MONTHLY OBSERVER'S CHALLENGE

Las Vegas Astronomical Society

Compiled by:

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&

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With special assistance from:

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NOVEMBER 2013

IC-1747 (PK 130+1.1) – Planetary Nebula in Cassiopeia

Introduction

The purpose of the observer's challenge is to encourage the pursuit of visual observing. It is open to everyone that is interested, and if you are able to contribute notes, drawings, or photographs, we will be happy to include them in our monthly summary. Observing is not only a pleasure, but an art. With the main focus of amateur astronomy on astrophotography, many times people tend to forget how it was in the days before cameras, clock drives, and GOTO. Astronomy depended on what was seen through the eyepiece. Not only did it satisfy an innate curiosity, but it allowed the first astronomers 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 is the tradition we are stressing in the observers challenge. By combining our visual observations with our drawings, and sometimes, astrophotography (from those with the equipment and talent to do so), we get a unique understanding of what it is like to look through an eyepiece, and to see what is really there. The hope is that you will read through these notes and become inspired to take more time at the eyepiece studying each object, and looking for those subtle details that you might never have noticed before. Each new discovery increases one's appreciation of the skies above us. It is our firm belief that careful observing can improve your visual acuity to a much higher level that just might allow you to add inches to your telescope. Please consider this at your next observing session, as you can learn to make details jump out. It is also a thrill to point out details a new observer wouldn't even know to look for in that very faint galaxy, star cluster, nebula, or planet.

IC-1747 (PK 130+1.1) – Planetary Nebula in Cassiopeia

IC-1747 is a very tiny and obscure planetary nebula just off Epsilon Cassiopeiae. It's also known as PK 130+1.1. It glows at a faint mag. 13.6, though some sources list it as mag. 12.1, but is relatively easy to find if one knows where to look. At first glance, because of its size, it blends in with the background, but with enough magnification, the round, fuzzy glow makes it plain that this is no background star.

The nebula is a real challenge for scopes smaller than six to eight inches, and especially for imagers because it takes significant magnification to bring the image size large enough to see more than just a dot. However, finding and recording it, whichever method is used, will certainly put the challenge into the "Challenge!"

Observations/Drawings/Photos

Jay and Liz Thompson: Observers from Nevada

Jay observed IC-1747 from Meadview, AZ with a 17.5-inch f/4.5 Newtonian on October 5, 1013. It was easy to find near an end star of the W of Cassiopeia (Epsilon Cass). I first picked it out with an 8.8mm eyepiece (227X) and an O-III filter. It was also nice with the 8.8mm eyepiece and 2X Barlow (454X) and O-III filter, since the seeing was very steady. It was also evident with no filter at 227X. After seeing it at 227X, I could pick it out easily as non-stellar with a 16mm eyepiece (125X). It was near the end of a chain of stars, and the disk appeared uniform with no significant features standing out other than the central star.

Both Jay and Liz subsequently viewed IC-1747 from their back yard in Henderson, NV with a 14-inch f/11 SCT and a 14mm eyepiece (279X). The amount of detail seen was similar to that using the 17.5-inch.

Francisco Silva: Observer from Nevada

On November 26, 2013, I observed IC-1747 from Highway 93 north of Las Vegas. I used a 4.5-inch reflector with various magnifications. My only possible description is that it looked like a star to me. I tried my 2X and 7X Barlows, and the UHC/LPR and O-III filters and I was not very lucky. The difficulty in finding it was a five.

The American Association of Amateur Astronomers
www.AstroMax.com

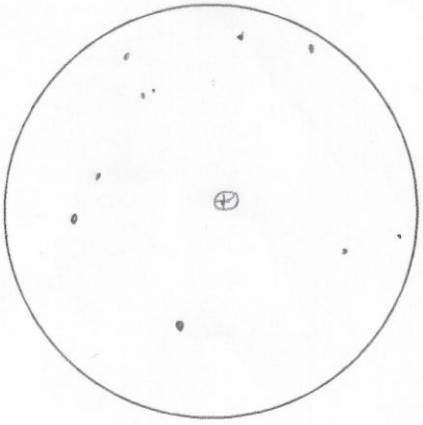
Observation Log
and SketchTemplate

Observer: FRANCISCO SILVA
Date: 26 NOV 2013
Time: 08:32 UTC
Site: HWY93 74 MILE NORTH LAS VEGAS
Seeing (1-10) 5 Transparency (1-5) 3

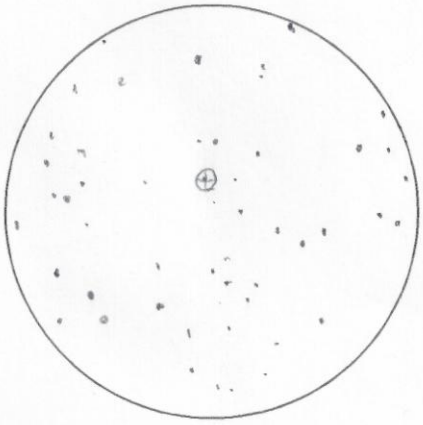
Object: IC 1747
Constellation: CASSIOPEIA
R.A. 01: h 57 m Dec. 63 d 19 m
Listed Magnitude: _____ Listed Size: _____
Source: _____
Telescope: MEADE 114 mm REFLECTING
Eyepiece(s): 25
Filter(s): UHC / LPR - OIII

Field Drawing

Low Power Ocular



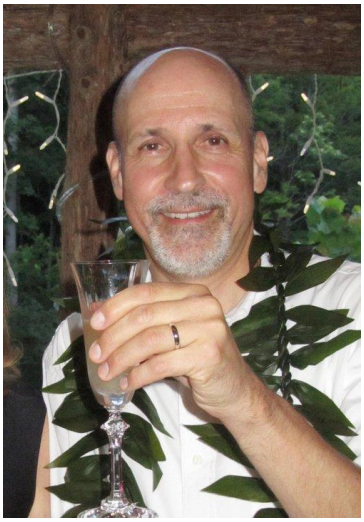
High Power Ocular



Description and Notes

- MY ONLY POSSIBLE DESCRIPTION IS THAT LOOK LIKE A STAIR TO MY.
- I TRIED MY 7X AND 2X BARLOW AND MY 2 FILTERS THE UHC/LPR AND OIII BUT I WAS NOT LUCKIC
- THE DIFFICULTY IN FINDING WAS 5

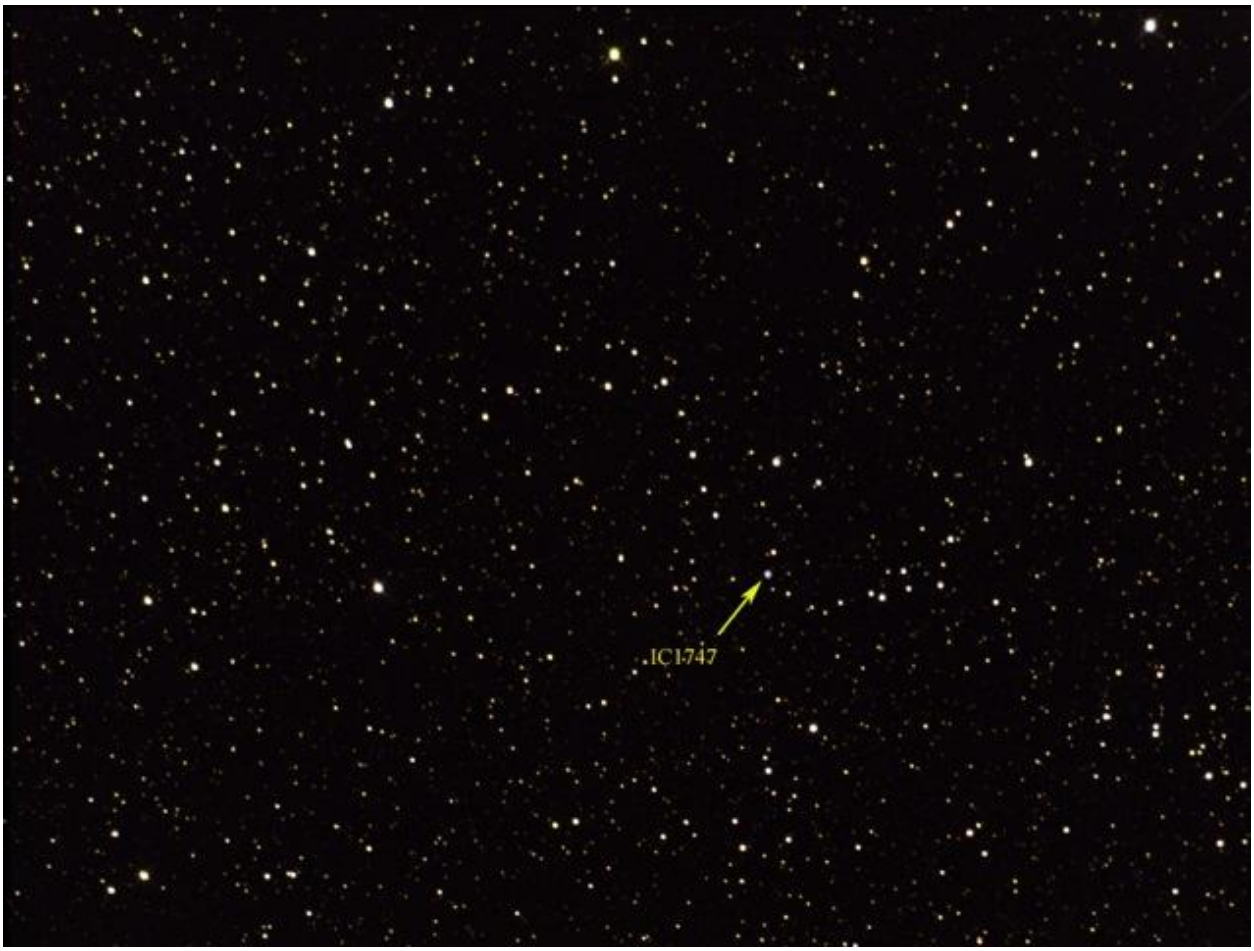
James Dire: Observer from Hawaii



IC-1747 is a faint planetary nebula in Cassiopeia, located 30 arc minutes southeast of the star Seguin (left most star in the "W" asterism). The nebula is 12 arc seconds in diameter and mag. 12.

The nebula is so small, it doesn't look very impressive when imaged with an 8-inch f/6.4 Ritchey Chretien astrograph. My accompanying image is a 60 minute exposure using an SBIG STF-8300C CCD camera. The yellow arrow points to the planetary nebula.

I viewed the planetary nebula this month with a 10-inch f/4 Newtonian the evening of the third quarter moon (before moonrise). The seeing was 1-2 arc seconds and the transparently was excellent with mag. 6 skies. All I can say is that IC-1747 looks very similar in a 10-inch telescope to M-57, the Ring Nebula, in my 9X50 finder scope! I could easily distinguish the PN from a star, meaning I knew it was a PN. However, even at 200X, I couldn't resolve the nebula to see any detail.

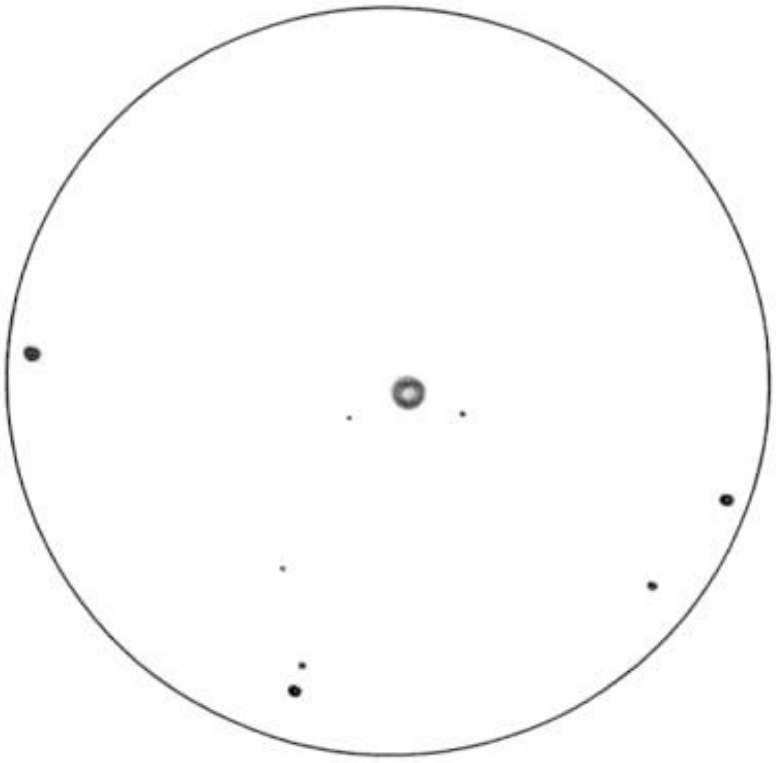

IC1747

Sue French: Observer from New York

With my 15-inch f/4.5 reflector at 102X, IC-1747 is a nice little planetary nebula. It's round, small, and fairly bright, with a possible fainter fringe. The nebula is located along a very distinctive, sinusoidal curve of stars that's about 17′ tall, tipped east-northeast. The nebula decorates the west-southwestern dip of the curve, and there's a mag. 10 star 4′ to the north. The nebula looks very nice at 216X, and it's quite bright. It seems to have a fainter fringe and is vaguely annular. It appears about half as big across as the distance between 2 stars located 4.1′ from the nebula in position angle 258.5º (the stars are 26 arc seconds apart).

Jaakko Saloranta: Observer from Finland

I, unfortunately, didn't get a proper chance to re-observe IC-1747 this season. However, my previous notes of this planetary nebula, made nearly a decade ago using an 8-inch reflector, are as follows: "A sparse asterism of stars, mag. 11 and fainter leads directly to the planetary nebula. Picked out @ 38X by blinking with O-III, being somewhat non-stellar. Also visible w/o filters. Flanked by two mag. 13 stars. Slightly elliptical in N-S direction, quite small. The ring structure is quite evident @ 266X (11'). Good O-III contrast. Central star not visible. Colorless."



Rob Lambert: Observer from Nevada

NGC-1747 had to have been a real challenge for visual observers. This object was tiny (looked like a star). At the normal 60X magnification of my Mallincam setup, it was difficult to tell the difference between the planetary nebula and some of the surrounding stars. In fact, I first thought a couple of hot pixels just north of the planetary *was* the object. In one of my images, the pixels appeared to have a fuzzy circle around them. Upon closer inspection and comparing my images with other images on the web, I realized what I thought was the planetary were actually artifacts from the camera sensor.

At only 60X, the object appears more like a fat fuzzy star than a planetary, but at 120X, the nebulous nature of the object begins to be apparent. It exhibited somewhat of a greenish hue, although with my inherited color deficiency, that could be a figment of my imagination. My 120X images were disappointing - the tracking for the 20 second exposures was drifting down and left, so objects were somewhat elongated and I chose not to include one of them.

The included image is a 15-second integration captured with a Mallincam VSS+ through a 127mm (5-inch) apochromatic refractor. I used a Mallincam MFR-3 focal reducer with 20mm of extension to provide the 60X magnification. The Mallincam is the equivalent of an 8mm eyepiece and with the focal reducer and extensions, the effective focal reduction is approximately 0.5 - thus the focal length of the telescope (952mm divided by the effective focal length of the Mallincam combination [16mm] equals 59.5X). Next time out, I'm going to try guiding my telescope to achieve a better image at greater magnification.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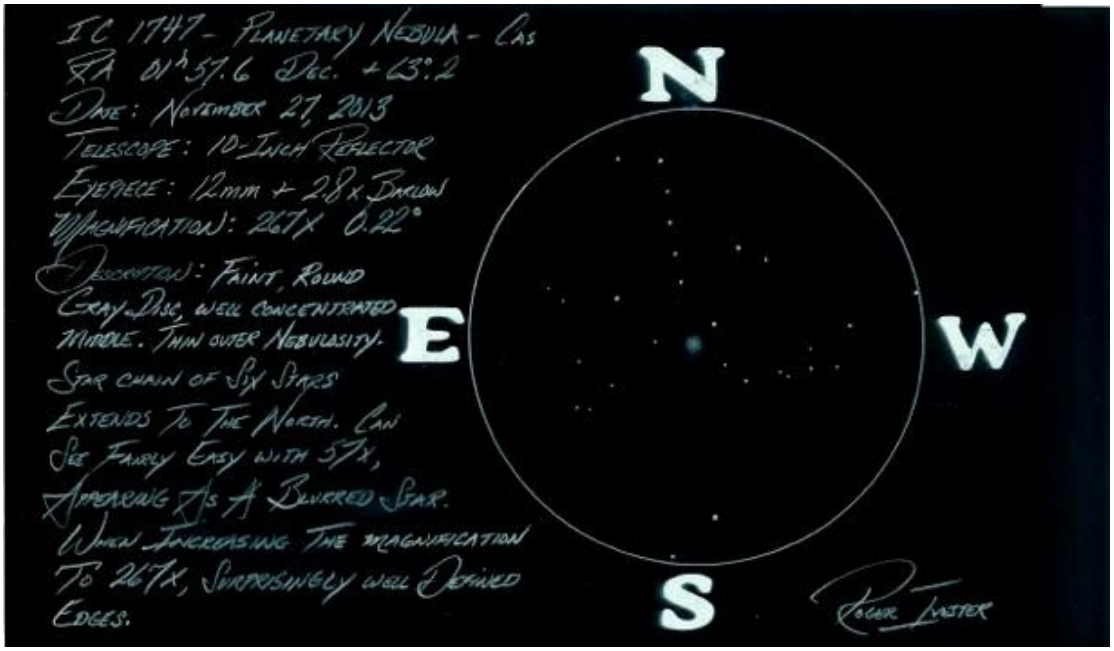
IC 1747

Roger Ivester: Observer from North Carolina

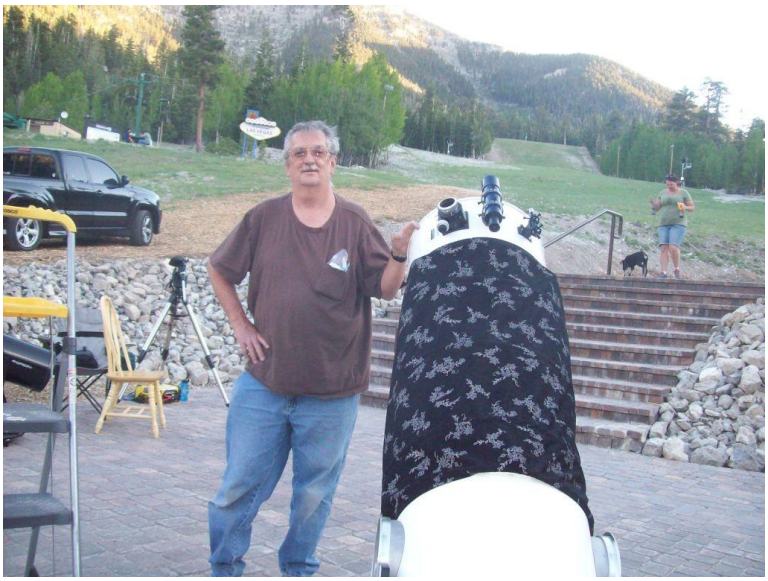
My first observation of planetary nebula, IC-1747 was in November, 1994. Before going outside, I was getting my list of objects and data together when I found some conflicting mags. ranging from 12.1 to 13.5. I wondered if it would be possible to see this object from my backyard. Using my 10-inch reflector, I used mag. 3 star, Epsilon Cassiopeiae as my beginning point, and went about 30' SE, with 57X, and found it immediately. It appeared very tiny and dim, but when I increased the magnification to 267X, I saw a well-concentrated disc, with a brighter middle. The shape was mostly round with a fairly even texture. Since that time, I often use IC-1747 to help evaluate seeing conditions, however, it's always pretty easy with the 10-inch.

On the night of November 27, 2013, using the same 10-inch reflector as my first observation in 1994, I saw so much more. Using a magnification of 267X, with excellent conditions, and a naked-eye limiting mag. of about 5.2, the planetary was very tiny, and the central region appeared almost stellar, using averted vision. The central star is around mag. 15, so I was probably not seeing this. The outer nebulosity was fairly faint with an almost wispy appearance, but with fairly well-defined edges. There was a chain of six stars radiating NNE of the nebula, which helps in finding this object. Another grouping of stars extended toward the west. It was a very interesting star field and the nebula was in the center of the two lines of stars. When using a UHC narrowband filter, I couldn't see any improvement, and really liked the view better without a filter.

The following sketch was made using a No. 2 pencil and a blank 5 X 8 note card. The colors were inverted using a scanner.


IC 1747 - Planetary Nebula - Cas
RA 01h57.6 Dec. +63°.2
Date: November 27, 2013
Telescope: 10-Inch Reflector
Eyepiece: 12mm + 2.8x Barlow
Magnification: 267x 0.22°
Description: Faint, Round
Gray Disc, well concentrated
Middle. Thin outer Nebulosity.
Star chain of Six Stars
Extends To The North. Can
See Fairly Easy with 57x,
Appearing As A Blurred Star.
When Increasing The Magnification
To 267x, Surprisingly well Defined
Edges.
N
E
W
S
Roger Lustig

Fred Rayworth: Observer from Nevada



I first tried to find this tiny gem at Cathedral Gorge in central-eastern Nevada in September, 2013. While trying to get an early jump on the November Challenge, I had no idea what I was in for! It looked like an easy target, being so close to Epsilon Cassiopeiae. Eau contraire! Since I had no idea how tiny it was, I was looking for something larger and brighter. After multiple tries, I gave up on that only good night before we got rained out.

It wasn't until October 5, 2013, from of all places, my back yard in very light-polluted Las Vegas, that I first spotted it. Once Roger Ivester told me how to find it and what to look for, I found it almost immediately, despite a gray background with almost no key stars to guide me. Luckily, all I needed was the bright Epsilon Cassiopeiae to get me to the area, and I was right there.

My notes were as follows: Finally found it. Boy, was it tiny! Just a subtle glow in line with an almost W-like line of stars, not too far from Epsilon Cassiopeiae. Too small for any significant detail or mottling, even at 390X. Seemed to have rough edges and not completely round though that might have been my imagination combined with the severe light pollution. My UHC filter made it stand out against the background. At 102X, it was barely a dot slightly larger than the surrounding stars. At 229X, it began to show itself as a bit more of a roundish shape. 390X, it showed a definite planetary shape and the UHC left no mistake what it was. There was no sign of a central star.

I tried again on October 26, 2013 from Redstone Picnic Area on the North Shore Road of Lake Mead, Nevada. It was clear, calm and cool. There were thin clouds to the south, but they never crept very far up into the sky. Of course, I stayed mostly in the central to northern reaches

so it never bothered me at all. At times I was wondering about transparency as it seemed a bit off, but overall, it was a pretty decent night. Maybe not the best, but still nice.

IC-1747 was almost invisible at 102X, but still there as a very tiny gray smudge at the end of that star chain. At 390X, it took on more definition with a lumpy center and slightly distorted edges. It didn't seem to be completely circular.

My drawing is a composite of both views and my consensus was that the object was mostly just a round ball, slightly distorted and almost featureless and solid in the middle. Disturbances I saw were probably turbulence or my eyes playing tricks, because after looking at the extremely rare photos I found, all of them show a pretty much featureless disk with little or no character, even in long exposures. By the way, the rippling you see to the lower right of the nebula is whiteout that smeared when I erased a star that I'd placed in the wrong spot. It's not a feature I actually saw next to the nebula!