Capitol Skies

The Newsletter of the Madison Astronomical Society

Solstice Issue, December 2025

Image of the Elephant's Trunk Nebula (with stars removed) by MAS member Zach Holcomb

From the President's Desk

By Laurence Mohr

I am pleased to announce that both of the proposed bylaws amendments were approved during our December monthly meeting. One amendment increased the amount the Board can spend, without the consent of the General Assembly, from $1500 to $3000. This action will allow our Society to continue paying annual expenses, such as the property insurance for Yanna Research Station, without needing an approved motion from the General Assembly every year. The second amendment clarified how the Society will cast its votes during Astronomical League elections. I would like to thank all of the members who attended the meeting and helped us reach the required quorum. These amendments will help the Board promptly conduct routine business for MAS.

I'm also thankful to reflect on the invigorating number of new and continuing volunteers who helped make 2025 a very productive and fun year! We started in 2024 with a very successful 90th Anniversary Gala committee that organized a wonderful event in April. Since last December, we've enjoyed an excellent, re-dedicated, quarterly newsletter. This year, the Dane County community has enjoyed the labor of a very eager, energetic, and friendly outreach committee. More recently, we launched our new webpage with lots of great, new content. Dave, our dedicated observatory director, has enlisted volunteers to work on very important maintenance projects at Yanna Research Station. We had a great picnic in September and a very successful Moon Over Monona Terrace in October! With the new Moon Over Monona committee forming this year, I look forward to all of the volunteer contributions that will make Moon Over Monona 2026 even better! Happy New Year to all MAS members and volunteers! Our Society and community is greatly indebted to all of your hard work and good company!

January's MAS Meeting

And coming soon:

Feb 13	Jeff Shokler and Avtar Roopra; a conversation about beginnings and convergence
Mar 13	John Rummel on mistakes and second chances
Apr 10	Max Kroft on the search for exoplanets

Space Place Will Close in 2026

For the first time in nearly 30 years, MAS is looking for a new home for its monthly meetings.

Space Place, which is the UW Astronomy Department's home for outreach and education, will be closing its doors when the lease expires in June. According to Jim Lattis, the recently retired director of Space Place, the UW admin has been mulling this move for some time, and has finally made the decision to shutter the operation.

This is a significant challenge for the Society. While we have leased or owned property for our observatory since 1960, we have never been in the position where we've had to pay for space for our monthly meetings (see article on next page for the history of our meeting places). Locating a new space and making arrangements for our monthly meetings will be the top priority for the Board as we ring in 2026.

Finding a suitable new meeting location will be challenging. In January, Laurence Mohr and the Board of Directors will form a committee to lead the search for a new venue. If you have any contacts or connections within the Madison community and are aware of a space that could be a good fit for the club, please reach out to Laurence or Kevin Santulis.

Contact Us

From the Outgoing Director

By Jim Lattis

Owing to budget constraints at the federal and state levels, and especially the deep cuts to federal research funding and the associated overhead funding, the UW-Madison campus administration has made the decision not to renew the lease for the UW Space Place area in Village on Park when the lease expires at the end of June 2026. Furthermore, as a campus hiring freeze has made it impossible for the Astronomy Department to hire new staff following the retirements of Kay Kriewald and I last May, most activities at Space Place have been cut back or discontinued. The ultimate disposition of the exhibits and historical artifacts on display at Space Place has not yet been determined.

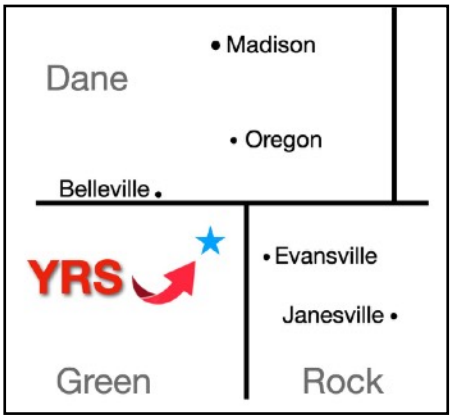
Thinking about joining?

No special preparation is needed to join the ranks of the MAS. The only requirement is a genuine interest in any phase of astronomical observation or study. Our members are amateurs with skill levels from novice to experienced observers.

Madison Astronomical Society members are active in sharing the pleasures of astronomy with the public, acting as a resource for students and teachers, and exchanging information at Society meetings which occur monthly. The Society continues to pursue its original goal to "promote the science of astronomy and to educate the public in the wonders of the universe." For more information about the Society, please visit us on the web at madisonastro.org.

What is YRS?

YRS stands for ***Y**anna **R**esearch **S**tation*, which is our Society's dark sky site. It is in northeastern Green County, about a 30 minute drive south of Madison. It has a heated and air conditioned clubhouse, a pit-toilet, several observatories, and plenty of concrete pads with electrical service for setting up equipment. There is no water available on site. It is for MAS members and their guests, and it is where we hold our star parties and other events. If you'd like to visit, send a message to madisonastro.info@gmail.com.



MAS Meeting Places: A History

By John Rummel, MAS historian

MAS has moved around a bit over the last 90 years. Here is a recap of our various meeting locations over the years.

1935-36

After its formation in 1935, MAS relied on the resources of its members for meeting venues. Locations, for the most part, were members' places of employment: The Madison Vocational School (later MATC), Madison General Hospital, the Forest Products Laboratory, and the Monona Golf Club clubhouse. Meetings generally took place on the third Wednesday of the month.

1936-1960

The Washburn Observatory. The Society's deep connection with Dr. C. M. Huffer, professor of astronomy, led to an invitation for the club to use the classroom inside the Washburn Observatory for some of its regular meetings in late 1936. By the beginning of the 1937-38 academic year, that arrangement seems to have been finalized into a permanent home for the club. The only limitation was that the club's use of the building not interfere with the Washburn tradition of public nights when the telescope and observatory were open to the public. Since those nights were (and still are) the 1st and 3rd Wednesday evenings, the club began meeting on the 2nd Wednesday of the month.

1960-1970

By the late 1950s, it was clear that Observatory Hill on the campus was no longer tenable for astronomical research. The city and campus had grown by leaps and bounds in the previous decades, virtually enveloping the Washburn Observatory in light pollution and smoky haze. In the fall of 1959, the Astronomy Department began moving most of their observing activities to their new observatory in Pine Bluff, WI, about 13 miles west of Madison. The department's new digs on top floor of Sterling Hall had abundant classroom space and the department extended its relationship with MAS by allowing our meetings to take place there after Washburn transitioned to other purposes.

1970-1980

MAS's use of Sterling Hall classroom space came to an abrupt end in August of 1970 when a bomb exploded just outside the building, extensively damaging Sterling Hall, and killing a graduate student. For the next two decades, MAS was somewhat nomadic again, and met in a variety of locations. For a time immediately after the bombing, Luther Memorial Church on University Ave was used. The group seems to have met occasionally at its own Oscar Mayer Observatory on the Bjorksten property in Fitchburg (present day Promega) but the observatory's meeting room was tiny and parking spaces were very limited.

1980-1993

Between 1980-84, the club secured space at the United Bank and Trust of Madison at 5574 Lacy Road. In early 1984, we moved to the M&I Bank of Jamestown at 5250 Verona Rd (intersection of Williamsburg Way). This arrangement served the club until May of 1993.

1993-1996

From mid-1993 until 1996, the club met in a classroom at Edgewood High School on Monroe St. This space was made available by club secretary Bob Shannon who taught chemistry there.

1996-2026

In the summer of 1990, even before the club had moved to Edgewood HS, the UW Space Astronomy Lab (SAL) opened a new outreach facility called Space Place. To house the new facility, the UW leased the old Ponderosa Steakhouse at 1605 S. Park. The "old

The only photo we have of the "old" Space Place at 1605 S. Park St. Date unknown.

Space Place" housed a museum exhibit space highlighting the UW's significant role in space and astronomy and had a small meeting room in the back for SAL departmental outreach efforts. Though there was much cooperation and collaboration between MAS and Space Place (Jim Lattis assumed the directorship in 1995), nobody seems to have thought of Space Place as a permanent meeting location for the club until much later. Our first record of a regular meeting (not a joint outreach event) there was the annual holiday/solstice party in December of 1996. The first record I can find of a regular monthly meeting being held there is May of 1998 when UW physics professor Bernice Durand gave a talk on Einstein's theory of relativity. I was at this meeting, but am pretty sure it was not the first time we used it for a regular monthly meeting. But I can find no records earlier than this one. (Our January 1998 newsletter notes that the March regular meeting would be held at a location TBA. There was no April 1998 meeting due to the banquet).

In the summer of 2005, Space Place moved less than a mile south on Park St to its current location in the Villager Mall, and MAS moved along with it. The current location in the Villager has been our home for nearly 20 years, and the only MAS home most members have ever known.

We're going to miss it!

Yanna Research Station: Improvements, Donations, and Future Planning

By David Leiphart, Observatory Director

Clubhouse repairs and improvements

After four decades the original clubhouse wall paint has been updated to a golden yellow color. This color warms the room without darkening it, highlights clubhouse pictures, and compliments the brown floor and woodwork very well. For the 90th anniversary gala in April, John Rummel created four MAS history posters and these have been placed by the clubhouse entrance. The clubhouse wall picture layout is being reworked as well.

Repairs were made to the clubhouse storm door that had broken and missing parts. The door did not close on its own and strong winds slammed the door against the outer wall. I installed a new lever handle, two new pneumatic door closers, and a missing wind chain. The storm door works well now and closes on its own.

YRS Equipment repairs

YRS has 5 Telrads and 4 of them did not work. I replaced broken glass, cleaned acid corroded battery terminals, and repaired broken electrical connections in the Telrads. A new NiMH charger (AA,AAA) and batteries (AA) were purchased for the club and are available for the Telrads and other equipment. The NiMH batteries do not typically corrode and damage electronics.

For the AKO observatory (northeast corner dome) a new shutter motor and mechanism was purchased. An upgraded board for the digital dome works controller was also bought. These redesigned parts address long standing issues that prevented AKO from working properly. The old shutter mechanism almost always jammed and the electronic controller did not handle exceptions well. These parts will be installed in AKO sometime in the next couple of months.

The Spilhaus Space Clock.

YRS Donations

Recently MAS has received some great equipment donations from club members.

—Wilbur Cox donated a Seestar S30 telescope. Wil also donated a 2" diagonal mirror, two 2" eyepieces, and an Apache case to hold these.

—Lee Keith, the Milwaukee Astronomical Society Observatory Director, donated an 8" Parks Optical dob telescope to the Madison society. Parks Optical is a brand that was known for making Newtonian reflector telescopes with high-quality optics.

—Dan Hyslop provided items donated by several individuals. This includes a laser collimation kit, a 2" TeleVue eyepiece, four 1.25" TeleVue eyepieces, and several 1.25" eyepiece filters. Along with these donations is a fascinating Spilhaus Space Clock (an astronomical/ celestial clock). This clock will be displayed in the clubhouse.

—Ed Proctor donated an 8" SCT Celestron Edge HD. This SCT is lighter and more portable than the MAS Meade SCT telescopes. Plans are to use this at YRS and at MAS outreach events.

Several posters detailing aspects of club history are now displayed in the clubhouse (note storm door too!)

YRS Planning

Historically YRS has not had a documented plan for the facilities and equipment. This has negatively impacted maintenance, improvements, and new features.

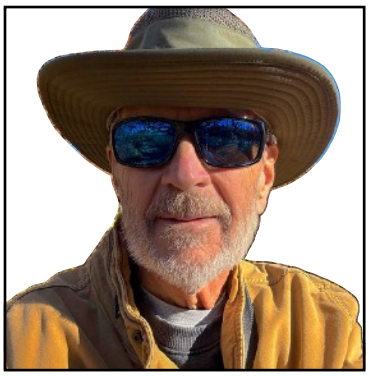
I have developed a detailed plan for future YRS maintenance and updates. While this focuses on more immediate maintenance needs it also addresses new, desired features. Part of this plan includes cost estimates and a basic priority for projects. A budget for this year and next reflects these priorities and costs.

I am working with MAS treasurer Jurgen Patau to understand MAS income and expenses for long term planning of YRS projects. What was obvious during our analysis is that MAS finances fall far short of meeting basic YRS plans. Stretching projects out into future years only addresses some of the needs while it delays features that club members want now. Jurgen and I will work on providing this information to MAS members.

A number of other YRS projects are currently being worked on and will be announced in the future. Stay Tuned.

MAS Member Spotlight: Wil Cox

Interview by Alex Samuel



Tell us about yourself.

I grew up in Lake Zurich, Illinois and moved to the Madison area in 1997. I spent my career in Energy Dispersive X-ray Spectroscopy (EDS/EDX), analytical instrumentation and semiconductor fabrication. I was a consultant with WMEP (Wisconsin Manufacturing Extension Partnership) for 15 years until I retired in 2020.

Wil's SeeStar S30 view of Comet Lemmon. 3 minute exposure, 10/26/2025.

How did you become interested in astronomy?

I remember when I was a kid on my grandparents' farm down in Central Illinois and seeing Echo 1 going across the sky. There weren't any other satellites at that time. I also knew Tom Jacobs (former MAS member) and his solar eclipse trip to Turkey and his experience with MAS spurred me to purchase a Meade ETX-125EC in 2002.

How long have you been a member of MAS?

I joined MAS in February of 2024 - Easy to track as the only physical checks I've written in the past two years have been to MAS!

What is your favorite astronomical object or phenomenon?

Right now, I'm spending more time imaging nebula and collecting deep sky images that we can't see clearly, if at all, through visual observations.

What equipment do you currently use for observations?

I have a DwarfLab Dwarf 3 and an Askar V with a ZWO integrated system of ASI585MC Air, AM3 mount, EAF Pro auto-focuser, and CCA Camera Angle Adjuster. ZWO has done a great job of creating an automated pathway to easily progress from a SeeStar to an ASIAir. Both the Dwarf and the Askar/ZWO are easy to set-up and align so more time can be spent on imaging.

Have you had any memorable observing experiences or "wow" moments when stargazing?

Seeing Echo 1 in 1960 before we started filling the skies with space junk. First time seeing Orion Nebula on my Meade SCT. Other memorable experiences were seeing the Starlink chain, ISS, and moons of Jupiter.

What was the most challenging or rewarding observation you've done?

Finally getting my scope to track and guide with high enough accuracy to unlock access to deep sky imaging, thanks to the help of Bonnie and Rick.

Are there any specific projects or goals you have in the world of astronomy that you're currently working on or that you would like to achieve?

Being able to have a better knowledge of the stars and heavens without having to rely on electronic or other aids. Smart scopes are the GPS equivalent in astronomy: you always get where you're going, but you may not know how you got there.

Outside of astronomy, what are your interests?

Hiking the Ice Age Trail, biking, and music. I am an audiophile and I make amplifiers.

Do you have any advice for new members of MAS?

Get involved, don't be shy, everyone here is eager to help and share. I couldn't ask for a more welcoming group. I learned more about astronomy basics in my first three months at MAS than I had on my own during the past 20 years.

Wil's shot of M42. Dwarf 3 EQ mode with just over an hour of exposure. 11/21/2025.

Dave and Bob's Big Adventure: The Chilean Astro-Tour

by Dave Leiphart and Bob Hamers

In October, we took a "Chile Astronomy and Stargazing Tour" sponsored by *Sky & Telescope*. The tour had 20 participants total, plus an outstanding tour guide from *Sky & Telescope*, Tony Flanders. Together we traveled to several dark-sky sites and observatories in northern Chile, had the opportunity to do visual observing and astrophotography, and learned about the culture and geography of Chile.

The Gemini South Telescope

Our first three visits were to observatories focused on imaging in visible and infrared. After meeting in Santiago, we travelled to Cerro Pachón, an 8,900-foot-high mountain in northern Chile that is home to the Gemini South Telescope, the Southern Observatory for Astrophysical Research (SOAR), and the Vera C. Rubin Observatory. We toured the inside of Gemini South 8.1 meter telescope, a twin to the Gemini North Observatory on Mauna Kea in Hawai'i.

The Magellan Telescopes

Our next stop was the Las Campanas Observatory, home of the two 6.5-meter Magellan Telescopes. . Our guide, Associate Director David Ossip, had the workers slew the primary mirror around the sky so we could see how fast and incredibly silent it is. From here we could also see the Giant Magellan Telescope currently under construction.

The Very Large Telescope

Next we visited Antofagasta, home of the Paranal Observatory's Very Large Telescope (VLT), which is actually four 8.2 m telescopes and four 1.8 m auxiliary telescopes. These scopes can be configured to operate as a larger, virtual telescope using optical interferometry. All the visual telescopes use adaptive optics, but the VLT's 8.2-meter primary mirrors are only about 2 cm thick. The shape of the mirror is controlled by a set of over 100 electromechanical actuators placed underneath that update the shape every few minutes.

Bob Hamers, Lee Keith - MAS (Milwaukee) Observatory Director, and Dave Leiphart in front of one of the Very Large Telescope buildings.

The ALMA Observatory

Our last tour was in San Pedro de Atacama where we visited ALMA (the Atacama Large Millimeter/ submillimeter Array), an array of 66 radio dish antennas The site is too high for casual visitors (5,000 meters or 16,500 feet), but we visited the control facility (2900 meters elevation). Here we got a close-up view of one of the "small" 7-meter antennas that was undergoing maintenance. Overall, it was amazing getting to see these very large scopes up close.

Personal Observing Time

Our time in Chile also included both visual observing and astrophotography from some of the darkest skies on the planet. Although we were clouded out in Vicuna, San Pedro de Atacama was amazing. We had two nights of visual observing at San Pedro de Atacama Celestial Explorations (SPACE), an astrotourism site featuring multiple telescopes including the largest publicly available visual telescope in the southern hemisphere, a 45" Dobsonian.

Our hotel in San Pedro also had a dedicated location for setting up individual telescopes, cameras, and Seestars for all-night viewing. Dave particularly enjoyed being able to see and identify all the major southern-hemisphere constellations, while Bob enjoyed being able to set up his DSLR and star-tracker to get some nice images of the LMC and the southern Milky Way.

Southern Sky Highlights

The skies at our locations were remarkably dark. When naked-eye observing, the Milky Way shines brightly, with Sagittarius and Scorpius high in the sky. The Large Magellanic Cloud (LMC) and Small Magellanic Cloud immediately jump out,

Dave Leiphart, Lee Keith - MAS (Milwaukee) Observatory Director, and Bob Hamers at ALMA.

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appearing similar to or brighter than the brightest parts of the Milky Way.

When viewed through the large telescopes at SPACE, things really popped. The Tarantula nebula (NGC 2070) was particularly stunning. The eyepiece was completely filled with bright and complex intertwining filaments that looked 3-dimensional. The Jewel Box Cluster (NGC 4755), a collection of white, blue, yellow, red, and orange stars, truly appeared as crown jewels. Other objects we had the chance to observe included Eta Carinae, 47 Tucanae (NGC 104), and Omega Centauri.

Bob Hamers' photo of the Large Magellanic Cloud.

Final Thoughts

Although our tour centered on astronomy, we also got to experience some of the culture and geography of northern Chile, which is absolutely stunning. Overall, this was an outstanding tour and we highly recommend it to any MAS members who have a chance to make the trip. Tony Flanders, our *Sky & Telescope guide*, wrote a short summary that you can find on the S&T site here.

MAS Money Matters: Hard Choices

By Jurgen Patau, Treasurer

Managing MAS finances is usually a pretty straight-forward process. It gets more complicated when we look at funding expansive plans.

Buildings at YRS are decades old and haven't received much attention. That's changed recently; our Observatory Director, Dave Leiphart, has undertaken the chore of identifying and repairing damages to the Clubhouse, the DGRO, the AKO, and the Privy. They aren't in danger of falling down (yet), but their accumulated decay is now being addressed. (Until I saw it, I didn't realize woodpeckers could damage stucco. They can.)

We are also responding to members' requests for additional services, including an internet infrastructure at YRS, additional observing, remote control, and sensing capabilities at YRS, and an expanded web and social media presence.

The Board generally agrees these are all good goals to pursue. The issues are how fast can we do them, what the priorities are, and how can we finance them. (The current estimate, in **today's** dollars, for these multi-year projects is over $20,000.) Which brings us back to finances, cash-flow and budgeting—and the input and desires of our members, whose dues finance MAS operations.

MAS has resources that we've accumulated since our $38,000 YRS pad and electrical upgrade several years ago, which was aided by generous member donations. Currently we have around $20,000 in available resources. But that's deceptive, because we want MAS to remain financially viable both during **and after** upgrades and repairs. We can afford everything in the current plan as long as inflation doesn't bite us—if we set priorities and plan carefully.

MAS has annual fixed expenses that take a significant portion of our annual revenue, which comes from membership dues (and donations, but they vary unpredictably). 150 members (as we ended 2024/25 with) generate about $9,000 per year for our annual income. But this year, almost 3 months into our membership year, almost 30 members have not renewed – which translates into almost $1,700 in lost revenue. However, to explain fixed expenses, I'll use the optimistic figure of $9,000. If we have fewer members (entirely possible, given our current renewal rate), the percentages noted below get even larger. Basic math.

Last year almost 45% of that annual revenue went to fixed expenses, primarily YRS mowing, YRS power, service fees and insurance.

We have moved our web site to a commercially hosted platform and are expanding its capabilities. Adding its fixed costs to our other fixed costs brings our annual fixed costs up to about 55% of our annual revenue.

Bringing internet services to YRS is hard to price out since YRS isn't currently served by an internet provider. Adding current crude estimates of its cost would bring our annual fixed costs to about 70% of our annual revenue.

So annual revenue minus fixed expenses is the revenue stream that replenishes our coffers.

But this just addresses the current projects. How the future plays out in terms of new projects, ongoing YRS maintenance, inflation, and inevitable unanticipated costs will put additional pressure on our finances.

The bottom line is that as more of our MAS and YRS improvements are brought online, the resources available to fund further improvements will go down. This reality will force the Board to make some hard choices, and it's a work in progress. How to balance all of this **and** protect MAS's financial viability will be a challenge.

Editor's Note

By Jack Fitzmier, *Capitol Skies* Editor

How quickly did *that* go by? By *that*, I mean 2025! Just twelve months ago, on December 21, 2024, the club resurrected *Capitol Skies,* its quarterly newsletter. In my (not unbiased) view, *CS* has enjoyed a fine first year. In this, our fifth issue, we continue that trend with lots of input from MAS members on travel, binoculars, Board business, a winter constellation, MOMT, and more.

But a week before the 2024 *CS* relaunch another interesting thing took place: Carol Santulis, Bonnie Tiedt and I did the December MAS presentation on smart telescopes — notably the Seestar 50. And like *CS*, the Seestar is trending. Two trends that had just begun a year ago are now blossoming. The first has to do with how the scope is mounted. Natively, it's an Alt-Az setup, which can create problems like field rotation. But clever amateurs reverse engineered the Seestar to run on an equatorial mount, which eliminated field rotation and allowed for longer exposures. Indeed, in the last year ZWO, the manufacturer of the Seestar, cried "Uncle!" and issued firmware updates that allow their unit to be mounted equatorially and to do longer exposures.

The second trend, barely visible a year ago, has to do with photo processing that can be done outside the Seestar. Part of the scope's allure is that it stacks photos on the fly and produces a finished product, straight out of the camera. But the unit can also save the constituent FITS files it stacks, and these can be extracted and processed in more powerful software—think Siril or PixInsight—to produce even more impressive results.

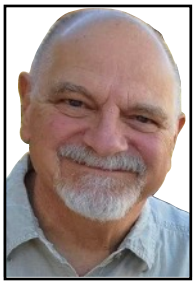
An example: Last September I photographed IC 1396, the Elephant's Trunk, from YRS with my Seestar. **Photo A**, below, is the stacked image Seestar produced. I was OK with the result, but somewhat underwhelmed. So I did a bit of quick and dirty tweaking on the stack. Using only Apple Preview, I eeked out **Photo B**. Better. At about the same time, my friend John Rummel contracted a pretty severe case of PixInsight mania. He was frantic for images to play with, so I sent him the 400 20-second FITS files Seestar had created. The Rummel PixInsight result, **Photo C**. Wowsa!

My hopes for the season? That MAS and *CS* continue to prosper. That smart telescope makers and clever amateur astronomers continue to innovate. And that all MAS members enjoy a wonderful holiday season.

Photo A — Seestar Stack

Photo B — Jack's Edits

Photo C — John's Edits



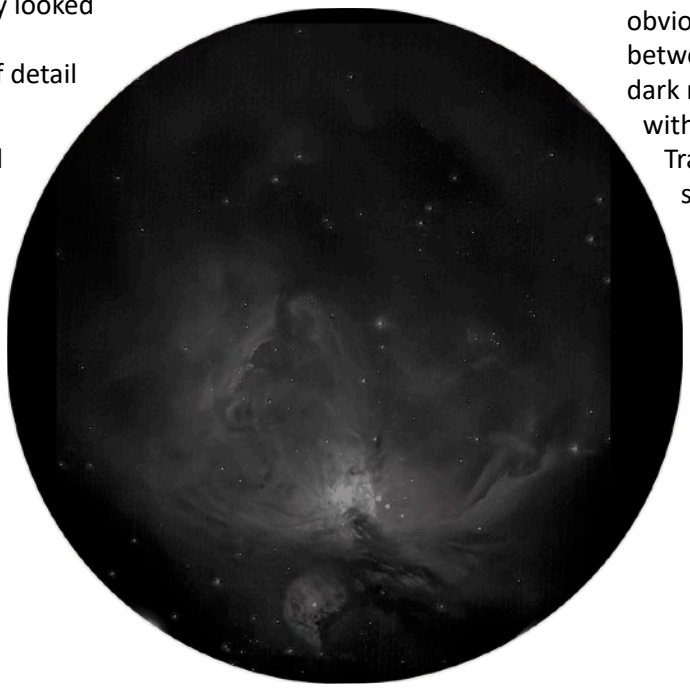
Orion: Linger Longer

By Alex Langoussis FRAS

If you have viewed any of the night sky through binoculars or a telescope, you've very likely looked at The Orion Nebula (M42-43), probably the most viewed deep sky object from the northern hemisphere. But how closely have you really looked at it? Because of its size and brightness, it offers a wealth of detail at many levels.

Start with binoculars or a small telescope. The entire sword of the Orion Constellation, with the nebula at its center, is one of the prettiest large areas of night sky you'll see. To the north of M42/43, you have the bright star cluster NGC 1981 and the reflection nebulae NGC 1973-5-7, known as the Running Man Nebula. To the south, you have the bright cluster NGC 1981. These frame the Orion Nebula beautifully.

Zooming in with a small telescope (a 4-inch refractor works here), the first thing you will notice is that the nebula appears to have long curved 'arms'. Under a dark sky, if you look carefully, you will see that these arms actually extend to make a complete loop. Use of a narrow-band nebula filter helps bring this out. You will also see about half of this area filled with bright nebulosity. Zoom in further to the brightest part of the nebula, and you find the four bright stars of what is known as the Trapezium. The nebula glows because of the UV light shining from these stars. The brightest of the four, Theta-1-C, is one of the most massive and luminous stars known. You will notice that the Trapezium appears to be in a hole in the cloud. This is because the strong stellar wind of this star has cleared things out. While you're looking at the Trapezium, see if you can spot two additional (dim) stars, known as E and F. E is visible in a 4-inch, and F in a 5-inch telescope, but only on nights when the seeing (air steadiness) is good. Thus, these stars can be used to judge how good the seeing is.



Seestar image of M42, processed to give the impression of what is visible at the eyepiece of a larger aperture telescope.

Using larger aperture to view Orion takes the view to a whole new level. The more aperture, the better! In a 15-inch reflector, one can see color! The bulk of the nebula has a greenish hue, but one of the arms has an obvious ruddy look to it. The contrast between the two arms is striking. The dark nebula separating M42 and M43, with its extension towards the Trapezium, is visible in a small scope, but with large aperture, it looks stunningly three-dimensional, especially at high power. The dark nebula shows subtle lighter areas within it. It really looks like a cloud (which it is!). The rest of the nebula within the loop is filled with detail. On one side, the cloud looks rather billowy, and on the other, the nebula will show a veil-like streakiness.

The Orion Nebula has something for everyone to see. If given the opportunity, use different apertures, different filters, different eyepieces. The big picture is lovely, but do not hesitate to zoom in and use high power. The surface brightness of the nebula allows it. There is so much to see in this nebula. Next time you view it, linger longer!

Capitol Skies is the quarterly newsletter of the Madison Astronomical Society. Members of the Editorial Committee include Jack Fitzmier (Editor), Bob Hamers, Alex Langoussis, John Rummel, Alex Samuel, Rob Strabala, and Rick Wayne. Interested in contributing? We'd love to have you participate! Contribute an essay, an equipment review, a book review, or another piece of astronomy-related material. And feel free to send comments, feedback, or other ideas along as well. Contact Jack Fitzmier for more information.

Exploring with Binoculars

By Craig Jewell

Binoculars have a few advantages over all the other astronomy gear in my house: They're generally the most affordable ready-to-use observing tool I own. They have the quickest set up time. They have the biggest convenience factor and can be carried anywhere. For these three reasons alone, they've become my main go-to gear.

On any clear night, I try to step outside and look at the sky for at least a few minutes. But finding an evening that I have a few hours available is less common. I tend to not load up my telescope and drive to a county park or side road on a work night, so I take binoculars out in my backyard instead. Since there's almost no setup time, I'm viewing in seconds. But I'm also able to change targets in seconds. The versatility offered by binoculars affords me a freedom that I don't get from my telescope. I can stop on anything that looks interesting as I'm passing it by. I might start on a perennial favorite item, but my meanderings after that can lead anywhere. I try to keep a notebook and a phone app handy to quickly note something I want to return to, because this approach to finding new targets is, to me, the exact opposite of finding an object in a book or article and planning to seek it out later. When I'm sky surfing with my binoculars, every interesting object I find is a new discovery to me, and I note it to look up or revisit later.

You can never have too many binoculars (not pictured, the Canon IS mentioned in the article).

I have numerous binoculars in my quiver, and they all have a different task. I have a travel set of 10x25 and a high-quality set of 10x42 that get their share of usage. But below, I highlight my two most used pairs, and they may not be as familiar to some people, since they're rather niche items.

Constellation binoculars

These binoculars are not much bigger than opera glasses (see picture above). My pair are 2x54, so they don't have much magnification, but they have an incredibly wide field of view. My pair claims a 36 degree field of view, but it's probably closer to 25 degrees, or the width of the big dipper. The magnification doesn't seem much different than that of unaided eyes, but the real experience is the binoculars pulling in an additional 1 to 1.5 stellar magnitudes. In urban darkness, they can add the fullness of a much darker sky, and in dark sky conditions, they add even more depth. Generally, I can't see all the stars in the little dipper, but these will reveal the faint middle stars. Seeing Cassiopeia through these little wonders brings a whole new background to life. Suddenly there are stars in the background that you could see individually with any telescope, but a familiar constellation just gains much more depth by seeing further into the vale of darkness. I bought mine from Sky Rover, and they were under $200 with shipping. And at their size, I can carry them just about anywhere.

Stabilization binoculars

The second most used pair at our house are Canon 12x36 image stabilized binoculars. They are battery powered, and with a press of a button, they greatly reduce hand shaking (a great asset for older astronomers). They weigh a bit more than standard 12x36 but are still light enough for extended usage. Having stabilization built in makes them more useful than stronger and heavier binoculars and removes the need for mounting them on a tripod. I highly recommend these for people with shaky hands, but the downside is the price, which is about $800.

The combination of these two binoculars makes for a great night of stargazing. Under darker skies, I can locate an interesting cluster or nebula with the constellation binoculars as a faint fuzzy object and quickly switch to the stabilization binoculars to get a much better view. Often, I'm switching back and forth in rapid succession, trying to take it all in. It might not be the most efficient way to learn the night sky, but for me, it's more exciting.

Binoculars can be a great introductory tool, too. Grab two pair and a laser pointer, and you're ready to introduce someone to the Orion Nebula, the Andromeda Galaxy or the Hyades in no time.

If binocular stargazing intrigues you, take a look at the Astronomical League's binocular observation programs. They have eight different programs listed, and it's a great way to gain experience with binoculars and learn the night sky along the way!

Here is a link to the AL programs listing.

Moon Over Monona Terrace, 2025

Held Friday, October 3, 2025

With perfect fall weather, a bright 12-day old Moon low in the south, and more than **1,300 visitors**, the 2025 edition of MOMT brought together families, couples, and curious first-timers for a night of discovery. Dozens of MAS volunteers lined the rooftop with telescopes, binoculars, cameras, and live-imaging screens, ready to show guests the wonders of the night sky. For many guests, it was their first time seeing Saturn's rings or the rugged surface of the Moon through a telescope — and judging by the chorus of *"ooohs"* and *"aaahs"* that filled the air, it was an unforgettable experience.

This year's Moon Over Monona Terrace was powered by **36 MAS and UW volunteers** and aided by dozens of Monona Terrace volunteers and technical support staff, all of whom brought incredible enthusiasm and expertise. Some operated telescopes trained on the Moon, Saturn, and other targets, while others managed the information tables, greeted guests, or helped keep the long lines flowing smoothly. Our live-imaging stations and big-screen displays drew constant crowds, offering dazzling close-ups of lunar craters and letting guests see what was happening through the scopes in real time.

Everywhere you turned, there were small moments of magic. Craig Jewell recalled a young boy who had just seen the Andromeda Galaxy on Carol Santulis' tablet/Seestar setup. He wanted to know if he could see it with his binoculars. Craig showed him where to look in the sky — when he finally found it, he let out a delighted shout that drew smiles from everyone nearby. Norm Goeschko described a toddler who insisted on letting his teddy bear "take a turn" at the eyepiece. These little encounters capture the spirit of MOMT perfectly: a blend of science, curiosity, and shared joy.

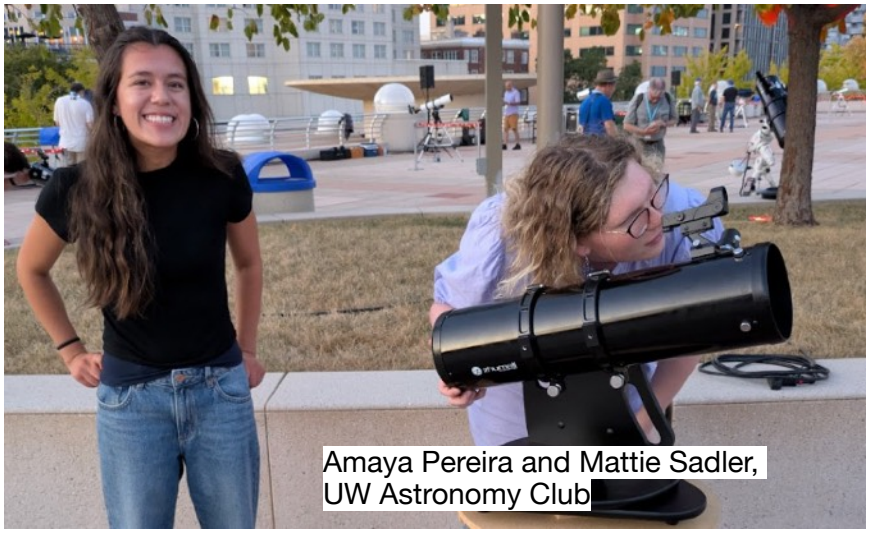
Thanks to Rick Wayne, we also successfully debuted the "**Take Your Own Astrophoto"** station, giving attendees a chance to leave with their own digital keepsake—a small but powerful reminder of what our hobby can achieve.

(Photos by Alex Samuel, text by John Rummel.)


Brandon Flores

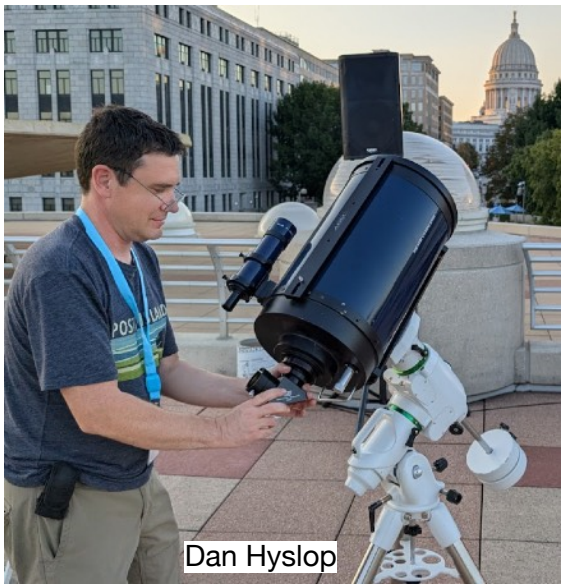
Adam Miller, president of UW Astronomy Club


Chris Moore


Amaya Pereira and Mattie Sadler, UW Astronomy Club


Craig Jewell


Dave Leiphart


Dan Hyslop


Stan Howald


Wil Cox


Chris Zeltner

Avtar Roopra and Neeraj Kullarni


Norm Goeschko and Jamie Orlando

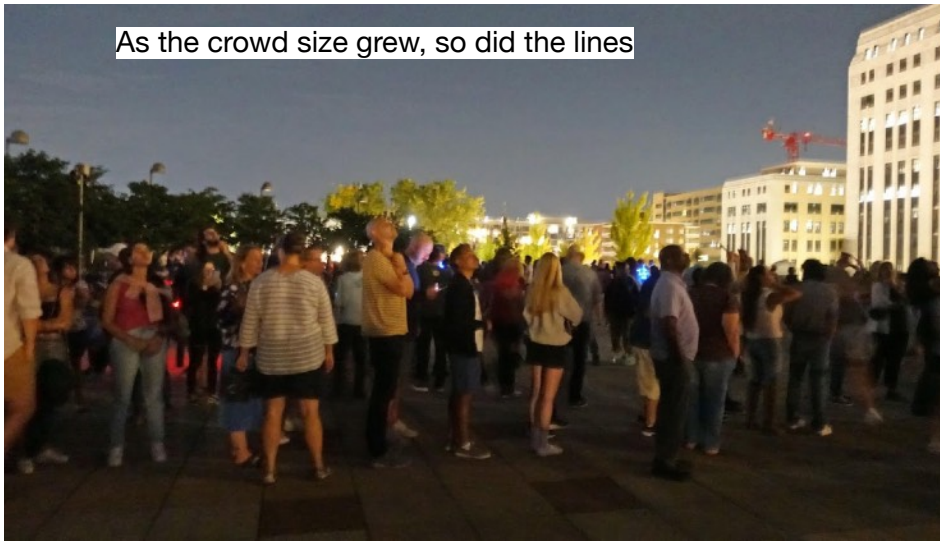
In addition to the observing volunteers shown on these pages, the following members contributed hugely to the evening's success:

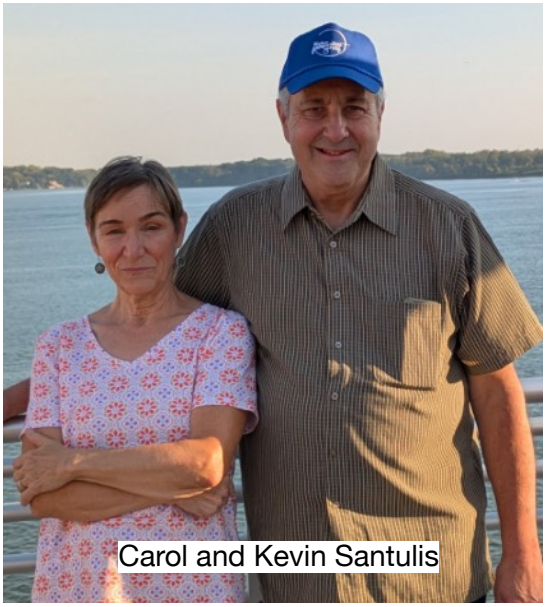
Information Table and Greeters: **Alex Samuel, Ben De Leon, Kari Peterson**

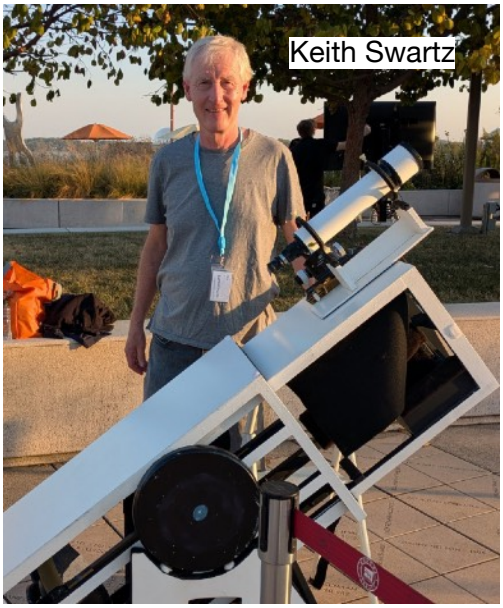
Ushers for line queuing and crowd control: **Rob Strabala, Craig Jewell, Norm Goeschko, Leslie Seltzer, Morgan Seltzer, Ava Seltzer, Neeraj Kulkarni**

Presenters: **Jim Lattis, Frank Ranallo, Rick Wayne**

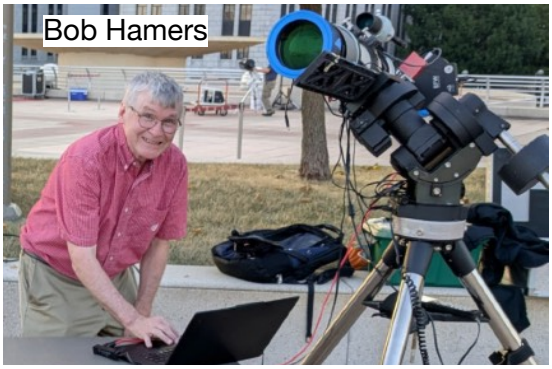

Jeff Shokler


As the crowd size grew, so did the lines

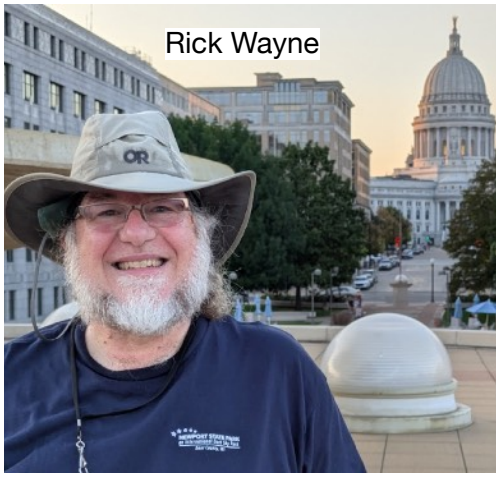

Carol and Kevin Santulis


Keith Swartz


Martin Mika


Bob Hamers


John Rummel


Rick Wayne

Moon Over Monona Stats

Starting in 1998, when a large planetary science convention in Madison gave rise to the first Monona Terrace star party, this was the 33rd such event we've attempted. So it seems appropriate to step back and take a look at the big picture:

- The first event, on 10/15/1998, was not called Moon Over Monona Terrace since the event which inspired it (the American Astronomical Society's DPS convention) took place near new moon. Instead, Jupiter and Saturn were the stars of the show. It was just called "a Public Star Party" on the rooftop, sponsored by the MAS.
- For five years, we experimented with doing MOMT twice annually, once in the fall and again in the spring (2014-2018 inclusive).
- Of these 33 events, 9 were canceled due to adverse weather and/or the lack of a backup date.
- Three events were moved to the backup date (and attendance suffered at all three).
- Due to clouds, three events were moved to inside spaces in Monona Terrace where MAS did indoor activities instead of star gazing.
- Two events were held virtually due to COVID restrictions (2020 and 2021).
- Our best attended events were:
  - 2011 (over 2,000 attendees)
  - April 2016 (1,700 attendees)
  - 2025 (1,329 attendees).

Announcing: The MAS Cookbook

By Jamie Orlando

Announcing our first ever cookbook!

The Madison Astronomical Society has been gazing at the stars and sharing our passion for the night sky for decades. Now we are celebrating our other passion: Great food!

We are happy to announce the creation of the first ever Madison Astronomical Society cookbook. We would love for all members to contribute their stellar recipes, heavenly desserts, and just good down-to-earth dishes.

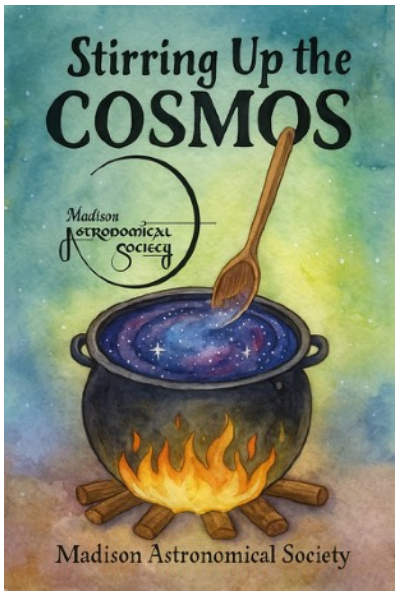
From now until March 1st, 2026, please send your recipes to **Jamie's email.**

Feel free to submit as many recipes as you would like. Astronomy themed dishes are welcomed but not required. Your submissions should include the recipe title, a clear list of ingredients, step-by-step instructions, and your name. You can also submit a photo and a little information about yourself if you like.

Clear Skies, and Happy Cooking!

We're looking for recipes of all kinds. Below are some example categories:

- Appetizers & Snacks
- Soups & Salads
- Breakfasts
- Main Dishes
- Side Dishes & Vegetables
- Desserts
- Breads & Baked Goods
- Beverages & Drinks
- Sauces & Dips



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John Rummel

Astronomical League Liaison and Capitol Skies Editor
Jack Fitzmier

To contact any of the above individuals, send an email to: madisonastro.info@gmail.com

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