

# MONTHLY OBSERVER'S CHALLENGE

## *Las Vegas Astronomical Society*

*Compiled by:*

*Roger Ivester, Boiling Springs, North Carolina*

*&*

*Fred Rayworth, Las Vegas, Nevada*

*With special assistance from:*

*Rob Lambert, Las Vegas, Nevada*

**MARCH 2016**

### **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-2392 (Caldwell 39) The Eskimo Nebula In Gemini**

NGC-2392, also known as Caldwell 39 or the planetary designation, PK 197+17.1, is a small, but fairly bright planetary nebula that lies in the constellation of Gemini. It shines at an apparent mag. 9.9 to 10.1, depending on the source.

It lies approximately 2,870 light-years away and was discovered by William Herschel on January 17, 1787. It has a mag. 9 star in the middle and a double shell of gas, giving it the appearance of a face buried within a parka, at least in very large amateur telescopes and some images. Some have likened it to a clown face. In most average amateur telescopes, the face-like image is not likely to be seen. However, it is still a relatively bright and interesting object with plenty to see.

### **Observations/Drawings/Photos (Contributors listed in alphabetical order)**



**Gary Bruno:** Observer from Nevada

On February 19, 2016, at 18:08, just after sunset, I pointed my 14-inch SCT about 10° SSE of Pollux in Gemini, and to my surprise, I found a bright star with a smudge next it. This couldn't be this easy. So I entered NGC-2392 into my database and I came up to the same place. I was there. I fine-focused and held up an O111 filter to my 41mm eyepiece and despite a bright moon above and that bright star next to it, I could see it fairly well from my back yard. I couldn't make out the face very well, it was just bright. However, the outer fringe was clear. If I had been the first one to ever see it, I would've given it the exact same nickname. The Eskimo nebula is perfect. When you're through, look around and you'll see some cool double stars in the same area.

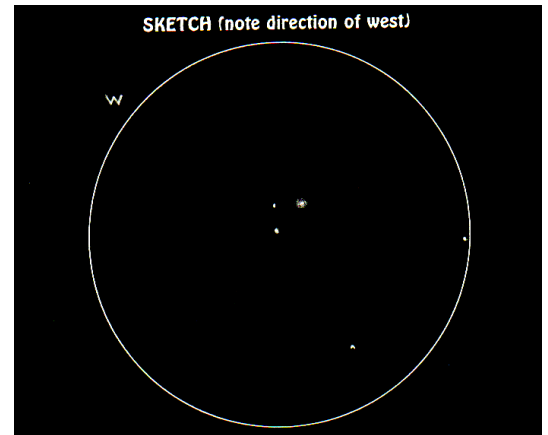


**Glenn Chaple:** Author and LVAS Friend from Massachusetts

On April 10, 2016, I observed NGC-2392 with a 10-inch f/5 reflector at 208X (FOV 0.3°). The limiting mag. was 5.

I found it by star-hopping from  $\delta$  Geminis. It formed a distinct pair with a nearby mag. 8 star. The central star was readily visible.

My first-ever sighting of the Eskimo Nebula was on December 11, 1977 with a 3-inch reflector at 60X.

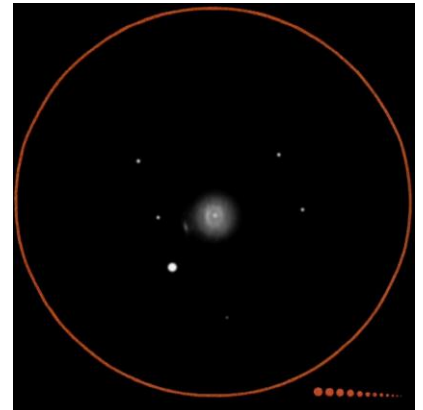


**Brandon Doyle:** Observer from New York

On March 4, 2016, I observed NGC-2392 from my driveway with a 10-inch reflector at 400X. The wind was 1mph, the temp was 20° and there was no cloud cover. Seeing was 8.5 out of 10 and transparency was 9 out of 10.

I was able to view Sirius B the same night, so the seeing was unusually decent for this time

of year. The "blob" on the NW side of the envelope in the drawing was supposed to come out as a slightly mottled ridge, but the scanner I used made it a bit more obvious on paper than it appeared in the eyepiece. The other amazing thing about this field is that it lies somewhat close to the Milky Way's arc, so background stars were popping in and out with the seeing. This is an effect I only recall witnessing a few years ago while I was studying M7 near the Galactic Center. It makes it extremely overwhelming to sketch because there are just so many stars. In this case, I just decided to stick to the basics and study the nebulous object at hand.



**Jim Gianoulakis:** LVAS Vice President/Observatory Coordinator from Nevada

This observation was taken from the LVAS Observatory on Mt. Potosi as seen in the image to the right. Note the summer Milky Way. Mt. Potosi is in the background. In the foreground are the three domes, the warm room and a couple of the pads with power outlets, set up for visual observing by club members.



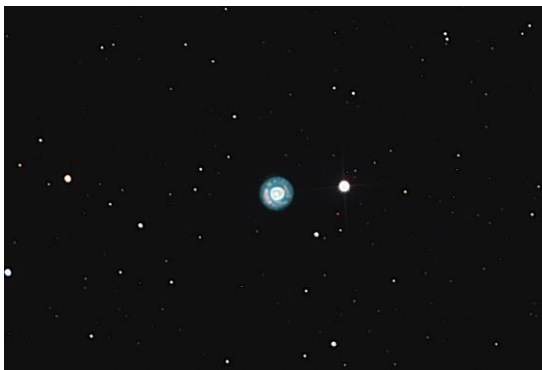
The Eskimo nebula, NGC-2392, also known as the clown face nebula and Caldwell 39, is a bipolar, double shell planetary nebula. It was discovered by William Herschel in 1787. It's in the constellation of Gemini and resides 2,870 light years away from earth.

The photo is a stack of 30, 5-minute exposures taken through red, green and blue filters. The sub-frames were stacked and registered in CCDstack 2, with levels and curves applied in Photoshop.

The image was taken through a 12.5-inch CDK telescope riding on a Paramount ME 2 mount, utilizing a Quantum Scientific imaging 683 CCD camera.

The image was taken at the Las Vegas Astronomical Society's observatory on Mount Potosi, Nevada.

These are cropped closeups.



**Roger Ivester:** LVAS Member from North Carolina

In February, 2016, I observed NGC-2392 from my backyard with a 10-inch f/4.5 reflector at 190X. The field of view (FOV) was 0.32° or 19 arc minutes.

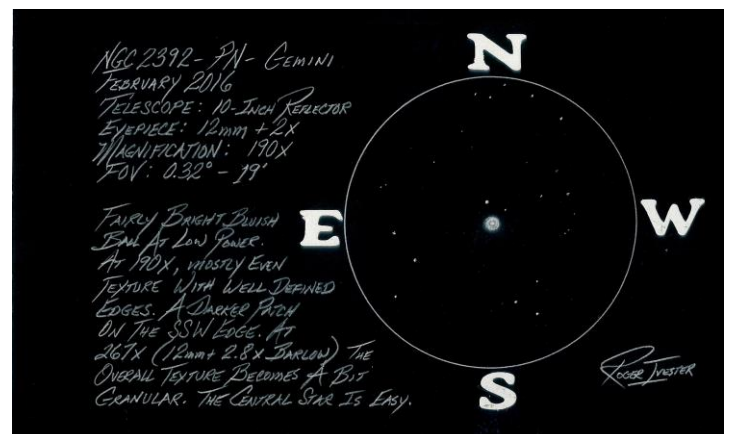
The nebula was a very bright, bluish ball, appearing as a blurred star at low magnification. When I increased the magnification to 190X, I could easily see the central star. The edges were well-defined, and I noted a darker patch on the SSW edge. When I increased the magnification to 267X, using a 12mm EP plus a 2.8X Barlow, the nebula became granular.

On January 31, 1998, I observed it with my 10-inch f/4.5 reflector @ 256X using a 12.5mm EP and a 2.8X

Barlow.

It was very bright, round, with a bright central star and well-defined outer edges. There was a greater concentration on SW edge.

On February 8, 2008, I used a 10-inch f/4.5 reflector @ 190X using a 12mm EP plus a 2.0X Barlow.



It was much brighter than double planetary nebula, NGC-2371-2372, also in Gemini. The nebula was very bright, round, but had a hint of N-S elongation. I could easily see the central star at all magnifications.



**Gus Johnson:** LVAS Friend from Maryland

In January 1980, I used a 6-inch reflector to observe NGC-2392 at 98X. It was easy to see, with a bright central star. The nebula edges were not well-defined, but gradually faded outward. When using an 80 mm refractor @ 58X the nebula appeared as a fuzzy star.

In February, 1992, I used a 44mm short refractor @ 9X, but couldn't see it for sure.



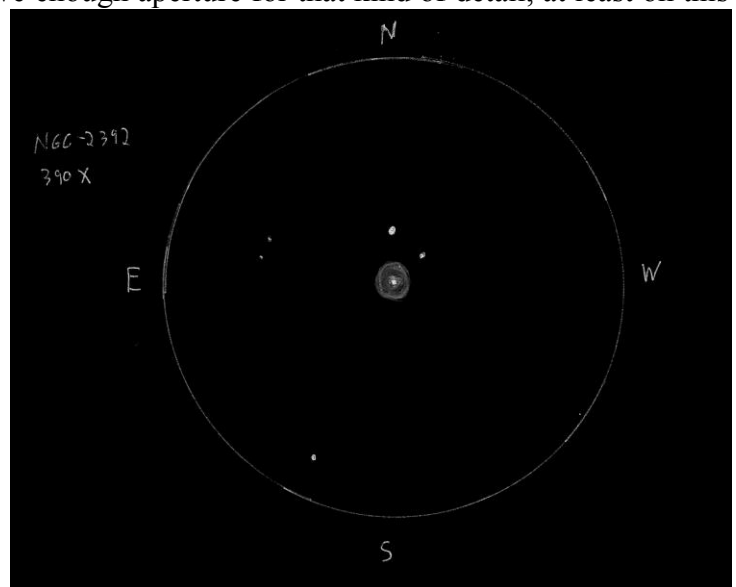
**Fred Rayworth:** LVAS AL Coordinator from Nevada

I've seen NGC-2392, the Eskimo Nebula numerous times, from 1992 up until most recently in February of 2016. All sightings have either been with a home-built 16-inch f/6.4 reflector or a commercial 16-inch f/4.5. Magnifications have ranged from 70X to 390X.

The color has almost always been a consistent blue with the exception of one evening in 1993 when it appeared slightly greenish at 82X. That might've been due to either weather or my physical condition at the time.

For this Challenge, I used my observation on February 5, 2016 at Furnace Creek in Death Valley. At -190 feet below sea level, it was clear and calm, but getting cold fast. No wind or breeze at all, though a very slight one came around midnight that was just enough to move the air and make us colder. The issue was the high, thin clouds to the west and northwest that slowly crept over us during the evening. Though it appeared super dark and was gorgeous for the brighter objects, when it came to the faint fuzzies, the transparency was terrible. Halos and nebulae formed around the brighter stars for most of the sky. However, around midnight, I found a few holes in Ursa Major and Leo, which was due north and southeast. Still a great night and had no effect on the Eskimo.

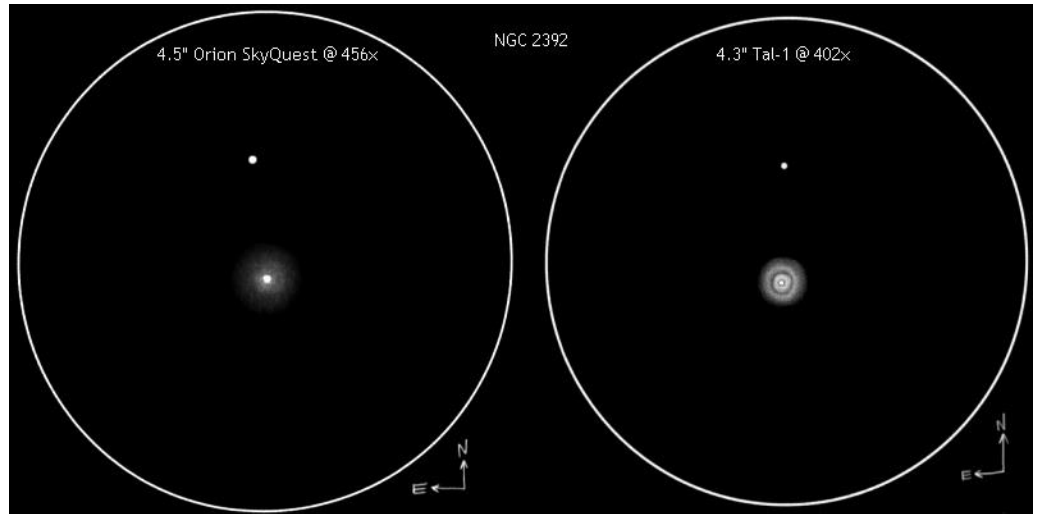
Using my commercial 16-inch f/4.5, NGC-2392 was a nice and round, slightly blue ball with a prominent central star. It had a slightly mottled interior. At 390X, the interior showed a bit more mottling. I never saw a hint of the Eskimo face or the parka shape. I didn't have enough aperture for that kind of detail, at least on this particular night. A mag. 7 star lay almost directly north. I did see the double ring with the more concentrated part of the nebula surrounding the central star, yet that concentration didn't obscure or cause the central star to blend in. The feature was quite noticeable. In fact, despite the relative brightness of the central star, I had no problem seeing the slight mottling surrounding it. The central area appeared round and didn't have that characteristic boxy or trapezoidal shape that can give it the facial features some see. I think better transparency might've allowed me to cut through with better detail. It was still a beautiful nebula. Maybe 720X would've made a difference but I didn't think the conditions warranted that high of a magnification given that nearby star was dancing around a lot.





**Jaakko Saloranta:** LVAS Friend from Finland

NGC-2392 is a beautiful planetary nebula just south of a brilliant mag. 8 star HD 59087! Under suburban skies and 4.5-inch reflector, it appeared as a round blob with a bright mag. 10 central star visible at the center nearly at every magnification. The Nebula appeared slightly brighter near and around the central star.



In an older observation with a 4.3-inch reflector, I noticed a beautiful double ring structure, but marked my observation as somewhat dubious due to details requiring very high magnifications (402-602X) in turbulent weather. I described the object as: “Mag. 11 central star was surrounded by a sharp, nearly circular halo. The outer halo displayed a brighter ring closer to the central star then fading away toward the edges. The southern edge might’ve had a brighter spot, but I was unable to make it out properly.”

Larger aperture shows a pale blue tint. I’ve also managed to squint the planetary out with a pair of 8X30 binoculars using a tripod. A great and easy object even for urban skies!



**Jay And Liz Thompson:** LVAS Members from Nevada

We observed the Eskimo Nebula with 17-inch and 24-inch Newtonian reflectors from a dark-sky location (Meadview, AZ). We also observed it from the edge of the Las Vegas valley (Henderson, NV) with the 24-inch Newtonian and a 14-inch SCT.

Using the 17-inch under the dark skies of Meadview, AZ, the Eskimo Nebula was evident at 95X. We saw the central star at this magnification. At 227X, it showed up well with the central star very visible. There was a bright star close to the nebula to the north.

At 427X, we easily held the central star in view with direct vision. With averted vision, some brighter arcs were visible in the face of the nebula.

In the 24-inch from Meadview, we could easily see the central star at 119X. At 530X, the ring that makes the face showed up fairly well within the surrounding fringe. A brighter part of the ring that makes up the face was evident on the preceding in the slightly north part of the nebula.

Because NGC-2392 is relatively small and bright, the views from Henderson rivaled those from Meadview. Sky transparency is more of a determining factor than background sky brightness, since high magnifications can be used to effectively to dim down the background.

From Henderson with the 24-inch, the Eskimo Nebula appeared distinctly non-stellar at 119X. The outer fringe was very bright. At 283X, the detail in the face started to become evident, and at 530X, we saw the face as a 360° ring with the central star in the middle. We then added a 2X Barlow to increase the magnification to 1,060X. We could see a lot of detail inside the face. It was definitely dark around the central star within the bright ring delineating the face. However, because the 24-inch was un-driven, viewing time was limited and tracking difficult as the object traversed the field of view in about 20 seconds.

The 14-inch SCT gathers a third the light of the 24-inch, but thankfully has a drive. The first night we observed it with the 14-inch was less than ideal. At 832X, some detail in the face was visible and irregularities in the fringe were also visible. On this night with an almost first-quarter moon and hazy clouds around, the amount of detail visible easily was less than with the 24-inch on better nights.

The next night was much more transparent and very steady. Using the 14-inch SCT at 98X, NGC-2392 was obviously non-stellar. At 832X, we could see darkness around the central star. The face and the fringe were reasonably well delineated, especially with averted vision. The advantage of the drive on the 14-inch SCT is that it allows you more time to catch features and make out details with averted vision, especially when observing at extreme magnifications. On this object, this compensated in large part for the smaller aperture of the 14-inch as compared to the 24-inch.

We imaged NGC-2392 for five minutes with the 14-inch SCT and a color CCD camera. North is up and the detail approximates what we saw in the 17-inch.

