

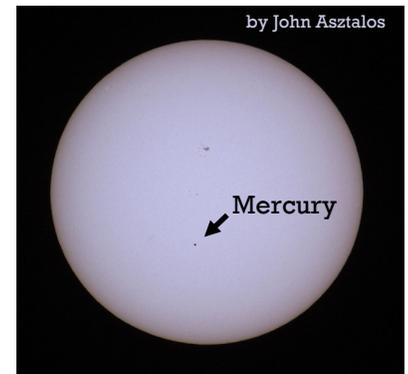
September, 2019

October Meetings

The next MAS meeting will be held on **Friday, October 18th**, from 7 PM at the Observatory. This is going to be a combined Board/Membership meeting. During the first hour is the official Board meeting when organizational and Observatory related issues will be discussed. Every member is welcome to attend. During the second half, starting at 8 PM **Lee Keith** will give a presentation on the upcoming **Mercury transit**.

We will have the **First Wednesday** How To Meetings on **October 2nd at 7:30 PM**. The **PixInsight Focus Group** will meet again on **Wednesday, October 16th at 7 PM**.

As always, the Observatory is open on Saturday nights, and also when posted on the Google Group.



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Membership Renewal

The Membership renewal period has started. There are several renewal methods you can choose from. If you prefer to do it online just follow this link: <http://www.milwaukeeastro.org/Renew>. The renewal form can also be printed out and send it back along with a check made payable to The Milwaukee Astronomical Society.

If you are wondering whether you need to renew your MAS membership, simply look for your name on this list: <http://www.milwaukeeastro.org/membership/membersRenewed.asp>. If your name is there, your membership is active through September 2020.

Thank you for being a member of the Milwaukee Astronomical Society.

Public Nights



The September 6th Public Night took place mostly under cloudy skies. Yet, our guests were not disappointed. Russ Blankenburg gave his talk about Our Moon twice. All Domes and Sheds were open where visitors could engaged in conversation with our members.

In **October**, there will be two Open Houses. The first is scheduled on **Saturday the 5th at 6:30 PM**. Dennis Roscoe's presentation is entitled: Where are the aliens? On **Friday the 25th at 6 PM** we

will set up a Halloween themed event named Scary Sky.

Any help from members willing to man a telescope, give a tour of the Observatory, or direct the traffic in the parking lot is highly appreciated!

Observatory Report

The old solar dome which was sold and paid for well over a year ago has finally been picked up by its new owner. The SBIG camera on the G-Scope has been reinstalled and the scope should be ready to go. Tamas, Agnes, and Jeff all know how to run the scope and I'm sure they would be happy to show other members. I have gotten a quote from a new employee at Vector Industries who used to own and run a masonry business to replace the step at "A" Buildings door and put an apron around the outside faucet. He is going to donate the labor and charge us only for the materials which he figures will be \$250, plus a tour for his family. The new stoop at the door will have two steps instead of one and a hand railing will be added too. Removal of the existing stoop will need to be done by MAS members.

Respectfully Submitted,
Paul Borchardt, Observatory Director

Treasurer's Report

\$6,938.87	Starting Balance as of 08/11/2019
	Expenditures
\$17.49	PayPal fees
\$2,138.87	Maintenance project
\$226.03	Periodic expenses
\$574.79	Observatory expenses
\$73.89	Other expenses
\$96.63	WE Energies
\$3,127.70	TOTAL Expenditures
	Revenue
\$200.00	Private donations
\$751.00	Membership dues
\$503.00	Public donations
\$1,454.00	TOTAL Revenue
\$5,265.17	Ending Balance as of 09/18/2019

Respectfully Submitted,
Sue Timlin, Treasurer

Membership Report

Since the last Report we received 6 new applications and an Honorary Membership was awarded. We welcome James Fanson, Arun Kumar & Family, Nathan Mathews, Elijah Seung-Joon Paik, Christopher Totsky, Walter Maier, and William Goes. The total number of active members is 179.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Meeting Minutes

The meeting was held on September 20th at the MAS Observatory, and was called to order at 7:00 PM by the President Tamas Kriska.

Minutes, Treasurer's Report, Observatory Director's Report, and Membership Chair's Report electronically submitted ahead the meeting were approved. New of the Colwell Family, Talbott Family, Primrose Family, Zibell Family, Christiano Family, Totsky Family, Peck Family, Gorski family, Kumar Family, Nathan Mathews, Elijah Seung-Joon Paik, John Adali, and Walter Maier applications were approved.

Old Business – The 8" Celestron EdgeHD: All proposed parts were purchased. It is set up as a loaner scope. **Maintenance:** The only remaining tasks are installing the new sign, recoating the A-dome, and pouring concrete for new steps at A building, and an apron around the yard faucet. **Solar camera:** The Board found that among the cameras the Observatory Committee suggested, the Blackfly S Monochrome model meets the requirements best. The costs, after selling the old camera, will be covered by donations from Gene Hanson and Tamas Kriska. **Observatory sign:** The sign has arrived and is ready to install. **Air condition:** Mike Wagner investigated the problem. The AC now works with full capacity. In the future, an additional 3T unit is needed to control the temperature on hot days. The question is tabled.

New Business – Sequence Generator Pro software: Arun Hegde donated the license. Now the F-scope can be operated either with SGP or SkyX. **Membership renewal:** Jeff will put together a promotion video to inspire MAS members to pledge donations along with the annual renewal. **Loaner scope program:** The Board accepted the Observatory Committee's suggestions for loaner scopes, which is obtaining a recommendation from a sponsor and a 10% deposit of the scope value.

Announcement – Sherry Shaffer from the Development Dept. of the Lowell Observatory, Flagstaff AZ will visit the MAS on October 14th. The Christmas party is scheduled on December 7th.

Program – The second half of the meeting was about watching a Vsauce video entitled "How the Earth moves" followed by a discussion. The meeting was adjourned at 9:07 PM.



Respectfully Submitted,
Agnes Keszler, Secretary

Observatory News

Summer Maintenance Projects

This month the west wall and the door of the Z-building were painted. The new yard sign was delivered to the Observatory and preparations were made to mount it on the posts. The debris from the summer construction work were deposited to a local waste management facility.



Aurora Borealis Observation on September 1st

It was a disappointment for me and I am wiped. I drove over 700 miles from yesterday afternoon to this morning. Drove all the way to Manitowish Waters first, then Silver City on the shores of Lake Superior and then most of the way back until I parked in the parking lot of a Comfort Inn at 4 AM for an hour or so of sleep. I went that far west and north thinking of best conditions (when my original plan was for Door County which is a far amount more south). Well, other than a few brief gray pillars, it was nothing naked eye but a bright glow (in part because there were very low clouds on Superior). I will share a picture at some point but it was nothing like I have witnessed in the past.



Turns out someone got a pretty good image at 3:30 from Egg Harbor but still not as good as Chad's image from that area. At least if I had gone to Door County, I would have saved an extra 6+ hours of driving.

I have since seen a fairly decent image from Oneida County as well as exactly where I was at Silver City but the brief outburst must have happened while I was driving early after sunset. There was certainly much more intense low activity later but the clouds blocked out the low activity. Here are 2 shots, one before midnight, the other near 1AM (2AM UP Eastern Time). Note the low clouds and more coming in from the left. These pics also have a little Photoshop enhancement so looking visually out over Superior, it was much worse.



Lastly, the second photo shows a bright orange glow to the right of the Dipper and bottom of the image.

by Nolan Zadra



August 27, 2018. By Chad Andrist.

Member's Stories

Visual Observing

Tonight, I decided to take a night off from imaging and do some visual with my 4" refractor, a TMB 105/650 LZOS/APM. After the clouds passed, it was a crystal clear night with the night darkness getting down to 20.0 mpsas on my SQM. Tonight was also a bit different than my usual visual sessions since I had used some recently bought new-to-me binoviewers. I had a different pair a long while back that were great for the Sun, moon and planets, but I didn't get too wowed at using them for deep sky. These new ones are great, and I have to say, I had a lot of fun looking through them for all the DSOs I tracked down tonight.

I started around 10pm with Jupiter, which was dropping pretty low in the sky. I could only make out three moons (later confirmed Io was behind Jupiter), and the NEB appeared more prominently colored.

I then took off to do some deep sky viewing while I was waiting for Saturn to clear the garage. I took in the usuals like M13, M92, M57, M27, M31, NGC281, double cluster, the double-double, Albireo, and the Veil nebula complex. I also checked off some that I hadn't seen before. These included the blue snowball nebula, NGC 7662 in Andromeda - it was very bright, and slightly colored. Almost star-like, but had enough distribution to it that it was for sure not a star. It also almost faded when viewing with direct vision, which I hadn't expected with something so seemingly bright. Perhaps that has something to do with its extended shape? I also tried the fetus nebula - NGC7008, which is a small nebula in Cygnus. I could make out the smoky appearance surrounding the bright stars near the core of the nebula. I later tried NGC7331 - the prominent member of the Deer Lick galaxy group. It presented itself as a fairly well defined elongated haze. I should've ventured over to Stephan's quintet, which is really close by, but somehow missed that opportunity. Throughout the night, I tried for the Fireworks galaxy and M33, but I think the surface brightness was just too low, and the Milwaukee skyglow wasn't helping.

Saturn was taking its time to clear the garage, so I rolled the scope over to a better spot in the driveway. It had to be one of the best views of Saturn I'd seen in several years. Granted, I don't do visual much, but I was pretty floored by the clarity of the view. Cassini's division was easily seen (not too difficult considering the inclination of the rings now), and there was some banding visible on the surface. Later, I ventured over to M8, M20, M11, M16, M17 and M22 for a quick tour of my favorites in that region. Of course, I had to end on Saturn again before packing it in;) It was a great night for visual, and if the seeing is just as good at MAS as it was here.

by Gabe Shaughnessy

Since the weather looked clear, cool & dry for a few days and it was approaching new moon (and I have vacation time to burn) I decided to pack up the 16" and head for dark skies at White Mound county park NW of Madison. The day was breezy and had scattered high and mid level clouds which I expected to dissipate after sunset which they did but they took their time. The seeing was poor and not as transparent as it could have been but the Milky Way was prominent. I did not bring my 180mm Mak to do planetary imaging since I had camping equipment in the car so this trip was visual observing only.

I revisited an object for which I have a poster of in my workout room in the basement, Abell 39 in Hercules. It is a dim perfectly round planetary about 2 arcmins in diameter. The night was not good enough to see it very well. Next I tried to find some of the more challenging planetary nebulae in an article in Sept. S&T. Saw the Green Rectangle, Cheeseburger Nebula and a few others without proper names. I always finish a night by looking at objects that look best under the darkest skies, which means emission nebulae or planetaries or galaxies. Since the Veil, Dumbbell and M31 were high in the sky; I took 15 minutes or so on each. The Veil looks like smoke rolling through space, the Dumbbell loses its dumbbell shape and looks like a football at right angle to the dumbbell and M31 shows several dust lanes and I can see it wrapping around the nucleus. The disk extends all the way to the companion galaxy, M32.

The second night was dark & clear; better than the previous night. The Milky Way was bright and prominent and I was seeing stars nearly to 6th mag! Transparent! The seeing was fairly good as the first thing I looked at was Jupiter and clearly saw the Great Red Spot and other bands. My first priority this night was to try and find more Abell planetaries using an S&T article from July 2017. I didn't find any. I have learned that when looking for extremely faint objects, my digital setting circles are not accurate enough to guarantee that I am close enough to identify the object. Also, the star atlas in Sky Safari cannot distinguish the wide range of brightnesses of the dimmest stars. They are all the same size in the software so it is almost impossible to identify a star field using only Sky Safari. I will need a star atlas in the future. Next was looking for Hickson Compact Groups (HGC) of which Stephan's Quintet (HGC 92) is a member. Spent some time finding & identifying each member which was more challenging than I expected, even with a 16" scope under good conditions. Also found HGC 88 in Aquarius & HGC 96 in Pegasus. These are very faint and I did not see all the members but they were fun to hunt for! I saw Triton, a moon of Neptune. I tried to look for moons of Uranus, but it was just coming over the hill to the east and the seeing was bad and it was getting late. I used the S&T apps to identify them earlier. Again, to finish up the night I looked at the Veil, and M31, Double cluster (the most bright stars per square arcmin it seems) and others.

I then began the long drive home and hit my pillow at 5am.

by Lee Keith

Member's Stories

Some Thoughts on Remote Imaging

How this got started: In the 1990's, I started going to Star Hill Inn, in northern New Mexico. It was set up mostly for visual astronomy with a high-quality night sky. They had one scope with a CCD camera, but it was extremely difficult to use. A few years later a new site became available, New Mexico Skies, in the southern part of the state near Cloudcroft. This site was primarily for imaging, with some resources for visual work also. You could operate the scope in the dome, or remotely from the guest house. Mike Rice, owner, had the vision to gradually grow his operation into one that astronomers from all over the world could use via the internet. Back then, I used Maxim-DL and CCD-Soft as my processing tools. An interesting aside. on one visit, I was on a hike on the grounds, and came within 100' of a mountain lion, resting on a rock outcropping. I had my camera with me, but had the wide field lens on. By the time I got my telephoto out of the pack and ready to go, he was gone.

Imaging today: I use the site iTelescope for remote imaging. This enterprise is based upon the resources at New Mexico Skies, plus other sites in Australia, New Zealand, Spain, California, and now Chile. It operates via some clever software for reserving telescope time, pointing the telescope, and retrieving data. When your reservation comes up, you direct the scope to your target, enter your settings also for exposure length, filters, and binning. I generally run scripts, that say something like, on September 10, at 9 pm, take 45 minutes of exposure on M31, 3 red, 3 green, 3 blue exposures, all at 5 minutes each, all binned (1:1). Either way, after your session is over, your file data will then be available (FTP off this site) for you to copy to your own computer for processing. Sessions will be automatically terminated in the case of rain, snow, severe winds, or very high humidity. In the rare event of an equipment malfunction (as, the scope stops tracking due to a cloud passing through the field, and disturbing the tracking), you can apply for a refund. They are very good about this.

Why do this? One is cost. Setting up a system with a quality telescope, mount, camera, computer, and lots of accessories can be very expensive. Also, the variability of Wisconsin weather can a problem. Imaging things not visible from Wisconsin is another reason. Also, with a choice of over 20 telescopes in 5 areas of the world, you can imaging something, somewhere on any given day. Where ever you are in the world, one of their sites at least is in darkness, and available, if clear. Sounds like a good way to deplete your savings account.

Minuses of remote imaging: When I imaged at New Mexico Skies, I set up and started my imaging run. Then, while it ran, I observed the excellent sky with binoculars. Seeing a near perfect sky with binoculars, and watching images pop up on the screen is pretty cool. Imaging remotely, you lose that quality of being there, and directly experiencing the night sky.

Finances: The minimum commitment is \$39/month. If this is all you want to spend you could probably get at least 6 high quality 1-hour images with a quality 4" refractor, over the course of a year. If you want to do more, you can add money to your account. I feel my costs are fair, and compared to the cost of setting a quality imaging system, I think this makes sense for me. I believe there is a trial subscription plan available, so you can see what can be accomplished.

to be continued on the next page

Member's Stories

A Facebook page exists for iTel users. This is very valuable tool to me, because a can see exactly what sort of results I may expect with a given scope and object. Because the larger scopes are expensive, I have noticed that many people only take 1 or 2 frames each of R, G, B, and get very decent results with limited exposures. Perhaps having Bortle 1 or 2 skies, f4.5 optics, and excellent mounts just allows you to get great results in a short time. I generally prefer longer exposures. Also, the manager of iTelescope, Christian Sasse, posts helpful news and maintenance reports on this site also.

Miscellaneous ramblings: I am not selling iTel here, or saying other people should use this. Rather, I feel that this works for me, and it could work for you. It could be part of your imaging for the year, imaging items not visible from Wisconsin, or very low in our skies.

The quality of work our imagers in the Milwaukee area are currently doing is quite high. I applaud the skill and determination of imagers, which can result in very fine, often spectacular, images. This is motivating for all of us, and as our skills improve, so will our results.

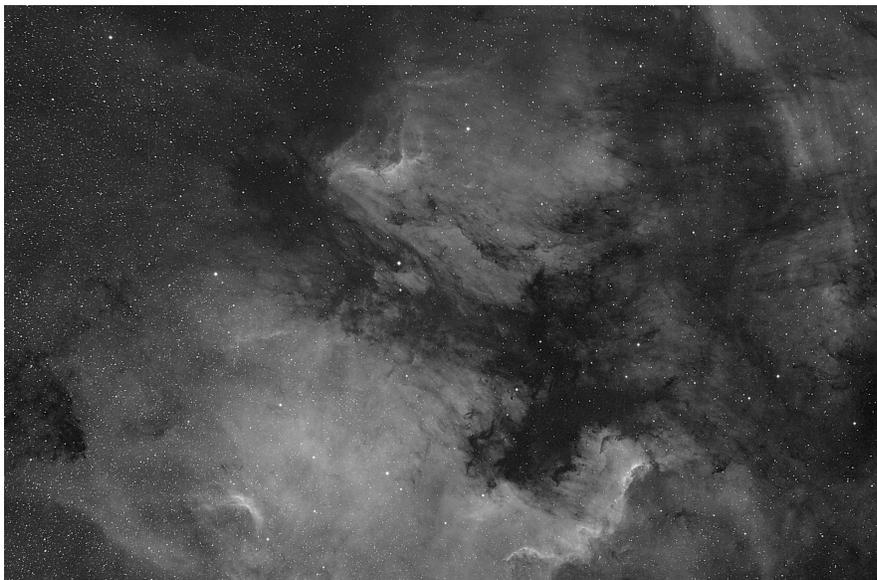
I use nebulosity/adobe now, but probably will move to Pixinsight in the next few months. This seems to be the most respected and widely used imaging product currently available.

If you are starting out, I would say the biggest thing is learn from others. Don't re-invent the wheel. Our societies in SE Wisconsin have imaging groups, which can provide excellent direction. Start small. Mount a DSLR on a tripod, and from a dark sky take 30-second wide angle images of the night sky, at, say, ISO 1600. Later, add a drive for longer exposures, and larger lenses. There is a great deal of value in doing this before you even think about telescopes, mounts, and CCD cameras.

All this will involve work, and at times, significant frustration, like for those who drive to a remote site, and while setting up, realizing that they left a key part on the kitchen table. But the payoff is high, so stick with it.

I really enjoy imaging, but there is no way I would ever get away from observing. There is something about being in a night sky and viewing clusters, nebula and galaxies, accompanied by the sounds of owls, coyotes, and other creatures, that is definitely one of the great pleasures of life. So explore, image, enjoy.

by Tom Schmidtkunz



Picture of North American/Pelican nebula region, in Ha. Imaged via iTelescope, from the New Mexico site, 08/26 and 09/01, 2019 using TAK 106 FSQ telescope and SBIG STL-11000M CCD camera. 12 x 5 min exposures with Ha filter, binned (1:1). Processed in Nebulosity and Adobe.

In the Astronomical News

Astronomers Uncover 'Invisible' Massive Ancient Galaxies

Although once invisible to us in the vast reaches of the universe, 39 massive ancient galaxies have been discovered by astronomers using multiple space and ground-based observatories. This is the first discovery of its kind, the researchers said.

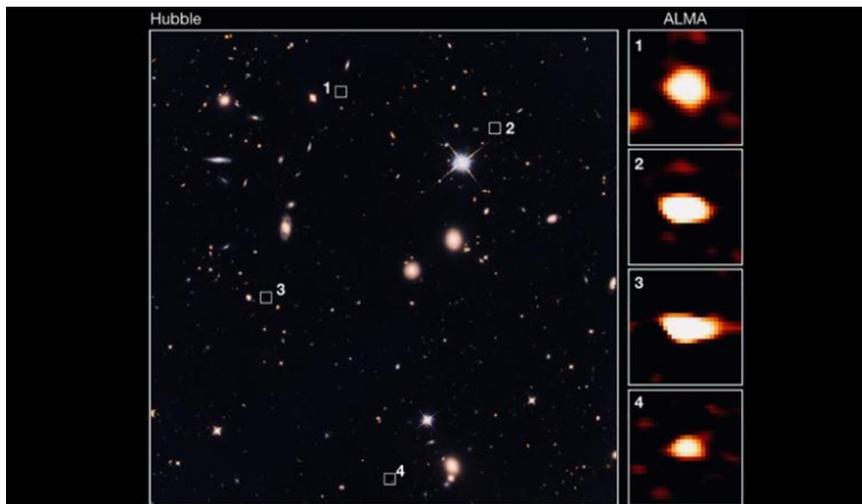
"This is the first time that such a large population of massive galaxies was confirmed during the first 2 billion years of the 13.7-billion-year life of the universe. These were previously invisible to us," said Tao Wang, study author and researcher at the University of Tokyo, French Alternative Energies and Atomic Energy Commission, and the National Astronomical Observatory of Japan. "This finding contravenes current models for that period of cosmic evolution and will help to add some details, which have been missing until now."

The new prevalence of these galaxies, which are con-

nected with supermassive black holes and dark matter, contradicts the current known models of the universe. Given their age and distance, the massive galaxies were hidden from our view because their light is weak and stretched. The universe is also expanding, which makes the distance greater. Over that distance, visible light becomes infrared, according to the study. "The light from these galaxies is very faint with long wavelengths invisible to our eyes and undetectable by Hubble," said Kotaro Kohno, study author and professor at the University of Tokyo. "So we turned to the Atacama Large Millimeter/submillimeter Array (ALMA), which is ideal for viewing these kinds of things. I have a long history with that facility and so knew it would deliver good results." The Atacama complex is located in Chile.

Galaxies also have a bit of a dust problem,

which cloaks the largest galaxies even more than smaller ones. Studying these galaxies can also reveal more information about supermassive black holes. "The more massive a galaxy, the more massive the supermassive black hole at its heart. So the study of these galaxies and their evolution will tell us more about the evolution of supermassive black holes, too," said Kohno. "Massive galaxies are also intimately connected with the distribution of invisible dark matter. This plays a role in shaping the structure and distribution of galaxies. Theoretical researchers will need to update their theories now."



ALMA identified 39 faint galaxies that are not seen with the Hubble Space Telescope's deepest view of the Universe 10 billion light-years away.

Looking up at the night sky, our galaxy the Milky Way appears a bit like spilled milk. But if we lived in one of these massive ancient galaxies, the view would be different. "For one thing, the night sky would appear far more majes-

tic. The greater density of stars means there would be many more stars close by appearing larger and brighter," explained Wang. "But conversely, the large amount of dust means farther-away stars would be far less visible, so the background to these bright close stars might be a vast dark void."

Future space-based telescopes could shed more light on the composition, number of stars and the chemicals in these galaxies. "Previous studies have found extremely active star-forming galaxies in the early Universe, but their population is quite limited," Wang said. "Star formation in the dark galaxies we identified is less intense, but they are 100 times more abundant than the extreme starbursts. It is important to study such a major component of the history of the Universe to comprehend galaxy formation."

Ashley Strickland cnn.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	18" F/4.5 Obsession	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	Herman Restrepo/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

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Gabe Shaughnessy	262-893-4169
Steve Volp	414-751-8334
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October Keyholders

10/05	Paul Borchardt	262-781-0169
10/12	Steve Volp	414-751-8334
10/19	Brian Ganiere	414-961-8745
10/26	Lee Keith	414-425-2331



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