REFLECTIONS / REFRACTIONS

University Lowbrow Astronomers Monthly Newsletter

May, 2025, Vol 49, Issue 5

Inside this issue:

M63 (SUNFLOWER GALAXY)

BY GLEN KAATZ

The Sunflower Galaxy (M63) is found in Canes Venatici high in the sky at this time of the year. It is 29.3 million light-years away and is a "flocculent" galaxy. Flocculent galaxies are patchy with discontinuous spiral arms. ❑
(See Glen's imaging details, p. 9)

OBSERVING REPORT 4/26/2025

BY ALEX SWARTZINSKI

Saturday (April 26th) was a long day. After a morning work event an hour south of home, I picked up the truck and hit the road, in pursuit of clear and dark skies in Northern Michigan.

The weather looked great all week. Clear skies were predicted with good transparency and decent seeing. You can't ask for more in a wet climate. Speaking of precipitation, the previous weeks had not been kind to the forested land I frequent. A massive ice storm damaged or destroyed countless trees across the area. The roads were blocked, and power was down for days. Thankfully, my family members had a generator.

Some relatives had already gotten to work clearing the field, but my grandfather and I spent some time clearing the back trails to get my truck back into the woods. Those weak yet fast-growing Populus trees are going to be a clean-up pain for years to come. Thankfully, the evergreens held up much better.

Anyway, it was finally time to get observing. I didn't have a massive list of objects prepared, but this was a strategic decision. It's been a while since I dedicated much of a night to an observing project, and tonight I wanted to go far.

APM 08279+5255 is a lensed quasar in Lynx. It was discovered during spectroscopic observations with

Some Populus leaning over near my observing pad. They will need to come down soon.

the 2.5 m Isaac Newton Telescope in La Palma. A whopping 12 billion light years away, this insanely distant object has high-speed winds that are blowing gas away from the supermassive black hole at 40% the speed of light!

To get started, I used a chart from the great website Deep Sky Corner. It did a fantastic job of guiding me to the target. Getting there was only half the battle though. As Lynx descended from the Zenith, I was in a race against time. The lower it got, the poorer my seeing conditions would become. Thankfully, I found the field fairly quickly. You can see my route using the map (once again, sourced from Deep Sky Corner) below:

OBSERVING REPORT continues, p.3

OBSERVING REPORT continues ...

I narrowed in on the four stars that are circled. These faint stars ranged from 15.5 magnitude to 17.5. Essentially, I was looking for a needle inside a haystack that I could only see with averted vision. Persistence paid off, though. After deep concentration, 330x, and several moments of steady air, I was able to confirm a tiny stellar point in exactly the correct spot. It brought a chill up my spine. Here was a faint redshifted glow 2.5 times older than our solar system. I was glimpsing a snapshot from the early days of our universe, an impossible distance to comprehend. Beautiful. I gave my telescope a little pat. This (relatively) small instrument was glimpsing targets meant for the Chandra X-ray Observatory.

This whole process took around 2 hours. I started this hunt at 12:00, and I was finally done at 2:00. During this pursuit, I confirmed my faintest stellar object to date. A 17.5 magnitude field star southeast of the quasar. This insanely faint star was only glimpsed 2-3 times, but it was instrumental in securing the quasar. It reaffirmed the correct position to my sceptical (yet hopeful) mind.

After this exciting yet tiring endeavor, I abandoned the Hickson groups that I had prepared as a backup project. My mental tank was out of gas around 2:30, so I spent a good 30 minutes staring up at the rising Milky Way. With good transparency and fully dark-adapted eyes, it was a spectacular sight.

While my observing list ended up being quite short, I did look at some other cool stuff. While I was still trying to 100% confirm the quasar, I peeled off to look at nearby Markarian 90, a little 13th-magnitude galaxy. It was a circular glow with a brighter core region. It looked like a Messier showpiece in comparison to the tiny stellar points I was concentrating so hard to glimpse.

Speaking of Messier showpieces, I warmed up for the night by spending a good 30 minutes on M51. I could look at it all night. Those beautiful arms full of mottling and H-II regions never get old. The arm that links to the companion NGC galaxy was noticeably brighter than I remembered. The bridge had an almost 3D look. Like someone outlined the edges with a white highlighter. It looked bold and concentrated compared to the other arms.

Another good galaxy was NGC 2357. It'd been on my list for a long time, but I finally got it as true darkness set in. Appearing as a faint edge on, direct vision revealed a thin smudge of light slightly bringer in the middle. Averted vision and 250-330x was best to reveal the outer regions.

Saturday night was the type of session that keeps me obsessed with this pastime. Great observing conditions combined with that late-night thrill of identifying something that human eyes were never meant to see. My 15" might not be one of those massive 7-feet-tall dobs, but it's now glimpsed three lensed quasars and two protoplanetary disks, feats I never imagined possible when I purchased it.

Hopefully, this post serves as motivation to go out there and redline your instrument and skills. It's exhausting, but well worth it. ❑

MAY 13, 7 PM

You're invited to Dean Regas' next online class

TOPIC: James Webb Space Telescope

What's the latest news from the giant space telescope, 1 million miles from Earth, that is showing us the universe like never before? Astronomer Dean Regas showcases the latest hits from the James Webb Space Telescope.

Lowbrow members can use this link and pass to join that night for free.

https://us06web.zoom.us/j/82676667163?pwd=V9mqLbwBwndZR4NlwWrmFvrnmGTTGz.1
Pass: 054110

As usual, I will record the session and make that available to you the next day. Please let me know if you have any questions and hope to see you there.
Dean Regas, Your Astronomer
Host of the Looking Up podcast
https://www.astrodean.com

PREVIEW: MAY 16 TALK ON RUSSELL PORTER

BY JIM SHEDLOWSKY

If you ask the general public Who was Russell Porter? you are likely to get a blank stare from most folks. But for the few that are aware of this man's life, the answer might be varied. Most would relate to his more than one thousand magnificent drawings created during his 20 years as a member of the team that created the Mt Palomar Observatory with its 200-inch Hale telescope. Many might relate to his reputation as the "Godfather of Amateur Telescope Making", a legacy that lives on through the 100-year-old Stellafane annual Star Party and the many articles that he wrote and illustrated. Only a few would be aware of his earlier experiences as an Artic Explorer at the turn of the 20th century, which are captured in his published diary and in a large collection of his beautiful artwork.

This presentation will describe his life, talents, and legacy to society, with an emphasis on his novel contributions to the design of astronomical instruments – both amateur and professional – and his impact on Amateur Astronomy in America.

UPCOMING SPEAKER SCHEDULE

May 16: Jim ShedlowskY

Topic: The Many Dimensions of Russell Porter

June 20: Adam Kall (Kall-Morris, Inc.)

Topic: What's up with space debris?

July 18: Kristina Collins

Topic: Citizen Science Project to Monitor the Ionosphere

August 15: CLUB PICNIC

September 19: Sebastián Garcia

Topic: Telescopius Website and App

October 17: Professor Gregory Tarle

Cosmologically Coupled Black Holes

Jim Shedlowsky graduated from the University of Michigan in 1960 with a degree in Engineering Physics. After spending two years as an artillery officer in the US Army in Germany, he worked for 36 years at General Motors as a Vehicle Development Engineer/Manager specializing in Acoustics, Noise, and Vibration, retiring in 1999. In his spare time, he wrote and recorded music for Epic and Roulette records as one of the "Skee Brothers", appearing on Dick Clark's American Bandstand in 1958.

Upon his retirement, Jim rekindled a lifelong interest in astronomy and joined the Warren Astronomical Society. His interests include observing and outreach, and he owns several telescopes, but in recent years his passion for astronomical history and technology has become a major focus. He belongs to a number of astronomy clubs in Michigan and Arizona (including the Lowbrows) and is currently the Treasurer of the McMath Hulbert Astronomical Society. He has visited a number of major observatories and in March of 2009 earned a certificate for observing 104 Messier Objects in one night at the "All Arizona Messier Marathon. ❑

REDISCOVERING THE FUN IN ASTROPHOTOGRAPHY

BY JEFF KOPMANIS

I bought a ZWO Sester S30. Frankly, it was "ahead of schedule" due to the rising tariff situation (buy now while they're still in stock and not subject to a 145% rate). I'd planned on selling my Orion 120ST first, play a few more months of band gigs, and then spring for the S30. As it turned out, I did everything the weekend of April 5 and the Seestar arrived on April 7. Highpoint Scientific gets 5 stars!

I'd been looking into the question of "30mm or 50mm Seestar?" for a while, and what it came down to was mainly in the more advanced 662 sensor … more sensitive, better QE (how much noise) ratings and a deeper pixel well fit with what I've come to prefer. Yes, the 30mm was smaller than I'd anticipated, but the upside is that this thing is very compact. The zippered case has about the same footprint as my tablet, so this is definitely in the "grab'n'go" territory.

It comes with a USB-C charging cable and can be charged on virtually any USB-C power supply. While it comes with a sturdy table-top tripod, it's really of limited use, since even tall grass would touch the telescope's housing. They include a magnetic solar filter, which is a slight improvement over the friction-fit filter on an S50.

Where the Seestars really shine is in setup and ease of use, and the S30 delivers on those goals in spades. As I'm writing this, I set it up in my front yard to take advantage of the clear skies. It took all of 10 leisurely minutes to set up and level the tripod, mount the S30, turn it on, go through the Level tool to precisely level it, and then begin imaging. There is simply no way I could have done this with my traditional rig, even if I had it mostly set up on a wheeled tripod in my garage. This is an ode to the old -ism that "the best telescope is the one you use." When there are clear skies, it seems to always fall on a band rehearsal or gig night, which pretty much precludes even considering the 35-45 minute setup time, plus imaging and another 30 minutes to tear down.

With any Seestar, I should mention that picking up the $42 **Apertura Leveler** is almost a must-have add-on. It makes precisely leveling any Seestar almost fun to do. For the S30, the tripod is kind of a joke, so I used my K&F heavy-duty camera tripod (which I use for 70mm Celestron binoculars), which works great. I should note that its legs are adjustable for different angles as well as length, which makes for a stable setup no matter what the situation.

The scope has only two buttons. The first is the power button on the side. It's big, well-lit and hard to miss even in the dark.

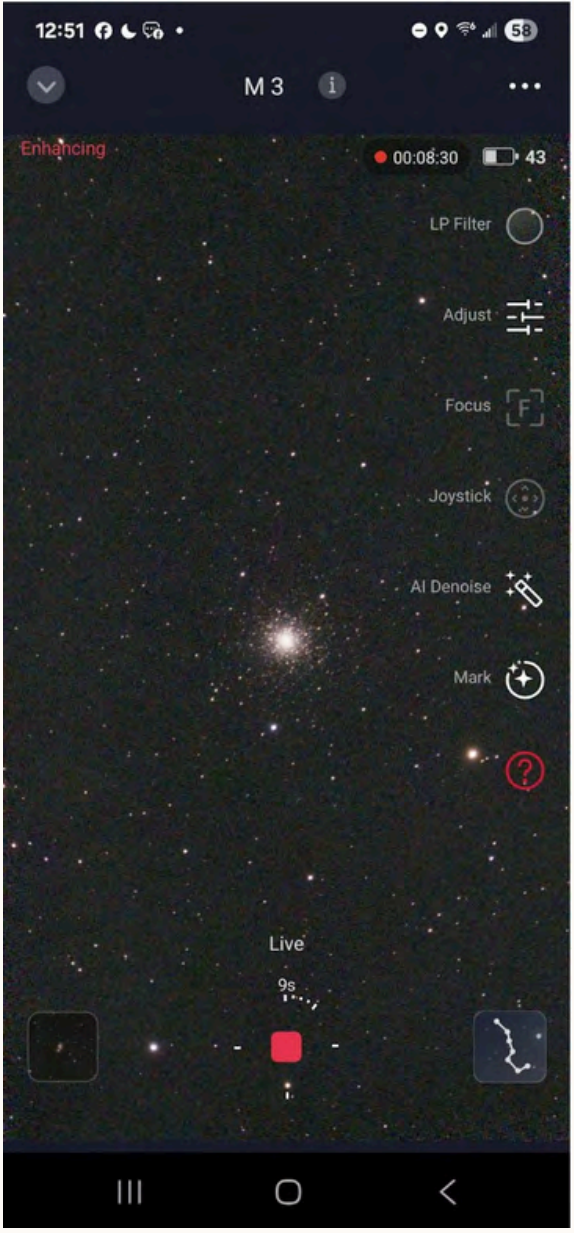
ASTROPHOTOGRAPHY continues, p.. 6

The second is on the bottom, a reset button, but it's recessed and not useful except when called for in the App. So, that's the hardware side of things.

The **Seestar App**. This is where the Seestar scopes really shine. Everything you do is through the app, including initial setup, networking, and all of the little tweaks you might want to do. It's designed as a "remote terminal" for your Seestar, so that once you get your scope up and running a capture, you can turn off your phone or tablet and "check in" when it's convenient for you. No worries about your phone or tablet crashing, or being interrupted by a call or something else. The app is well-designed with their own planetarium software, so whether you want to choose one of their "selections of the day" or simply browse through their planetarium software to pick an object, it's very easy.

It's worthwhile to point out a handy feature in the planetarium software: it shows you what you're currently capturing (blue) and in red what area the camera will capture. Once you find what you want, you punch the Goto button, and the telescope slews to that object and begins to capture frames. Otherwise, starting a capture is like using a cell phone camera: Even the button looks like what you'd expect.

The photo I included is a screenshot of what my Samsung S25 screen looks like when it's capturing, in this case, the M3 globular cluster. You'll see what results it's getting after only 8 minutes of integration. As with all astrophotography, the more frames you capture, the less noise and more detail you'll capture.



Once you hit the Stop button, you have the option to use their excellent "AI Denoise" tool, which I can highly recommend, it does a marvelous initial cleanup. After that, you can vary the brightness, contrast, and saturation of your photo to put the finishing touches on it. This is all within the Seestar and the App! Once you're happy, just like on your phone, you can Download the photo to your phone, or Export it to any number of services in the cloud.

In short, the Seestar line of automated telescopes lives up to every expectation I've had.

- **Are they as good at astrophotography as traditional methods?** No, but for their size and cost, they do every backflip and blast through whatever expectations you might have of them, and they do it without hours of post-processing, setup, and teardown.
- **Is 30mm or 50mm too small to see much?** I'll say that I'm getting results that rival my best attempts with my 120mm refractor and hours of post-processing with a device that's easy and fun. Yes, fun. When you stop futzing with the myriad of details that traditional astrophotography requires, you rediscover the fun of astronomy.
- **Price?** These things are ridiculously, if not laughably, inexpensive for all that they pack into a compact package. $400 for the S30 and $550 for the S50 is around the cost of a single planetary camera for a traditional rig. They're a miracle of packaging. I think they'll still be an incredible buy even after tariffs go into effect.

ASTROPHOTOGRAPHY continues, p.7

Examples (So what can this thing do?!):

>> M3 Globular Cluster. This was the last photo of the night, and while my battery could have lasted another hour or more, I wasn't gonna make it. It was relatively high in the sky but didn't suffer too badly, and stars are still round. The crispness was a testament to my choice of the S30 for its sensor.

<< Solar (April 22) This was from a video I'd captured the previous week, and I used traditional planetary techniques to stack and process. Its detail was as good as the snapshot, so going through the processes does seem to be worthwhile.

<< M51 - Whirlpool Galaxy. This is my 3rd attempt at M51 with the Seestar, and while this one was not as long as I intended, at least I was able to get a decent finished image. Trees blocked the view and the Seestar began reporting that stacking had failed. This went on for about 10 minutes, so it wasn't anything that would resolve quickly. Stunningly, at 20 second exposure times, only 8 minutes worth produced the very distinct image you see here. Again, the sensitivity of the sensor made such a shot possible.

>> M97 - Owl Nebula
M108 - The Surfboard Galaxy
I don't know for sure, but this image caught some tree branches, and probably some overshine from the neighbors' outdoor lighting. I ordered a dew shield to prevent this in the future. In spite of the weird background, the eyes of the "owl" show quite nicely, and the star detail in the Surfboard came through. This was 10 second exposures for 50 minutes. I'd tried for a few minutes at 20 seconds, but it was clear it was only going to blow out the more subtle details. ❑

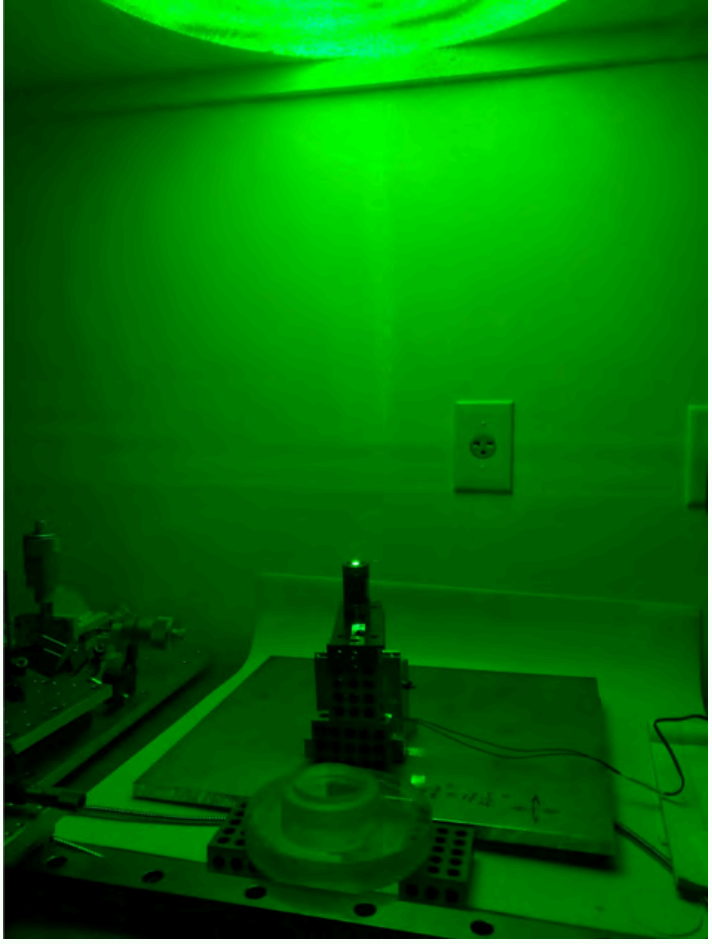
A LIGHT SOURCE FOR TESTING OPTICAL FLATS

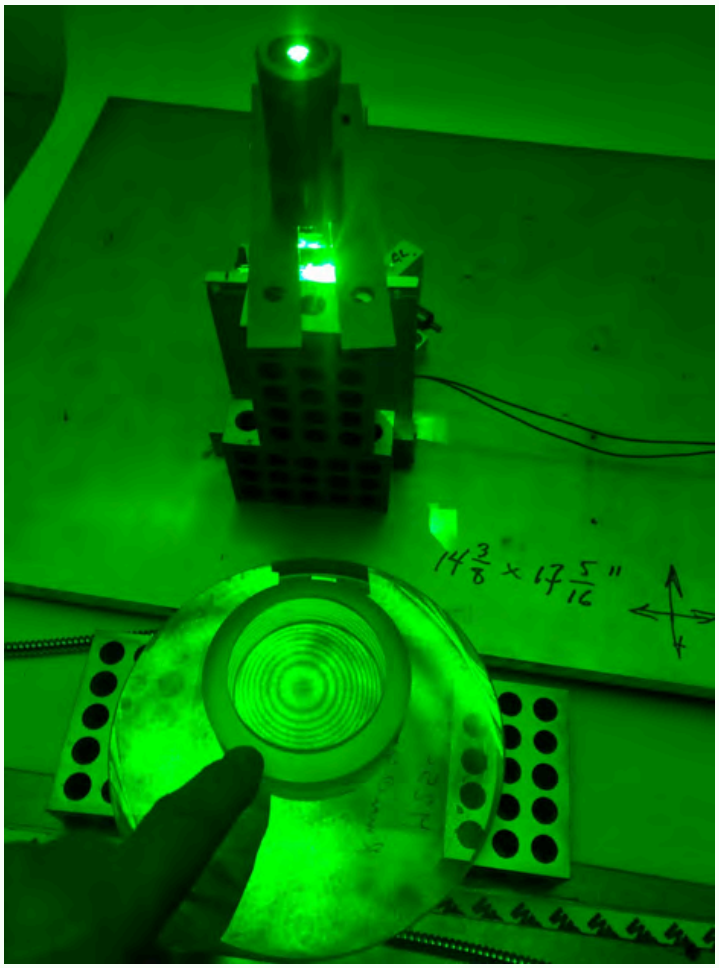
BY TOM RYAN

Light is always, everywhere, interfering with itself, but to see this, you have to exclude most of the noise.

You can get rid of most of the interfering noise by looking at only monochromatic light. This kind of light is responsible for letting you see "speckle" when you point your laser beam at a wall, and for letting you see fringes when you trap light between two semi-transparent surfaces.

One of the best measurement tests for optical surfaces involves comparing the difference between a surface of known shape, and the surface under test, using monochromatic light and looking for the spaces where the light interferes constructively with





itself (resulting in bright bands) and destructively with itself (resulting in dark bands).

In the past, optical workers who desired monochromatic light would sprinkle table salt onto a burning alcohol wick, which resulted in the salt breaking down and radiating light in the yellow part of the spectrum. The resulting light is not exactly monochromatic, because there are two sodium lines, but they are close together and they are bright, so lots of people like to use them.

When I was a teenager, I got hold of a low-pressure sodium vapor lamp, and it was great for looking at interference fringes. The only problem was that it took thirty minutes for the lamp to ignite and reach maximum brightness.

We can do better now with green diode lasers. They are relatively cheap and are available on Amazon in the not-eye-safe brightness levels. Please note that any laser that is brighter than a milliwatt or two is going to leave permanent scars across your retina if

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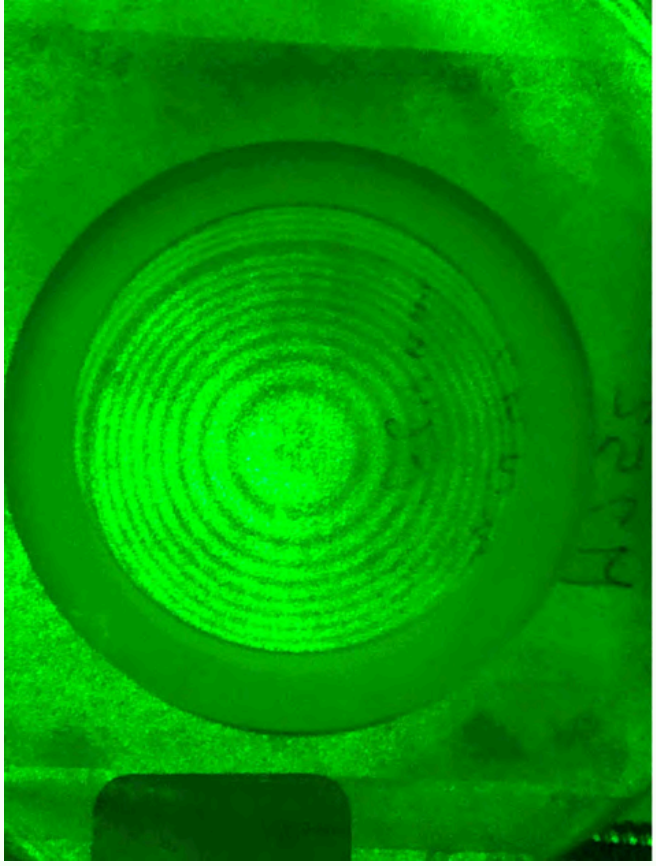
LIGHT SOURCE continues ...

the beam gets into your eye. Once burned, those parts of your eye don't work anymore, and my ophthalmologist constantly reminds me of that fact when she examines the inside of my eyes.

In any case, I was looking to measure the flatness of some optical windows I bought, and I needed a bright source of monochromatic light. Fortunately, I had a 50 mW laser (totally not eye-safe – do not do this at home), and so I set the laser standing up using some 1-2-3 blocks, expanded the beam with a big microscope objective stacked over the laser, bounced the beam off the ceiling, and was able to see fringes.

These windows I bought were supposed to be flat. Next time, I'm testing them before I pay for them. ❑



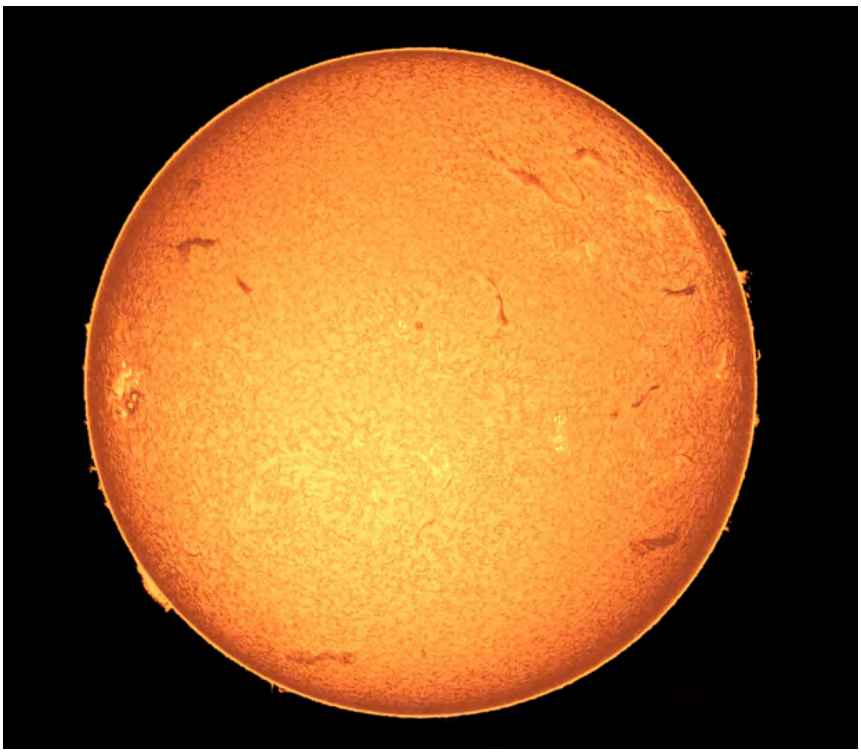
DETAILS OF GLENN KAATZ' IMAGE (from page 1):

Celestron Edge HD 8 inch Schmidt-Cassegrain telescope
Celestron CGX mount
Celestron off-axis guider
Celestron 0.7X focal reducer
ZWO 8-position electronic filter wheel
ASI1600MM Pro imaging camera
ASI174 mini guide camera
Baader CMOS-optimized LRGB filters
ASIAir Plus
ZWO electronic automatic focuser

Luminance: 60 X 2 min; red 60 X 2 min, Green 62 X 2 min, and Blue: 66 X 2 min for a total integration time of 8.27 hours. Processing was done using Pixinsight and Photoshop along with RC Astro Star, Noise, and Blur Xterminators. ❑

SUN in Ha, APRIL 30

BY TIM GEHRING



University Lowbrow Astronomers
Meeting Minutes April 18th 2025
by Don Fohey

The meeting was held at the Detroit Observatory and began at 7:35pm. Member Brian Ottum PhD. gave a presentation titled "The Astrophotography Decathlon". He reviewed 10 types of objects to photograph in the night sky, describing the equipment to be used for each.

Election:

The business meeting was conduct by President Charles Nielsen. Charlie said he would be willing to serve as President again and he nominated all the present club officers. He had heard from all except Krishna that they would be willing to serve another year.

President: Charlie Nielsen
President Emeritus: Dr. Mark Vincent
Vice Presidents: Don Fohey, Brian Ottum, Ken Cooke, Dmitri Tsahelnik
Treasurer: Doug Scobel
Observatory Director: Jack Brisbin
Observatory Director Emeritus: Percival Lowell *(deceased)*
Newsletter Editor: Amy Cantu
Webmaster: Krishna Rao
Online Coordinator: Jeff Kopmanis

Kurt Hillig proposed that the list be approved by affirmation.
A show of hands approved all nominees.

Officers Reports:
Charlie Nielsen reviewed the Tecumseh Parks & Recreation event scheduled Friday April 25th. He related that it has been a nicely attend and fun event in the past with surprisingly dark skies considering it's closeness to Techumseh. At present 3 members are planning to attend and more would be helpful.

VP Don Fohey reported that John Wallbank had volunteered as the Peach Mt. open house coordinator for the Saturday April 26th event.

VP Brian Ottum displayed the poster he made of the Messier objects he had photographed at the Messier Marathon event held at his property on Saturday March 22nd-23rd.

Observatory Directory Jack Brisbin reported that he attend the Ford Astronomy Club (FAC) event at Henry Ford Community College. He had purchase a table for the sales part of the event and had sold a wedge and tripod which had been stored at the observatory. He had also sold the club 6" f8 Cave telescope.

Jack also announced that he had registered for the Dark Sky Lecture at the Plymouth Public Library scheduled for at 7pm on Wednesday April 23. Members who would like to attend should call the library to reserve a seat.

Treasurer Doug Scobel sent his report via email:

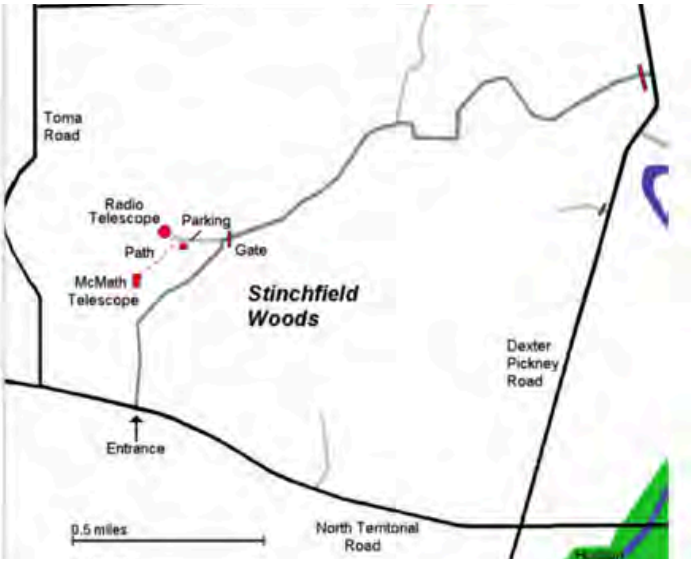
> We have 211 memberships.
>
> I provided the annual Treasurer's report for our April 1, 2024 through March 31, 2025 fiscal year. It appears in the April issue of Reflections/Refractions.
>
> Since our previous meeting on March 21, I spent $210.00 to renew our PO Box at the Green Road office.

Jim Forrester reported that Fred Espenak, known for his work of solar and lunar eclipse predictions is seriously ill with an idiopathic lung disease.

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

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:	Don Fohey
	Brian Ottum
	Ken Cooke
	Dmitri Tsahelnik
Treasurer:	Doug Scobel (734) 277-7908
Observatory Director:	Jack Brisbin
Newsletter Editor:	Amy Cantu
Key-holders:	Jim Forrester
	Jack Brisbin
	Charlie Nielsen
Webmaster:	Krishna Rao
Online Coordinator	Jeff Kopmanis

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
Lowbrow-members@umich.edu