



The Binocular Sky

No. 118
October 2021

Newsletter

Introduction



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

At last the "observing season proper" has arrived in northern temperate latitudes; the sky is darkening reasonably early and we are starting to see more public stargazing evenings. Of course, with Covid precautions, we are wary about sharing eyepieces. One solution is to sterilise them between users. Another, simpler one, is to cut toilet-roll inners so they are just longer than the eyepiece, and give them to people for personal use to fit over the eyepiece when they use it.

Fortunately, due to the generosity of fellow amateur astronomers, a few years back I was able to fundraise for a dozen identical binoculars, so I can lend them to families/"bubbles" for use during the session. Being identical, I can see exactly what other users are seeing, which makes helping them find specific targets much easier.

Autumn is "**Milky Way** season", and binoculars really come into their own here.

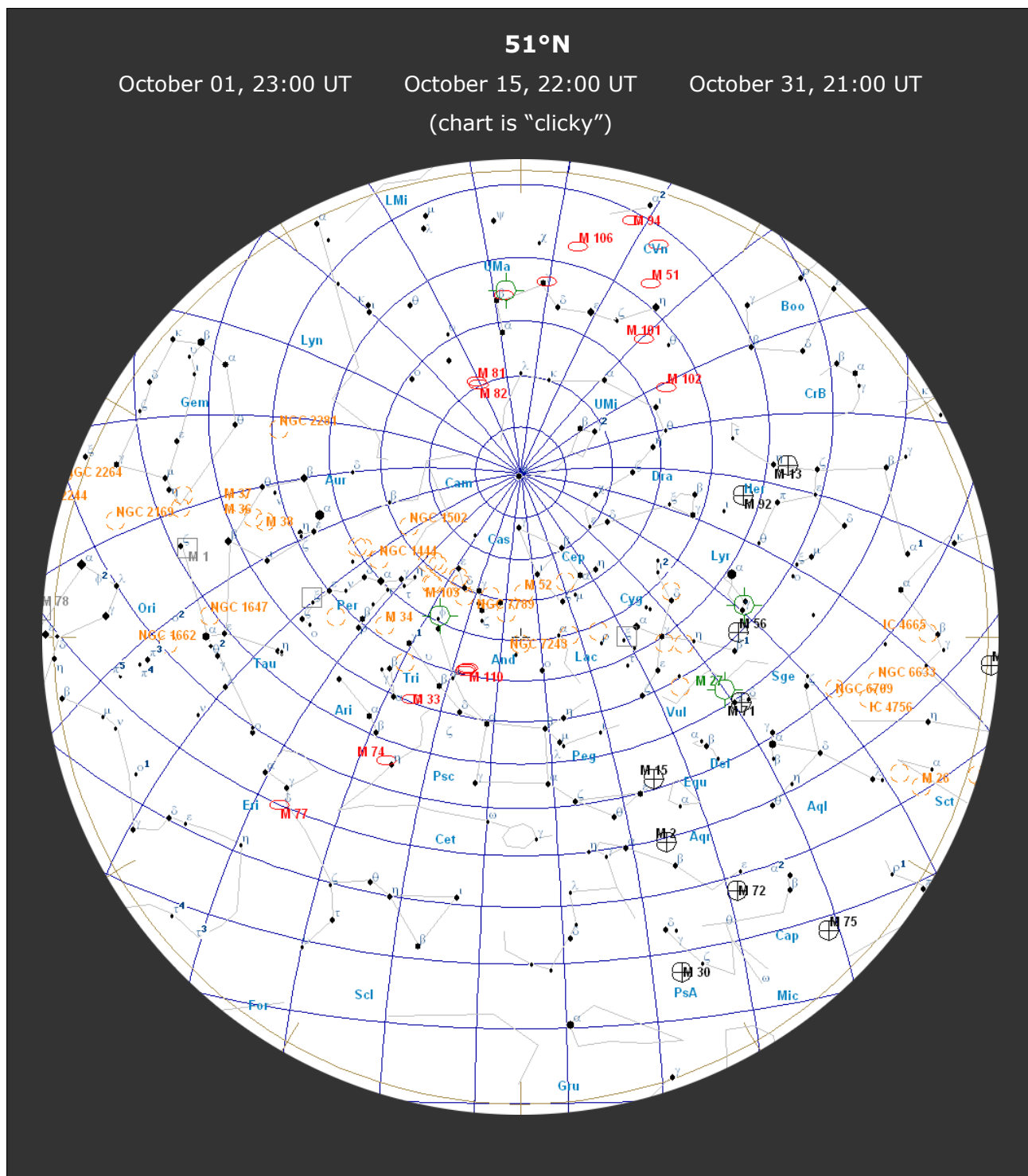
In the Solar System, the increasing darkness means that we have even more lunar occultations. **Vesta** is lost in the daylight sky, but **Ceres** is back and the binocular planets (ice-giants **Uranus** and **Neptune**) are now both nicely placed for observation.

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.)

As the sky darkens at twilight, the Milky Way, always a pleasure to scan with binoculars of any size, arches overhead. In the north are [NGC 457](#) (the Owl Cluster) and [NGC 663](#) in Cassiopeia and the [Perseus Double Cluster](#),



from which you can easily find Stock 2 (the Musclemans Cluster). Kemble's Cascade and its "splash pool", NGC 1502 are also conveniently placed. To the East of them lie M34 in Perseus and the often-overlooked NGC 752 in Andromeda. More open Clusters are visible in the southern sky in the region of Ophiuchus. These include Melotte 186, NGC 6633 and M11, The Wild Duck Cluster, all of which are easily visible in 50mm binoculars. Rising in the north-east are the Auriga clusters, M36, M37 and M38 and, later, M35 in Gemini. While you are looking at M35, also see if you can identify two smaller open clusters, NGC 2158, which is half a degree to the SE, and the slightly more difficult IC 2157, which is a degree to the ESE. To the south of them, the Pleiades and Hyades make a welcome return to evening skies. Also look out for the nearby NGC1647.

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.

In November, the Milky Way is overhead in the mid-to-late evening. This means that those objects (globular clusters and galaxies) that are outside our galaxy are not as well placed for observation as they are when the Milky Way is low in the sky. The bright M81 (Bode's Nebula) and M82 (The Cigar Galaxy), are still relatively easy to observe, even in a 50mm binocular, and their altitude is such that you are unlikely to get neck-strain when you do so with straight-through binoculars. M81 and M82 can be used as a good demonstration of averted vision, especially in larger binoculars: 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. M51 (The Whirlpool) and M101 are becoming much more difficult owing to their lower altitudes; if you wish to see them this month, you should look as soon as the sky is dark.

Notable exceptions to the generalisation of galaxies being poorly placed on November evenings are some of those south of the galactic plane, notably The Great Andromeda Galaxy, M31 and M33 (The Triangulum Galaxy). M31 in particular is very

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.

easily visible this month and is a naked eye object in moderately dark skies. It is large and bright enough to be able to withstand quite a lot of light pollution (making it available to urban observers). M33 has a low surface-brightness and benefits from lower magnification. This generally makes it easier to see in, say, a 10x50 binocular than in many "starter" telescopes. It is in November evenings that the Sculptor Galaxy, NGC 253, becomes observable before midnight, but you will need a good southern horizon for this.

Although the two Hercules globulars, M92 and the very impressive, and very easy to find, M13 are still observable, their altitude becomes less favourable as the month progresses. M15 and M2 are both better placed. This is also the best time of year to observe NGC 288 in the evening; as with NGC 253, a good southern horizon is essential.

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 – also known as the Apple Core and the Diabolo) – is visible in the evening skies in even 30mm binoculars. The Helix Nebula, NGC 7293 is now about as well-placed as it gets for observation from Britain before midnight; you'll need a decent southern horizon.

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.

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

October 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
M33 (NGC 598, the Pinwheel Galaxy)	Tri	gal	6.2	013351	303929
NGC 663	Cas	oc	7.1	014601	611406
NGC 752	And	oc	5.7	015742	374700
Stock 2 (the Muscleman Cluster)	Cas	oc	4.4	021434	591358
NGC 884 and NGC 869 (the Perseus Double Cluste	Per	oc	5.3	022107	570802
M34 (NGC 1039)	Per	oc	5.2	024204	424542
M45 (the Pleiades)	Tau	oc	1.6	034729	240619
Kemble's Cascade	Cam	ast	9.0	035752	630711
Melotte 25 (the Hyades)	Tau	oc	0.5	042650	154841
M38 (NGC 1912)	Aur	oc	6.4	052842	355117
M36 (NGC 1960)	Aur	oc	6.0	053617	340826
M37 (NGC 2099)	Aur	oc	5.6	055218	323310
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
M13 (NGC 6205, the Great Hercules Globular Clust	Her	gc	5.8	164141	362738
M92 (NGC 6341)	Her	gc	6.4	171707	430812
Melotte 186	Oph	oc	3.0	180030	025356
NGC 6633	Oph	oc	4.6	182715	063030
M11 (NGC 6705, Wild Duck Cluster)	Sct	oc	5.8	185106	-061600
M27 (NGC 6853, the Dumbbell Nebula, the Apple	Vul	pn	7.6	195936	224318
M2 (NGC 7089)	Aqr	gc	6.5	213327	-004922
NGC 7293 (the Helix Nebula)	Aqr	pn	6.5	222938	-205013

Variable Stars

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
V CrB	6.9-12.6	357.6
X Oph	5.9-8.6	338

A few sources I have seen note that R Hya is also near maximum; unfortunately, it is only above the horizon during daylight!

Selection of Binocular Variables (mag < +7.5)			
Star	Mag Range	Period	Type
XY Lyr	5.8-6.4	Irreg	Irregular
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
U Del	7.0-8.0	ca. 110d	Irregular
TW Peg	7.0-9.2	ca. 90d	Semi-regular
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
T Cep	6.0-10.3	388d	Mira
SS Cep	6.7-7.8	ca. 190d	Semi-regular
RZ Cas	6.2-7.7	1.195d	Eclipsing binary
R Sct	4.5-9.0	146d	RV Tau

Double Stars

Binocular Double Stars for October			
Star	Magnitudes	Spectral Types	Separation (arcsec)
ζ Lyr	4.3, 5.6	A3, A3	44
β Lyr	3.6, 6.7	B8, B3	46
OΣ525 Lyr	6.0, 7.6	G0, A0	45
d Cep	4.1, 6.1	F5, A0	41
γ Her	3.7, 9.4	F0, K	43
Σ2277 Her	6,2, 8.9	A0, K	27
8 Lac	5.7, 6.3	B3, B5	22
56 And	5.7, 5.9	K0, K2	128
ΣI 1 And	7.1, 7.3	G5, G5	47
ψ-1 Psc	5.3, 5.8	A2, A0	30
14 Ari	5.0, 7.9	F0, F2	106
62 Eri	5.4, 8.9	B9, B8	67

The Solar System

The Moon

October 076 New Moon
 October 13 First Quarter
 October 20 Full Moon
 October 28 Last Quarter

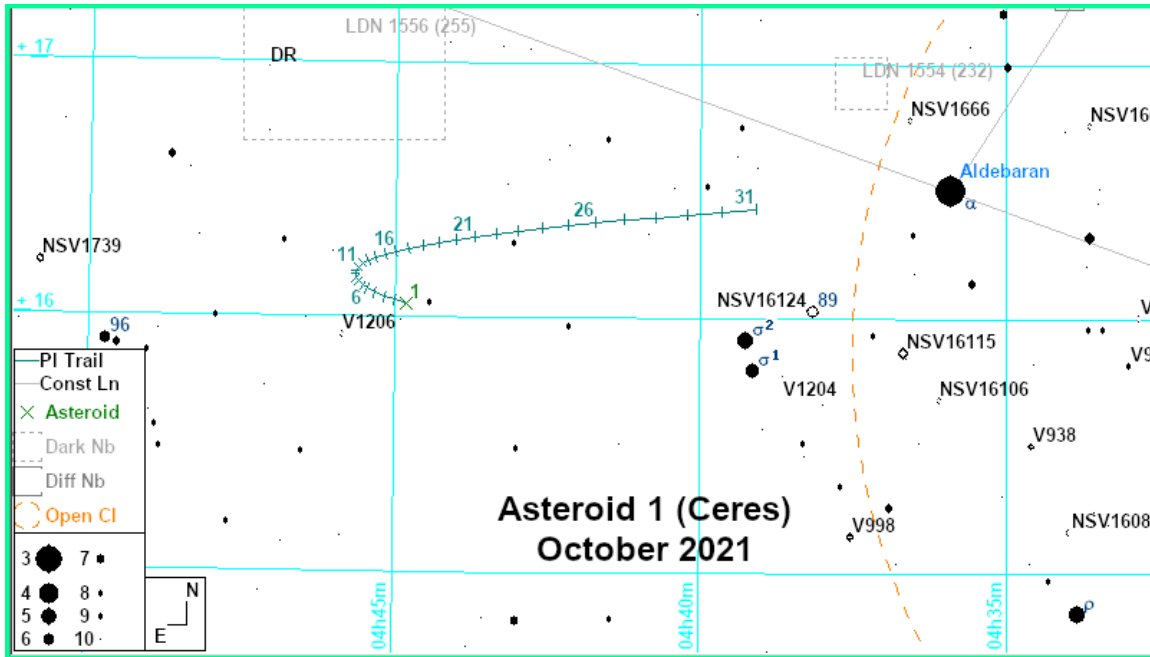
Lunar Occultations

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 October 2021 50.9°N 1.8°W							
Date	Time (UT)	Phase	Star	Spectral Type	Magnitude	Position Angle	Cusp Angle
Oct 03	03:40:53	D	eta Leo	A0	3.5	53	-27N
Oct 03	04:16:47	R	eta Leo	A0	3.5	340	46N
Oct 04	04:22:16	R	HIP 53737	F5	6.5	358	33N
Oct 08	15:17:55	D	alp Lib	A3	2.8	166	15S
Oct 22	21:57:52	R	HIP 16414	K2	6.8	307	42N
Oct 22	23:24:40	R	HIP 16641	K1	6.1	195	27S
Oct 23	21:41:21	R	53 Tau	B9	5.5	244	73S
Oct 25	22:54:46	R	HIP 28742	K0	7.0	276	83N
Oct 26	21:48:24	R	37 Gem	G0	5.7	207	23S
Oct 26	23:39:33	R	49 Gem	B8	6.4	335	30N
Oct 30	02:56:57	R	HIP 47779	K0	6.5	344	37N
Oct 30	03:56:01	R	HIP 47909	K0	6.8	319	62N

Asteroids

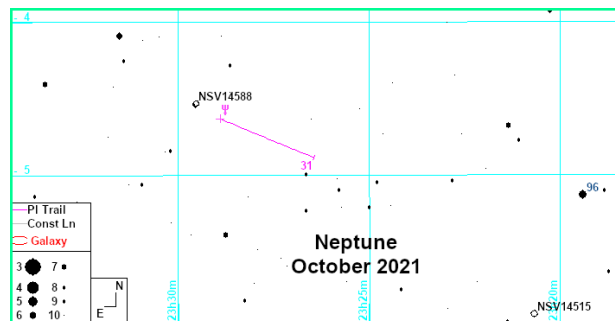
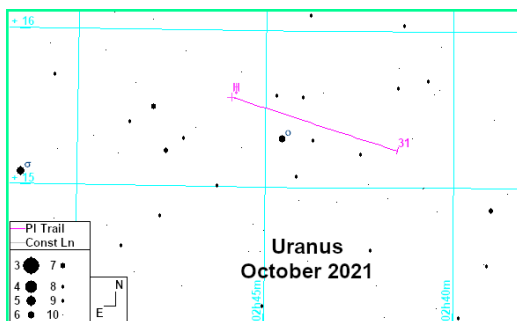
Asteroid 1 (Ceres) is just east of Aldebaran and the Hyades; it brightens from mag. +8.3 to +7.6 during the month.



The Binocular Planets

Uranus (mag +5.7) is still best observed after midnight all month, and **Neptune** (mag +7.8), just before midnight. Use σ and \circ **Ari** as guides to Uranus, and **96 Aqr** to locate Neptune.

(Charts are "clicky")



Public Outreach & Talks

If you find yourself at any of these, do come and introduce yourself or give me a virtual “wave”.

Dates are UT.

(Z indicates “Zoom”; H indicates “Hybrid” zoom and physical meeting.)

Oct 5 th	North Norfolk U3A (Z)	Are We Alone?
Oct 8 th	Early Birds WI (Z)	Journey Into Space
Oct 9 th	<u>Cotswold AS (Z)</u>	Ten Ways the Universe Tries to Kill You
Oct 20 th	<u>Mid Cheshire AG (Z)</u>	Ten Ways the Universe Tries to Kill You
Oct 31 st	<u>Marlborough Dark Skies Festival</u>	Journey Into Space and Seven Ways the Universe Tries to Kill You

Zoom/Webex Talks during the SARS-CoV-2 pandemic?

I regularly give talks, on *Binocular Astronomy* and numerous other astronomical topics. I’m 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 and will charge you nothing except travel expenses.

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*

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