Highlights of the July Sky...

- - - 1st - - -

DAWN: A waning crescent Moon is 4° above Mars.

- - - 2nd - - -

AM: The waning crescent Moon is 3° to the right of the Pleiades.

- - - 3rd - - -

AM: A thin crescent Moon is 4½° to the upper left of Jupiter.

- - - 5th - - -

New Moon @ 6:57 pm EDT

- - - 7th - - -

DUSK: A narrow, waxing crescent Moon is nearly 3° above Mercury.

- - - 8th - - -

DAWN: Jupiter is 5° to the upper left of Aldebaran.

- - - 9th - - -

PM: A waxing crescent Moon is 5½° to the upper left of Regulus in Leo.

- - - 13th - - -

First Quarter Moon @ 6:49 pm EDT

PM: The Moon occults Spica, in Virgo, at 11:12 pm. It reappears at 12:23 am.

- - - 17th - - -

PM: A waxing gibbous Moon is 3½° to the lower left of Antares in Scorpius.

- - - 21st - - -

Full Moon @ 6:17 am EDT

- - - 24th - - -

PM: A waning gibbous Moon is about 5° to the lower left of Saturn when they rise in the east-southeast shortly before midnight.

- - - 27th - - -

Last Quarter Moon @ 10:52 pm EDT

- - - 29th - - -

PM: The Southern Delta Aquariid meteor shower peaks but it is best in the Southern Hemisphere.

- - - 29th → 31st - - -

AM: A waning crescent Moon, Jupiter, Mars, Aldebaran, and the Pleiades gather above the eastern horizon.

Prime Focus

A Publication of the Kalamazoo Astronomical Society

★ ★ ★ July 2024 ★ ★ ★

This Month's KAS Events

Community Outreach: Saturday, July 13 @ 9:30 am

Kindleberger Festival in Parchment • ***See Page 19 for Details***

Observing Session: Saturday, July 13 @ 9:30 pm

Kalamazoo Nature Center • ***Visit Observing Page for Details***

Observing Session: Saturday, July 27 @ 9:30 pm

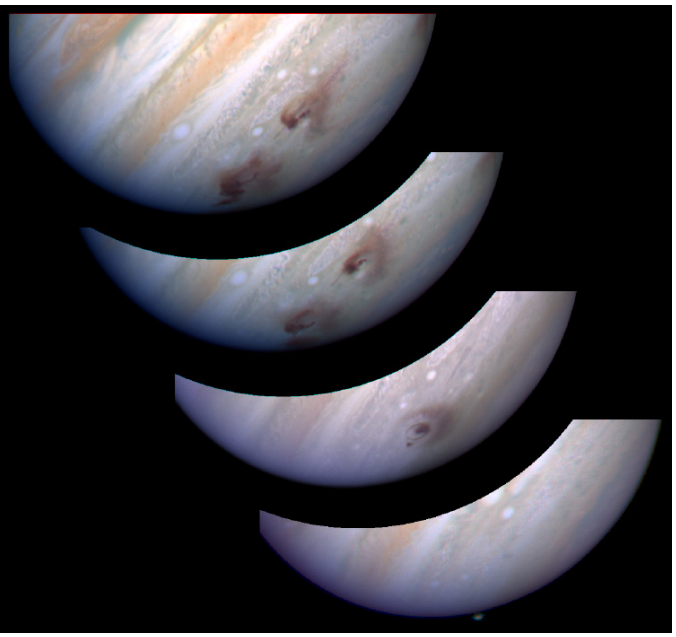
Kalamazoo Nature Center • ***Visit Observing Page for Details***

Inside the Newsletter. . .

Observations by Richard S. Bell

In June and July, two notable astronomical anniversaries have or will take place. The first transit of Venus in our lifetime occurred on June 8, 2004. Up until then, no one alive had ever seen Venus cross the Sun's face since the last one took place in 1882. We in North America saw the 2004 transit in progress at sunrise, and the farther north and east you went, the more you saw. That's why I traveled to Maine. It's amusing that I would visit Maine again 20 years later to view a similar event (transits, occultations, and eclipses are all variations on a theme). You can read member's accounts of this historic event in the August 2004 issue of *Prime Focus*. On June 6, 2012, another Venus transit occurred, and we hosted one of our biggest observing events ever on the shore of Lake Michigan. Sadly, if you missed both transits, the next one will not happen until December 2117 (and it's not even visible from most of North America).

The next big astronomical anniversary actually took place over several days, from July 16 to 22, 1994. Fragments of Comet Shoemaker-Levy 9 collided with Jupiter. This was the first direct observation of a planetary impact in the solar system, and it was, in my opinion, the biggest astronomical observational event of our lifetime. Heck, maybe of *all* time!



Eugene and Carolyn Shoemaker and David Levy discovered the comet on March 24, 1993, using the 18-inch Schmidt telescope at Palomar Observatory in California. Carolyn was the first to spot it on a photographic plate, and she described it as a "squashed comet." It was the first comet discovered orbiting a planet, most likely captured 20 to 30 years earlier. It approached Jupiter too closely in July 1992, causing it to be torn into pieces. Not long after its discovery, astronomers realized it was actually going to impact Jupiter. Astronomers warned the public that the impacts would likely be invisible to amateur telescopes on Earth.

At the time, I was working at the Kalamazoo Public Museum & Planetarium and was just becoming involved in the KAS. Eric Schreur, planetarium coordinator and KAS member, let me borrow the planetarium's 8-inch Cave Optical Newtonian. The only telescope I owned at the time was a Jason 60mm refractor, which I got when I was seven. My first serious telescope, a Meade 10-inch LX200, wouldn't arrive until September 1994.

I'm uncertain about the timeline, but I believe the Hubble Space Telescope had already released images of the impact scars. It didn't make any difference. When I set up that 8-inch Newtonian in my backyard and pointed it at Jupiter, I saw two very obvious black splotches in Jupiter's southern hemisphere. At that point, I...FLIPPED...OUT! I had been observing Jupiter since I was seven, and to suddenly see those dark spots mixed in with Jupiter's familiar belts and zones and know what caused them was the coolest thing ever.

A common question I get is: What's the coolest thing I've ever seen through a telescope? Well, now you know the answer. People have seen eclipses, bright comets, and aurorae for centuries. No one had ever seen anything like that before.

June Meeting Minutes

Vice President Jack Price called the Kalamazoo Astronomical Society's general meeting to order on Friday, June 7th, at 7:06 pm EDT. KAS President Richard Bell was unable to attend the meeting in person because he had finally contracted COVID earlier in the week. About 25 members and guests were in attendance in room 1110 of Western Michigan University's Rood Hall, while approximately 28 joined us virtually from home on Zoom. We were unable to hold the meeting at KAMSC due to a graduation ceremony in Chenery Auditorium.

With no President's Report this month, Jack quickly reviewed the upcoming KAS activities. These only consisted of Public Observing Sessions on June 8th and 29th, with the weather forecast looking poor for the former (it was canceled).

(NOTE: If Richard had been present, he would have requested assistance in finding guest speakers for the Astrophotography Special Interest Group's 2024-2025 season. We will hold all meetings on Zoom on the third Friday between October and March. If no one takes action, the future of the AP-SIG is at risk.)

Our feature presentation was the second and final part of the KAS membership's *Great North American Eclipse Stories*. Those sharing reports this month included (in order, before and after a break) Paul Asmus (Mazatlán, Mexico), Matt Borton (Makanda, Illinois), Arya Jayatilaka (Venue, Ohio), Eric Schreur (Junction, Texas), Jack Price (Portland, Indiana), Dave Woolf (Uvalde, Texas), and Richard Bell (Jackman, Maine). All of those listed above also shared written versions of their reports. Please enjoy them, starting on page 5.

Before adjourning the meeting, Jack reminded everyone that the 30th annual Perseid Potluck Picnic will be on Saturday, August 3rd, at 6pm. Texas Drive Park, the site of the first and second Perseid picnics in 1995 and 1996, will host it. We need a volunteer to bring a grill and handle the cooking. With that, the meeting concluded at 9:38 pm.

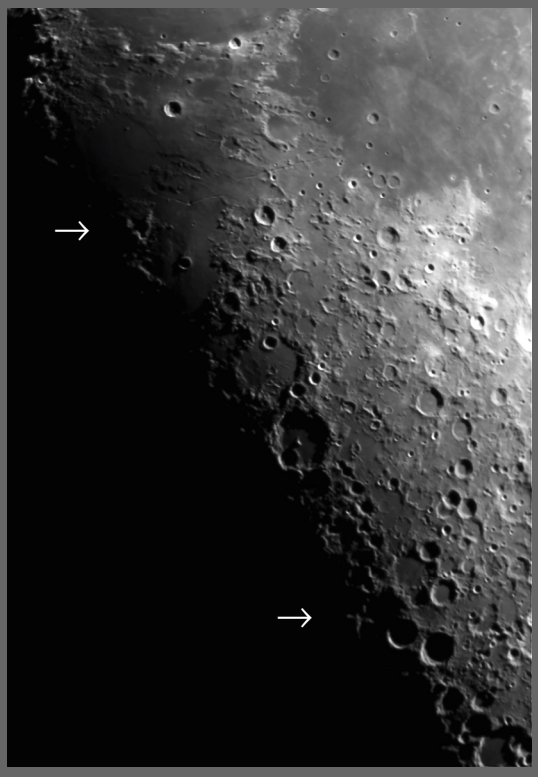
Special thanks to Pete Mumbower for setting up and running our audio/video system during the meeting.

The Lunar X & V

Image by Gregory T. Shanos, Sarasota, Florida

The Lunar X and V were visible on June 13, 2024, at 11:43 pm EDT. The Moon was at 49% phase, only 29° above the horizon. The sky was perfectly clear down to the horizon; however, the seeing was below average without a jet stream. The image was acquired using a Meade LX200GPS ACF 8-inch f/10, a ZWO ASI 178MM monochrome camera, and an Optec 0.62X focal reducer. The AVI video was acquired using Firecapture v2.7.14, processed using Autostakkert 4.0.11 beta and Registax 6.1, and further sharpened and processed in Photoshop CS4.

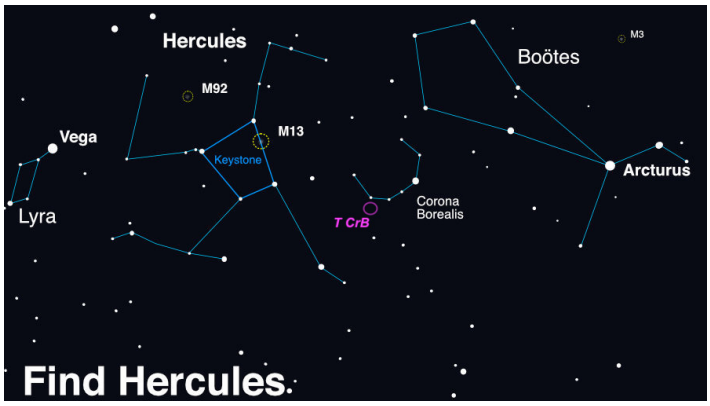
The Lunar X (also known as the Werner X) is a claire-obscure effect in which light and shadow create the appearance of the letters 'X' and 'V'. The Lunar X is formed from the rims of the craters Blanchinus, La Caille, and Purbach. The X is visible beside the terminator, about one-third of the way up from the Moon's southern pole. The Lunar V forms along the northern part of the terminator, near the Ukert crater. The V was visible first, then the X slowly appeared approximately an hour later. The X and V are visible for only a few hours and then disappear.



A Hero, a Crown, and Possibly a Nova!

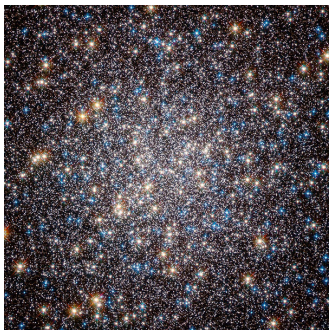
by Vivian White

High in the summer sky, the constellation Hercules acts as a centerpiece for late-night stargazers. The "Keystone," a near-perfect square shape between the bright stars Vega and Arcturus, is at the center of Hercules. It is easy to recognize and can serve as a guidepost for some amazing sights. Although the stars are not the brightest, the shape of the hero's torso, resembling a smaller Orion, is nearly directly overhead after sunset. Along the edge of this square, you can find a most magnificent jewel: the Great Globular Cluster of Hercules, also known as Messier 13.



Look up after sunset during summer months to find Hercules! Scan between Vega and Arcturus, near the distinct pattern of Corona Borealis. Once you find its stars, use binoculars or a telescope to hunt down the globular clusters M13 (and a smaller globular cluster M92). If you enjoy your views of these globular clusters, you're in luck - look for another great globular, M3, in the nearby constellation of Boötes. Image created with assistance from Stellarium.

Globular clusters are a tight ball of very old stars, closer together than stars near us. These clusters orbit the center of our Milky Way like tight swarms of bees. One of the most famous short stories, *Nightfall* by Isaac Asimov, imagines a civilization living on a planet within one of these star clusters. They are surrounded by so many stars that it is always daytime except for once every millennium, when a special alignment (including a solar eclipse) occurs, plunging their planet into darkness momentarily. The sudden night reveals so many stars that it drives the inhabitants mad.



Back here on our home planet, Earth, we are lucky enough to experience skies full of stars, a beautiful Moon, and regular eclipses. On a clear night this summer, take time to look up into the Keystone of Hercules and follow this sky chart to the Great Globular Cluster of Hercules. A pair of binoculars will show a faint, fuzzy patch, while a small telescope will resolve some of the stars in this globular cluster.

Bonus! Between Hercules and the ice-cream cone-shaped Boötes constellation, you'll find the small constellation Corona Borealis, shaped like the letter "C." Astronomers around the world are watching T Coronae Borealis, also known as the "Blaze Star," in this constellation closely because it is predicted to go nova sometime this summer. There are only five known nova stars in the whole galaxy. It is a rare, observable event, and you can take part in the fun! The Astronomical League has issued a Special Observing Challenge that anyone can participate in. Just make a sketch of the constellation now (you won't be able to see the nova), and then make another sketch once it goes nova.

A red giant star and white dwarf orbit each other in this animation of a nova similar to T Coronae Borealis. The red giant is a large sphere in shades of red, orange, and white, with the side facing the white dwarf the lightest shades. The white dwarf is hidden in a bright glow of white and yellows, which represent an accretion disk around the star. A stream of material, shown as a diffuse cloud of red, flows from the red giant to the white dwarf. When the red giant moves behind the white dwarf, a nova explosion on the white dwarf ignites, creating a ball of ejected nova material shown in pale orange. After the fog of material clears, a small white spot remains, indicating that the white dwarf has survived the explosion. NASA/Goddard Space Flight Center

As we prepare for the Perseids, check out our mid-month article on the Night Sky Network page! Keep looking up!

This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the United States dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Members of the Kalamazoo Astronomical Society stood in nearly every state along the path of totality on April 8th with hopes of witnessing the grandest phenomenon in all of nature—a total solar eclipse. Here are their stories...

Paul Asmus
Mazatlán, Mexico

Due to climate predictions of cloud cover for April 8, 2024, we decided to join the *Sky & Telescope* cruise to Mexico, which had a planned observing site off the coast of Mazatlán, Mexico. Our observing party, the *Sky & Telescope* group, consisting of about 300 people, had a "prime" viewing space on the ship's top deck. Determined to witness the eclipse, the ship's captain steamed to a predicted cloud-free location. It was about 100 miles southeast of the planned location.

The day of the eclipse dawned with only minimal cloud along the horizon, and we set up to observe for several hours before first contact. I planned to observe mostly with my naked eyes and 10×30 image-stabilized binoculars. But I also wanted to see the details of the corona and prominences with my Orion 80 mm refractor at 15× and 20×. For the first time in five eclipses, I also wanted to take some pictures with a Sony RX100 VI and 200 mm focal length lens.

Paul Asmus and his wife Alice joined *Sky & Telescope's* Mexico Eclipse Cruise. This is the view from the observing platform on the upper deck of their ship, the *MS Zaandam*.

We observed the mildly interesting partial phases using eclipse glasses and projected the image of the Sun through the back of our chairs. During the eclipse, some members of the group took measurements of the changes in ambient temperature and sky illumination. It really started becoming interesting about a minute before totality, as the Moon's shadow began to build on the very thin stratus clouds in the area. It was moving at a half-mile per second toward us. About 10 seconds before totality, the lights started to fade, followed by the diamond ring.

Then...Totality!

The screaming from our group was very loud and enthusiastic. There we were, standing in the shadow of the Moon! Sunset colors were on the horizon 360° around. The prominence at 5:00 was fantastic! Through the telescope, delicate loops and curves revealed the details of its (and others') structure. The corona was silky, and you could "see" the solar magnetic field lines traced by plasma. I struggled to find words to describe the experience, turning to the words of the poet Paul Simon: "Hello, Darkness, my Old Friend."

In just 4 minutes and 27 seconds, the second magnificent diamond ring marked the end of the event. The shadow raced off to the northeast. The next thought was, "When is the next one?" We all celebrated our experience of this great eclipse by popping the champagne corks after that.

☼ ☼ ☼

Richard Bell
Jackman, Maine

It's always good to have a Plan B.

Making plans well in advance of a total solar eclipse is a wise thing to do. That's why I organized a planning meeting two years before the April 8th eclipse. A follow-up

From left to right: Richard Bell, Alexis Bell, Ronald Bell, Connie Bell, Merina Munson, PJ Munson, and Reese Munson viewing the eclipse with their eclipse glasses.

meeting in May 2022 whittled our candidate sites down to three. In the end, we selected Chalk Bluff River Resort and Park in Uvalde County, Texas, as the best spot for Kalamazoo Astronomical Society members and their friends and family to gather and enjoy nature's grandest spectacle together.

One thing that I made clear during our meetings was that my primary goal was to view the eclipse under the most cloud-free conditions possible. The chosen area had one of the highest probabilities of clear skies on Eclipse Day, but forecasts leading up to April 8th clearly necessitated a Plan B. We played the odds, but it didn't work in our favor.

My decision to cancel the plans for Chalk Bluff was not an easy one. I closely monitored the weather forecasts and models and hoped conditions would improve. Plus, I really wanted to visit the Alamo and Dealey Plaza! I finally had to make the call on April 2nd and cancel all the reservations my family and I had made. Fortunately, everything was fully refundable except for Chalk Bluff. I thought about viewing spots nearby, like Indiana or Ohio, but everyone already had time set aside for a week-long trip. I looked into going to Plattsburgh, New York, but there were no hotels available in or near the path of totality. Looking a little further along the path, I came upon Jackman, Maine. The weather forecasts for April 8th looked very promising. We found a hotel with reasonable rates in Waterville, Maine, and made reservations. Waterville is about 2 hours south of Jackman, but this was the best last-minute option.

Those who attended my 35 presentations on the total solar eclipse know how ironic this was. Using a climate map from Jay Anderson and weather satellite imagery from the past five years, I made it clear that Maine was the worst place to go. I made such an impression that Mike Dupuis, who attended my talk in Vicksburg, emailed me on April 3rd with the subject heading "What were you saying about Maine?" So, yeah. The weather on Eclipse Day was better in Maine than anywhere else along the path. Go figure!

The crazy thing was that a spring nor'easter was on the verge of striking New England. Experts predicted that Jackman would receive between 18 and 24 inches of snow! We did see plenty of snow on the roadside in Massachusetts and Maine, but the roads were totally clear by the time we arrived in the area.

My family and I left Kalamazoo on April 4th. My oldest niece, Alexis, traveled with me. My parents, Ron and Connie; my youngest niece, Merina; her two children, PJ and Reese; and Alexis' two dogs, Lucy and Luna, traveled separately. We weren't sure how the two young kids (ages 6 and 3) and dogs would do with a 10-hour day on the road. Surprisingly, they did very well. There were some family squabbles along the way, which, I suppose, is to be expected. We never took a family trip like this before and probably never will again.

Our first stop was in Syracuse, New York. The weather was gray and depressing the entire day, and the biggest form of entertainment was seeing electronic road signs with messages like "Solar Eclipse Monday," "Arrive Early, Stay Late," and "Expect Delays." I saw similar warnings in Wyoming in 2017. About two hours into our second day on the road, we heard the DJs on SiriusXM talk about the magnitude 4.8 earthquake with an epicenter near Lebanon, New Jersey. We may have felt it if we were stationary, but we never noticed a thing while zipping along I-90. When we crossed the border into Maine, I turned to Alexis and asked, "Why are we here?" It was completely overcast with light rain, but the eclipse was still three days away.

Our hotel, Fireside Inn & Suites, was pretty packed. Not only were their other eclipse chasers, but local residents had no power at home thanks to the nor'easter. We had originally planned on three days of travel, so Saturday was an open day. It was still cloudy with some rain, so it was not a wonderful day to spend outside. My family decided to drive back down to Massachusetts and visit the Salem Witch Museum. I wanted to go, but I needed to update my imaging plan, and someone had to stay behind and watch the dogs. Much to my surprise, my Eclipse Orchestrator script remained exactly the same. I did need time to learn to use my new wireless intervalometer.

We traveled up to Jackman on Sunday, April 7th, to scout out viewing locations. The Versant Power Astronomy Center and Jordan Planetarium, from Orono, Maine, were

Having fun with the partial phases! Alexis tries out the KAS Eclipse Pinhole Viewer, while PJ checks out the eclipsed Sun with a Pringle Can Pinhole Viewer.

Richard poses with his eclipse imaging setup at EJ Carrier in Jackman, Maine.

hosting a viewing event at the Jackman Town Offices. I contacted the planetarium director in advance, and he invited me to set up my equipment there. On the Jackman website, there was an image of the area surrounding town offices. It was taken during their annual Moose Festival. The scene appeared lush and verdant, adorned with numerous canopies. It is evident that this event takes place during the summer months. Snow had covered much of the green space when we arrived, and the melted snow had left it very muddy. There was no way I'd want my family, especially the young children, to spend a day on that.

There was another possibility across the street: St. Faustina Church. Someone, most likely the church's pastor, drove up while we were looking around. He invited us to set up on this narrow concrete drive that dead-ended between the church and a garage. The only catch was that we'd have to arrive very early on Eclipse Day to claim it. Driving further north into town, there were no more candidate sites. All areas were inaccessible to the public. Pommerlo Memorial Park was one of the places I had high hopes for. It is on Wood Pond's shore and offers a stunning view of Hog Island and the surrounding mountains. Unfortunately, the park was also a snowy and muddy mess, and the pond remained frozen over.

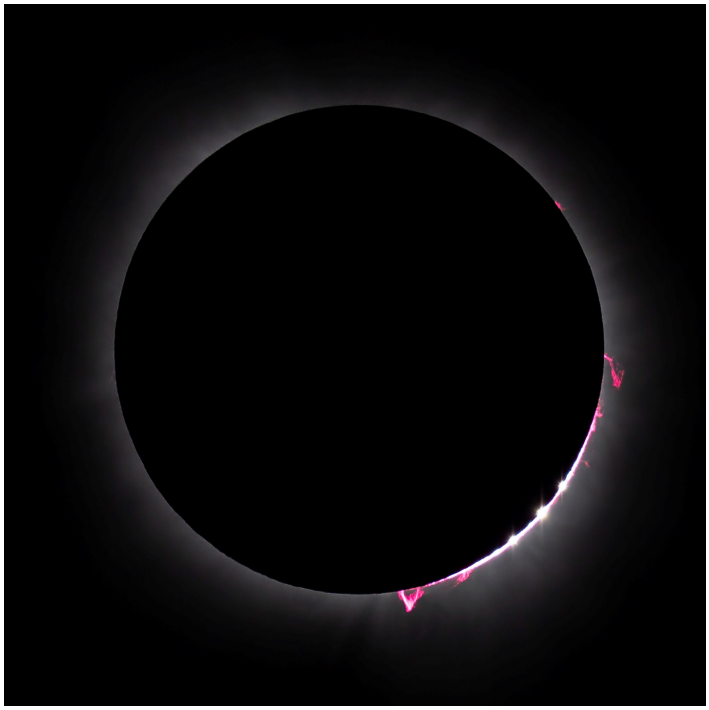
Heading south out of town, I saw a sign that said "Eclipse Parking." I followed it, and it soon led me to EJ Carrier. Google describes it as a shipping company, but their main business is cutting timber and producing wood raw materials. They had a large, half-paved, half-dirt work area and charged $50 per day for parking. Unfortunately, they intended to charge us for parking on both Sunday and Monday. We probably should have just taken our chances, arrived on Monday morning, and paid for the day. It would have been fine, but we didn't know that on Sunday. After thinking about it, we gave in. My parents and I each paid them $100 for a guaranteed spot with porta potties nearby. The excellent news was that the clouds gradually thinned out throughout the day and were totally clear by the time we returned to Waterville.

Eclipse Day finally arrived, and we pulled into EJ Carrier in Jackman at 9am. We were among the first to arrive, so I had my choice of spots. I picked an area as far away from their industrial-style building as possible on an area of concrete that bordered the dirt area. One of the employees suggested I set up way down in the dirt area, but I said I didn't pay $100 to set up on dirt. They didn't force the issue.

My main setup consisted of an Astro-Physics Mach1GTO German Equatorial mount, which carried a Stellarvue 130mm refractor (with a focal reducer/field flattener) and an Astro-Tech 65mm refractor. The Stellarvue took still images of the eclipse using a Canon 6D controlled via Eclipse Orchestrator from Moonglow Technology. The Astro-Tech telescope recorded video of the eclipse using a Sony α7RII mirrorless camera. Both telescopes used Thousand Oaks SolarLite filters. My Anker PowerHouse 757 Portable Power Station powered everything, except the Sony camera. Thank goodness I had the Anker. It gives me the flexibility to set up anywhere and have reliable power for several hours.

Another thing I was grateful for was a video Astro-Physics released in mid-March about daytime polar alignment. I was able to polar align on Polaris before the 2017 total eclipse and the 2023 annular eclipse, but it wasn't possible this time. Between my schedule and the weather, I had no opportunity to practice beforehand. Overall, it worked very well, but I made sure to re-center the Sun every 10 minutes or so. There was no way I could have left it unattended like I did in 2017.

One major problem I ran into was with the new (to me) Garmin 18x USB GPS device I purchased on eBay back in January. On January 19th, Fred Bruenjes, the creator of Eclipse Orchestrator and one of the Eclipse Series speakers, strongly recommended that everyone who uses his eclipse



Richard took this picture of Baily's beads and the now-famous triangular prominence from Jackman, Maine, at 3:32 pm EDT on April 8th. It is a 1/4000-second exposure with a Stellarvue 130mm refractor (with a focal reducer/field flattener) and Canon 6D on an Astro-Physics Mach1GTO mount.

automation software get one. As soon as it located GPS satellites, Eclipse Orchestrator thought the date was August 27, 2004, and there was no way to manually correct that. Merina noticed how frustrated I was, so she researched the Garmin on her phone while I looked into Eclipse Orchestrator. She discovered a reference to the problem and a driver available for download to resolve it. That did the trick, although I'm still perplexed by it. I downloaded the latest driver as soon as the Garmin arrived in the mail.

First contact from Jackman, Maine, was at 2:18:54 pm EDT. I first spotted a little bite out of the lower right of the Sun's disk with my Lunt 8×32 SunOculars about a minute later. Once the eclipse had progressed enough, we started having a little fun with the partial phases. I made three Pringle Can Pinhole Projectors, which we passed around. We also tried out the KAS Eclipse Pinhole Viewer, which I first created in 2017 and updated for the 2024 eclipse. The holes I punched out the letters "KAS," appropriately enough. Naturally, everyone donned their official KAS Eclipse Shades. Well, everyone except my parents. They still had the same pairs I gave them in 2017.

The sky became noticeably dark about 5 minutes before totality. This is when Luna seemed to get a little nervous and jumped into Alexis' lap. Lucy's response to the darkening sky was to jump into my parents' caravan and take a nap! Rather typical behavior for her. Our surroundings took on an eerie grayish-blue hue about a minute before totality. It's no wonder our ancestors thought the world was coming to an end. Colors becoming more subdued near mid-eclipse make it appear as if reality itself is fading away!

Second contact, the start of totality, was at 3:29:30 pm EDT. Thanks to a wireless earbud in one ear, I received a reminder from Eclipse Orchestrator to remove the solar filters from the two telescopes about 20 seconds beforehand. I forgot to remove the solar filter on my Canon T2i (550D). To control this camera, I used the wireless intervalometer I practiced with in the hotel on Saturday, and I intended to assemble a widefield composite. I wasn't too disappointed because the foreground wasn't as appealing as I had hoped for.

The whole family poses for a picture after the eclipse. From left to right: Richard Bell, Merina Munson, PJ Munson, Alexis Bell, Reese Munson, Ronald Bell, and Connie Bell. Other family members include Luna (a husky-Pomeranian) and Lucy (an English bulldog).

You could hear thousands of people at the Jackman Town Offices and around me at EJ Carrier erupt with excitement at the appearance of Baily's beads and the diamond ring effect. The solar corona then made its glorious appearance. In 2017, the three iconic streamers visible during totality were like peddles in an incomplete flower. This time, the corona was in full bloom, with peddles all around. This was due to the difference in the solar cycle: near mini-

mum in 2017 and approaching maximum in 2024. The pinkish glow protruding below the Moon's disk was evident almost right away. This time I remembered to view totality with binoculars (my Orion 10×50s) and clearly saw a triangular-shaped prominence. I've seen plenty of these with my Lunt hydrogen-alpha telescope, but what a thrill to see one with no special filters!

Maximum eclipse occurred at 3:31:14 pm EDT, with an altitude of 37.5° above the southwest by west horizon (237°). Third contact, the end of totality, was at 3:32:57 pm EDT. Totality from Jackman lasted 3 minutes and 26.7 seconds. Although it was nearly a minute shorter than what we could have seen from Chalk Bluff in Texas, I was still able to witness the 2024 eclipse under pristine skies! Based on my simulations and images, I'm pretty sure we saw a double diamond ring at the end of totality. It all happened too fast to be sure visually. A third bead appeared a fraction of a section later. One thing that really struck me about this eclipse compared to 2017 was how much brighter and more spectacular Baily's beads were at the end of totality. They were dazzling!

Another thing to note is the change in temperature. The high temperature in Jackman on April 8th was about 60° F. I brought an LCD clock and thermometer with me. The lowest temperature I observed during mid-eclipse was 51° F. There was also a strong breeze throughout the day, but it died down at around totality. The young kids got pretty restless after totality, so Merina and my parents packed them and the dogs into the caravan and started making their way back to Waterville. Alexis stayed with me, and I wanted to photograph and observe the eclipse until the very end. That end, fourth contact, was at 4:39:29 pm EDT. Nearly everyone at EJ Carrier had left by this time. Once the eclipse was over, I screamed "Woo Hoo," and someone on the opposite end of the place yelled "Woo Hoo" in reply.

I started the slow process of packing up all my equipment and cramming it in my Jeep. Alexis did her best to stay warm. I had to be out of EJ Carrier by 6 pm, and I made it with 10 minutes to spare. Alexis and I were the last people to leave. Traffic was moving quite well on Main Street (U.S. Route 201) in Jackman, so I had hopes we would avoid the eclipse traffic. This hope quickly vanished once we headed south out of town. The 2-hour drive home

On April 9th, the Bell family stopped at Ogunquit Beach in Ogunquit, Maine. It was the first time Alexis, Merina, PJ, and Reese had seen the ocean.

Everyone then visited Niagara Falls State Park on April 10th. It was the first time PJ and Reese had seen the falls.

turned into a 5-hour, slow-moving trek. It did give us time to enjoy the beautiful scenery and, when we were at an absolute standstill, the new eclipse images on my camera. Because the others made a couple stops on the way back, we all arrived in Waterville at about 11pm.

According to the 2020 census, Jackman has a population of 783. It's estimated that 10,000 people from across the country (and beyond) flooded the small town, nicknamed the "Switzerland of Maine," on Eclipse Day. Local officials said it was probably the largest crowd they had ever seen.

Tuesday, April 9th, was another long day on the road. We had one stop to make, though. Alexis really wanted to see the ocean. Merina and her kids never saw it, either. Instead of stopping at the Atlantic shore on the way in, I told them to wait because I knew the weather would be better. It was a very sunny and cloud-free day. I opted for Ogunquit Beach in Ogunquit, Maine. Unfortunately, the beach was under water. This may have been due to that pesky nor'easter, but I'm really not sure. We then continued on our way and stopped at Hamburg, New York, for the next two nights.

We spent the following day visiting Niagara Falls State Park. Yes, it would have been easier to stay in Niagara Falls itself, but there weren't any hotels available. I can't imagine why! Everyone had been to Niagara Falls before except for PJ and Reese. For me, it was my third time. I was first there in the early 1980s (probably '83) and again in 2012. Everyone but my parents, who watched the dogs, took a ride on the Maid of the Mist. While waiting in line, I asked one of the attendants if they saw the eclipse. Her answer was no. It was totally overcast. Too bad, as I was looking forward to seeing pictures of the eclipsed sun above the famed falls. The boat we rode on was relatively new. They recently replaced the older versions with fully electric ones. Of my three trips on Maid of the Mist, this was the most extreme. Despite the raincoats provided, the wind and mist were extremely intense, leaving us soaked and chilled to the bone.

Our family adventure ended with our arrival back in Kalamazoo on April 11th. I've now seen two total solar eclipses, two annular eclipses, and four partial solar eclipses. Thanks to the rotten weather in Texas, I missed out on

an opportunity to view the 2024 eclipse with my fellow KAS members. I was thrilled to share the experience with my family, though. My parents observed the 2017 eclipse from Carbondale, Illinois, but my nieces missed it. I really wanted them to see this one. I hope PJ remembers it when he grows up, but I'd be surprised if Reese does.

I truly hope I don't have to wait 20 years to witness another total solar eclipse. All I know is that I don't want to organize any more special activities leading up to the next great American eclipse. I'd simply like to enjoy it for myself.

☼ ☼ ☼

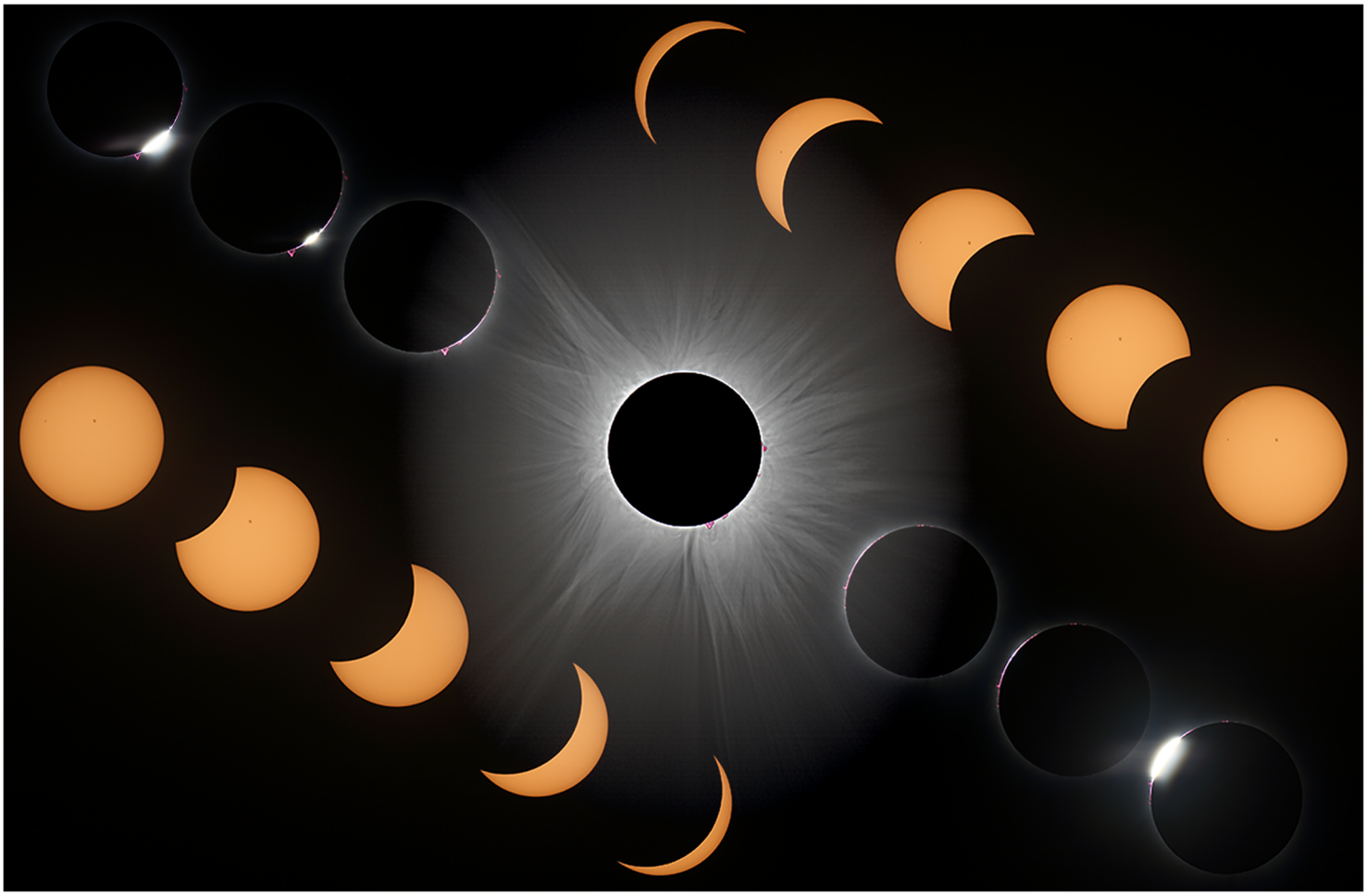
Matt Borton
Makanda, Illinois

2024 will be the first time my daughter, who was 1 year old in 2017, will see a total solar eclipse. That was my thought when I watched my first total solar eclipse in 2017. Since then, my wife and I have had a second child; now they are 5 and 8.

On May 10, 1994, I witnessed an annular eclipse through a welding glass my dad gave me. Since then, I've permanently added a total solar eclipse to my bucket list! The 2024 trip began eight months prior to totality. Planning began with taking notes on lessons learned in 2017, evaluating equipment, and deciding what exactly to capture. Planning where to go proved to be the hardest part.

This time I had huge ambitions to capture Baily's beads, the chromosphere, prominences, and the diamond ring effect. By this time, I had upgraded to a Canon 5D Mark III with an 80mm triplet refractor at 650mm focal length on an iOptron CEM25P center-balanced equatorial mount. I investigated how to take photos in a timed sequence and what techniques would be ideal. Don't get me wrong, the 2017 eclipse was great, and I was able to collect the photos I needed with the manual process I set. This time I wanted more automation and precision, as spending time with my family was the goal rather than a finger on the shutter release.

With all this planning and focus on photography, equipment, and methods, I didn't even think of the one thing that would be the largest hurdle: April cloud cover. I pinpointed the best locations a month in advance, researching past trends and reading forums to increase my viewing chances. All of this meant absolutely nothing when the time came to choose a location. In my preparation, I had viewing spots from Texas to Montreal picked out based on location,



Matt assembled this impressive composite from images he took at Blue Sky Vineyard in Makanda, Illinois. An 80mm triplet refractor and a Canon 5D Mark III on an iOptron CEM25P mount are among the equipment used.

The Borton Family enjoyed the *Great North American Eclipse* together under a blue sky from Makanda, Illinois.

weather patterns, and other points of interest for the family mini vacation. The best part is that the actual weather conditions were 180°, the opposite of all predictions.

The trip, in short, was perfect! We started off leaving Kalamazoo at 8:30 pm on April 7th, heading to Makanda, Illinois (Blue Sky Vineyard). This location appeared to have a 26% chance of cloud cover and was close to home. With all the hype, we expected bumper-to-bumper traffic. It was totally clear. We arrived at Blue Sky Vineyards at 1:30 am, and we were the only ones there. The sky was perfectly clear. I gathered all the necessary equipment, assembled the mount, polar-aligned it, and settled down in the van with my family tightly packed. Later that morning, I awoke to a blanket of thick fog and clouds. The dew had soaked and covered everything outside!

After a morning of worry and cloud-watching, the clouds dissipated into a slight "wispy" haze as the Sun rose higher in the sky. When the time came, the clouds disappeared, and the sky was perfect. During the partial phases, the kids and I experimented with a pinhole projector made from a Pringles can and talked about environmental changes. As totality approached, everyone became silent, just waiting for the Sun to make its last glimpse through the mountains on the Moon. My timer went off, and I yelled out, "Take them off, take them off." IT...WAS... GLORIOUS. Everyone cheered, screamed, and yelled with excitement. My children have seen their first total solar eclipse. The corona was huge, and a prominence was easily visible with the naked eye. It was just amazing.

I used Eclipse Orchestrator to take all the photos from start to finish. This meant that while everyone else immediately left after totality, I was still taking photos for an hour or so. This helped to prevent any traffic from leaving the site. We did hit a backup closer to St. Louis, but it was really only the last half hour or so.

Thank you, my loving wife, for entertaining me with my illness of eclipses and astronomy. I look forward to making more memories with the family in Spain in 2026.

Arya Jayatilaka
Vanlue, Ohio

Most of us struggled on Monday morning (April 8th) to decide where to go and observe the eclipse with the least cloud cover. We planned to drive to Erie, Pennsylvania, because it was on the centerline of totality. However, the weather forecast led us to change our plans to Toledo, Ohio. With some friends in Toledo, we drove further southeast to a small park in Vanlue, Ohio.

There were about 10 families and a group of motorcyclists from Detroit. It was fairly clear throughout the eclipse.

Through KAS's eclipse seminars, I was better prepared this year for each eclipse stage. My photographs turned out okay with sunspots and prominences. But I missed photographing the diamond ring as I struggled to change the camera settings. Instead, I got to see it live.

I carried two cameras (Canon EOS 60D and Canon 5D Mark IV), two lenses (Canon EF 24-70mm USM and Canon EF 100-400mm L IS II USM), two intervalometers, two tripods, and two solar filters (made in KAS workshops in 2017 and 2024). I experimented with different exposure settings. I quickly realized multitasking with two sets of equipment is challenging and decided to focus on one set (Canon EOS 60D with Canon EF 100–400mm L IS II USM). During totality, I took some landscape photos using my cell phone.

According to KAS speakers' recommendations, I photograph in both JPEG and RAW formats. In the future, I hope to process RAW files.

Overall, the 2024 eclipse worked out much better for us than the 2017 eclipse (observed in St. Genevieve, Missouri, but missed the totality due to clouds). We are grateful to have seen one of the most amazing natural phenomena.

Deep appreciation goes to Richard S. Bell (President, KAS) for organizing excellent seminars and preparing a *Prime Focus* special newsletter. Also, a huge thank you to all the speakers in the 2024 KAS Eclipse Series.

Arya (left) and his family enjoyed the eclipse from Vanlue, Ohio.

Mercedes Rivero Hudec
Fredericksburg, Texas

In 2017, my immediate family and I had a wonderful experience observing the total solar eclipse in Grand Island, Nebraska. I knew right away that I was going to try to make it to this year's total solar eclipse. Based on several weather databases in the fall of 2022, I, along with many others, expected the best conditions to be in the southwest. Richard Bell had organized planning meetings earlier that spring to determine the best location for the eclipse, ultimately deciding on Chalk Bluff River Resort and Park (Uvalde, Texas).

As my first choice was to be in a park, I kept reading about several state parks in Texas that were in or near the path of totality, and in October 2023, I visited friends in Austin, Texas (I was on my way back to Rhode Island from New Mexico, where I had joined some members from Skyscrapers, Inc.—the Amateur Astronomical Society of Rhode Island—to observe the annular solar eclipse). My friends and I drove to Fredericksburg, scouted several parks and other locations nearby, did a short hike in Enchanted Rock Park, and decided that was where we wanted to go, camp, and observe the eclipse. The disadvantage was that we could only make phone reservations for campsites and/or day passes at parks in or near the path of totality for April 8th (or previous days) until November 8th.

On that day, my friends and I were on our phones, trying to reserve our spots (campsites or day passes, whichever we could find), but we were unsuccessful. Nonetheless, we agreed that on April 8th, we would drive to the Fredericksburg area, find a place, and spend the day there.

We all know what happened weatherwise on April 8th in many areas of Texas; no need to repeat details here: it was cloudy with sporadic clear patches of sky. My friends

Mercedes, a KAS member from Kingston, Rhode Island, observed the eclipse in comfort from Fredericksburg, Texas.

Mercedes (with her back turned on the right) and her friends and at the Lady Bird Johnson Park entrance wearing their commemorative T-shirts.

and I decided to keep our original plans instead of driving farther in other directions, as clear-skies conditions were still uncertain elsewhere. We left Austin at 4:30 am and at 6:00 am arrived at "Lady Bird Johnson Municipal Park" in the outskirts of Fredericksburg (the park had opened at 5:30 a.m.); staff at the gate welcomed us and asked each one of us where we were from, then we proceeded to drive to the designated parking areas; it was still dark and a few other people were already in the park.

As soon as daylight arrived, one of my friends and I went for a walk. She bought commemorative T-shirts for all of us, and we wore them right away. I also ended up buying one coffee mug. Later on, I went for other walks: to explore the park trails, which were well maintained; to look at equipment other visitors were setting up: solar scopes, cameras, filters, etc. (one family had traveled from Washington State and had a nice solar-scope setup); to check out food venues. At the park, some birdwatchers told me they were there for the birds, not the eclipse.

Midmorning, around 10am, hopes rose as the skies cleared significantly; however, we could see clouds lurking on the horizon. By 10:30 am, Mac'N Wag'N, the mac'n cheese truck, opened for business, and there we were, enjoying our orders; they were delicious! (We ate later the lunch we had brought.) Then the partial eclipse began, and clouds started to move in; though not completely overcast, we could see the Sun through open patches in the clouds.

When totality arrived, everybody was mesmerized. "Gillespie County Airport" borders the park to the east, and its lights came on during totality. We were able to observe the corona intermittently, primarily due to light scattering in the clouds. The total eclipse ended four minutes later, and the second partial eclipse began; the clouds completely obscured the latter, but I continued to track its progression by monitoring the time.

Many visitors started to leave the park right after totality. During the second partial phase, we ate the lunch we had prepared, waited until the eclipse officially ended, and

left shortly afterwards. Before exiting the park, we stopped to talk with the staff at the gate—the same people who had greeted us at 6:00 am when we arrived; they mentioned I was the only Rhode Island resident who had visited the park that day. We started our drive back to Austin around 3:30 pm; on the way, we stopped at "Pedernales Falls State Park," where we admired the beautiful waterfalls and "Cypress Pool."

It certainly was another wonderful experience!

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Jack Price
Winchester, Indiana

As planning for the eclipse began, Don Stillwell and I decided to travel together, as we had done for the 2017 eclipse. We didn't want to do a long trip, so we thought we would go to Ohio. Mike and Karen Sinclair expressed their desire to join us, and Jim Bradshaw also expressed a desire to tag along. To reduce travel time on Monday, I wanted to travel part way on Sunday. I found us some hotel rooms in Fort Wayne. So on Sunday afternoon, we met at the hotel. Don's grandson and Jim's brother from Wisconsin joined us.

On Sunday evening, we gathered in the hotel breakfast room to distribute maps and the field guide from Michael Zeiler and Michael Bakich. We would be at our viewing location for 4 to 5 hours, so I wanted to have food and a restroom available. I thought a truck stop in Ohio would work, but we decided we wanted to avoid the main highways and the heavy traffic, so we started looking at state roads. There was a state highway that went straight south of Fort Wayne. About an hour and a half drive would take us to Winchester, Indiana, almost right on the centerline for the eclipse. We looked closely and found a Walmart in Winchester, with a large part of the parking lot on the south side of the store. Food and a restroom were available; that was the place to go.

KAS members and friends posed for a group picture after successfully seeing the *Great North American Eclipse* from Portland, Indiana.

Without the expert leadership of KAS President Richard Bell, the group had a hard time locating the blazing Sun in the sky. A little eclipse humor!

The weather made us doubt the sky would be clear, but we went anyway and hoped for the best. It looked like it would be better than Ohio and Illinois. Greg Sirna and some of his friends joined us on Monday morning. When we got to Winchester, the clouds were thin, but as the eclipse approached, they got thinner. It was about 90% clear throughout the eclipse.

Don had set up his telescope using the Sun Funnel, whereas I had set up a Coronado H-alpha scope. As the eclipse progressed, I kept comparing the views between both scopes. I enjoyed the unobstructed views through my eclipse glasses and SunOculars. During totality, it is so cool to be in the middle of a 360° sunset around us. It was a fabulous eclipse! There was also a large prominence that was easy to see with the naked eye during totality! Viewing the eclipse with a group of friends made it even better. I'm looking forward to seeing the eclipse in 2045 as it crosses the southern United States.

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Eric Schreur
Junction, Texas

I signed up to view the total solar eclipse on April 8, 2024, with a group from the Milwaukee Public Museum. Bob Bonadurer, the director of the Daniel Sorif Planetarium at the museum, guided the tour. I've known Bob for years and have traveled to two earlier eclipses with him: 2001 in Lusaka, Zambia, and 2019 in Vicuńa, Chile. I was traveling with my daughter, Emily. The group included a dozen other friends whom I know from the Great Lakes Planetarium Association or from the eclipse in Chile.

I traveled to the eclipse on Amtrak trains: the Wolverine from Kalamazoo to Chicago and the Texas Eagle from Chicago to San Antonio. In San Antonio, we stayed at the Holiday Inn Riverwalk hotel. We arrived at the hotel a little after 10pm on April 4th. April 5th was a free day because

While in San Antonio, Eric Schreur, his daughter Emily, and the rest of his eclipse group visited the Alamo.

group activities did not begin until 4pm. Emily and I explored San Antonio's Riverwalk. After the morning exploration, we returned to the hotel, where I assembled and began testing my equipment. At 4:00, we met the group to board a small boat to cruise the Riverwalk and then return to the hotel for a buffet reception.

April 6th began with an early call to board a motorcoach that would take us west to the hill country, where we toured the Natural Bridge Caverns. The guided tour lasted about 90 minutes. After returning to San Antonio, we had dinner on our own at Whataburger, a well-known Texas chain that is expanding into Michigan this year. After dinner, Emily and I explored the area around the Alamo, which we would visit the next morning.

On April 7th, we had a guided tour of the Alamo. The tour was about an hour long, and we had a day-long pass to visit the site and the adjacent museum.

The group staff set up a meeting in the afternoon to decide where we would go for the eclipse. Bob invited me to attend the meeting, and Emily came along to "be where it happened." The team had already preselected and reserved four sites. We selected Uvalde in the south, Comfort, Kerrville, and Junction along I-10.

Everyone at the meeting, except me, used Dark Sky Clock as their weather reference. I had the hourly block graphs from Dark Sky Clock and Astrospheric, animations from Ventusky, and real-time composite images from GEOS satellites.

Ventusky showed that on the morning of the 8th, a band of clouds would be moving westward from the Gulf of Mexico across the eclipse path, where it would stall and reverse in the afternoon. There was also movement of a patch of cloud at the front of that line that would sweep up from the mountains in Mexico, across Uvalde, and farther north, reaching I-10 at about the time of totality. The patch of clouds would pass over about half an hour after it arrived. It could arrive before, during, or after totality, depending on its velocity. If it arrived a little early or late, we would see totality.

At the start of the meeting, the consensus was that I should go to Kerrville until I showed the animations. We needed to go farther west, almost to the edge of the totality line. We decided to travel an additional forty miles to Junction, where we had reserved a church parking lot. We would lose a minute of totality, but we have an increased chance of seeing some of the eclipse. The extra distance also meant that we would have to pack up quickly after totality in order to make our dinner reservation in San Antonio that evening.

April 8th began with cloud cover over San Antonio as we boarded the motorcoach. Overcast skies continued until after we drove through Kerrville, but over the next twenty miles, the clouds thinned, and eventually we drove out from under them. It seemed more likely that we might see the eclipse in clear skies. We arrived at the church parking lot a little less than an hour before first contact, plenty of time to get equipment set up. I chose a spot near a pile of flat stones, stacked to form a short wall, where I had some shade from nearby trees that the Sun would clear within the hour. Because of my practice, set-up went quickly, and I knew I had enough battery power in the computer and camera to launch the Eclipse Orchestrator program.

For some reason, Eclipse Orchestrator decided it did not recognize my camera. I spent the first half of the partial phases in a frustrating battle against the computer, eventually succeeding in getting Eclipse Orchestrator to recognize the camera. Partial eclipse images were coming in with

After visiting the Riverwalk, the group took a tour of Natural Bridge Caverns.

Eric had to do some last-minute trouble shooting thanks to a camera that couldn't be detected by Eclipse Orchestrator.

good exposures, well ahead of totality. All I had left to do was finalize the centering and remove the entire solar filter.

My daughter came over at about that time to tell me that Lisa, who runs the planetarium in Waukesha, Wisconsin, was asking for help getting an 8-inch Celestron aligned on the Sun. I went over to see if I could help. By now, a few of the clouds sweeping up from the south had begun to pass over. To protect the crosshairs, I covered the guide scope and attempted to align the telescope using shadows between clouds. We couldn't find the thin crescent sun in the eyepiece, which was sweeping a box pattern around the area where the shadow appeared. It was down to two minutes, and Lisa told me I could go back to attend to my own equipment.

The clouds were getting thicker, with breaks coming over at half-minute intervals. Toward the southwest, the clouds appeared as dark as a heavy thunderstorm due to the Moon's shadow. Totality would come in a few more seconds. I tried to do a total camera recentering, but the image was too dark to see through the viewfinder. I had to let the equipment run as it was.

Looking up at the sky, it was mostly overcast now. The last bit of the crescent sun disappeared behind the clouds. We missed Bailey's beads and the diamond ring in the cloud, but a hole passed, allowing the corona to shine through. A cheer went up, and then a groan as the clouds swallowed up the eclipsed sun. Over the three minutes of totality at our site, we may have seen twenty seconds of the eclipsed sun. At the end of totality, the clouds again obscured the diamond ring and Baily's beads.

After about five minutes, we all gathered to have a group photo taken. By then, the clouds were beginning to break up; the small patch of clouds drifting north from Mexico was past us. It took about twenty minutes to pack up the gear, and another ten to load everything on the bus.

By the time we boarded, we had a fair amount of blue sky overhead, and the partial phases were nearly complete.

Traffic was good until we got to the intersection where viewers from Uvalde were trying to get on I-10, at which point it began to gel up. It took twice as long to return to San Antonio as it did to drive out to the viewing site.

That evening, we strolled down the Riverwalk to the restaurant where we had our celebration dinner. The next morning, we had a 6:50 am train to catch.

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Mike Van Goor

Wapakoneta, Ohio

Our journey to the 2024 total eclipse began with lessons learned from the 2017 total eclipse, which we witnessed in Franklin, Kentucky. We were looking for a location within a four-hour driving distance, as close to the center of totality as possible, with convenient access to roads in every direction, in case we needed to resort to Plan B if the weather did not cooperate. Scanning along the center of totality, we came across the Armstrong Space Museum in Wapakoneta, Ohio, the hometown of Neil Armstrong. We figured this had to be a place with incredible energy on Eclipse Day, so we set our sights on watching the eclipse from the museum's grounds. We booked rooms for ourselves as soon as we could, a year in advance. Since we saw the 2017 eclipse with our youngest daughter, we invited our oldest daughter and her husband to join us for the eclipse in Wapakoneta, where totality would last for 3 minutes and 57 seconds.

Having purchased our first telescope during the pandemic in October of 2022 (and still being a newbie), I had grand plans to try to photograph through our telescope, an 8-inch Celestron StarSense Dobsonian telescope with a Kendrick Astro Instruments solar filter. After purchasing and reading Alan Dyer's *How to Photograph the Solar Eclipses*, I realized photographing through an untracked telescope would have required constant adjustment and

Mike Van Goor, a KAS member living in Chelsea, viewed the eclipse with his family at the Neil Armstrong Air & Space Museum in Wapakoneta, Ohio.

caused me to miss seeing the eclipse. I decided to take some less involved approaches presented in Alan's book to document our experiences, namely using our iPhones, a series of photographs using an intervalometer, and the most time-consuming approach of photographing totality with a telephoto lens.

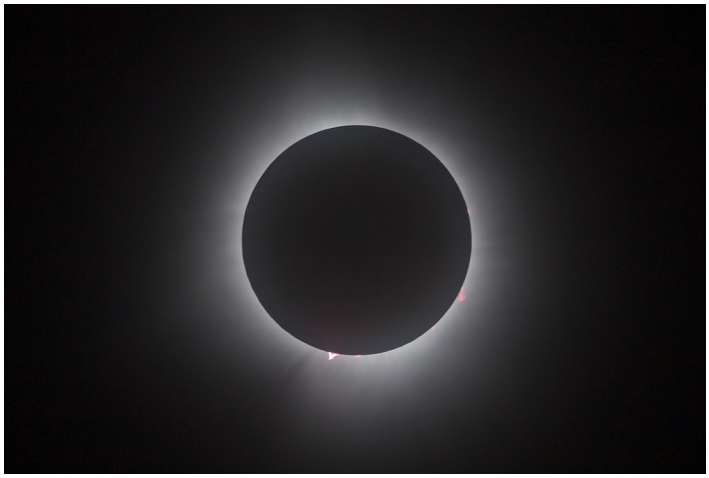
There was a bit of a problem because I did not own a telephoto lens, so I rented a Canon EF 100-400 f/4.5-5.6 lens from the Camera Mall in Ann Arbor. I rented it for a week, starting on the Wednesday before the eclipse, in hopes of clear skies to practice with the lens. I was fortunate to have several opportunities to find out what I could do with it, practicing live view focusing and testing ISO and exposure settings until I had a plan for what to do on April 8th.

I also practiced taking a series of shots at two-minute intervals. Since I wanted to use our full-frame camera for totality to hopefully capture the corona, that meant I had to use our cropped sensor camera for the series. During my initial practice session, it became evident that I wouldn't be able to capture the entire eclipse from the beginning to the end of the partial eclipse. Therefore, I calculated the number of shots I would need to capture and determined the optimal time to begin taking photos to achieve a roughly centered totality in the final composite image.

We packed up and left on Sunday afternoon to explore Wapakoneta a bit and visit the Armstrong Space Museum to get a sense of where we might try to set up. I was going to leave the telescope at home, but my wife said even though we would not be using it for photography, we should still bring it because seeing the eclipse live would be an amazing thing. This turned out to be one of the best things we did!

Before we checked into our hotel, we visited the museum shortly before its closure to explore the exhibits and purchase some solar glasses. We had previously sent the other glasses we had purchased to our youngest daughter at MIT, so she could witness the 93% partial eclipse. Then, we crossed the street to the hotel, reconnected with our oldest daughter and son-in-law, and proceeded to explore downtown Wapakoneta in search of a restaurant.

Mike brought his Celestron 8-inch StarSense Dobsonian with a Kendrick Astro Instruments solar filter so his family could observe the eclipse up close.



Mike took this 1/60-second exposure of totality with a Canon 6D Mark II and Canon EF 100-400mm lens at 400mm at f/5.6 and ISO 100.

Wapakoneta's community is very proud of their claim to fame as Neil Armstrong's birthplace, and rightly so. They have space-themed public art and sculptures of Neil Armstrong along the main street through downtown. Many businesses have products celebrating space and the eclipse, from beer to chocolate.

The weather was certainly a concern for the following day. At that time of year, Wapakoneta had an average history of 67% cloud cover. The forecast called for mostly clear skies at 8:00 am, followed by high, thin clouds by midafternoon for the eclipse. We decided that was tolerable and committed to staying there rather than chasing the unknown elsewhere.

The parking lot at the museum was not that big, so I got up early on the morning of Eclipse Day so I could get in line to secure a parking space and avoid lugging all our gear across the street. As I approached the entrance, I could see them counting cars. I just made the cut, with only seven or eight cars getting in after me.

Finding a spot to set up was the next step. At 8:00, there were already a couple hundred people there. Luckily, there was a nice open spot between two families on the berm along the entrance to the museum, which would guarantee unobstructed views to the southwest. The family next to us was from Traverse City, Pennsylvania. He found the museum on the map and also decided to go. When they arrived at 1:00 am, their car was actually the second one there. The security guard told them they could stay as long as they didn't get out and climb the building. The museum sits partially underground.

I set up the telescope and filter, and I asked my daughter to be the telescope's keeper while I went to get the cameras from the hotel. I told her that if people were curious, I would offer them a look through the telescope. When I returned, I was pleased to see her talking to a mom and her child, helping them look at the pre-eclipse sun. Indeed, talking to a community of people from across the country—and even the UK—in the afternoon was probably the

Totality at the Neil Armstrong Air & Space Museum!

most fun we had, after seeing the eclipse!

The museum's atmosphere was full of energy and a party vibe. A couple of thousand people gathered at the start of the partial eclipse, enjoying a music broadcast with a Sun or Moon theme and food trucks. Despite the thin clouds, views of the partial eclipse were still pretty clear. They stopped the music a few minutes prior to totality, and the crowd cheered when the shadow swept over us. Venus appeared like magic, and the sunset effect was visible in every direction on the horizon. Despite the excitement, I remembered to take my filters off and get some photos of the diamond rings and Baily's beads. Looking at the total eclipse through the telescope and seeing the large solar prominence—that big loop of plasma—grow in real time was one of the coolest things I have ever seen! I was so glad my wife convinced me to bring it.

Three minutes and 57 seconds passed by quickly, and it was time to put the filters back on. Many people left at that point, but we stayed until the very end. Our family's iPhone videos of totality and time-lapse were enjoyable to see. For the composite photo, I chose to include photos at four-minute intervals before and after totality. And the photos in total turned out better than I had hoped, given my lack of experience with this sort of thing. This experience exceeded all our expectations!

I am so grateful for everyone's generosity in sharing their knowledge, resources, guidelines, and references; it gave me the confidence to try to photograph this wonderful event. And thank you to Richard and the KAS for producing the wonderful Eclipse Series!

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Dave Woolf
Uvalde, Texas

Despite the unfavorable forecast, we proceeded with our plans to visit the Chalk Bluff River Resort. There were too many people involved, hotels were fully booked, reservations had been made, and RVs had been rented, so we were unable to change our plans. Perhaps some of us would set out on Eclipse Day and chase it northeast.

Our group included my wife Melody, my son Jonathan, my daughter Sonnet Rumora, her husband Matt, and our granddaughter Aria. Also, friends Molly Billman, David Markowicz, Annie Lawrence, John Lawrence, and Chris Sinclair, who arrived with Sonnet in a rented RV, seemed to think it was a sports car. While at the park, we met Mike Patton, Rick Beno, Chip Johnson, and Elaine Shirk.

It soon became clear that the cloud cover over central Texas seemed to lie directly along the path of totality; there was no chasing the eclipse without a day's drive, so we decided to stick it out and hope for the best. We were able to enjoy the riverfront and the animals at the nearby preserve.

I successfully polar aligned the mount the day before, and prepared the equipment for the morning of Eclipse Day. We woke up to completely overcast skies. Approaching first contact, we saw so little sun that I could only focus on the tape I placed on the focuser while testing it at home prior to the trip.

I decided to let the mount track and Eclipse Orchestrator run with my Canon 5D Mk III attached to a TeleVue NP101is, hoping to catch something through a break in the clouds. I also had two film cameras mounted, along with a Lunt solar scope for visual observations and centering. I had to pause and cover the equipment during a brief rain. Through thin spots in the clouds, we were able to see a few of the first partial phases. Unfortunately, the mount decided to reboot itself and lost tracking.

Approaching totality, we were able to experience the effects—temperature drop, darkness—and see some totality again through thin clouds. We brought along a temperature logger and graphed the temperature drop. I did manage a few images.

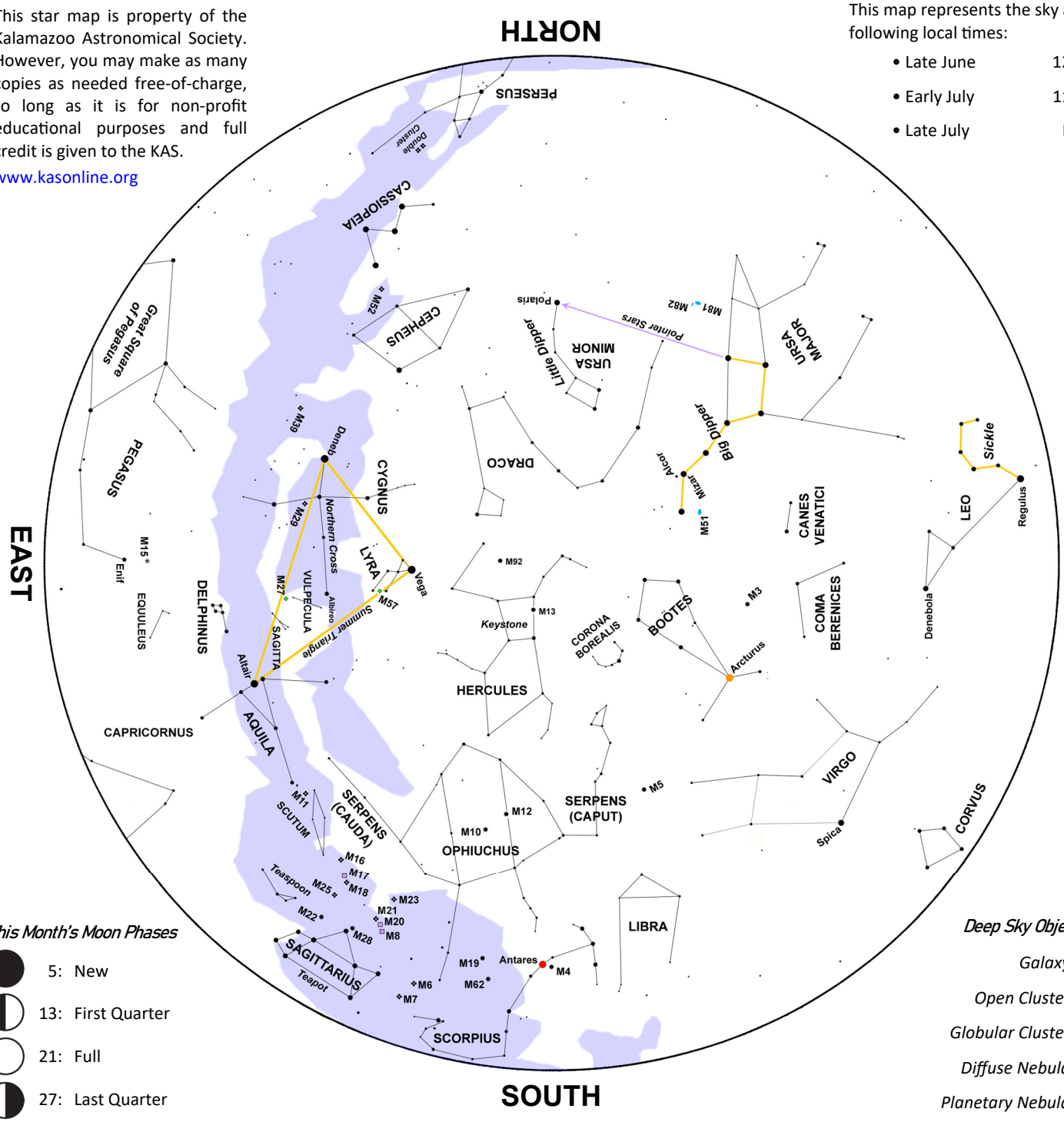
The clouds continued to thin as the eclipse progressed, so we were able to see most of the final partial phases. Afterwards, we discussed the possibility of traveling to Spain in 2026 or Alaska in 2033.

Some of the KAS members, family, and friends that went to Chalk Bluff River Resort and Park in Uvalde, Texas (from left to right): Molly Billman, David Markowicz, Annie Lawrence, John Lawrence, Chris Sinclair, Aria Rumora, Sonnet Rumora, Jonathan Woolf, Matt Rumora, and Melody Woolf.

July Night Sky

This map represents the sky at the following local times:

- Late June 12 am
- Early July 11 pm
- Late July Dusk



This Month's Moon Phases

- 5: New
- 13: First Quarter
- 21: Full
- 27: Last Quarter

Deep Sky Object Key

- *Galaxy*
- *Open Cluster*
- *Globular Cluster*
- *Diffuse Nebula*
- *Planetary Nebula*

Mercury is the most illusive planet in the solar system. Its orbit is so small that it can never get farther than about 28° from the Sun. You have an excellent chance to spot it again (or for the first time) at dusk on July 7th. Look for the two-day-old waxing crescent Moon hanging above the west-northwest horizon. Using binoculars, look about 3° below the Moon to spot the innermost planet.

The first-quarter Moon will occult (or cover up) Virgo's brightest star, Spica, on the night of July 13th. At 11:12 pm EDT, the dark limb of the Moon will block the first-magnitude star. It will reappear in dramatic fashion 71 minutes later, at 12:23 am. You can view this occultation with the unaided eye, binoculars, or a telescope.

A waxing gibbous Moon will be 3½° to the lower left of Antares, the red supergiant star representing the heart of Scorpius, on the evening of July 17th. You might need binoculars to cut through the Moon's glare.

From July 29th to 31st, early morning risers can enjoy the gathering of a waning crescent Moon, Jupiter, Mars, Aldebaran, and the Pleiades above the eastern horizon shortly before dawn.

Public Observing Sessions

at the Kalamazoo Nature Center

Observe the Night Sky

Members (like you) will set up telescopes near Owl Observatory. The observatory itself, featuring our new 16-inch Leonard James Ashby Telescope, will also be available for use.

Telescope Clinic

Do you need help with your telescope? Members will be on hand at the start of each session to give you a one on one tutorial. We can even help you learn how to find objects in the sky!

Constellation Tours

One of our members will take visitors on a tour of bright stars, constellations, and asterisms using a green laser pointer. It's just like being in a planetarium - only under the *real* night sky!

July 13th & July 27th

Gates open no later than 9:30 pm if skies are clear.