

MONTHLY OBSERVER'S CHALLENGE

Las Vegas Astronomical Society

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&

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JULY 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.

M92 (NGC-6341) Globular Cluster In Hercules

M92 is also known as NGC-6341. It's a globular cluster located in Hercules. It was first discovered by Johann Elert Bode in 1777, but later independently discovered by Charles Messier on March 18, 1781. It shines at mag. 6.3 and lies approximately 27,000 light- years away.

Though not as spectacular as its neighbor in the sky, M13, it's far older and brighter in terms of absolute mag. Because of its distance and angle within the galaxy, it does not appear as bright to us as M13 and is often overlooked.

Despite not being as spectacular as some other globular clusters, M92 is still a fine object and a great Observer's Challenge for any size telescope. In fact, on the best evenings, it can even be spotted with the naked eye.

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

Gary Bruno: LVAS member from Las Vegas

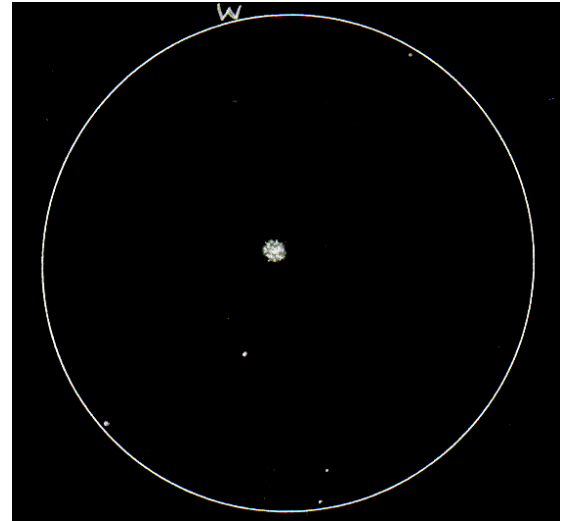


On Friday, June 3, 2016 at 20:40, I observed M92. I used a 14-inch SCT with 23mm (170X) and 55mm (71X) EPs. The cluster appeared clearer at 71X, probably due to the fact it was still not entirely dark. It didn't appear as round as M5 (last month's challenge), but somewhat elongated, almost like it was splattered in shape. I also spotted a bright area in the upper corner of my scope. It was located beneath (in the form of a triangle) two double stars one on each side. However the big show of the night was Mars & Saturn, especially Saturn's rings. They sparkled!

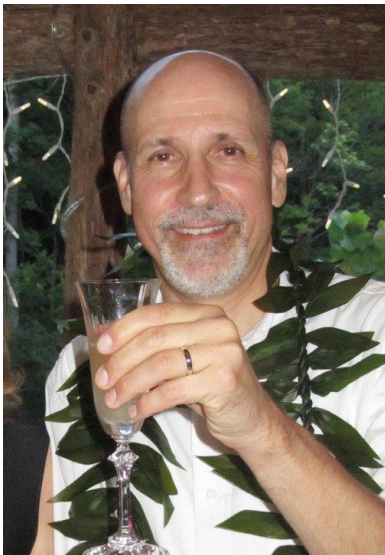
Glenn Chaple: LVAS Friend and Author from Massachusetts



I observed M92 with a 4.5-inch f/7.9 reflector at 150X (0.4° FOV). The seeing was III on the Antoniadi Scale and the NELM was 5. The outer portions were definitely resolved. It was generally round in shape.



James Dire: LVAS Friend and Professional Astronomer from Hawaii



M92 is the middle in size and brightness of three globular clusters located in the constellation Hercules. The brightest and largest is M13 while the smallest in our sky is NGC-6229. All three can be spied with an 8-inch or larger telescope.

Globular clusters are highly compact groupings of tens of thousands to millions of stars. There are approximately 150 of these clusters forming a spherical halo around our Milky Way galaxy. Globular clusters are also known to exist in other galaxies. The Andromeda galaxy probably has 2-3 times as many as the Milky Way.

M13 is the brightest globular cluster visible in the northern hemisphere and the third brightest visible from Earth. At mag. 5.8, it has a diameter of 25 arc minutes, nearly as large as the Moon. In comparison, at mag. 6.4, M92 is roughly half as bright. It spans 15 arc minutes. Although both appear in Charles Messier's famous catalog, he didn't discover either of them. Edmond Halley discovered M13 in the year 1715 and Johann Bode discovered M92 in 1777.

M92 is found six and one-third degrees north of Pi Herculis, the northeastern-most star in the Keystone. Like M13, M92 can easily be spied in 50mm binoculars or finder scopes. Many stars can be resolved in both clusters using telescopes. Larger apertures will reveal more individual stars. I recommend eyepieces that yield 100X, or higher if the seeing is steady.

At mag. 9.4, NGC-6229 is quite a bit more challenging to find than M92. NGC-6229 is located just north of the center of Hercules' club, or 11° north of M13. The easiest way to find it is to center the mag. 5 star 42 Herculis in the eyepiece and hop 2° to the southeast. William Herschel discovered NGC-6229 in 1787. He was also the first to resolve stars in M92 six years later.

My image of M92 was taken with a 10-inch f/6 Newtonian with a coma corrector yielding a 1753mm focal length. The



scope was atop a Paramount ME German equatorial mount and the image was taken with an SBIG ST-2000XCM CCD camera. The exposure was 20 minutes. The brightest star in the field of view, left (east) of the cluster, is HD156821 shining at mag. 9.76. The faint star to the left of this is mag. 16.1. The yellow orange star on the northeast side of the cluster is HD156873, at mag. 9.98. The third brightest star in the field, to the lower right of the cluster shines at mag. 10.9. None of these stars are members of M92.

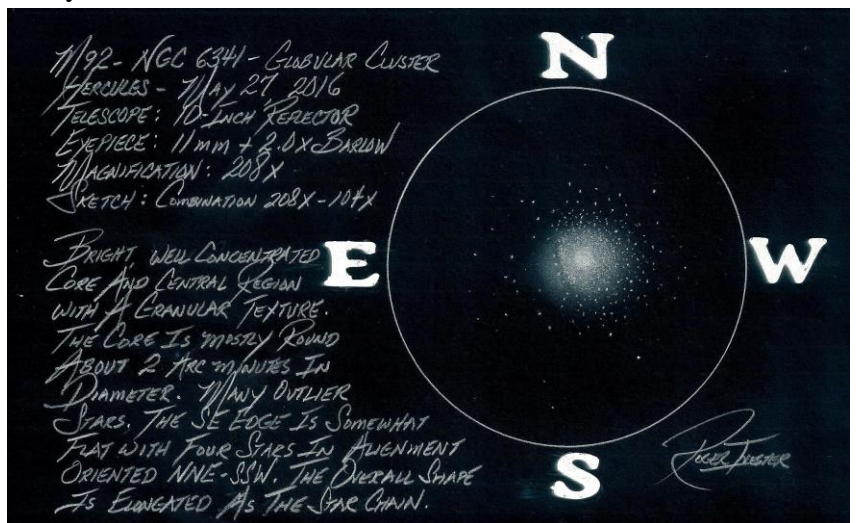
Roger Ivester: LVAS Member from North Carolina



On May 27, 2016 I observed M92 from my backyard with a 10-inch f/4.5 equatorial reflector. I used an 11mm EP and a 2.0X Barlow for magnifications of 104X & 208X respectively.

The cluster was bright with an intense round core and a granular texture at 104X. When I increased the magnification to 208X, I was able to resolve stars in the outer regions and in the halo, with many outliers.

The overall shape had a subtle N-S elongation. The NNE-WSW edge was flat, which was one of the more noticeable and recognizable features of the cluster. When using averted vision, a faint chain of four stars followed the flattened edge. These stars weren't visible on two of the three nights I observed, and appeared intermittent, or not constant.



Gus Johnson: LVAS Friend from Maryland



I observed M92 in Hercules on several occasions.

In 1955, I used a 3.5-inch reflector @35X and 125X. It was easily recognizable.

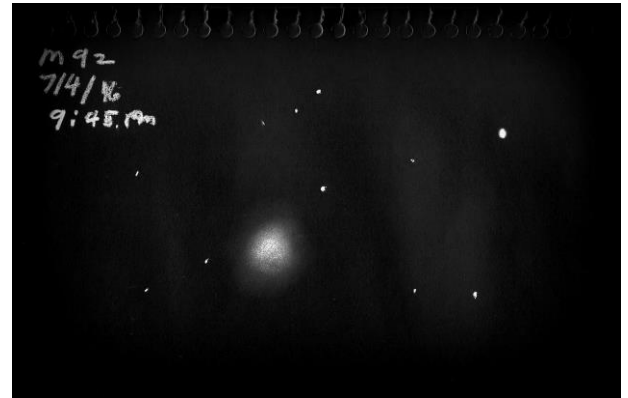
In 1973, I used a 3-inch refractor @131X and obtained partial resolution of stars, less so than M13.

In 1978, I used a 12.5-inch reflector from Virginia @160X. I obtained excellent resolution of stars.

John Lourdes Pierce: LVAS Member from Las Vegas



I viewed M92 on July 4, 2016 while it was at its highest point in the sky. I observed it from within the very bright inner Las Vegas metro area using a 10-inch reflector. This was still the best view I've ever had of it. Here's my final version of my field sketch of M92.



Fred Rayworth: LVAS Member and AL Coordinator from Las Vegas



I've observed M92 many times, starting with my home-built 8-inch f/9.44 back in September, 1986 from Eurovillas, Spain. If I'd seen it before that, I never recorded it. For this challenge, I got a good look at it at Cathedral Gorge State Park in east-central Nevada on June 3, 2016, and once again, a quick look on August 6, 2016. The Cathedral Gorge trip was also that fateful trip where the power supply went out in my brand new travel trailer, so the trip was short, only the one Friday night. However, it was a good one.

At 4,800 feet, it was hot, with the temp dropping as the sun went down. It was clear and calm. The sky looked good and as it got darker, the transparency was pretty decent with spots that were

clear, but other places getting heavy with moisture. Overall, the night was a keeper.

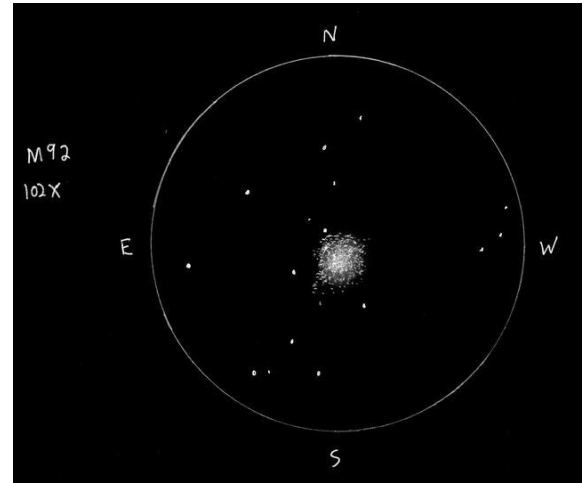
At 102X, M92 was a small, dense glob with a concentrated grainy core. Did not spread very far from the core. I didn't note any particular color.

As for anything odd, I had to go back to an observation on October 25, 1995 from Lake Murray, Oklahoma at the Okie-Tex star party (872 feet) using my home-built 16-inch f/6.4 reflector at 86X. During that observation, I noted the cluster looked a bit "squarish" and this was the only time I noted the odd shape. That may have been the magnification or the evening. Not sure. All I can say is I didn't notice it at Cathedral Gorge in June, maybe because of the much more superior observing conditions and higher magnification. I resolved more stars and washed out the odd shape.

After drawing the cluster, I noticed it did have sort of a squarish shape to it, though that can be attributed more to my lack of artistry than to what I actually saw, though it does kind of look like what I saw in 1995. It also kind of matches what I drew in my log book back in June, but I never realized it until I just drew it.

As I was compiling this report, I had one more opportunity to observe this object from our "undisclosed location" at 2100 feet near Las Vegas. The sky was mostly clear with puffy clouds moving through, being pushed by an annoying gusty wind that only bothered us on occasion. When I finally got to M92, it was directly overhead and it was the last object of the night at 10:30, right before I packed up.

Since I knew what to look for, when I aimed at the cluster, at a magnification of 102X, the “wall of stars” was clearly visible, mainly because I knew what to look for. It jumped right out and was so obvious, I’m surprised I didn’t see it before (more on that in a moment). The cluster was grainy and well resolved, down to the core but looked boxy and part of that was probably the illusion brought on by the straight line of stars on the “bottom” as it was oriented in my telescope view. I counted about six stars in a line about 2/3 of the way from the core and well into the halo. The transit was relatively abrupt, though beyond the wall, there were still a good scattering of stars, but not near as smooth or rich as the other sides of the cluster. That lack of richness is what made the “wall” stand out from the rest of the surroundings. What I also noticed was that the cluster faded in and out a bit, probably from high passing clouds which were thickening, especially to the east. On the drive home, I was wondering if this wall was partially obliterated up at Cathedral Gorge because it was clearer and much higher in elevation so that more background stars popped out and blended the wall into the mix. I have not changed my drawing but the wall would’ve been to the east, best guess. Then again, I was tired and all twisted around the other night.

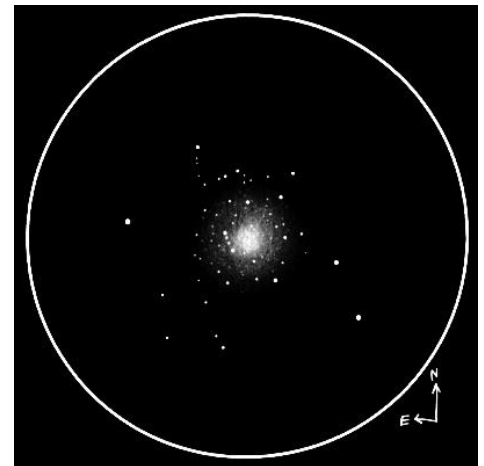


Jaakko Saloranta: LVAS Friend and Observer from Finland



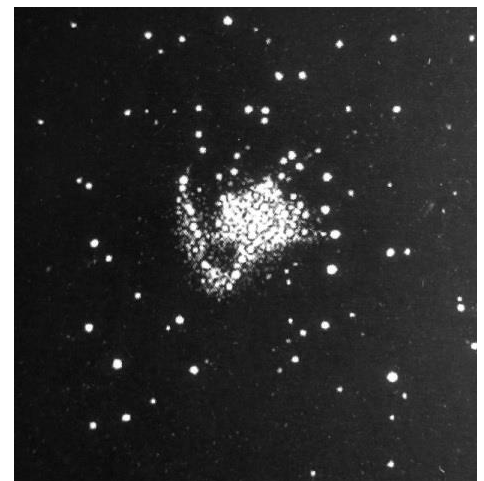
This is the baby brother of Messier 13. The brightest star in the cluster is mag. 12.1 so it’s a fairly easy object to resolve. However, it’s a difficult naked eye object: barely visible with optimal averted vision at an altitude of 57°. It’s easily visible with 8X30 binoculars as a non-stellar smudge.

It formed a triangle with two mag. 10 stars. I was able to partially resolve it – only a handful of stars were visible - with a 3-inch refractor @133X (23’). With a 4.5-inch reflector @152X (20’), the cluster appeared as fairly well resolved, with a few dozen stars visible. It had a bright core, might have appeared slightly elliptical, but was probably just an illusion caused by unresolved stars NW of the nucleus.



M 92 (Trouvelot) Drawn at Harvard College Observatory, 1874 (B. A. A.)

M92 contains a little known small feature nicknamed “Trouvelot’s Hook” (named after 19th century French astronomer Étienne Léopold Trouvelot). It’s a hook-shaped chain of stars with dark bays at both sides. This feature is visible in two separate sketches made by Trouvelot. The first one is from 1874 and the second



from 1877. Both sketches of M92 were made from Harvard College Observatory.

Having seen Roger Ivester's notes on M92, it's obvious that Roger has noted - at least a part of - "Trouvelot's Hook." He described it as "a faint chain of four stars following the flattened edge." This was part of the very same chain sketched by Trouvelot! I personally could not make out the dark lane sketched by Roger. I only saw a couple of bright stars just E of the cluster's core.

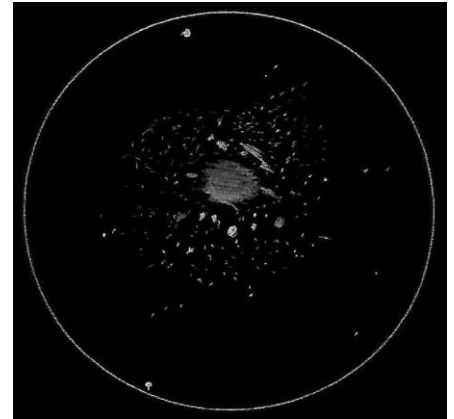
Francisco Silva: LVAS Member from Las Vegas



On July 8, 2016, I observed M92 from the LVAS Club Observatory site at Mt. Potosi at 1,780m. The transparency was 4 out of 5, seeing was 1 out of 5 and my condition was good. I used an 8-inch reflector at 187X with a 52° FOV EP.

It was difficult to find M92. I used the stars Vega (A-Lyr) and HIP-86414 (L-Her). This last one is the first time I've seen it through the eyepiece and was nice. Going back to M92, it was a globular cluster with a circular shape, with a highly concentrated

core and I couldn't see separation between stars in the core. I really liked it.



Jay and Liz Thompson: LVAS Members from Henderson, Nevada



We observed M92 (NGC-6341) from several locations with telescopes ranging from a 90mm f/13.5 Maksutov to a 24-inch f/4 Newtonian. It can be seen well from both light-polluted and dark skies.

From our somewhat light polluted backyard in Henderson, NV, it was easily recognizable as a bright non-stellar object in the 90mm Maksutov at 48X. With a 14-inch f/11 SCT at this location, the cluster was well-resolved at 186X.

We also imaged M92 using the 14-inch SCT with its focal ratio reduced to f/5.5 to fit the image of the cluster onto the APS-sized chip of our color CCD camera. The results of the 20-minute exposure are attached.

While imaging M92, we also viewed it with a 16-inch f/10 SCT. In the 16-inch, it appeared smaller and more condensed than M3 or M13. With a 14mm eyepiece yielding 290X, we easily resolved it with direct vision. The outermost stars spanned about half the 82° apparent field of view (AFOV) of the 14 mm eyepiece. With averted vision, we spotted even more stars, of course. More stars were also evident the longer we looked, enlarging the extent of the central ball of stars.

Under the brighter skies at the Boy Scout camp on Mt. Potosi, M92 was still resolvable at 63X and 114X with my homemade 10-inch f/4 Newtonian.



As is true of most objects, viewing from a dark-sky location enhances the “wow” factor. At Cathedral Gorge State Park with a 17-inch f/4.5 Newtonian, we easily resolved it at 95X. Increasing magnification to 227X made resolving the cluster even easier and provided a very impressive view. The following night, we viewed it with a 12-inch Newtonian during an impromptu “globular marathon”. At 57X, M92 easily resolved into one of the more spectacular globular clusters.

Through a 24-inch f/4 under the very dark skies of Meadview, AZ, at 116X, the cluster appeared bright and well-resolved, with a very condensed core. At 152X, we could resolve the core a little bit better than at 116X.

Using an 8.8mm eyepiece with an 82° AFOV (277X), the core of the cluster resolved in detail as were the outer parts. It took up at least half the AFOV. We could easily resolve it with direct vision, and of course averted vision just added to the number of stars and the beauty of the cluster. Increasing magnification with a 4.7mm eyepiece (519X), M92 took up the whole 82° AFOV and we resolved it very well.