



REFLECTIONS / REFRACTIONS

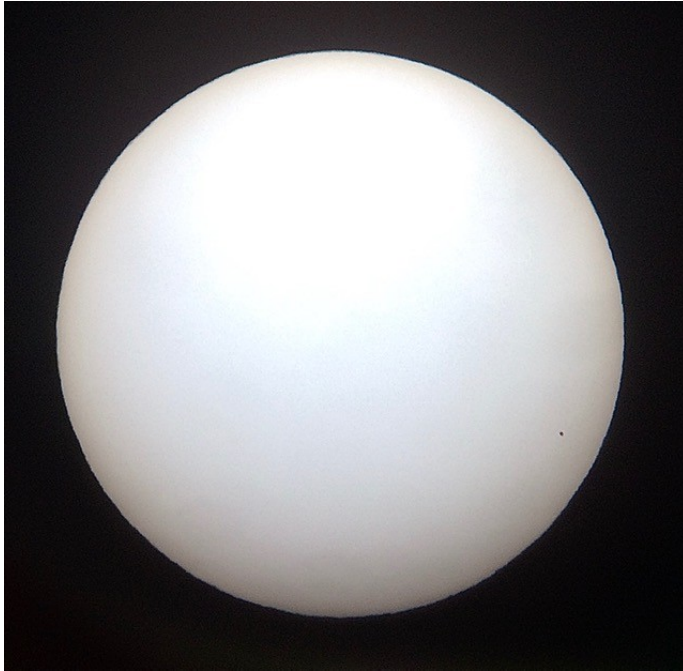
REFLECTIONS \ REFRACTIONS

University Lowbrow
Astronomers

December 2019

VOLUME 43, ISSUE 12

Mercury Transit In Da South, Nov 11, 2019



Mercury Transit Images by Christopher Sarnecki take with cell phone

Many Lowbrow's had hoped to see, against the November odds of good weather, the Mercury Transit on Monday November 11th. This would be the last chance for many to see one. The transits of 2032 and 2039 will not be visible in North America, The next visible in Ann Arbor will be in 2049 (30 years). The day of the transit it snowed all day. Your editor measured 9" of snow on his deck tabletop. It was not lost to all Lowbrows, however. Chris Sarnecki, who has moved to North Carolina, emailed to members the following messages.

“Here's a couple of hand held cell phone pics taken through my 8-inch F6 reflector stopped down to 3" with Bader Mylar solar filter. If I had any pride I would be embarrassed by these photos. Taken about 10:ish. WeatherUnderground showing approx 30-40% cloud cover at the time. Forecast indicating much less clouds towards end of transit. Will try again.”

“Skies down here did clear up around noon. Here's a couple more photos (above) taken with the cell phone through my scope. Yes, these photos have been edited (sharpened, cropped). For the second photo I swapped the 25mm Orion Polssl eyepiece for a 7mm Tele Vue Nagler. It made for some challenging manual tracking. As the diminutive Mercury approached the edge of old Sol, I fantasized seeing the famous 'gum drop' effect; but, then I remembered I'm viewing all this on my Orion reflector. While it is a fine scope w/o a drive, I decided to kick back and enjoyed Mercury making 3rd contact at 1:02 cell phone time then exiting the disk a minute latter. All in all, this was a fine way to spend the first half of the day.

Now, if I only had some snow here, it would make the rest of the day perfect!

Chris, NC Lowbrows Ex-Pat”

Coping with Things that Ruin Astronomy

by Adrian Bradley, VP Lowbrow Astronomers

Last time I talked about fighting telescope envy. Hopefully a few of you out there no longer feel so bad when you show up with your small refractor and look around at everyone else's fancy and expensive telescopes. But in case you didn't, I can summarize it like this: When you learn the night sky, you can observe more successfully with binoculars than others can when their go-tos stop working and the batteries die on their 30" dobs. You can also continue to enjoy other parts of the night sky while astrophotographers scream and yell when someone turns on a light during one of their imaging runs.

Speaking of things that ruin astronomy, let's talk about those next and figure out how we can keep from blowing a gasket when these distractions occur.

TURN OFF THE &*\$#@ LIGHTS!!

Sorry kids but when you observe in a setting where the skies get real dark, you may hear some grown men and women scream this at somebody.

During outreach sessions, we are often showing the night sky to people who have no night vision and no clue why we would yell at them for turning on flashlights. I think we need to take a step back and understand the differences between us and the general public:

US: A dark place under a dark sky is PERFECT for observation.

PUBLIC: A dark place under a dark sky is where things like the Texas Chainsaw Massacre happens.

If there were no people around with telescopes, I'm not so sure the general public would want to come out and look up at the stars. They are busy looking around making sure they still have the same amount of children they started with. Let's cut them a little slack when it comes to the lights. Better yet lets use those flashlights as an opportunity to teach them about night vision and how to develop it. When they begin to see things further away in the dark than they thought they could see, it may make them less afraid of the dark and more likely to enjoy looking up at the night sky at all those stars they never see at home.

As for cars that turn on headlamps... yeah that sucks. But again many new cars do not give you the option of killing the headlamps. They are automatic and are out to get all of us as astronomers.

I'm afraid I have bad news for us as astronomers. We absolutely cannot stop this from happening. So here are a couple of creative ideas to keep your night vision from getting ruined: 1. Grab a black or red towel, and cover your eyes with it while looking away. This may be the best way to preserve your night vision until the car goes away. 2. Keep dark sunglasses handy and put them on when light comes. it'll minimize the effect of the glaring lights on your eyes. Oh yeah and turn away.

Astrophotographers, I'm sorry but the only thing you can do is kiss those particular frames goodbye. But bear in mind that your sensors do not need to regain their night vision. The moment the annoying lights disappear, your rig is back to capturing light from your intended target. You may not see anything for 20 minutes but your CCD is back to gathering your precious data.

IF YOU'LL LOOK TO THE NORTH YOU CAN SEE THAT THE POINTER STARS OF THE DIPPER LEAD TO.. THE CONSTELLATION OF &*\$#@ CLOUDS

This name, constellation of &^#@ clouds hasn't been confirmed by the IAU yet, and neither has the southern constellation of &*\$#@ clouds. That's because it's also referred to as the [insert city here] nebula. So once we decide if it's a nebula or a constellation..... either way, mama says that clouds are the DEVIL.

Imagers, your astrophotography rig will last only as long as these clouds are transparent enough for any starlight to come through and be detected by your sensors. Observational astronomers can still see these things through a telescope based on how much aperture your mirror has. But the clouds don't care about your aperture or how long an exposure you are taking. When the thicker clouds come in to ruin your view, they will provide zero transparency and could care less that you really want to show somebody the rings of Saturn for the first time in their lives. I guess they are going to have to wait or look it up on the internet.

Yes we have lots of forecast channels that give us an indication as to whether or not the clouds stand a chance to ruin our observation. Following these forecasts helps, but experience helps as well. Sometimes you trust your gut and think to yourself that a clearing could come. There are times you get lucky and it does get clear. Other times you are proven wrong and the clouds laugh at you, one by one, as they pass by and admire how nice your scope looks, sitting there pointing north because you were just about to start aligning it. Your scope just became an expensive paperweight. Deal with it. Maybe start practicing looking at distant leaves on trees. Maybe collimate it. Maybe talk to people about how scopes work. Or maybe just sit there and be angry about life in general. The clouds do not care.

If you really want the clouds to go away, then what you do is take your telescope down, pack it all back up, and as you are putting the last part back into your vehicle, the sky will become crystal clear. Should you tempt fate and try to reassemble your scope, clouds will reappear, begin covering up important things like Polaris, and begin laughing at you again.

So far I've only seen two things keep clouds away. 1) is a solid clear night as forecasted by a number of the astronomy forecast channels such as ClearDarkSky and Astrospheric, and even the Weather Channel will agree when your threat of clouds is minimal. 2) If Jim "Almighty" Forrester predicts the weather will be clear, clouds become VERY AFRAID and tend to stay away from the observation area. Only a couple times in the past couple of years have I seen rogue clouds defy Jim Almighty and his predictions.

Ok, the truth is that even Jim Almighty can't really control when/where clouds appear. (He's still done pretty good at keeping them from showing up at all!) Try to avoid nights where cloud or dense fog is predicted, but if you wind up facing one or the other, be assured that the clouds don't last forever and that clear skies *will* return. In the meantime you should probably put a moratorium on any club member buying anything new until a successful night of observing or imaging has happened. I forgot to mention that clouds love knowing when a new astronomy purchase has been done. They all want to see your new purchase up close so they tend to show up just to take a look. Clouds are secretly worried that one of these new gadgets will be some kind of laser that burns a hole right through them and enables cloudy night astronomy. They are paranoid of this, and want to make sure that your new 18" DOB doesn't come standard with something like that.

LOOK AT THAT LIGHTBULB IN THE SKY..

The moon... a beautiful and very necessary object that orbits our Earth. However, most astronomers wouldn't mind shooting it out of the sky on clear nights. Clouds tend to be scared of the moon, too. It's a shame how many stretches of clear nights tend to fall when the moon is somewhere between 60% waxing gibbous and 60% waning gibbous. How do we deal with such a bright natural object without sending rockets up to nuke it for the sake of our own outreach or desires to view some faint DSOs

I don't know... Ok maybe I do. One option: Look for Lunar landing sites and map the moon the way that David Levy did. One other option: Collimate your scope. One other option, do a moon viewing party and be amazed at how many of the general public actually freak out when they see the moon up close in your scope (yes, even your small refractor that you kicked and stepped on after deciding it wasn't good enough to compete with those big dobs... yeah that one still makes the moon look really good. So don't kick it or throw it away, use it to surprise people with our clear the moon look through it.

Or, as we Lowbrows do, plan your viewing sessions during the times where the moon stays out of the way of dark skies. This is during the crescent phases when the moon is no more illuminated than about 10%. It's either chasing the sun or being caught by the sun in those crescent stages.

Yeah I'm sorry you don't get to use your brand new scope when you want to. Astronomers tend to get lucky if, on a planned outreach night, the sky cooperates and clears up for us.

OK ITS DARK, NO CLOUDS IN THE SKY, I CAN SEE THE MILKY WAY, AND MY SCOPE WON'T WORK.

Sorry for your luck. Remember those cloudy or moonlit nights? Those are perfect nights to test your rig and get familiar enough with it so that any problems occurring during optimal observing time can be taken care of quickly and quietly.

But if all else fails, I highly recommend putting your scope into manual mode (disengage any drive motors), and use your sky maps or smartphone/tablet sky maps to see if you can find things manually. It's definitely a worthwhile pursuit. Failing that, get out the binoculars and/or just look up at the night sky with your naked eyes... and see if you can learn a new constellation or two, Or three, Or 6. In other words, take the opportunity to expand your knowledge of the night sky.

If you already do know quite a bit about the night sky... then teach others. Nothing is more rewarding than watching someone walk away knowing more about the night sky than they did when they came to our outreach event. If it's not an outreach event and we're just observing amongst ourselves, well talk to another club member that may not know the night sky quite as much. Naked Eye observation has been well underestimated and can prove to be a wonderful way to observe when all else fails.

Alternatively, you could throw money at the problem and have a number two scope that has encoders, go-to, motors, etc. Heck go get a 3rd one while you're at it. Set up all three. Make them all point at M13. Keep using the one that doesn't crap out after going to 2 or 3 DSOs.

OK I'M AN ASTROPHOTOGRAPHER AND I DIDN'T COME TO DO ANYTHING MANUALLY

Better find your DSLR camera and do some nightscape/landscape shooting. You can always point it at a bright region of the night sky, take enough appropriate pictures, and stack them to create a nice wide field object.

If you don't have your DSLR camera or you break it, then you should begin a nice long night of crying about how you wasted a beautiful night on equipment failure. Or buy that second rig and use it when your first rig fails.

AND NOW FOR REAL PRACTICAL ADVICE

1. Make sure the primary battery for your rig is charged. Showing up and forgetting to charge your battery is like leaving home on a trip, forgetting to bring your smartphone charge cable, and your smartphone is at about 20% battery life. So maybe both your smartphone and your main battery for your rig are at 20% each. That's a nice coincidence, but it won't help you fix the fact that you can't observe for long.
2. Test your equipment to the best of your ability, including your collimation eyepiece or tool and any equipment used by Astrophotographers.
3. Count to 10. Distracting light can come from other sources, not just the ones listed here. Do your best not to get worked up over it.

Here is the reason I won't joke around with #3. The general public contains many who are fascinated by astronomy and the night sky, and they are here to learn and see stellar objects through a telescope. They do not know about all of these light distractions. If we give off the impression that we are spoiled vampires who whine and moan about every stray photon of light that doesn't come from space, we give a very bad impression of what it is to be an amateur astronomer and we turn away those who might otherwise be interested in the night sky. Please be careful about doing that. I hate to be serious here, but remember that the night sky is not just about you, it should be enjoyed by ALL who wish to learn of it's secrets.

AND FINALLY A NOTE ON LIGHT POLLUTION

The fight is on to reduce and eliminate light pollution. If you join the fight against light pollution, you will indirectly learn of what many from the general public think and know about lights. You will see their ignorance towards just how beautiful the night sky is, as well as just how necessary it is that we preserve as many dark sites as we can in order to observe, photograph, and enjoy this night sky beauty. This helps you, in turn, to understand why you must endure all of these distractions.

Imagers, you will have very little choice but to shoot through filters for the various types of light such as Tungsten that emanates from cities. For nightscape images, a wise astrophotographer by the name of Dr. Brian Ottum told me "Get rid of the yellows in your photo and that will diminish or even remove the light glow from all pictures you take.

I STILL HATE THE MOON!!!

Look for some YouTube channels that talk about what would happen to Earth if the moon were gone. Ask yourself if you're ready to endure that harsh type of living condition, or if you could afford to move from place to place until scientists reconstruct the moon and put it back.

We need the moon.. so please don't destroy it.

3D Printing a Telescope Counter Weight

by Chuck Steele

A well balanced telescope allows sighting in on object to stay in view after slewing to a new position. The Meade 10" SCR on a equatorial fort mount was always out of balance with the finder scope and heavy eyepiece diagonal. I decided that I could correct this unbalanced problem by 3D printing a custom counter-weight. I used a free 3D mesh program called **Blender** which you can download off the internet. It is an amazing program which allows 3D modeling, animation, and 3D output for printing. However as the program has so many features it is daunting to learn, but there are many tutorials online if you have the time. My design is in the form of a crescent in which the inner curve fits snugly to the telescope tube. I applied velcro strips to this inner curve and on the telescope. I also designed in belt loops to hold a strap in place which wraps around the tube. The crescent shape counter weight was printed as a hollow box and I filled it was steel BBs, which gave the assembly a weight of nearly 3 lbs.

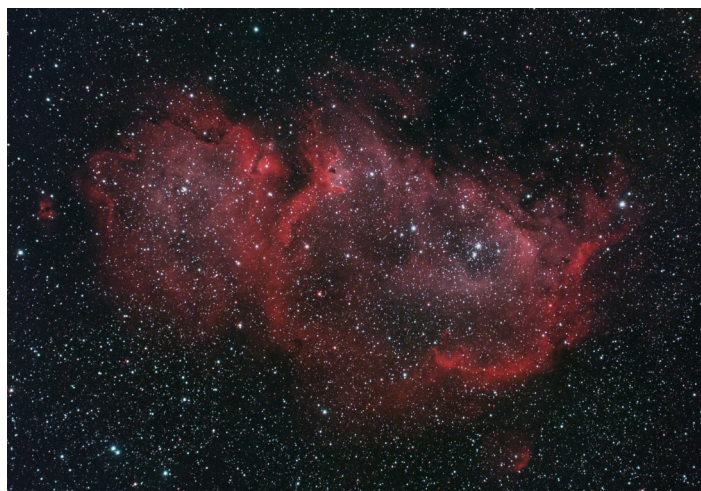


The Crescent Shape counter weight is filled with steel shot giving it a weight of 2.75 lbs. This is enough to offset the finder scope, diagonal and eyepiece. Molded in a silver plastic which looks like aluminum.



Self sticking velcro strips are applied to the telescope tube and to the inner curve of the counter weight. A nylon belt holds the assembly in place. Adjustment up and down the tube as well as side to side as finder scope is off center.

With the counter weight mounted near the front end of the telescope it balances the scope fairly well, so that when I point to a new object it doesn't veer off before I can lock it in place. Also the drive motor and gears don't have to work nearly as hard. Less wear and tear on the equipment. Steel shot, velcro and nylon strap were only major expenses under \$25 other then on hand plastic to mold the parts. Just another fun and useful 3D printing project.



Federico Spotti wrote to members on Nov. 6th.

"Here is my image of the Soul Nebula shot with my travel setup: Borg90FL@F4, ASI294MCpro, IDAS NB1, sky-watcher AZGTi. Total of 102min (360s x17), gain 200, acquired with SGP and processed in Pixinsight.

The IDAS NB1 is a multi narrowband photographic filter that performs very nicely and that doesn't drive you too crazy with color balance and star colors, with the addition of having an excellent anti-reflection coating (I had to stop using Baader filters because they were badly interacting with the front glass of my camera)."

Andromeda Galaxy Images by Federico Spotti



Federico Spotti wrote in an email to members on Nov 6th.

“ Last week I was traveling in Oregon for business and I took the occasion of shooting from a spectacular location (Crater Lake, altitude 7300ft, Bortle 1).

[Editor: The Bortle scale (1 to 9) ranks the brightness of the night sky.] I decided to go for M31 because I never had luck before with this target...

Borg90FL@F4, ASI294MCpro, IDAS HEUIB-II, skywatcher AZGTi. Total of 175min (300s x32), gain 130, acquired with SGP and processed in Pixinsight.”



(Left)

“I tried to play with it a little, its a very nice tool [Editor: Awni Hafedh suggested HDRWaveletTransform] (and now I understand where the look of many galaxy images I see come from)... I really like the added contrast to the dust clouds, but I'm not crazy about the nucleus (feels artificial)... maybe I will have to try and blend the two solution.”

Upcoming Events

DATE	EVENT	LOCATION	
Tuesday Dec. 10th. 7:00pm	Westland Library	William P. Faust Public Library, 6123 Central City Pkwy, Westland, MI 48185	Don Fohey is presenting the exploration of Pluto, the New Horizon Mission.
Friday Dec. 20th 7:30 pm	Monthly Meeting	Room G115 Angell Hall 435 South State Street Ann Arbor, MI.	Professor Monica Valluri, U of M Astronomy Dept. "Fast Moving Stars"
Friday Dec. 20th 6:00pm to 8:30pm	Solstice Hike	Independence Lake	Coordinated by Adrian Bradley and John Wallbank, A few telescope needed if clear.

University Lowbrow Astronomers

Monthly Club Meeting Minutes

15 November 2019, 7:36pm, Room G115 Angell Hall

President Charles Nielsen called the meeting to order and then introduced our speaker.

Speaker

Who

Xianzhe Jia Associate Professor Department of Climate and Space Sciences and Engineering, College of Engineering, University of Michigan

Topic

New Evidence of a Plume on Europa
Galileo Magnetic Field and Plasma Wave Measurements

Questions were answered. Charlie came forward and thanked our speaker.

Business Meeting

Name	Topic
President Charles Nielsen	Is already getting requests for next year.
Charlie read an email for the absent Vice President, Adrian Bradley	<p>Greetings, hopefully from San Francisco by the time this meeting occurs. Here are my highlights/report since last month:</p> <ul style="list-style-type: none"> - The December Event that John Wallbank and I are doing will be on for Dec 20th. Will inform the club via email if anything changes, as well as final arrangements. Watching weather in case of snow out (kinda like the Mercury Transit for us... couldn't get anything in a 4-5 hour radius to go get a glimpse of it...) - My image of a meteor near the milky way, taken during the perseids this past summer, got reposted again in Instagram (@atbsigma713 is my handle if you want to go take a look at what I've posted). It was reposted once already by Dr. Becky Smethurst of the U.K. (@drbecky_). The original photo was taken at Lake Hudson from the observation parking lot. I've since missed several meteors that flew close to other captures I've done. And to see the repost: https://www.instagram.com/p/B1qcfPEhGXp/ ... it's also a finalist for a calendar contest at my job with Comerica Bank. Without that meteor in the shot, I doubt it would have travelled that far across the internet. Maybe I'll print it... - I will update our facebook page with the dates for our open house soon. I expect to be done by the time this November meeting happens.
Vice President Jim Forrester	<p>Him and 3 others moved the 17.5 to Dave's shop. During the recent cold spell it cost about a quarter to heat his shop to 45 deg. After some math was discussed it was estimated that seasonal cost would be minimal.</p> <p>Brian Ottum reminds that the GLAAC board is having turnover and is looking for volunteers. Most meetings are online. He expects AATB to be the last weekend of September. Members should understand before volunteering preparations for AATB will likely conflict with popular out of town September star parties like Okie-Tex, Black Forest and the Great Lakes Star Gaze.</p>
Treasurer Doug Scobel	Membership is currently 156 members and treasury is \$7,217.
Charlie read an email for the absent Webmaster, Krishna Rao	"Can't make the meeting tonight as I'm sick, going on clinical service tomorrow, and hosting my wife's entire department at our house, apparently (fun?).

	<p>Here's my report:</p> <ul style="list-style-type: none"> - Minutes and newsletters are uploaded to the website where I have them. I didn't see any from July. Were there any? If so, please forward to me for posting. - Youngastronomer website changes (fixing links) and moonphase calendars were posted - We've discussed having an astronomy event request form on the website. I've attached the latest version in my records. Can the officers confirm this to be the final version and if so where do you think it should go? I was thinking on the main page as one of the first links, so it's easy to find. I imagine this is one of the main reasons for visiting our site so might as well make it prominent." <p>Don stated he will find the July minutes and send a copy to Krishna.</p> <p>Treasurer Doug added that he did reimburse Krishna for the yearly domain fees.</p>
Newsletter Editor Don Fohey	He and Dave Jorgensen have been working on a telescope that was donated to the club. The drive is in need of repairs. Meade no longer makes the required parts. <i>Was left for further consideration.</i>
Observatory Director Jack Brisbin	<p>No update from Sucila on the gravel driveway yet.</p> <p>Started the season observatory maintenance work and is dependent of snow level.</p> <p>The 8" Cave scope is in need of a new 1.25" focuser. Motion for purchase was made by Kurt Hillig and seconded by Charlie Nielsen.</p> <p>Thanked all who helped with the painting of the observatory and displayed finished photos of it.</p>
Member Doug Warshow	Brought in to share, an article he found in the NYT about Starlink Satellites where a quote from Patrick Seitzer was used.

Adjourned

9:21pm

Minutes taken and transcribed by

Joy Poling

Doug Bock emailed to members on Sept. 1st.

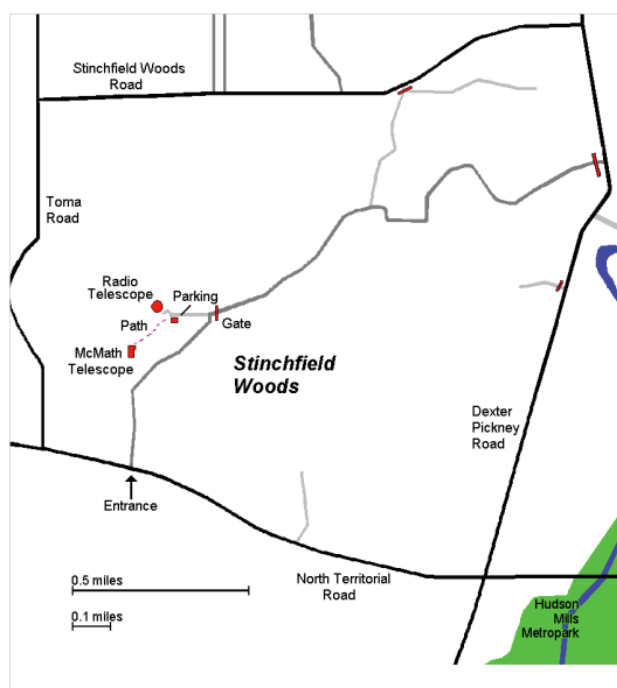
"I finally spent some time on the Helix Nebula this past week. I'll probably hit it another few nights, since it is low in the south and limits the amount of time of acquisition an any given night. It's also in the city glow to my Southeast and South while acquiring data.
 43 x 180 second subs, gain 300, temp 5C
 Darks and Flats applied
 ZWO asi071mc Cool camera
 10" f/8 RC.
 Northern Cross Observatory"



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 (contact the treasurer to find out how) or by check made out to "University Lowbrow Astronomers" and mailed to:

The University Lowbrow Astronomers

P.O. Box 131446

Ann Arbor, MI 48113-1446

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 dues or magazines 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: 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

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



Member Club



Astronomical League Member Society
#201601, Great Lakes Region

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STAMP