



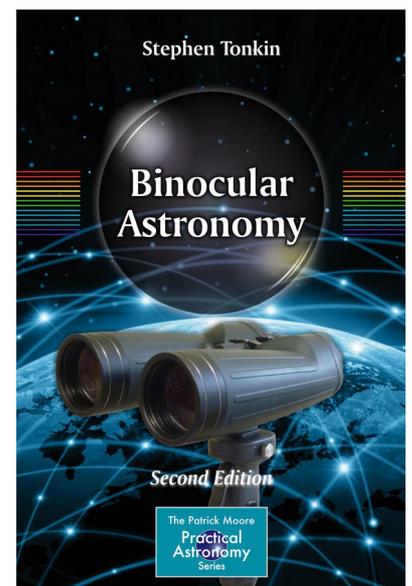
Introduction

Welcome to the ***Binocular Sky*** Newsletter of June 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 or smartphone.

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

([Hyperlinked text](#) will take you to charts and more information.)

Visible low in the North are [NGC 457 \(The Owl Cluster\)](#), [NGC 633](#) in Cassiopeia and the [Perseus Double Cluster](#). The finest and best-placed open cluster available this month is [Melotte 111](#), the cluster that gives Coma its name. More open clusters are becoming visible in the southeastern sky as Ophiuchus rises. These include [Melotte186](#), [NGC 6633](#) and [IC4665](#), all of which are easily visible in 50mm binoculars.

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 the region of Ophiuchus, see if you can find [Barnard's Star](#). This has the largest known [proper motion](#) of any star. 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 June, 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. Look out for the two galaxy trios in Leo ([M95/96/105](#) and [M65/66/NGC3628](#)) which are now moving into the western sky, and [Markarian's Chain](#) in Coma Berenices, which is very well placed as we enter astronomical twilight. If you have a big binocular, also observe the edge-on [NGC4565 \(Berenice's Hair Clip\)](#), which is next to [Melotte 111](#). Also 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 Canes Venatici globular cluster M3, is a good one to start with during an June evening's observing. Later in the evening, the two Hercules globulars, M92 and the very impressive, and very easy to find, M13 are at a better 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.

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.

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 appearance of giant planets.

For interactive charts of Deep Sky Objects visible from 51°N, please visit: http://binocularsky.com/map_select.php

Binocular Double Stars for June			
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
i 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

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
R Vir	6.9-11.5	145d	Mira
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
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

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
UV Aur	7.4-10.7	394
Chi Cyg	5.2-13.4	408

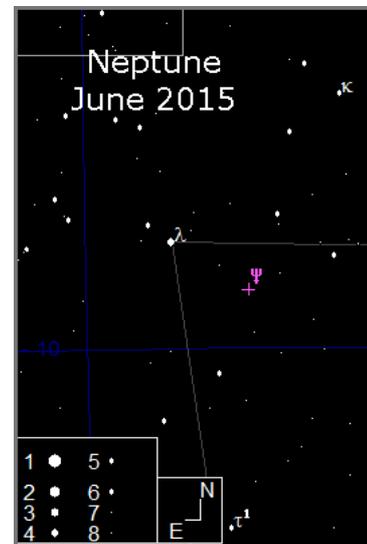
The Solar System

(The charts in this section are "clicky")

Planets

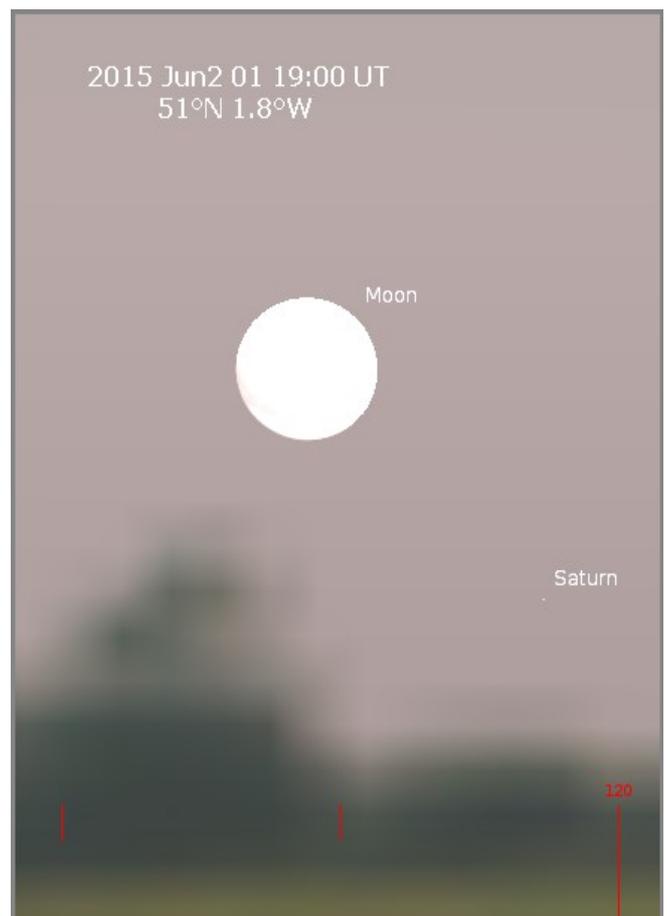
Of the binocular planets, **Uranus** only just creeps above the horizon as morning nautical twilight dawns. **Neptune** is a tricky object in the southeast, shining at only mag +7.9 in astronomical twilight. It is 2° SW of λ Aqr. Its position changes by only 4 arcmin this month.

There are no bright **asteroids** observable this month.



Appulse of Moon and Saturn

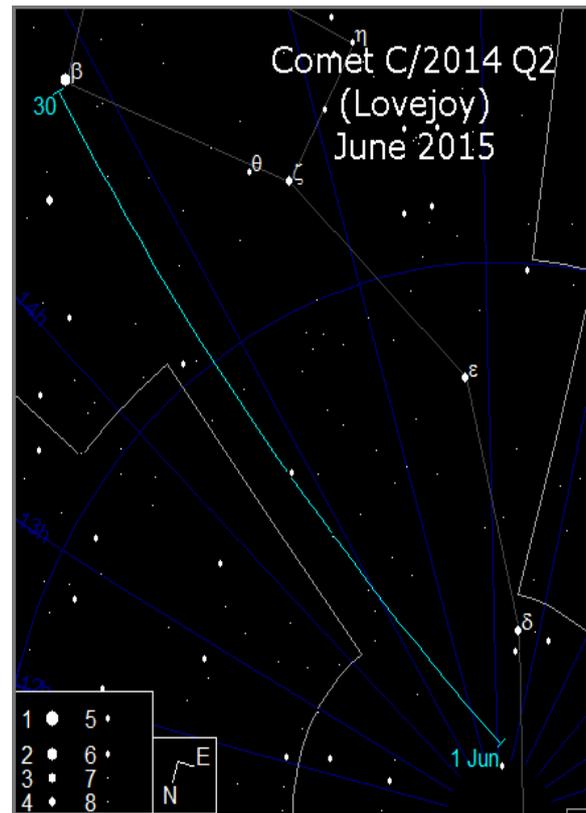
On June 01, Moon and Saturn will rise close to each other at an azimuth of approx. 120° when viewed from southern Britain. Saturn will rise just before 20:00 BST (19:00 UT) for most of Britain. The Sun will be above the horizon for another hour or so. Binoculars are the ideal instrument for observing this event, with the bodies separating from their 1.2° closest approach as they rise.



Landscape view prepared with [Stellarium](#) under [GNU Public License](#)
CompassMarks Plugin by [Matthew Gates](#)

Comets

Comet C/2014 Q2 (Lovejoy) is circumpolar in Ursa Minor. Fading from a magnitude about +7.5 at the beginning of the month, it is now a very difficult binocular object and you should use an aperture of at least 70mm to have a good chance of success. At the end of the month it is less than 15 arcmin from *Kochab* (β UMi)



Meteor Showers

There are no major meteor showers this month, although the very unpredictable (ZHR: anywhere from 0 to 100) **June Boötids** are active from the 22nd, peaking five days later. The meteors are grains of dust that were left in the wake of Comet 7P (Pons-Winnecke) which passed perihelion in January. 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 that we observe as a “shooting star”.

The Moon

- Jun 02 Full Moon
- Jun 09 Last Quarter
- Jun 16 New Moon
- Jun 24 First Quarter

Lunar Occultations

As June nights get shorter, there is only one occultation of a star brighter than mag +7.0 visible from the UK this month. Time and Position Angle is for my location (approx: 50.9N, 1.8W) and will vary by up to several minutes for other UK locations. It is a **(R)**eappearance.

Lunar Occultations, June 2015, 50.9°N, 1.8°W					
Date	Time	Type	SAO	Mag	PA (°)
Jun 05	02:42	R	SAO 162050	6.4	269

Public Astronomical Activity

I will be doing some solar observing outreach at the **International Sun Day** event at Blashford Lakes on the 21st. If any of the readers of this newsletter attends, please do introduce yourself!

Wishing you Clear Dark Skies,

Steve Tonkin

for

The Binocular Sky

Acknowledgments:

Unless otherwise stated, 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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