



# The Binocular Sky

July  
2018

# Newsletter



## Introduction

Welcome to July's **Binocular Sky** Newsletter. For those of you who are new to it, the intention of this monthly offering is to highlight some of the binocular targets for the coming month. It is primarily targeted at binocular (and small telescope) observers in the UK, but should be quite useful for observers anywhere north of Latitude  $30^{\circ}\text{N}$  and not entirely useless even further south (I have at least one subscriber as far south as  $12^{\circ}\text{N}$ ).

Astronomical darkness, albeit short, return for locations south of about  $53.5^{\circ}\text{N}$  this month and, as binocular observers with our combination of maximum portability and minimal set-up time, we are well suited to take advantage of what this darkness reveals.

Uranus and Neptune both become much easier to observe this month, as is Vesta, which is nicely placed for southern Britain and, if you've not seen an asteroid before, this is a good opportunity – but don't tarry: it's now beginning to fade.

Although conditions for neither is ideal, those of us in southern England do at least have a couple of lunar grazing occultations to test ourselves on this month. Details on page 8.

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

## The Deep Sky

*(Hyperlinks will take you to finder charts and more information about the object.)*

[NGC 457](#) (the Owl Cluster) and [NGC 633](#) in Cassiopeia, and the [Perseus Double Cluster](#) are visible low in the north. More open clusters are visible in the southern sky as the region around 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.

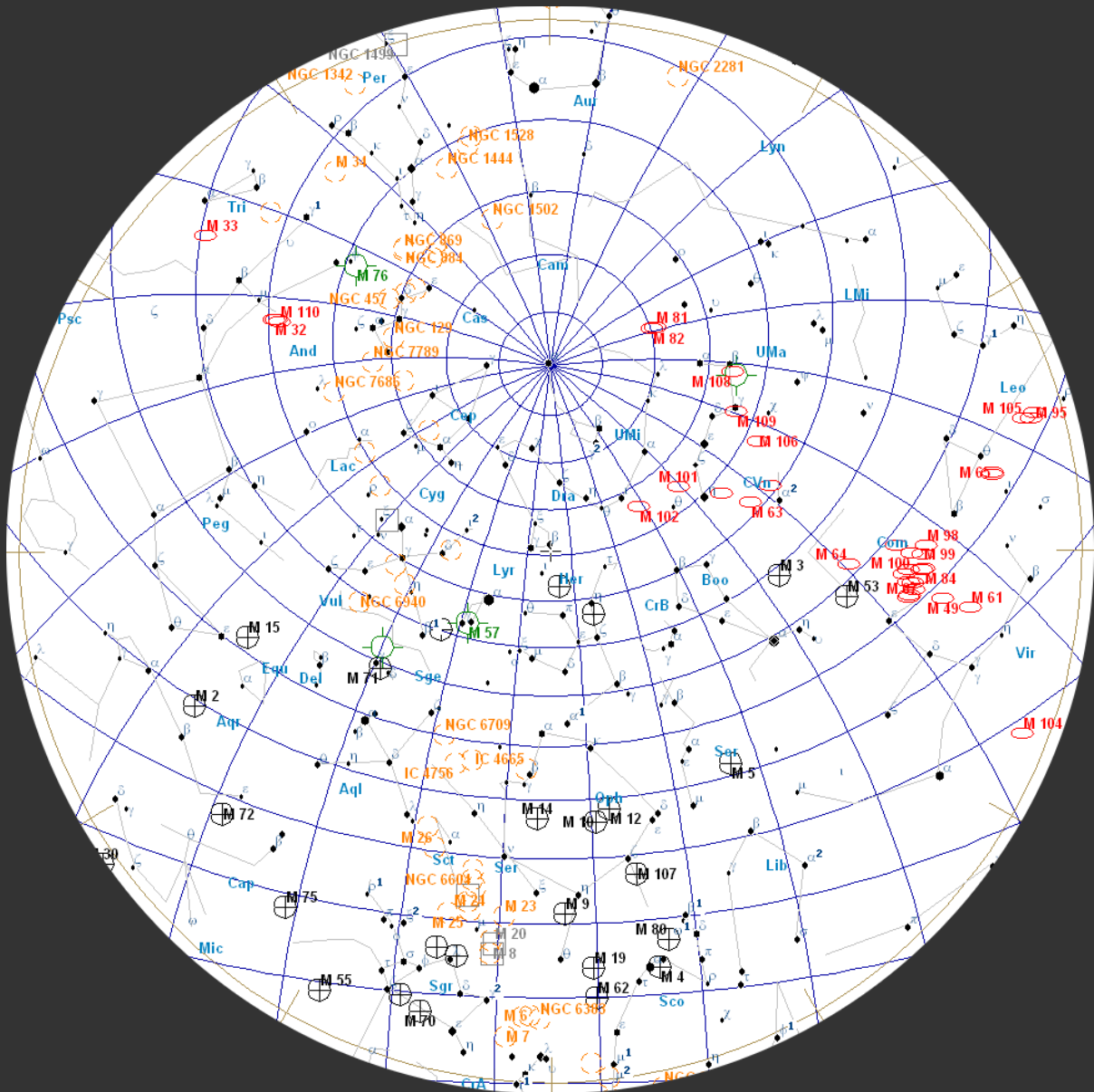
In July, we are able to look out of the plane of the Galaxy during the evening. This makes more globular clusters and galaxies available for observation. Very well placed this month are [M81](#) (Bode's Nebula) and [M82](#) (The Cigar Galaxy), both of which are easy in a 50mm binocular. These can be used as a good demonstration of averted vision: if you have them both in the same field of view, you may see that the

*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!*

51°N

July 01, 23:00 UT July 15, 22:00 UT July 31, 21:00 UT

(chart is "clicky")



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.*

The easiest planetary nebula, [M27](#) (the [Dumbbell Nebula](#) – although I insist that it looks more like an apple core than a dumbbell!) 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 appearance of giant ghostly 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.

## July Deep Sky Objects by Right Ascension

Object	Con	Type	Mag	RA (hhmmss)	Dec (ddmmss)
M31 (the Great Andromeda Galaxy)	And	gal	4.3	004244	411608
NGC 457 (the ET Cluster, the Owl Cluster)	Cas	oc	6.4	011932	581727
NGC 663	Cas	oc	7.1	014601	611406
NGC 884 and NGC 869 (the Perseus Double Cluster)	Per	oc	5.3	022107	570802
M81 (NGC 3031)	UMa	gal	7.8	095533	690401
M82 (NGC 3034)	UMa	gal	9.2	095554	694059
M51 (NGC 5194, the Whirlpool Galaxy)	CVn	gal	8.9	132952	471144
M101 (NGC 5457)	UMa	gal	7.7	140312	542057
M5 (NGC 5904)	Ser	gc	5.7	151833	020459
M13 (NGC 6205, the Great Hercules Globular Cluster)	Her	gc	5.8	164141	362738
M92 (NGC 6341)	Her	gc	6.4	171707	430812
IC 4665 (The Summer Beehive)	Oph	oc	4.2	174618	054300
M23 (NGC 6494)	Sgr	oc	5.5	175700	-190100
Barnard's Star	Oph	st	9.5	175749	044136
Melotte 186	Oph	oc	3.0	180030	025356
M20 (NGC 6514, the Trifid Nebula)	Sgr	en	6.3	180218	-230159
M8 (NGC 6523, the Lagoon Nebula)	Sgr	en	5.0	180348	-242259
NGC 6572	Oph	pn	9.0	181206	065113
M24	Sgr	oc	4.6	181826	-182421
M16 (NGC 6611, the Eagle Nebula)	Ser	oc	6.0	181848	-134749
M17 (NGC 6618, the Omega Nebula or Swan Nebula)	Sgr	en	6.0	182048	-161059
NGC 6633	Oph	oc	4.6	182715	063030
M25 (IC 4725)	Sgr	oc	4.6	183146	-190654
M11 (NGC 6705, Wild Duck Cluster)	Sct	oc	5.8	185106	-061600
M27 (NGC 6853, the Dumbbell Nebula, the Apple Core Nebula)	Vul	pn	7.6	195936	224318
NGC 6934	Del	gc	8.8	203411	072415
M15 (NGC 7078)	Peg	gc	6.2	212958	121003
M2 (NGC 7089)	Aqr	gc	6.5	213327	-004922

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)

### Variable Stars

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
AF Cyg	6.4-8.4	92.5	Semi-regular
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
SU Cyg	6.4-7.2	3.84d	Cepheid
X Cyg	5.9-6.9	16.39d	Cepheid

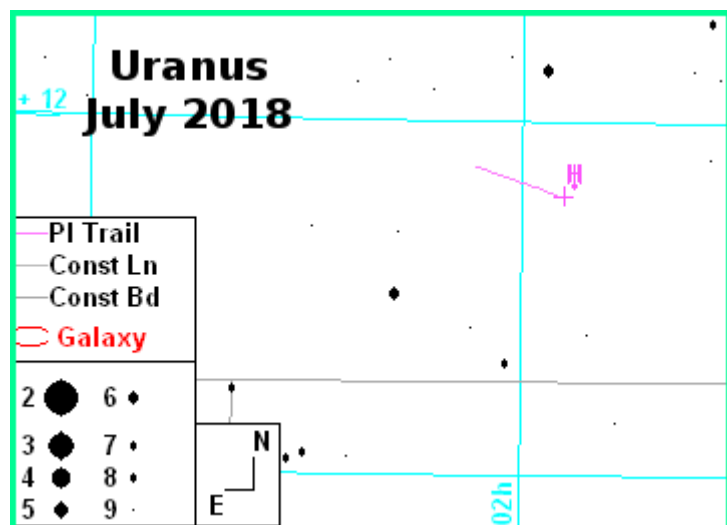
Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
R Aqr	5.2-12.4	387
R Ser	5.2-14.4	356

## Double Stars

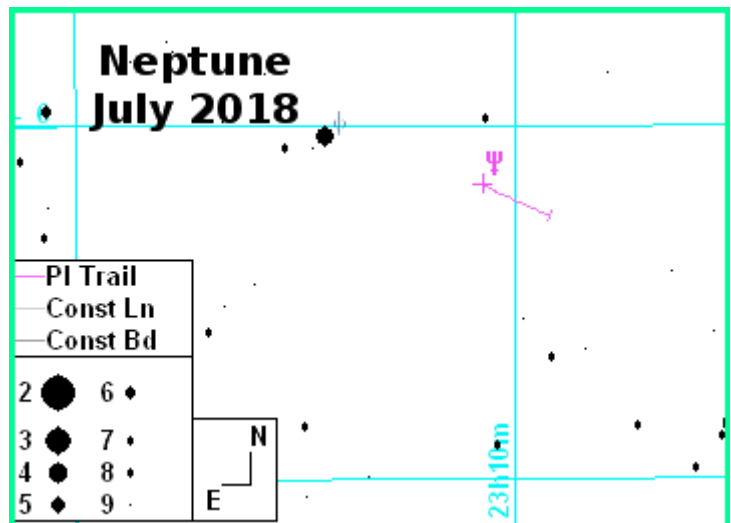
Binocular Double Stars for July			
Star	Magnitudes	Spectral Types	Separation (arcsec)
67 Oph	4.0, 8.1	B5, A	54
$\rho$ Oph	5.0, 7.3, 7.5	B5, A, B3	151, 157
53 Oph	5.7, 7.4	A2, F	41
$\gamma$ Her	3.7, 9.4	F0, K	43
$\delta$ Boo	3.5, 7.8	K0, G0	105
$\mu$ Boo	4.3, 7	F0, K0	109
$\iota$ Boo	4.0, 8.1	A5, A2	38
$\nu$ Boo	5.0, 5.0	K5, A2	628
DN & 65 UMa	6.7, 7.0,	A3, B9	63
$\pi$ -1 UMi	6.6, 7.2	G5, G5	31
$\delta$ Cep	4.1, 6.1	F5, A0	41

## The Solar System

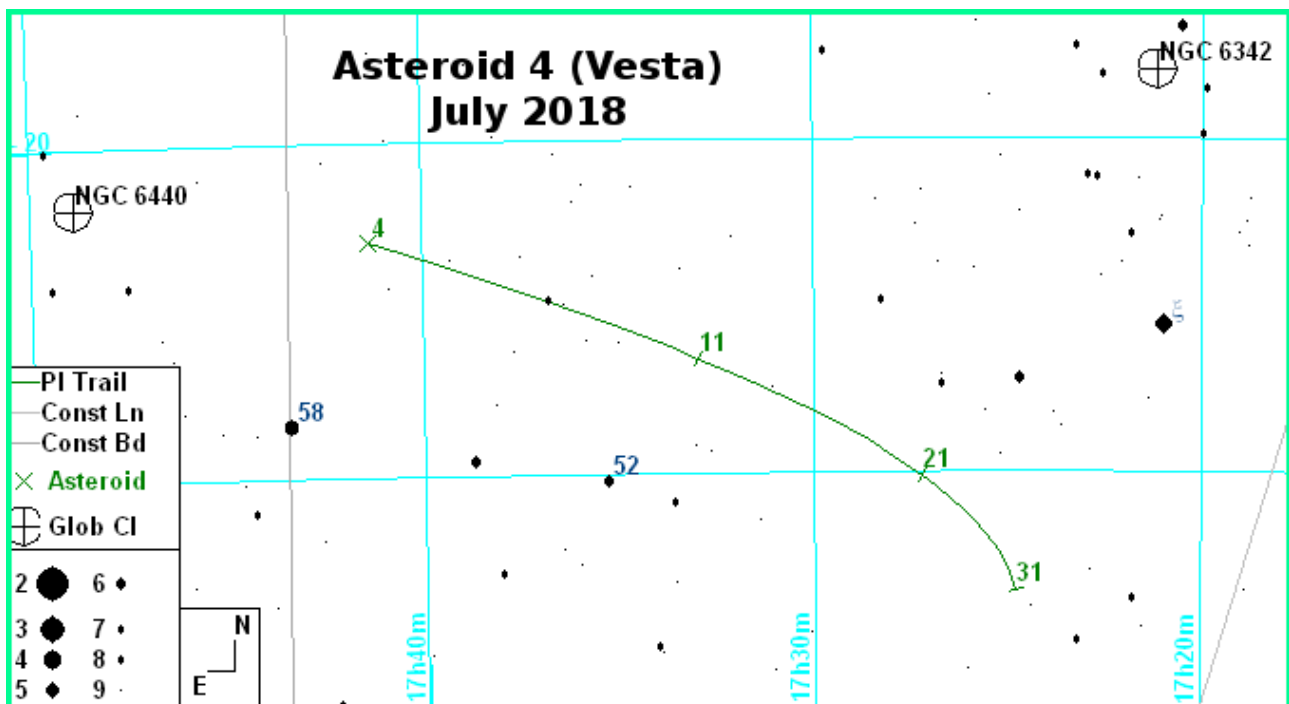
At the beginning of the month, **Uranus** is 13°-ish high from southern Britain at Nautical dawn, but by the end of the month it is much better placed, shining at mag +5.8 in southern Aries. Its position changes by 33 arcmin during the month.



**Neptune** is theoretically visible at mag. +7.9 (brightening by 0.1 mag during the month), and gets gradually higher during morning twilight as the month progresses. By the end of the month it, conditions are much more favourable as you can observe it at a higher altitude.



**Asteroid 4 (Vesta)** is in Ophiuchus, and gradually dims from mag +5.6 to 6.3 during the month. This, coupled with its evening culmination in a reasonably dark sky, makes it quite good for binocular observation if you have a good southern aspect.



## Comets

There are no comets suitable for small to medium binoculars this month.

## Asteroid Occultations

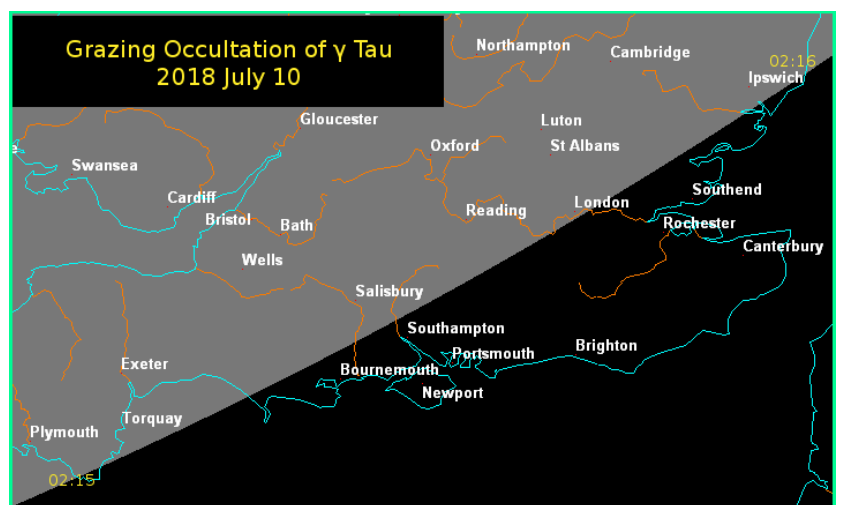
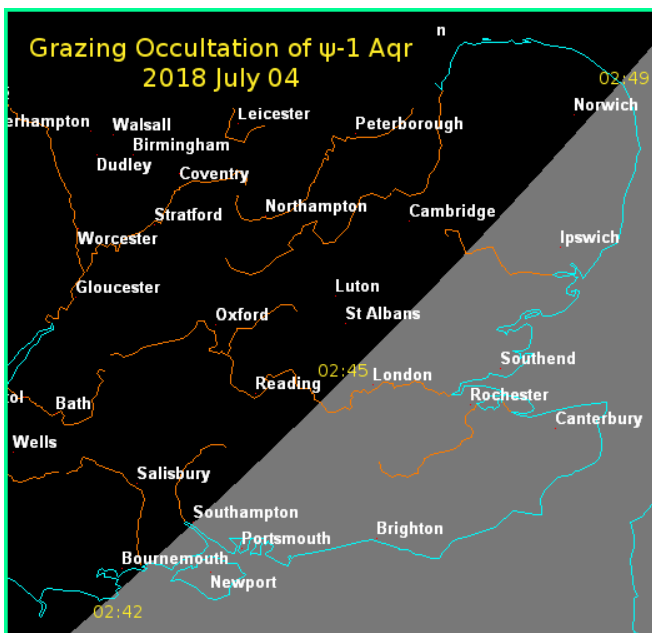
There are no predicted asteroid occultations of stars mag +7.5 or brighter, visible from mainland UK, this month.

## Lunar Occultations

Data are for my location and may vary by 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 2018, 50.9°N, 1.8°W							
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	Position Angle
04 Jul	02:41:51	Gr	$\psi$ -1 Aqr	K0	4.2	3.0N	
10 Jul	02:15:07	Gr	$\gamma$ Tau	G8	3.7	0.6S	
30 Jul	00:33:21	R	39 Aqr	F0	6.1	62N	284

There are two grazing occultations for southern England, but neither is ideal. The first, on the 4<sup>th</sup>, is at a better altitude, but the Moon is gibbous and most of the graze will be against the bright part of the limb. On the 10<sup>th</sup>, the Moon is in its waning crescent phase, and the event takes place mostly against the dark limb, but it is at extremely low altitude and you will need a very good southerly aspect (Purbeck coast?) to have a chance of success.



(NB: these charts are "clicky")



## The Moon

July 06	Last Quarter
July 13	New Moon
July 19	First Quarter
July 27	Full Moon

## Public Outreach & Talks

This month I will be at the following events. I do like to meet the "real people" behind the names on a subscription list, so please do come and introduce yourself if you are there.

12 <sup>th</sup> : Yarmouth Probus Club	<b>Ten Ways the Universe Tries to Kill You</b> (Talk)
27 <sup>th</sup> : <a href="#">Fordingbridge Astronomers</a>	<b>Lunar Eclipse Picnic</b> (Public Outreach Event)
28 <sup>th</sup> : <a href="#">Fordingbridge Astronomers</a>	<b>Frogham Fair</b> (Public Outreach Event)

Next month, at Builth Wells, Powys, I will be offering a *Binocular Astronomy Workshop* as part of the **SolarSphere festival**:



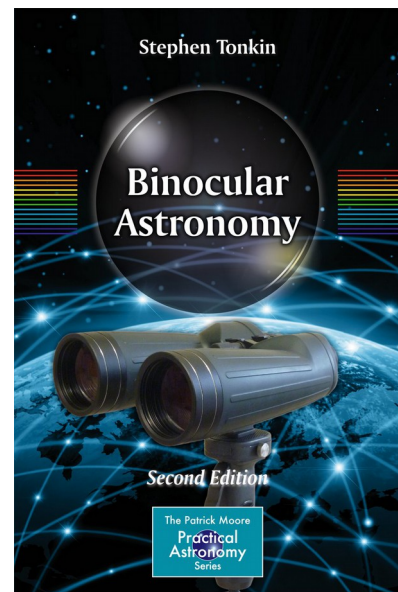
For those who like to mix music, camping and astronomy, **SolarSphere** boasts a good dark site (with a "red light only" camping option for observers), decent showers/loos, good craic, and is very family-friendly.

I'll also be giving a talk (*Pseudoastronomy – Planet X, Zetans and Lost Civilisations*).

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- 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)



Wishing you Clear Dark Skies,

**Steve Tonkin**

for

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

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### **Acknowledgements:**

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Variable star data based on *The International Variable Star Index*  
Occultation data derived with Dave Herald's *Occult*

**Disclosure:** Links to *Amazon* or *First Light Optics* may be affiliate links

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