



The Binocular Sky


July
2017

Newsletter

Introduction

Welcome, especially to new readers, to July's **Binocular Sky** Newsletter. The intention of this monthly offering is to highlight some of the binocular (and small telescope) targets for the coming month. It is primarily targeted at binocular observers in the UK, but should have some usefulness for observers anywhere north of Latitude 30°N and possibly even further south.

Highlights this month include a tricky daylight occultation of Mercury, and a review of an unusually good budget binocular.

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  and .

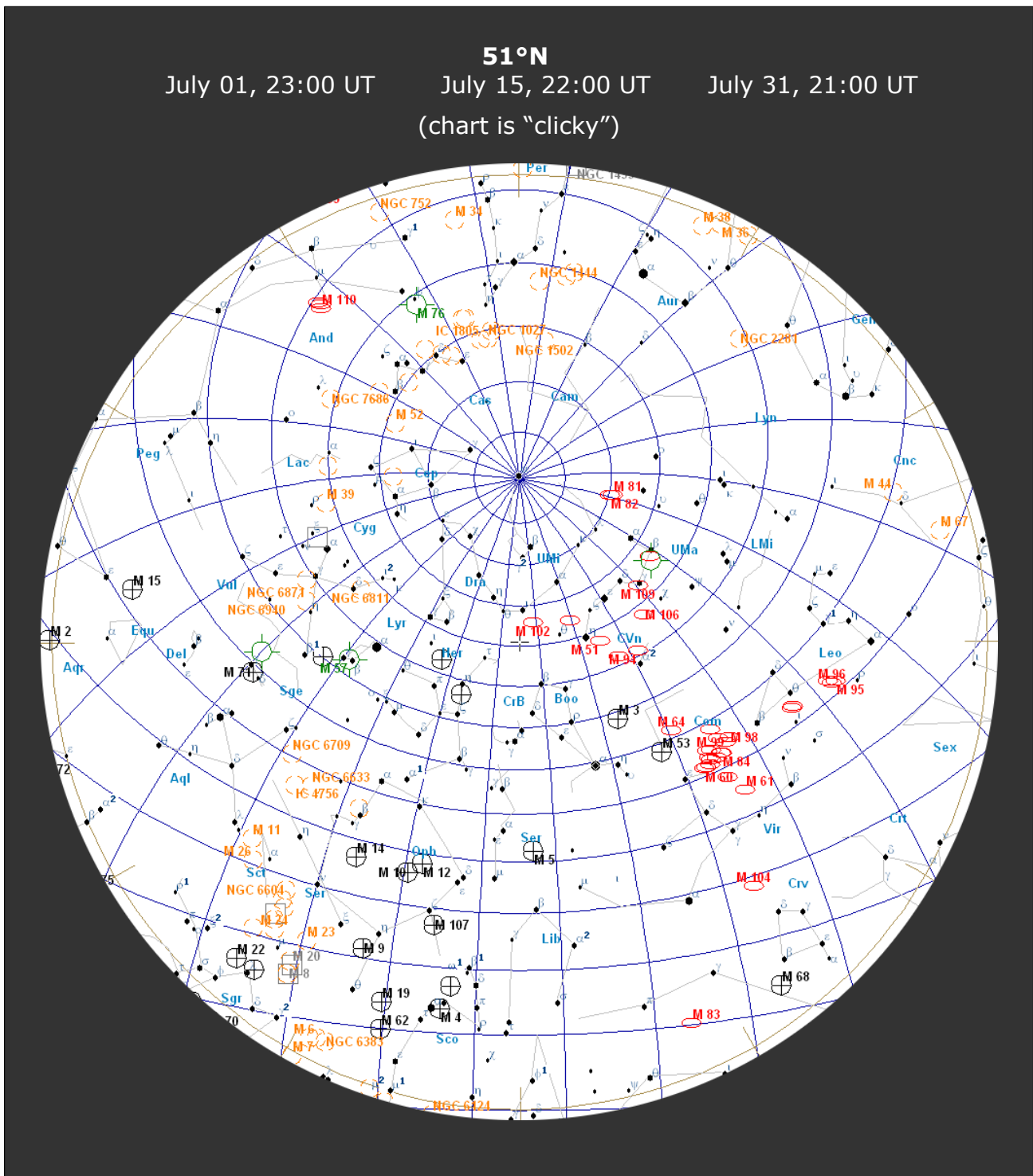
The Deep Sky

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

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 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 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 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 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

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	7.1-8.1	0.57d	RR Lyr
TX UMa	7.0-8.8	3.06d	Eclipsing binary
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

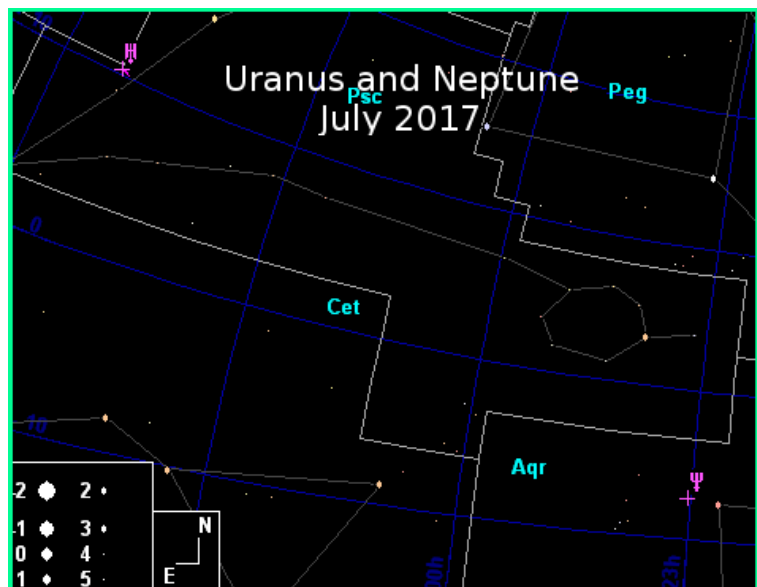
Double Stars

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

The Solar System (charts are 'clicky')

Neptune is now back in the morning sky at a reasonable 20° above the horizon at the end of astronomical twilight at the beginning of the month, and getting higher and easier as the month progresses. It is shining at mag. +7.9 midway between two reddish stars, λ and ϕ Aqr. It hardly moves at all as it changes from prograde to retrograde motion.

Uranus has also returned to the morning skies, attaining about 15° altitude as astronomical twilight ends as the month begins, and a healthy 40° by the end of July. It is much brighter than Neptune, at mag. +5.8. It is a degree north of σ Psc, its position changing by less than $\frac{1}{2}^\circ$ during July.



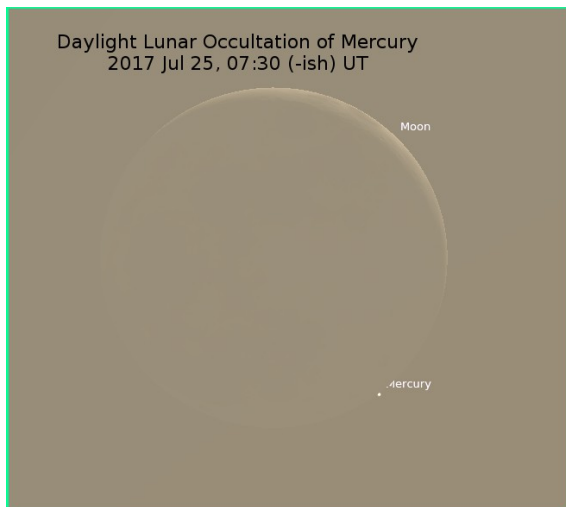
Asteroid Occultations

There are no predicted asteroid occultations of stars visible from the UK and suitable for binoculars (mag. < +7.5) this month.

Lunar Occultations

Owing to the short nights, there are few occultations of stars brighter than mag +7.0 visible from the UK this month. Data are for my location and may vary by several minutes for other UK locations. The types are **(D)**isappearance and **(R)**eappearance ; they are all dark-limb events.

Lunar Occultations, Jul 2017, 50.9°N, 1.8°W							
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	Position Angle
Jul 02	22:33:55	D	94 Vir	A0	6.5	14S	187
Jul 06	23:00:08	D	HIP 84856	G1	6.5	84N	96
Jul 08	01:52:38	D	16 Sgr	B0	6.0	52S	141
Jul 10	01:17:11	R	HIP 98045	F0	6.9	90N	250
Jul 14	00:44:55	R	χ Aqr	M3	4.9	73N	266
Jul 15	03:00:19	R	HIP 906	G5	6.7	43S	201
Jul 19	03:16:59	R	HIP 17617	A0	6.9	47S	211



There will also be a daylight lunar occultation of Mercury at around 07:30UT on the 25th. You will need exceptional sky conditions if you are to see this, as it occurs close to the horizon (<5° from my location). If you do attempt this, take great care, as the Sun will be only 26° (i.e. about one outstretched hand-span) away.

The Moon

July 01 First Quarter
 July 09 Full Moon
 July 16 Last Quarter
 July 23 New Moon
 July 30 First Quarter

Public Outreach & Talks

During July I will be at the following events. If you attend any of them, please come and say hello!

18th: *Equipment Clinic* at [Fordingbridge Astronomers](#)

28th: Talk: *Pseudoastronomy: Planet X, Zetans and Lost Civilisations* at [Vectis AS](#)

29th: *Astronomy Display and Public Solar Observing* at [Frogham Fair](#)

Equipment Mini-Review

Manufacturer's Specification

Weight (g)	759
Field of View (°)	6.0
Eye Relief (mm)	18
IPD (mm)	53-74
Waterproof	Yes
Prism Type	Porro
UK Guarantee	2 years
Origin	China
Body Material	Aluminium alloy and Polycarbonate
Armour Type	Thin textured rubber
Nitrogen Gas Filled	No
Prism Material	BAK-4
Prism Coating	Fully multi-coated
Lens Coating	Fully multi-coated
Eyecup Type	Fold down

Opticron Adventurer T WP 10x50



Price: £89

Available from: [Opticron UK stockists](#)

It's always nice to be offered a new waterproof binocular to try out, especially so when it exceeds expectations.

When I reviewed the “ordinary” Opticron Adventurer 18 months ago, I was struck by the quality of such a low-priced instrument and declared, “*you would need to spend perhaps three times as much to get a binocular that gives significantly better images.*” This is no longer true: Opticron has

cracked it with the *Adventurer T WP*.

Everything works as it should, the image in the sweet spot is extremely good, it has decent coatings, it is lightweight and comfortable to use, the strap is good quality and comfortable, unusually for a budget binocular it is not



significantly stopped down, and it will suit a wide range of faces. Unusually, and importantly, for a binocular in this price range, it is waterproof and, therefore, resistant to dew-ingress.

Being picky, it would be a better general purpose binocular if the close focus was nearer than 7m, but this isn’t a problem for astronomy. So what could improve? Only things that would make it more expensive: nitrogen or argon-purging, multi-position twist-up eyecups, tethered eyepiece covers (you can source those from 3rd party suppliers), proper prism cages. With the exception of the last of these, they are personal preferences anyway and, given Opticron’s customer service, you are not at risk from prism-displacement resulting from poor quality control or a knock in transit.

So, I’m going to stick my neck out again: If there is a better 10x50 for less than £125, I don’t know of it. If you want a decent general-purpose binocular primarily to use for astronomy and your

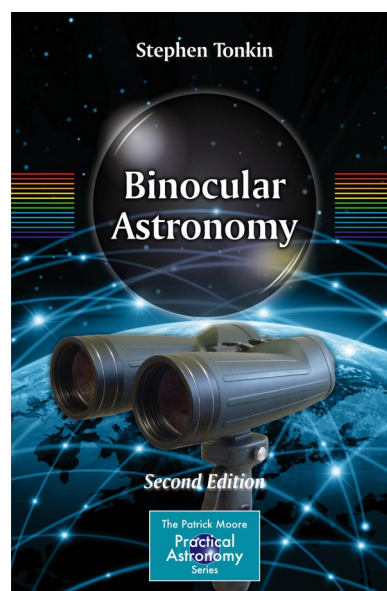
Binocular Sky Ratings (/10)	
Sharpness of Image	10
Size of usable field	9.2
Colour Correction	9
Control of stray light	9
Eye relief	10
IPD	10
Overall Optical Quality	9.5
Focus mechanism	10
Eye cups	10
Hinge	10
Armour	10
Weight and balance	10
Overall Mechanical Quality	10
Case	7
Neck-strap	10
Objective caps	10
Eyepiece caps	10
Value for Money	9.5
Overall	9.6

budget is around £100, this could well be it.

You can read the full review at [Binocular Sky Reviews](#).

The **Binocular Sky Newsletter** will always be free to anyone who wants it, but if you would like to support it, there are a number of options:

- 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



Wishing you Clear Dark Skies,

Steve Tonkin

for

[The Binocular Sky](#)

Acknowledgements:

The charts in this newsletter were prepared with Guide v9.0 from <http://projectpluto.com> or [Stellarium](#) under [GNU Public License](#), incorporating Milky Way panorama ©Axel Mellinger

Variable star data based on David Levy's *Observing Variable Stars*
Occultation data derived with Dave Herald's *Occult*

Disclosure: Links to *Amazon* or *The Binocular Shop* may be affiliate links
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