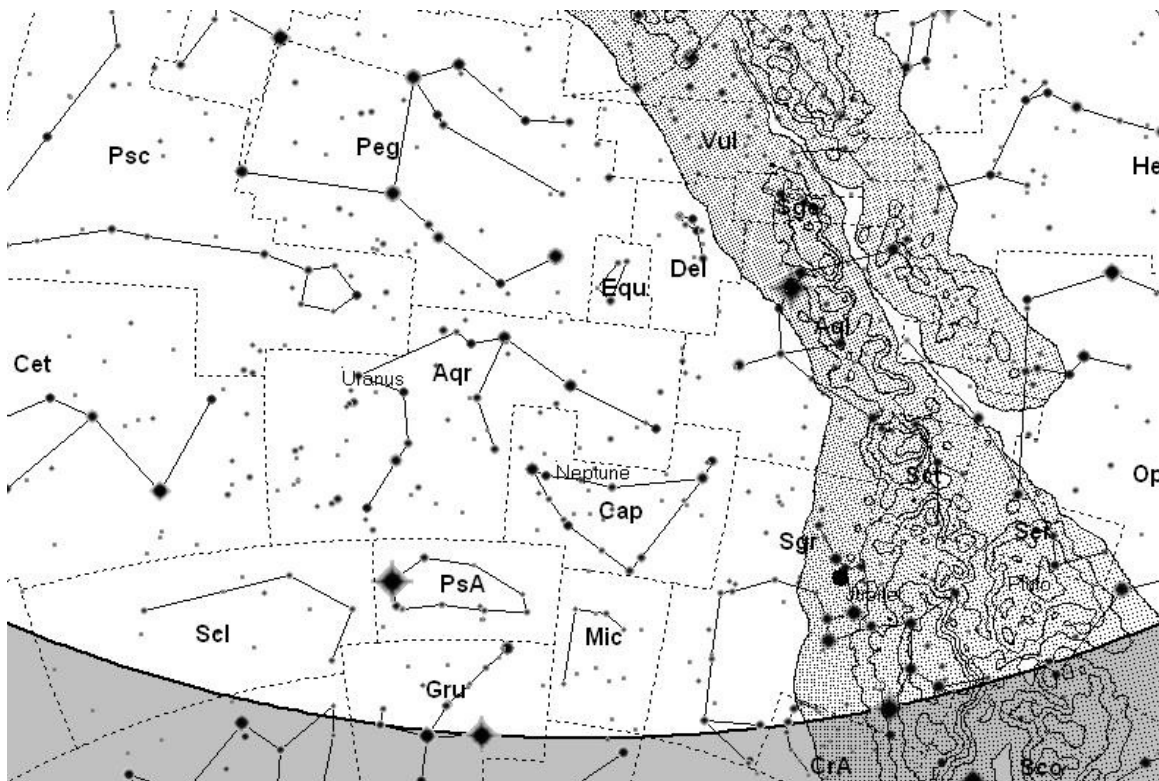


Small Wonders: Quick Peeks - Aquarius

Tom Trusock 10/08

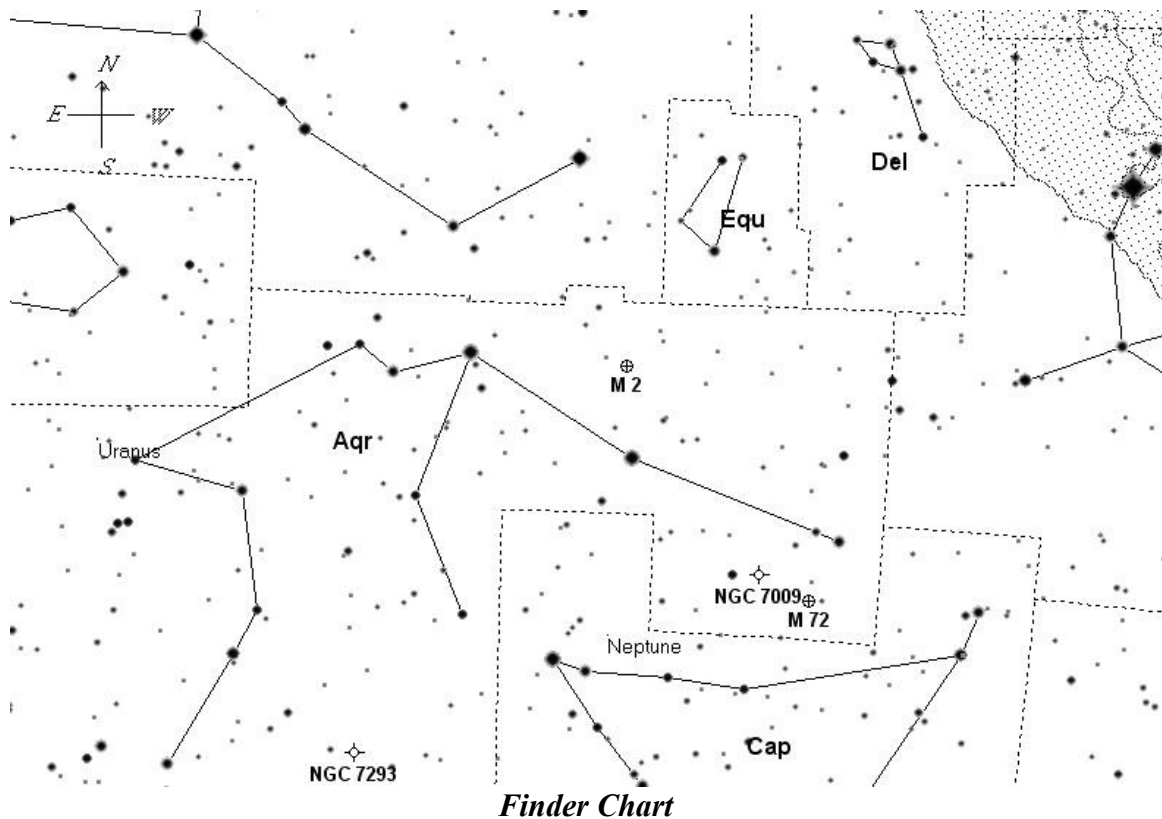


The constellation Aquarius (Latin for water-bearer) isn't what I'd call one of the more obvious constellations of autumn - at least from the northern latitudes. It is, however, one of the largest in the night sky - in terms of area, it comes in somewhere around 10th overall, but its three brightest stars hover around 3rd magnitude. Aquarius resides in an area surrounded by water and sea creatures, and as a result is sometimes known as the celestial sea.



Widefield Finder Chart - Looking South, Mid October appx 10pm.

Aquarius is home to at least three globular clusters, two fine planetary nebulae, and several different galaxies. There's a host of interesting objects here, but for this quick peek, we'll just take a look at the showpieces: globular clusters Messier 72 and 2, NGC 7009 (the Saturn Nebula) and NGC 7293 (the Helix Nebula).



We'll start with the easiest to find, the globular cluster M2. With a magnitude of 6.6 and a size of 16'. M2 is one of the better globular clusters for smaller telescopes - that said, it can be tough catch with lower powered binoculars and some care is needed while sweeping. In 7 or 8x binoculars, look for a fuzzy star. With higher magnifications the globular becomes more obvious and is a fairly easy target with my 15x50's. It's well resolved in my 18" telescope.

Dave Mitsky writes:

M2 is one of the finest of the Messier globular clusters. As seen through the Astronomical Society of Harrisburg's 17" f/15 classical Cassegrain, it exhibited a bright, compressed, and somewhat off-center core. Increasing magnification allowed fainter stars in the cluster's corona to be detected. An obviously brighter outlying tenth magnitude star was situated to the northeast of the center. At 324 (20mm Meade Series 5000 Plossl) and 404x (16mm Brandon), the corona stars somewhat resembled the arms of a starfish.

The ASH 5" f/5 achromat finder scope at 19x displayed M2 as a clearly non-stellar disk. At 40x, the cluster was obvious.

I re observed M2 on the following night (2008/10/6) through a friend's 10" f/4.5 Meade Dobsonian reflector from a much higher and darker site, under far better conditions. The transparency was excellent and the VLM was well above sixth magnitude. Unfortunately, I arrived fairly late due to the late moon set and M2 was rather low in the southwest at the time. The cluster was quite spectacular at 163x (7mm Pentax XW) and looked better through the 10" than it did through the 17" the previous night. The tenth magnitude star again stood out prominently.



M2 Sketch contributed by WadeVC



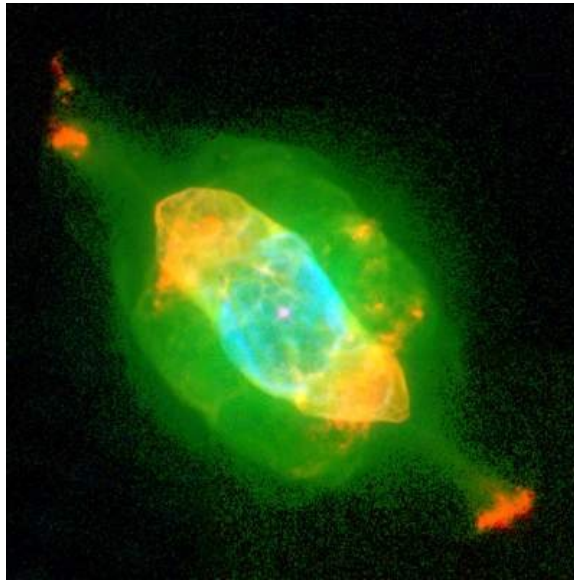
NGC 7009 - Contributed by Bill W.

From here we'll drop down to NGC 7009, the Saturn Nebula. This mag 8 planetary nebula was one of the earliest discoveries made by William Herschel for his sky surveys. Herschel cataloged 7009 on September 7, 1782 while observing from his home. As you can see from the pictures, the genesis of the name is fairly obvious - when observed with a large enough telescope, the resemblance to a nearly edge on Saturn (and ring system) is rather telling. In small telescopes and binoculars (at lower powers) look for a blue/green "star", if you've ever seen Uranus or Neptune, you'll get a very good idea of why Herschel called these Planetary Nebula. The central star is around magnitude 11.5 and is an easy catch in my 18" telescope. Pulling out the central stars in planetary nebula often requires the use of high powers to increase the apparent contrast between the nebula and the central star.

Don Pensack made the following observation through his 12.5" Dobsonian:

7009, mod size, very bright, bluish overtones, at high power appears to have several overlapped rings, hints of the ansae but not too obvious, overall oval shape, slightly brighter in very center but central star not apparent.

I've seen hints of the ansae (extensions) in telescopes as small as 8 inches, but rarely. Even in my larger scopes it usually takes a clear, transparent and steady night.



NGC 7009 - Hubble Space Telescope

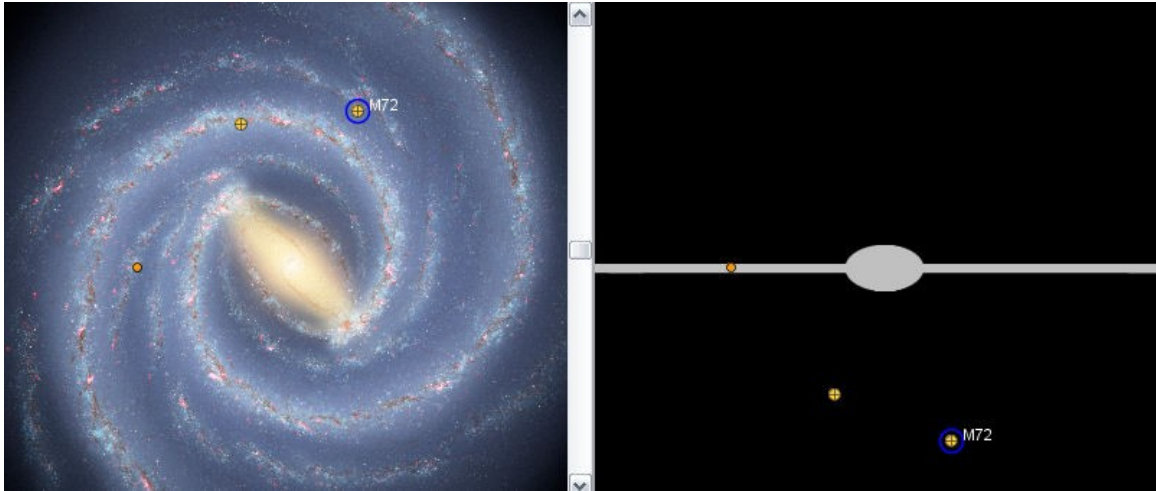


M72 - Contributed by Hunter Wilson

Take a moment and compare M72 to your earlier view of M2. Bill Tschumy's "Where is M13?" shows that m72 shines with the luminosity of 43,362 suns, stretches 106x106 light years and lies around 55,400 years away. Contrast that with the other (unlabeled) globular shown in the image below - M2.

M2 has the luminosity of 287,179 suns, a diameter of 175x175 light years and a distances significantly less

than that of m72 - 37,500 light years. It's no wonder that M2 is the more impressive globular for our backyard telescopes.



Comparative Placements of M2 (unlabeled), Earth, and M72

Although it's poorly placed position for northern observers, a larger telescope (8-14 inches) will still typically show a moderate amount of resolution - as long as the sky conditions support it. Remember when you're looking close to the horizon, you're viewing through 2.5 times the air mass you are at zenith. Atmospheric extinction robs us of a fair amount of starlight.



NGC 7293 - Contributed by Mark Sibole

Finally, lets stop by NGC 7293 - the Helix Nebula. This is a large planetary visible in binoculars from a dark

site. Don't be misled by the listed 7.3 magnitude - the surface brightness of the planetary is quite low, and if transparency is poor, or if there is a small amount of light pollution, you'll almost certainly miss it in small instruments.

At a mere 650 (or so) light years the Helix is the nearest planetary and relatively nearby, cosmically speaking. It's apparent diameter of 17' translates into an actual diameter of about 2 light years at that distance.

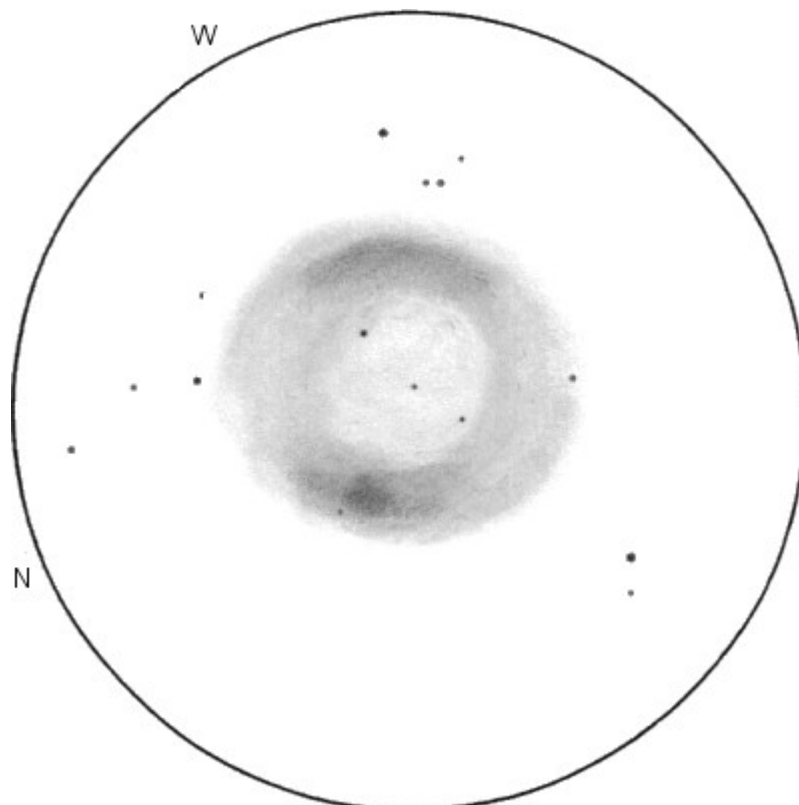
In an 8" scope, look for a circular area of background brightening (with two more distinct opposite patches), and a darker area in the middle - which may or may not be visible depending on the magnification you're using.

Dave Mitsky contributes:

I viewed NGC 7293 through my friend's 10" Dob at 82x (14mm Denkmeier). Using a narrow band filter, the Helix Nebula was a large annulus, with two opposing brighter sections and several enclosed stars. An O-III filter darkened the field considerably but enhanced the nebula slightly.

I've found the best views of the Helix come on cool, transparent nights with the use of very low powers. The surface brightness of the planetary is very low and it does not take much to erase it completely from your view. In *Visual Astronomy of the Deep Sky*, Clark recommends using slightly higher powers to detect the dark center.

Observing from Finland, reader Iiro Sairanen contributes the following sketch of the Helix made through a 300mm newtonian operating at 88x:



NGC 7293 - Iiro Sairanen

The Helix has the dubious distinction of being one of the few astronomical entries on Snopes.com, due to an e-mail that first made the rounds around 2003 claiming that NASA had managed to take a photo of the "Eye of God" - a rare event that occurs once every 3000 years. While the photo is a stunning combination of images taken from Kitt Peak and the Hubble Space Telescope, you won't have to wait 3000 years to see the Helix.

And with that, that's it for this month. Once again, thanks to the readers who submitted observations, sketches and photos, there were far more excellent submissions this month than I could use. 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

Hubble Witnesses the Final Blaze of Glory of Sun-Like Stars

<http://hubblesite.org/newscenter/archive/releases/1997/38/image/g/>

Iridescent Glory of Nearby Planetary Nebula Showcased on Astronomy Day

<http://hubblesite.org/newscenter/archive/releases/2003/11/>

If you liked this article, you may want to check out the rest of the series.

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

E-mail me or send any observing reports to: tomt@cloudynights.com
(Please contact me via Forum PM if I don't respond.
I've been having some issues with spam lately.)

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<http://www.thinkastronomy.com/>

Constellation Art from the Freeware Program Stellarium

<http://www.stellarium.org>

Special Thanks to all those who take the time to read and contribute to this series.