

PRESIDENT'S CORNER

by Dell Vance

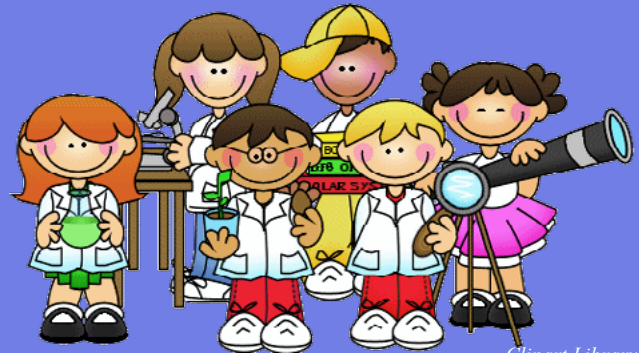


Ann-Maree Vance

CVAS is starting the 10th year since it was organized in October 2013. That month, Tom Westre wrote the first draft of the CVAS Constitution and brought together Dale Hooper, Ned Miller, and myself to work out the final document. I still have the final draft of that document on my computer. It was accepted at our first club meeting and Tom Westre was elected President. Also elected were myself as Vice President, Dale Hooper as Secretary, and Ned Miller as Treasurer. Just goes to show, be careful when you are setting up an organization, you are likely to be involved in the leadership for some time.

I want to thank Bruce for his great work in his three years as President. The pandemic was extremely tough on all organizations that depend on gathering to exchange information. Bruce brought us through that rough period and developed means for us to work together. Great job, Bruce! James Somers, our pre-

cont'd on p. 2



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UPCOMING EVENTS

Club Meeting

- October 19 at the Nibley City Offices. CVAS Secretary-Treasurer Bonnie Schenk-Darrington will talk to us about archaeoastronomy and cultural astronomy.

Star Parties

- October 7: North Park Elementary
- October 17: Mountainside 6th Grade Class
- October 21: River Heights 6th Grade Class

STEM Nights

- October 3: Mountainside Elementary
- October 17: Lincoln Elementary
- October 26: Nibley Elementary

Keep up to date by
visiting our website:



President's Corner, cont'd from p. 1

vious Vice President, has also been supportive of the club and has also been the Library Coordinator for the North Logan and Smithfield Libraries.

As a result of our last meeting, I am again President, Dale Hooper is Vice President, Bonnie Schenk-Darrington is Secretary-Treasurer and Bruce Horrocks is the new Public Relations Specialist. I am grateful that Bonnie agreed to continue on as the Secretary-Treasurer. She has really excelled with the newsletter. Of course, I'm very excited to have Dale back in the Executive Committee. He is always very supportive of CVAS.

My personal goals for the club this year are:

- Get more active participation in the club operation by more members, i.e., delegation of assignments.
- Get more people out to our meetings.
- Continue to provide outreach events.

October is stacking up to be a very busy month. Currently we have four star parties and two STEM fairs planned. I encourage each of you to participate in at least one of these events. Most of these events are on weeknights and finish up before 10:00 p.m.

The Executive Committee is meeting on Wednesday night to work out our schedule for the rest of the year. We initiated a poll through Groups.Io to get your input on what nights of the month would work for you to participate in our monthly meeting for the winter months. Please respond to the poll so we can make an informed decision for the upcoming meetings. If you need the poll re-sent to you, let me know and I will get it to you.

Thanks again for your great support to the club.

Clear Skies,
Dell Vance



What Is a STEM Night?

“STEM” stands for Science, Technology, Engineering, and Mathematics. Local elementary schools host evenings at which children can learn about STEM topics informally. This is a great chance for us to share our love of astronomy! We only need two to three people for each event. Contact any member of the Executive Committee to volunteer. During the winter, we stay indoors, so you won't have to worry about getting cold!

Events last from 6:00 to 8:00 p.m. Please plan to arrive at 5:30.

Challenges from Our President

Please take the poll on what nights work best for club meetings.

Please help out at upcoming star parties and STEM nights.

TREASURES OF LYRA

by Blaine Dickey

The constellation Lyra (the Lyre) was one of the first constellations that I learned to recognize during the summer months.

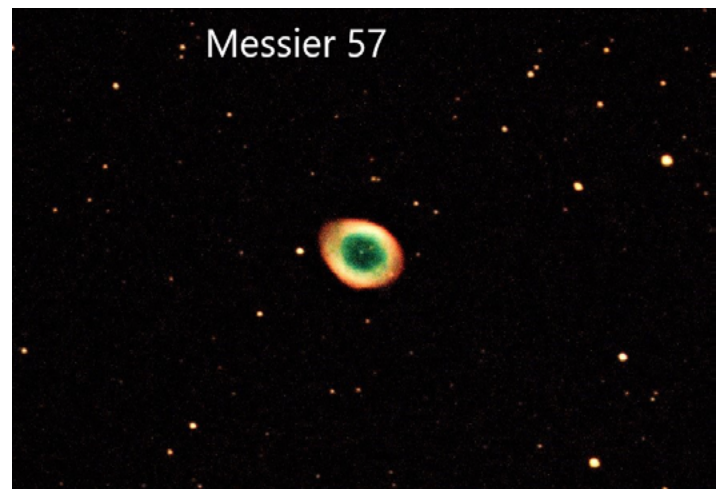
Brilliant Vega of visual magnitude +0.02 is the brightest star in the pattern that makes up Lyra and the fifth-brightest star in the sky.



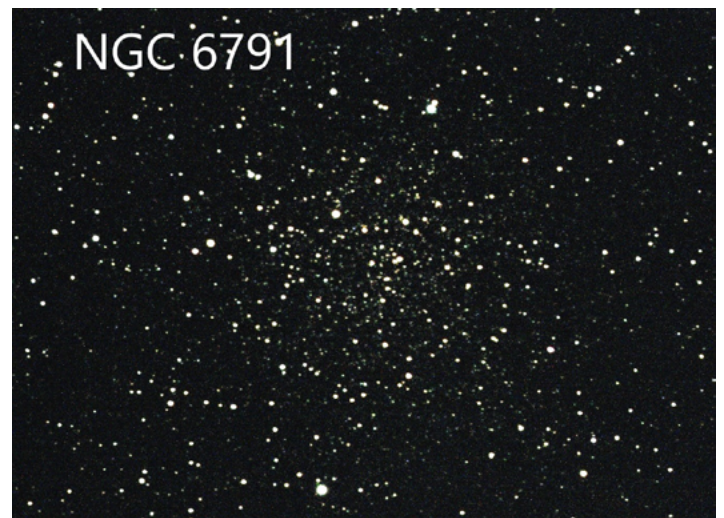
Vega is part of a small triangle with the Double Double star Epsilon Lyrae and Zeta Lyrae. If you have excellent eyesight, you may be able to split Epsilon with your unaided eye. With binoculars, it is easy to see both stars. The two stars Epsilon Lyrae are also double stars that can be split in a small, three-inch telescope, with the gap tilted of about 90 degrees from each other.



One of the first deep sky objects I observed was a planetary nebula named Messier 57, also famously known as the Ring Nebula. In a telescope, it appears as a small, well-defined gray smoke ring. With an imaging telescope, it bursts into a colorful oblong planetary nebula with several small stars on the inner part of the ring. I have never seen the central white dwarf star visually in a telescope, but it is visible in the included image. Just above the nebula is a very close, dim double star, which is just visible in the included image.



NGC 6791 is a faint, rich galactic star cluster at visual magnitude of 9. It was unknown to me until I imaged it in August. I was surprised that I had not previously known about it. It is 16,000 light-years away from our solar system.



cont'd on p. 4

Treasures of Lyra, cont'd from p. 3

A dim, 13-magnitude bluish galaxy, NGC 6675 is about 125 million light-years from our solar system, and receding from us at 1500 miles per second. Besides this galaxy, there are many other galaxies within the border of Lyra but they are quite dim as seen from the earth.



T Lyrae, a red variable star in Lyra, is one of the reddest stars I have observed directly through an eyepiece. It looked as red as a stoplight when I first observed it.



An often overlooked globular cluster in Lyra is the globular cluster Messier 56 in the Milky Way background at magnitude 8.3. It is at a distance of 32,900

light-years. This cluster is not very condensed and the brightest stars are about magnitude 13.



Since Messier 27 was close to Lyra, I decided to get an image of it.

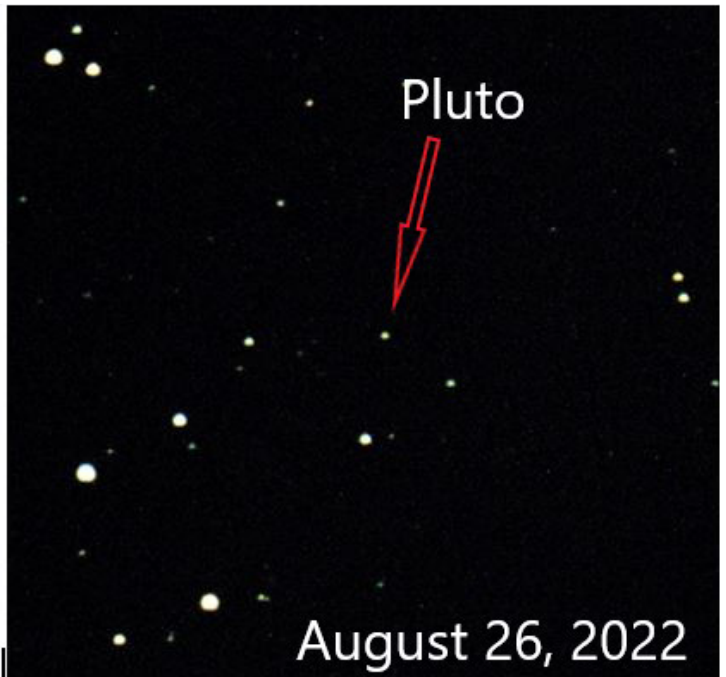
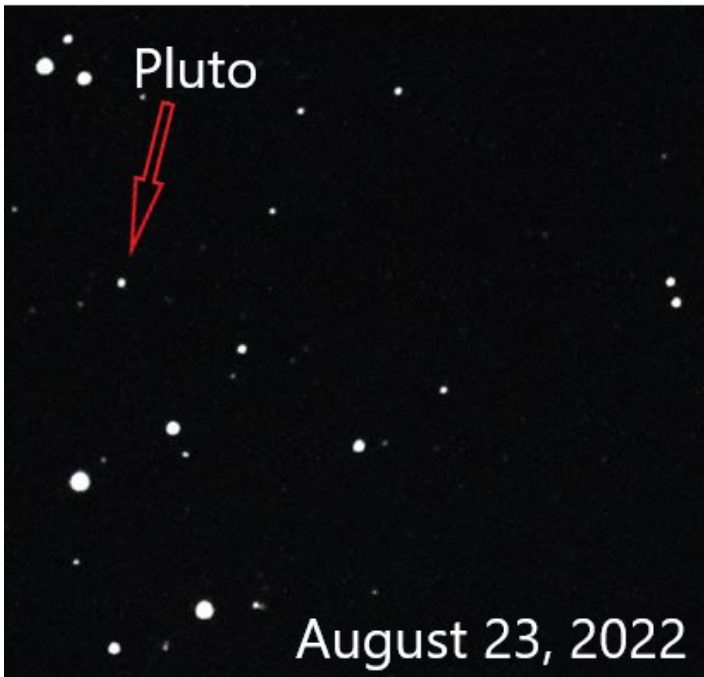


In addition, I imaged the minor planet Pluto to observe its motion against the starry background in Sagittarius. The included images show Pluto's motion over a period of three days, from August 23, 2022, to August 26, 2022. At the time, it was dim at magnitude +14.4. It is difficult to see Pluto without a large telescope.

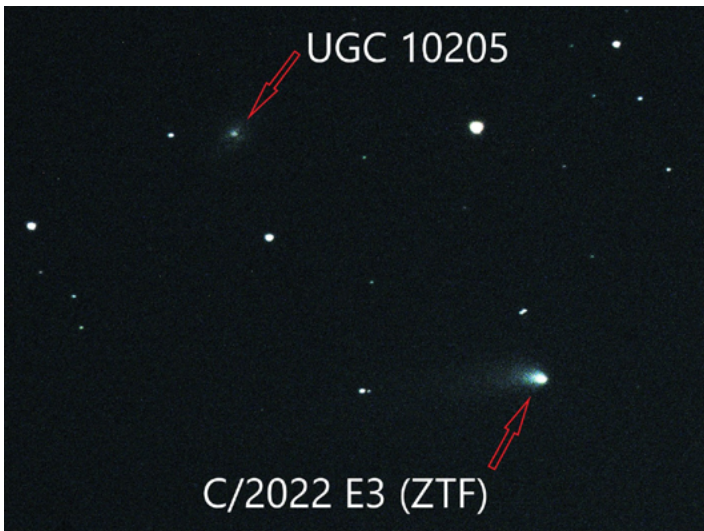
Finally, the comet C/2022 E3 is moving toward the inner solar system and should be visible to the unaided eye from January 25, 2023, thru Feb 7, 2023.

cont'd on p. 5

Treasures of Lyra, cont'd from p. 4




It already has a tail, as seen in the accompanying image. The image also shows the galaxy UGC 10205 in the upper left-hand corner. The comet in the image is 2.2 astronomical units (204 million miles or 18.6 light-minutes) away from Earth in this image, while the galaxy is estimated to be 450 million light-years distant.



These are some examples of the amazing treasures waiting to be discovered on any night of the year, and are worth taking the time and effort to observe.

All images courtesy of the author.



USU Observatory Public Night

October 21, 2022
7:30–9:30 p.m.

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Get there early to ensure you can look through the telescope! Because of enthusiastic public response, only the first 400 people in line will get a chance!

For details about location, targets, weather, and parking, visit the USU Physics Department website [here](#).

CVAS'S PARTNER: NIGHT SKY NETWORK

by Dell Vance

Cache Valley Astronomical Society is associated with the Night Sky Network (NSN). You may ask, "What is the Night Sky Network?"

NSN is sponsored by the NASA Jet Propulsion Laboratory in partnership with the Astronomical Society of the Pacific. They work with astronomy clubs across the United States and provide a common website for people to get information about participating clubs. They have calendars of events for each of the clubs and for national events. They also set up webinars occasionally that include guest speakers on various topics.

As a participating club, we receive outreach items and post information on our activities. As a member joins, we put their name and email address on our NSN Roster. Members can then go on

and set up an ID / password for access to the site. They can modify their profile and log in hours they have contributed to club outreach events. It is also a site

you can use to find other astronomy clubs in other parts of the country that you may be interested in visiting.

The website is <https://nightsky.jpl.nasa.gov>. The first time you visit, it will ask you to set up a login ID and a password. If you are not in the system, it will let you browse the clubs. You can click on a club near you, and it will provide information about the club. It also has a tab that will let you register with the Night Sky Network or to apply for membership with CVAS.

If you have questions about Night Sky Network, please let me know and I will try to help you.



Night Sky Network



Classroom Clipart

You can see CVAS events on the NSN calendar at <https://nightsky.jpl.nasa.gov/clubs-and-events.cfm>. If you don't yet have access to the NSN website, please let a member of the Executive Committee know! We can add you to the roster and help you create a login and password.



EXECUTIVE COMMITTEE

- President: Dell Vance; avteam.dell@gmail.com
- Vice President: Dale Hooper; dchooper5@gmail.com
- Secretary-Treasurer: Bonnie Schenk-Darrington; bschenkdarr@gmail.com
- Night Sky Network Coordinator: Dell Vance; avteam.dell@gmail.com
- Public Relations: Bruce Horrocks; bruceh@gembuildings.com
- Webmaster-Librarian: Tom Westre; twestre45@aol.com

WHAT COLOR IS IT?: THE HUBBLE PALETTE

by Bruce Horrocks

The other night at a star party, there were a few people that were asking about the color in the images coming from the James Webb Telescope. I replied by asking them what color a radio wave is. Color, even in our visible spectrum, is really subjective and truly in the eye of the beholder. Many times, I have put on a pair of pants only to be told by my wife that my shirt does not match with them. And yet, they looked okay to me. It is very interesting to me that, while our ears are capable of hearing almost 10 octaves, our vision is limited to not even to what we would call a full octave of sight. (Note: An octave is a doubling of frequency. Each C note on your piano is either double or half the frequency of the adjacent C.)

The normal human eye can see a range of color from 390 to 700 nanometers. Frequencies on the low end of the scale, around 390, are called ultraviolet, and are the wavelengths of x-ray machines. Even lower are the gamma rays used to kill cancer and in other medical treatments. While we call these light frequencies “lower” because the number is lower, they are actually higher in energy. The number refers to the length of the wavelength.

On the upper end of the scale above 700 nanometers, we find the infrared light spectrum; here we find microwaves and radio waves. These wavelengths are much longer and below our ability to detect with

our eyes. Those tiny holes in your microwave oven are designed to let the visible light out but keep the longer microwaves in the oven to heat your popcorn—but not heat you. These are the light waves that are being looked for by the James Webb Telescope.

So, back in the visible spectrum, we have all the colors our eyes are able to see, which—if compared to sound waves—is not quite a full octave. After NASA launched the Hubble Telescope, a scientist by the name of Jeff Hester in 1995 was looking at some of the data and had the idea of mapping the colors a bit differently than normal. At that time, hydrogen-alpha (H α) light was mapped as a nice red color, sulfur II (SII) was a dark

red, and oxygen III (O III) was greenish color. This is called the HSO palette. Jeff decided to try using the sulfur for red, the hydrogen for green, and the oxygen for blue. The first image he tried this on was the fa-



A comparison of the Wizard Nebula rendered in the HSO palette (above) and the SHO or Hubble palette (below). Both images were taken with a 150mm telescope, the ZWO 294 camera, and narrowband images.



cont'd on p. 8

MESSIER 97: THE OWL NEBULA

by Dell Vance

About 8,000 years ago, a star in the region of the Big Dipper exploded. The star contracted down to a white dwarf star. The remnants of that explosion are still visible. It is known as M97, or the Owl Nebula.

This is a planetary nebula. Planetary nebulas are quite common, as this is part of the life cycle of many stars. The explosion would have destroyed any inner planets that were in the star system at the time. The appearance of the owl eyes is a result of an inner shell that is barrel shaped and at a 45-degree angle to us. The result appears as two rings that look like eyes. The outer shell is much larger than the inner shell; it appears as a sphere.

M97 is located just 2 degrees away from Merak. The two front stars of the bowl of the Big Dipper point

to the North Star, Polaris. Merak is the bottom-pointing star. To get two degrees from Merak, with your right hand at arm's length, put your middle finger on Merak and your index finger will be very close to the area of M97.

M97 is about 2,000 light-years away. That means about 6,000 years ago, the explosion may have been visible with the naked eye. Now M97 is very faint, at a magnitude of 9.9. Under very dark skies, you may be able to see it with binoculars. However, in most areas, it will take a telescope to see



it. The image will appear very fuzzy in most smaller telescopes. A good way to see it is with a camera attached to a telescope. The white dwarf central star is still visible.

Image courtesy of the author.

What Color Is It?, cont'd from p. 7

mous "Pillars of Creation" image, and everyone loved it. Hence was the birth of the "Hubble palette." While it improved the appearance of the Hubble images, this new color mapping method was also of scientific significance, as it allowed scientists to make an easier distinction between the various gases in the universe. If you look at astronomical images that are narrow-band, you will often see them listed as SHO (sulfur II for red, Ha for green, oxygen III for blue) or HOO (Ha for red and oxygen III for green and blue), or by whatever mapping system was used to replace the red, green, and blue (RGB) color scheme.

If you try using narrowband filters, the one thing you should expect is to greatly increase the exposure

time. I typically find that my exposure time is 10 times that of what I would use with standard RGB filters. So, while the images may look really cool, be prepared to be outside taking images for 10 times as long.

So, what colors are the James Webb images, really? I would guess just whatever you want them to be. I am sure that NASA will most likely follow up using the Hubble SHO palette on many of these newer images, and possibly some other combinations that will be a benefit to them, as well to us, the public. Either way, I am sure that we will enjoy seeing what this new telescope will have to show us in the years ahead.

All images courtesy of the author.

ASTROPHOTOGRAPHY GALLERY

Recent Images by Club Members



Crescent
Ned Miller

The rising crescent moon just before dawn broke on September 24, 2022. Taken with a Nikon D5100 with a 300mm lens. 2.0 sec exposure. F11.

Ned comments, “I never look up at the night’s sky without marveling about the forces of nature.”



Hey, Astronomy Hero!
What’s Your Origin Story?

CVAS members are astronomy superheroes who share their love of astronomy with the galaxy! (Or, at least with the people of Earth!)

What piqued your interest in astronomy? Please tell us! Send your article to Bonnie at bschenkdarr@gmail.com!

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RECENT CLUB EVENTS



Clockwise from top left: Bruce Horrocks presents a talk on the program Stellarium at our club meeting on September 21. Dell Vance presents a talk about the moon to children at the Tremonton Library for NASA International Observe the Moon Night on October 1. Dane Darrington adjusts a telescope at the moon party. The crescent moon that night was obscured by clouds; regardless, a good time was had by all. Paul Yamaguchi poses with his telescope at the moon party.

All photos courtesy of Bonnie Schenk-Darrington.



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UPCOMING ASTRONOMY EVENTS AND ANNIVERSARIES

by Bonnie Schenk-Darrington

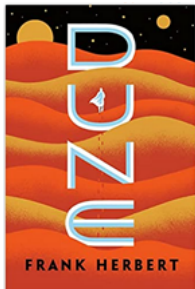
- October 1: [NASA International Observe the Moon Night](#). [Here](#) is an interesting article about why the two faces of the moon look so different. See also p. 10 of this newsletter.

- October 5: Neil deGrasse Tyson was born in 1958. Tyson is the director of the Hayden Planetarium in New York City and is famous for his TV appearances, books, and magazine columns popularizing astrophysics.



Wikipedia

- October 8: Frank Herbert was born in 1920. Herbert's series of Dune science fiction novels have inspired multiple movies and introduced multiple generations to the excitement of space travel.



Amazon

- October 8: Mercury reaches its highest altitude. It will be visible in the morning sky at magnitude -0.6. It will only reach a peak altitude of 9 degrees around sunrise, but will probably still be difficult to observe.



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- October 9: Conjunction of the moon and Jupiter. They will share the same right ascension at around 6:05 p.m.
- October 12: Moon and Uranus at appulse, coming within 47.2 arc minutes of each other. This will not fit in the field of view of most telescopes and will be best viewed by binoculars at about 8:43 p.m.

- October 18: [Félicette](#) the cat was launched into space by the French space program in 1963.
- October 18: 136199 Eris reaches both opposition and perigee. It will be visible in the constellation Cetus and appear at its brightest due to perigee.
- October 19: Subrahmanyan Chandrasekhar was born in 1910. An Indian-American astrophysicist, he received a Nobel prize for his work on stellar structure and evolution.
- October 23: Saturn's retrograde motion ends.
- October 25: Partial solar eclipse visible from Europe, Africa, Greenland, and Asia.



Wikimedia Commons

- October 27: Moon's perihelion, or closest approach to the sun.
- October 31: Halloween! Halloween/Samhain is traditionally a "cross-quarter day," which fell midway between autumn equinox and winter solstice in the old Julian calendar. You can read more about it [here](#).



Clipart Library

- October 31: The Caltech Rocket Research Group (precursor to the NASA Jet Propulsion Laboratory) was founded in 1936.



NASA



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Free Astronomy 101 Textbook Now Available!

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