

PRESIDENT'S CORNER

by Dell Vance



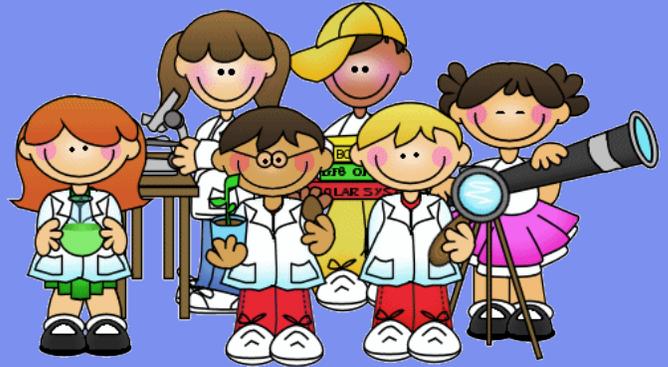
Ann-Maree Vance

Happy New Year to all our beloved CVAS friends. As an Executive Committee, we hope you had a wonderful holiday season! Here's a recap of our recent club events (see photos on pp. 10–11):

On December 30, we had our belated holiday party. Our original plans to have it on December 2 were foiled by the illness of multiple club members. (It's a brutal flu/cold/COVID-19/RSV season this year. Wash your hands frequently and stay healthy!) We enjoyed chili, soup, salads, breads, and interesting conversation.

Our November meeting was very interesting. Vice President Dale Hooper reviewed the basics of eye-pieces. It reminded me of what I learned long ago and mostly forgot over the years. The information about true field of view was very helpful to me. It explains a lot about why I get such a limited field of view with my bigger telescopes. It also encouraged me to add

cont'd on p. 2



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UPCOMING EVENTS

Club Meeting

- Friday, January 13, at the Nibley City Offices (455 West 3200 South, Nibley)
- Topic: Show and tell! Share information about astronomical equipment or any other astronomy-related topic. If you would like share something, please let one of the Executive Committee members know so we can plan on giving you some time.

STEM Events

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

- January 11: River Heights Elementary
- January 19: North Park Elementary
- January 25: Wellsville Elementary
- February 2: Birch Creek Elementary
- February 9: White Pine Elementary
- February 16: Sunrise Elementary
- March 9: Cedar Ridge Elementary
- March 13: Greenville Elementary
- March 23: Providence Elementary



Keep up to date by visiting our website:

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

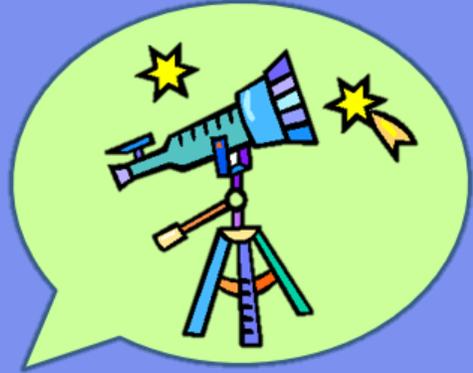
the true FOV to my list when I calculate the magnification. Dale did a great job. Unfortunately, there were only a few people there for the presentation. Hopefully, our new monthly meeting schedule will help with that.

Starting with our January 2023 meeting, we will be meeting on the second Friday of the month. So, the meeting will be on Friday, January 13, 2023, at Nibley City Hall. This meeting will be our annual Show-and-Tell meeting. We encourage everyone to bring something that they recently obtained or did, to the meeting. This includes equipment, programs, a favorite image you've taken, and so on. It is always fun to see what others are working on. Be prepared to take a few minutes to tell about what you brought.

We wish everyone a great 2023! Be safe and when possible, look up and enjoy the skies.

Thanks again for your great support for the club.

Clear Skies,
Dell Vance



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Challenge from Our President

Bring something to share at our Show-and-Tell meeting on January 13! This includes equipment, programs, books, favorite images—anything you'd like to share!



Classroom Clipart

You can see CVAS events on the NASA Night Sky Network 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.

CACHE VALLEY ASTRONOMICAL SOCIETY



Our Website: CVAS-UTAHSKIES.ORG

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@gem-buildings.com
- Webmaster-Librarian: Tom Westre; twestre45@aol.com

2022 IN REVIEW

by Blaine Dickey

During this past year, many interesting celestial events took place.

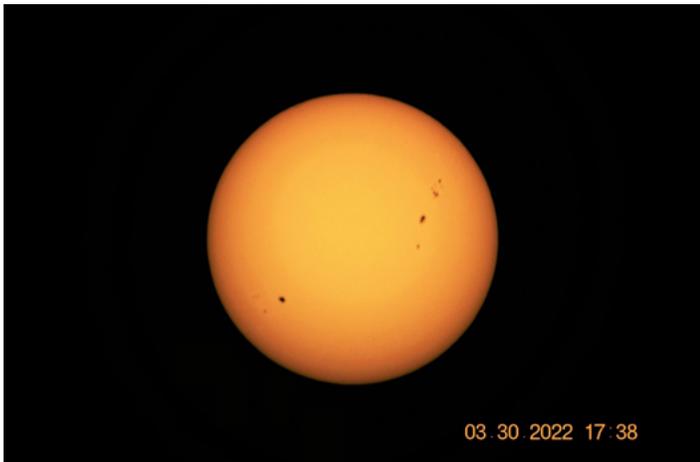
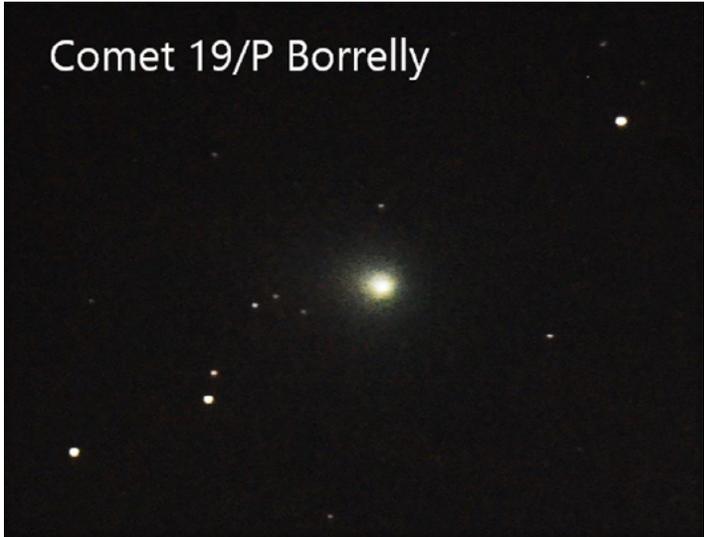
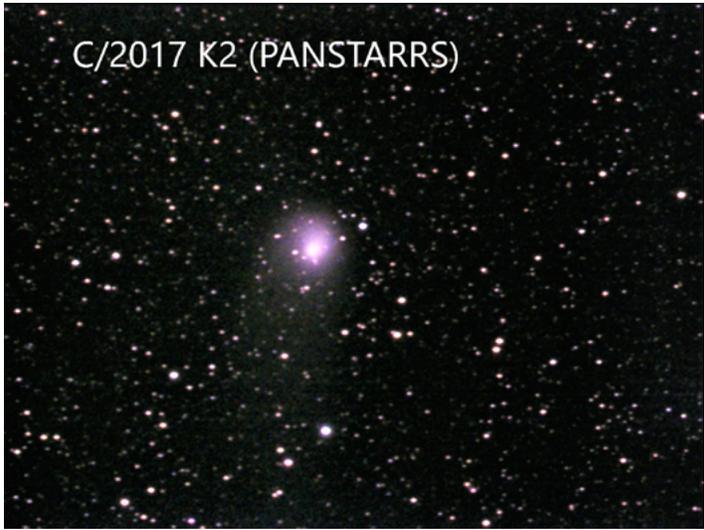
The weather was not great when a total eclipse of the moon occurred on the evening of May 15, 2022. For a while that evening, it looked like no eclipse would be visible, however the clouds parted temporarily and a dark but fully eclipsed moon became visible. The images below show the moon during totality and also as the Earth's shadow was leaving the moon.



The sun has awakened this year with many sunspots passing across its surface. The best spots will probably occur during the coming months of 2023. The accompanying image shows several groups of sunspots on the sun's surface, as observed on March 30, 2022.

This was a year that several comets appeared in our evening sky. None of the comets were particularly bright but they could be seen with optical

Lunar eclipses, sunspots, and comets amazed and impressed us in 2022.

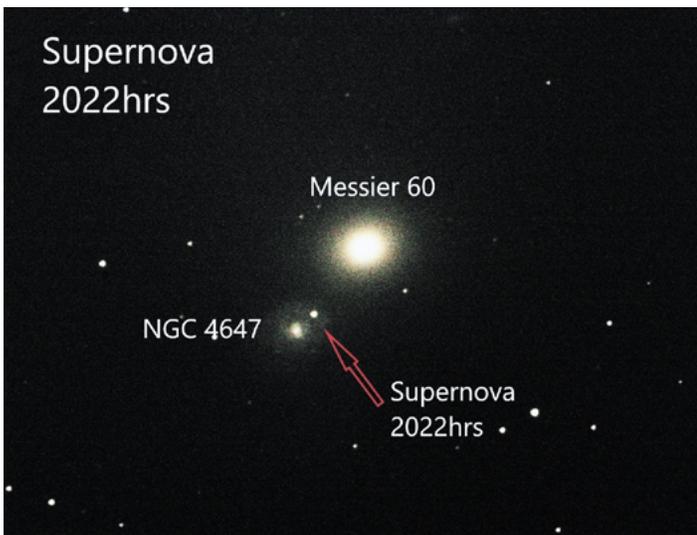


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2022 in Review, cont'd from p. 3

aid. It was interesting to watch them change as they moved across the sky. Comet C/2022 E3 (ZTF) should rise to naked-eye visibility in February 2023.

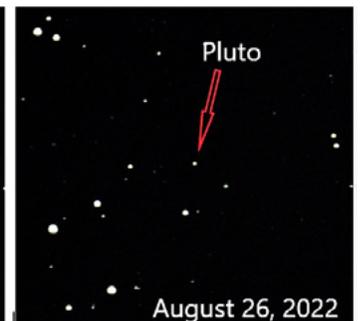
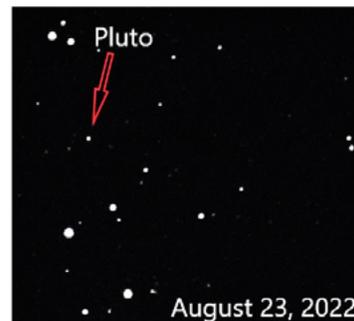
A supernova was discovered on April 16, 2022, by Japanese astronomer Kōichi Itagaki. It appeared in a galaxy, NGC 4767, that is located near Messier 60, as depicted in the image below.



Another total lunar eclipse occurred on the early morning of November 8, 2022. Because of the weather, it seemed likely it would not be visible, but I was able to get an image of the partial phase of the eclipse between the hours of 2:00 and 3:00 a.m.

In August, I took some images of the motion of the minor planet Pluto.

Jupiter and Saturn were prominent in the evening sky during the latter part of 2022. Each image was taken with my 12-inch Meade Scope that is located in



A supernova was discovered near Messier 60 in 2022.



cont'd on p. 5

2022 in Review, cont'd from p. 4



my home observatory.

A close conjunction of Jupiter and Venus occurred on the early morning of April 30, 2022, over the eastern mountains of Cache Valley. This photo was taken from the parking lot of Ridgeline High School.

Besides solar system events, I also did some deep-sky imaging. Included in this article are some of my

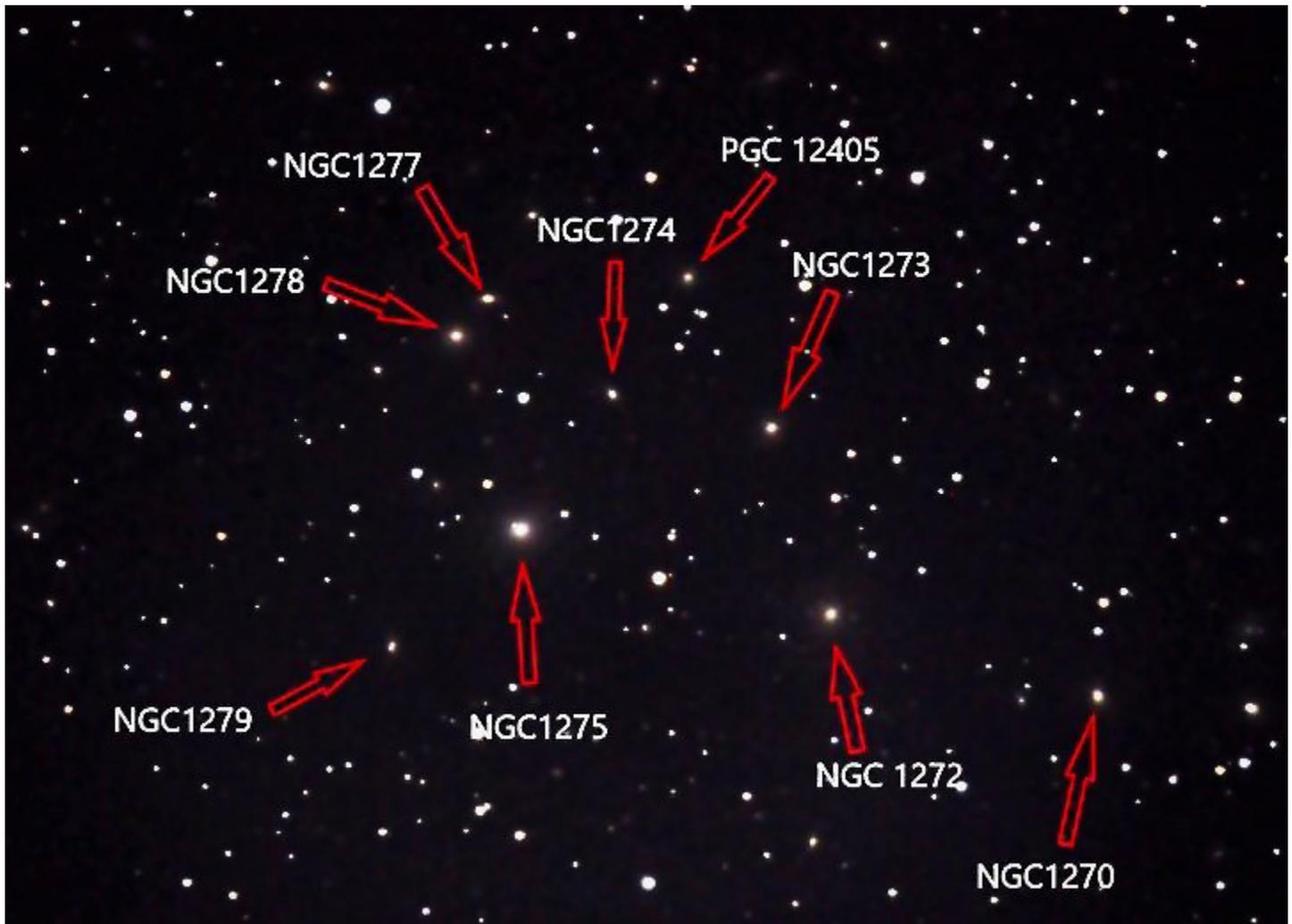


Spectacular views of planets and dwarf planets, including Venus, Jupiter, Saturn, and Pluto, were an astronomical highlight of 2022.



cont'd on p. 6

2022 in Review, cont'd from p. 4



favorite deep-sky images: Messier 13, 82, 42, 104, and 27.

An image of Abell 426 shows a group of faraway galaxies located in the constellation Perseus.

This is a fair sampling of my observations in the year 2022. No doubt, 2023 will have some exciting celestial events to observe, as well, including

**Deep-sky
objects thrilled us
in 2022.**

an annular solar eclipse that will occur around noon on October 14, 2023. This eclipse will be best visible in central Utah if the weather is clear. I am looking forward to what the heavens will offer us this coming year.

Images courtesy of the author.



Amazon Kindle

Free Astronomy 101 Textbook Now Available!

In an effort to democratize knowledge, the [OpenStax](#) project produces free digital and inexpensive hard-copy college-level textbooks written by professionals in many fields. You do not have to be a college student to request a copy. You can read more about the new astronomy textbook [here](#). And you can download or order a copy [here](#).

OPINION: THE ARTEMIS I MISSION HARDWARE IS OUTDATED TECHNOLOGY

by Bruce Horrocks

I know most of the articles printed in our newsletter are generally talking about some astronomical object or the tools we use for our little space viewing hobby. I hope that this little commentary of mine, will not be found too objective or cause any riffs between any of us. As a young boy growing up as a kid in the 1960s, there was nothing more fascinating to me then the Apollo and other NASA space missions. I remember so clearly watching these scenes on the television with my dad, who was equally obsessed with space and rockets as I was.

It started me down my astronomical life's journey. When I was nine years old, we purchased our first Sears telescope. We used it almost to its demise. We also built and launched who-knows-how-many Estes rocket motors and kits. It was just our summer thing to do, and still is. So, please know that I have loved the excitement about space, rockets, and astronomy. Now I must come to my comments about this new space project, called Artemis.

NASA has decided to return to the moon in an effort to work toward someday going to Mars. That is a great goal, and I am all for that. But how is NASA planning to make that next giant leap? Not by stepping forward but by going a bit backward. As the first Artemis rocket roared into space in November, it was not by means of some new, modern rocket technology. The rocket was propelled by two five-segment, solid-propellant rocket boosters (the space shuttle used four-segment boosters), four RS-25 liquid hydrogen motors, and one RL10 liquid fuel motor.

The solid booster motors have been used by NASA since the 1980s, when they were developed for the first launch of the space shuttle. While some of the segments may be new, many of them used on Artemis

I have been used on previous shuttle missions. In fact, the top segments on both boosters have each flown on over 10 shuttle missions.

Next, we have the four RS-25 liquid-fuel rocket motors. Now, if NASA was really planning on going to Mars, I would think we would be testing some new state-of-the-art rocket motor and propellant. Nope, the four main motors on Artemis 1 are all used motors from previous space shuttle missions. In fact, these four motors have been used in a total of 25 previous shuttle missions, with the oldest motor used in 1998 to take John Glenn back into space.

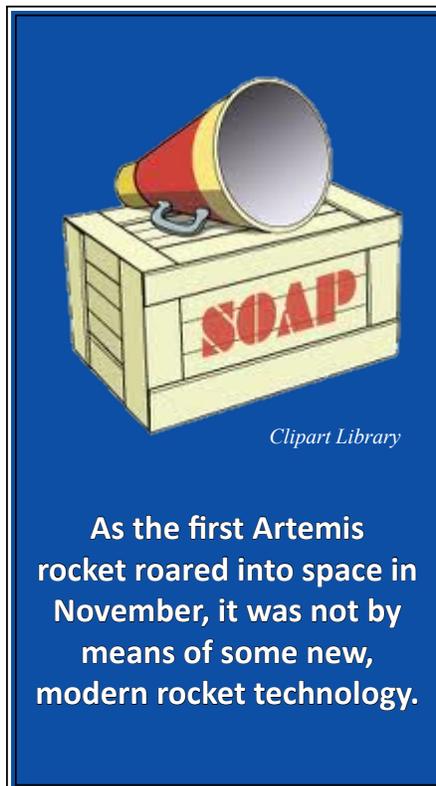
Finally, consider the second-stage motor, the RL10. Surely this must be some new prototype motor to be used on a future mission to Mars? Sadly no, this rocket motor was first developed in 1959, and while it has been improved for safety and reliability, it is pretty much the same motor NASA has used for the last 25 years or so.

Now, it seems like if NASA was really intent on going to Mars, we would need to develop a rocket that moves us much faster than this current generation of rocket motors is capable of. With our current rocket motor systems, the fastest you can get to Mars is around seven months. Can you imagine being stranded in a minivan for seven months? Now let's stick a couple of other people in this minivan with you, and hope you all get along for a year and two months in this small spacecraft, as you make your round trip (no onions for me, please!). So, I begin to reason that surely this mission is not a test for some mission to Mars; it

must be just about going to the moon.

After staying up waiting to watch the launch and having it postponed, I finally gave up and went to bed. I must say, I got pretty tired watching NASA try to put on a great public relations news story. How I miss

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**As the first Artemis
rocket roared into space in
November, it was not by
means of some new,
modern rocket technology.**

Artemis, cont'd from p. 8

good ol' Jules Bergman and his scientific presentation of an Apollo flight. The broadcast in November just seemed like an old MTV broadcast trying to create a partylike scene.

So, I missed the live launch; surely, the images coming from the moon later on would be outstanding. I waited for a few days and then NASA announced that “stunning, game changing, exciting” new images taken by the Orion spacecraft as it flew within 81 miles of the moon were to be released. And so, after all this time and money, NASA released these images. I saw them and thought, “This is it? This is the stunning new game-changing image of the moon?” I felt like the boy in the movie *A Christmas Story*, who finally decoded the secret message after drinking gallons of chocolate-flavored Ovaltine. Really, this is the picture we have been waiting for? Wait a minute.

I think I have a copy of a similar picture taken back in 1968 from the Apollo 8 mission. Yep, I have seen this before and I must admit that I am much more impressed with the first image of this.

Now as I said, I am all for the exploration of space, and if using rocket parts that are 25 years old is the way to do it, then great. But I have to ask myself is this really the best way to move forward? I think of the famous words uttered by Neil Armstrong when he

made that heroic first step down on the moon: “That’s one small step for man, one giant leap for mankind,” and I wonder why NASA is not taking steps forward to developing new propulsion systems. Why, with this new interest in space travel, are we still back in the 1980s, so to speak? Maybe some of you have good answers for these questions; I would love to hear them.



*Above: Image of the moon and Earth, taken by the Orion spacecraft, November 2022.
Below: Earthrise, famous image taken from the Apollo 8 spacecraft, December 1968.
Images courtesy of NASA.*



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USU Observatory Update

The December public night was cancelled due to copious snow and freezing weather. The observatory is currently closed and will reopen in the spring. For details about location, targets, weather, and parking, visit the USU Physics Department website [here](#).

RATING DARK SKIES: THE BORTLE SCALE

by Dell Vance

Many times, I have advised people to find dark-sky areas to observe astronomical objects. How do you rate dark skies? Many amateur astronomers use a system called the Bortle Scale. It was developed by John E. Bortle in 2001 and was published in *Sky & Telescope Magazine*. It bases the scale on practical observations. The Bortle Scale has nine classes. Class 1 is the best for astronomical observation, and class 9 is the worst.



Grand Teton NP / Milky Way - Jenny Lake North
10/2/2019 9:03 PM MDT
Canon T3i - ISO 1600 Exposure 30 sec

Class 1: Excellent Dark-Sky

Sites. All the stars are bright; in fact, it can be difficult to identify familiar constellations. M33, the Triangulum Galaxy, is visible to the naked eye, with direct vision. An example of such a location in Utah is Bryce Canyon.

Class 2: Typical Truly Dark-Sky Sites. The Milky Way is very structured to the unaided eye. Clouds are only visible as dark holes in a starry background.

Class 3: Rural Sky Sites. There are slight signs of light pollution along the horizon. M33 is easy to see using averted vision. The Milky Way still appears complex. Many areas up canyons and some valleys fit this class.

Class 4: Rural/Suburban Transition Sites. There are obvious light-pollution domes over population centers. The Milky Way is impressive but lacks obvious structure. M33 is difficult to see, even with averted vision. Clouds in the direction of the light pollution source are only slightly illuminated. Many areas are close to light-polluting cities.

Class 5: Suburban Sky Sites. The Milky Way is very weak or invisible near the horizon and washed out overhead. Clouds are brighter than the sky itself.

Class 6: Bright Suburban Sky Sites. The Milky Way is apparent only overhead. M33 is impossible to see unaided. M31, the Andromeda Galaxy, is marginally apparent with the unaided eye.

Class 7: Suburban/Urban Transition Sites. The entire sky is grayish white. The Milky Way is totally invisible. Clouds are very bright.

Class 8: City Sky Sites. The sky is whitish gray or orange. Some stars are not visible in familiar constellations. Most Messier objects require a telescope to see.

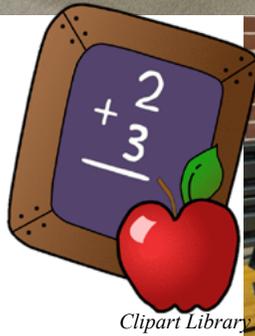
Class 9: Inner-City Sky Sites. The entire sky is brightly lit. Constellations are invisible. The Pleiades is the only Messier object that is visible.

A great project is to visit several areas on moonless nights and determine which Bortle Class those areas are. As you find good areas, ask your friends to go to those areas and observe the skies. You'll never forget the sites that are truly dark-sky sites. Many of the U.S. national and state parks have dark-sky programs for their area. You can read more about it [here](#).

You can find a copy of Bortle's original 2001 article archived on his [Wikipedia page](#).

Image courtesy of the author.

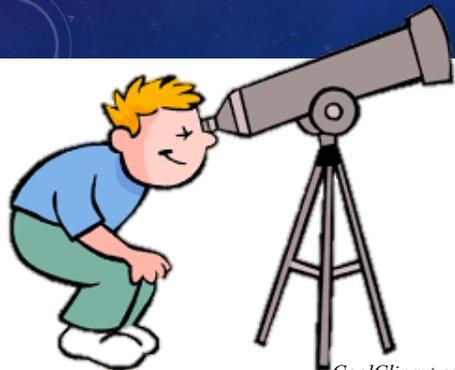
RECENT CLUB EVENTS



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COYOTE STAR STORIES FROM NATIVE NORTH AMERICA
 (Book cover from Taylor, 1993.)



CoolClipart.com

THE PLEIADES
 Aboriginal art retells the story. (Artwork from Wroth, 2015).

RECENT CLUB EVENTS

Page 10

Clockwise from top left: Dale Hooper presents “Understanding and Choosing Eyepieces at a club meeting on November 16, 2022.

- A closeup of eyepieces Dale demonstrated.
- Bruce Horrocks talks to kids about astronomy at Nibley Elementary STEM Night on October 26, 2022.
- Slides from Bonnie Schenk-Darrington’s presentation, “Astronomy Around the World,” at a club meeting on October 19, 2022.



Page 11

Holiday party on December 30, 2022.

Above, left to right: Paul Yamaguchi, Sharell Eames, Clark Salisbury, Sharon Salisbury, Bruce Horrocks.

Below, left to right: Aaron Hooper, Eldon Darrington, Dell Vance, Dale Hooper.

Photos courtesy of Bonnie Schenk-Darrington.



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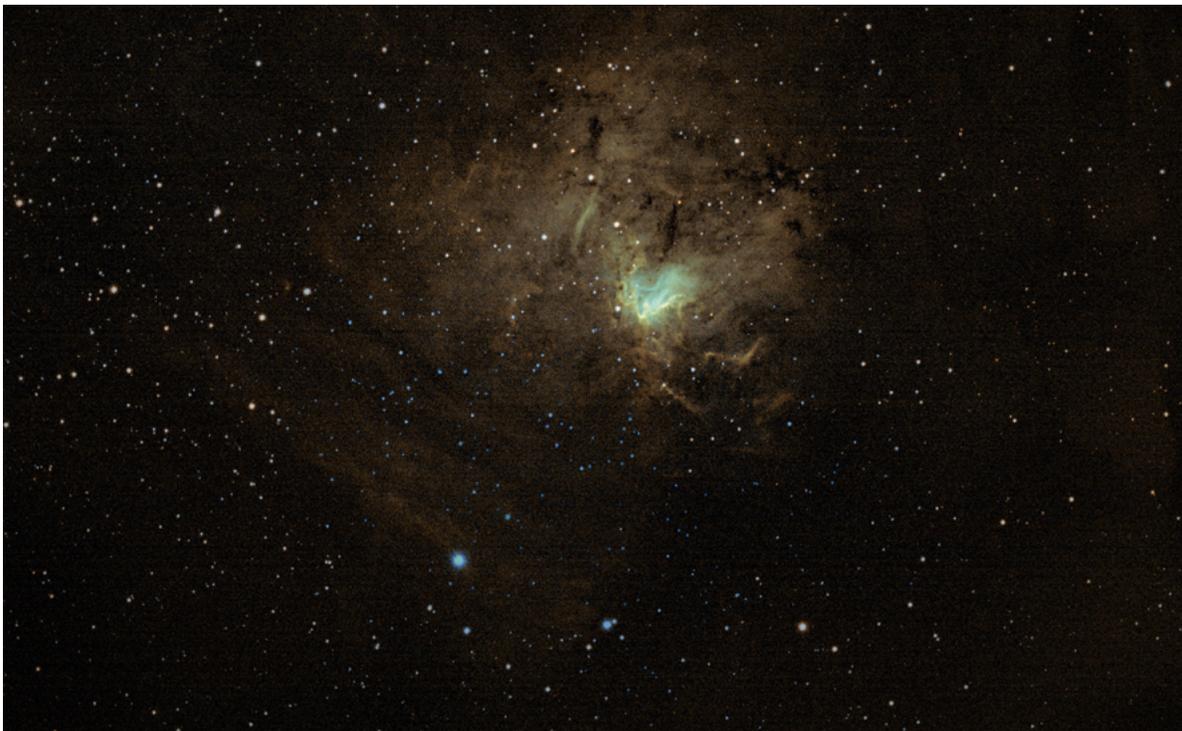
ASTROPHOTOGRAPHY GALLERY

Recent Images by Club Members



Flaming Star Nebula (above) and Fossil Footprint Nebula (below)
Bruce Horrocks

These two images were both taken using narrowband color filters and are the SHO palette combination.
Bruce used a 150mm refractor and a ZWO 294MM camera.





Clipart.World and Cliparts Zone

Need a quick astronomy fix?
Tune in to CVAS's astronomy show on Utah Public Radio!

UTAH SKIES

Every Tuesday at 4:48 p.m.
91.5 KUSU-FM (west Cache Valley)
89.5 KUSR (east Cache Valley)

You can also download the UPR app or listen to the livestream [here](#).
Check out our past radio shows [here](#).



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

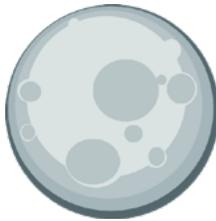
CVAS members are astronomy superheroes who share their love of astronomy with the galaxy! (Or, at least with the people of Earth!)

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

UPCOMING ASTRONOMY EVENTS AND ANNIVERSARIES

by Bonnie Schenk-Darrington

- January 1: Guiseppe Piazzi's discovery of the first asteroid (Ceres) in 1801.
- January 2: Amy Mainzer born in 1974. Besides being deputy project scientist on the WISE mission and principal investigator on the NEOWISE mission, she was the science advisor for the 2021 film *Don't Look Up*.
- January 3: Quadrantids meteor shower peaks.
- January 4: Earth at perihelion (0.983 AU from sun).
- January 6: Moon at aphelion and near apogee, resulting in the [micromoon](#).
- January 12: End of Mars retrograde motion.
- January 18: Pluto at solar conjunction. It will be at its most distant from Earth (35.68 AU).
- January 22: Venus and Saturn at conjunction.
- January 24: Mercury at highest altitude (13 degrees) at sunrise.



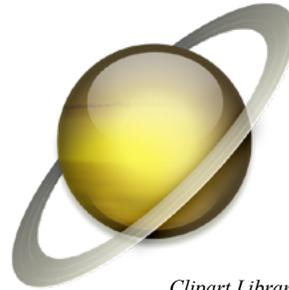
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- January 28: Space Shuttle *Challenger* accident in 1986. Seven astronauts were killed, including Christa McAuliffe, a



Wikimedia Commons

New Hampshire schoolteacher. Because McAuliffe was the first schoolteacher-astronaut, schoolteachers across the nation watched the launch with their pupils at school, unwittingly exposing the children to the tragedy; many 1980s children have never forgotten witnessing this unforgettable and shocking event.



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- January 30: Mars and the moon at conjunction.

The CVAS Executive
Committee Wishes You
Happy Holidays and Clear
Skies in 2023!



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A LITTLE ASTRONOMY
HUMOR



Memebase