MONTHLY OBSERVER'S CHALLENGE
Las Vegas Astronomical Society

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&
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The Leo Trio M-65/M-66/NGC-3628

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 old 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 that is free for the taking.

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 here today. 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.

The Leo Trio M-65/M-66/NGC-3628

This month we are concentrating on a fairly easy target. Two are visible in scopes as small as a 2.4-inch refractor while the third will likely require at least a 4-inch or larger scope. The Leo Trio is a group of three galaxies that are all visible in a low-power wide-field eyepiece. Two of the objects are Messiers, so if you are doing the Messier catalogue, you get to nail two at once. The third galaxy is a very interesting edge-on NGC object. The location of this fabulous galaxy group is relatively easy to find in southern Leo. The Messiers can be found on the *Sky & Telescope* and *Astronomy* magazine star charts.

The challenge is to see more than just two bright smudges, and one faint sliver of light. It is recommended to first look at all three under low power, then increase the magnification and study each galaxy individually. You may be surprised at what you can see. How many of you can see the twist in the edges of the edge-on NGC galaxy? How many of you can see structure or mottling in either of the Messier galaxies? How about the dust lane in NGC-3628? There are some difficult features to keep you busy for a while!

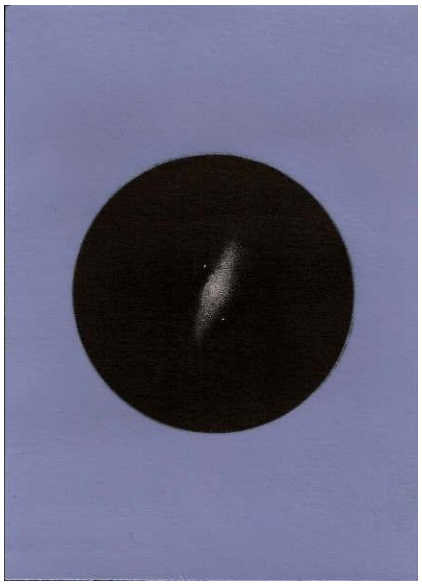
Observations/Drawings/Photos

Roger Ivester: Observer from North Carolina

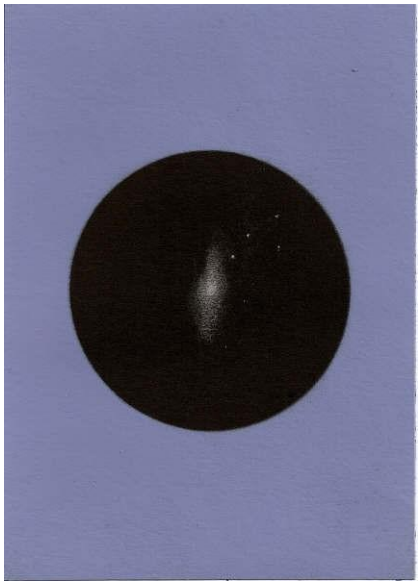
Note on the photo of myself: I'm standing next to a Criterion 12-inch reflector, one of the rarest vintage production telescopes on the planet. Ted Komorowski discovered "Komorowski's comet" with this grand instrument. It's presently owned by Gardner-Webb University, and housed in the Williams Observatory on campus. If you would like to know more about Komorowski's pseudo comet, contact Dr. Don Olive, dolive@gardner-webb.edu director of the Williams Observatory. He will be happy to fill you in.

I observed using a 10-inch reflector from my backyard in Boiling Springs, North Carolina and also from the South Mountains only 20 minutes north. My favorite eyepieces of choice are still my older Konig's.

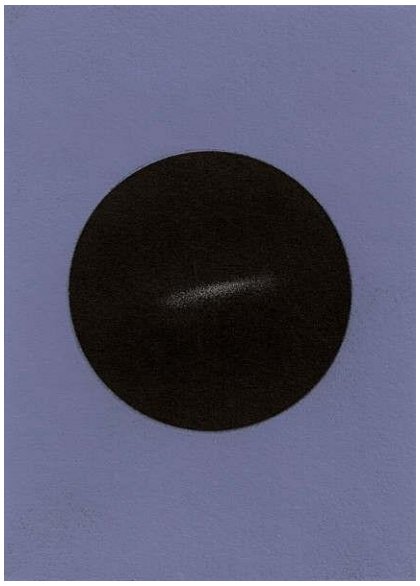
M-65: Bright, large and very elongated, with a brighter well-concentrated middle and nucleus. Some unevenness or mottling noted. I could easily see a mag. 12 star only 2' SW and a much fainter star off of the NE central region. Both were also described by Skiff and Luginbuhl. M-65 appears fainter and less concentrated than M-66. I couldn't see the dark lane with my 10-inch as described in the *Observing Handbook and Catalog of Deep-sky Observing*.



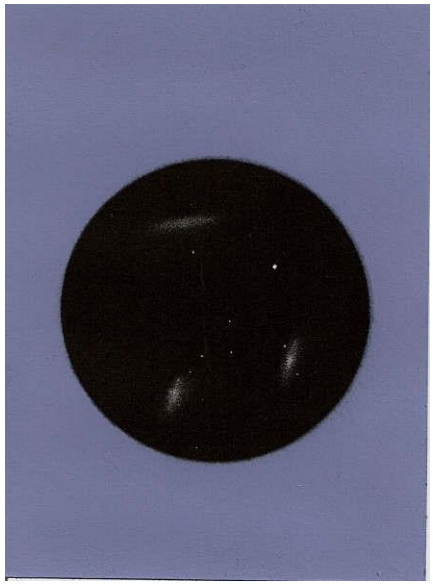
M-66: Very bright, large, with a brighter nucleus, and elongated, with a faint halo. I noted a very uneven surface texture or mottling. One of my notes indicates a stellar nucleus at 200X using the 10-inch. This galaxy is oriented N-S and is located SE of a chain of three fairly bright stars. I easily saw this star chain with my 4-inch refractor.



NGC-3628: Companion galaxy to M-65 and M-66. It's faint, very elongated with (LSB) low surface brightness. I couldn't see the dust lane with the 10-inch, but was able to do so, or imagine it using a 12-inch only a week ago from a dark site. This was noted only at low magnification, and was not visible at higher power, as it was not very concentrated. High magnification didn't seem to work well on this galaxy due to its relatively low surface brightness.



All three galaxies fit nicely within a 1° FOV.



Fred Rayworth: Observer from Nevada

I used a 16-inch, f/4.5 Dobsonian with 26mm (70X), and 20mm (91X) eyepieces. I observed the first time from Redstone Picnic Area at Lake Mead, Nevada (2,100 feet). The second time was from Sawmill Trailhead, Lee Canyon, Nevada (7,400 feet).

On April 25, 2009 at Redstone, I made the following observations: The whole trio fit nicely into the field of the 26mm eyepiece. The two Messiers presented some detail and NGC-3628 was a nice streak. Upon closer examination of each galaxy, I made the following notes:

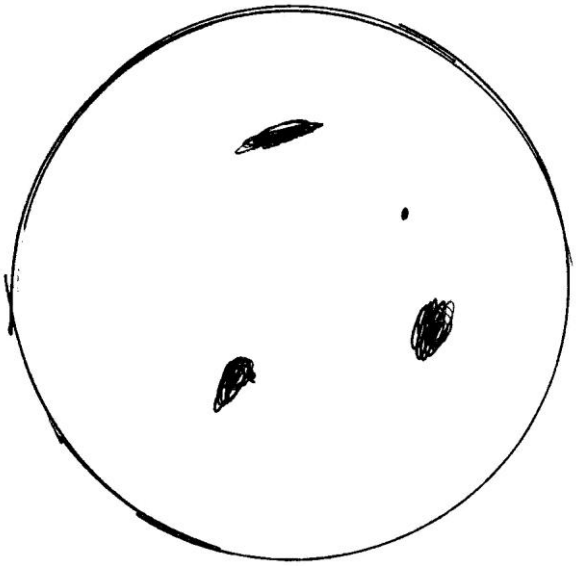
M-65: A nice bright oval, distorted in the center. M-66: Another nice bright oval with a lot of spiral structure just hinted at. No detail and no other outstanding features. NGC-3628: Wow! Nice thick streak. Looked for the twisted edges but couldn't make them out.

On May 16, 2009 at Sawmill Trailhead, despite the much higher altitude, the sky was not very dark and an annoying cold wind hampered my observations by making my eye water constantly as I tried to look through the eyepiece.

The whole trio fit nicely, once again, in the 26mm eyepiece, though the edges were distorted as is the nature of that particular eyepiece. When I switched to the 20mm, though it was a higher power, the view looked almost the same except it was flatter. However, each individual galaxy didn't show any more detail than with the cheaper eyepiece. Upon closer examination, I made the following notes:

M-65: Almost oval but looked kind of distorted and almost broken up. No significant detail when switching between the cheap and expensive eyepieces. M-66: Softer glow and rounder than M-65. Once again, switched between the eyepieces and noticed no significant difference. NGC-3628: A soft, elongated streak. The edges showed a faint twist which is what I was most interested in. Changing eyepieces brought out no additional detail.

Leo Trio



70 X

Steve Davis: Observer from North Carolina

I used a 12-inch f/5 reflector on an Astro-Physics 600E mount, with either a 35mm (44X), 16mm (95X), 9mm (170X), or 7mm (217X) eyepiece including a Barlow that doubled my magnification. I observed from the South Mountains in North Carolina, a small mountain range only 20 minutes north of Boiling Springs, NC, where I reside.

M-66: Very uneven texture with a clumpy appearance, elongated. A brighter diagonal nucleus as compared to the orientation of the axis of the galaxy halo. Brighter well concentrated nucleus. A chain of stars from the NW. The skew of the core is slight, maybe 10° pointing toward the center of the trio. Dimmer outer halo is elongated toward NGC 3628.

M-65: Much more even texture than M-66 with greater elongation. Bright, core much more compact and evenly distributed than M-66.

NGC-3628: A hint of the dark lane at lower power, but becomes invisible at higher power. Very elongated with fairly low surface brightness. Presence of dark lane really at limits for conditions at observation. Galaxy appears suddenly dark on side toward M65/66. This would be expected and betrays the presence of the lane which is biased (off the core) toward that side.

Rob Lambert: Observer from Nevada

I contributed a Mallincam image of all three galaxies from Joshua Tree National Park in California. My image is closer to what you would actually see through the eyepiece, rather than a high-resolution time exposure.

Frank Barrett: Observer from North Carolina

Frank allowed us to present some of his outstanding photos of each individual galaxy. Each image was taken with an 8-inch SCT, focal reduced to 1400mm f/7, with an SBIG ST-7E camera and a Losmandy G11 mount from Gastonia, North Carolina.

Brett Clapper and Steve Davis: Observers from North Carolina

Brett and Steve submitted this outstanding photo of the trio. It was taken with Steve's 130 mm (5-inch) refractor on an AP-400 mount, with a Canon Rebel XSi camera. Brett and Steve stacked 9 (nine) 5 (five) minute exposures.

Jim Gianoulakis: Observer from Nevada

Jim was kind enough to send this photo along. It was taken from his back yard in Las Vegas, Nevada.