The Binocular Sky Newsletter

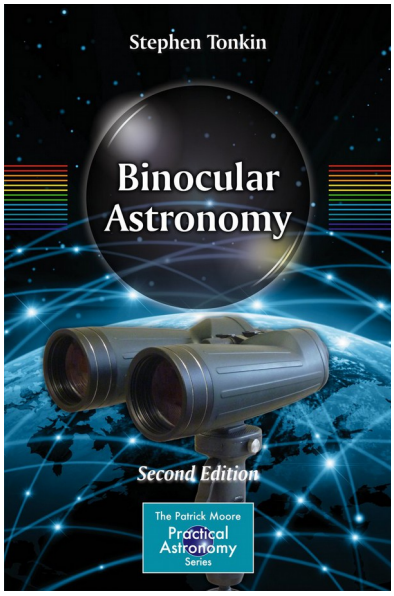
October 2014

Introduction

Welcome to the ***Binocular Sky*** Newsletter of October 2014. 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. For this Newsletter to be a useful tool, it needs to have the information that **YOU** want in it; therefore please do not be shy about making requests – if I can accommodate your wishes, I shall do so.

If you would like me to email this newsletter to you each month, please complete and submit the subscription form. You can get "between the newsletters" alerts, etc. via and .

If you would like to support this Newsletter, the simplest way is to purchase my book, Binocular Astronomy. Please click on the image for more information.



The Deep Sky *(Hyperlinks take you to charts and more information)*

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 I 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 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 Cyg	7.5-14.0	426
V CrB	7.4-11.0	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

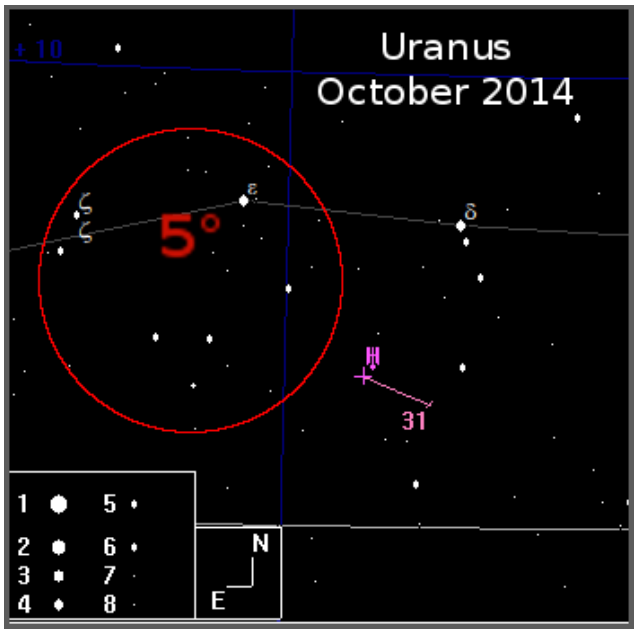
Double Stars

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
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

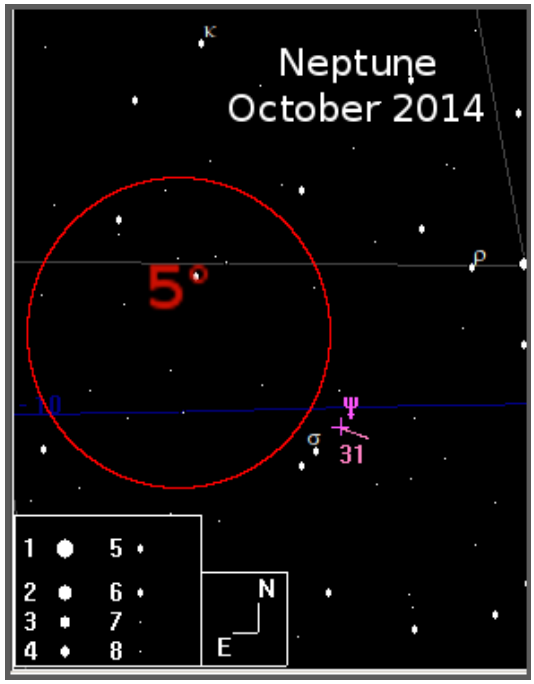
The Solar System

Planets

The binocular planets, **Uranus** and **Neptune**, are becoming easier to observe. **Uranus** reaches opposition on the 7th, at magnitude +5.7 and just over 2° south of ε and δ *Psc.* It moves just over a degree during the month.



Neptune starts the month half a degree NW of λ *Aqr* and moves a further half a degree westward during the month. It is much fainter than Uranus at magnitude +7.8, but is still an easy binocular target.



Comets

Comet C/2014 E2 (Jacques) is fading rapidly and can no longer be observed with small apertures. **Comet C/2012 (PanSTARRS)** is brightening, but is lost in the dawn twilight.

Asteroid Occultations

There are no binocular-accessible asteroid occultations visible from the British Isles this month.

Lunar Occultations

There are several occultations of stars brighter than mag +7.5 visible from the UK this month, including the evening occultation of of β Cap on the 30th. 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 and (**R**)eappearance. The occultations near the Full Moon on the 8th will be very difficult. There is also a daylight occultation of Saturn on the 25th. The planet will disappear at approximately 16:00 UT (depending on your location) and reappear just over an hour later in civil twilight, but at a very low altitude. To be visible, even in large binoculars, the sky will need to be exceptionally transparent.

Lunar Occultations, Oct 2014, 50.9°N, 1.8°W

Date	Time	Type	SAO	Mag	PA (°)
Oct 02	22:26:04	D	HIP 96666/7	7.3	91
Oct 04	23:16:38	D	164519	7.3	56
Oct 05	21:17:14	D	146135	6.2	133
Oct 05	22:06:55	D	146142	6.9	150
Oct 06	22:00:56	D	146733	6.4	147
Oct 06	23:40:38	D	146756	6.4	59
Oct 07	00:45:21	D	146780	5.9	147
Oct 08	19:02:09	R	109753	6.0	306
Oct 09	02:06:40	R	109907/8	6.2	221
Oct 10	02:52:02	R	92941	7.4	265
Oct 11	23:00:35	R	93805	7.0	287
Oct 15	04:09:47	R	96371	7.1	283
Oct 15	05:20:11	R	96409	5.9	228
Oct 16	00:14:14	R	97192	7.3	243
Oct 27	18:15:52	D	160474	6.5	87
Oct 28	17:39:25	D	161255	7.4	40
Oct 28	19:52:05	D	161376	5.8	52
Oct 30	21:55:19	D	163471	6.1	45
Oct 30	22:00:26	D	163481	3.1	49

The Moon

Oct 01 First Quarter

Oct 08 Full Moon

Oct 15 Last Quarter

Oct 23 New Moon

Oct 31 First Quarter

Wishing you Clear Dark Skies,

Steve T ***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*