



The Binocular Sky



January
2016

Newsletter

Introduction

Welcome to the first **Binocular Sky** Newsletter of 2016. If the incrementing of the 4th digit of the [ISO 8601 date format](#) holds special significance for you (and even if it doesn't), then I wish you a prosperous one, replete with superb observing opportunities. 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 usually clickable and will take you to a larger chart that may be more useful as well as being downloadable to your computer or mobile device.

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 .

The Deep Sky

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

The [Pleiades](#) (M45) and the [Great Orion Nebula](#) (M42) culminate in the early evening, as do the [trio of open clusters](#) in Auriga and [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. Also high are M44 (*Praesepe*) and M67, two fine open clusters in Cancer. Lower in the southern sky are more open clusters M46, M47 and, near Sirius, M41.

The rather indistinct open cluster NGC1502, is brought to prominence by an asterism, that is named Kemble's Cascade, in honour of Fr. Lucian Kemble, a Canadian amateur astronomer and Franciscan friar, who discovered it with a 7x35 binocular. He described as "*a beautiful cascade of faint stars tumbling from the northwest down to the open cluster NGC 1502.*" It is one of the most pleasing objects in small and medium 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 observing in the region of the Orion Nebula, take the time to study R Leporis (*Hind's Crimson Star*), which is near maximum and is a candidate for the reddest star in the heavens. To the north of that, just to the SE of Alnitak (ζ Ori) is the multiple star σ Orionis.

Two galaxies worth observing this month are The Great Andromeda Galaxy, M31 and M33 (*The Pinwheel*), both of which are close to the plane of the Milky Way. M31 in particular is very 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. If you are up around midnight (or later) it is worth looking out for the galaxy trios in Leo (M95/96/105 and M65/66/NGC3628) and Markarian's Chain in Coma Berenices. If you have a big binocular, also observe the edge-on NGC4565 (*Berenice's Hair Clip*), which is next to Melotte 111, the cluster that gives Coma its name.

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 were still Australopithecines!

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

Variable Stars

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
W And	7.4-13.7	396
R Cyg	7.5-13.9	426

Selection of binocular variables (mag < +7.5)			
Star	Mag Range	Period	Type
AA Cam	7.5-8.8	Irreg	Irregular
RX Lep	5.4-7.4	Irreg	Irregular
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
SS Cep	6.7-7.8	ca. 190d	Semi-regular
RZ Cas	6.2-7.7	1.195d	Eclipsing binary

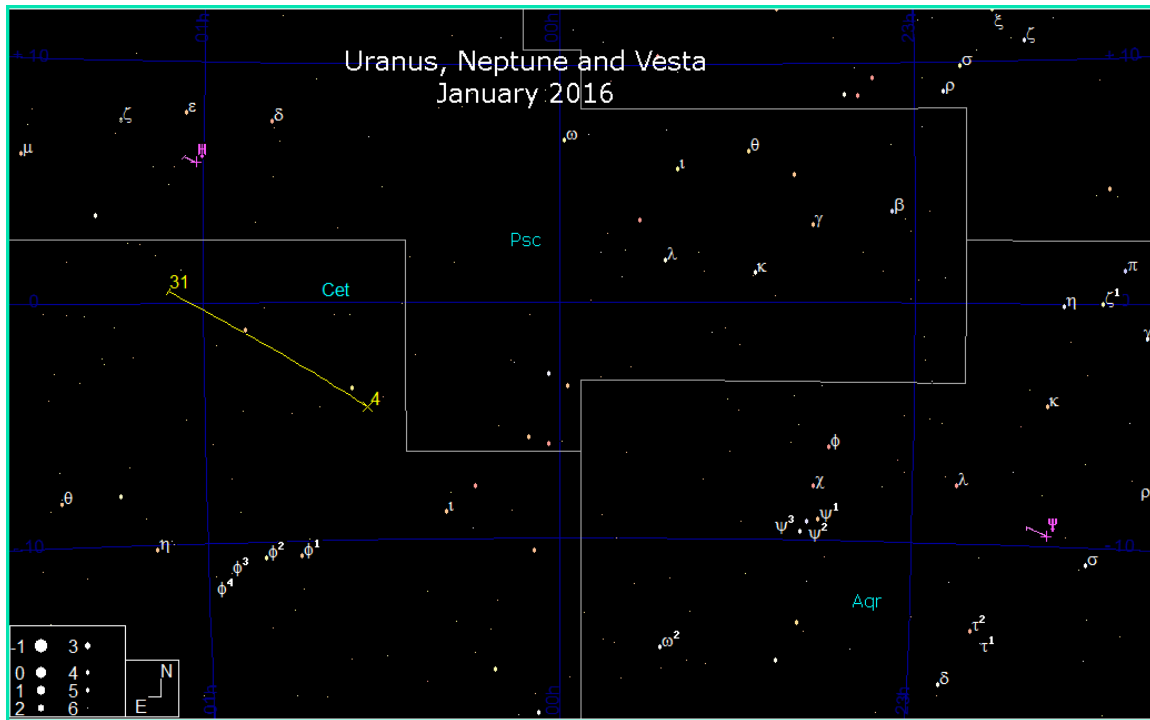
Double Stars

Binocular Double Stars for January			
Star	Magnitudes	Spectral Types	Separation (arcsec)
δ Cep	4.1, 6.1	F5, A0	41
56 And	5.7, 5.9	K0, K2	128
Σ11 And	7.1, 7.3	G5, G5	47
14 Ari	5.0, 7.9	F0, F2	106
62 Eri	5.4, 8.9	B9, B8	67
τ Tau	4.3, 7.0	B5, A0	63
ν Gem	4.1, 8.0	B5, A0	113
ζ Gem	4.0, 7.6	G0, G	101
ι Cnc	4.0, 6.0	G5, A5	31
p-1 Umi	6.6, 7.2	G5, G5	31

The Solar System

Planets

Uranus shines at mag. +5.8 just S of ε Psc; it sets soon after 01:00 at the beginning of the month and two hours earlier by month end. Its position changes by only half a degree throughout the month.



Neptune still lies between λ and s Aqr, but is much fainter than Uranus at mag. +7.9 and is now best observed in the evening as soon as the sky is dark, especially towards the end of the month when it sets soon after the end of astronomical twilight.

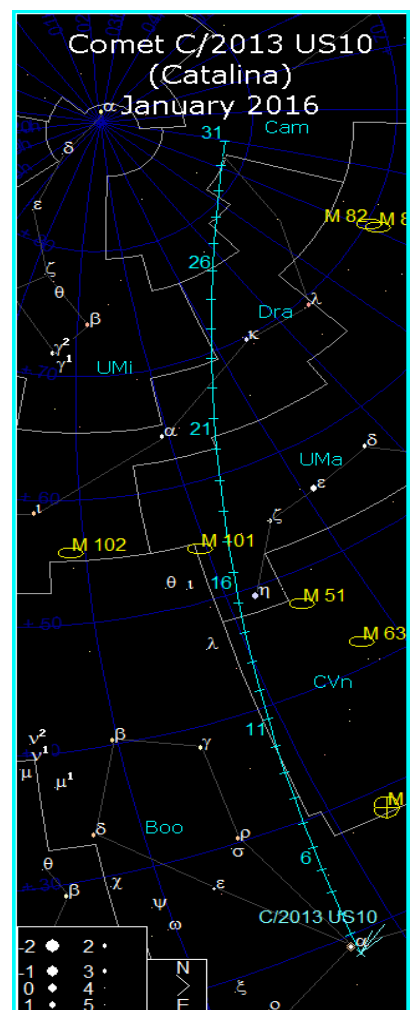
Asteroid 4 (Vesta) is in the same region of sky as Uranus, but is a difficult object, fading from mag. +7.9 to +8.2 during the month so, unless you have very good skies, you will probably need at least 70mm binoculars to spot it.

Comets

Comet 2013 US10 (Catalina) is now a 6th magnitude morning object and starts the month less than 1° from Arcturus. It is expected to fade by about a magnitude during the month. It passes several bright stars that will aid its location. (Clicking on/tapping the image on the right will link to a higher resolution chart)

Meteor Showers

The Moon is reasonably favourable for the



Quadrantids, which has its narrow peak predicted for 08:00 on the 4th, with a ZHR of 80 to 120. This is very favourable for North American observers; less so for European observers. Most meteors are due to debris left by comets, but the Quadrantid shower is one of two (the other is the Geminids shower, which peaked on December 13) that originates from an asteroid, in this case asteroid **2003 EH1**. You can use binoculars to examine the persistence of any ionisation trails from these slow-moving, often colourful, meteors.

Asteroid Occultations

There are no asteroid occultations of stars visible from the UK and suitable for binoculars this month.

Lunar Occultations

There are several occultations of stars brighter than mag +7.5 visible from the UK this month. Times and Position Angles are for my location (approx: 50.9N, 1.8W) and will vary by up to 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)**. The highlight is the early morning occultation of Aldebaran on the 20th. From this month, I am including the cusp angle on the table, as this may be more useful to visual observers

Lunar Occultations, Jan 2016, 50.9°N, 1.8°W							
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	Position Angle
Jan 01	03:07:37	R	HIP 58002	F0	6.3	64N	320
Jan 16	18:41:12	D	μ Psc	K4	4.8	70N	48
Jan 17	18:00:05	D	HIP 11228	K0	6.9	43S	118
Jan 17	19:42:03	D	HIP 11427	F5	6.5	89N	69
Jan 19	22:30:53	D	70 Tau	F7	6.6	31S	135
Jan 19	23:57:23	D	75 Tau	K2	5	68N	54
Jan 20	00:08:37	D	HIP 20916	F7	6.7	65S	101
Jan 20	00:18:52	D	θ-1 Tau	G7	3.8	4S	163
Jan 20	00:54:43	D	HIP 21029	A6	4.8	67S	100
Jan 20	01:02:39	D	HIP 21053	F5	6.5	56S	111
Jan 20	03:24:22	D	Aldebaran	K5	0.9	56N	43
Jan 20	22:57:47	D	111 Tau	F8	5	45S	124
Jan 21	18:39:55	D	HIP 29616	A6	5.9	71N	62
Jan 21	22:27:00	D	HIP 30218	G9	6.3	65S	106
Jan 26	23:46:37	R	HIP 52660	K1	6.4	32N	353
Jan 28	00:29:57	R	HIP 56388	K5	6.5	58N	325
Jan 30	04:01:55	R	θ Vir	A1	4.4	55N	327

The Moon

Dec 02	Last Quarter
Dec 10	New Moon
Dec 16	First Quarter
Dec 24	Full Moon

Equipment Mini-Review

Helios Stellar II 15x70

Manufacturer's Specification	
Weight (g)	1750
Field of View (°)	4.4
Eye Relief (mm)	20
IPD (mm)	56-74
Waterproof	Yes
Prism Type	Porro
UK Guarantee	1 year
Origin	China
Body Material	Magnesium Alloy
Armour Type	Rubber, full
Nitrogen Filled	Yes
Prism Material	BAK-4
Prism Coating	Multi-coated
Lens Coating	Fully multi-coated
Eyecup Type	Fold down



I have at last been able to get some reasonably good observing with the [Helios Stellar-II 15x70](#).

The binocular bears a superficial resemblance to the *United Optics BA8 15 x70*, which is branded as *Helios Apollo*, *Oberwerk Ultra*, *Garrett Signature*, and several others. At £100 less expensive than the BA8, there has been a lot of interest as to how it compares, with some people speculating that it could be almost equivalent. Let me quash that now: the

BA8 is remarkably good value for money and it is unrealistic that the equivalent quality is attainable at less than two thirds of the price. It isn't.

The Stellar II is well-constructed. It has well-fitting, tethered objective caps. It is not internally stopped, so you get the full 70mm equivalent aperture. It is noticeably lighter and slightly smaller than the *Helios Apollo*. However, its coatings, although well-applied, are not as good and consequently control of stray light is not as good. It is also not as bright: I estimate it to be about 0.3 magnitudes less bright. I found its most irritating feature to be its very slack focus: it is simply far too easy to accidentally defocus it, although if you do need to fold the eyecups up or down, e.g. for use with spectacles or for different users, you will need to refocus anyway.

This is a mixed bag. As well as the *Helios Apollo*, I also compared it to one of the common budget 15x70s (that are internally stopped to 62mm); the *Stellar II* is clearly a better binocular and is a good half magnitude brighter and has a larger area in which the image is good. It also has much better colour correction and better control of stray light. Its eye relief for spectacle wearers is significantly better than that of the *Helios Apollo*.

It is comfortable to use and has decent eye relief. Its individual eyepiece focusing makes it suitable for astronomy. Being waterproof and nitrogen-filled it will not suffer from internal condensation if you use it on humid nights. With the strap, it weighed 1915g, which means it can be hand-held for short periods, although it really needs to be mounted, and is light enough not to need a particularly substantial mount. It has some very nice touches like the tethered, well-fitting objective caps and a decent padded neck-strap.

In summary, the *Helios Stellar II* is worth considering by someone who wants a good step up in quality from the budget 15x70s, has a budget between £150 and £200, and for whom its shortcomings are merely minor irritants.

For the full review, please go to the [Binocular Sky Reviews](#) page.

Thanks to [The Binocular Shop](#), who provided the binoculars for review

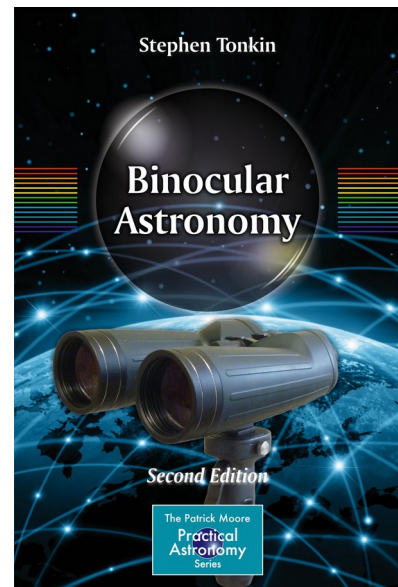
Public Outreach & Talks

During January I will be active at the following events, where I would be delighted to meet any readers of this newsletter who attend:

- 5th: *The Cherenkov Telescope Arrays*; 19:30, one of several short talks at the [Wessex Astronomical Society](#).
- 16th: *Stargazing Live Public Observing*; 18:30-21:00, with [Fordingbridge Astronomers](#).
- 19th: *Any Astronomical Questions*, 19:30, part of the [Fordingbridge Astronomers](#) panel.

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](#)

Acknowledgments:

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*

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

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