



The Binocular Sky

No. 126
June 2022

Newsletter

Introduction



Welcome to June's **Binocular Sky** Newsletter.

Short evenings this month: even in southern Britain, we will not have astronomical darkness until mid-July (although we do have a few hours of astronomical twilight) so observing opportunities in June are necessarily limited.

But, as ever, the summer Deep Sky offers us a wonderful variety, which many of us will be able to enjoy without having to swathe ourselves in multi-layers of thermal insulation. It's a real gift to be able to simply walk outside with binoculars on a clear night and be with old friends in the sky, knowing that other like-minded folk are sharing the same wonders.

In the Solar System, we have only four lunar occultations, but **Vesta** comes within the range of small binoculars at the end of the month ([page 7](#)). **Comet C/2017 K2 (PanSTARRS)** is not (yet?) putting on the hoped-for display, but is still faintly visible in medium-sized binoculars ([page 8](#)).

We also have an "explainer" on integrated magnitudes and the visibility of extended objects, which I hope will be useful to newcomers to this wonderful hobby ([page 8](#)).

If you would like to receive the 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 on the objects.)

It's unfortunate that June's nights are so short, and never completely dark, in the northern temperate latitudes because, as you will see from the chart on page 3, examples of all the major classes of deep sky object are well-placed.

In the northern sky we can see [NGC 457](#) (The Owl Cluster), the "Triple Cluster" ([NGC 663](#), [NGC 654](#) and [NGC 659](#)) in Cassiopeia and the [Perseus Double Cluster \(PDC\)](#). A double string of stars from the PDC leads us back into Cassiopeia, where we find the [Muscleman Cluster \(Stock 2\)](#)

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.

We look to the southern sky for one of the finest and best-placed open clusters available in the evening this month: [Melotte 111](#), the cluster that gives the constellation Coma Berenices its name. More open clusters are becoming visible in the south-eastern sky as the Ophiuchus region rises. These include [Melotte186](#), [NGC 6633](#) and [IC4665](#), all of which are easily visible in 50mm binoculars.

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. [Markarian's Chain](#) in Coma Berenices is very well placed as we enter astronomical twilight and,

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 technology consisted of rocks, sticks and bones.

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 when 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, although it is easier in say, 10x50 binoculars than an equivalent-priced small telescope.

The Canes Venatici globular cluster M3, is a good one to start with during a 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 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.

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.

This month we can also see M5 in Serpens, which is one of the largest globular clusters known, being 165 light years in diameter. Its apparent size is nearly as large as the Moon. If you have a good southern horizon, have a go at M22, which is the largest globular cluster visible from the British Isles.

With binoculars of at least 100mm aperture, you might be able to find NGC 6572, a planetary nebula in Ophiuchus. It looks stellar, even at 40x, but you can identify it by its colour; I see it as green (but apparently younger people can see it as blue – what do you see?).

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 ghostly planets.

Later in the night, look out for M27 in Vulpecula (the Dumbbell) which,

although it is not as large or bright as NGC 7293 (the Helix), is arguably the easiest planetary nebula to see from the latitude of Britain, owing to the Helix's low culmination altitude and surface brightness.

For interactive maps of Deep Sky Objects visible from 51°N, you can visit: https://binocularsky.com/map_select.php

June Deep Sky Objects by Right Ascension

Object	Con	Type	Mag	RA (hhmmss)	Dec (ddmmss)
NGC 457 (the ET Cluster, the Owl Cluster)	Cas	oc	6.4	011932	581727
NGC 663, NGC 654, NGC 659	Cas	oc	7.1	014601	611406
Stock 2 (Muscleman Cluster)	Cas	oc	4.4	021434	591358
NGC 884 and NGC 869 (the Perseus Double Cluste	Per	oc	5.3	022107	570802
M81 (NGC 3031)	UMa	gal	7.8	095533	690401
M82 (NGC 3034)	UMa	gal	9.2	095554	694059
M95 (NGC 3351)	Leo	gal	10.6	104357	114211
M96 (NGC 3368)	Leo	gal	10.1	104645	114912
M105 (NGC 3379)	Leo	gal	10.5	104749	123449
M65 (NGC 3623)	Leo	gal	10.1	111855	130526
M66 (NGC 3627)	Leo	gal	9.7	112015	125924
Melotte 111	Com	oc	1.8	122430	260122
Markarian's Chain	Vir	gal	9.9	122611	125647
NGC 4565 (Berenice's Hair Clip)	Com	gal	9.9	123620	255914
M51 (NGC 5194, the Whirlpool Galaxy)	CVn	gal	8.9	132952	471144
M3 (NGC 5272)	CVn	gc	6.2	134211	282233
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 Clust	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
Barnard's Star	Oph	st	9.5	175749	044136
Melotte 186	Oph	oc	3.0	180030	025356
NGC 6572	Oph	pn	9.0	181206	065113
NGC 6633	Oph	oc	4.6	182715	063030
M22 (NGC 6656)	Sgr	gc	5.1	183624	-235410
M27 (NGC 6853)	Vul	pn	7.6	195936	224318

Variable Stars

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
W And	6.7-14.6	397.3
R And	5.8-15.2	409.2

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

Double Stars

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
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
δ Cep	4.1, 6.1	F5, A0	41

The Solar System

The Moon

June 07	First Quarter
June 14	Full Moon
June 21	Last Quarter
June 29	New Moon

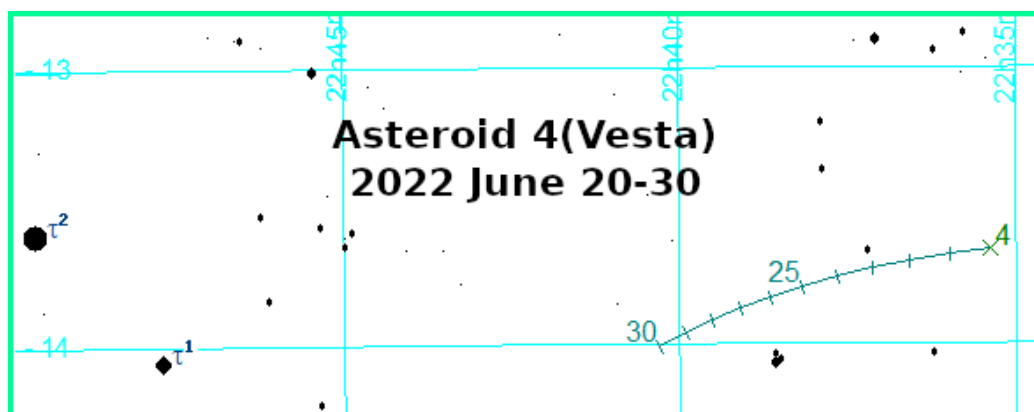
Lunar Occultations

Only four this month, but at least one of them is a bright one! Data are for my location and may vary by several minutes for other UK locations. The phases are (**D**)isappearance, (**R**)eappearance and (**Gr**)aze; they are dark-limb events unless the Cusp Angle is negative.

Lunar Occultation June 2022 50.9°N 1.8°W							
Date	Time (UT)	Phase	Star	Spectral Type	Magnitude	Position Angle	Cusp Angle
Jun 07	21:06:12	D	HIP 56079	F5	6.7	93	69N
Jun 10	01:01:11	D	the Vir	A1	4.4	174	29S
Jun 18	03:07:55	R	35 Cap	K3	5.8	310	36N
Jun 23	02:33:41	R	HIP 7502	K0	7.0	269	69N

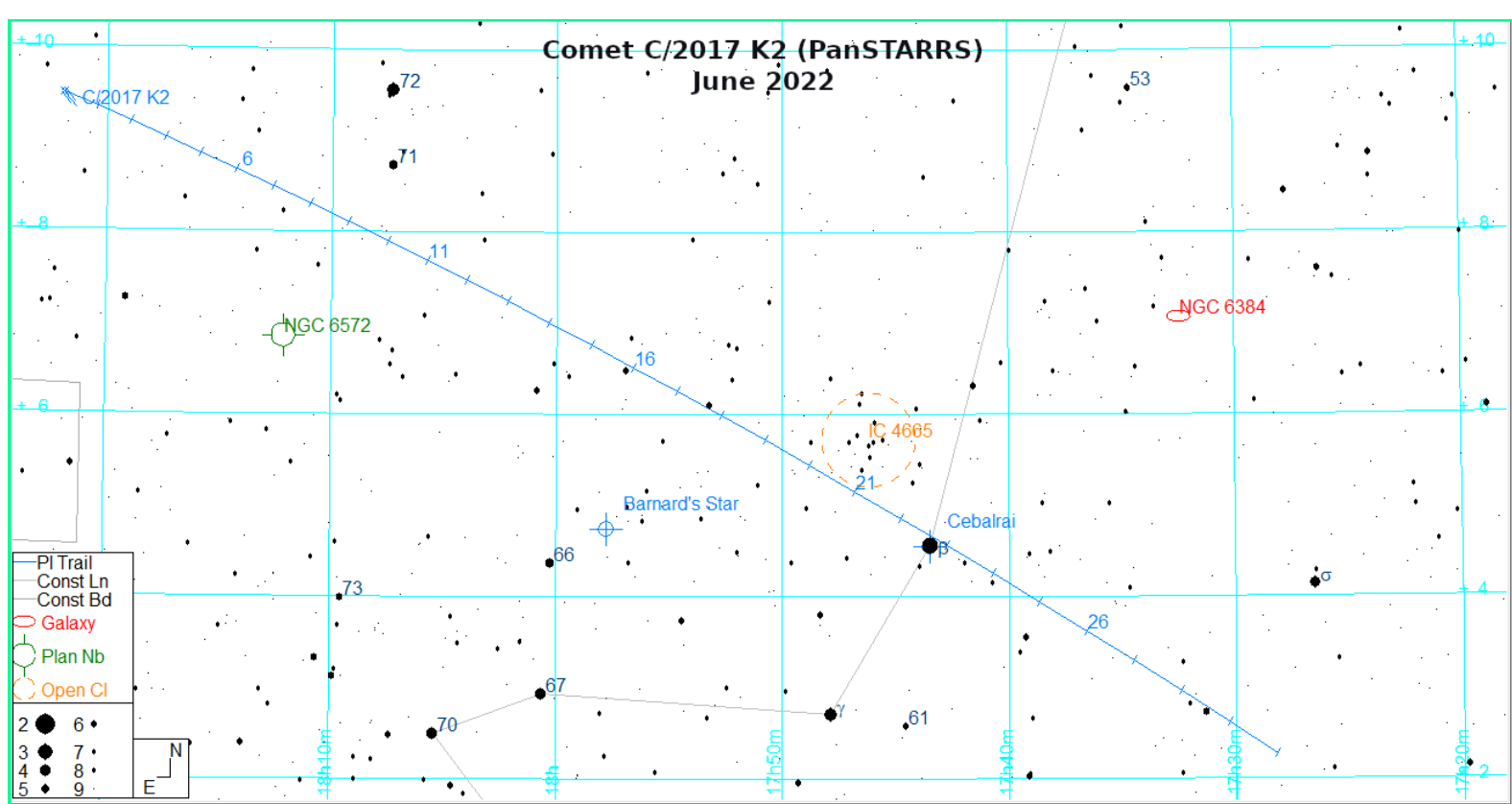
Asteroids

Asteroid 4 (**Vesta**) brightens to mag. +7.1 by the end of the month, but is low down in a morning twilight sky just west of the τ Aqr stars. It'll be far better next month.



Comets

Comet C/2017 K2 (PanSTARRS) continues to brighten, albeit not as rapidly as had been predicted, but is still within the range of 70mm binoculars, given a good sky. Given the brighter summer skies, the best time to look for it is around local midnight, when the sky will be darkest (unless you have later local street-light switch-offs).



Integrated Magnitude, Surface Brightness and Visibility

The Dumbbell (M27) and the Helix (NGC 7293) planetary nebulas have similar magnitudes, but the former is distinctly brighter; this often surprises people. The reason is that the magnitudes of extended (i.e. not point-like, like stars) are their integrated magnitudes, that is the magnitude it would have had if all its light had come from a single point.

At the end of the Deep Sky section of this newsletter, I mention that one of the reasons that the Dumbbell is easier to see than the Helix is its low surface brightness. The Helix is about three times the diameter of the Dumbbell, so its light is spread over nearly ten times the area, so the mean of its surface brightness is much less. We measure surface brightness in magnitudes/arcsecond²; the Dumbbell's is 20.16 mag/arcsec², whereas the Helix's is only 22.44 mag/arcsec², so it looks fainter in binoculars. Obviously, visibility is also affected by variations in brightness across extended surfaces, eg the galaxy M77 is visible in 70mm binoculars mostly because of its very bright core, which looks almost stellar.

In this panel, there are six circles on each side (the top and bottom ones, which are barely perceptible, are identical), each of the same integrated magnitude; you can see how the surface brightness changes with size. The right hand side demonstrates the effect of light pollution on visibility.



Outreach & Talks

If you find yourself at any of these, do come and say hello. Dates are UT.

- | | | |
|--|--|---|
| June 16 th
(pm) | Cranborne Chase AONB
International Dark Sky Reserve | Improving Dark Skies in the IDSR
(Workshop for LPOs, parish
councillors, lighting designers, and
planning agents) |
| June 17 th | Swindon Stargazers | Journey Into Space |
| June 20 th
to 26 th | Cranborne Chase AONB
International Dark Sky Reserve
at the Chalke Valley History
Festival | Advocating for Responsible Outdoor
Lighting at Night |

Zoom/Webex Talks?

I regularly give talks, on *Binocular Astronomy* and numerous other astronomical topics. I'd be happy to do this – potentially anywhere in the world – on Zoom or Webex if that is of interest.

If you would like a talk for your society/group, [Click here for current talks](#).
For schools/scouts/guides, etc., I am a STEM Ambassador so there will be no fee.

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 one of my books, **[Binocular Astronomy](#)** or **[Discover the Night Sky through Binoculars](#)**.
- Buy equipment or books through an affiliate link in the newsletter or on <https://binocularsky.com>
- 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 *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

© 2022 Stephen Tonkin under a [Creative Commons BY-NC-SA License](#)

