full Moon

Wishing you Clear Dark Skies,

Steve Tonkin

for

The Binocular Sky



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*

Occultation data derived with Dave Herald's *Occult*

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