



Small Wonders: Ophiuchus

A monthly sky guide for the beginning to intermediate amateur astronomer

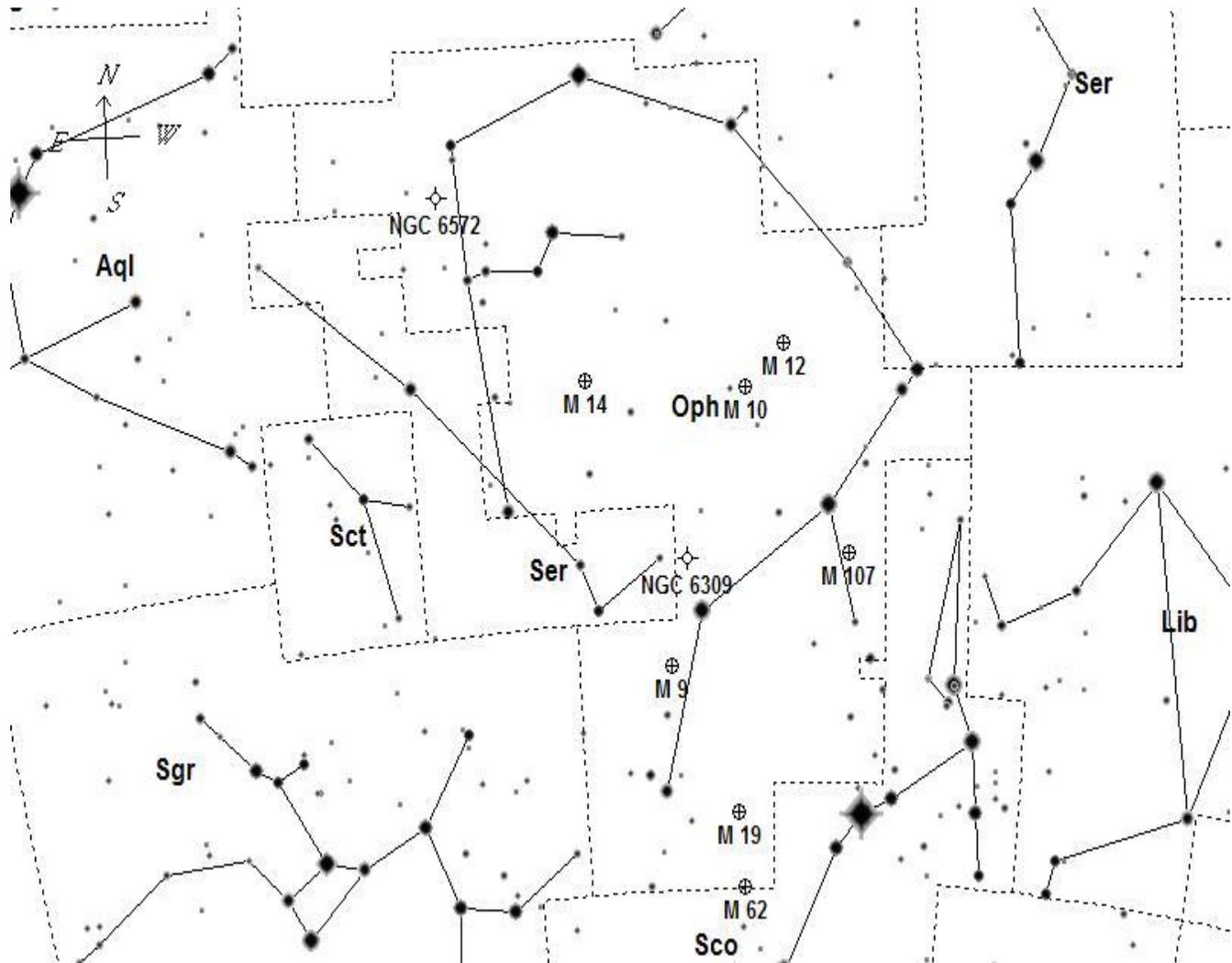
Tom Trusock - 06/09



*Barnard 72 (The Snake Nebula) - One of the many dark nebulae in Ophiuchus:
Contributed by Hunter Wilson*

This massive constellation culminates around midnight on June 12th and for me, has always been the harbinger of Summer. As with many constellations, it's mythology is somewhat mixed, but the most prevalent mythos is it's association with Aesculapius, surgeon aboard Jason's Argo.

I've been an amateur astronomer for decades now, but I'm still awed by the sheer size of this constellation. Bordered on the north by Hercules and the south by Scorpius and Sagittarius, it reaches from +14 to just beneath -30 declination, and covers nearly three hours in right ascension and splits Serpens neatly in two.



Widefield Finder Chart - Looking South, early June around 12pm.

It's brightest star is 2nd magnitude Rasalhague located at the top of the constellations distinctive bell shape. The most interesting star within it's borders is probably the mag 9.5 red dwarf named Barnard's Star. Discovered in 1916 by E. E. Barnard, it's six light years away (making it the second closest star) and has a proper motion in our sky of one degree every 350 years. Barnard's star is approaching us rapidly – around 87 miles per second – and will reach closest approach of 3.8 light years around 8000 years from now.

Ophiuchus is also home to the obsolete constellation Poniatovski's Bull, placed in the night sky in 1777 to honor King Poniatowski of Poland. This 3 degree asterism is reminiscent of Taurus, and is nicely framed in a wide field telescope or pair of binoculars.

As per deep sky objects:

Sitting half in the summer Milky Way, it's no surprise that it's rich in globular clusters. In fact, about 1/6 th of Milky

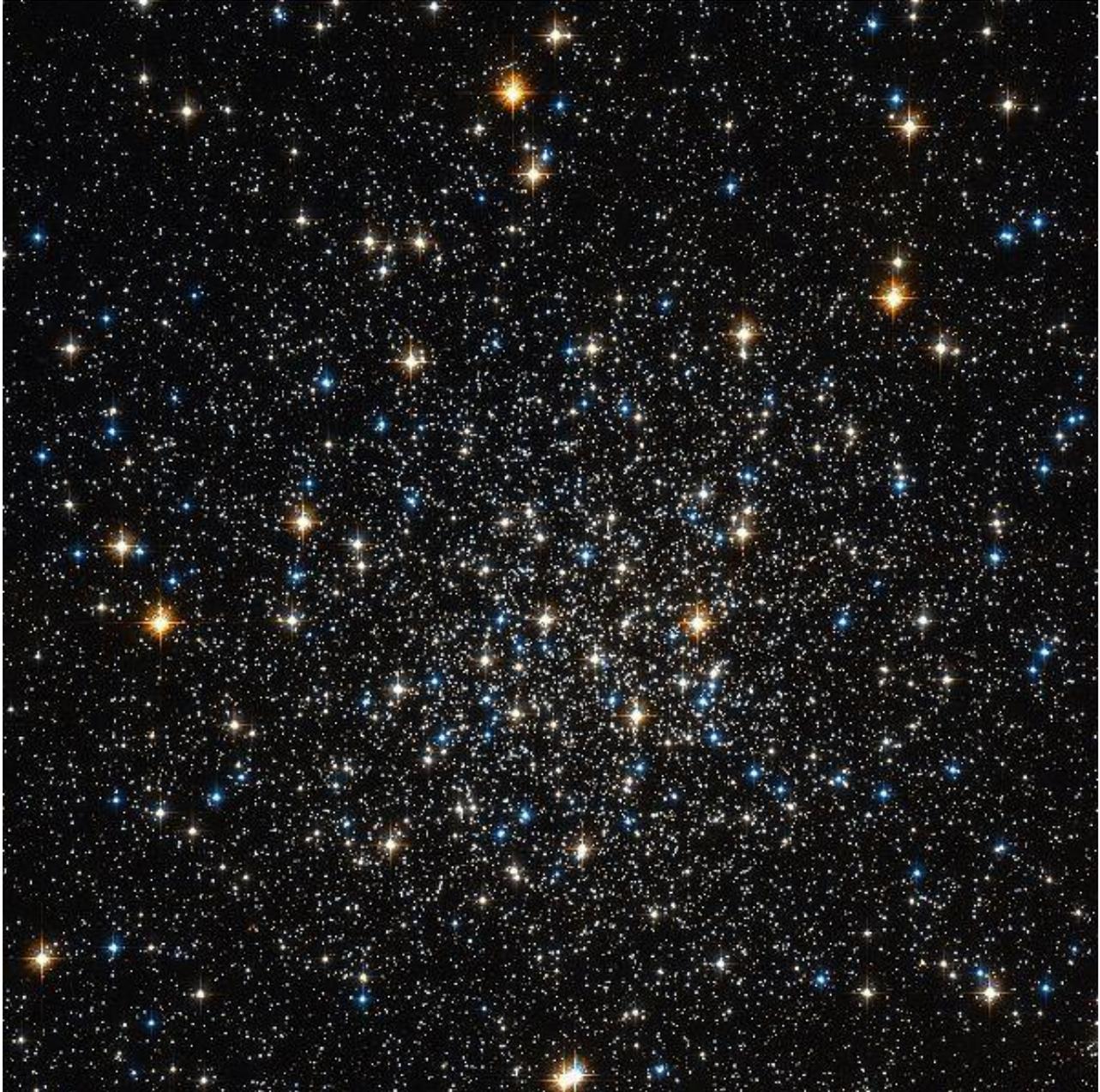
Way globulars are to be found in it's boundaries, with 7 of them being fairly bright Messier objects (25 out of the 158 or so currently known). Galaxies abound, but most of them are too dim for the typical amateur telescopes. The brightest is NGC 6384 at mag 11.6, abet with a low surface brightness. Strangely enough, only one galaxy cluster (AGC 2163) is listed. There are a host of planetaries here as well – most faint, but at least two (out of some 160+) are suitable for small telescopes and have made it onto this months list. If you're a fan of dark nebula, Ophicuhus has a host. One of the most prominent in the northern hemisphere, visible to the naked eye, but probably best viewed in binoculars, the Pipe Nebula is a 7 deg long chain of dark clouds that can be found south of Theta Oph.

The targets we're going to focus on in this article include the seven Messier objects found in Ophiuchus and two small, but bright planetary nebula. For those inclined to lists, in order of decreasing magnitude, here are the globular clusters:

M12
M62
M10
M19
M14
M107
M9

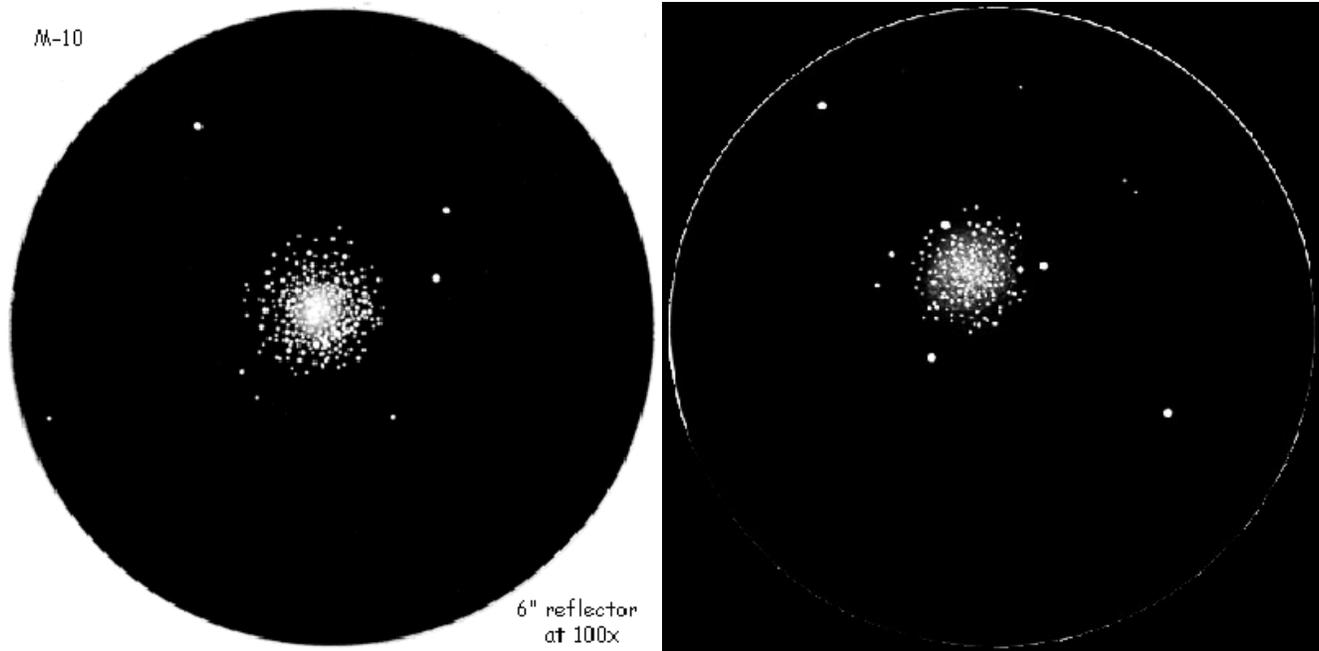
All should be visible in binoculars, although identifying a couple of them may be a challenge in lower powered units. The planetary nebulae that we're going to visit are:

NGC 6572 (the Blue Racquetball)
NGC 6309 (the Box)

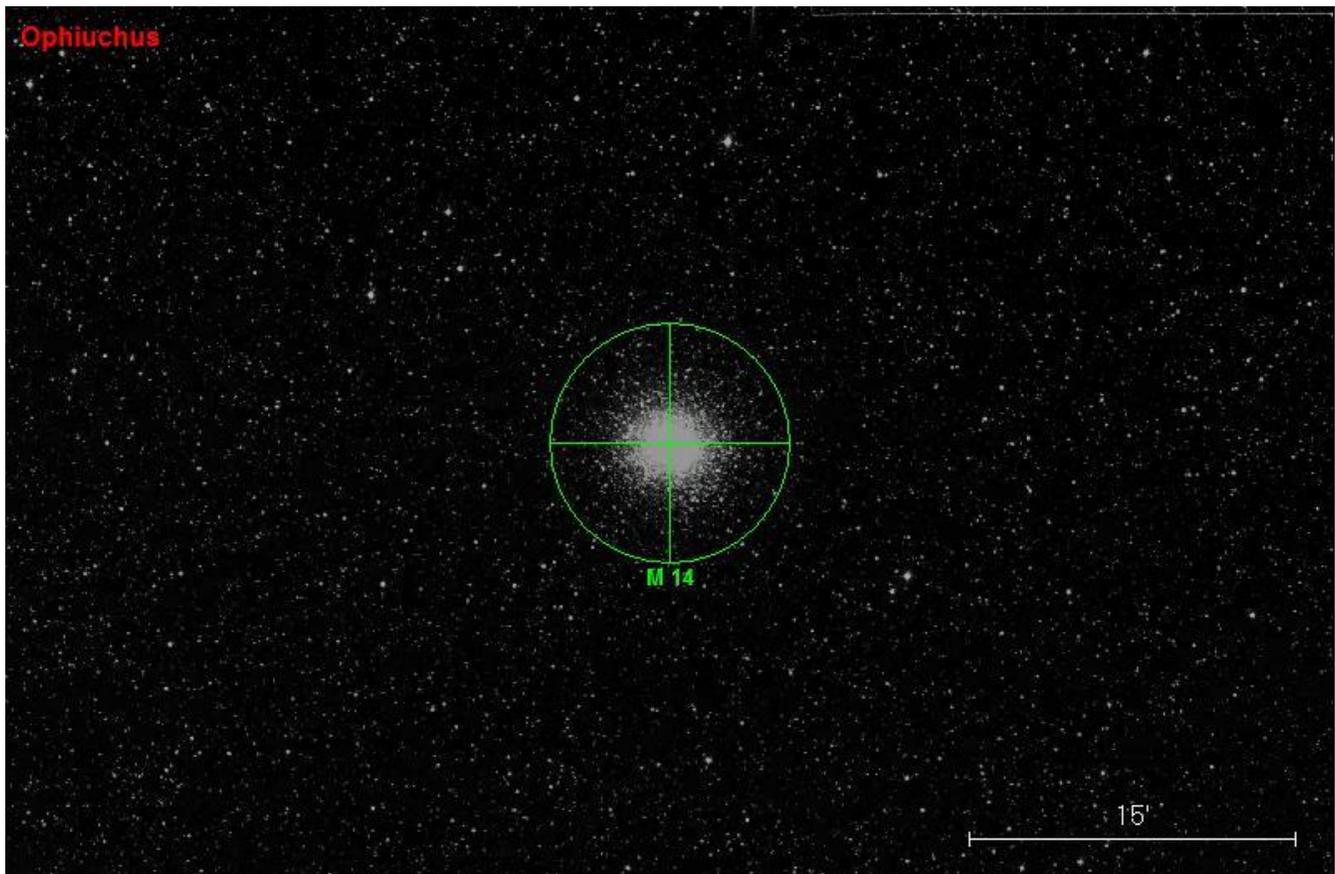


M12 - Hubble Image

Lets start with the center of the constellation, and globular clusters M10 and M12. Shining at mag 6.6, and 6.1 both of these globulars are easily visible with binoculars from a semi-dark site, and M12 should be visible with the naked eye from a truly dark (and perhaps southern) site. These two globulars are just over three degrees apart and a widefield scope or set of binoculars will show the pairing to great advantage. To my eye they are of a similar size - around 15' to 20', with M10 perhaps just a bit larger. I find M12 a bit looser, and find it to lie just off center of a somewhat irregular rhombus of brighter stars. Taras Wertelecki's sketches made with his 6" reflector at 100x give the visual observer a wonderful point of comparison.



While we're in the center pop over 10 degrees or so east of M10 and check out M14. While M12 and M10 are located on the same side of the galactic center as Sol, M14 is on the other side and lies about twice as distant – some 30,300 light years.



M14- DSS Image

As with the rest of the our targets this evening, take some time and see how well it responds to magnification, you should find that in a moderate sized telescope (8 inches and up) you should begin to get at least some resolution at higher powers.



M9 - Contributed by Hunter Wilson

Now head south about $15\frac{3}{4}$ degrees for our next target, mag 7.8 M9. If you're scanning or using a wide field telescope, the first thing you may notice is that there are two other globulars in the same field as M9, both lying about a degree away. Mag 8.2 NGC 6536 lies to the NE, and a much dimmer mag 9.5 NGC 6342 to the SE.

Dave Mitsky writes -

M9 was easily visible in the Lumicon 11x80 finder scope. It was unresolved through the 12.5" f/6.5 Cave Astrola Newtonian at 46x. At 83x, there was partial resolution of the cluster's outermost stars. The cluster was somewhat resolved at 159x and had an almost triangular appearance at this magnification.

M9 lies "above" and just this side of galactic center at a distance of around 25,800 light years.



M19 (Note the elongated shape) - Contributed by JimThommes

Head SSW to find M19 and M62. There are a host of smaller globular clusters in this area which are interesting targets in their own right - especially with a large telescope. Again, with a pair of binoculars or a wide field scope, you'll find these two in the same field of view as they lie about 3.5 degrees apart. I've found they just fit into the field of the NP-101 with a 31mm Nagler. While this setup does not have enough magnification (or aperture) to show resolution of the globulars, it's an extremely impressive wide field view. In real space, M62 lies around 22 kiloparsecs from us, while M19 clocks in at about 28 kiloparsecs.

In observations made with a 17" f15 classical cassegrain, Dave Mitsky notes:

M19 was easily visible with the 5" f/5 finder scope. As seen with the 17" f/15 clasical cassegrain at 144x, it appeared as oval shaped with 2 bright outlying stars and was partially resolved. Increasing the magnification to 259x resulted in a beautiful view of a fully resolved globular cluster. A line of faint, almost equidistant field stars was noted to the west of M19.

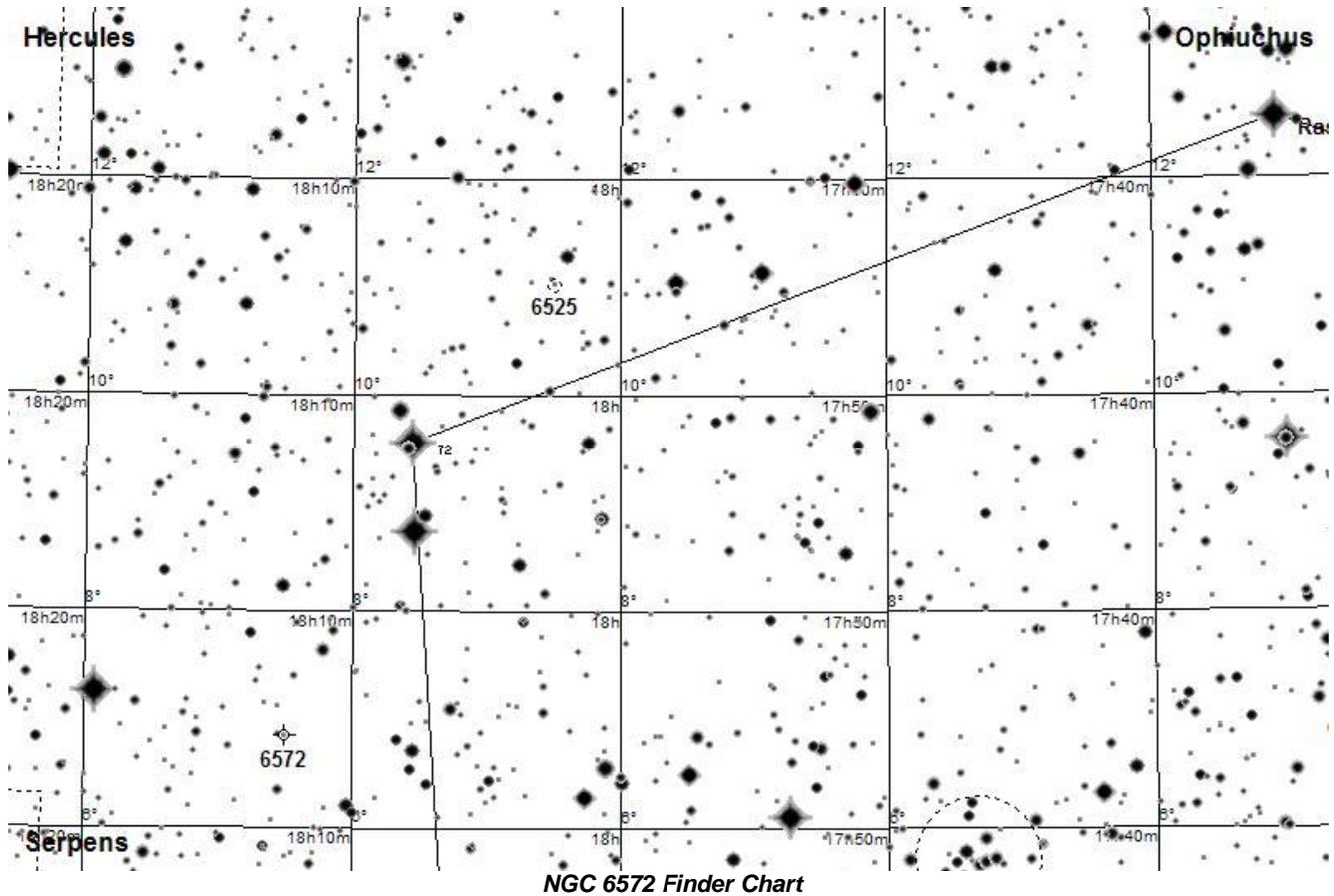


M107 - Contributed by Hunter Wilson

You'll find our last Messier about halfway between Zeta and Phi Oph, and about 21 kiloparsecs away. To me, the most interesting thing about M107 is it's framing. It lies in the center of 4 11th magnitude stars in the shape of a crucifix. In the screen capture from *Where is M13*, I've labeled M107, and displayed the rest of the Messier globulars to give you an idea of where these things are located with respect to us. In an interesting illustration of how gas and dust affect visibility, note that these bright globs are all on the same side of the galactic core as we are, as well as being on "top".



Let's finish up with two of my other favorites in this region, both planetary nebula. By the way, especially in contrast to our other targets this evening, these last two are somewhat small. If you're having problems locating these try holding an OIII filter between your eye and the eyepiece, and flicking it in and out. The stars will dim, leaving the planetary standing alone.



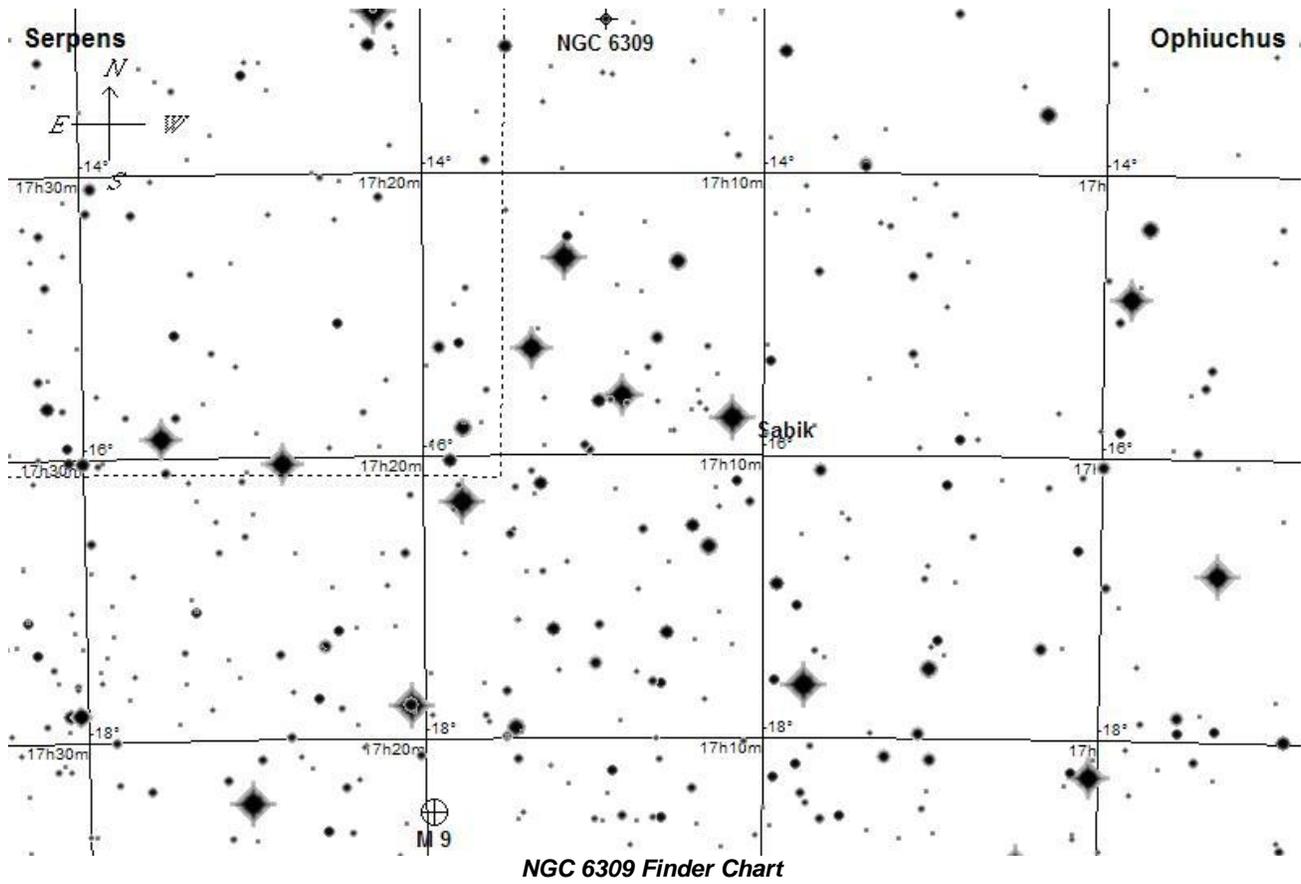
Mag 8.1 NGC 6572 (also known as the Blue Racquetball) is an obvious blue green color to me, in just about any telescope – but in an exercise in the variations of individual eyesight, Dave Mitsky notes that to him it appears green in larger scopes, and aquamarine in smaller ones. On planetary nebulae, I'm fond of bumping up the magnification in order to glimpse the central star. Because of the high surface brightness of this particular object, I've never managed to see it even though it's listed at magnitude 13.6. On larger scopes, pop in an OIII filter if you've got one and you may find yourself rewarded with some detail on the northern and southern edges of the planetary.



NGC 6572 - Contributed by Bill W

Bill W contributes the above image and writes:

Despite being the least aesthetically pleasing image I've ever posted this nebula is sort of interesting: It's so bright i couldn't go longer than 30 seconds even with narrowband filters without saturating the core--far brighter than any PN I've imaged, including the ring, cat's eye, and blue flash. Visually it presents a good opportunity to grasp a PN's color. with my 8" SCT through LP and smog it looks pale blue to me. I'd like to try this one with dark skies at altitude and perhaps more aperture to get a better sense of the color.



Mag 11.5 NGC 6309 is considerably lower in the sky, and may present something of a problem for northern observers trying to look through light pollution. I still remember my first view of this nebula. It came through an 8" f6 dob, and I noted a distinct box shape to the planetary. Larger telescopes clearly show the bipolar nature, but like John writes below, I too have failed to see the 14.4 mag central star in any scope.



NGC 6309 - Contributed by Bill W

John Tatarchuk writes:

Nice, bipolar, two lobes, one lobe larger and brighter than other, dark space between lobes, no central star seen filtered or unfiltered, mag ~13 star seen near brighter lobe.

I'll leave you with a couple of suggestions for challenge objects:

An interesting planetary for amateurs with large telescopes might be Minkowski's Butterfly. Most planetaries we observe tend to be either large and faint, or small and bright. The Butterfly is both small and faint! Use a large enough telescope however, and tiny bipolar M 2-9 is quite an interesting target.

Motivated globular hunters should also seize the opportunity to hunt down Palomar 6 and 15, as they lie within Ophiuchus as well. Discovered photographically via the Palomar Sky Survey these globs form a quite manageable list for someone looking for a small, yet challenging list of targets.

And with that, that's it for this one. Once again, thanks to the readers who submitted observations, sketches and photos. Your contributions greatly enrich these articles.

As always, I'm gratified if folks find my meanderings useful.

Till next time -

-Tom T.

Additional Resources / References / Just Plain Cool Stuff

NGC 6502 from Best of AOP

<http://www.noao.edu/outreach/aop/observers/n6572.html>

Milky Way Globular Clusters

<http://seds.org/~spider/spider/mwgc/mwgc.html>

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http://www.cloudynights.com/category.php?category_id=170

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I've been having some issues with spam lately, and probably didn't receive your e-mail.)
Please indicate if I can cite your observations in future columns.

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Special Thanks to Olivier Biot for assistance with the PDF's and all those who take the time to read and contribute to this series.