



March, 2022

## April Meetings

The next **Board Meeting** will be held on April 18<sup>th</sup>, 2022 from 7 PM via Zoom videoconference. It will be open to every MAS member who is interested in organizational and Observatory related issues.

The **First Wednesday meeting** will be held in person at the Observatory on April 6<sup>th</sup> from 7:30. New members are especially encouraged to attend this meeting. It is a chance to gain hands-on experience, receive tips on how to get started and/or get more involved in the Club's activities.

The **Astrophotography Interest Group** will meet on Wednesday, April 13<sup>th</sup> at 7 PM through Zoom videoconference.

Invitations will be sent out prior to Zoom meetings.

The MAS Google Group is as active as ever. Learn about the astronomical news, follow equipment related discussions, or just check out the latest images taken by fellow Club members.

## Astronomical Events of the Month

**April 16:** This full moon was known by early Native American tribes as the Pink Moon because it marked the appearance of the moss pink, or wild ground phlox, which is one of the first spring flowers. This moon has also been known as the Sprouting Grass Moon, the Growing Moon, and the Egg Moon. Many coastal tribes called it the Fish Moon because this was the time that the shad swam upstream to spawn.

**April 22, 23:** Lyrids meteor shower. This is an average shower, usually producing about 20 meteors per hour at its peak. It is produced by dust particles left behind by comet C/1861 G1 Thatcher, which was discovered in 1861. The shower runs annually from April 16-25. It peaks this year on the night of the night of the 22<sup>nd</sup> and morning of the 23<sup>rd</sup>. These meteors can sometimes produce bright dust trails that last for several seconds. The waning gibbous moon may block some of the fainter meteors this year, but there is still potential for a good show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Lyra, but can appear anywhere in the sky.



**April 29:** Mercury is at greatest elongation of 20.6 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet low in the western sky just after sunset.

**April 30:** New moon. The moon will be located on the same side of the earth as the sun and will not be visible in the night sky. This is the best time to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

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## Observatory Director Report

The two cameras reported missing in my last report have been found. They were in a cabinet not where they belong.

The fuel oil tank behind the Quonset building has been removed from the property. It went to Vector Industries where one half has become the skid burning barrel and the other half has been turned into scrap bin.

A Dome has a new eyepiece box put on the ladder. The new box is large enough to hold all eyepieces and other items used on A scope. Lee Keith built the box and did a great job on it. Thanks Lee!

It has been reported by members who have been using the F Scope that the mount has an issue with the RA not moving properly. This will be investigated shortly.

Respectfully Submitted,  
Paul Borchardt, Observatory Director

## Treasurer's Report

<b>\$11,454.38</b>	<b>Starting Balance as of 02/19/2022</b>
	<b><u>Expenditures</u></b>
\$1.41	PayPal fees
\$10.00	WI tax (W5 form)
\$54.80	Display case
\$188.79	WE Energies
\$248.00	TOTAL Expenditures
	<b><u>Revenue</u></b>
\$62.65	Private Donations
\$46.00	Membership dues
\$1.00	Grants
\$109.65	TOTAL Revenue
<b>\$11,316.03</b>	<b>Ending Balance as of 03/20/2022</b>

Respectfully Submitted,  
Sue Timlin, Treasurer

## Membership Report

Since the last Report we received 3 new membership applications. We welcome Heidi Hoefler, Jordan Reese, and Alexander Harkin & Family. The total number of active members is 195.

Respectfully Submitted,  
Jeff Kraehnke, Committee Chair

## Minutes

The last Board Meeting was held via Zoom videoconference on March 21<sup>st</sup>. Meeting was called to order at 7:03 PM by Tamas Kriska President.

**Minutes and Treasurer Report** electronically submitted ahead of the meeting were approved.

**Observatory Director Report** electronically submitted by Paul Borchardt Observatory Director ahead of the meeting was amended and approved. Amendment: The latch in the B-doom door was fixed. **Membership Report** was electronically submitted by Jeff Kraehnke Committee Chair ahead of the meeting. There was one renewal, and no new member application this month. The report was approved.

**Old Business** – *Display box for the sputnik replica:* A placard will be purchased for the display. *Public Nights:* A follow up Committee Meeting will be held soon. *Old equipment selling:* The old parts are listed to sell. *Website:* Acquiring SSL certificate for the entire website is in progress. A motion was made and carried to allocate \$53/year to cover this expense.

**New Business** – *Permission letter to Ottawa Lake:* Jason secured the permission which will be posted on the website. *Spring cleanup:* A work party will be organized in April. *F-scope mount:* The AP900 mount has been permanently malfunctioning for a while and should be replaced. A discussion has started and will be continued about purchasing a used AP Mach1 mount or waiting for the AP Mach2 we are in the line for.

**Announcement** – The next meeting will be on April 18<sup>th</sup>, 2022, via Zoom videoconference.



## Zen of Telescope Buying

**Program** – MAS member Lee Keith gave a presentation entitled: Zen of the telescope buying.

Lee's presentation can be found on the website and on the you tube channel of the Club.

Respectfully Submitted,  
Agnes Keszler, Secretary

## Member's Story

### Saturday Member's Night

I still need to compile my notes from last night's Member Night - but what a night! The skies were cloudy for sometime but when they broke and cleared they did so unwaveringly. The GoTo scope needed to be realigned and Lee gave a lesson on doing so. He did the first few stars and guided me through the next set. Then we started an informal sky tour. Lee led and I followed along observing what would pop out in the gaps. At one point we considered bagging it as it seemed hopeless. We went in for a few minutes and upon returning to the outside the sky had broken wide open and was rapidly clearing away east! Then it was game on! Lee busted out a tour he had brought along and I "steered". After awhile we switched roles and I read the notes which really helped me digest more of the info. What a night. Two hours later we had really gone through a ton. I learned about Open and Globular Clusters. How to "blink" using a filter in your hand while observing. How distance is measured in space, and more on how we know where things are located. Also a lesson on Emission vs Reflection nebulae. We even spent sometime observing M42 (the Orion Nebula) on the GoTo (9.25") and the Obsession (18"), comparing views and filters between them. Thanks for a great Member's Night and I look forward to another and meeting folks there!

Pete Lakatos

### Saturday Member's Night

Sue Timlin and I co-sponsored the nomination for William Gottemoller in two categories of the Jack Horkheimer Youth Awards to the Astro League, so we wish him luck. William was nominated for the Horkheimer/Smith Youth Service Award, for his service to the club and in establishing a growing Astronomy Club of 40+ members at Menomonee Falls High School. He was also nominated for the Horkheimer/Parker Youth Imaging Award for his work on Melotte 15, which includes his service of getting G-scope prepared for first light with a new camera. The winners in these categories could win a cash prize of up to \$1750, and a trip to the Astronomical League National Convention in New Mexico this year.

Background here: <https://www.astroleague.org/al/awards/horkhmr/horkhmrs.html>

Matt Ryno

### Sunday Daytime Viewing

It was good to see a sizable gathering of MAS members in perfect weather and in daylight so we can actually see what everyone looks like too!

Views through the solar scope were pleasant, using the zoom eyepiece to take in the entire sun in one view and spot the activity. Venus was a nice sight through B-scope, at 20mm, then further magnified and low to the horizon during the day via a 9mm eyepiece, with a few filters applied. Thanks Russ and Lee for collaborating to set these views up and inspire a spring crowd to come join. Thanks to nature as well, for a guest appearance of a red-tailed hawk who decided to put on a show, making me glad I brought the binoculars in my bag I take with me whenever I go to the MAS.

Also in my bag was my ASI462MC planetary camera and laptop, for a photograph of the Sun. The Sun wasn't overly active, but there was an interesting bit of activity. A few of us enjoyed looking at the prominence on the top which was suspected to be wrapping around the top and out of view behind the sun. We also marveled at the brighter white regions in the lower left and right which I believe are plage in the chromosphere, not to be confused with faculae in the photosphere below. The contrast in the image comes from granules, demonstrating the ongoing convection constantly churning on the surface.



my first go at the sun in okay seeing, I like how it turned out. Hopefully this looks familiar if you saw this with me Sunday afternoon.

Matt Ryno

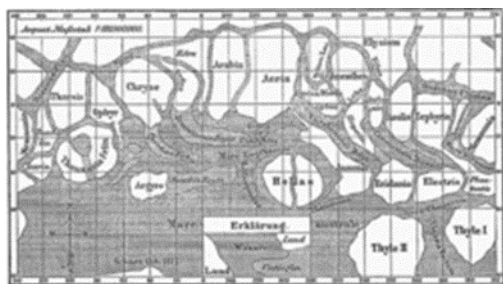


## Member's Story

### I Saw Martian "Canals"!

After the amazing images I got of Mars in the fall of 2020 that I shared with the Society via our Google group, I thought back to all the years I observed Mars, but made drawings with MAS' "A" scope, the same one I took the images with. One of the major highlights I remember is seeing one of the "canals" of Mars and documenting it along with other MAS members. As there are currently no planets in the sky to image, I thought it would be a good time to share my story, and some history, with all the Society members. Let me begin as many a classic mystery novel does...

It was a dark and stormy night. Well, not exactly. It was dark, but it was also cool, hazy and calm on that fateful night in October 1988 at the MAS Observatory observing the planet Mars when I saw them! Saw what, you say? Not Martians, but the fabled and debunked Martian "canals". If you are under 40, you may never have heard of the canals of Mars. They magically disappeared once spacecraft arrived at the planet (Mariner 4 in 1965 and Mariners 6 & 7 in 1969) and took close up images that showed Mars as we know it today: a cold, arid place with a thin carbon dioxide atmosphere, craters like the Moon, monstrous volcanos higher than Mt. Everest and a canyon that could span the entire North American continent!



Drawing of Mars by Schiaparelli showing "canali" in 1877.

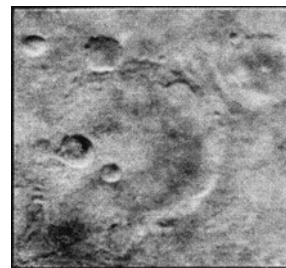
For those of you who have not heard of them or don't know much about them, let me give you a quick backstory. While not the first to see them, they became the dominant motif of Mars by the Italian astronomer Giovanni Schiaparelli during the opposition of 1877 using the 8.6-inch Merz achromatic refractor at the Brera Observatory in Milan, Italy.

Schiaparelli was the first to call these linear features canali ("channels"), which was mis-translated into English as artificial man-made "canals". At the time, there were many canals being built or planned on Earth (think Erie, Suez and Panama) and they were symbols of technological prowess and modernity. So, if we could build them, then why not the Martians? Also, it was fashionable at the time to believe all the planets may be inhabited. Less than a century before, the great William Herschel, discoverer of the planet Uranus, believed that even the Sun was populated!

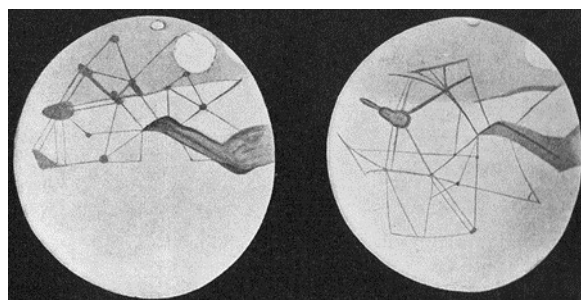
This fed into the over active imagination of the public and the well to do, well-travelled blue-blooded Bostonian, Percival Lowell who felt, as many did at the time, that we were not alone in the universe and the Martian canals were proof of this. He wrote many books and gave hundreds of public lectures describing that the Martians built the canals because the planet was drying out and needed to transport water from the polar caps to the equatorial regions. He even built the Lowell Observatory in 1894 on Mars Hill in Flagstaff, Arizona, using his own money, to observe it with a 24-inch f/16.3 Clark refracting telescope.

Not everyone believed in the canals, however. Many professional astronomers with much larger telescopes could not see them. Also, astronomers had found that Mars was too cold and dry and its atmosphere too thin to support liquid water on the surface. Much later it was determined that when a telescope views many point-like features (e.g., sunspots or craters) just below the limit of resolution, they appear to join up to form lines. The canals were just the brain "connecting the dots" along with a preconceived notion of what should be there.

According to one review of the telescope (<http://scopeviews.co.uk/LowellClarkRefractor.html>), one consequence of the "short" 16.3 F-ratio is that the 24" Clark refractor is fitted with an iris diaphragm in front of the objective, which allows it to be stopped down, to as little as 150mm aperture, to reduce chromatic and spherical aberration. The diaphragm is like the multi-blade type used in more expensive



Mariner 7 image of the Martian craters



Martian "canals" drawn by Percival Lowell.

*to be continued on next page*

camera lenses. Some have suggested that this diaphragm mechanism is to blame for Lowell's canals: he stopped it down to the point where the exit pupil was so small, he was actually viewing the capillaries in his own retina.

While the canals were debunked as optical illusions by the 1960's, Lowell did also start the search for a new "Planet X" which we now call the dwarf planet Pluto, which was eventually discovered in 1930 by the young Clyde Tombaugh. Today, the Lowell Observatory is a respected and productive amateur astronomer founded professional observatory that specializes in Solar System astronomy.

In 1988, I was an experienced deep sky observer, but I had not done much planetary observing. Unlike today, taking pictures of planets with slow photographic film was an exercise in frustration to get anything at all. Some had gotten moderately good results but only after herculean effort and much expense with buying the film and sending it off to be processed and printed on photographic paper. (Remember those?) Figure 4 shows an image of Mars taken with photographic film with the same telescope and from the same observatory Percival Lowell used to observe Mars over a century ago. He did try to photograph the canals but never got a convincing image.

That's what makes me so amazed at the planetary images I can get with modern digital cameras today. Even a bad image today is better and much easier than a good one was then. In lieu of taking pictures, I had done some planetary drawings that show much more detail than could be photographed. Making drawings was the preferred way to capture planetary details.

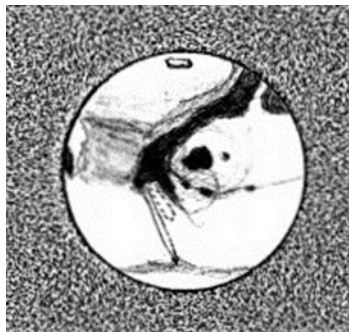
I had done much reading about the canals up to then but I never thought you could actually see them. Percival Lowell used a 24-inch achromatic refractor (which he would constrict down to 12-18" to improve clarity) with his imagination to see them and I knew they were illusory so I didn't expect to see one. But that was about to change.

In 1988, Mars was coming especially close to the Earth in what is called a favorable "perihelic" (close to the Sun and therefore the Earth) opposition when it would be 23.7 arc-seconds and only 36,400,000 miles from Earth. And now I had the MAS' premiere "Planet Killer" 12.5" f/8.86 "A" Scope at my disposal. The die was cast!

On that cool but hazy night, I remember also that long time members John Astalos was there doing drawings and Dan Koehler was taking photographs. Dan took at least an entire roll of 36 photos of which none would normally be acceptable but I'm sure one or two may have been acceptable on that night. John was next and he did his drawing which took 15-20 minutes.

Being the new kid on the block at the time I was last. I remember John saying to me as I approached the telescope that he could see a Martian canal. I was flabbergasted but skeptical of it in the first place or the possibility of me being able to see it. So, I climbed the ladder (which is still there), put my observing form in the lighted box mounted on the telescope, made myself as comfortable as possible as one can while 6 feet up on a ladder, and put my eye to the eyepiece, which had a red filter to increase the contrast of the surface markings, and a polarizing filter (like sunglasses) to eliminate glare and dim the image down so it did not dazzle the eye and was more comfortable.

There is a strategy in making drawings of planets. I already had a form with the outline of a circle, so I would normally add any phase of the planet in the circle but Mars was near opposition so it was "full" like a full Moon and had no phase so I could skip that step. Next, I carefully draw in the most obvious markings to use as reference points for the fine details. Lastly, I put in all the fine details I can see, and on this night, there were many.



Drawing of Mars 1988 showing Solis Lacus and "canal".

One must watch the planet for an extended period of time to catch the periods of steadiness when you can see the fine details on the planet's surface. Watch, watch, watch, draw. Watch, watch, watch, draw. Repeat for 15-20 minutes. Patience is a virtue. Communing with Mars for 15 continuous minutes. But, oh, what you can see!

And see I did. Near the end of my session, it suddenly popped into view! A "CANAL"!! I yelled to John, "I see it! I don't believe it! I see it!". It is one of the moments in my amateur astronomy career that I will never forget. Once I saw it, it was fairly easy to keep it in view for many seconds at a time.

I have included my observing drawing (to the left) and notes from  
*to be continued on next page*



Solis Lacus hemisphere.

that night so you can "see" what I saw. I did take a photo on that night but does not, of course, show the "canal" or any fine detail for that matter so I did not include it here. The drawing is better anyway. As noted on the observing form, the atmospheric "seeing" or steadiness of the air was excellent at the time so I was able to see and record many fine surface features. So many that I could not record all the subtleties that I sensed or perceived for only a moment.

It shows what is called Solis Lacus (Lake of the Sun) at center. It is also colloquially called "The Eye of Mars" due to its circular shape. The "canal" I saw is the nearly vertical double line that runs from left of center to near the bottom.

On October 2020 there was a mediocre opposition of Mars. It was moderately low in the sky and not as close as in 1988 at 38.9 million miles away but better than it will be for the next decade or so. But now with digital cameras, amateurs can easily capture details on almost any planet! As an example, I am including an image I took using the same telescope as I used with the Mars drawing in 1988 showing the same hemisphere. Compare this with an image taken with the same telescope as Percival Lowell used to observe Mars above.



Digital image of the Solis Lacus or "Eye of Mars".

The software I use to take the pictures and process them mimics what I did when making the drawing. It takes advantage of the moments of sharpness between all the long periods of fuzziness. I take a video with thousands of individual images, most fuzzy, but some are sharp. Software picks the sharpest ones, stacks them together so the details on each frame reinforce each other, then that single, stacked image is "sharpened" so that the fine details are visible and voilà, a picture of a planet that would be the envy of any professional astronomer before the Hubble Space Telescope was launched (and fixed).

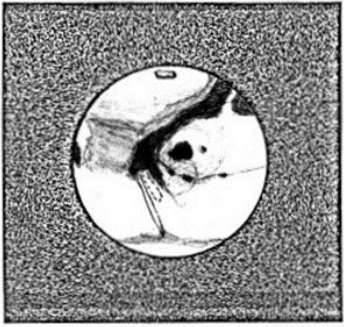
I hope that this narrative gives you a flavor of what amateur astronomers do at night and contrasts some of the old with the new. In doing so, I hope that some of you will join me and the other members of the Society in the activities at the Observatory, like the ones described here. It does take some time to learn the basics but that what makes it fun, don't you agree?

Lee Keith

#### APPENDIX IX

##### Observing Form for Mars

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MARS 10/20/88  
 Drawing Time Begin 2:45 End 3:00 (U.T.) Diameter 20.5 (seconds of arc)  
 Seeing (1-5) 4-5 Magnitude -2.1  
 Aperture 13" f/4  
 Magnification 380x  
 Filter Red + Barrier  
 Observer L. Keith  
 Location MAS Obs. A'

Comments: Canals! Double canal N to polar area! Area around Solis Lacus very textured w/ many "cracks" N of it. Very good seeing. Bright area next to "canal" - refraction.

41° Dewar haze, other fairly dry CM: 76°  
 75° RH

Photograph: Time (U.T.) 2:30 Exp. 1/125 Film EXTRARANGE 200+2415  
 Comments: Excellent seeing. Slide = 2415 film used.

Mid-South Astronomical Research Society  
 Little Rock, Arkansas



## In the Astronomical News

### Spooky Stars: Phantom Black Hole Is Actually a “Stellar Vampire”

Back in 2020, a team of astronomers based at the European Southern Observatory (ESO) published a paper on HR 6819. Using observations from the MPG/ESO 2.2-metre telescope, they proposed that HR 6819 was a triple system containing a black hole, one star orbiting the black hole, and a second star in a wider orbit. The black hole in HR 6819 would have been the closest to Earth yet observed.

However, another team based at KU Leuven in Belgium believed that the observations could equally be explained by a binary system, with two stars in orbits of similar lengths and no black hole.

For this alternative explanation to be correct, one of the stars would have to be “stripped” – meaning that it had lost a large proportion of its mass to the other at some point in the past.

In the best scientific spirit, the two teams decided to work together to seek the truth.

“We had reached the limit of the existing data,” explains Abigail Frost, a researcher at KU Leuven and leader of the new study. “So we had to turn to a different observational strategy to decide between the two scenarios proposed by the two teams.”

“We agreed that there were two sources of light in the system, so the question was whether they orbit each other closely, as in the stripped-star scenario, or are far apart from each other, as in the black hole scenario,” says Thomas Rivinius, a lead author on the original ESO paper.

The debate was clinched by data collected using the GRAVITY and Multi Unit Spectroscopic Explorer (MUSE) instruments on ESO’s Very Large Telescope Interferometer (VLTI).

“MUSE confirmed that there was no bright companion in a wider orbit, while GRAVITY’s high spatial resolution was able to resolve two bright

sources separated by only one-third of the distance between the Earth and the Sun,” says Frost.

“These data proved to be the final piece of the puzzle and allowed us to conclude that HR 6819 is a binary system with no black hole.”

However, while they may have lost a black hole, the researchers believe they have gained a rare sighting of a spooky astronomical occurrence.

In binary systems where two stars are close together, it’s not uncommon for one star to “suck”

away the atmosphere of the other – a phenomenon sometimes called “stellar vampirism”. The researchers believe they may have observed the immediate aftermath of a stellar vampire attack in HR 6819.

“While the donor star was stripped of some of its material, the recipient star began to spin more rapidly,” says Julia Bodensteiner, who led the study proposing the stripped-star scenario as a PhD student at KU Leuven and is now a research fellow at ESO.

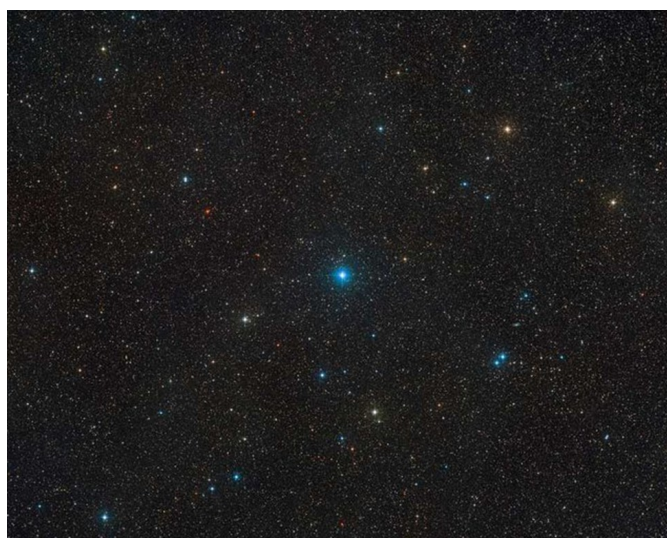
“Catching such a post-interaction phase is extremely difficult as it is so short,” says Frost.

“This makes our findings for HR 6819 very exciting, as it presents a perfect candidate to study how this vampirism affects the evolution of massive stars, and in turn the formation of their associated phenomena including gravitational waves and violent supernova explosions.”

Far from leading to acrimony, the original debate about HR 6819 has nurtured scientific understanding and the formation of a new collaboration between the astronomers.

“Not only is it normal, but it should be that results are scrutinized,” says Rivinius.

Meanwhile, the search for Earth’s closest black hole continues.



*View of the area of sky where the system HR 6819 is located. The two stars in HR 6819 can be viewed from the southern hemisphere on a dark, clear night without binoculars or a telescope. Credit: ESO / Digitized Sky Survey 2. Acknowledgement: Davide De Martin.*

Matilda Handsley-Davis  
cosmosmagazine.com

## Adopt a Telescope Program - Signup Sheet

	Adopter	Scope	Location
1	Sue Timlin/John Hammetter	18" F/4.5 Obsession	Wiesen Observatory
2	Steve Volp	12.5" F/7.4 Buckstaff	B Dome
3	Robert Burgess	12.5" F/9 Halbach	A Dome (Armfield)
4	Russ Blankenburg	9-1/4" F/10 Celestron	Albrecht Observatory
5	Jeff Kraehnke	14" F/7.4 G-scope	Z Dome
6	Lee Keith/Tom Kraus	12" F/10 LX200 EMC	Tangney Observatory
7	Colin Boynton	10" F/6.3 LX200	Ray Zit Observatory
8	Tamas Kriska	Stellarvue SVQ 100 F/5.8	Jim Toeller Observatory
9	Paul Borchardt	Solar scope	SkyShed POD

### At Your Service

#### Officers / Staff

President	Tamas Kriska	414-581-3623
Vice President	Jeff Kraehnke	414-333-4656
Treasurer	Sue Timlin	414-460-4886
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Asst. Observatory Director	Russ Blankenburg	262-938-0752
Asst. Observatory Director	Lee Keith	262-875-9103
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Webmaster	Gene Hanson	262-269-9576

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Jason Doyle	414-678-9110
Dennis Roscoe	608-206-0909
Lee Keith	414-425-2331
Jim Schroeter	414-333-3679
Gabe Shaughnessy	262-893-4169
Steve Volp	414-751-8334
Mike Wagner	262-547-3321

#### April Keyholders

04/02	Tamas Kriska	414-581-3623
04/09	William Gottemoller	262-442-3686
04/16	Jim Bakic	414-303-7765
04/23	Steve Volp	414-751-8334
04/30	Russ Blankenburg	262-938-0752



#### MAS Observatory

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[www.milwaukeeastro.org](http://www.milwaukeeastro.org)