To all CVA Members-Spring Star-B-Que on May 4 at Eastman Lake

THE OBSERVER

The Newsletter of Central Valley Astronomers of Fresno March-April 2024

The Solar Eclipse of 2024

Although inclement weather(and horrendous traffic jams) kept many people from seeing it, millions of others in Mexico, the United States, and Canada were able to view the total solar eclipse of April 8, 2024. Officials throughout the three-country region reported viewing turnout unlike anything they had ever seen before. Most people were not disappointed; exceptional views of the totality wowed spectators during the last solar eclipse to hit mainland North America until 2045. Many people were seen wearing T-shorts emblazoned "Two in a Lifetime," references to both the 2017 and 2024 eclipses, especially those in southeast Missouri and southern Illinois, where the totality lines of both eclipses crossed.

Above-the Diamond Ring and totality in Perryville, Missouri

Astronomy Quote of the Month-

"You know why the stars are so bright, Joey? The rain last night washed them all!"

From *Dennis the Menace*

In this Issue-

Central Valley Astronomers

Web address www.cvafresno.org

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Director-Steve Brittan

Larry Parmeter is the editor of *The Observer*

He can be contacted at 559-288-3456 or at lanpar362@gmail.com

CVA Events in May and June

May 3-Monthly meeting at Round Table Pizza, 7pm

May 4-Monthly star party; Spring Star-B-Que at Eastman Lake

May 11-Private star party at Solitary Cellars Winery

May 17-Public star party at Riverpark

June 1-Monthly star party at Eastman Lake

June 7-9-weekend star party at Courtright Reservoir

June 7-Monthly meeting at Round Table Pizza, 7pm

June 8-Star party at Eastman Lake

June 14-Public star party at Riverpark

June 27-Private starwatch at for Fresno Historical Society, Kearney Park

June 29-Public starwatch at Millerton Lake

Number of exoplanets found as of April 2024-

Confirmed-5,616

How many more are out there?

Tens of Thousands? Hundreds of Thousands?

Millions?

(From NASA's Exoplanet Exploration Website)

From the Observer Archives

"It was magical…"

-A waiter at a St. Louis restaurant , commenting on the August 2017 total solar eclipse

From the Fall 2017 *Observer*

The same and more could be said about the April 8, 2024 eclipse

The President's Message

The sunny months are coming, and it will be a great opportunity to gather again at our monthly star parties. Once again, the weather prevented us from gathering to attempt a Messier Marathon. After several months of bad weather, cloudy and/or rainy, that prevented many of us from enjoying the Orion nebula, the rosette nebula, and all the open clusters in Canis Major, it will be possible to get back on track by putting our telescopes outside. Leo is already high in the sky, its galaxies will be the first targets before it goes into the light dome of Fresno and the surrounding area. Vega, the Summer Star, the zero-magnitude equal of the Spring Star Arcturus high in the east, is on its way up low in the northeast after nightfall. Early in the evening, enjoying all the galaxies in Virgo and Coma Berenices will be possible. While waiting for the Sombrero Galaxy (M104) in Virgo, close to Corvus, let's not forget the highlight of Coma Berenices with NGC 4565 (the Needle Galaxy or Caldwell 38). There are many targets to visit and revisit in good company in the upcoming months, at Eastman Lake, Big Stump, Courtright Reservoir, and Big Meadow for the most adventurous CVA members.

In July 1969, 600 million people on all the continents followed the first step of a man on the Moon. They experienced the event with their family or friends, around a radio, sometimes a TV, at an age where color television was not widespread, and the internet did not exist. To celebrate the 50th anniversary, On the Moon Again brought together 1350 events in 77 countries in 2019. Every year, this event will be repeated to share this enthusiasm for the Moon again in a global, universal movement, transcending all borders. On the Moon Again will occur on Friday, June 14th, Saturday, June 15th, and Sunday, June 16th, 2024. For a large section of the Earth's population, this period is Summer and the weather may be expected to be good. These three dates were chosen because the phase of the moon is close to the first quarter, thus allowing quality observation of several hours just after sunset. On June 14th, 2024, CVA will have its monthly outreach event at River Park where it will be possible to see the Moon, with many people seeing the Moon through a telescope for the first time, hence fostering interest in astronomy for many young kids in our local communities.

Like every Summer, many events will occur, often simultaneously: outreach events listed by Brian Bellis, our outreach coordinator, River Park events, Millerton Lake events, possible Courtright Reservoir weekends, and camping at Cedar Flat over in the White Mountains on July 5-9, organized by our former president Ryan Ledak.

In addition to the website, CVA has a Facebook page where members regularly post messages about improvised meetings when the weather is promising for observations. All the members are encouraged to use the Facebook page, or other means of communication (email, text messages) to gather, carpool, and share their views at the eyepiece, experiences, and progress in the hobby.

Clear skies always-

Hubert Cocetti

Astronomy Short

Starting in the 1400s, it became increasingly common for well-known men to make themselves or others seem even more important by "Latinizing" their names. For example, today, few people have heard of Carl von Linde, but if we mention Linnaeus, everyone knows the famous Swedish botanist who developed modern scientific taxonomy. This was true in astronomy as well. Michael van Langren became Langrenous and Kikolaj Kopernik was called Copernicus. His student Georg de Porris became known as Rhaeticus. Even followers of Ptolemy of Alexandria, who lived well before Latin became trendy, had his name posthumously changed to Claudius Ptolemais.

Profiles in Astronomy

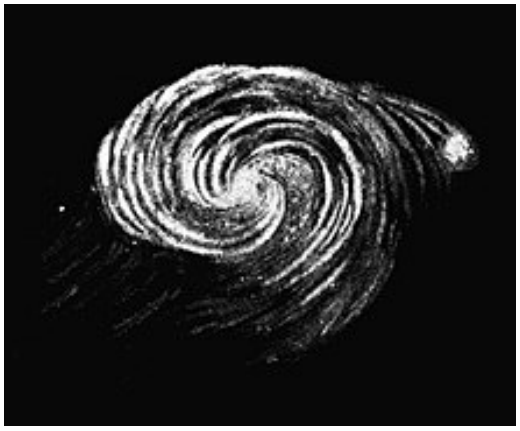
William Parsons, Lord Rosse(1800-1867)

William Parsons, who is better known by his noble title, the 3d Earl of Rosse, or simply Lord Rosse, was born in York, England to Lawrence Parsons, the 2d Earl of Rosse. He was educated at Trinity College, Dublin, and Oxford, and, following his father's death in 1841, inherited both his title and estate in Ireland. He would make his base of operations in Ireland, interspersed with traveling to London as a member of the British Parliament and holding various government offices. He and his wife had thirteen children, of whom only four lived to adulthood.

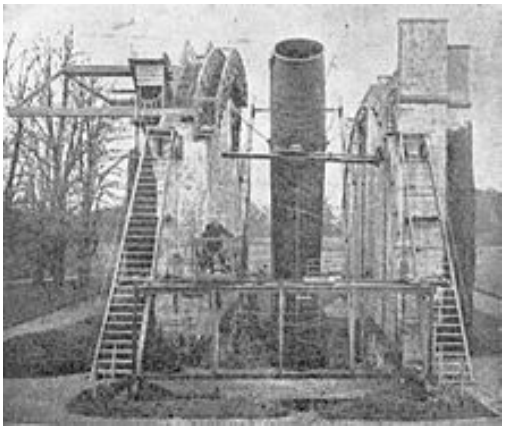
Rosse always had a strong interest in physics and astronomy, and when not in government service, devoted most of his time to studying the heavens. He built a series of telescopes, cumulating in what was known as the "Leviathan of Parsonstown," a giant reflector with a 72" mirror, which was the largest in the world at the time. Rosse was particularly interested in what was then called the "nebulae," and observed many of the objects from Charles Messier's catalogue. Using the 72", he found that some of them had distinct spiral shapes and was the first to name them the "spiral nebulae," which we now know as spiral galaxies. In particular, his drawings of M51 have become famous. Rosse also observed and drew images of M1 and gave it the name of the Crab Nebula that we know of today.

One of Rosses's main goals was to answer the question of what was known as the Nebular Hypothesis. In the 1700s and 1800s, some astronomers believed that the wispy nebular clouds they were seeing were made up mostly of gas, with only a few stars among them. Others, including Rosse, thought that these clouds were predominately stars, but neither faction had large enough telescopes to study them in detail. For many years, Rosse engaged in an ongoing debate with John Herschel, the son of William Herschel, who supported the Nebular Hypothesis. Rosse built the Leviathan to help solve the controversy, but even it was not large enough to resolve the makeup of the nebulas, something that would not occur until well after the deaths of both men.

Among many other honors, Rosse was president of England's prestigious Royal Society from 1848 to 1854, and was the Chancellor of Trinity College, Dublin, from 1862 to his death in 1867. His oldest son, who became the 4th Earl of Rosse, was also an accomplished astronomer.



Lord Rosse's famous drawing of M51, The Whirlpool Galaxy



The "Leviathan of Parsonstown" Lord Rosse's 72" reflector telescope, c. 1850

Space Age Archeology

Luna 3

The early Soviet Luna program was initially designed as a propaganda outlet for the Soviet Union to show its technical superiority over the West, but of the first several Lunas, Luna 3 is significant in that it took the first images of the far side of the Moon. This gave scientists their first look at the mysterious back side and created a public sensation, not only in the Soviet Union, but throughout the world.

Although the official Soviet records are vague, the Luna program probably began in early 1957, when Sergei Korelev's R-7 ballistic rocket was perfected and could be used as a satellite launching platform as well as a nuclear weapons carrier. The early Lunas were designed and built by Korelev's missile bureau, known as OKB-1. It is now known that the first three Lunas, which were launched between September and December 1958, were failures. The first successful Luna, designated Luna 1, was launched on January 2, 1959, and was intended to impact the moon, but, due to a navigation error, flew by it. Still, it was the first spacecraft to go into planetary space. After another failure in June, Luna 2 became the first spacecraft to impact the Moon on September 14, 1959.

Once that had been achieved, the next craft in the series was not intended to hit the Moon, but circle around it in a gravity-assist trajectory, take images, and return to Earth. Luna 3 was based on the previous Lunas, except that it carried cameras and a photographic processing/scanning system. It was probably built during the spring or summer of 1959 for a launch in the fall if the earlier Lunas were successful. Luna 3 was a cylindrical cannister with a flared top that held solar panels and antennas. It was 51 inches tall and 37 inches high and weighed 641 Earth pounds. Besides the cameras, it also carried cosmic ray and micrometeorite detectors. Much of the space and weight in the main body was taken up by batteries and maneuvering fuel. The mission plan was for the spacecraft to fly by the Moon, take images of the far side, then whip around and return to near-Earth vicinity, where the stored images would be transmitted back to Earth.

The craft, officially known as E-2A-1, was launched on October 4, 1959. After a two-day journey, it flew within 3,800 miles of the Moon's south pole; a light sensor activated the cameras, and the first images were taken when it was 63,000 miles beyond the far side. A total of twenty-nine images were taken before it started heading back to Earth. The first images were transmitted on October 8 as it flew by Earth and went back to the Moon in a highly oblong orbit of the Earth-Moon system. The last images were transmitted on October 18; of the twenty-nine photos taken, seventeen were successfully transmitted, giving scientists their first views of the back side of the Moon. Contact with the craft was lost on October 22, 1959; it is believed to have burned up in the Earth's atmosphere in March 1960. The name Luna 3 was given to it in 1963.

The images, although grainy, showed an intensely cratered far side, with few of the mare that characterize the Earth-facing side. Although the Soviet Union saw it a huge propaganda victory, scientists throughout the world were overjoyed at the first views of the far side of our only natural satellite, leading to many more efforts and details about it during the coming years.

What's New in Space

Still Another Space Pioneer Passes into the Cosmos
Thomas Stafford 1930-2024

The past several months have seen the deaths of several early astronauts; now, another one joins them. Tom Stafford, a member of the second astronaut group and veteran of four space flights, including the ASTP mission, died at the age of 93 on March 18, 2024, according to NASA.

Stafford was born and raised in Oklahoma and attended the U.S. Naval Academy,* then went into the Air Force after graduating in 1952. He went through fighter pilot training, then went to test pilot school, and eventually became a test pilot instructor. In 1962, he was assigned to attend Harvard Business School, but was selected as a NASA Group 2 astronaut instead.

After initial astronaut training, Stafford was paired with Alan Shepard to fly the first Gemini mission, GT-3, but Shepard was removed from the flight due to a medical issue. Stafford was then paired with Wally Schirra as the backup for GT-3. Stafford and Schirra flew GT-6 in December 1965, which was the first American dual flight with Gemini 7. He was then assigned as the backup commander for Gemini 9 with Eugene Cernan. Tragically, the prime crew for Gemini 9, Eliot See and Charles Bassett, were killed in a jet crash in February 1966, and Stafford and Cernan flew as the prime crew in June 1966. Stafford was then assigned to the Apollo program as the backup commander of what was then the second Apollo mission. In the assignment shuffle following the Apollo 1 fire, he became the commander of Apollo 10, along with John Young and Gene Cernan. In May 1969, he, Young, and Cernan were launched to the moon for what was a dress rehearsal for Apollo 11. Stafford and Cernan flew the lunar module to within ten miles of the surface of the moon before returning safely to Earth.

After Apollo 10, Stafford became the chief of the astronaut office, where he served for two years. In 1972, shortly after the United States and the Soviet Union signed an agreement to conduct a joint Apollo-Soyuz mission, he was assigned to be the commander of the American segment, along with Deke Slayton and Vance Brand. He learned to speak and read Russian, and became one of the first Americans to visit and train at what was then known as Star City+, Russia's otherwise secret space center. In July 1975, the three were launched and docked with Soyuz 19, commanded by Alexi Leonov and piloted by Valeri Kubasov. The two spacecraft spent two days together in orbit, and both landed safely afterwards. Stafford and Leonov became lifelong friends as a result, and Stafford gave the eulogy at Leonov's funeral in 2019.

After the Apollo-Soyuz Test Project mission, Stafford left NASA and returned to the Air Force, one of the few 1960s astronauts to go back to regular military service. He rose to become a three-star general before retiring from the Air Force in 1979. He then worked for and served on the boards of several companies before retiring altogether in 2000 and moving to Florida, where he lived for the rest of his life. With his death, only eight of the twenty-four astronauts who went to the Moon are still alive.

Above-Leonov and Stafford in 2014

***When Stafford was at Annapolis, his roommate while on the Academy training ships was John Young, who would also become a Group 2 astronaut and fly with him on Apollo 10.**

+Today, it is called the Gagarin Space Center

Jeanette Epps Finally Flies in Space

Jeanette Epps, who was chosen as an astronaut in 2009, finally flew to the International Space Station aboard Crew Dragon C-8, launched March 4, after almost fifteen years in the astronaut corps, even after most members of the astronaut class of 2013 and even some members of the class of 2017 have already flown in space. She was originally assigned to fly a Soyuz mission to ISS in 2017, then was removed from the flight for unstated reasons. This stirred up some controversy; because she is African-American, some members of her family and supporters claimed that NASA was being racist. She asked them to not to protest, saying that it might jeopardize her chanc- of being reassigned(actually, astronauts being removed from flights and reassigned is not unusual. It was frequently done during the Space Shuttle era and a few times during the joint American-Russian Soyuz missions after the shuttle was retired). In 2020, Epps was reassigned to OM-1, the first Boeing Starliner operational mission, then scheduled for 2021. However, as Starliner's problems mounted and OM-1's launch date kept being pushed back, she was cross-trained for Crew Dragon as well, and in August 2023 was assigned to Crew Dragon flight C-8, which will spend six months aboard ISS.

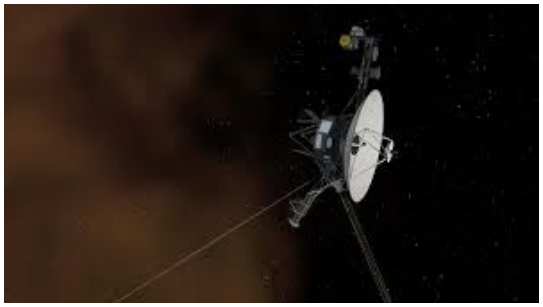
Epps was born and raised in Syracuse, New York, majored in physics at LeMoyne College, and earned a Ph.D. in aerospace engineering from the University of Maryland. She worked for the CIA and in private industry and then for NASA before being chosen for the astronaut corps. At age 54, she is one of the oldest people to make a first spaceflight; she will also be the second African-American woman to serve aboard the space station.

Starliner to Make First Crewed Flight-At Last

On May 6, if all goes well, Boeing's Starliner OFT-3 mission will launched atop an Atlas-5 rocket from the Kennedy Space Center with two astronauts, Barry "Butch" Wilmore and Sunita Williams, aboard. They will dock with ISS the next day and spend ten days after that checking out the spacecraft and its systems. They expect to return to Earth on May 17. It's been a long frustrating timeline for the Starliner, which is now almost five years behind schedule. The first Starliner flight, OFT-1, occurred in December 2019, and was cut short after twelve hours due to multiple software malfunctions; once it was back on the ground, many other flaws were found, which took almost three years to fix. The second mission, OFT-2, in May 2022, which should have been crewed, was a second unmanned test flight which revealed even more problems, especially with the landing parachutes and wiring systems. It is reported that Boeing has lost almost $3 billion on the Starliner program due to its ongoing difficulties.

If all does go well with OFT-3, the first operational Starliner mission, OM-1, will take place in January 2025, with four astronauts aboard. NASA had originally planned to alternate Starliner and Space-X Dragon missions to ISS, but in 2023, contracted with Space-X to supply most of the crewed American missions through 2030. The space agency still expects Boeing to fulfill its original contract of six crewed operational flights, and will use Starliner about once a year from now on. After that, what will happen to the Starliner program is anyone's guess. While some are speculating that it will be shut down after 2030, others say that Boeing already has committed itself too much to let it die, and will probably try to compete as a space "taxi" service in the 2030s, when at least four to six private commercial space stations are expected to be in Earth orbit.

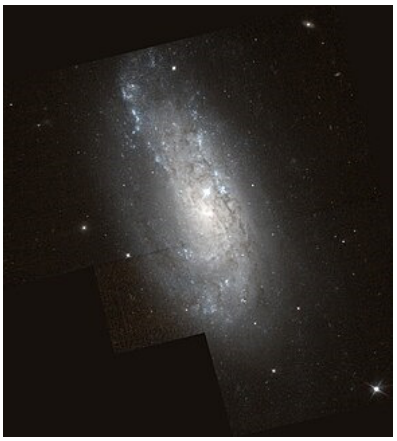
Voyager I Finally Comes Back Online



On April 5, scientists at the Jet Propulsion Laboratory in Pasadena announced that they had finally received intelligible data from Voyager I, which is now in its 47th year of spaceflight and is more than 15 billion miles from the Earth. In November 2023, JPL briefly lost contact with the spacecraft, and when they regained it, it was sending back "gibberish," random zeros and ones from its internal binary code memory. This sent the scientists and engineers back to the computer code books of the 1970s, when Voyager's onboard computers were designed and built, to find out what had gone wrong with the craft. They even consulted with now long-retired members of the original Voyager team, those that were still alive. Eventually, in March of this year, JPL sent a command for a complete "data dump," a readout of all of the spacecraft's memory, and, as a result, learned that one of the computer chips aboard had been damaged and was unusable. They wrote new code to bypass the chip and transmitted it to Voyager on April 18(Since Voyager is so far away, radio commands take 22 hours to get to it and 22 more hours to reply to Earth). On April 21, they announced that the new code had worked, and Voyager is now sending back data about its systems and performance. JPL will continue to monitor the spacecraft and send code updates in case any more chips might go bad.

Voyager I was launched in 1977, along with its twin Voyager 2(because it was following a different trajectory, Voyager 2 was actually launched first, about two weeks before 1). After visiting Jupiter and Saturn, Voyager 1 headed out of the solar system and into interstellar space. It passed what is known as the heliosphere, the boundary where the sun's influence ends, in 2011, and has kept going every since. Now that its computer problems have been fixed, scientists hope to keep it operational for five to ten more years, until its power runs out.

Galaxy in the Eyepiece-
NGC 6207



When most astronomers think of Hercules, they first think of the well-known globular cluster M13, as well as the slightly less well-known globular M92. They generally don't associate the constellation with galaxies, yet there are a couple of galaxies in Hercules, and one of them is only a few degrees away from M13; it is NGC 6207.

6207 is a small(about one third the size of the Milky Way) spiral galaxy, which is designated an SA(s)c galaxy. It has an apparent magnitude of 11, which puts it close to the edge of viewing with a small telescope. Its absolute magnitude is -19.6. Like so many other NGC objects, it was first seen by William Herschel in 1787.

A controversy about 6207 is its distance from Earth. Different measurements over the years have come up with anywhere between 30 and 62 million light years away, which is a difference of a factor of two. Astronomers are trying to pin down a more precise measurement using the Hubble Space Telescope, but, so far, the distance is in flux. 6207's other major claim to fame was the supernova SN2004 A, a type II supernova, which was the brightest in several years.

The American Eclipse of 2024

From Hope, Arkansas* by Richard Kinney

My wife and I traveled to Hope Arkansas for the eclipse. We stayed with some friends that moved there after they retired. It started off with partly cloudy skies often obscuring the sun, but then when the moon had made first contact with the solar disk, the sky cleared, and it stayed cleared for us till about five minutes after totality. It was perfect at the Hope Arkansas municipal airport.

This was our second eclipse. My wife and I had ventured to Oregon in 2017 with me missing the first day of school, which was a difficult choice to make but the right one. That first drop into totality in Oregon was so numbing. For a moment it felt as if my soul was being pulled out of my heart and up into that dark, dark, darkest black void I've ever seen in my life. But then I remembered it's just a shadow. And then I laughed when somebody played the theme to the X-Files. That was fun. For this eclipse, I was focusing more on my surroundings, watching the darkness slowly approach, and just before totality, it was almost as if the area were enveloped in a very light smoke that was kind of purple colored. It was interesting. And then, during totally, we could see the solar flare out about our 5 o'clock, reddish at the base then tipped with a white spike that was about 1/4 to 1/3 the disk diameter. I also thought it would be fun to use my phone's (Lux light-meter app) light meter to capture the darkness so I've included a photo for you with that and also a photo that my friend Rickson Fisher, former Clovis resident took while we were there at the tarmac.

***Which, I believe, is former president Bill Clinton's hometown**

Astronomy (bad-but possibly true) sarcastic statement-

"Whatever the missing mass of the universe is, I hope it's not in cockroaches…"-

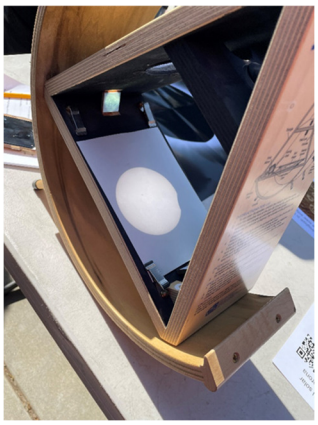
-A New York City renter who wishes to remain anonymous

From jupiterscientific.org

From The Downing Planetarium at Fresno State by Steve Harness and Hubert Cocetti

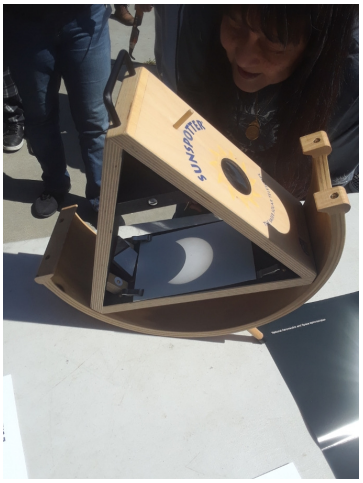
I stayed home instead of traveling to see the total eclipse and went to the Planetarium. While Dr. White was giving planetarium shows I was with a couple of my physics students doing safe solar viewing.

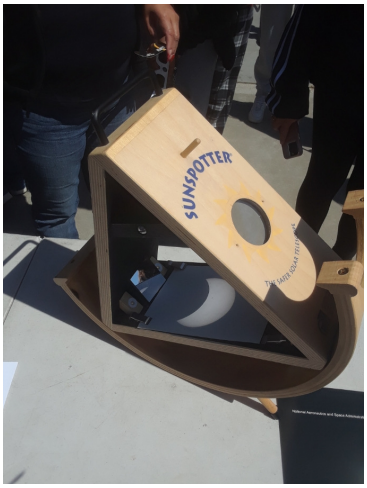
I used my 8-inch Dobsonian with a funnel and projection screen to project about a 4-inch sun. I also used my SunSpotter viewer to watch the eclipse. There were two large sunspots visible which made the viewing more enjoyable. Several hundred students (maybe up to 300) and the public came out to observe the eclipse and to attend the short eclipse planetarium shows.



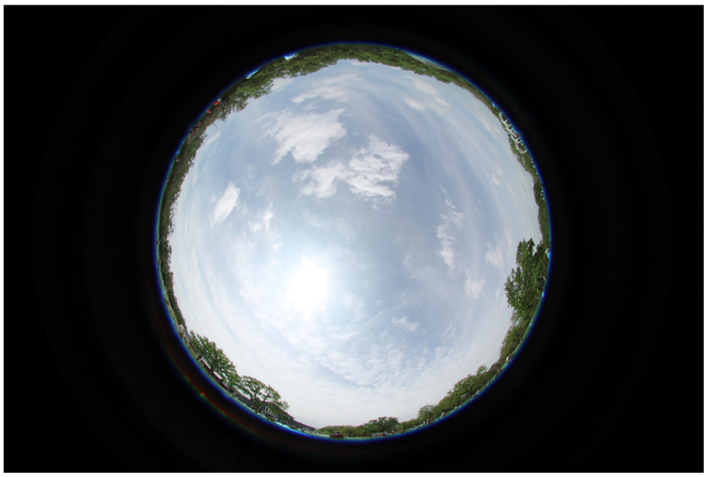
Images by Steve Harness

Images by Hubert Cocetti



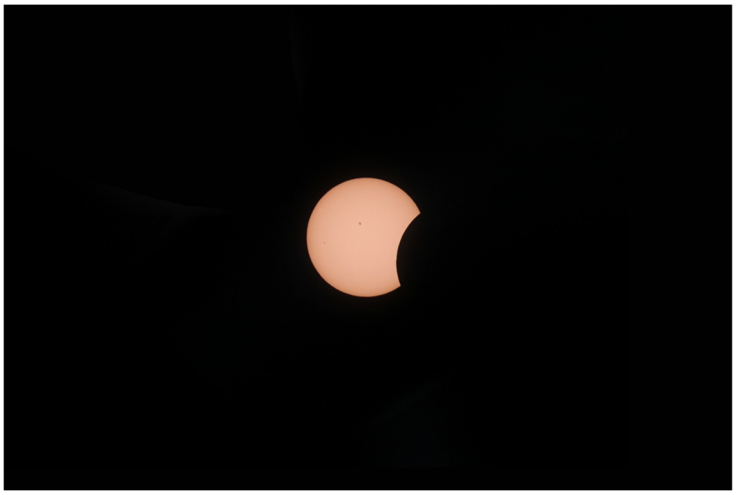


From Fredericksburg, Texas, by Fred Ringwald



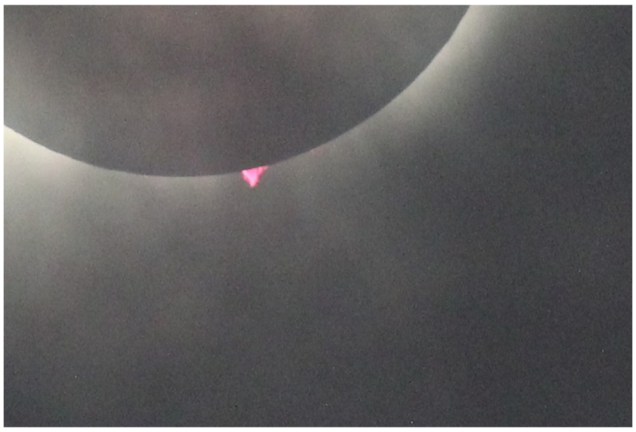
Unfortunately, the weather was cloudy. It could have been worse: it could have been raining.

The intrepid eclipse chasers soldier on, regardless of the weather.



Going, going… During the partial phases, the Moon only partly obscures the Sun.

Totality! The solar corona, which is hot gas escaping from the Sun, is visible through thin clouds.

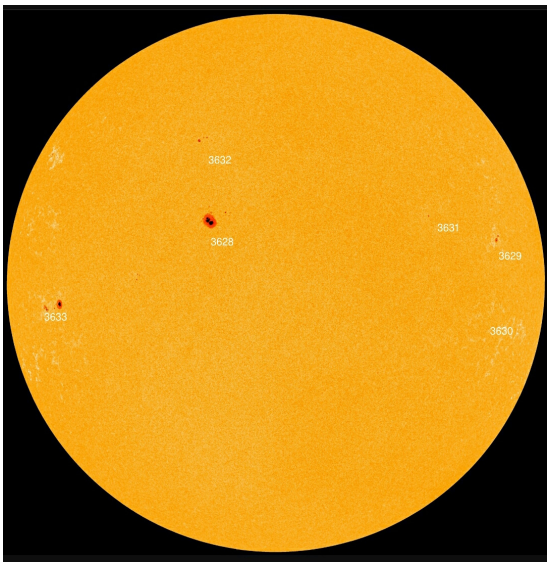


Prominences are magnetically heated, buoyant loops and streamers of gas rising from the Sun. Multiple prominences were visible, but the clouds allowed me a shot of only this one, on the Sun's south limb.

From Perryville, Missouri, by Larry Parmeter

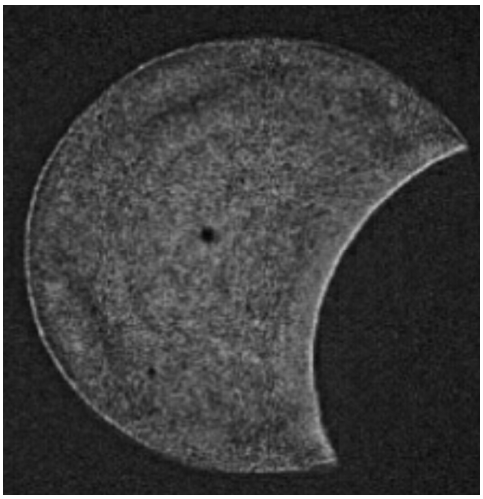
Several days before the eclipse, rain was predicted for southeast Missouri, but as the time drew closer, the weather reports became better and better. On eclipse day, clear skies with only a few high wispy clouds marked the forecasts, so Aileen and I drove 70 miles south from St. Louis to the Perryville airport, a few miles north of the town, and one of seven sites that were part of the Perryville Eclipse Festival. The Tourism Board woman in charge of the festival asked me to be at the airport due to the large number of fly-ins she was expecting, and, sure enough, between 60-70 aircraft were already there, with more landing while we set up. The airport manager asked me to give a talk about the eclipse over the p.a. system, and afterwards the crowd, about 200 people altogether, viewed the sun through my 8" Meade telescope. As totality time grew near, the skies became darker and the temperature was noticeably dropping. At totality (1:58 pm CDT), there were oohs and aahs as the sky turned a twilight dark purple, the sun became a black disc surround by a whitish corona, and Jupiter, Venus, Sirius, and few other stars would be seen. I pointed out Baily's Beads and solar flares around the edge of the disc, then the brilliant diamond ring as it came out of totality. Then it was over. Within fifteen minutes, as the sky drew brighter, people were getting into their planes, taxiing down the tarmac to the runway, and taking off. By the time the eclipse ended (about 3:15 pm), only a few planes were still at the airport and most of the crowd was gone. It was a momentous day; however, it hadn't ended. After dinner in nearby Ste. Genevieve, we were caught in the biggest traffic jam in Missouri history: a thirty mile bumper to bumper parking lot on I-55 north back to St. Louis, the result of tens of thousands of people who headed south that day to watch the eclipse. It took us almost four hours to get back to our hotel room. But it was more than worth it.

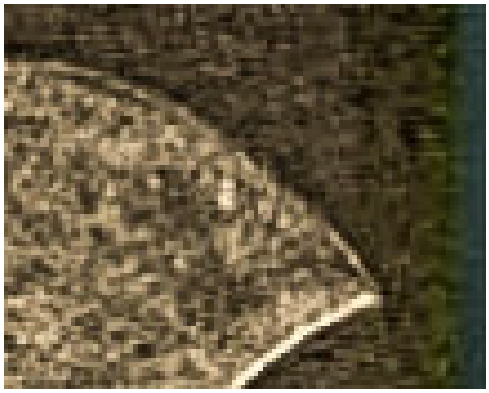
From Fresno-Madera by Randy Steiner



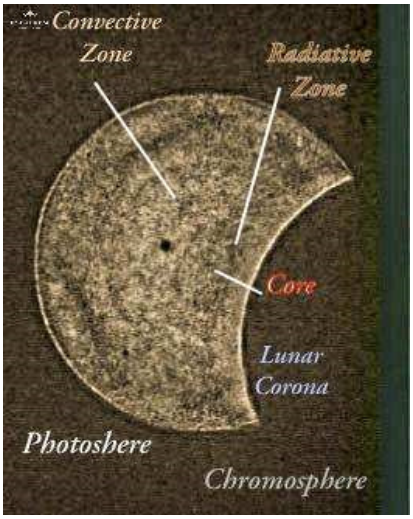
Sunspots at the time of the eclipse

The eclipse, as seen from the Fresno-Madera area





A loop prominence during the eclipse



If you look at the upswell image, (enhanced Ps HDR3) you'll notice a small cross to the right of the large sunspot. I believe that is the very center of the sun, the central Core. The Grey outer circle is the Radiative zone, then the Convective zone, out to the Photoshere. Notice how this activity ends up with huge rolling surface phenomena, hidden beneath the Chromosphere. There are prominences visible at the same location as at totality, including some spicules and loops that were lost by lunar occlusion at that time. I checked with the NASA Helioseismology website to use the interactive model- unfortunately it only went to October, 2017. I could see the banding where the sunspots materialize though.

Another in a continuing series on lesser known-but still important-observatories throughout the world

The Baker Observatory

The Baker Observatory, named after two prominent donors to the institution, is owned and managed by the physics and astronomy department of Missouri State University, whose main campus is in Springfield, Missouri. The observatory itself is located a few miles outside the town of Marshfield, Missouri, about 75 miles from Springfield. If Marshfield sounds familiar, it is; it was the birthplace and boyhood home of Edwin Hubble(Despite his English accent and mannerisms, Hubble was very much a product of the American Midwest).

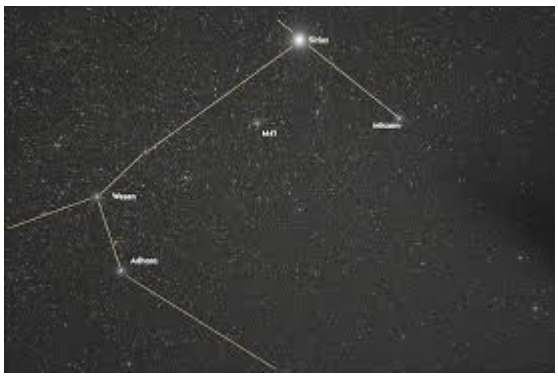
The observatory was established in 1977, when the university decided to include a graduate astronomy program among its physics offerings. Currently, the observatory has three permanently mounted telescopes: a .4 m(16") Cassegrain reflector, a .36 m (14") reflector, and a .28(11") reflector, all equipped with CCD cameras and computer-controlled imaging. These are used primarily by the staff and students at Missouri State for various research projects. There are also several smaller mobile telescopes. In addition, the observatory has an active public outreach program, partially sponsored by NASA, with regular public starwatches during the spring and summer.

Star Stories

Mirzam

Mirzam, also known as Beta Canis Majoris, is the second brightest star in Canis Major, and the first to appear when it comes over the horizon, being part of the Dog's front leg. It I classified as a B1 star, has an apparent magnitude of 1.98, and an absolute magnitude of -4.1. Its size is almost ten times that of our Sun's and its mass is thirteen times that of the Sun. The latest measurements show that it is about 500 light years from Earth, and its age is estimated at about twelve million years old. It is not known to have any companion stars, nor have any exoplanets been found orbiting it.

Mirzam is a Beta Cepheid Variable, different from a regular Cepheid Variable in that its luminosity variation comes from surface pulsing. Beta Cepheids are usually regular blue or white class B stars while Cepheid Variables are blue supergiant stars. Beta Cepheids also have very short pulsation times; in Mirzam's case, they last only a few hours and vary by tenths of a magnitude, ranging from 1.92 to 2.02.



The name Mirzam comes from Arabic and means "Hearlder" or "Leader," indicating that it is the first star in the constellation to be seen. In Chinese astronomy, Mirzam was one of six stars forming an asterism describing a military unit, and was known as Jun Shi yi, "the First Market for Soldiers."

CVA member Bill Ducas at the Northeastern Astronomy Forum(NEAF) in New York on April 27-28, 2024. Over 190 companies showed off their astronomy related products, along with seminars and workshops

Another Astronomy Short-

Quarks, which are the subatomic particles that, among other things, make up protons and neutrons, were independently proposed by both Murray Gell-Mann of CalTech and George Zweig (then of CERN) in 1964. Zweig wanted to call them Aces, but Gell-Mann's proposal to name them Quarks won out in the physics community. The term "Quark" comes from Irish writer James Joyce's novel *Finnigan's Wake*, in which he describes "three quarks for Mr. Mark…" Gell-Mann eventually won the Nobel Prize for his research in subatomic particles, including quarks.