



The Binocular Sky

September
2017

Newsletter

Introduction

Welcome to September'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.

The longer nights of September, coupled with the fact that it now actually gets properly dark (and the night-length increases more rapidly as we approach the equinox) means that many more objects are visible. Uranus and Neptune are now relatively easy, and the dark skies mean that some otherwise tricky deep sky objects are more easily visible.

We have a pair of grazing lunar occultations to look forward to: a tricky one for South-east England and a slightly easier one for the Midlands and mid-Wales.

There are also a couple of events involving asteroids that are within the reach of hand-held binoculars. The first is the close approach of a NEO at the beginning of the month then, on the 9th, there is an asteroid occultation of a mag. +5.1 star.

All the charts are "clicky" and will take you to a higher resolution chart than is possible in the newsletter.

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.)

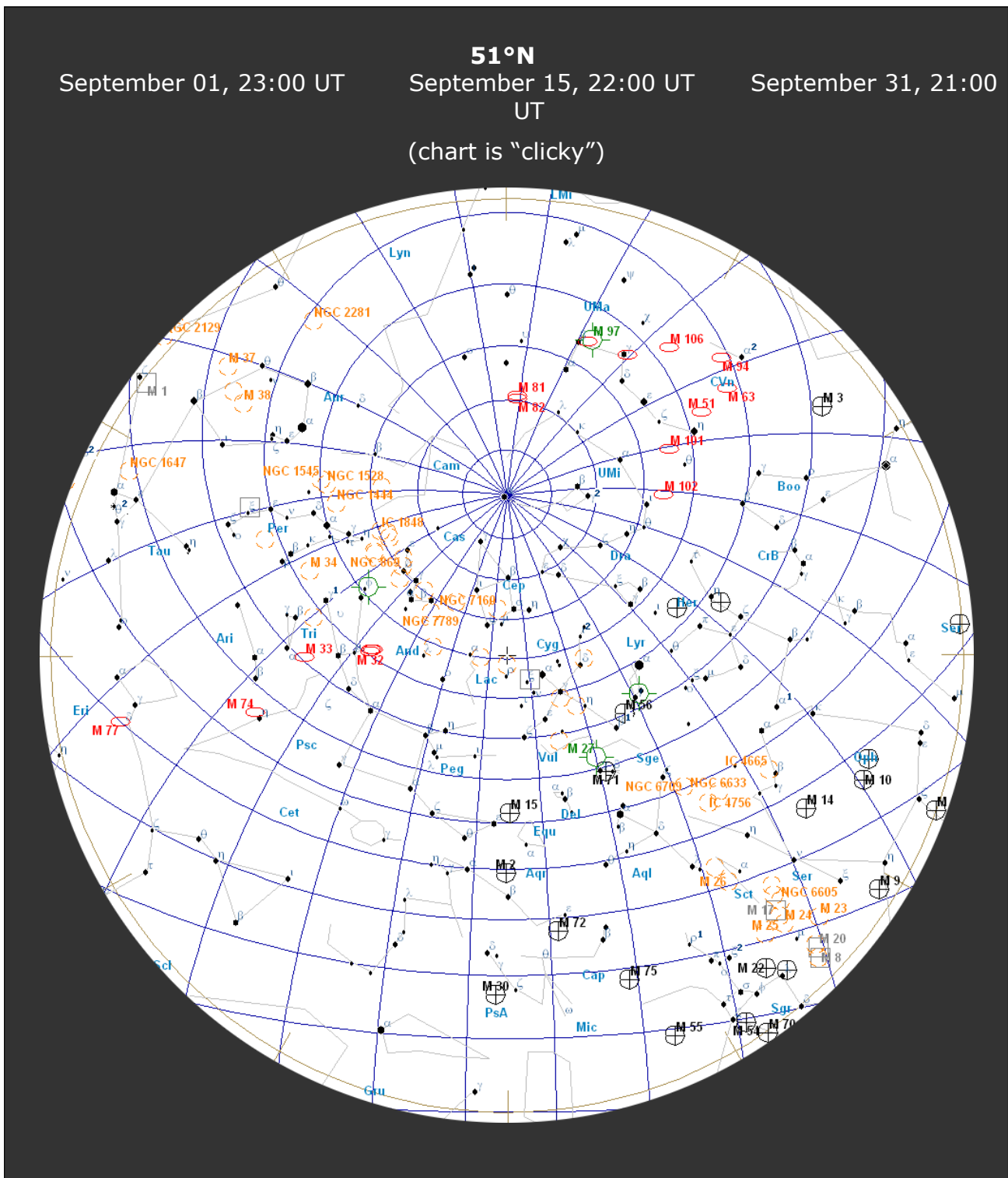
As the sky darkens at twilight, the Milky Way, always a pleasure to scan with binoculars of any size, arches overhead. In the north are [NGC 457](#) (the Owl Cluster) and [NGC 663](#) in Cassiopeia and the Perseus Double Cluster, from which you can easily find [Stock 2](#) (the Muscleman Cluster). [Kemble's 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. Even further to the south-west 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](#). 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. Given the usual brightness of UK skies near the horizon, September is probably the latest you can realistically expect to see it in binoculars.

In September, 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. [M81](#) (Bode's Nebula) and [M82](#) (The Cigar Galaxy), both of which are visible in a 50mm binocular, are at a comfortable height in the northwest. 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 more difficult owing to its low surface brightness. The same can be said of M33 (The Pinwheel), which is considerably easier at the end of the month than it



is at the beginning. Because they are of such low surface-brightness, they benefit from low magnification. This generally makes them easier to see in, say, a 10x50 binocular than in many "starter" telescopes. The Great Andromeda Galaxy, M31, is easily visible this month. It is large and bright

enough to be able to withstand quite a lot of light pollution (making it available to urban observers) 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 [M92](#), it is easier to resolve the outer stars of the latter. Also visible this month is [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 a Full Moon. At a reasonable altitude throughout the 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 [Dumbbell Nebula](#) – although I insist that it looks more like an apple core than a dumbbell!) – is 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. In Aquarius, you should be able to find the magnitude +8.0 [NGC 7009](#), the *Saturn Nebula*. September is probably the earliest in the year that the [Helix Nebula](#), [NGC 7393](#) is observable in Britain before midnight.

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.

The two bright emission nebulae, [M20](#) (the [Trifid](#)) and the larger, brighter

and easier M8 (the Lagoon) are now sinking into the twilight; you will need a good south-western horizon if you are to have a realistic chance of observing them. 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

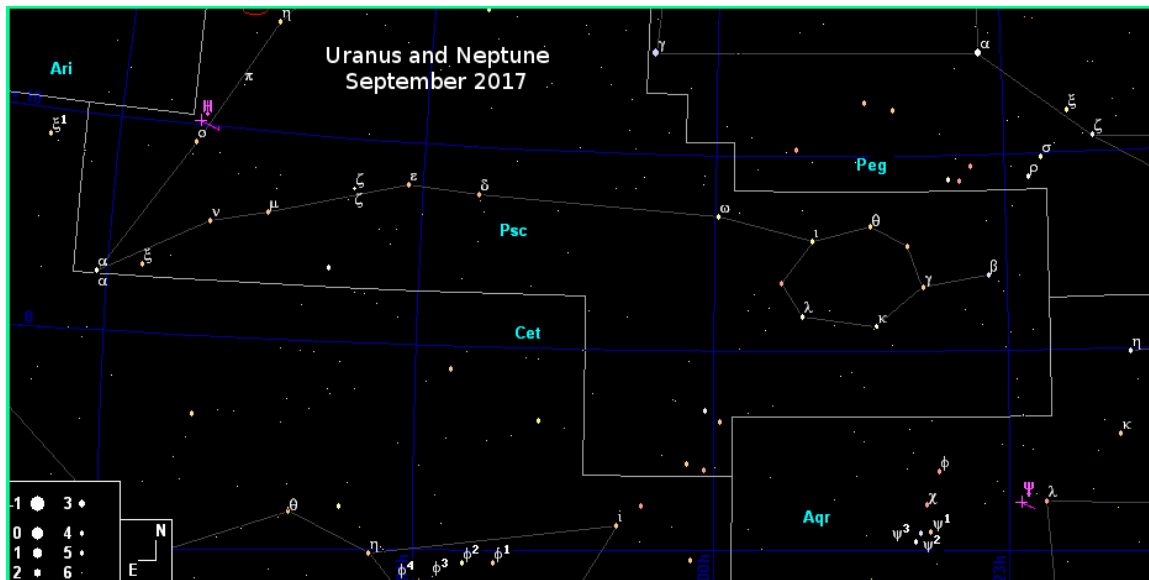
Selection of Binocular Variables (mag < +7.5)			
Star	Mag Range	Period	Type
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
AR Cep	7.0-7.9	116	Semi-regular
RX Cep	7.2-8.2	55	Semi-regular
TX Psc	4.8-5.2	-	Irregular
RR Lyr	7.06-8.12	0.57d	RR Lyr
TX UMa	7.0-8.8	3.06d	Eclipsing binary
R Sge	8.0-10.4	71d, 1112 d	RV Tau
U Sge	6.5-9.3	3.38d	Eclipsing binary
DY Vul	8.4-9.7	-	Irregular
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
TW Peg	7.0-9.2	90, 956	Semi-regular

Double Stars

Binocular Double Stars for September			
Star	Magnitudes	Spectral Types	Separation (arcsec)
ζ Lyr	4.3, 5.6	A3, A3	44
β Lyr	3.6, 6.7	B8, B3	46
οΣ525 Lyr	6.0, 7.6	G0, A0	45
δ 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
Σ1 1 And	7.1, 7.3	G5, G5	47
ψ-1 Psc	5.3, 5.8	A2, A0	30

The Solar System (charts are 'clicky')

Neptune is now available throughout the hours of astronomical darkness, shining at mag. +7.8 midway between two reddish stars, λ and φ *Aqr*. It moves (retrograde) about 46 arcmin to the south-east of λ during the month.



Uranus now rises with the onset of astronomical darkness. It is much brighter than Neptune, at mag. +5.7. It is a degree north of σ *Psc*, its position changing by 53 arcminutes during September.

Meteor Showers

There are no major meteor showers in September.

Asteroid Occultations

September 09: Asteroid 6926 (Susumu) occults σ -1 *Tau* (mag +5.1)

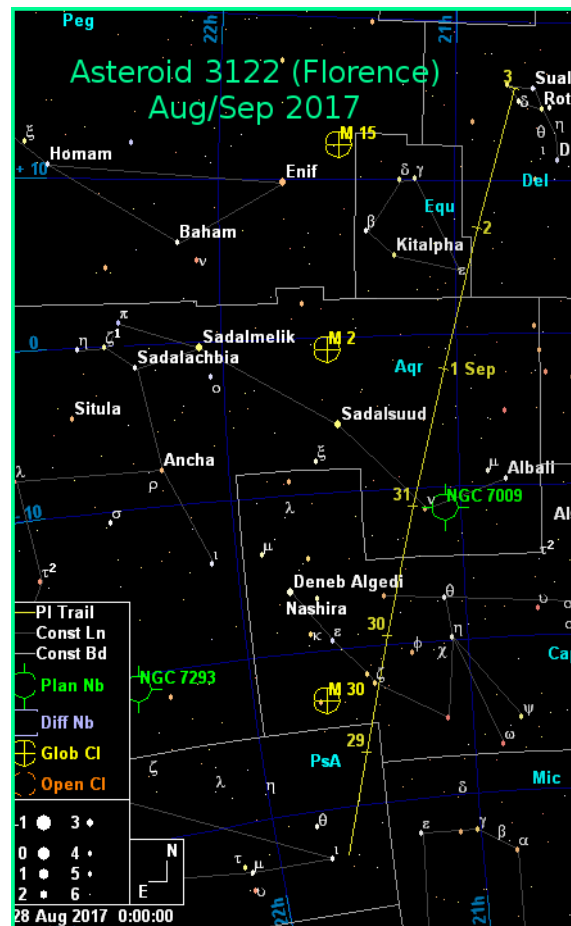
[Detailed information](#) [Map](#)

Near Earth Object

Asteroid 3122 Florence should be from just before the beginning of the month. It will pass at 18.4 LD (0.047 AU, 7 million km) at 12:06 UT on 2017 September 01. The magnitude predictions are uncertain, but although it may be near the limit of visibility for smaller binoculars, it should be relatively

easy in 70mm or larger apertures at least until the Moon begins to interfere at the beginning of September.

The asteroid, which has a diameter somewhere between 4 and 9 km (we should know this more precisely after this pass) is named for Florence Nightingale and will not pass this close again for another 50 years. Although it is classified as a PHA (potentially hazardous asteroid) it will not become an impact threat at least for the next few centuries.

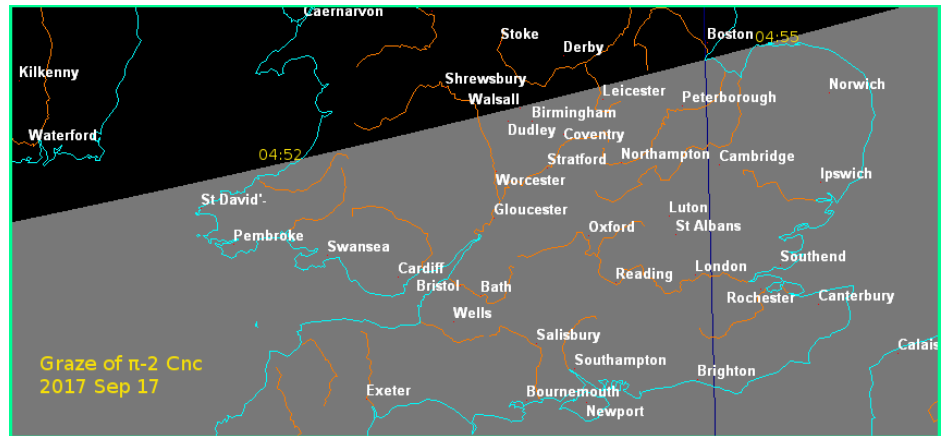
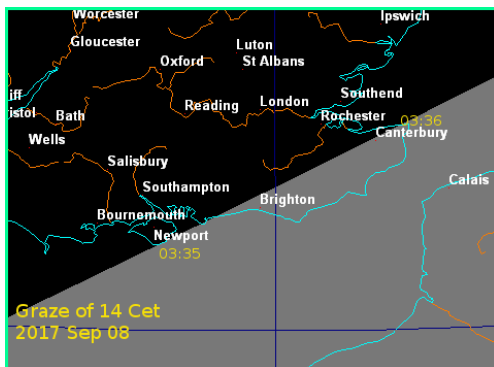


Lunar Occultations

The nights are getting longer, so we are getting more observable 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, Sep 2017, 50.9°N, 1.8°W							
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	Position Angle
Sep 07	20:52:57	R	HIP1939	K1	6.1	51S	219
Sep 08	03:34:24	Gr	14 Cet	F5	5.9	12.5N	
Sep 09	03:01:40	R	HIP 6751	B9	6.6	58S	224
Sep 12	04:31:14	R	48 Tau	F5	6.3	71S	242
Sep 14	03:42:08	R	HIP 29545	B8	6.6	71S	252
Sep 17	03:54:34	R	π -1 Cnc	G9	6.5	51N	325
Sep 17	04:54:16	Gr	π -2 Cnc	K1	5.4	6.5N	
Sep 17	05:04:29	R	π -2 Cnc	K1	5.4	30N	346
Sep 24	18:53:44	D	γ Lib	K0	3.9	76N	86
Sep 28	20:53:36	D	HIP 93118	O7	6.9	48S	127
Sep 29	18:58:32	D	56 Sgr	K0	4.9	39S	132

There are two grazing occultations this month. The first, of 14 Cet, on the morning of the 8th, will be tricky as the Moon will be less than 2 days after Full. The second, of π -2 Cnc, on the morning of the 17th, will be somewhat easier as it is a slightly brighter star and the Moon will be a waning crescent 3 days before New.



The Moon

September 06	Full Moon
September 13	Last Quarter
September 20	New Moon
September 28	First Quarter

Public Outreach & Talks

During September I will be at the following events; please do come and say "Hello" if you attend any of them:

1st & 2nd: [End of the Road Festival](#)

5th: [Wessex AS](#)

14th: [Worcester AS](#)

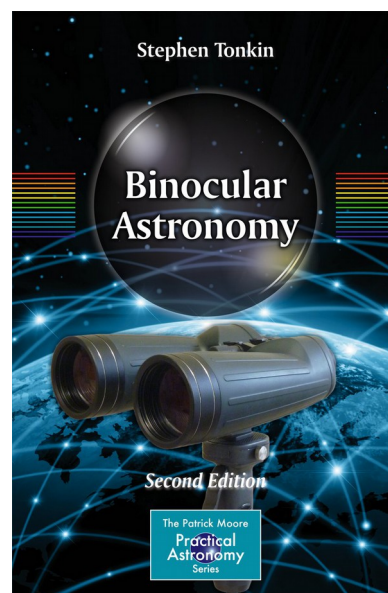
Public Stargazing

Ten Ways the Universe Tries to Kill You
(Talk)

Binocular Astronomy
(Talk)

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:

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

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