

REFLECTIONS / REFRACTIONS

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University Lowbrow Astronomers Monthly Newsletter

April 2024, Vol 48, Issue 4

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M51

BY DOUG BOCK

It is galaxy season this Spring, This month (March 11, 2024) I decided to collect fresh data on Messier 51, with the ZWO asi2600mc pro camera. This is the first time I've used that camera on this object. This was only about 1 hour and 40 minutes in the morning hours.

Description from Wikipedia:

The Whirlpool Galaxy, also known as Messier 51a or NGC 5194, is an interacting grand-design spiral galaxy with a Seyfert 2 active galactic nucleus. It lies in the constellation Canes Venatici and was the first galaxy to be classified as a spiral galaxy. It is 7.22 megaparsecs away and 23.58 kiloparsecs in diameter.

Data Acquisition: 20 x 300 second light frames. ZWO asi2600mc pro camera, temp 0C, gain 100. 10" f/8 RC telescope. Losmandy G11 mount. Stacked in Deep Sky Stacker, processed in PixInsight. ■



2023 YEAR IN REVIEW

BY CHARLIE NIELSEN

The year 2023 was a year that seemed like it was pretty much back to business as usual. We continued to run hybrid meetings, which is a benefit to our club despite it being born out of a response to the COVID-19 pandemic. The meetings are also still recorded and uploaded to our YouTube channel. The trend through the year was toward having more in-person attendees than via Zoom. In April we moved to our new meeting location at the Detroit Observatory. It seems appropriate for an astronomy club to meet at an observatory, and on many of our meeting nights, we can join the public in viewing through the historic telescope after we conclude the meeting. We were plagued by audio and video issues with the room's equipment, which compromised the remote connect quality especially. We would resolve one issue only to have a different one come up next month. As I author this article in early 2024 the situation has improved, but I found myself commenting at our last meeting that perhaps we had too much technology in the room.

Our meeting topics were as follows:

January - This was another great presentation by Br. Guy Consolmagno, Director of the Vatican Observatory Foundation, who connected with us via Zoom from the Vatican Observatory in Italy. It was 1:30 AM his time! This time he spoke about the surprising surface that the OSIRUS-REx probe found on asteroid Bennu and an explanation of why it is that way. We had 49 attendees combined.

February - This was another repeat (many times) appearance from Warren Astronomical Society member, Ken Bertin. This time Ken's presentation was titled "The Birth, Life, and Death of Stars". In person attendance was 15, plus 13 via Zoom.

March - Excellent presentation from Dr. Mojtaba Akhavan-Tafti about the Parker Solar Probe and what it has discovered. Mojtaba explained how the

proposal was carefully worded to maximize the probability that Congress would approve it. He also showed "logic gate" charts to show how a sensor failure could be mitigated by a combination of other sensors or instruments, and how many failures would lead to the mission being classified as successful or not after it is complete. This was remarkably interesting, and an aspect of mission design that we have not seen in any previous presentation. We had 17 in-person attendees and 12 via Zoom. We can thank club member Parker Sevcik for bringing this month's speaker.

April - Dr. Jeff Morgenthaler from the Planetary Science Institute, spoke to us about the interaction of Io's volcanic eruptions with Jupiter's magnetic field. He also spoke about how we can get images of sodium tails from Mercury and comets with parts you can buy at a high-end camera shop. Club member Ken Cooke recruited Jeff. We had 25 in-person attendees and 18 via Zoom. This was our first meeting in our new location at the Detroit Observatory and the first time since the COVID-19 pandemic that our in-person attendance exceeded the online attendance.

May - We did not meet this month at the DO. This was a demonstration of the planetarium at the University of Michigan Museum of Natural History, by Buddy Stark, the new Planetarium Manager. Buddy showed us many of the features of the system and how he uses them to teach astronomy to the public. We had 17 in-person attendees and 5 via Zoom. VP Dave Snyder reached out to Buddy to make this happen.

June - This month we had another great presentation by Jim Shedlowski. This time he spoke to us about orbital light pollution, and it was an alarming revelation. As usual, he played his guitar and sang a song about the subject at the close of his talk. We had 21 people in the room, and 3 Zoom attendees. Unfortunately, we had audio issues that were unresolvable at that time, and this made it very difficult for the Zoom audience to hear properly.

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2023 **YEAR IN REVIEW** continues from p. 2

July - This was our annual trip to the Sherzer Observatory at Eastern Michigan University. Norb Vance was our "guest" speaker, and he showed us a series of slides about local astronomy events and venues, some not local. That was followed by one of his students, Miles, who led us on a demo of the recent planetarium upgrades. After our business meeting, we walked over to the observatory and used several telescopes for a while. This was the first time in several years that the sky cooperated on this night for us. It was also the return of our pizza, cookies, and pop social period preceding moving into the planetarium. We could not run a hybrid meeting this time, but we had 33 in-person attendees.

August - We had a great presentation about space weather and how it is driven by the Sun, by distinguished professor, Dr. Tamas Gombosi. Tamas is considered THE expert on this subject, and we can easily see why. He struck an excellent balance between complexity and understandability. At the end of his presentation, he talked about EMP's from hydrogen bomb explosions and how they compared to solar flares and coronal mass ejections. He concluded by asking the question whether the Sun or humans are more dangerous. Combined attendance was 44. Our Online Coordinator, Jeff Kopmanis used to work with Tamas, and we can thank Jeff for bringing him to us.

September - Our guest speaker was Avital Keely, a recent graduate of Eastern Michigan University. She did a presentation about the Ort Cloud and how she is researching the possibilities of imaging an Ort Cloud object in the future. We had 11 in-person attendees and 11 via Zoom. Thanks to Norb Vance for connecting us with Avital. She also joined our club after the meeting!

October - This month featured club VP, Dr. Brian Ottum, who spoke to us about getting ready for the April 8, 2024, Solar Eclipse. Brian had lots of especially useful information and tips to prepare for the event and the decisions that must be made.

Several other attendees had much to contribute as well, based on their previous experiences and information they knew about accommodations for this eclipse. This was an excellent presentation. We had 15 in-person attendees and 15 via Zoom.

November - Club member Don Fohey recruited NASA Solar System Ambassador, Timothy Campbell, to speak to us about the James Webb space telescope. It was a very thorough and detailed presentation and brought us up to date on the telescope's findings. We had 23 in-person attendees and 19 via Zoom.

December - Great presentation by UofM Physics Chair, Professor David Gerdes, about the LUCY mission to the Jupiter Trojan Asteroids, and stellar occultations. We had 20 in-person, plus 10 online attendees. Club member Debbie Smith found David for us.

We started our Open House schedule on April 15th. Note I stated "schedule", not that we ran it. Clouds had other ideas, and the following Saturday was even worse since it rained. Same deal for our first try in May, but we did succeed on May 25th. The sky was clear but never got very dark. Despite that, we were able to find some galaxies and saw the supernova in M101. Club members helping were Open House Coordinator Jim Forrester, McMath operator, Charlie Nielsen, and club members Alex Swartzinski, Dmitri Tsaheinik, and Tony Licata. We had 25 guests. Our first event "on the road" was on June 19th for the Dexter Girl Scouts. Charlie Nielsen, Don Fohey, Jim Forrester, Jack Brisbin, and Bob Gruszynski showed up at the venue, only to watch incoming clouds defeat us. In a strange twist, VP Adrian Bradley took a wrong turn and ended up setting up for a different group of campers on the other end of the field we were in. We could not see each other. After the main group gave up and left, the sky cleared just enough to let Adrian show Venus to the other group. That group had an event with a different astronomy club, but they did not make it. So, Adrian saved something out of nothing!

2023 **YEAR IN REVIEW** continues, p. 4

Returning to our open house schedule on June 17th, we had clear skies, but some smoke in the air causing poor transparency. It was steady seeing, however. Club members bringing telescopes were Eddie Hernandez, and a member of the public named Devin Davis. Brian Ottum and Gary Nichols brought two types of EAA setups, Jack Brisbin and Dmitri Tsaheinik staffed the McMath telescope, and Jim Forrester ran a training session on our club's 17" DOB for Barry Wissman and Jon Blome. Charlie Nielsen was the Open House Coordinator. We had 13 guests. We also ran our June 24th open house. The sky was clear, but hazy and smokey. By midnight only a few stars were visible, so we called it an evening. We had a group of Boy Scouts and parents (about 18 of them) from the Pinckney area visit us. Club members that helped were Jim Forrester (OHC), Don Fohey, Jack Brisbin (running the McMath), Brian Ottum, plus Roger and Stephanie Brenton. The total guest count was 45.

We tried two Michigan Math and Science Scholars events in July, succeeding on July 31. Oddly, we started the night with light rain. Six brave Lowbrows: Jim Forrester, Jack Brisbin, Don Fohey, Adrian Bradley, Shannon Murphy, and her husband Joe, entertained and taught about 30 students. We did see stars eventually. All three of them. Vega, Arcturus, and Deneb (which was an averted vision object). We also saw a lot of dark rain clouds and atmospheric smoke. So, we turned it into a lesson on equipment and split the students into separate groups. One group would learn about the history and functionality of the McMath telescope. Another group learned about how telescopes work, using the 17.5-inch as the visual aid. Still, others looked at Don's tablet, pointing out what was behind all the clouds and smoke in the night sky facing south. Finally, was the EVScope station with Shannon and Joe, explaining how a small and compact astrophotography rig can do wonders for deep space object imaging. It was a successful night, as all the students stayed engaged, asked questions, and let us know that they came away informed, and enjoyed their time on the hill.

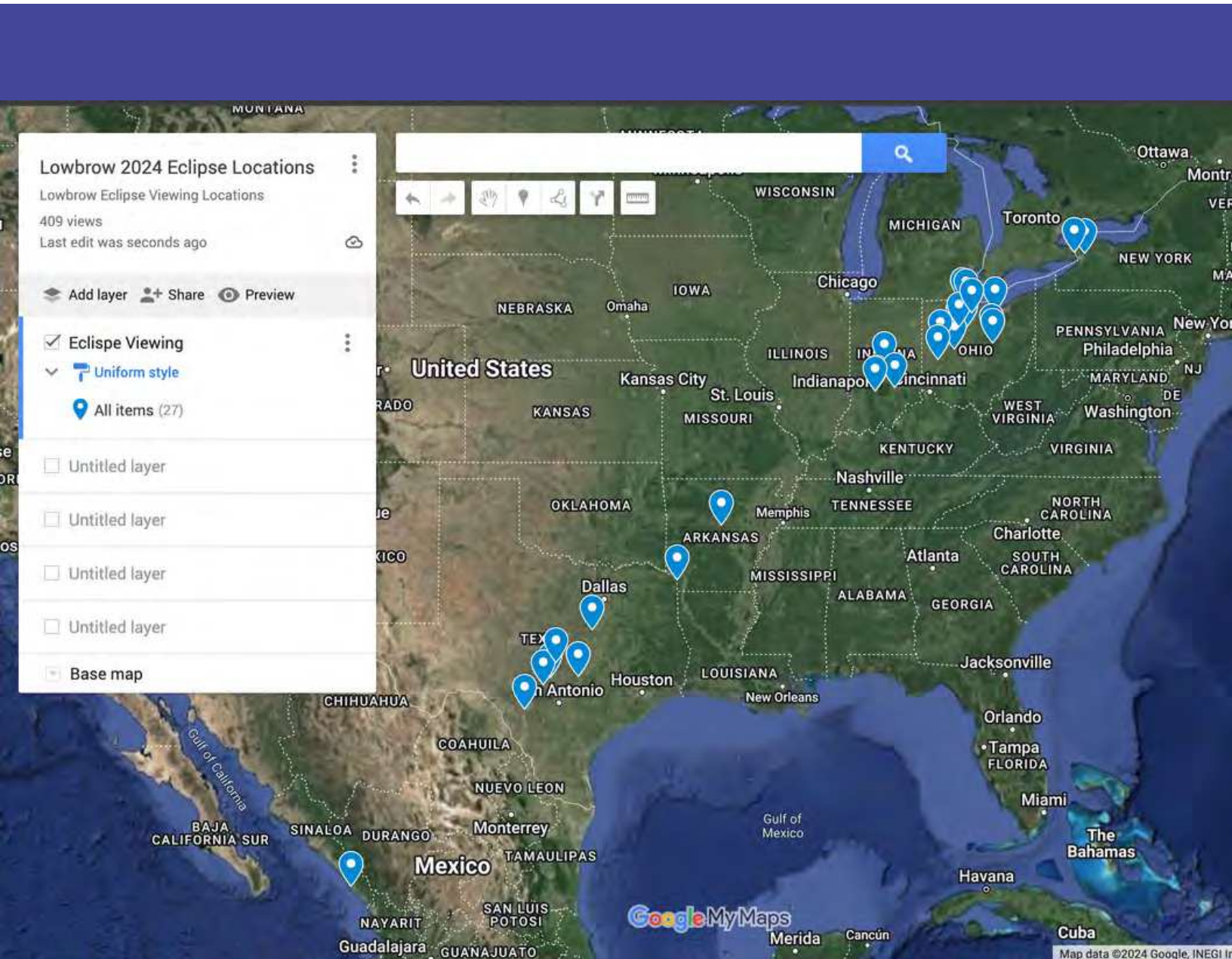
Back to the open houses, we had success on our second July attempt. Charlie Nielsen, Jack Brisbin, Barry Wissman, Jon Blome, and Dmitri Tsaheinik were there to run telescopes. I used my 66mm ED refractor at the parking lot, and we had the McMath 24 inch and the club's 17.5-inch telescopes operating. We only had 11 guests show up, but they all were incredibly pleased with the experience. The sky was one of the best we have had this year. Transparency was not good, but we had only a few passing clouds and the air was reasonably steady and smoke free. Our August 12 open house had Jim Forrester serving as OHC, and Jack Brisbin operated the McMath telescope with Adrian Bradley assisting. Also helping at this event were David Cooke and his wife, Doug Nelle, and Gary Nichols. We had nearly 100 guests to enjoy a good sky considering all the smoke, haze, and clouds we have been dealing with, and a few Perseid meteors were spotted. We also ran the August 19 event. The Canadian wildfire smoke cleared as the evening progressed, leaving us with one of the better nights of the year. We were pleased that we ended up with an adequate number of telescopes and operators to treat our guests the way we like to. OHC was Jim Forester. Jack Brisbin operated the McMath telescope while Brian Ottum projected images on the outside wall of the building. Also bringing telescopes were Charlie Nielsen, Dorian Jurgle, Barry Wissman, Gary Nichols, and Brandon Roche. Ken Cooke showed up to greet and guide our guests and answer questions. This was an excellent open house! At 12:34 AM we witnessed an object racing across the sky from south to north. It was very bright and moving faster than any satellite that we had ever seen. A couple of us also think we detected a short trail behind it. We do not know what this was. The guest count was 33.

On August 26 we took a trip of over an hour to the north. This event was born when club member and pilot, Dmitri, met the manager of the cafe at Owosso Airport. She asked if we could have some people with telescopes come to a "camping" event they hold every year for pilots and families. We agreed, especially when we were offered free food, which was very tasty. We set up equipment and then ate, followed by walking back over to our telescopes to discover the sky had turned completely cloudy. But we waited it out and started to view the Moon and

APRIL 8 ECLIPSE MAP: WHERE WILL YOU BE?

A big thanks to **Don Fohey** for making this interactive eclipse map showing where Club members will be during the April 8 eclipse. If you'd like to add your location, click the link below. ■

<https://rb.gy/ct1wpt>



later Saturn and a few other objects. Our hosts and the participants (25 of them) that came over to look were very pleased. Helping with this event were Charlie Nielsen, Jim Forrester, Jeff Kopmanis, Brian Ottum, and Gary Nichols. We enjoyed this event too and will likely be asked to return. Good thing it was not a day or two earlier since tornadoes ripped through just south of them. I drove through one of the heaviest damaged areas on my way up.

Both of our September open houses got clouded out. But the 22nd and 23rd were our dates for Astronomy At The Beach. This was our AATB event since the pandemic, and the attendance is coming back! It was down from average last year, but this year we were much closer. We were treated to clear skies both nights! We had about 1500 guests on Friday night and 3000 on Saturday.

Both of our October open houses got taken by clouds. Due to confusion in dates, we ended up with three open houses scheduled in November. It did not matter though because the weather erased them all. So concluded our 2023 open house schedule.

Sometimes, as part of this article, I must mention the loss of a beloved club member. This time it is Dave Jorgensen, whom we lost last August. Dave was a Vice President for many years and was one of the most prolific speaker recruiters this club has ever had. He was also highly active in our public outreach events ...we could almost always plan on Dave being there. He was instrumental in the building of our club's 17.5-inch telescope, which was also safely stored in his garage over the winter. In addition to all of that, he was one of the nicest people you could ever hope to meet. We miss you, Dave!

We had no change of officers in 2023. Membership hovered around 200 most of the year and our treasury continued to show growth. Hey, maybe we should figure out something to spend some of it on! As Spock would say "live long and prosper, Lowbrow astronomers." ■

STARRY STARRY NIGHT LYRICS (with apologies to Don MacLean)

BY JIM SHEDLOWSKY

Starry Starry Night
Looking at the Milky Way
Thinking It's so far away
That it's impossible to comprehend

Dwell upon the thought
That Galaxies shine from so far
We do not see them as they are
But as they were before this earth had men

We try to understand, the vastness of the
Universe
With Measurements we sometimes curse
Cuz it's so hard for us to know
How distant is the feeble light
On this Starry Starry Night

Not so long ago
Astronomers tried to explain
The theories that were on their brains
'Bout what the Spiral Nebula could be

Then with modern eyes
And instruments that measured well
They solved the mystery to tell
The nature of the Island Galaxies

For Hubble came along
And found that "blinking star" to say
Andromeda was far away
Much farther than the Milky Way
That Cepheid is blinking still
I guess it always will

Starry Starry Night
Contemplate the Universe
Starts with a Gigantic Burst
Of Energy and Matter, long ago

How that came to be
From a Singularity
Expansion that today we see
In Cosmic Radiation everywhere

Dark Mass and Energy
Are Cosmic things we can not see
Which constitutes a mystery
That we continue to explore
This Universe has secrets still
We guess it always will ■

PROCESSING M42: OLD vs. NEW

BY AWNI HAFEDH

Here is another "back to the past edition," with all the new processed tools. I edited the data of my Orion Nebula captured in the beginning of 2016. This was a very challenging image as it was composed of different exposures 2sec, 5sec, 10sec, 15sec, 30sec, 60sec, and 120sec subs to create a dynamic range of the bright core and to add more complexity. It was captured with my first modified non-cooled camera (Canon SL1) all at ISO1600, and if you are familiar with those cameras, the thermal noise is extreme, I remember my darks were captured while the camera was in the fridge to match the ambient temperature of the light frames in January. It was a huge learning curve back then. The amazing thing is that the original image took me two months to process while the new one only took 3 hours to get the final image, ■



**NEW
PROCESS**

**OLD
PROCESS**

Equipment used
Celestron 9.25" with
hyperstar
Canon SL1 Camera
Astronomik CLS clip filter
iOptron ZEQ25 mount



USING NIGHT IMAGES TO SAY GOODBYE

BY ADRIAN BRADLEY

Often when we take night sky pictures, we are engrossed in the process and are only satisfied if we get a good result. Then it's off to competition sites or posting online for friends, relatives, and the general public to see.

Photos of the night don't have to fall into this category! Sometimes we take pictures for posterity's sake. We can put deeper meaning into our images. For instance, see above right.

This is the old cottage that my priest, Father Daniel Trapp, used to retreat to after a long week of serving the Archdiocese of Detroit. He passed away after only a couple of months into 2024. I had taken images from his cottage when he was inside sleeping. After his death, capturing Orion above the cottage in a composition that also shows nearby Lake Huron was my 'goodbye' tribute to him.

Here was the image of a rising Milky Way from the same cottage just this past year. Father was inside, sleeping when I took this image below.



So not only do circumstances mark the times, but the night sky itself keeps a record of events. It makes it possible to recreate points in time... should I be able to access the cottage again before the family sells it, I would be able to take a mirror image of this shot but with very different circumstances.

I also said goodbye to my long time vehicle, a pickup truck that I drove to many locations for imaging:



NIGHT IMAGES continues, p. 9

NIGHT IMAGES continues ...

This was its last look at Port Sanilac Roadside Park. With over 228k miles, a couple of things leaking underneath, and a squawking serpentine belt, it was time to trade it in.



The new vehicle, an Equinox, got its travel legs not long after coming into my possession. Here it takes the place of my truck in the same spot at Port Sanilac Roadside Park.



We may be fans of science, logic, and reason. But the general public we serve as astronomers runs on emotion and the latest sensationalized news of the week. We owe it to ourselves to at least understand this if we want to reach the public and introduce them to something that has brought us joy throughout the ages ... the universe! Things and people come and go, but the night sky will be there in the foreseeable future -- if we keep looking up and continue to help in the fight to reduce light pollution so that we can gaze at the night sky for years to come. ■

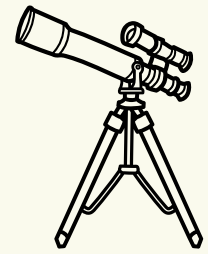


**Hello,
Galactic
Center!**

Milky Way rise is slowly moving earlier into the evening. But this means we say goodbye to Orion as its setting is also slowly moving earlier into the evening.

UPCOMING TOPICS FOR THE OBJECTIVE LENS

BY JACK SPRAGUE



Our Lowbrow photographic roll features images from snapshots, eyepiece imaging, EAA captures, and astrophotography. All images are welcome and while we have a monthly theme, we love any submission.

May – Galaxies. Get processing on those images from galaxy season and let's have a rogue's gallery of the spiral, the elliptical, the irregular, and the interacting! It would be interesting to see how deep our deep-field images can go. There will be a prize for the most distant, discernable, galaxy captured. Can we top 300Mly?

And we'll look forward to your photos of the April 8 eclipse!

UPCOMING MEETING SPEAKER SCHEDULE

April 19: Jeff Kopmanis, Club Online Coordinator

Topic: *Automated Astrophotography (On the Cheap)*

May 17: Gary Nichols

Topic: *How Smart Are They? A Comparison of the New Breed of All in One Smart Telescopes*

June 21: Club members Ed Hernandez, Jeff Kopmanis, Ken Leitch, Marcus Clarke, Jack Sprague, Dmitri Tsahelnik, Glenn Kaatz, Brian Ottum

Topic: *Timed Showings of Astrophotography by Club Members*

July 19: Miles Mercier, EMU grad (also Norb Vance)

Topic: *TBA, about radio astronomy and primordial hydrogen*

August 16: Club Picnic (Location TBD)

September 20: Club meeting cancelled for Astronomy at the Beach

Meeting Minutes

University Lowbrow Astronomers

March 15, 2024

President Charlie Nielsen called the meeting to order at 7:36 PM, introducing Jim Shedlowski of the Warren Astronomical Society. His talk, "Searching for the Dark Universe," was very informative and well received.

Business Meeting

President Charlie Nielsen—

1. Some items from the estate of long time member Bernard Friberg were distributed to various members. A collection of the estate's photographs of the University's decommissioned Lamont-Hussey Observatory in South Africa will be passed on to the Bentley Historical Library.
2. Solar viewing devices (glasses, pin-hole cards) were offered to the members.
3. As compensation for this evening's talk and many past presentations, this evening's speaker, Jim Shedlowski, was voted a lifetime membership in the Lowbrows.
4. April annual Election of Officers: Most Officers are standing for reelection. Stepping down are Vice Presidents Adrian Bradley, Dave Snyder and Jim Forrester. VP Forrester's duties largely included scheduling Peach Mountain Open Houses and recruiting members to staff them as well as opening the facility to the membership on clear, dark of the moon nights. Forrester will be traveling much of the summer and unable to perform many of these tasks. Long time member Ken Cook has agreed to be a candidate for Vice President, leaving two Vice President slots to be filled.

Vice President Jim Forrester—

VP Forrester announced he was not a candidate for reelection. Member Don Fohey volunteered to be Open House Coordinator for the April 13 and May 4 Peach Mountain Open houses.

Observatory Director Jack Brisbin—

North Territorial Road is closed at Dexter-Town Hall Road for construction until April 29. The only approach the the North Territorial Road gate to the Observatory is from the east.

Online Coordinator Jeff Kopmanis—

Many new additions have been made to the new website's astro photo gallery. The lowbrows.club domain name has been renewed. A bibliography of astro photo processing software will soon be added.

Treasurer Doug Scobel—

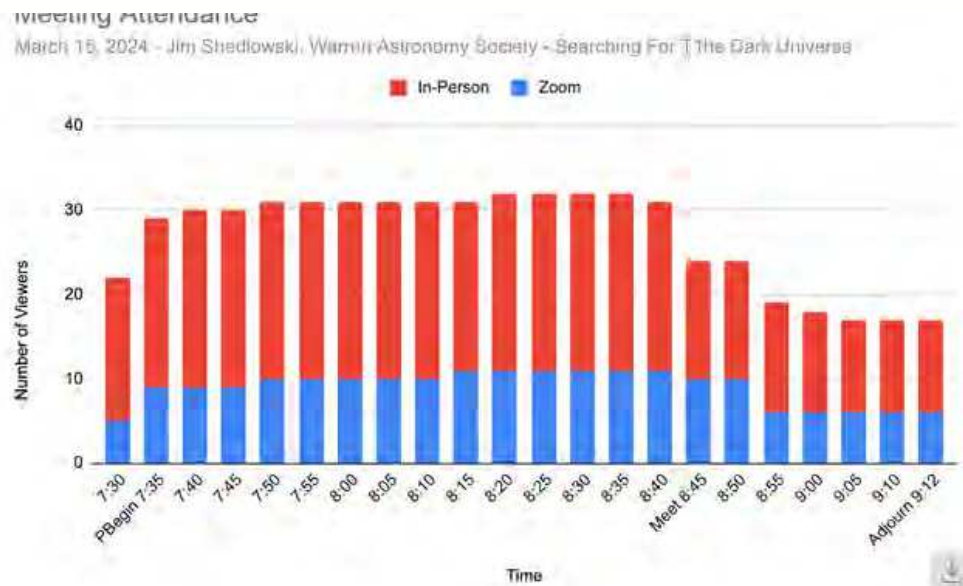
- We have 200 memberships.
- I made our usual monthly payment to AT&T for our Open House "hotline", and paid the newsletter editor's cost of printing and mailing the printed version of our newsletter.

Member Kurt Hillig announced long ago member Irene Newhouse had passed away.

The meeting was adjourned at 9:12 PM

Respectfully submitted,

Jim Forrester
Vice President



Max	11	21
Percent	34.38%	65.63%
Total	32	

Treasurer's Report for Fiscal Year April 1, 2023 to March 31, 2024

Doug Scobel, Treasurer

Overview:

We have \$13,028.56 in the treasury, a decrease of \$962.81 below last year.

We have 201 memberships, an increase of 3 compared to last year. Our membership categories break down as follows:

- 44 Family/Individual (22%)
- 105 Senior (age 55+) (52%)
- 5 Student (2.5%)
- 30 Reside outside of Michigan's lower peninsula (15%)
- 17 Lifetime/Honorary/Hardship (8.5%)

Note: Because of space limitations in the newsletter this report is necessarily brief. If you have questions or would like further detail about anything outlined here then please do not hesitate to contact me.

Balance Sheet:

<u>Income</u>		<u>Expenses</u>	
Dues collected	\$3,565.00	Open house "hotline"	\$190.20
Astronomical League dues	\$245.63	Newsletter printing/ mailing	\$136.14
			\$1,185.6
Donations	\$15.00	Astronomical League	3
			\$1,510.2
Shirt/Cap sales	\$1,029.00	Donations	4
			\$2,631.1
Shipping/ mailing	\$297.75	Shirt/Cap club order	0
RASC publications sales	\$848.00	Shipping/ mailing	\$423.05
Miscellaneous	\$4.00	Miscellaneous	\$435.35
		Observatory/ equipment	\$405.48
		Guest speaker expenses	\$50.00
			\$7,002.1
<u>Total Income</u>	\$6,039.38	<u>Total Expenses</u>	9
	\$13,991.3		
<u>Balance 01 April 2023</u>	7	Shirt Inventory	100
Income	\$6,039.38	Cap Inventory	32
Expenses	\$7,002.19		
	\$13,028.5		
<u>Net Increase (Decrease)</u>	(\$962.81)		

TREASURER'S REPORT continues , p.8

Income and Expenses Details:

This year 37 Lowbrows are also Astronomical League members, a decrease of 4 compared to last year. The difference between what members paid and what we paid out is the \$10.00 annual fee that the A.L. charges its member societies, and several members paid ahead for multiple years' worth of A.L. membership. Also, we purchased our 2024 RASC observer's calendars and handbooks through the Astronomical League.

Donations we received were from several members that included them with their dues payments. All these donations (however small) from members are greatly appreciated!

We had five donations going out - \$200.00 (annually going forward) to the Vatican Observatory Foundation as suggested by Brother Guy at the January 2023 meeting; \$250.00 to Dark Sky International (previously known as the International Dark Sky Association); \$500.00 to the Great Lakes Association of Astronomy Clubs (GLAAC) in support of the annual Astronomy at the Beach star party; \$60.00 to sponsor the Peach Mountain Clear Sky Chart; \$500.00 GoFundMe donation to RASC Hamilton Observatory after the vandalism incident.

Members bought \$1029.00 worth of shirts and caps. This was after making a purchase of \$2631.10 from Sunrise Screen Printing in Ann Arbor to shore up our inventory.

Shipping/Mailing income was payment from members for shipping Lowbrow apparel and RASC items that they purchased. Similarly, shipping and mailing expenses were for mailing those items, mailing shirts and caps to some of our guest speakers, and shipping shirts and caps to club president Charlie for distribution to guest speakers at monthly meetings.

We ordered our 2024 issues of the Royal Astronomical Society of Canada (RASC) observer's calendars and handbooks from the Astronomical League, instead of directly from RASC. This cost is included in the Astronomical League expense line item. Miscellaneous income was from the sale of four

sheets of red "Rubylith" film. Thanks, Jack - every dollar helps!

Our larger miscellaneous expenses were \$194.00 for annual rental of our USPS post office box, and \$193.82 for food and refreshments provided at the July meeting at EMU. The rest was for costs associated with transitioning our club website to the new site hosted by WordPress (thanks, Jeff!).

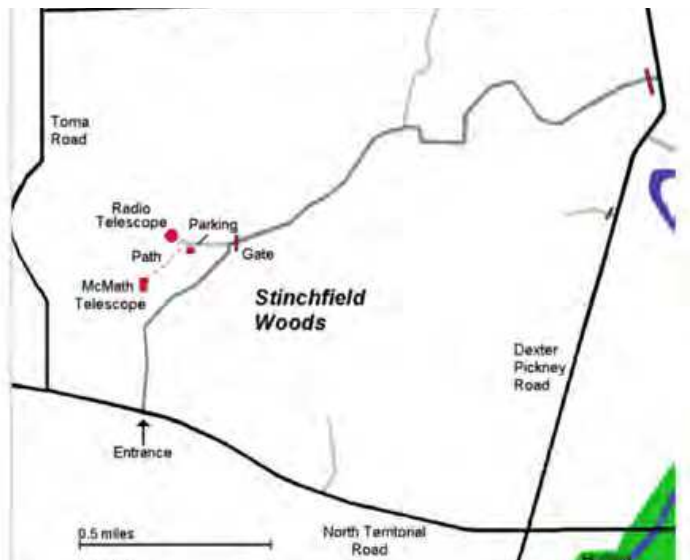
Observatory and equipment expenses consisted mainly of \$75.63 for cooling fans for the McMath primary mirror and \$206.62 for observatory heaters and a replacement wall outlet. The remaining \$123.23 covered miscellaneous costs associated with maintaining the observatory.

Our only guest speaker expense was for a gift certificate for October speaker Brian Ottum.

PLACES & TIMES

Monthly meetings of the University Lowbrow Astronomers are held on the third Friday of each month at 7:30 p.m. The location is usually the Judy & Stanley Frankel Detroit Observatory. The Observatory is located at 1398 E. Ann St., Ann Arbor. The Ann Street Parking Structure (M86), the Catherine Street Structure (M5), the Glen Street Structure (M61), and the School of Public Health II Lot are usually open after 6:00 p.m. Mon-Fri. The M86 structure is closest to the Detroit Observatory.

Peach Mountain Observatory is the home of the University of Michigan's 25-meter radio telescope and McMath 24" telescope, which is maintained and operated by the Lowbrows. The entrance is addressed at 10280 North Territorial Road, Dexter MI, which is 1.1 miles west of Dexter-Pinckney Rd. A maize and blue sign marks the gate. Follow the gravel road to the top of the hill to a parking area south of the radiotelescope, then walk about 100 yards along the path west of the fence to reach the McMath Observatory.



PUBLIC OPEN HOUSE / STAR PARTIES

Public Open Houses / Star Parties are generally held on the Saturdays before and after the New Moon at the Peach Mt. Observatory but are usually canceled if the forecast is for clouds or temperatures below 10 degrees F. For the most up-to-date info on the Open House / Star Party status call: (734) 975-3248 after 4 pm. Many members bring their telescope to share with the public and visitors are welcome to do the same. Mosquitoes can be numerous, so be prepared with bug repellent. Evenings can be cold so dress accordingly.

Lowbrow's Home Page

<http://www.umich.edu/~lowbrows/>

MEMBERSHIP

Annual dues are \$30 for individuals and families, or \$20 for full time students and seniors age 55+. If you live outside of Michigan's Lower Peninsula then dues are just \$5.00. Membership lets you access our monthly newsletter online and use the 24" McMath telescope (after some training). Dues can be paid by PayPal or by mailing a check. For details about joining the Lowbrows, contact the club treasurer at: lowbrowdoug@gmail.com

Lowbrow members can obtain a discount on these magazine subscriptions:

Sky & Telescope - \$43.95/year

Astronomy - \$34.00/year, \$60.00/2 years or \$83.00/3 years

Newsletter Contributions:

Members and non-members are encouraged to write about any astronomy-related topic. Contact the Newsletter Editor: Amy Cantu cantu.amy@gmail.com to discuss format. Announcements, article, and images are due by the 1st day of the month as publication is the 7th.

Telephone Numbers:

President:	Charlie Nielsen (734) 747-6585
Vice President:	Adrian Bradley (313) 354-5346
	Jim Forrester
	Brian Ottum
	Dave Snyder
Treasurer:	Doug Scobel (734) 277-7908
Observatory Director:	Jack Brisbin
Newsletter Editor:	Amy Cantu
Key-holders:	Jim Forrester
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A NOTE ON KEYS: The Club currently has three keys to the Observatory and the North Territorial Road gate to Peach Mountain. University policy limits possession of keys to those whom they are issued. If you desire access to the property at an unscheduled time, contact one of the key-holders. Lowbrow policy is to provide as much member access as possible.

Email to all members

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University Lowbrow Astronomers

