

REFLECTIONS / REFRACTIONS

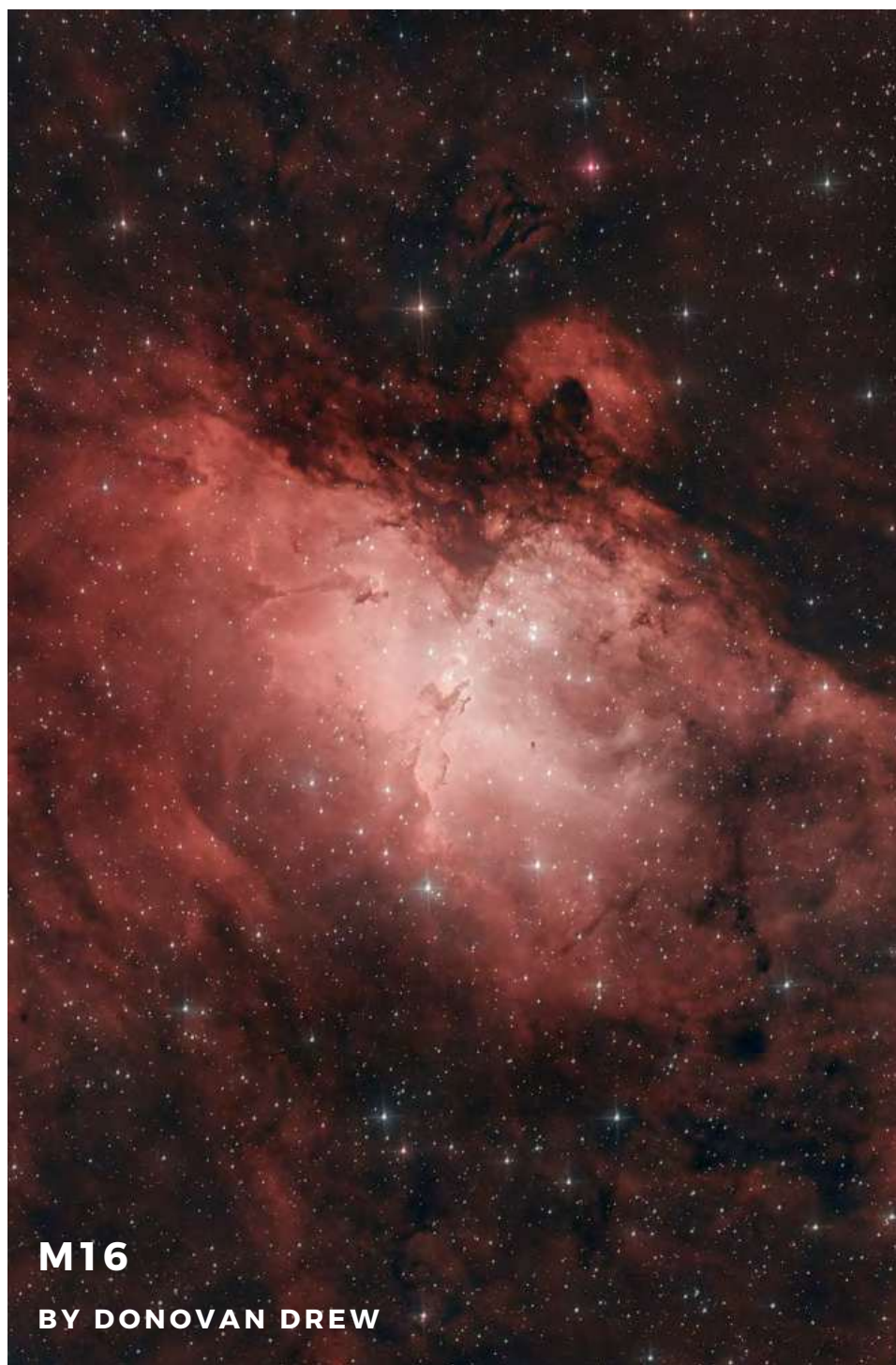
REFLECTIONS \ REFRACTIONS

University Lowbrow Astronomers Monthly Newsletter

August 2023, Vol 47, Issue 8

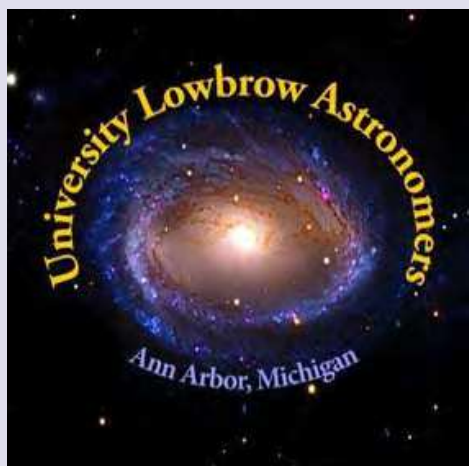
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M16

BY DONOVAN DREW



NGC 4631: MYSTERY AT THE EYEPIECE

BY ALEX SWARTZINSKI

Under a blanket of Canadian smoke, it's easy to forget about the good sessions. When the transparency, moon phase, and wind speeds are perfect, the telescope disappears. You stare through a window into a new place, far removed yet extremely close.



The knot I saw is on the right side of the circle. I did not take this photo!

During the May 2023 new moon, these factors all lined up. The (at the time) novel smoke was pushed by a strong jetstream to the south and I was left with high magnitude 6 skies, comfortable temperatures, and excellent transparency. The Milky Way climbed brilliantly as the hours ticked by.

This marathon session presented me with a realization. Many of the brighter NGC galaxies lack comprehensive studies by modern sky surveys.

This realization occurred when I turned my attention to NGC 4631. This "Whale" galaxy is an edge-on barred spiral in Canes Venatici. It features a small dwarf elliptical companion cataloged NGC 4627. Through a 15" telescope, my view of this magnitude 9.8 galaxy was truly spectacular. Here's what I wrote at the eyepiece: "Edge-on, bright but irregular. TONS of mottling across the galaxy. There are at least two dark lanes cutting across, much like M82. A suspected HII knot is near a magnitude 12 field star. It is round and very bright."

It was the suspected HII knot that sparked my revelation. Upon returning home, I researched what this mysterious object could be. Surprisingly, the knot (pictured above right) doesn't show up as an NGC or IC object. I turned to the knowledgeable deep sky observers on the Cloudy Nights online forum to look for answers.

These brilliant detectives were able to locate some research papers on NGC 4631 in the infrared spectrum. This data was taken from the AKARI space

telescope. There was also some limited data from the late 1960s in radio form. It was quickly determined that any HII in this area was very faint and not accessible visually. Interestingly, there was very little data in visual light. Other than some 1980s research papers which referenced star formation within the galaxy, information was hard to come by in the visual spectrum.

This experience made me realize how much work there is to do in our own galactic backyard. This galaxy is 30 million light-years away. It's large and bright in amateur telescopes, let alone massive research instruments. Due to the sheer amount of galaxies out there, this pair has been overlooked.

Thanks to the efforts of those who helped me research this target, we were able to determine what I likely saw. In the data, this region stands out the most in UV light. This suggests the presence of hot blue O stars.

A collection of these massive and young stars results in an OB association. This class of object contains many groups of star clusters within them. They are between 100 and 700 light years in diameter in a spherical shape. Over time, these associations split up. O-type stars live shorter lives than smaller stars. They burn through fuel quickly, and their higher mass results in supernova explosions.

MYSTERY AT THE EYEPIECE continues, p. 3

MYSTERY AT THE EYEPIECE continues ...

I saw a combination of these OB associations. I glimpsed the cataloged CM 67, but the knot might have also included nearby CM 65 and CM 66. These OB associations have cataloged numbers, but the designations are hard to find. You certainly won't see them in Sky Safari!

It's amazing what we can see under good conditions and with a patient eye. I would have never imagined that I was going to gaze at such an obscure deep sky object on this night. Visual astronomy is very rewarding. I glimpsed an object that many have not even studied, let alone seen. ■

AUGUST OBSERVING AT PEACH MOUNTAIN

BY JIM FORRESTER

Days become noticeably shorter in August, with sunset coming 44 minutes earlier on August 31 than the first of the month. Thus, opening times for Peach Mt. events will come earlier.

We have Open Houses scheduled for Saturday, August 12, and Saturday, August 19. Lowbrows are needed for each evening to operate the McMath Telescope as well as manage the events as Open House Coordinator (OHC).

Running the McMath takes training and a level of experience working in the Observatory with a trained operator. Help in the Observatory is always welcome and Open Houses are an excellent opportunity to learn the operation of the big scope.

Along these lines of learning opportunities, we're always happy to train folks on the 17.5-inch Dobsonian. Advance notice is needed to be sure an experienced operator is available.

OHC, for the most part, is not a difficult job. The toughest part is the weather call. But you're in luck! We have experienced members willing to help with everything, so inexperience is no excuse for not stepping up.

Look to your email beginning Wednesday, August 9 through Tuesday, August 22 for notices of member nights. Sunset is at 8:45 pm 8/9, astronomical twilight ends at 10:35 pm and the moon rises at 1:06 am the morning of 8/10. 8:27 pm marks sunset 8/22, astro twilight ends at 10:10 pm with a 6-day-old moon setting at 11:08 pm.

Mark your calendars! September is a busy month under the skies for the club: Open Houses are 9/9 and 9/16 and Astronomy At The Beach is 9/22 and 9/23. Additionally, September is a popular month for dark site star parties and many Lowbrows will be out of town chasing Bortle 1 and 2 skies.

Hopefully, we'll have a cloudless, smokeless two weeks in August.

About that smoke: High-altitude wildfire smoke can transform a lovely-looking evening weather-wise into a frustrating night with our biting insect friends. So, at least for member nights, a poor smoke forecast could result in cancellation. Open Houses are a different matter. Double stars and the bright objects of summer will look good (or good enough) to the public for them to have a worthwhile evening, so the high altitude smoke won't be cause for cancellation.

Of greatest concern are Air Quality Alerts from NOAA. The air becomes dangerous for the very old, very young, and persons with chronic health conditions when the PM2.5 count reaches 101 (orange on the color-coded scale). This is my personal limit, given my age and health. The EPA doesn't believe the general public needs to be alarmed until the count is above 150. Above 200, everyone is at risk, and above 300 all are likely to be affected. ■



More about events at Peach Mountain on pages 4 and 9!

MMSS AT PEACH MOUNTAIN

BY JIM FORRESTER

Between some clouds and thick high-altitude wildfire smoke, we didn't have much to show the Michigan Math and Science Scholars in our telescopes. Shannon Murphy from the Astronomy Department managed to show a few of the brightest Messier objects, like M57, with her EV Scope, but the McMath and the 17.5-inch Dob were skunked until the moon cleared the trees around 11:30 pm. Even very low in the skies, our guests were impressed with the view in the 17.5-inch.

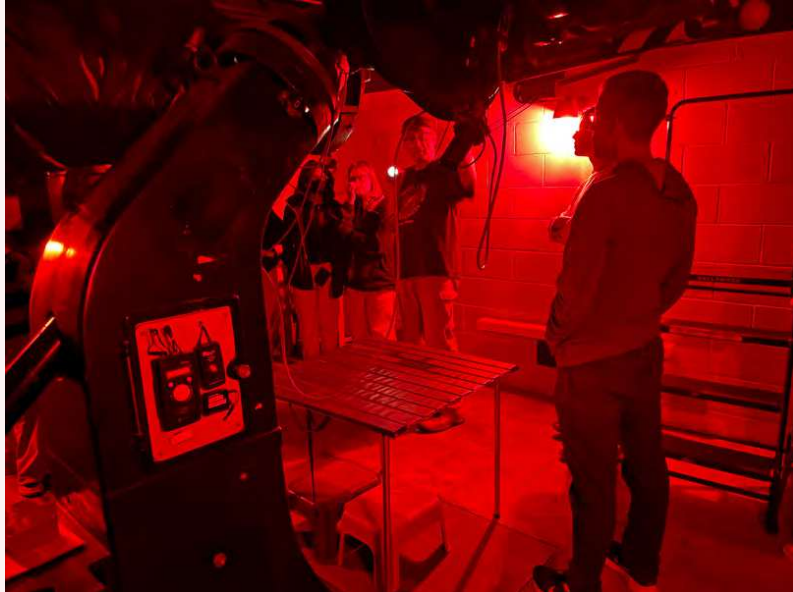
Lowbrow's present:

Jack Brisbin explained the mechanical, optical, and electronic operation of the McMath Telescope. **Don Fohey** gave a lively demonstration of Sky Safari. **Adrian Bradley** tracked the moon with his Move-Shoot-Move-driven Astrophotography rig. I explained the operation of the 17.5-inch telescope, and at the 11th hour targeted the moon.

We had 14 student guests accompanied by four staff and faculty. ■



Above photo taken by Jim Forrester with his iPhone 8. "This image is the closest I could come to what we saw processing the data with the phone camera's native software."



Photos above and below by Adrian Bradley



ANNUAL TREK NORTH

BY NORBERT VANCE

I made my annual trek north recently starting just 12 hours after hosting the Lowbrow meeting at EMU. The first stop was at the SF Wessling Observatory near Fremont, MI, home of Gerber Baby Foods. Their annual baby food festival was in full swing, which meant plenty of visitors that evening -- some 55 or so -- at the roll-off roof facility six miles north of town. I manned a pier-mounted C11/CGEM that I donated a few years ago, one of several scopes on the floor. I let young guests use the hand paddle to move the scope and explained the layout of the Milky Way to others under clear, dark, smoke-free skies. Wonderful, as always! My photos show founder Steve Wessling with the C11.

Next, I went north to the Traverse City area where I stopped at the Enerdyne Science Store in cute Sutton's Bay. Kid in a candy shop I was, picking up a pair of Vixen 2.1x40mm constellation binoculars. They yield an expansive look at the sky yet are compact and easy to hold. Can't wait to try them on the Perseids at Fish Lake on August 12th. I also picked up two Celestron 76mm Firstscope tabletop Dobs to give away at my Thursday evening talk at the Event Center of the Headlands Dark Sky Park near Mackinaw City. Long-time proprietor Richard Cookman and I chatted about scopes, plus we met a retired gent from the Trackman Planetarium in Joliet, IL. Another long conversation ensued.



We arrived in town an hour early for our hotel check-in so we stopped at the Leelanau Sands Casino for a potty break. While there, I put \$20 in a slot machine and walked out \$360 richer! Pure luck paid for the Dobs and then some. :)



ANNUAL TREK NORTH continues, p. 6

Before leaving TC, travel partner Cathy and I were happy to meet up with our ol' Lowbrow friend Doug Scobel and his wife, Debbie, over breakfast. We stopped by their lovely home and had a great visit. Cathy and Deb discovered they have several U.P. ties and interests, and Doug showed me his wonderful tech toys and NASA Lego models. Yeah, sci nerds we are. Thanks for the hospitality, Doug and Deb!



Next, we were off to the Straights to spend four days, one out on Mackinac Island and much time with long-time friend and former student, Dave Black, owner of his Mackinac Straight Photography Gallery in downtown St. Ignace. You may have seen his storefront next to the fudge shop with lightning photos of that big bridge up there. He's made a great living as an artist and guide to the U.P. Dave once got me to the top of the north bridge tower in 2006, as his wife is a retired bridge employee. They would pop in for my Thursday night Headlands presentation, "Explore Michigan: Planetariums and Observatories of Michigan." Yes, the Lowbrows, EMU, and U-M facilities were included; Peach Mountain, Detroit Obs, and Angell Hall, too. My goal was to let guests know that plenty of astronomy places and clubs can be found all over our great state. I advertised the Great Lakes Star Gaze and Astronomy at the Beach. Remember, this was a working vacation, so I dressed the part. The young lady that won a scope was ecstatic as were her parents and grandparents in attendance. One never knows where this interest will take them. Sadly, one far-too-young kid cried when he failed to win, but I told the audience if I had Oprah's money they'd ALL get a telescope -- and a car!

The Headlands staff have a gem that draws loads of astro-curious people to the park every night, even when the weather is less than ideal. The talk was well



attended but giving away two telescopes, two Nightwatch books, and a couple of Dave's professionally mounted northern Michigan aurora photos helped draw a crowd. We spent the rest of the night with a few scopes on the "patio," a platform at the base of a presentation hillside next to Lake Michigan.

Young resident observational astronomer Andrew Johnson has the job many of us wished for when we were his age, showing visitors celestial objects with a CPC Deluxe Celestron 11. I found myself giving impromptu tours of the sky until clouds thwarted our views of the moon and brighter stars.

Dave and I returned Saturday night with a brighter moon and tons of guests. Once again, I stepped in to announce a flyover of the ISS, describing its stats before it appeared out of the west for a brilliant flyover and later gave an impromptu sky tour. It's the ideal place to mention that the station moves at the speed needed to cross the entire Mackinac Bridge in ONE second, and



A LOW-TECH SOLAR TELESCOPE

BY BRIAN OTTUM

THE NEED

There are two solar eclipses coming up, and I plan to be among groups of people, so thoughts turn to a good instrument to show sunspots and solar eclipse phases.

As I get deeper into public outreach, I see the difficulties many people have looking through telescopes. Kids, especially. And though I love my Lunt H α scope, it has a tiny “sweet spot” where you must carefully place your eye.

PREVIOUS SOLUTION

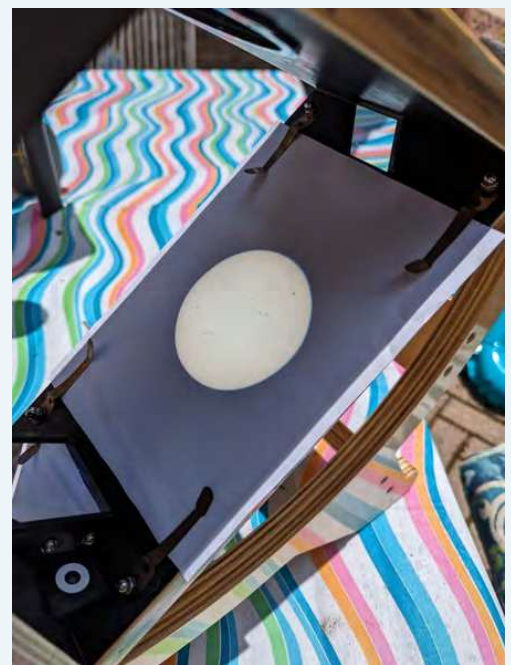
My previous solution to this problem for the Venus transit was to construct a “sun funnel.” It works great and shows a nice view for groups. But I sold the 4” refractor that powered that sun funnel to Clay Kessler. Plus, that’s a big rig to lug around.

THE “SAFE SOLAR SCOPE”

The web has many plans for making your own solar image projector, but way back in my brain, I remembered seeing a cute little wooden device that showed an image of the sun for many to see.

The same folks who make the StarLab portable planetarium (for nearly 50 years now!) also make the Sunspotter. It is an ingenious folded Keplerian reflector telescope. The 62mm objective lens creates a bright and sharp 3” image of the sun.

If you shop online, the average price is \$500 (plus shipping), but Fisher Scientific has it for \$287! I was suspicious but excited to receive the actual scope, complete with fabric cover.



Also good for the moon!
(Moon projected onto paper.)

TECHNICAL DETAILS

The scope is very attractive and well-made (in China). The laminated wood has many coats of varnish. The vertical bearing pads slide smoothly. You place it on a tabletop and swivel the feet to get azimuth movement. Simple and solid.

The Sunspotter is designed to be easy to use. First you unscrew the locking bolt that holds the two pieces together for transport. Then point approximately towards the sun. The “gnomon” brass rod casts a shadow on a white collar, so you move the scope to remove that shadow. Then you can see tiny sun images inside the “scope.” You carefully nudge the scope until the tiny sun is inside the white ring sticker. There are ring stickers on both sides for versatility. The 3” sun image then appears on a piece of 6” x 8” paper you place under brass paper holders. I improved upon the supplied paper by getting 24lb “super bright” 100 whiteness paper.

LOW-TECH SOLAR SCOPE continues, p. 8

The sun's image can be focused by simply twisting the negative Barlow lens located at the top of the triangle. The threads provide fine focus.

Since there are three first-surface mirrors, the focal length is likely 920mm (f/15).

PERFORMANCE

The sun's image is great! People can see sunspots even if they are standing 6' away. And if you get a closer look you can see both the umbra and penumbra of the bigger spots. I've counted as many as 20 distinct and separate sunspots.

I can almost see faculae, granulation, and limb-darkening. Are they really there, or am I transferring the view I've remembered through refractors? I dunno, but I'm very pleased with this low-tech scope. ■

AATB 2023: GETTING READY FOR THE ECLIPSE

BY BRIAN OTTUM

Put September 22-23 on your calendar! The largest public astronomy event in Michigan will bring in thousands of astronomy and space enthusiasts. **WE NEED YOUR TELESCOPE!** We've had as many as 70 telescopes at Island Lake State Rec Area (Brighton) and want to break that record. We'll showcase the first quarter moon, Saturn, double stars (Albireo), clusters (M11 and M13), nebulae (Lagoon and Eagle), and a galaxy (M51 or M31). As in previous years, you'll have a glow sign to tell what you are pointing at.

Newbie? Bring your scope and friendly colleagues will help you get it running smoothly.

No scope? We STILL need volunteers to point the public in the right direction, and hand out Scavenger Hunt prizes, as well as other important tasks. (Email me if you want to volunteer.)

IF CLOUDY,

The show still goes on! Our theme this year is "Getting Ready for the Eclipse," and we have talks starting in the big tent at 7 pm and keynote speakers at 8 pm. The popular Gemini simulator will join us again, along with astronomy club tables, Michigan Science Center live demonstrations, astropics, and a food vendor.

Here is the AATB Facebook Event. Please hit "Going" and pass it on!

<https://fb.me/e/1qZbOuzeM>

Or if you prefer, our website:

<https://www.glaac.org/astronomy-at-the-beach-2023/>

OBSERVING FIELD DETAILS

The scopes will be set along Kent Lake Beach, and between the beach and the parking lot -- same as in previous years. Also, you'll have to bring your own electrons, as we do not have enough plugs for dozens of telescopes. Ask me for a site map if you need one.■

BEGINNING MILKY WAY PHOTOGRAPHY CLASS

Club member **Brian Ottum** will lead a free beginning Milky Way photography class at the Ann Arbor District Library's **Pittsfield Branch, Tuesday, August 29 at 6:30 pm**. Participants will also have the option to sign up for an additional meetup to practice at a local park.

More info:

<https://aadl.org/node/614588>

THE PERSEIDS METEOR SHOWER - BE THERE (at Peach Mnt.)

BY JACK BRISBIN

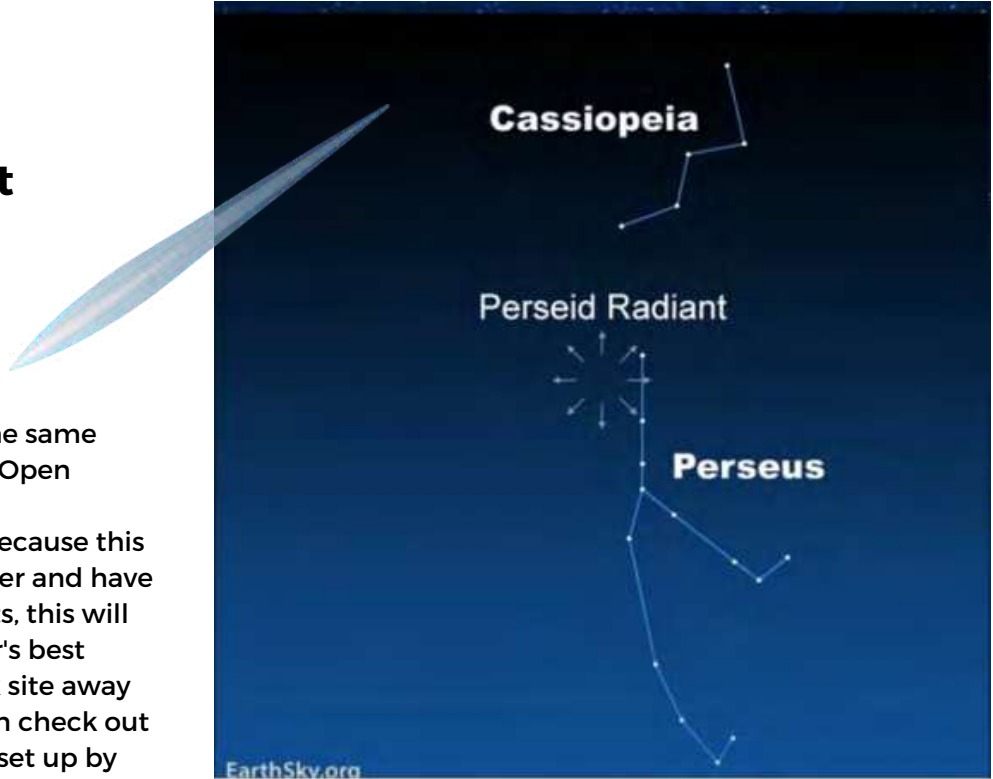
The August 12 Perseid Meteor Shower is the same night as the Peach Mountain Observatory Open House, hosted by the University Lowbrow Astronomers. We hope you will be there because this is a Public Open House. If you are a member and have not attended one of our open house events, this will be a great night to attend. It's the summer's best meteor shower. This means you get a dark site away from city lights. While you're there, you can check out the Observatory and the other telescopes set up by Lowbrow members.

This year you don't have to put up with moonlight. The moon will rise on Aug 13 at about 2:40 am as a crescent moon and will be about 8 to 10 percent illuminated. The Perseids shower will start to peak at about 2 am in the morning.

The Perseids shower is created from debris left by Comet Swift Tuttle and the peak occurs when the densest part of the debris crosses Earth's orbit. The radiant point for a shower is the area from where the meteors originate and by 2 am in the morning, the Perseids will be well off the horizon and in darker skies overhead.

How many meteors will you see in an hour? This question is asked a lot. Based on past Perseids showers, that number will be 20 to 30 meteors an hour. But as it moves toward its peak time in the earlier morning hours, and high overhead in darker skies, some observers have reported seeing as many as 90 meteors an hour. If you plan on staying out that late, bring a lawn chair and a blanket. You will probably also want to bring some water with you. Just remember there are no restroom facilities at Peach Mountain. If you bring your children out to do some observing, which is a great idea, plan to control their water intake.

There is no admission charge or parking fee, so enjoy the night! ■



UPCOMING MEETING SPEAKER SCHEDULE

August 18: Tamas Gombosi, UM
Center for Space Environment
Modeling

Topic: *Space Weather: Is the Sun or
Humanity More Dangerous*

September 15: Avital Keeley-Polston,
EMU Physics.

Topic: *TBD*

October 20: Dr. Brian Ottum, Club VP.
Topic: *Preparing for Next Year's
Eclipse*

November 17: TBA

December: 15: TBA

UPCOMING TOPICS FOR THE OBJECTIVE LENS

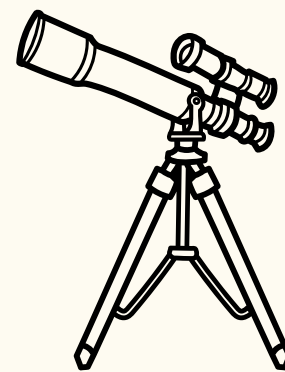
BY JACK SPRAGUE

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.

September – A lovely summer interlude following the excitement of galaxy season and then cluster season brings what? Stars and asterisms! September is about stars and asterisms. Feel free to share a sentence or two about why your selection is of interest to you. Finding out why astronomers like things is usually even more interesting than the thing itself!

October – The Summer Milky Way! Let's get those wide-field imaging machines set up and feature star fields and objects of the best show through summer. August is my favorite Milky Way season because I get to visit true Bortle 1 skies in northern Ontario (the Wabakimi Wilderness Park) and the images are astounding. There is something about a dense field of stars and dust streaking the night. Please share yours!

November – My personal favorite as the time has shifted allowing family, friends, and neighbors the chance to share the night skies before the temperatures plunge to "parka." We feature this month the galaxy Andromeda which is – perhaps beside the moon – the most awe-inspiring celestial object in our northern sky. Let's showcase our nearest major galaxy and perhaps brush off those mosaic skills! ■



ANNUAL TREK NORTH continues ...

orbits roughly the distance from the bridge to Detroit above the Earth (OK, close enough), points I've made for years.

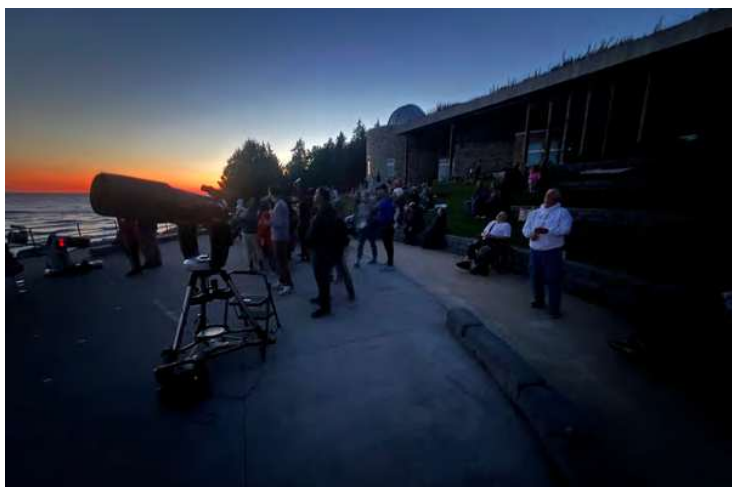
Three scopes were available on the patio. Two scopes were from volunteers who brought a 10-inch Dob and an 8-inch Dob, and one is from a former student of mine from 20 years ago who remembered my fanaticism about light pollution. Now that was unexpected! Long lines are not uncommon with a typical night bringing 100-200 or more people to the site depending on weather and news events.

I gave another impromptu tour of the clear moonlit skies centered on the physical layout of the Milky Way. I find explaining the reality of our place in the universe far more rewarding and meaningful than the mysticism of the constellations. I mingled with the masses until 1 am. Emmet County has such a gem there. If I only lived closer... It is heavenly at the Headlands! I hated to leave but my work is here, still. As Arnold said, "I'll be baack."

Final note: The popular "Nightwatch" field guide by the late Terrance Dickinson is getting a big update with co-author Ken Hewitt-White, to be released September 7th. The new 5th edition promises many updates, new photos, and planet charts good through 2035.

Details can be found at:

<https://www.target.com/p/nightwatch-5th-edition-by-terence-dickinson-ken-hewitt-white-spiral-bound/-/A-89162785> I love this book and use it as a text for my ASTR 315 Observational Astronomy class. ■



Lowbrow Monthly Meeting

July 21, 2023, 7:30-11pm

EMU Planetarium & Shertzer Observatory

Attendees: 33 members

Gathering (starting 7am) – Members enjoyed pizza, bread, pop and cookies, just outside of the planetarium.

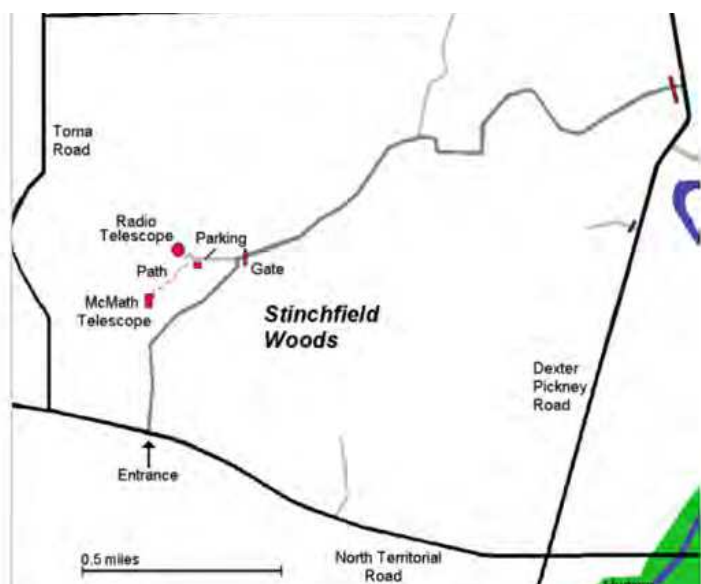
1. Meeting Introduction (starting 7:45pm)
 - a. Charlie welcomed everyone, thanked Norbert for his hospitality, noted 10+ years of tradition, introduced Norbert
2. Norbert Vance Presentation
 - a. Biographical images showing his first telescopes
 - b. Introduction and thanking Astronomy Department Interim Head Dr. Behringer
 - c. Avital will be the club's August speaker
 - d. History of the planetarium, recently upgraded Digitalium Lambda Projector, Strong Hall renovation
 - e. Fish Lake Facility images with a multitude of telescopes
 - f. Headlands talk coming up, giving away a couple of telescopes
 - g. NEAF Trip report, including NYC
 - h. Great Lakes Star Gaze coming up 9/14-17/2023
 - i. Astronomy at the beach coming Sept 22-23, 2023
 - j. Planetarium Show
 - i. Zoom out to Saturn
 - ii. Go back and forward in time
 - iii. Turn constellations on/off
 - iv. Took requests
 - v. Epsilon Aurigae video
3. Club Meeting (Charlie)
 - a. Gift for Norbert & Miles
 - b. Hamilton Observatory RASC \$500 donation motion passed, to help rebuild after vandalism
 - c. Next month's meeting, Aug 18, will be back at Detroit Observatory
 - d. Peach Mountain Open House scheduled for tomorrow night (July 22)
 - i. Charlie will open
 - ii. Need telescope volunteers!
 - iii. Jack on the 24"
 - iv. The 17" scope has been fixed
 - e. Jeff Kopmanis reported that the switchover to the new club website is making good progress.
 - i. Dave Snyder has been invaluable to the process
 - ii. Amy Cantu has been helping get the newsletters moved over
 - f. Jeff modeled the new club polo shirts. \$25 and contact Doug Scobel.

- g. Brian Ottum (and Jeff) reminded everyone that Astronomy at the Beach will be Sept 22-23
 - i. We want to have the 70+ telescopes we've had in the past
 - ii. Saturday keynote speaker is meteorologist Paul Gross, Friday is Jesse Mason
 - iii. Location is Island Lake State Recreation Area, Brighton MI
 - iv. We expect 3,000 across the two nights
 - v. There will be a food vendor
 - h. David Jorgensen (Charlie) noted that the Night Sky Network outreach tool kits are full of good items, things to give away.
 - i. Dave Snyder reported good progress switching over the Members Only section. All the newsletters have been copied, just a few things left.
 - j. Jack Brisbin, observatory director, made a report
 - i. Star Hopper telescope has been returned
 - ii. We need to redo the telescope loaner policy
 - iii. 3-4 scopes at observatory are ready to borrow
 - iv. Other scopes and binoculars are at members' houses
 - v. Road up Peach is good as of Thursday
 - k. Doug Scobel, treasurer sent a report
 - i. We have 200 memberships.
 - ii. Besides our monthly payment for our Open House "hotline", and the cost of printing and mailing our printed newsletter, our expenditures since last month's meeting were:
 1. \$500.00 donation to GLAAC in support of the upcoming Astronomy at the Beach outreach event.
 2. \$12.00 to the Astronomical League for 100 "Intro to Astro" guides.
 3. \$280.00 to the Astronomical League for our annual dues payment. 36 Lowbrows are also Astronomical League members.
 4. \$250.00 annual donation to Dark Sky International (formerly International Dark Sky Association).
 5. \$2631.10 to Sunrise Screen Printing to shore up our shirt and cap inventory. We have already received over \$470.00 (more coming) from members for special orders, so we are below the \$2200.00 we approved last month.
 - l. Jim Forrester reports that there's an open house Saturday, and that we need members to show up with telescopes. Members night at Peach are also coming up, subject to clouds/smoke.
 - m. Motion to adjourn passed at 9:30
 - n. Dr. Behringer thanked us for coming and looks forward to future events
4. Shertzer Observatory
- a. The meeting continued a short walk away
 - b. The 10" refractor and many other scopes showed the crescent moon and bright deep sky objects (like M13)
 - c. Everyone enjoyed the pleasant evening out on the roof

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:

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	Jim Forrester
	Brian Ottum
	Dave Snyder
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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

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University Lowbrow Astronomers

