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Roanoke Valley Astronomical Society

Amateur Astronomy News and Views
In Southwestern Virginia

Volume 42—Number 11 **November 2025**

RVAS October Meeting Summary

Splash! The History of Mars' Water, Real & Imagined

By **Erin Elliott, Secretary**

You can view this month's Zoom recording by clicking this link. The passcode to view the video is: **ZvD!4Y2K**

After wrapping up the Celestial Café, the meeting began at 7:30pm with an introduction from RVAS President, **Michael Good**.

*October Meeting Agenda – **Michael Good Slide***

Attendance: There were 26 members in attendance. 11 individuals were in person and 15 attended virtually.

Program | 00:25:00: Dr. Ramin Lolachi is an Assistant Research Scientist with UMBC at NASA's Goddard Space Flight Center, where he studies the Martian atmosphere and the behavior of dust and water in planetary environments. His work explores how these processes shape the surfaces and climates of worlds like Mars and the Moon. Ramin has contributed to work on NASA missions and instruments including Mars Climate Sounder, Lunar Reconnaissance Orbiter, and the Double Asteroid Redirection Test (DART).

Zoom Screenshot – Dr. Ramin Slide

Splash! The History of Mars' Water, Real & Imagined

About Dr. Ramin

- PhD studying water in Martian Atmosphere
- UMBC/NASA GSFC:

- Planetary Atmospheres
- Exospheric Lunar Dust
- Estimating ejecta mass from NASA's Double Asteroid Redirection Test (DART)

Mars: The Red Planet

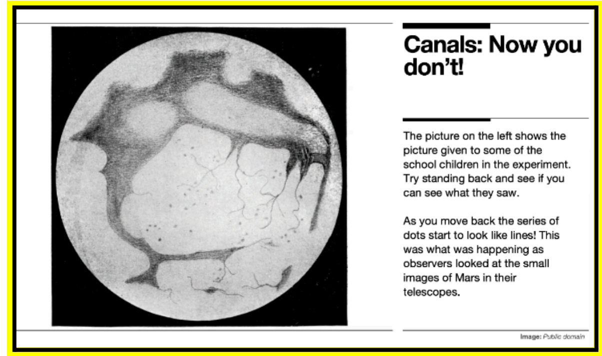
- Named after Roman god of war
- 4th planet from the sun
- Nicknamed "Red Planet" as a result of iron-rich rocks
- 2 tiny moons: Phobos and Deimos

Early Observations

- Observed by the Ancients:
    - Babylonians
    - Chinese
    - Egyptians
    - Greeks
- Retrograde Motion
- Observed by Aerial Telescope by Christiaan Huygens in 1600s

The Great Canal Caper

- Giovanni Virginio Schiaparelli (1835-1910)
    - Telescopic Observations:
        - Maps
        - Seas/Continents
        - Linear Networks
- Percival Lawrence Lowell (1855-1916)
- Mistranslation of "Canali" as "canals" instead of "channels"
- Inspired H.G. Wells' *War of the Worlds*
- At the beginning of the 20th century doubts came up that Mars had canals. It could be an optical illusion
    - Astronomers couldn't see the canals in observations

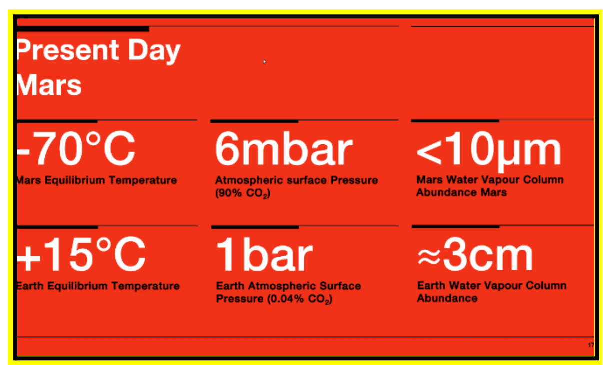


Zoom Screenshot – Dr. Ramin Slide – Optical Illusion or Canals?

- Hopes of Martian civilization and water was dashed by Mariner 4 flyby in 1965

Present Day Mars

- Mars is very cold, dusty and dry
- Very low surface pressure (`100x less than Earth)
- Evidence of "watery past"
- Where did it all go?
    - Residual Polar Caps
    - Regolith (ground ice)
    - Atmosphere
    - Hydrated minerals from chemical weathering
    - Lost to space (photodissociation)



Zoom Screenshot – Dr. Ramin Slide
Present Day Mars Stats

Rivers on Mars

- 1972: Mariner 9 discovers strange valleys resembling dried up riverbeds
- ~3.8 billion years old
- Naedi Vallis (HiRISE Image)
    - 2-3km wide, 1000km long
    - Riverbed ~100m wide

Lakes on Mars

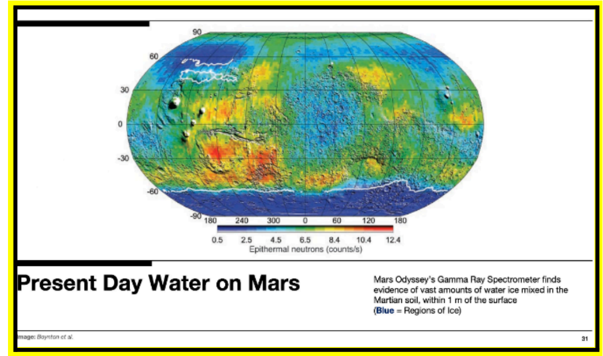
- Dozens of craters which may have contained lakes (filled by rivers)
- Stratified Layers
    - Sedimentary Deposits

Ancient Northern Ocean

- Enough water present after meteoritic bombardment, 3.8 billion years ago to form a global layer 500m thick
    - Warm & wet climate
    - Ocean formed on flat northern plains
- Evidence
    - Shorelines
    - Sublimation residue from effluent during catastrophic flooding episodes
- Criticism
    - Shorelines don't match up
    - Tipping and deformation of Mars by True Polar Wander?
    - Lack of carbonates (though some have now been found)
    - Acidic ocean?
- What would conditions have been like Mars 3.5 to 4 billion years ago? What changed?
    - Ancient Mars…
        - experienced warmer and wetter conditions
        - had a thicker atmosphere

Outflow Channels

- Massive channels with no tributaries
- Ages ranged from 1.5-4 billion years old
- Ex – Ares Vallis 25km across, hundreds meters deep
- Formed by episodes of "catastrophic flooding"
    - Earth ocean current sized flows
    - Teardrop-shaped islands (indicate turbulent running waters rather than ice, lava or mud)
    - May have fed ancient northern oceans
- Source: massive release of high-pressure groundwater under permafrost seal (though alternate, less popular theories exist)



Zoom Screenshot – Dr. Ramin Slide
Evidence of Water & Ice

Water Today

- Fog/Clouds/Snow
- Ice
    - Frost & ice on the Surface
    - Glaciers
    - Polar Ice
    - Subsurface Ice
- Subglacial Lakes?
    - 2018: Orbital radar evidence from MARSIS on ESA's Mars Express
    - Similar to Lake Vostok in Antarctica
    - 30 miles across
- Crustal reservoir?
    - 2024: Data from NASA's InSight lander suggested groundwater on Mars
    - Water is estimated to be 7-13 miles beneath the surface
- Water Vapor
    - Travels between reservoirs

The "Running Water" Debate!

- Recurring Slope Lineae
- Gullies
- Initial Hypothesis: liquid briny water flowing downslope
- Current understanding: may be driven by granular flows triggered by changes in hydration of salts
    - Still an active area of research

Why All This Fuss About Water?

- The "L" Word: Life!

- Water as a solvent, a medium for chemical reactions
    - o Part of the ingredients for life
- Even if not liquid on the surface, its history tells us about Mars' past habitability and evolution

The Future of Martian Water Hunting

- Future orbiters and landers with even more advanced instruments
- Potential human mission to Mars – water as a resource
- The ongoing quest to understand Mars' past and present habitability

Summary

- Past
    - o Evidence of ancient water features, rivers, oceans
    - o Ancient Climate: Warm & Wet
- Alternatives
    - o White Mars – caused by pyroclastic-like CO2 flows
    - o Wind Erosion – over very long timescales
- Present
    - o Cold & Dry
- Lots more to find out!

Zoom Screenshot - John Wenskovitch slide

What's Up? | 01:22:00: John Wenskovitch gave his "What's Up?" program on what the skies of November have in store for us. John's "What's Up? Highlights" in this issue provide a summary of the program. You can watch a recording of his program by clicking the link at the beginning of the newsletter and following the timestamp listed for this segment.

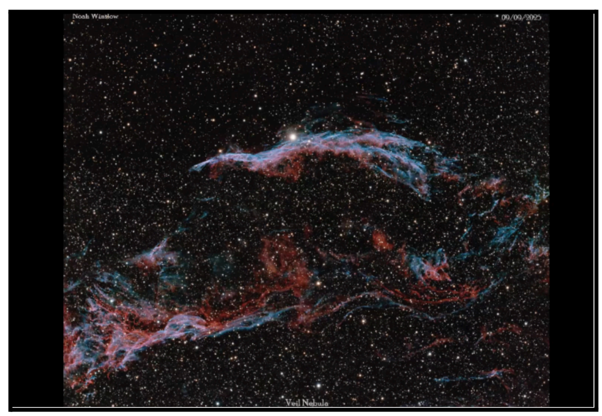
Below you can find the Astronomical League program John highlighted in this month's presentation:

- *Comet Observing Program.* You can find out more about this program by following this link.

Astrophotography | 01:38:37: We thank **Vincent St. Angelo, Tom Cerul, Ed Dixon, Michael Good, Hetzal Hartley, Ben Hartman, Dave Thomas,** and **Noah Winslow** for providing their work this month. We had a variety of images focusing on near and deep sky objects.

To provide each image with the focus it deserves, we are sharing the submissions in a separate article in this newsletter. Do not miss checking out the rest of these images.

You can also visit our RVAS Facebook Group to see photos posted throughout the month.



*Zoom Screenshot – **Noah Winslow Photo***

Next month: Monthly meetings will resume on Monday, November 17 at 7:30pm, and are held at the VWCC STEM building ST314.

NOTE : This is a different room from the past meetings. It is next door to the previous room.

Our speaker will be Cole Gregg who is an astronomer specializing in small-body dynamics, interstellar objects, and planetary defense. He is currently completing a PhD at the University of Western Ontario under the supervision of Dr. Paul Wiegert, focusing on simulations of interstellar material traveling through the Milky Way. Passionate about astronomical simulations, small-body surveys, and education, he also enjoys teaching and engaging with students in the classroom. Outside of academia, he spends his time outdoors, enjoying nature and pursuing wildlife photography.

The meeting was adjourned at 8:59pm.

What's Up? Highlights

November 1 to 30, 2025

This Month:

Within the solar system, this month is dominated by the outer planets. While Mercury, Venus, and Mars remain primarily visible dimly in the twilight, Jupiter through Neptune shine largely throughout the night. The month begins with Jupiter rising at 11:09pm, Uranus rising at 7:20pm, and Saturn and Neptune already high in the sky at dusk. By the end of the month, Jupiter will be rising by 8:09pm, Uranus will have passed opposition, and Saturn and Neptune will be setting by 1:30am. The lunar perigee on the 5th is the closest that the Moon will get to the Earth in 2025, making the Full Moon (which is achieved nine hours earlier) the largest Supermoon of the year. With Titan shadow transits complete on Saturn, we can turn our attention to double (and single) shadow transits of moons on the face of Jupiter, with one example occurring on the 20th. The summer and fall constellations split the evening sky, making this month a great time to catch some final views of Milky Way objects in Sagittarius and Scutum while also spending some time looking ahead to Pegasus, Pisces, Perseus, and plenty of fall deep sky objects. Finally, the comets C/2025 R2 (SWAN) and C/2025 A6 (Lemmon) will slowly fade from view throughout the month, but both should be high-quality binocular targets at the beginning of November.

Celestial Events:

- November 5: Peak of the Southern Taurid meteors
- November 10: Possible eruption of T Coronae Borealis
- November 12: Peak of the Northern Taurid meteors
- November 17: Peak of the Leonid meteors
- November 20: Io and Callisto double shadow transit on Jupiter
- November 21: Uranus opposition
- November 21: Peak of the Alpha Monocerotid meteors
- November 29: Moon/Saturn/Neptune conjunction

Sunset and Twilight:

- Sunset ranges from 6:20pm (1st) to 5:02pm (30th)
- Evening twilight ends from 7:48pm (1st) to 6:34pm (30th)

Lunar Phases and Apsides:

- Full Moon: November 5, 8:20am
- Perigee: November 5, 5:16pm (221,726 miles)
- Last Quarter: November 12, 12:29am
- Apogee: November 19, 9:46pm (252,706 miles)
- New Moon: November 20, 1:48am
- First Quarter: November 28, 1:59am

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to the pursuit of observational and photographic astronomical activities. **Meetings are held at 7:30 p.m. on the third Monday of each month. We meet at the VWCC STEM building ST314. Directions are below. Meetings are open to the public.** Observing sessions may be held, weather and sky conditions permitting, at a dark-sky site. For information regarding joining RVAS, including annual dues, click here. Articles, quotes, etc. published in the newsletter do not necessarily reflect the views of the RVAS or its editor.

Officers/Executive Committee/Editor/Webmaster

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Erin Elliott, Secretary (secretary@rvasclub.org)
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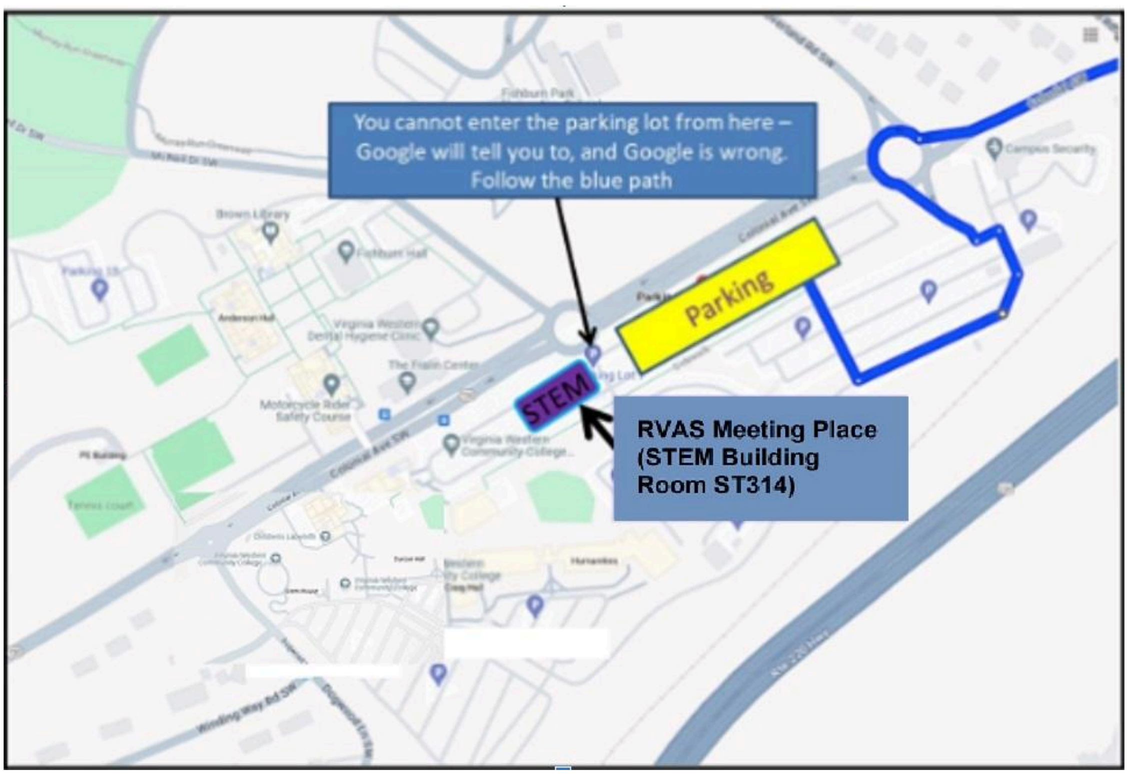
Michael Hutkin, Past President (pastpresident@rvasclub.org)
Ed Dixon, Newsletter Editor (newsletter@rvasclub.org)
Ed Dixon, Webmaster (webmaster@rvasclub.org)

Directions to RVAS Meeting Location

Virginia Western Community College STEM Building, Room ST314
3094 Colonial Ave SW, Roanoke, VA 24015

VWCC is located in the southwestern area of the City of Roanoke. The STEM Building is accessed via the roundabout at Overland Drive and Colonial Avenue, near Campus Security at the top right of the map. The STEM Building is at the opposite end of the Colonial parking lot from Campus Security. Follow the darker blue path from the roundabout and park anywhere in the lot.



Note: Google provides incorrect guidance to access the parking lot from the roundabout at McNeill Drive. That roundabout **does not** provide an entrance to the parking lot.

October Natural Bridge State Park Star Party

Contributed by John Goss

The week preceding the October Natural Bridge State Park stargazing event had forecast beautiful clear skies. But as Saturday approached, some consternation arose. Thankfully October 18 gave clear skies and the event was a "go."

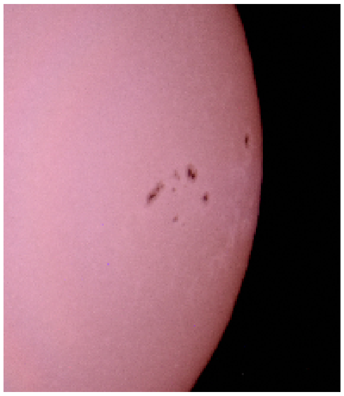
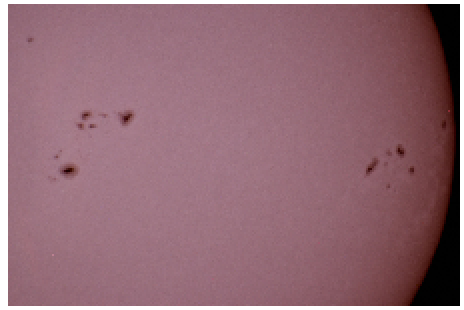
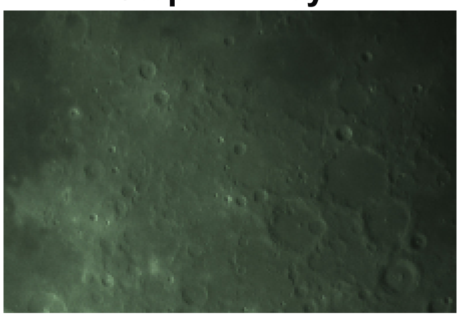
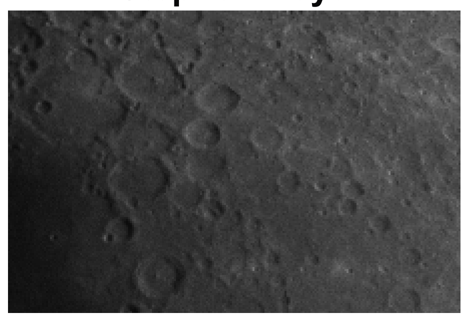
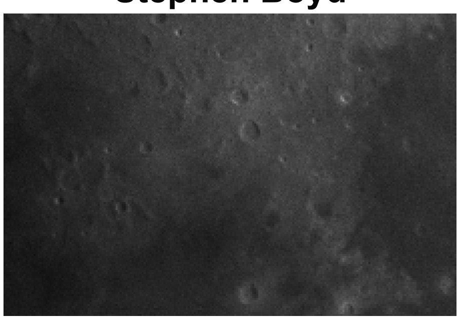
RVASers Bert Herald, Mike Hutkin, and John Goss joined half a dozen park rangers, and over 100 members of the public for a grand night of navigating the night sky and seeing some of its celestial wonders up close in the Park's 10 inch Dobsonian reflectors.
Everyone who was asked had never seen the Milky Way. They were about to get their chance! And the skies did not disappoint. Plus the telescopes offered views of M13, M16, M17, M57, and the Double Cluster.

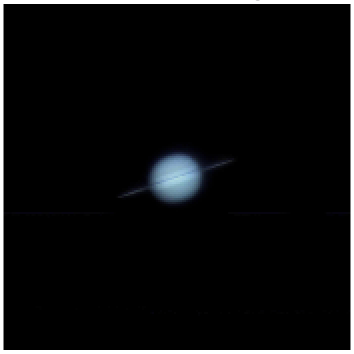
Bert's set up featured a Celestron 9.25 inch SCT with a Starizona Hyperstar. It was fitted with a ZWO ASI-2600-MC camera and an IR-cut filter. So, what could the very interested public see in near real time? How about Comet Swan, IC 1396 (Elephant Trunk Nebula), NGC 6888 (Crescent Nebula), NGC 7000 (North America Nebula), IC 1318 (Gamma Cygni Nebula), IC 1805 (Heart Nebula), IC 1848 (Soul Nebula), M16 (Eagle Nebula), M17 (Omega Nebula), M57 (Ring Nebula), and M31 (Andromeda Galaxy).

By the time the Pleiades rose, the event was winding down.
The crowd left happy. It was quite a night!

October 2025

Ctrl- Click on the picture see the source file and additional information

Hetzal Hartley 	**Hetzal Hartley** 
Stephen Boyd 	**Stephen Boyd** 
Stephen Boyd 	**Stephen Boyd** 
Stephen Boyd 	**Ed Dixon** 

Stephen Boyd 	**Ed Dixon** 
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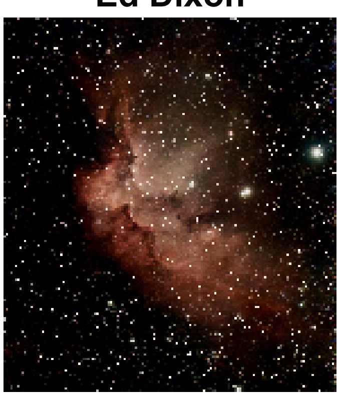
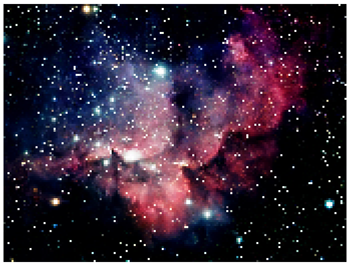
Ed Dixon 	**Ed Dixon** 

Ed Dixon 	**Ed Dixon** 
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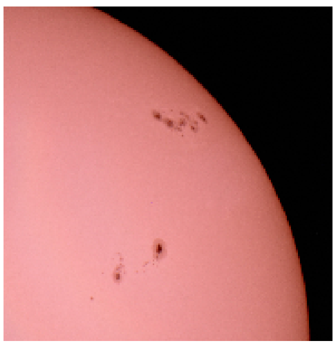
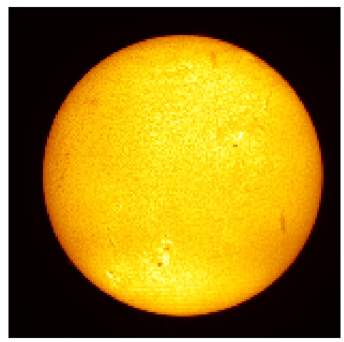
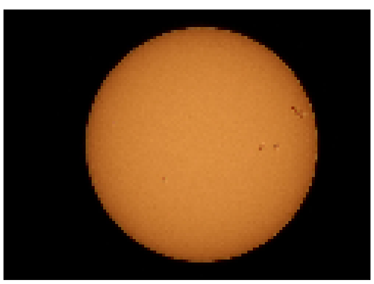
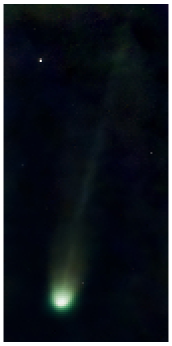
Hetzal Hartley 	**Ben Hartman** 
David Thomas 	**Noah Winslow** 

Ed Dixon 	**Ed Dixon** 
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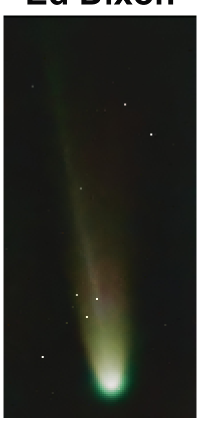
Ed Dixon 	**Ed Dixon** 

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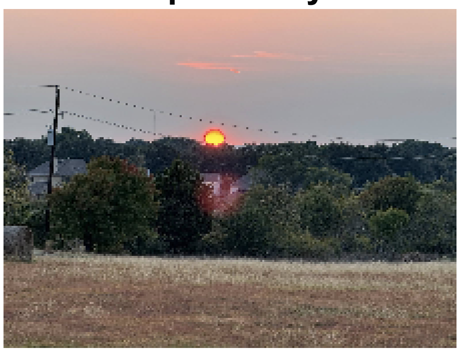
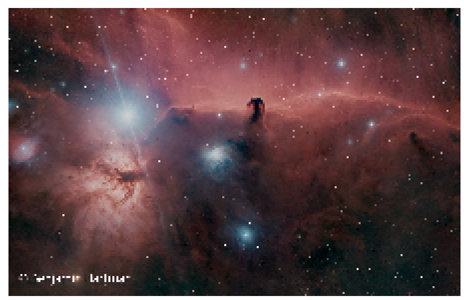
Stephen Boyd 	**Stephen Boyd** 
Ben Hartman 	**Ben Hartman** 
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