



REFLECTIONS / REFRACTIONS

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University Lowbrow
Astronomers

April 2021

VOLUME 45, ISSUE 4

AURORA



Adrian Bradley emailed this image to members on March 20th. During our member meeting on March 19th, Adrian announced that he would be driving north to the thumb area to try and take a photo of the possible Aurora predicted at kp-3 for that night. He wrote in part “These shots started around 3:40am... so I took a nap before driving out. I knew that the aurora might not be as visible with any part of the moon in the sky, so I waited for moonset. It coincided with milky way rise. “

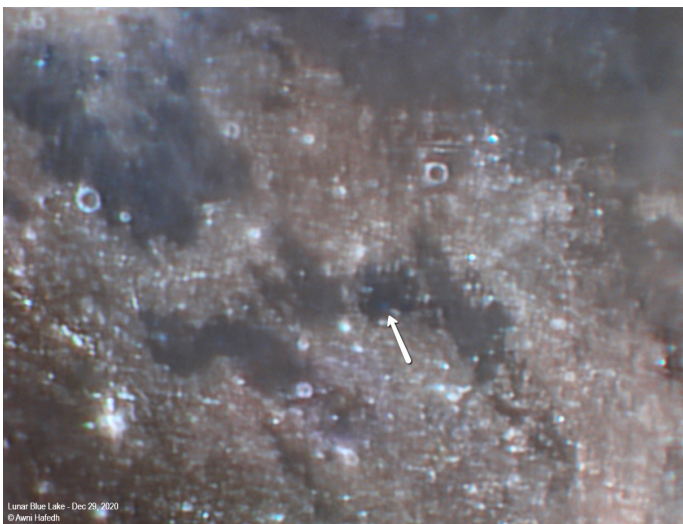
Lunar Blue Lake (Dec 29, 2020)

Email to members on Feb 15th from Awni Hafedh



There is a nice story to that, before the end of 2020 I watched a YouTube about a guy trying to image a crater on the Moon called Blue Lake, to be honest I thought that it is not realistic as he was trying to be funny, but by the end of his video he managed to image a blue spot on the Moon which got me very curious.

<https://youtu.be/KXM6w2tawAs>



Luckily, a couple of nights later it was clear with a full Moon straight up and I thought why not let's give it a try, it took me a long time to figure out where that spot is but eventually I managed to put it in the center and captured my frames.

I used my SkyWatcher 180Mak, TeleVue 2.5x barlow, ZWO mini filterwheel and ZWO ASI174MM camera, I captured 10,000 frames video for each Red, Green and Blue filter and stacked only 4% of that in AutoStakkert3, used PixInSight, Photoshop and Luminar4 to process the final image. I've also used a new technique to sharpen the image called APF-R which I found very interesting.

<https://www.cedic.at/apfr/> Now to be honest I

wasn't expecting anything especially with my small aperture of 7" and high F/stop of F/37.5 but I was surprised, it is actually there, really not bad for amateur photography.



(Left) image take by the NASA Lunar Reconnaissance Orbiter Camera of the Lunar Blue Lake Crater

Lowbrow Photos Emailed to Members

Glenn Kaatz emailed the image below to members on March 17th.

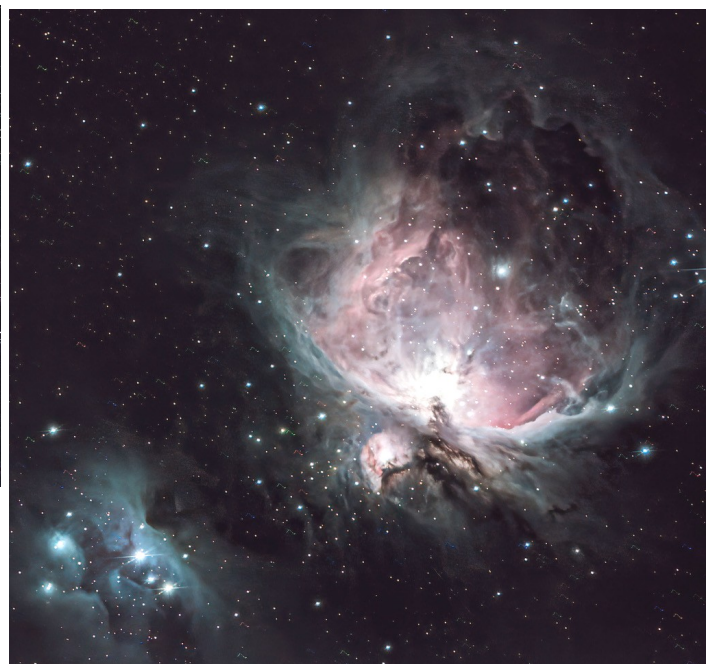


“I finished my IC434 project last night. This image represents 3.25 hours of integration time using my Williams Optics Z61 with a field flattener in a Celestron CGEM mount. The camera was the ASI294 MC pro cooled to -15C. All was controller with the ASIAIR pro, including guiding. I gathered 39 5 min exposures over three nights. The project was processed with AstroPixelProcessor and Photoshop. I think I’m done with all things Orion now, as it is setting earlier and earlier and falls behind trees in my neighbors yards by about 10:30 pm now. That gives me only about 2 to 2.5 hours of imaging time each session. “

Howard Ritter included the two photos below of M42 and surrounding region in an email to members on March 22nd.



“L-eNhnance filter which was made with the GT81 and a DSLR,.”



“RASA, ‘2600, and a broadband LP filter, with colors I like much better.”

Spectroscopy Inspiration by Dave Jorgensen

Our March speaker, Tom Field, inspired me to try a bit of spectroscopy with my Canon DSLR camera. I placed a circular piece of cheap plastic film diffraction grating (line spacing = $2 \mu\text{m}$) between my camera lens and its protective UV filter. I chose a few available light sources to look at.

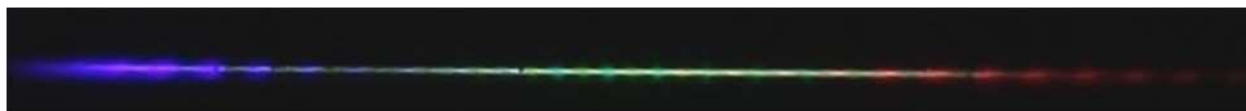
Incandescent lamp: The electrons in a heated solid, like tungsten in an incandescent lamp, have essentially an infinite number of energy levels available to them. Therefore, the photons generated also produce a nearly continuous smooth spectrum as shown here from one of my old bulbs:



Florescent bulb: This is one of my 4 ft workshop lamps. Here the energized mercury gas is predominant with its characteristic purple and green photons, as well as some fainter yellow lines. These lines are characteristic of and definitive of the specific glowing gases being energized.



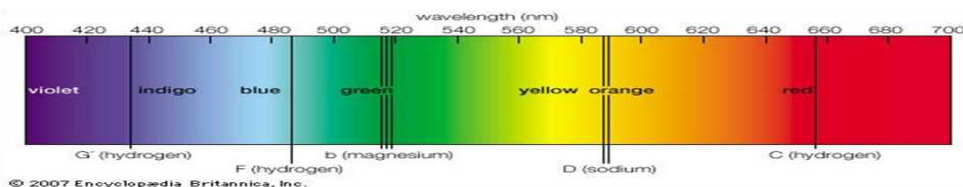
“White” LED: Here I used an “Artificial Star” LED that I use to collimate my scopes. I don’t fully understand the output, but it is interesting to compare with the above sources. I understand that several phosphors are included in its design that are activated by the LED to simulate “white” light



Red LED: Here is a single red LED which, I think, produced only one wavelength of light, though it is a bit smudged.



The stars: Here is a spectrum I pulled off a website of our sun. The sun emits a nearly continuous spectrum, characteristic of an object at about 5000 deg K. As the sun’s light moves out through its atmosphere, the elements present in its atmosphere absorb certain wavelengths characteristic of their identity. So here, instead of bright colored lines representing the elements, we see dark characteristic absorption lines, equally identifying the elements present. The spectrum here identifies just 3 of many of the elements. A complete line spectrum is, of course, much more detailed.



I would need to do some significant fine tuning of my system and analysis to identify all the elements. But it has been fun to experiment.

University Lowbrow Astronomers Treasurer's Report
Fiscal year April 1, 2020 to March 31, 2021
Doug Scobel, Treasurer

Overview:

We have \$10,176.59 in the treasury, an increase of \$2647.95 over last year.

As of March 31, 2021, we have 165 memberships, an increase of 14 over last year. Our membership categories break down as follows:

- 38 Family/Individual
- 89 Senior (age 55+)
- 6 Student
- 19 Out-of-State or Upper Peninsula
- 13 Lifetime/Honorary/Hardship

Ten members subscribe to the printed/mailed version of the newsletter. An additional member receives the newsletter free of charge because of personal hardship.

I now accept Venmo for dues and other payments, as well as PayPal and checks in the mail.

Here's our breakdown of income and expenses by category:

University Lowbrow Astronomers Balance Sheet 01 April 2020 - 31 March 2021			
<u>Income</u>		<u>Expenses</u>	
Dues	\$3,135.00	Phone hotline (AT&T Messaging)	\$190.20
Extra for mailed newsletter	\$90.00	Newsletter printing/mailing	\$229.83
Magazine subscriptions	\$0.00	Magazine subscriptions	\$34.00
Astronomical League	\$195.00	Astronomical League	\$212.50
Donations	\$645.50	Donations	\$160.00
Shipping/mailing	\$8.30	Shipping/mailing	\$80.60
Miscellaneous	\$0.77	Miscellaneous	\$132.64
		Observatory/equipment	\$386.85
<u>Total Income</u>	\$4,074.57	<u>Total Expenses</u>	\$1,426.62
<u>Balance 01 April 2020</u>	\$7,528.64	Shirt Inventory	57
Plus Income	\$4,074.57	Cap Inventory	16
Minus Expenses	\$1,426.62		
<u>Balance 31 March 2021</u>	\$10,176.59		
<u>Net Increase (Decrease)</u>	\$2,647.95		

Treasurer's Report Continued

The disparity between newsletter payments and outlay is partly due to payments paid to the newsletter editor this year for expenses incurred last year. Plus, this year fewer members have paid extra for subscriptions to the mailed newsletter.

Magazine subscriptions should break even, but do not. Last year a member paid for an Astronomy magazine subscription renewal that I did not send in. I refunded that money to the member, because now members handle Astronomy magazine subscriptions themselves online.

This year 27 Lowbrows are also Astronomical League members, an increase of seven 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 a member payment received early for the Astronomical League's fiscal year that starts July 1, 2021.

The donations we received this year consisted mainly of large donations from two of our members (over \$200.00 each!), and three \$50.00 donations from outside the club in memory of the late Bernard Friberg. The rest is composed of smallish donations from several members that include them with their dues payments (typically senior members who pay at the family rate – hint hint!). All of these donations are greatly appreciated!

We had two donations going out, our annual \$100.00 to the International Dark Sky Association, and our annual donation to sponsor the Peach Mountain Clear Sky Chart. Because the annual Astronomy at the Beach was a virtual event in 2020, there was no donation to GLAAC this year.

The mailing income was a refund from the post office. I had mistakenly paid twice online for the shipment of a cap to one of our guest speakers.

Shipping/mailing expenses were for mailing shirts and caps to several of our guest speakers.

Our miscellaneous income is a small deposit from Venmo to verify our checking account. Venmo withdrew the same amount as part of that process, and is included in miscellaneous expenses.

Miscellaneous expenses include the annual fee for our post office box, the cost to print a manual for one of the club's telescopes, and the small Venmo deposit described under miscellaneous income above.

Observatory and equipment expenses consisted mainly of \$333.44 for paint for the observatory building. The rest was for replacement heat lamps, and rental for a trimmer to clean up some of the observatory grounds.

Line items that were in last year's report and not in this year's report include:

- We had no shirt or cap sales, nor did we order any.
- We did not do a club order of RASC calendars or handbooks this year.
- We incurred no expenses with respect to our guest speakers, except for sending them a shirt or cap in appreciation.

If you have questions or would like further detail then please do not hesitate to contact me.

The Importance of Customer Service in Our Hobby

Brian Ottum

It seems obvious, right? But my experience is that the companies that make telescopes, cameras, mounts and accessories often focus only on the product itself and rarely invest in the customer service needed after the sale. Our industry seems a bit niche, and immature. There is not much standardization, so that does make for great innovations. It's the wild west with new stuff coming out all the time. But the market size is rather small, even worldwide. Due to the hand-crafted nature, the telescope industry seems to have a lot in common with musical instruments (not mass-produced, human inspection is critical). These are my stories and things I've learned.

GREAT CUSTOMER SERVICE

Nikon Binoculars – I bought an exceptionally fine pair of 7x50's way back in 1983 and have enjoyed them ever since. Extremely bright, sharp and lightweight. Holding them out at arm's length you can see fully bright circles inside the eyepieces, meaning that they did not go cheap on undersized internal prisms. (When you see squares inside the circles, it means undersized prisms.) Quality like this sells for \$200-\$300 today. But back in 1996, I dropped them after seeing Comet Hyakutake. Misaligned! So I sent them back to Nikon's service facility in Melville, NY. They sent them back perfectly collimated, for FREE.

Fast forward to today. I received an email from the same service facility, telling me that the work was under warranty and FREE. Helpful Lowbrow Kurt Hillig had diagnosed them to no longer hold focus because the internal pin that was attached to the center helical focus had sheared off.

Celestron Telescopes – I bought my Orange tube C8 waaay back in 1976 and it had developed a smoky haze on the *inside* of the corrector plate after thirty years. So I sent it to California and they cleaned and collimated it, for FREE.

Lunt Solar Telescopes – The Lowbrow email alerted me to an estate sale twelve years ago that contained a solar scope. I enjoyed the hydrogen alpha scope immensely. But slavishly following my GPS caused it to get damaged. (Don't we all have stories of blindly following our GPS?) I was heading to the Lowbrow encampment at our wonderful Atlanta MI hosts. GPS had my RV on a national forest service road that started to climb into the densely forested hills. The dirt road narrowed to a bad two-track. The trees started to close in, brushing both sides of my RV. As I crested the hill, just a mile south of my destination, I saw that the road below was washed out. As I slowly backed up for a quarter mile, the RV bumped up and down, causing the Lunt case to drop 5' onto the floor of the RV. I sent it to Arizona and the re-collimated and adjusted for less than \$100.

A couple years later, I was showing my West Virginia hosts views of the sun on a windy day. A gust blew the scope over and completely snapped off the diagonal in half! Back to Arizona for an inexpensive fix, and I took them up on their offer to upgrade to a Feathertouch focuser for just the cost of the focuser.

Two weeks ago, I noticed that the view of the sun was very dim and tough to see. Is it my aging eyes? So I emailed them. One of their customer service people called me an hour later to ask a few questions about what I was seeing. He had me disassemble the diagonal. He asked if I saw that the teal-colored "blocking filter" was clear or cloudy. It was definitely cloudy, so it no longer passed all the light. He said they'd send out a replacement. USPS took 9 days to deliver the envelope (poor customer service, but they are struggling under many issues including COVID). I installed the new blocking filter just now and the scope is as good as new! I was able to see one large prominence on the N pole, a small near S pole, plus a large sunspot and active area towards the W. Plus I could see granulation!

The Importance of Customer Service in Our Hobby Continued

Starmaster Telescopes – Everyone has a story of how Rick Singmaster was generous with his time on the phone or in-person. He talked me off the ledge when my wife backed into my 14.5” dob with her car and tipped it over. He suggested that the mirror was likely knocked off its cell. Then he instructed me on how to install angle brackets to re-strengthen the bottom box. Years later, when the GOTO would not work, he sent me (for a nominal cost) replacement cables that fixed the problem. Rick has since passed, but the website is still up.

BAD CUSTOMER SERVICE

Software Bisque Mounts – Their software, TheSky, is very good. However, they put out telescope mounts without fully vetting them. My Paramount MX was installed out at my desert observatory and worked fine for a couple years. Then it started tracking poorly. I could not figure out why. The Bisque family does not provide direct customer support. Yes, you read that right. You pay \$9000 and you cannot call or email the people who made the product. They force you to log onto their Forum, and post your problem. Other owners then reply with questions, red herrings, wild goose chases and conjecture. Sometimes, you get lucky to have another owner who solved the exact same problem. But not always. Ultimately, if you keep pushing, you get one of the Bisque family to post the authoritative answer (often with a link to the information you need). This process is lengthy, frustrating and not always successful.

Anyway, I found that it was the worm gear that was the problem. It took a trip out to New Mexico and dozens of hours of preparing and disassembly. Then waiting for replacement (which cost hundreds of dollars). But it did fix the problem.

Then a couple years later, the problem recurred. Bisque now says I should have been completely disassembling the mount, stripping the gears of all the sticky grease (what a job!), regreasing, and reassembling every six months - because I was in a dusty environment. But this maintenance instruction was NOT in the manual! Figuring all this out caused me pain and expense for 2 years. Finally, I sent the ENTIRE mount back to Bisque and had them do a complete refurbishment. For the privilege, they charged me \$2,700! I sold it on Astromart. And don't get me started on the software bugs that stymied me several times. Bottomline is that if you buy a new Bisque mount, you are an unwitting beta tester.

QHY Astro Cameras – They make the awesome Polemaster, and I've talked to many folks who love their cooled CMOS cameras. However, I needed a camera that could both take normal pictures AND function as an autoguider. They had a new camera that promised both, so I bought it. The first problem was achieving the correct distance between the refractor's corrector/flattener lens and the camera. This is a problem ALL imagers will talk about, because there is NO standardization in the industry (separate article). Anyway, I finally got it to provide excellent images out there in the desert. But I could not get it to autoguide. The refractor was piggybacked on top of my bigger 10” reflector, and I wanted to use it to make fine adjustments to mount tracking so that my pictures were sharper. Like other software companies (and Bisque), you cannot call/email/smoke signal a human. You must submit the glorious “ticket” and then wait. In very poorly worded posts, sometime hilarious translations from Chinese, they directed me to different USB drivers. NONE WORKED. I sold the camera to a gentleman in Petoskey and he is having fun taking pictures with it (and not trying to do autoguiding). Several folks have admitted to me that QHY doesn't do software drivers well. Ug.

Classified Ads – For over a decade I used our best-known site to buy and sell, building a 100% rating. Then I placed an ad for a little-known accessory. To better explain what it did, I inserted a link to a tiny astronomical accessories company based on some guy's garage. I got banned from the site! No warning. No reinstatement after I made an appeal.

The Importance of Customer Service in Our Hobby Continued

Prism Software – This was touted as a single program that did the work of 6 programs. It can help you plan objects to image, drive the telescope mount, autoguide, focus, run the camera, run the filter wheel, ensure you are pointing exactly where you want, make coffee, collimate the scope, calibrate your images, process your images, etc. I even spoke to a current user and the distributor before paying \$400 for it. Could not get it to work with my system. Distributor worked with me two nights. Still could not get it to work with my system. Abandoned the effort.

Here’s what I’ve learned:

Given the high rate of innovation and tech-dependence of our equipment, we are often buying new products on the “bleeding edge”. They are so new that they contain bugs and unanticipated issues. Stick with the tried and true.

Before buying, talk to current satisfied owners who are using the product the way you want to

Carefully buy used so you are lowering your financial risk should you have to re-sell

When you have problems, use a multiple methods for getting help. First, submit your problem directly to the manufacturer and keep the heat on. Second, seek out Cloudynights and other forums to see if others have had your problems. Third, seek out experts on the web and social media so they can point you in the right direction.

The March meeting was recorded and can be viewed on you tube.
<https://youtu.be/wFpETyfmSgl>

Upcoming Events

The Messier Marathon is an informal event where Lowbrows will go to Lake Hudson and set up at the lake parking area in an attempt to view all the Messier objects in one evening. A secondary date is Saturday, April 10th. Emails sent from members to the members distribution list will be the only announcement that members have decided to brave the elements and travel to Lake Hudson. A good number of non Lowbrows folks have come to the location in past years. Even though the area is large, you should maintain distance between telescope and refrain from sharing eyepiece views.

Open House events have been canceled until further notice.

DATE	EVENT	LOCATION	
Friday April 16th 7:30 pm	Monthly Meeting	By Video Conference. Instructions will be emailed to members,	Speaker: Brian Ottum PhD, Lowbrow Member, topic: Astronomical Image Processing Overview

University Lowbrow Astronomers

Monthly Club Meeting Minutes

19 March 2021, 7:36 pm, Individual Live Connections via Zoom/YouTube

After some chatter to allow for late arrivals, President Charlie Nielsen called the meeting to order and then introduced our speaker.

Speaker

Who

Tom Field, Editor Sky & Telescope

Subject

"You Can Almost Touch The Stars" .. on Amateur Spectroscopy with R-SPEC

A Q&A session on spectroscopy occurred afterward. Charlie thanked our speaker for the presentation.

Business Meeting

Name	Topic
Charlie Nielsen, President	Elections are next month. There is a process to conduct them online. Nominations are open as of this meeting, up until the April meeting. Amy Cantu was nominated for Newsletter Editor. She has accepted the nomination.
Doug Scobel, Treasurer	1 new member since last meeting, 163 memberships \$10131.10 in Treasury. Will send a sponsorship check to Sky Chart for Peach Mountain.
Joy Poling, V.P.	Keeping Night Sky Network info up-to-date
Jim Forrester, V.P.	Looking into various star parties. 2 of the 5 – Great Lakes Stargaze, Sept. 9-12, Rocky Mountain Star Stare Sept 2-6. Black Forest and Okie-Tex are 'wait & see' on COVID-19 conditions.
Jeff Kopmanis	Max 32 online, 5 on YouTube. A Communications Committee meeting will be forthcoming.
Jack Brisbin	Gave a short presentation on observatory upkeep. Trimmed and cleared out some brush on the hill next to the observatory to give us more room. The paint job on the observatory has held up pretty good. Is looking into removing some trees that are blocking our eastern views. Dr Kurt Hillig, Chris Adams, and Michael Hagan volunteered to help clear out some trees.
All Lowbrow Officers and a few members	On email usage: Many ideas were submitted on our use of email, specifically the usage of the new 'Camp Lowbrow' email group. It was brought to our attention that we already had a few email lists for the various star parties that Lowbrows like to attend. We will utilize those groups to keep the general membership email list from getting too crowded. We will also consider sending out regular reminders for proper email etiquette, including not always using the 'reply to all' button to respond to emails sent to the group.

Addendum

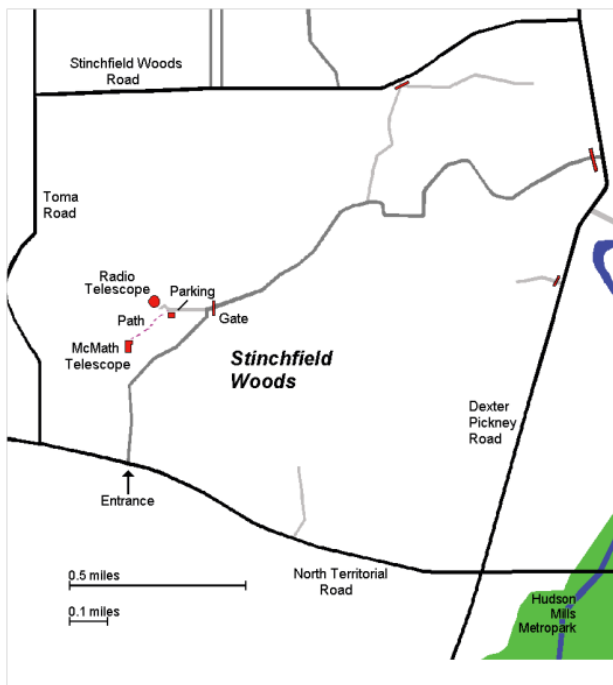
Approximately 45 people attended tonight's virtual meeting.

Adjourned 09:40:00 PM Minutes were taken and transcribed by Adrian Bradley

Places & Times

Monthly meetings of the University Lowbrow Astronomers are held the third Friday of each month at 7:30 PM. The location is usually Angel Hall, ground floor, Room G115. Angell Hall is located on State Street on the University of Michigan Central Campus between North University and South University Streets. The building entrance nearest Room G115 is the east facing door at the south end of Angell Hall.

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 radio telescope, 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 cancelled if the forecast is for clouds or temperature below 10° F. For the most up to date info on the Open House / Star Party status call: (734) 975-3248 after 4pm. 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. Evening can be cold so dress accordingly

Lowbrow's Home Page

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

Membership

Annual dues are \$30 for individuals and families, \$20 per year for students and seniors (age 55+) and \$5 if you live outside of the Lower Peninsula. Membership entitles you online access to our monthly Newsletters and use of the 24" McMath telescope (after some training). A mailed copy of the newsletter can be obtained with an additional \$18 annual fee to cover printing and postage. Dues can be paid by PayPal or by mailing a check. For information about dues or joining the Lowbrows contact the club treasurer at:

lowbrowdoug@gmail.com.

Lowbrow members can obtain a discount on these magazine subscriptions:

Sky & Telescope - \$32.95/year or \$65.90/2 years

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

For more information about magazine subscriptions contact the club treasurer.

Newsletter Contributions

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

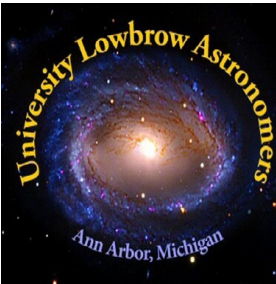
Telephone Numbers

President:	Charlie Nielsen (734) 747-6585
Vice President:	Adrian Bradley (313) 354 5346
	Jim Forrester (734) 663-1638
	Joy Poling
	Dave Jorgensen
Treasurer:	Doug Scobel (734) 277-7908
Observatory Director:	Jack Brisbin
Newsletter Editor:	Don Fohey (734) 812-3611
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 each to the Observatory and the North Territorial Road gate to Peach Mountain. University policy limits possession of keys to those who 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



University Lowbrow Astronomers



University Lowbrow Astronomers
P.O. Box 131446
Ann Arbor, MI 48113

STAMP