





The Binocular Sky

July
2014

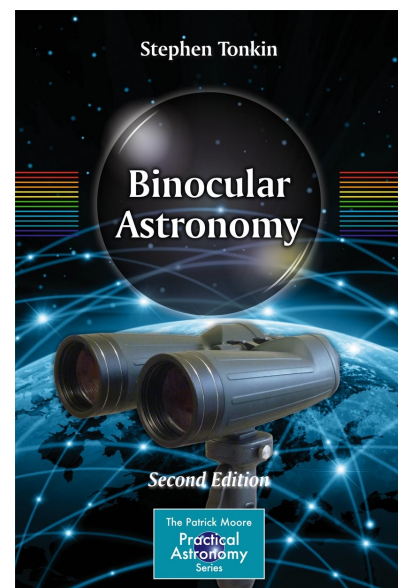
Newsletter

Introduction

Welcome to the ***Binocular Sky*** Newsletter of July 2013. 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](#). Click on the image for more information.



The Deep Sky

Visible low in the North are [NGC 457 \(the Owl Cluster\)](#) and [NGC 633](#) in Cassiopeia and the [Perseus Double Cluster](#). More open clusters are visible in the southern sky in the region of Ophiuchus rises. These include [Melotte 186](#), [NGC 6633](#) and [IC 4665](#), all of which are easily visible in 50mm binoculars. [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](#). A little to the northeast, in Scutum, is [M11 \(the Wild Duck Cluster\)](#). You need at least a 15x70mm binocular to resolve the vee-shape of brighter stars that gives this cluster of a thousand or so stars its common name. 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 July, 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 M3, 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. It's apparent size is nearly as large as a Full Moon. At a reasonable altitude by mid-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 Dumbell Nebula – although I insist that it looks more like an apple core than a dumbell!) is now 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 July			
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

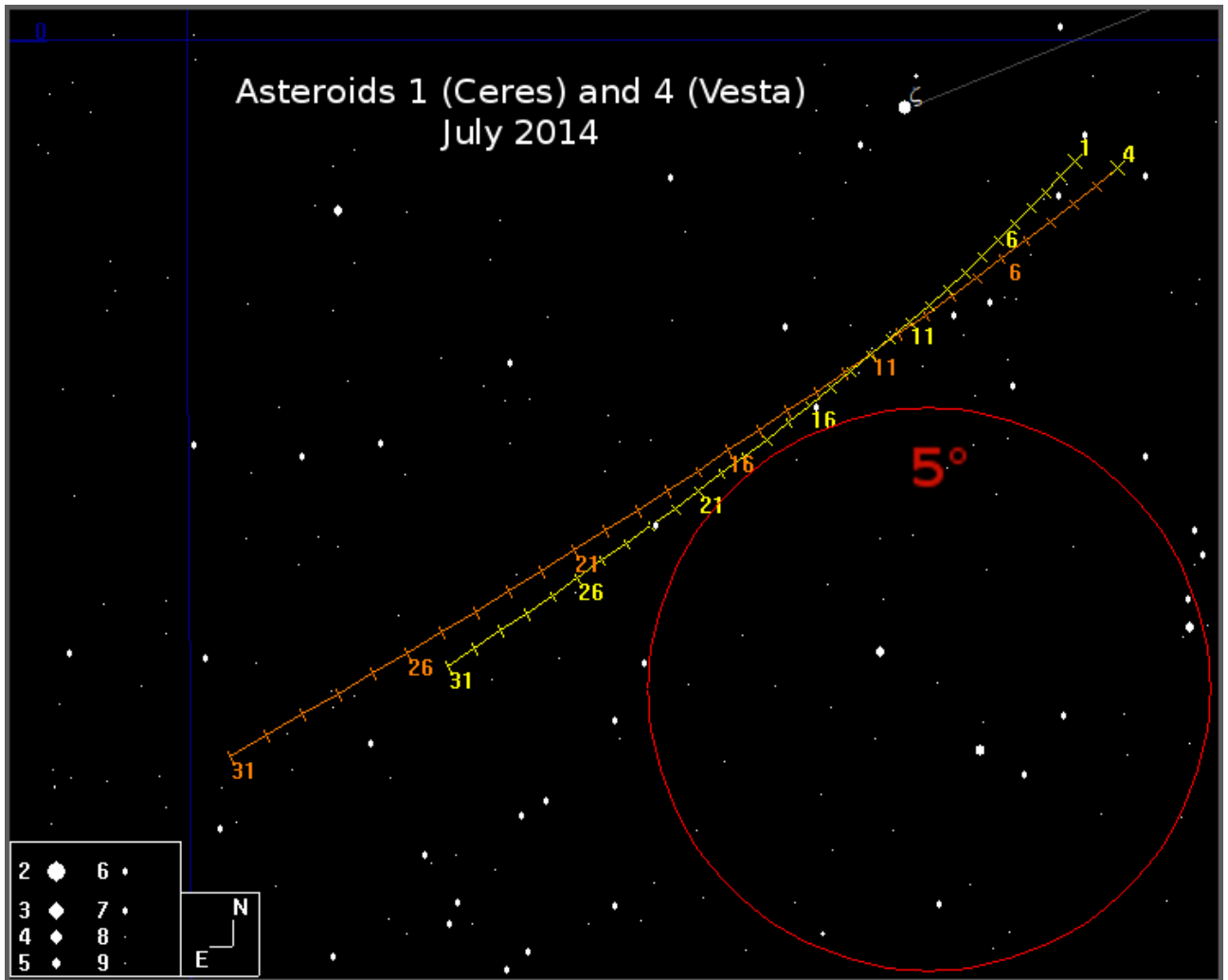
Mira-type stars near predicted maximum (mag < +8.5)		
Star	Mag Range	Period (days)
X Cam	7.4-10.7	144
Chi Cyg	5.2-13.4	408
X Oph	6.8-8.8	329
R Ser	6.9-13.4	526

Selection of Binocular Variables (mag < +8.5)			
Star	Mag Range	Period	Type
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
EK Cep	8.2-9.5	4.3d	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
ZZ Boo	6.7-7.4	4.99d	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

The Solar System

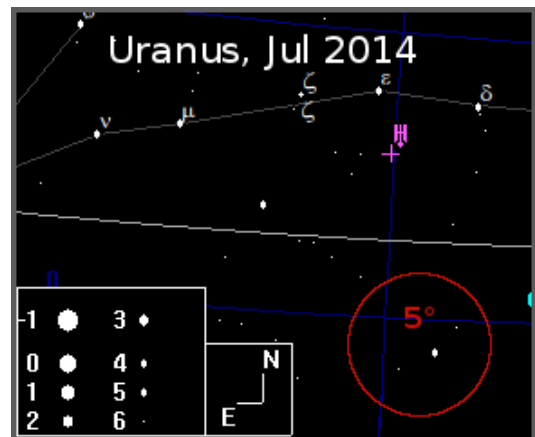
Minor Planets

Ceres (mag +8.4) and **Vesta** (+7.1) are very close to each other, near ζ Vir, during the first week of the month and are observable even in small binoculars.

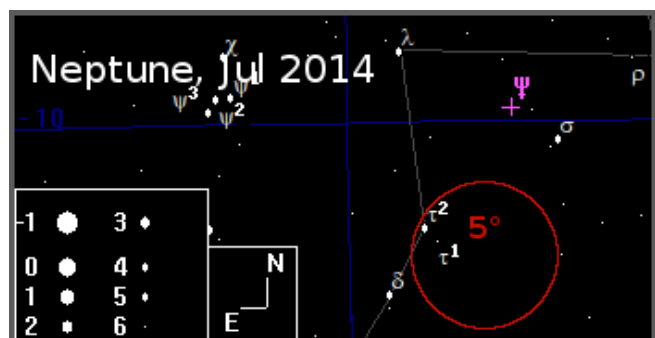


Planets

The binocular planets, **Uranus** and **Neptune**, are becoming easier to observe in the morning sky. **Uranus** is at magnitude +5.8 and just over 2° south of ϵ Psc. It moves only about 10 arcminutes during the month.

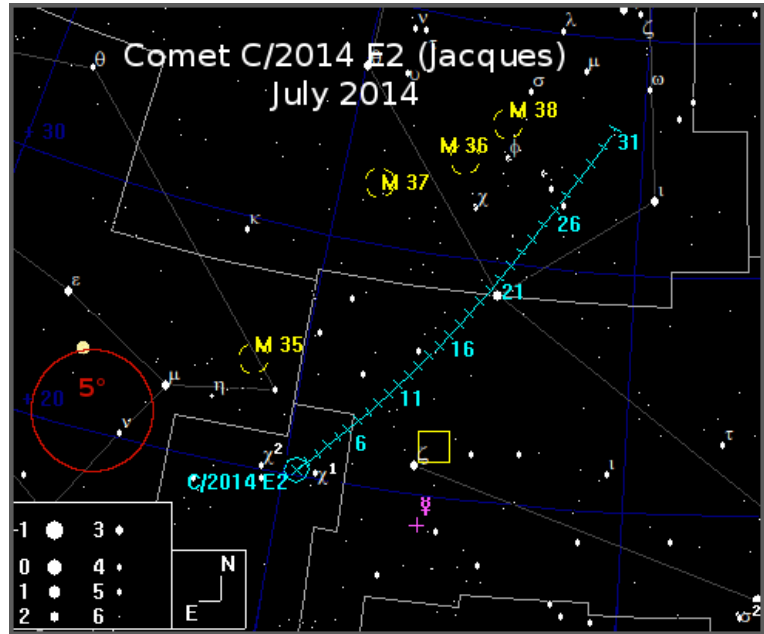


Neptune lies between λ and σ Aqr, but is much fainter than Uranus at magnitude +7.9, but its apparent motion is only three times as much, in the direction of σ .



Comets

Comet C/2014 E2 (Jacques) was estimated to be at about mag 7.0 just before it was lost into conjunction on June 24th. With any luck, it should still be a binocular object and observable after it moves into Auriga at the end of the month.



Meteor Showers

The only meteor shower this month is the Southern Delta Aquariids, a weak shower that peaks on the 28th, just after the New Moon, and which is active for almost a fortnight either side of this. The radiant is low down (just north of Fomalhaut), so it's not ideal for our latitudes, but 15-20 per hour may be possible. These faint, slow meteors are dust particles from a comet that has now split into two (Comets Marsden and Kracht). 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. 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, Jul 2014, 50.9°N, 1.8°W					
Date	Time	Type	SAO	Mag	PA (°)
Jul 07	22:44:55	D	158828	7.1	98
Jul 11	21:12:13	D	161842	6.9	129
Jul 11	21:49:56	D	161871	6.8	121
Jul 12	01:12:22	D	162001	6.6	76
Jul 14	00:51:18	R	164025	7.5	229
Jul 14	01:50:43	R	164046	6.6	271

The Moon

- Jul 05 First Quarter
- Jul 12 Full Moon
- Jul 19 Last Quarter
- Jul 26 New 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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