

PRESIDENT'S CORNER

by Bruce Horrocks

Happy New Year to everyone! I hope you are all doing well and had an enjoyable Christmas holiday. My grandmother used to always tell me that she felt the days pass like years, and the years pass like days. I am starting to feel that same way. I remember all the excitement and apprehension with computers when we had the Y2K (Year 2000) situation and now to realize that was 22 years ago, and the end of life as we know it still has not come. Many people thought that the Mayan calendar predicted the end of the Earth on December 12, 2012, and that was 10 years ago. Just for the fun of it you can look up a list of the predictions for the end of the world and there is a pretty darn good list of dates that have come and gone. So, for now we can just enjoy another year on Earth as there are no end-of-world predictions for this year.

We want to welcome any new club members that have joined our club recently. We hope to see you at our club meetings this year and get to know you better. Our next club meeting will be held on January 19 at 7:00 p.m. in the Nibley City office building, located at 455 W. 3200 S. For our first club meeting of the year, we generally like to have an open forum discussion where members can share information about any new or even old astronomical equipment they have received, or any other astronomical related topic like software. If you would like share something, please let one of the executive committee members know so we can plan on giving you some time.



Shannon Horrocks

UPCOMING EVENTS

Meeting

Date: Wednesday, January 19, 2022

Time: 7:00 p.m.

Place: Nibley City Offices

455 West 3200 South, Nibley, UT 84321

Topic: Open forum discussion where members can share information about astronomical equipment or any other astronomical 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

Cache County School District has reinstated STEM events for January 2022. This is a great chance for us to share our love of astronomy! We only need two to three people for each event. Contact Bruce to volunteer. Because of the pandemic, a face mask might be required, and we might have last-minute cancellations. During the winter, we stay indoors, so you won't have to worry about getting cold! Upcoming dates:

- January 13: North Park Elementary
- January 20: Birch Creek Elementary
- January 27: Wellsville Elementary

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

Keep up to date by visiting our website:



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

With this new year, the Cache County School District is starting up the STEM activities again. Pending any possible cancelation here is the list of these for January:

North Park Elementary School: January 13
Birch Creek Elementary School: January 20
Wellsville Elementary School: January 27

These all go from 6:00 PM to 8:00 p.m. with set up time starting at 5:30 or so. If you are able to help with one of these events, please let us know. We hope you have an enjoyable time talking about the stars with a young person. I am sure you will enjoy this experience. Again, these are subject to last-minute changes due to the COVID situation, so we will keep you informed via email if we hear anything different.

I would like to thank all of those that were able to attend our Christmas social last month. It was enjoyable to visit with you all and we hope that more of

you will be able to join us at future upcoming social events.

With the winter solstice last month, I thought, "What else can I do but go look at the sun that day?" The sky was clear that day, so I was hoping to get some great images of the sun. When I finally got my telescope all set up and going it wasn't hardly pointing up that much at all. I checked, and for that day, the highest the sun was going to get up in the sky was only 25 degrees. As I tried to look at the sun through so much atmosphere, I soon realized that the winter solstice is not really the best day to look at the sun. I could see quite a few sunspots but when I tried to take a picture of them, they did not look so good. I looked ahead to see where the sun would be during the summer solstice and on that day, it will rise to an altitude of close to 72 degrees. I'll have to try it again on that day this summer.

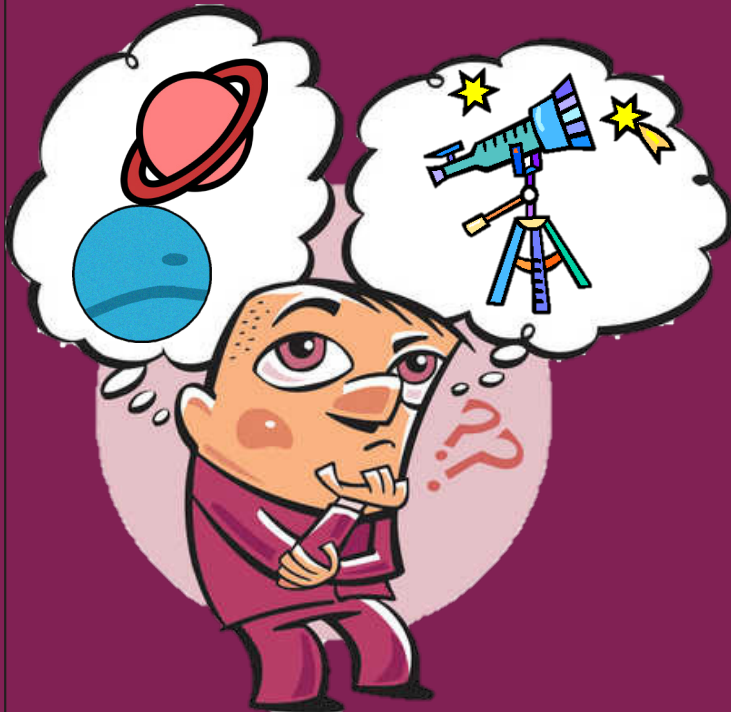
As we begin this new year as the CVAS club, we would like to maybe do a bit of house cleaning so to speak. We have many names on our club roster which puts you on our email list. We will be sending you out a brief form to update any of your information and confirm that you are still around and wanting to belong in the club. There are many club members that we have not seen for some time and just want to insure that are club roster is current and up to date. Please watch for this in your email and respond to this email as this will help us update our list of club members.

I would also like to encourage you to join our Facebook group. This is a great way to post pictures, share news articles, and any other information that you might find interesting. If you have any friends or family that like astronomy you can invite them to join as well. I would also like to invite you to submit any ideas or topics you would like to see presented in our club meetings in this new year. There are a variety of special interests in astronomy, and we don't want to leave anyone out. So, if you have a topic of interest let us know, we would love to hear from you. Thanks again for all your help and here is to a bright new year for all of us.

Clear Skies,
 Bruce Horrocks

Challenge from Our President

Tell us what's on your mind! You can tell us at our January 19 meeting, on our Facebook page, or in our newsletter! Please share your astronomy thoughts, questions, and projects!



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THE BIG DIPPER

by Dell Vance

The Big Dipper is an asterism in the constellation Ursa Major, or the Big Bear. It will be visible in the north after 10:00 p.m. tonight. The Big Dipper is one of the most recognizable objects in the northern hemisphere. It is made up of seven very bright stars. Starting at the top of the bowl, working around the bowl, and then down the handle, we have:

- Dubhe is a magnitude 2 double star. Dubhe is a yellow normal giant star (spectral class G9 III) with a white dwarf star companion (spectral class A7.5 V).
- Merak is a magnitude 2.3. It is a white subgiant star (spectral class A1 IV). Dubhe and Merak are the pointer stars and point towards Polaris, or the North Star.
- Phecda or Phad is magnitude 2.4 and may be a binary star system. Phecda is a white main sequence star (spectral class A0 V). The binary is believed to be an orange main sequence star (spectral class K2 V). (For comparison, our sun is a yellow main sequence star [spectral class G2 V].)
- Megrez is magnitude 3.3 and is the faintest of the seven stars. It is a white main sequence star (spectral class A2 IV).
- Alioth is a magnitude 1.75 and is brightest of the seven stars. It is a rotating variable star and may have multiple companion stars. It is a white star and its luminosity is between a normal giant and a subgiant star (spectral class A1 III–IV).
- Mizar is magnitude 2.2. It is a double star with its own companion star, but it is also a visual double star with Alcor. Mizar is a white main sequence star (spectral class A1 V). Some Middle East Cultures used the Mizar–Alcor visual double as an eye test. It takes good vision to see both stars visually.
- Alkaid is magnitude 1.85. It is a blue–white main



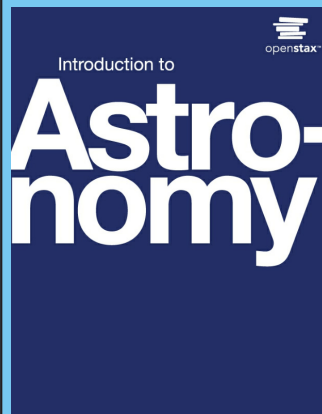
Dell Vance

sequence star (spectral class B3 V).

Just to the right of Alkaid are two merging galaxies. This is the Whirlpool Galaxy or M51. It has a magnitude of 8.4, so a telescope is needed to see it. It has over a billion stars and is about 23,160,000 light-years away.

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](#).

Amazon Kindle

A LOOK BACK ON 2021

by Blaine Dickey

As the New Year begins, it is good to reflect back on some of the important celestial events of the past year. 2021 was a good time to be involved in astronomy, and some really enjoyable celestial sights were visible if you took the time to observe them.

High on my list was comet C/2021 A1 (Leonard). When I first heard about the comet, I learned that it would become bright enough to be visible in the morning sky in early December. I rolled off the roof of my observatory on December 3 around 5:00 a.m., and then put in the coordinates of the comet's position into my planetarium program and slewed my telescope to it. The image of the comet appeared on the right side of my computer screen. I then took a series of images from which I later created a movie of the comet sliding across a small arc of sky. On a few mornings I took out my binoculars and searched for the comet and was able to find it though it was very faint. As the month progressed, the comet brightened and was easier to see.

This fall we were treated to a beautiful array of planets lined up in the southwestern sky. Jupiter was



the high in the south, followed by yellowish Saturn to its right, and finally, brilliant Venus in the western sky. Uranus and Neptune, along with the moon, also graced our sky during the fall and early winter months.

We shouldn't forget the near total lunar eclipse that took place on the late night and early morning of November 18 and 19 respectively. The clouds thickened as the Earth's shadow approached the moon and it looked like it would be a no-go, but as I waited patiently, the moon would pop through the clouds and I got several pictures of the eclipse as it progressed.



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Free Online Course: Introduction to Amateur Astronomy

Sponsored by the Kalamazoo (Michigan) Astronomical Society. Course covers topics such as astronomy basics, use of binoculars and telescopes, and astrophotography, in five two-hour online classes. Classes start January 15! You can find more information at <https://www.kasonline.org/amastro.html>.

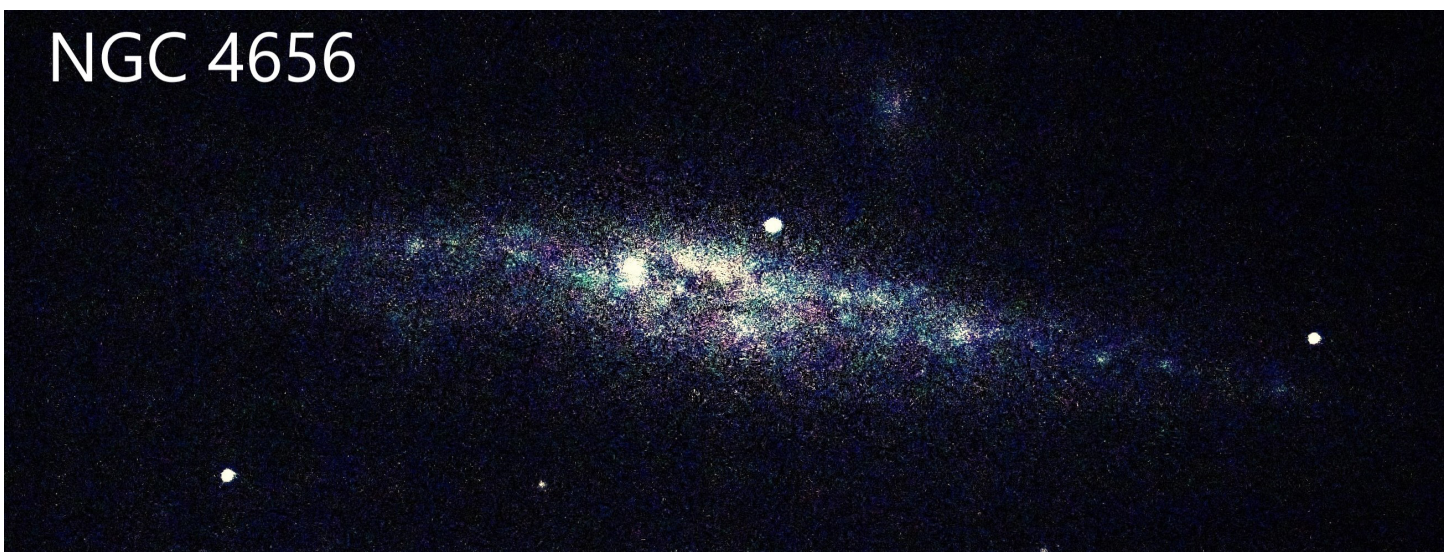
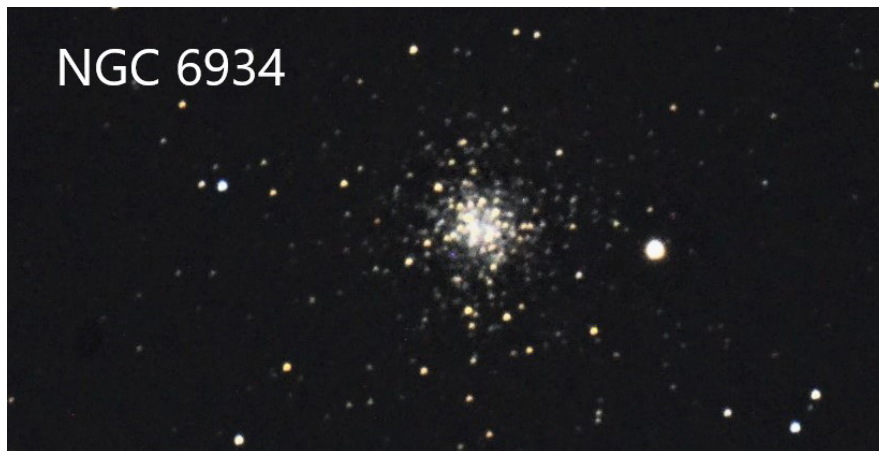
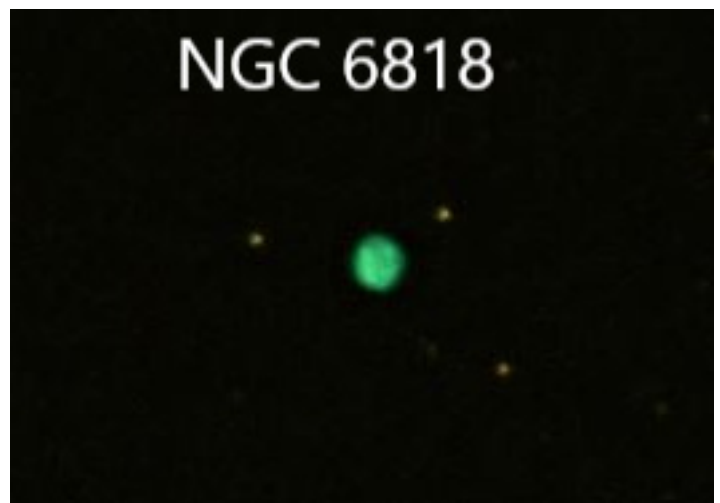
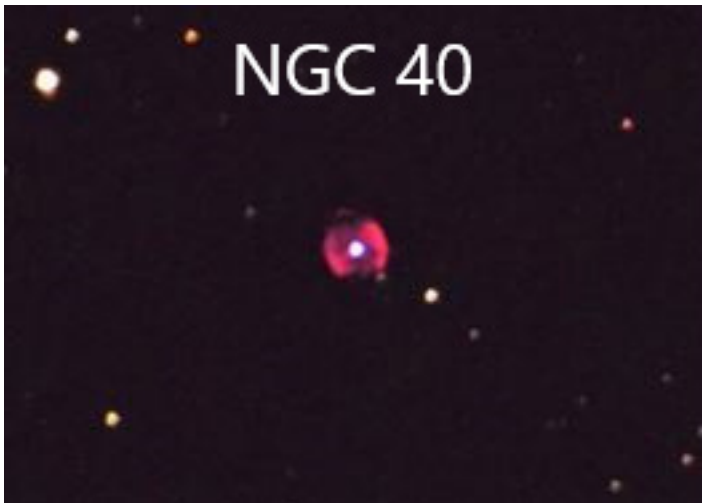
Look Back, cont'd from p. 4

Starting in the summer, I made a list of celestial objects and imaged as many as time permitted. Below are several of the images that I took. NGC 40 and NGC 6818 are two beautiful planetary nebulae with beautiful contrasting colors of red and green. NGC 6934 is a condensed globular cluster in the constellation Delphinus.

Finally I thought I would include a galaxy, NGC4656, that is 46 million light years away in the constellation Canes Venatici.

That is a small sampling of some of last year's celestial events and treasures. No doubt the year 2022 will also have some surprises and important celestial events that we can all enjoy.

All images courtesy of Blaine Dickey.



A HUMBLE BEGINNING TO A LIFELONG PURSUIT

My Astronomy Origin Story

by Dale Nartker

When I was growing up and in grade school, I took a serious interest in science. This was during the 1960s—during the Apollo era. I didn't really understand the things I read or saw, but they were like magic to me. It was rockets and astronauts that got my attention as our country was gearing up for the challenge of going to the moon. Representatives from the government would come to town and give presentations to the entire school and inform everyone about the activities, which were taking place to get us to the moon. They called the push to get there, "go fever," and as time went on, everybody felt it.

I grew up in Sacramento, California, where Aerojet General Rocket Company had built a rocket motor factory and would be building some of the major components to get America to the moon and back. Everyone in our community either worked for or knew someone who had a job at Aerojet. Even as a child, I sensed something big was happening. I could go over to a friend's house, and his dad, who was a chemist at Aerojet, would come home all dressed up. I didn't know what he did, but I knew it was important.

In the fall of 1968, I was 10 years of age. My mom was taking some courses at American River Junior College for credit. One of the classes she was taking

was an astronomy class from a teacher I would later study engineering under. During the course of the semester, he had scheduled a star party in the middle of the night (4:00 a.m., to be exact) to watch an occultation of the moon and Jupiter; an occultation is where the moon passes in front of a planet or star.

It would be this view of Jupiter and its moons coming out from behind our moon that would impress me the most and change my life forever.

Mom tried to get my two brothers to go see the wonders of the moon moving in front of a planet but got no takers. She then tried to bribe me with breakfast after the whole ordeal, and I thought about it some. After all, food talked to me, like most kids, so I consented. I mean, getting up at the unheard-of hour of 4:00 a.m.—and it wasn't even one of my days to help my brother deliver his newspapers on his paper route—what was I thinking? However, I look back on this time period with great fondness, because

for me as a youth, it was a season of great discovery. And while the country and the world were tearing themselves apart in 1968, internally here at home and across the sea in a war we were involved with, I was oblivious to these conditions and life at this time period, and 1968 was a wonderful time in my life.

In later years, I had to use some software to recreate the day of this star party as I had forgotten the date,

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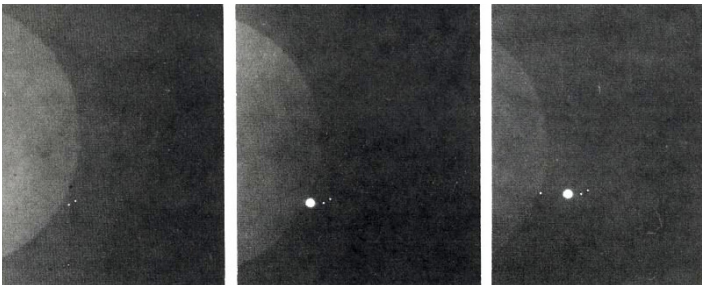
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Humble Beginning, cont'd from p. 6

but from a computer program, I worked the date back to Saturday morning, October, 19, 1968. I believe we took off from the house at a few minutes past 4:30 a.m.

The main star party was already under way as we arrived at the grade school where the telescopes were set up. There were probably between 20 and 30 people that showed up, which is a pretty good crowd for 5:00 in the morning. There were three eight-inch telescopes set up to view the events, and what I saw through the eyepiece really inspired me. I had never looked through a telescope of this size before, so, looking through a telescope of this magnitude was impressive. My first views of the moons of Jupiter coming out from behind our moon began some very interesting thought processes in my head about the idea of how does it all work? I had started the morning thinking that the time would just drag on and on, and all of a sudden that changed instantly and it was as if I was struck by a bolt of lightning! It was that aha moment you always hope for at a star party in today's world. My interests in the morning changed suddenly, and the thrill had my heart beating in such a way that I wondered if I would have enough time to see all of the objects we were going to look at. For this is what I saw through the telescope:



Dale Nartker

I was witness to one of the grandest celestial events: the passing of one heavenly body in front of another. The geometry and timing of these types of events are so rare, and here I was at a mere 10 years old, seeing my first occultation of the moon passing in front of Jupiter. Later I would be privileged to see Saturn in all its glory and splendor, and even though Saturn is still my favorite planet to observe, it would be this view of Jupiter and its moons coming out from behind our moon that would impress me the most and change my life forever. We also observed the Pleiades (seven

sister stars), a configuration of stars that resembles a small dipper in the constellation Taurus, but I kept going back to that view of Jupiter to help make a lasting impression upon my mind in case I never saw it again. I would even try and cut in line to get back to see this spectacle. I was deeply enriched by this experience and longed to do it again.

It was during this time period that the first manned Apollo mission, Apollo 7, was launched (October 11–21, 1968), and I tried to keep up with the events of space travel, as I loved everything about the adventures of space.

It was also decided this year that we would go to my mom's cousin's home to celebrate Christmas. We were excited to go and wondered how Santa would ever find us, as we would be traveling over to south Sacramento very early in the morning. That was a grave concern for a child of 10, who didn't understand the mechanics of it all, but we managed to keep panic out of the trip. We kids were assured that Santa kept track of everywhere we went and would indeed find us, no matter where we traveled.

The reason I want to portray this Christmas in such detail is it had a great impact on the rest of my life. We traveled over early in the morning; the trip took about an hour, and of course, we kids couldn't sleep, as the excitement was very palpable. We awoke the next morning to a dreary, foggy morning—again, something that would significantly add to the day. Like all children do, I was one to be counting my presents; one of them was a handheld pinball game. But I also watched enviously as my brothers kept opening present after present. Furthermore, my dad had to rub salt into the wound even more by requesting that I go out to the car bring in another present for my brother from the trunk. I was irritated to know that I was getting something else for a sibling. I remember being upset the whole way out to the car and retrieving this large box measuring roughly 30 inches x 14 inches x 8 inches. Coming into the house, I walked by the coffee table and sort of tossed it onto the ground. To complicate the situation even further, my dad asked me to open it up. I said, "I'm not opening it up for him." As he laughed himself silly he said, "No, it's for you." Now the tide had turned, and I went from sheer misery to a moment of pure elation. I had no idea of what to think, but proceeded to open the box without even slowing

cont'd on p. 7

ASTROPHOTOGRAPHY GALLERY

Recent Images by Club Members



Rosette Nebula

This first image of the Rosette Nebula is actually four pictures seamed together. Each of the four pictures took 90 minutes to take using narrowband filters to produce this in the Hubble Palette color scheme.

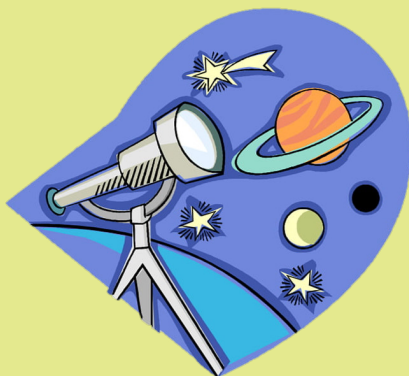
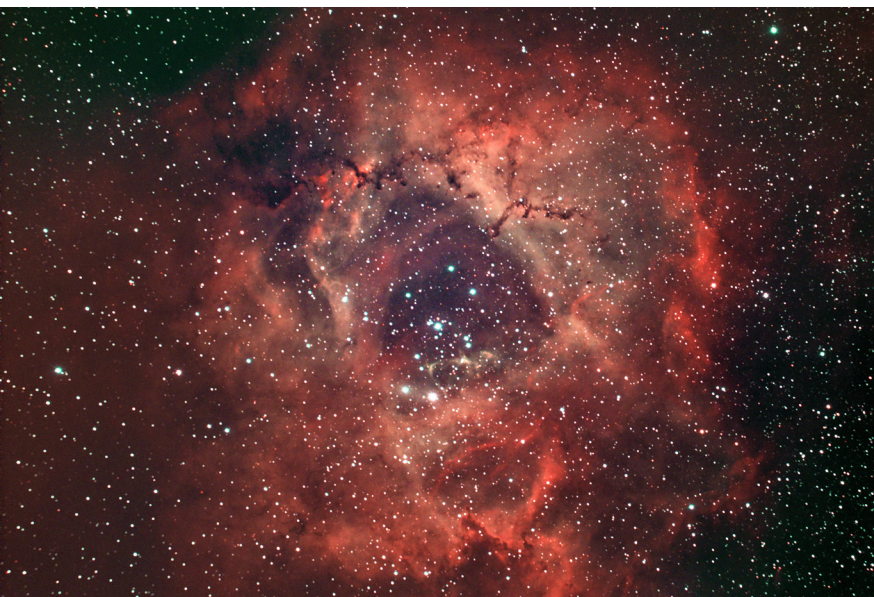
The second image is a true-color image of the Rosette Nebula for comparison.

About the Hubble Palette

If you take a red, a green, and a blue image of the same thing, you can add these three colors together to get a full-color image. This is what most cameras do every time you take a picture. By adding these colors in the proper intensity, you get all the other colors. This is called an RGB image (red, green, blue). Since most of the stuff in space is more of a reddish color, NASA decided to assign some of the red colors to more contrasting colors. Some of the more common gases in space are hydrogen, oxygen, and sulfur. Both hydrogen and sulfur are in the red color wavelengths, and oxygen is in the blue wavelength. The Hubble Palette causes the sulfur (reddish wavelength) to appear red, hydrogen (very red wavelength) to appear green, and oxygen (blue wavelength) to appear blue. This is now called a SHO image (sulfur, hydrogen, oxygen), instead of RGB. It is a bit more complicated than this; this is a very basic explanation.

Since there is a lot of hydrogen, most images are really reddish in color. Using the Hubble Palette brings out more contrast to the image and lets you see a few more details.

Images taken in November 2021 by Bruce Horrocks. Explanation also by Bruce Horrocks.



**Want to share
your images next
month?**

Please send them to
Bonnie at [bschenk-
darr@gmail.com](mailto:bschenk-darr@gmail.com).

Clipart Library

Humble Beginning, cont'd from p. 6

down. Inside was a two-inch Sears telescope with a wooden tripod, sun filter, three different eyepieces, and another lens for doubling the power of the other lenses. To me it was the perfect present to finish Christmas with. Back then, Sears sold a metal-and-glass telescope that was well put together. I later talked to Mom, and she said it was her idea to get the telescope.

Nothing else in life mattered at this time, as I was in a whole new world to explore. It took a while to remember that it was foggy outside, and then the real world set in with a good deal of disappointment. But as luck would have it, the sun started to shine through the fog and the exhilaration set in once again. We crudely set up the tripod and put in the sun filter and were amazed to see sunspots on the surface of the sun. Not having seen these distinctive spots before, my curiosity was heightened: What else could there be in the universe, and what does it all mean? I was definitely hooked on the subject. Even though the entire universe was now at my fingertips, the possibilities of what I could discover was overwhelming.

The day was like a dream, and I could have died then, and life would have been lived to its fullest. Later that night, after the sun had set, we brought the telescope out onto the front lawn for another look at the sky, as the evening had stayed crystal clear. Looking up into the southeastern sky, my brother saw a star and said, "Hey, look, there's a double star." The object did look a little different. What that difference was, I don't remember, but I do know he had no idea what a double star was. We aimed the telescope and got the object into view with one of the eyepieces, and it was Saturn! What fortune had driven us that day? We were very excited to watch Saturn until we shivered with cold and headed indoors to get warmed up. What a day! It had made a lifelong impression on me that I would never forget.

As time went by, I remember getting that small telescope out many times, trying to understand how everything up in the heavens worked. Where to find planets? What time of the year would I find them? What else would I find out there? And what did it all mean? I would contort and bend the legs of the telescope and lie on the ground to see what was in the sky. If anyone were to walk by me, out in the backyard, and see this spectacle, it would look as though a giant three-legged spider were looming over me, getting

ready to devour me. During my teenage years, instead of going out with the popular crowd to parties, I would be out in the backyard with my telescope, finding new treasures in the sky. Instead of being yelled at by my mom for coming home too late from an event, I would hear her, as though a warning shot had been fired across the bow of a ship, that I did, indeed have school the next morning and to get to bed. As time went on, I would pass by fuzzy things in the sky, of which I had no understanding, and gradually started to form ideas of a grander sort. I believe this is what drove me to pursue the knowledge of what makes up the cosmos.

The love of the heavens pervades my interests to this day. A love of astronomy was planted by a very simple star party; I had received an introduction to a universe filled with intrigue and wonder. And though I have studied the cosmos not only through the university and on my own, taught outreach programs to dozens, and entertained hundreds at star parties, and even ground mirrors and built my own instruments, it will always come down to that one pure moment in time when a 10-year-old boy saw his first occultation. Then comes the very important Jedi Knight question, "When does one really feel like they're a full-blown astronomer and know all there is to know?" The answer: Always pursuing but never achieved!



Pngset.com

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!

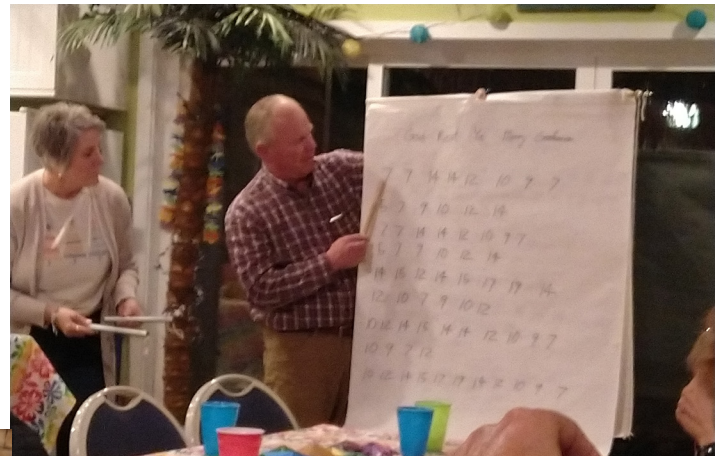
CHRISTMAS SOCIAL

December 15, 2021



Shannon Horrocks

Club members and their families enjoyed a baked potato bar and chatted. We then played a fun game where we tried to play Christmas songs on chimes while Bruce led us. We also enjoyed a tour of his observatory! A great time was had by all.



Bonnie Schenk-Darrington



Happy New
Year 2022!

UPCOMING ASTRONOMY EVENTS AND ANNIVERSARIES

- Jan. 1: Moon at perigee to Earth. Because it's close to the time of the new moon, we won't be able to enjoy the full effect; the moon will just look like a thin crescent.
- Jan. 1: Guiseppe Piazzi's discovery of the first asteroid (Ceres) in 1801.
- Jan. 2: Comet Leonard at perihelion; however, it will not rise more than 12 degrees above the horizon and will be unobservable.
- Jan. 3: Quadrantids meteor shower peaks.
- Jan. 3: Leonardo da Vinci unsuccessfully tested a flying machine in 1496.
- Jan. 4: Earth at perihelion (0.983 AU from sun).
- Jan. 4: Charles Messier's discovery of M80 globular cluster in Scorpio in 1781.
- Jan. 4: Spirit rover landed on Mars in 2004, ahead of its twin, Opportunity.
- Jan. 6: Leon Foucault's pendulum experiment demonstrates Earth's rotation in 1851.
- Jan. 10: Mercury reaches highest altitude in evening sky. It will be easiest to observe Mercury before this date, but more difficult afterward, when it will appear as only a thin crescent.
- Jan. 14: Moon at apogee to Earth. The moon will be nearly full, but will appear smaller than usual.
- Jan. 14: Huygens probe landed on Saturn's moon Titan in 2005; it was the first successful landing in the outer solar system.
- Jan. 17: Pierre Mechain's discovery of Comet 2P/Encke in 1786.
- Jan. 18: Uranus retrograde motion ends.
- Jan. 23: Voyager II discovers clouds and winds in Uranus's atmosphere in 1986.
- Jan. 25: Opportunity rover landed on Mars in 2004, following the successful landing of its twin, Spirit.
- Jan. 25: Joseph-Louis Lagrange was born in 1736. An Italian-French mathematician and astronomer, he made significant contributions to our understanding of classical and celestial mechanics.
- Jan. 26: Hale Telescope at Palomar Observatory, the most advanced telescope of its time, saw its first light in 1949.
- Jan. 28: Space Shuttle Challenger accident in 1986. Seven astronauts were killed, including

Christa McAuliffe, a New Hampshire school-teacher. Because McAuliffe was the first school-teacher-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.

- Jan. 28: Johannes Hevelius was born in 1611. He charted the lunar surface, discovered four comets, and described ten new constellations, among other accomplishments.
- Jan. 31: Yuji Hyakutake discovered Comet C/1996 B2 (sometimes known as Comet Hyakutake) in 1996, using binoculars.
- Jan. 31: Apollo 14 launch (the third manned moon landing) in 1971.

You can find more details about many of these astronomical events at <https://in-the-sky.org/newscal.php>.

A LITTLE STEM HUMOR



Nick Seaver
@npseaver

forget STEM, now I'm all about
STEAMED HAMS: science, technology,
engineering, art, math, humanities,
anthropology, music, and such



Memebase