MONTHLY OBSERVER'S CHALLENGE

Las Vegas Astronomical Society

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SEPTEMBER 2017

NGC-6905 Planetary Nebula In Delphinus

Introduction

The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It's open to everyone that's interested, and if you're able to contribute notes, and/or drawings, we'll be happy to include them in our monthly summary. We also accept digital imaging. Visual astronomy depends on what's seen through the eyepiece. Not only does it satisfy an innate curiosity, but it allows the visual observer to discover the beauty and the wonderment of the night sky. Before photography, all observations depended on what the astronomer saw in the eyepiece, and how they recorded their observations. This was done through notes and drawings, and that's the tradition we're stressing in the Observers Challenge. We're not excluding those with an interest in astrophotography, either. Your images and notes are just as welcome. The hope is that you'll read through these reports and become inspired to take more time at the eyepiece, study each object, and look for those subtle details that you might never have noticed before.

NGC-6905 Planetary Nebula In Delphinus

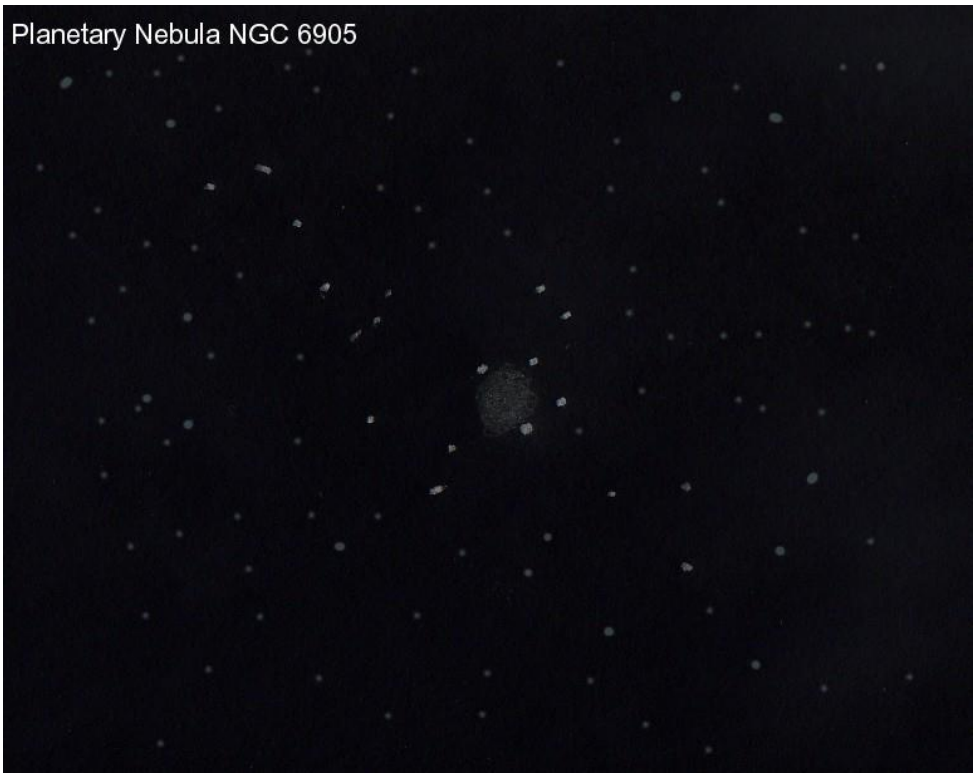
NGC-6905 is known as the Blue Flash Nebula. It's a planetary nebula in the constellation of Delphinus that was discovered by William Herschel in 1784. It carries his number designation of H-016-4. It also goes by several other monikers including Heinze 2-466, PK 61-9.1 and PNG 61.4-9.5. It shines at a relatively dim mag. 10.9 to 11.9, depending on the source, and has a mag. 14 central star.

The Blue Flash is known for its two ansae extensions, giving it an ovoid shape that's only visible in images or larger apertures. The central star is a white dwarf with an extremely hot surface temperature of about 150,000°K. The nebula lies approximately 7,500 light-years distant.

Observations/Drawings/Photos

John Lourdes Pierce: Observer from Nevada

I observed the planetary nebula NGC-6905 in August, 2017 from the dark skies found in the Lake Mead area. I used a 10-inch reflector at 30X to locate it. While not conspicuous, as well as small and dim, it caught my eye among a small group of dim stars. At 90X, it was fairly easy to observe. It was also pretty high in the sky.



Gary Ahlers: Observer from Nevada

NGC-6905, or the Blue Flash Nebula, is a relatively small planetary nebula in the Delphinus constellation. Approximately 3,000 light-years distant, its angular size seems grouped on two disparate measurements. I believe the first, about 45" X 37" is the size of the bright elongated ball of the central gas shell. The second, 1'35" X 30" includes the faint filaments extending from the north and south poles. Because these filaments appear to terminate at two nearby stars, filaments actually curving toward the south star, it's possible an outer gas shell has been stretched out by gravitational interaction with these stars.

The central gas shell is a bright blue elongated sphere in appearance with extensive mottling. A white dwarf star is very prominent.

This image is quite a change for me. I've spent the last two months imaging LDN s with an 80mm (3.1-inch) at F3.5. This is with an ACF (SCT) 10-inch at f/20, 120sec exposures vs 900sec.


NGC 6905 Blue Flash Planetary Nebula 1'35" x 21" ACF-10 @ F20 15x15min Exp 9-23-2017

Keith Caceres: Observer from Nevada

I made two observations of NGC-6905, The Blue Flash Nebula. The first was shot at f/6.3 on the evening of Saturday August 26, 2017 at our Astronomy in the Park event at Red Rock Canyon. The second was shot at f/10 on Friday September 22, 2017 at our 31st annual fall star party at Cathedral Gorge State Park. I've submitted my September 22nd observation, after judging it to be the more detailed of the two.

This object is a planetary nebula. The two sources I consulted on its distance conflict with each other by a significant amount. The description within *Sky Safari Pro, v5* lists its distance at a surprisingly specific 2,533 light-years. The source used within its *Wikipedia* article indicates a distance of about 7,500 light-years (source: https://arxiv.org/pdf/1211.0223.pdf).

The object appears as a compact, almost spherical blue-green planetary nebula. Its angular dimensions are 0.8 X 0.6 arc minutes. In the photo, the upper-left third of its outer shell appears to be denser/brighter than the other two-thirds. Its inner shell (about 15% of its total radius) is about twice as bright as the surrounding outer shell, and is distinctly bluer than the outer shell. The point at the exact center, where the white dwarf would be, is brighter, still, and appears almost blue-white. Plate solving my photo indicates its field of view is 15.1 X 12.6 arc minutes with an image scale of 0.416 arc seconds/pixel.

Equipment: 8-inch SCT, Canon 70D, Advanced VX mount.

Exposure: 30 seconds, ISO 6400, f/10.

Craig Sandler: Observer from Massachusetts

I observed the Blue Flash Nebula planetary (NGC-6905) from a light-polluted site in suburban Boston (Carlisle, MA) with an 8-inch f/10 SCT on September 12, 2017 using an 8-24mm zoom EP @ 22mm (91X). Seeing was very good, transparency fair to poor and NELM 3. With the grey sky glow and the humidity high, I considered myself lucky to find it! It was a barely detectable blob that became more distinct with a UHC-S filter. Then it leapt into luminosity with the narrowband O-III. The nebula was distinctly brighter in the center with the filter. While hooded, with averted vision, I convinced myself I saw the central star, but I'm not totally convinced. My general impression was of a round, ghostly glow, and I enjoyed finding it.

Chris Elledge: Observer from Massachusetts

On September 16th, 2017 @9:00pm, EDT, I used a 10-inch f/5 reflector to observe NGC-6905 from the ATMoB Clubhouse. Sky conditions were: Bortle Scale: 6. NELM: 4.5. Transparency: Poor. Seeing: Excellent.

It was a very humid night with RH hitting 100% shortly after the sun set. The moist conditions impacted the transparency, but made for very stable seeing. I was able to locate the nebula by star hopping with a 35mm (1.9˚ FOV) eyepiece from Gamma Sagittae via Eta Sagittae, Theta Sagittae, and 18 Sagittae. The final hop from 18 Sagittae to NGC-6905 was the most difficult hop.

In a 10mm (127X, 0.6˚ FOV) eyepiece with the nebula centered, I saw a chain of mag. 10 stars (HD 352097, HD 352098, HD 352099, TYC 1639-0814-1) to the west of the nebula leading toward a small triangle of stars that the nebula sat within. The triangle was composed of stars between mag. 10 and 12 spaced a little less than 2' apart. HD 352100 to the North, TYC 1639-1018-1 to the East, and GSC 1639-2261 to the South. NGC-6905 sat between the north and south stars of this triangle. The nebula itself appeared as a 1' fuzzy spot.

Adding a Barlow to the 10mm (254X, 0.3˚ FOV) showed that the nebula was slightly elongated in the same axis as the two nearby stars of the triangle. I saw no detail in the nebulosity due to low contrast. Staring at the eastern star of the triangle, I sometimes detected a flicker where the central star might be.

Steve Clougherty let me view the nebula through his 18-inch reflector. It was a bit more distinct with improved contrast, but I still couldn't see any details in the structure. The center star was easily visible with averted, but not direct vision.

James Mullaney: Observer from Delaware

The Blue Flash Nebula. An unusual and overlooked planetary nebula, visible in a 5-inch and a fascinating sight in 10-inch or larger scopes. "Small, faint and misty, ill-defined, closely surrounded by several faint stars." Lies near the DEL-SGE border in a rich Milky Way field.

James Mullaney *Celestial Harvest* Dover (paraphrased)

David Eicher: Editor – *Astronomy Magazine* and Observer From Wisconsin

"In the northern part of Delphinus lies NGC-6905, a photographic mag. 11.9 object with a diameter of 46". This object appears as a beautiful ring-shaped nebula with a faint central star in an 8-inch scope. Larger instruments show it as one of the finest planetaries in the summer sky."

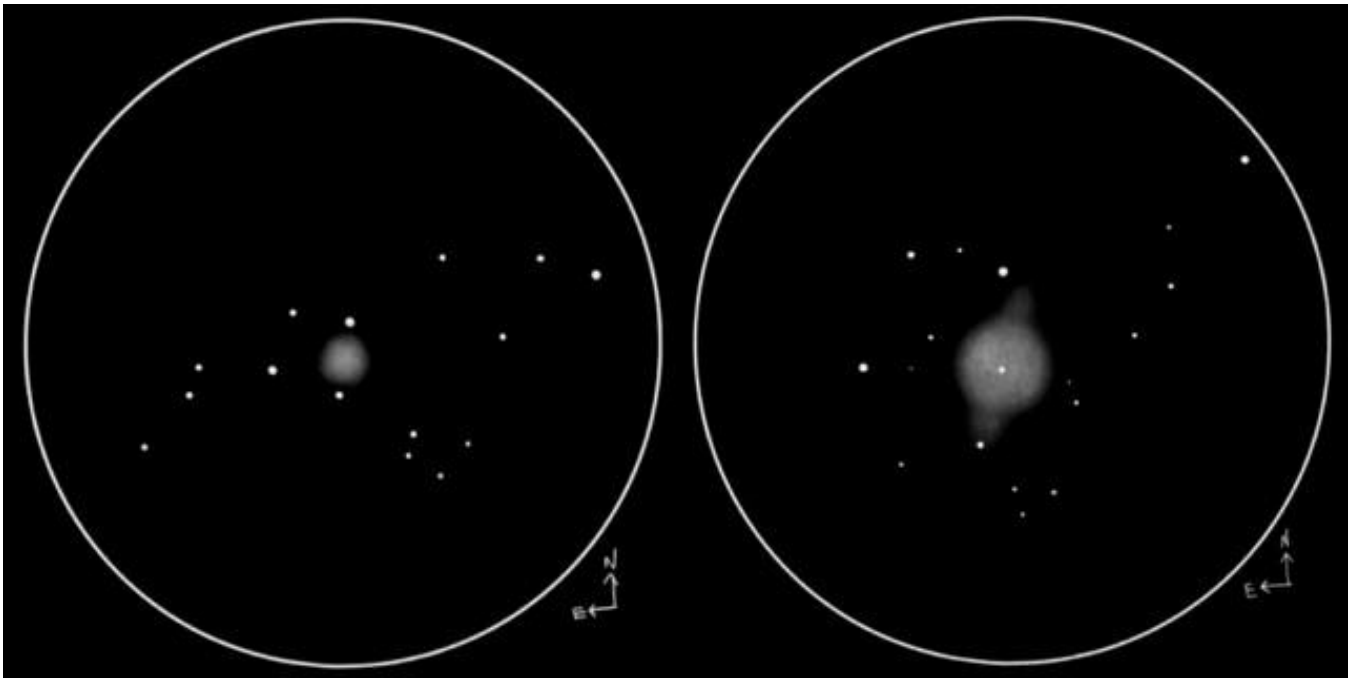
David J. Eicher *The Universe from Your Backyard* Cambridge University Press (paraphrased)

Jaakko Saloranta: Observer from Finland

8-inch reflector @ 133X + 400X + O-III filter.

At first, the planetary nebula looked a bit disappointing and frankly quite similar to what's commonly seen under suburban skies, despite the SQM-L reading of 21.39 and naked eye limiting mag. of 7.3. The center of the nebula was slightly brighter, but I saw no color. It was in a quite lovely star field. The telescope had not cooled down properly yet and that was the point - to show what good seeing (or in this case - what good cooling of the telescope) can do to deep-sky objects. Granted, seeing varied slightly between the sketches for the better, as was intended, but not nearly enough to illustrate this properly.

Once the telescope had properly cooled down, the image and stars were nearly crispy sharp, even @400X. In the center of the nebula was a faint mag. 14 central star which was clearly brighter than the generally listed mag. 15.7. Surrounding the star was a slightly diffuse, uneven brightness and slightly elliptical halo being slightly brighter on the E side. At the NW and SE ends were two extensions that were barely visible using the O-III filter and the SE one was barely touching the mag. 13 star in the SSE. Surprisingly, I failed to see the triangular (or M27-like) structure in the halo but saw a shape reminding me of NGC-7009. I saw nothing darker near the central star as is commonly reported by observers.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Richard Nugent: Observer from Massachusetts

On September 10, 2017, limiting mag. was 4.8, air was steady, and the neighborhood was bright. I used a towel as a shroud to block ambient light and observed NGC-6905. A hint of the Milky Way was visible through Cygnus and Scutum. I tried a variety of eyepieces and filters using the 10-inch f/5. Mag. 12.5 stars were a challenge to see.

The nebula was almost impossible to see with an unfiltered 22mm (58X) EP and very challenging to see using the 16mm (79X) EP without a filter. A Sky Glow filter improved the view slightly while UHC and O-III filters greatly improved the visibility of the nebulosity.

The best view of the nebulosity came when I used a 9mm (140X)/O-III filter combination. The most pleasing view came with an unfiltered 7mm (180X) as many of the faint stars surrounding the nebula were visible. There were 4 stars ranging from mag. 10.5 to 12.8 attending the nebula. I had to use averted vision with all eyepiece/filter combos although I could use direct vision with the 7mm/O-III. I saw no color, no structure, and no central star. Hardly remarkable…I realize my observing conditions were mediocre, at best, but this object had to be teased out of the glow in order to see it. Note: O-III filters need aperture to provide enough light to "drive through" the filter. They have very narrow band pass. In smaller scopes you're just looking into a black tube.

On September 17, 2017, I used the 20-inch scope with drive platform running. The sky was very clear, but humidity levels were up (fog was forecasted for later in the night) and the sky was bright, especially to the west. I couldn't see mag. 4.8 61 Cygni. A bit later, when this star was near the meridian, I could just glimpse it. Low clouds began to move in from the south at around 10:15. The scope was very wet. I put it all away 10:45.

Using a 13mm (194X), the nebula was immediately obvious as a round, colorless glow. At this magnification, I saw no color nor did I see a hint of the mag. 14.2 central star. With an 8mm (315X), the central star was visible with slight averted vision. The nebula looked round, but the brightness was uneven across its face. Still no hint of color. I used a 2X Powermate with the 8mm (630X) and this showed the nebula slightly elongated toward the brighter star and the star just south of the nebula. The central star was easily visible at this magnification.

I tried the UHC with the 8mm/2X combo and this was too much mag/filtering for the sky conditions. The best view came with the just the 8mm and the UHC filter.

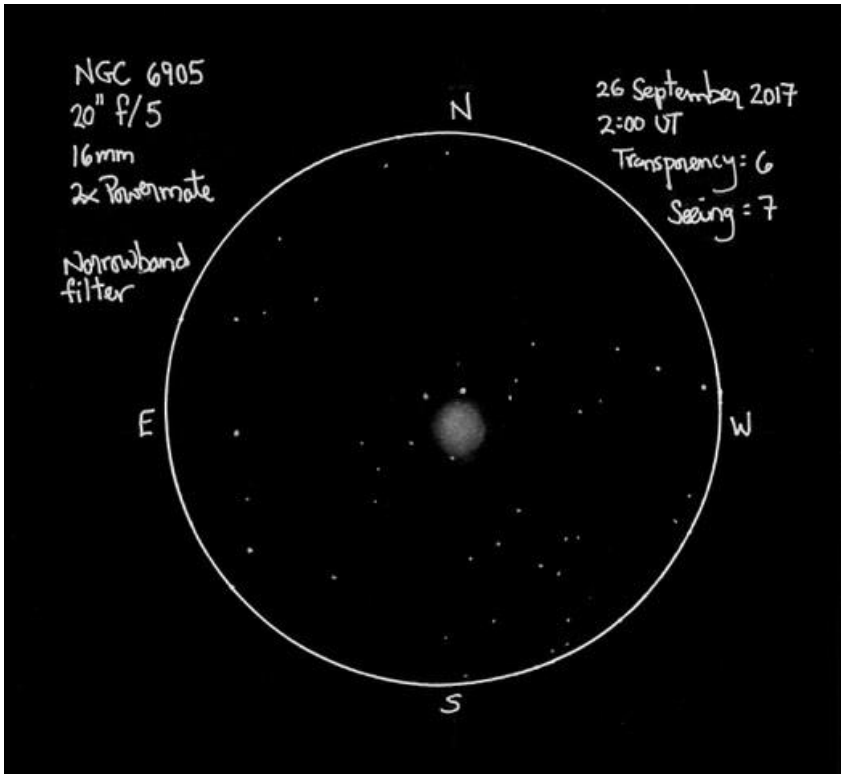
The O-III was too much filter. It showed the nebula beautifully, but the view was diminished due to the lack of field stars.

I tried using a 13mm/2X/UltraBlock filter and the view was superb!! Same for this combo with a 17mm (296X). The view with these combos was indeed remarkable!

Will attempt to sketch this object next.

On September 25, 2017, I used the 20-inch to prepare a sketch of the object. The sky was good. I gave the transparency a 6 due to humidity and a slight haze. The seeing was about a 7. Later in the evening, I saw strange heat currents in the tube…I suspect it was the heater for the secondary running too hot. The sky had a NELM of about 4.8.

Now that I've become familiar with the star hop from Sagitta, the nebula was easy to locate and I used a 16mm/2X/UltraBlock filter for the sketch. This gave 315X and a 0.25° true field of view. The drive platform was up and running. I made a crude sketch of the star field and nebula then finished the sketch indoors. I could not see the central star and saw no detail across the nebula. I couldn't detect any color. This was my first ever attempt at sketching an astronomical object. The image was black on white then inverted using Photoshop Express.


NGC 6905
20" f/5
16mm
2x Powermate
Narrowband filter
26 September 2017
2:00 UT
Transparency: 6
Seeing: 7
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Mike McCabe: Observer from Massachusetts

For the LVAS September Observer's Challenge, I was able to observe NGC-6905, also known as the Blue Flash Nebula, several times. I was also able to use several different telescopes, including an 8-inch, a 12.5-inch and 18-inch reflectors.

My first exposure to the nebula came back in July at the 2017 Stellafane Convention. For the past two years, Larry Mitchell has assembled an observing list for one of the latest additions to the convention activities, which is called the Stellafane Observing Olympics. NGC-6905 was on this year's list and I looked at it briefly in my 8-inch reflector, but because I was more interested in completing the list I didn't spend much time on it.

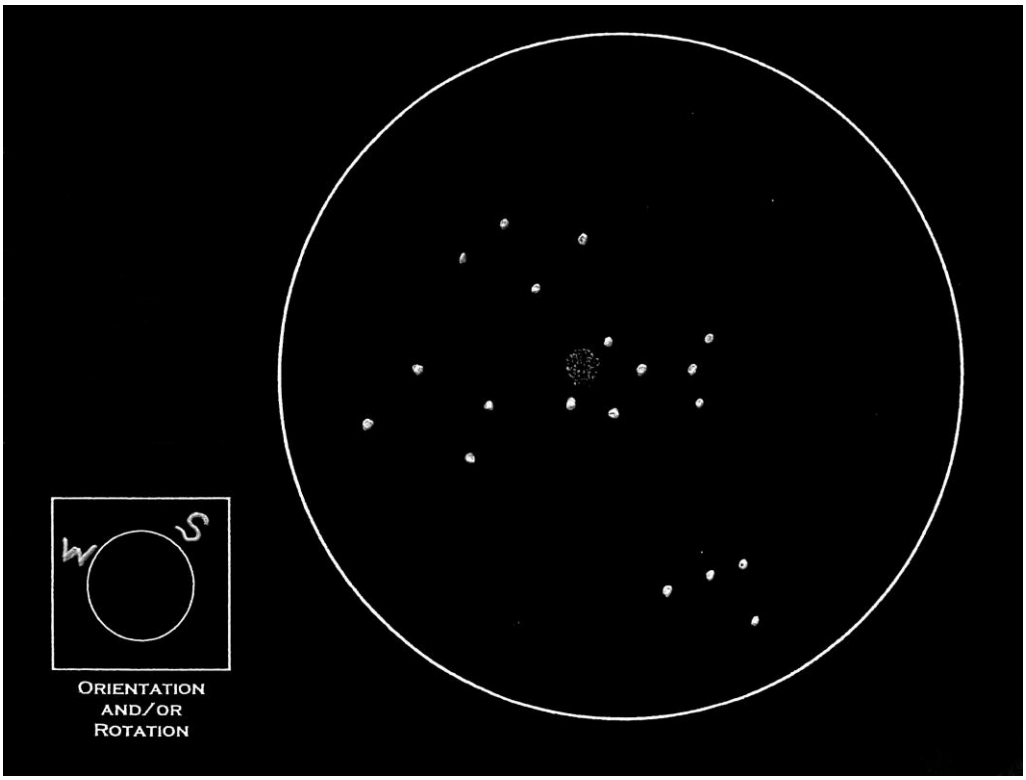
My second exposure came in August on one of the darker, clearer nights of the month when I was using my 12.5-inch reflector. This observation was spectacular. I was taking my time, this time, and I found that the nebula responded well to magnification. It's nestled very nicely in a trapezium of mag. 11–13 stars, and the nebulosity itself showed nice structure. I can't recall glimpsing the mag. 14 central star during this observation. I created my sketch on this night at 254X.

My final exposure to NGC-6905 for the challenge came on a clear, dark night in late September. On this night, I was able to view it through a friends' 18-inch reflector, and the view was gorgeous. Because of eyepiece limitations, we were restricted to 280X, but even at that power, the central star was surprisingly visible with averted vision. In fact, it caught me off guard with how bright it seemed and I found myself going back and forth many times to make sure I was seeing what I was seeing. It was a thrill to catch it.

I also went back with the 8-inch on that September evening just to push it and see what could be done with it. Perhaps the most noticeable difference in the view was that even at 267X

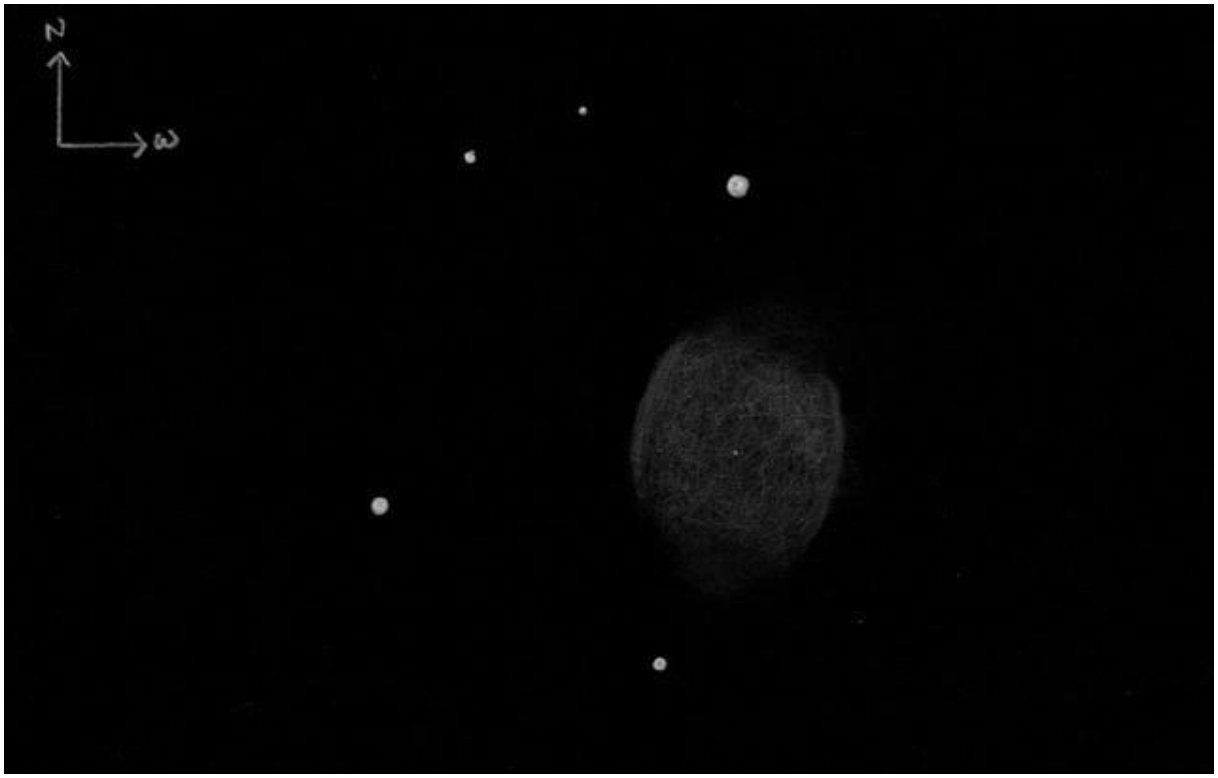
in the 8-inch scope, one of the mag. 13 trapezium stars was not directly visible, or not readily anyway. It seemed almost wrong in a way, because the nebula looks so comfortably cradled in that trap of stars that without one it looked like it was sitting on a three legged stool.

So that's my story. For more information on the Blue Flash Nebula and many more interesting objects, you can read about them at the Stellafane website here: https://stellafane.org/convention/2017/2017-observing.html



Sue French: Observer from New York

At 49X, with the 15-inch scope shown in the photograph, NGC-6905 is a fuzzy glow trying to hide in a pile of stars just outside the south-southeastern corner of a slightly askew parallelogram of field stars. At 216X, it sits along the base (western side) of a 1' trapezoid of stars and is broadly brighter across the middle. At 345X, the bright region is highly textured. There seems to be an extremely faint dot in the center, which I take to be the central star. Going to 493X the central star is more apparent, but best snatched with averted vision. A little very faint nebulosity extends from the open ends of the bright region, more so in the south-southeast than the north-northwest. A UHC filter brings out the bright region's detail a bit. An O-III filter also works, but doesn't show any further detail. The sketch was made at this magnification. The squiggly lines I drew in the interior of the bright region are just my attempt to represent the complex texture of the region.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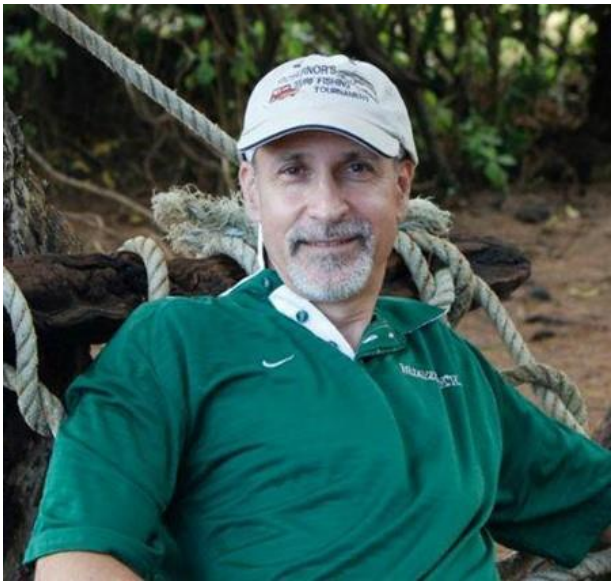
Dr. James Dire: Observer From Hawaii



NGC-6905, otherwise known as the Blue Flash Nebula, is a planetary nebula located in the northwest corner of the constellation Delphinus. I star hop to the Blue Flash from Sagitta, the Arrow. Just off the tip of the arrow, marked by mag. 3.5 Gamma Sagittae, is the mag. 5 star Eta Sagittae. The arrow points right at Eta. NGC-6905 is found exactly 4° due east of Eta Sagittae. The Arrow is about 4.75° long, which helps me estimate the distance from Eta Sagittae to the Blue Flash Nebula.

The nebula is estimated to be mag. 10.9 and measures 47 X 37 arcminutes in size. The brightest parts of the nebula, visible in amateur telescopes through the eyepiece, is a roughly circular region around 35 arc seconds in diameter.

I viewed the nebula this month through two telescopes. The first was a 61mm (2.4-inch) f/5.9 (360mm f.l.) refractor using a 4.8mm eyepiece (75X). Through this telescope, the nebula appeared as an out of focus star with no color or detail. With sharp stars surrounding it, it was very apparent the object was a planetary nebula.

The second telescope was a 20-inch f/5 Dob with a 13mm eyepiece (195X). This large light bucket collected enough light to see the blue color of the nebula and some of its brighter and darker regions. The central star was clearly visible.

My image of the Blue Flash Nebula was taken with a 10-inch f/6.9 Newtonian using an SBIG ST-2000XCM CCD camera. The exposure was 60 minutes. In the image, north is up and west to the right.

In the image there is a zig-zagging chain of blue and red stars northwest of the nebula. The brightest star in the chain and in the image, a blue one, is mag. 9.6. The brightest red star in the chain is mag. 10.1.

There are four stars surrounding the nebula almost forming a square. The nebula resides on the west side of the formation. The brightest star, north of the nebula is mag. 10.4. Clockwise from there, the stars are mags. 12.0, 11.5 and 12.3. The image captures stars down to mag. 18.

Gus Johnson: Observer from Maryland

Using a 6-inch reflector at 59X, NGC-6905 was fairly easy to see, but with little detail. It was mostly a round, featureless disc at 118X. It was located on the western side of a triangle of faint stars. It was also easier than planetary nebula NGC-6891.

Joseph Rothchild: Observer from Massachusetts

I observed NGC-6905 in September at the ATMoB clubhouse in Westford, Mass. I observed with a 10-inch reflector. I initially located and viewed it with a nebular filter (NPB) at 52X and 82X. It appeared as a small, round, featureless disc adjacent to a field star. I couldn't see the central star. Once located, I also viewed the nebula without the nebular filter at 82X and 159X. It handled magnification well and was equally visible at both magnifications.

Jay and Liz Thompson: LVAS members and observers from Nevada

We observed NGC-6905 from several locations with a variety of telescopes.

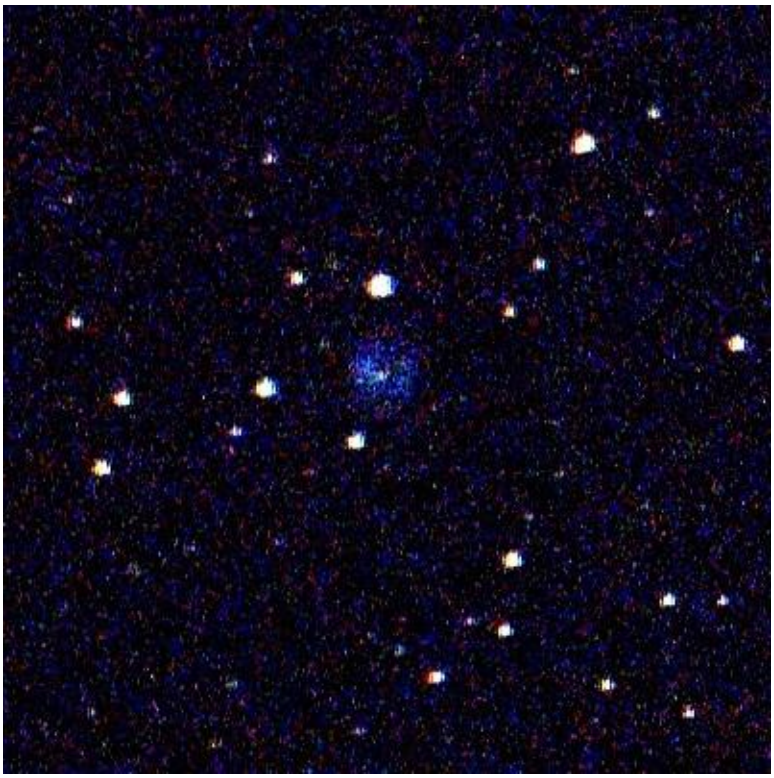
From our backyard in Henderson, NV, in a 14-inch f/11 SCT, it showed up well at 186X with an O-III filter. With a 16-inch f/10 SCT from our backyard, at 102X and no filter, it was apparent between two stars. At 156X, it was a little more evident because the sky background was darkened. It showed up well at 203X with no filter. At 271X, with averted vision we saw glimpses of a central star.

From Cathedral Gorge State Park with a 17-inch Newtonian, NGC-6905 was centered between two stars at 227X. It had a moderate surface brightness and we saw a hint of the central

star with averted vision. In a 25-inch a couple of nights later, we definitely saw the central star. The nebula itself had a nice texture.

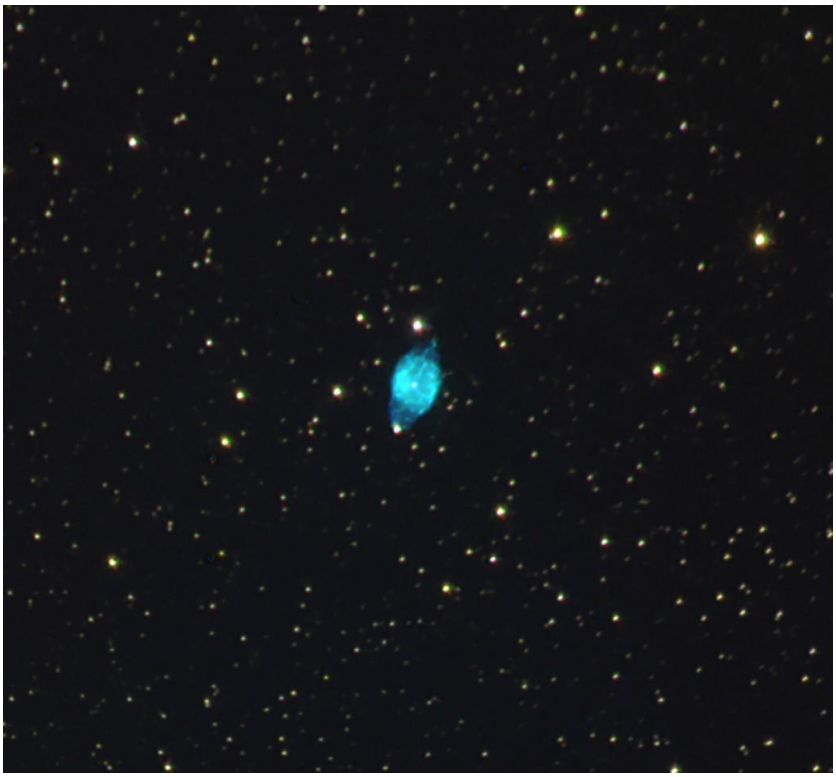
With the LVAS 24-inch from Meadview, AZ, it showed up well at 152X plus a UHC filter. It also showed up well at 277X with no filter. It was flanked by two stars. The central star was visible.

While evaluating various camera lenses and small telescopes as finder scopes when imaging with the 14-inch f/11 SCT, we imaged NGC-6905 as a test object using a Celestron Nightscape CCD camera and a 5-inch SCT working at an effective focal ratio of f/7. We were pleased to see the planetary nebula's distinctive bluish glow. Upon enlarging a full-resolution image of 30 seconds integration time, we saw the central star. A 400X400 pixel crop from an unguided image is attached, taken from the raw 3760X2840 pixel image with no processing. Given the difficulty in seeing the mag. 14 central star visually in 14-inch to 17-inch telescopes, it's remarkable to be able to capture it easily in a short exposure from a somewhat light-polluted location with a 5-inch scope.



Mario Motta: Observer from Massachusetts

Done with a 32-inch reflector.



Roger Ivester: LVAS Observer from North Carolina

NGC-6905 was easy to see with a 10-inch reflector at 256X (12 mm eyepiece and a 2.8X Barlow) despite poor transparency, under a 4.5 NELM sky. The nebula can be located and viewed at low magnification and without a filter, but it's best observed with higher magnification and a UHC filter.

At 256X, and with a UHC filter, the shape of this planetary was mostly round and featureless, but with a very subtle N-S elongation. I couldn't see the mag. 14.2 central star. NGC-6905 is located on the western edge of a four star square, between the two most western stars. The blue color, as seen in digital images, cannot be easily seen visually.


NGC 6905 - Planetary Nebula - Delphinus
Date: September 2017
Telescope: 10-inch Reflector
Magnification: 256 x
Small, mostly round with
A subtle N-S elongation
Fairly easy to see
Despite poor conditions
From my NELM 4.5 backyard.
A UHC filter seemed to bring
The nebula alive, however
mostly a small featureless disc.
The central star could not be seen.
For higher magnifications with my
f/4.5 reflector, I like to use a Barlow lens. 12mm EP + 2.8 x
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Roger Ivester

Fred Rayworth: LVAS AL Coordinator and Observer from Nevada

I've observed NGC-6905 several times. For the Challenge, I originally observed it from my usual spot at the "undisclosed location" at Redstone Picnic Area on the North Shore Road in the Lake Mead Recreation Area. At an elevation of 2,100 feet, it was clear with a slight breeze. There was a high, thin haze that might've been trouble during my observation, as noted. An invisible band that didn't show until the sun went down, it was highlighted across the sky at dusk. As it turned out, it was a kind of bright night, though still dark enough for open clusters, though star colors and such, ahem…nebula color, were washed out.

The nebula was a small, round and lumpy soft glow between one side of a trapezoid of stars. At 102X, unfiltered, it looked more like a fuzzy spot. With the O-III, it sharpened to a round glow. At 229X unfiltered, it looked like a round lumpy glow framed by the three stars. With the O-III, it was more distinct. With a UHC filter, it looked even better. At 390X, it looked the best. Unfiltered, it was a distinct round glow with an almost dumbbell appearance. With the O-III, it showed more details within the structure, mottling and something going on that I couldn't hold steady. With the UHC, it definitely looked the best with the lumpiness more well-defined, but still a bit indistinct. I just caught the flash of the central star once or twice but couldn't hold it steady. I can't say I saw the "wings" distinctly though when I saw the "dumbbell" shape, that may very well have been part of that. Most of the time, it looked round and all the shape and structure was within the circle. I never saw even a hint of color which surprised me until I thought of the high haze. The last time I looked at it was in 1997 with my home-built 16-inch f/6.4 and even then, I didn't note any color.

I took another crack at it again on September 22, 2017 from Cathedral Gorge State Park in East-Central Nevada. At 4,800 feet, it was cool and getting colder. It was clear with possible humidity up there. It was hard to tell so early, but it wasn't too much of a factor as the night

progressed. The breeze was annoying at times, mainly because it was so cold. It got much colder later on to the point I had to finally quit.

The nebula, unfiltered at 102X, was just a smudge, but clearly showed to be a planetary. This time I skipped 229X and went right to 390X. Unfiltered, the central star jumped right out, even with direct vision, as well as some mottling in the central area. There was a slight ovoid shape to the circle as well. With the UHC, I saw just the hint of something outside the circle, giving the impression of ansae. There was also more mottling within the center but the filter suppressed the delicate view of the central star.

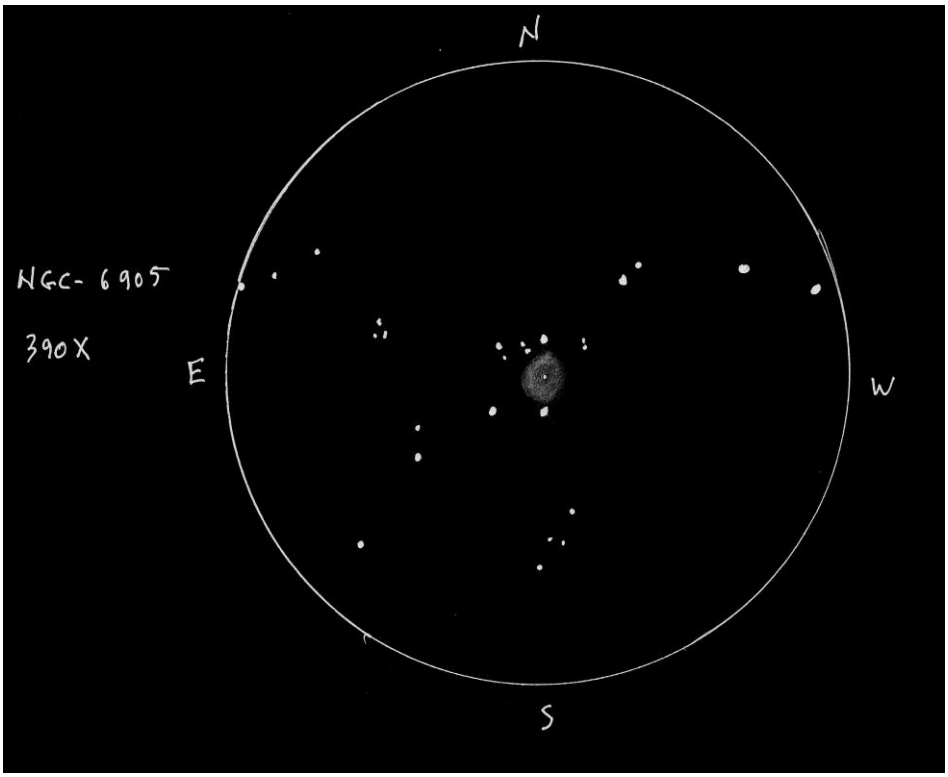
Overall, the best view of the nebulosity was with the UHC. I never tried the O-III but my aim was to see nebula AND central star. That failed. The star was just too faint.

One more thing is that unfiltered, even at 390X, I managed to see that infamous flash of blue-gray. That was something I never saw back home at my usual spot, probably due to sky conditions. The blue seen in photos certainly wasn't near as prominent, in fact it was fleeting at best, but I saw it. The filter, of course gave false color, so whatever colors I saw were not real.

The central star was very faint but quite easy at 390X, which surprised me. At 102X, there just wasn't enough magnification to see much. However, at that low magnification, while the nebula was a smudge, I detected "something going on" within the smudge. Could've been mottling, could've been the central star? Not sure as I didn't spend a lot of time at that power. Maybe I should've experimented at 229X but I wanted to cut to the chase since I wasn't all that impressed with 229X back home. It might have paid off here but I got what I needed already.

The wings were by far the hardest to pick out and what I saw was very fleeting at best. Those extra bits of nebulosity sort of bridged the gap between the two stars that frame the nebula. Some of that might've been an illusion, but I know I saw some of it, tendrils of something, however faint. I give that to the altitude, sky conditions and aperture.

I did the drawing at the best view, which is a combination of with and without the UHC to get the nebulosity (with) plus the central star (without). It doesn't really show the wings as well as I'd like but I spent enough time on it and was afraid I'd just mess it up more, so I figured I'd better quit while I was ahead. I always joke about people submitting their chicken scratches and well…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