



## Visit to the Lowell Observatory

by Don Fohey (Photos by Author)



Clark Telescope Building

While on a trip to Arizona in February to visit friends and enjoy milder weather, I had an opportunity to visit Lowell Observatory in Flagstaff. We were staying in Sedona and drove up to Flagstaff for a day trip, enjoying the drive thru Oak Creek Canyon along the way. In the morning we walked the downtown shopping district and had lunch in the historic Weatherford Hotel.

The observatory is only a few blocks from downtown. As the road winds its way up the mountain (Mars Hill), you are afforded a nice view of the Flagstaff city center below. The campus is in the woods with 9 different buildings and a 10th under construction. In the "Steel Visitor Center" we purchased tickets for the 2pm "Lowell Tour" and the 3pm "Story of Pluto Tour".



24" Clark Telescope

I don't know why but I expected the Clark Observatory building to be bigger. It is a nice unassuming structure a short walk from the visitor center. The real magic is inside! Once inside my vision was immediately drawn up the 32 foot long Clark Refractor to the wood lattice of the dome above. The telescope's objective is a 24 inch Air-spaced Fraunhofer doublet achromat (f16). The telescope underwent a major restoration in 2014-2015 and is now in a beautiful pristine condition.

Mars was the passion of Percival Lowell who built the observatory and contracted with Alvan Clark and & Sons to build the telescope. He is most famous for his observations of Mars and the drawings that he created which depicted dark areas connected by lines. Our tour docent also explained that the observatory was later used by V.M. Slipher who revolutionized our understanding of space with his observations of the expanding nature of the universe. In the 1960s, a team of scientists and artists used the Clark Telescope to create detailed maps of the moon in support of America's manned voyages to the moon. Apollo astronauts studied these maps and some even used the Clark Telescope for part of their training to go to the moon.

## Visit to the Lowell Observatory continued



Eyepiece end of the Clark Refractor

I marveled at the observation chair, thinking about the hours that Percival Lowell spent looking thru the eyepiece. The rotating part of the dome is supported on tired wheels seen in the photo. This replaced an earlier system which floated the dome on a salt water moat. The telescope is available for public viewing. It is opened for observations on clear nights when the humidity is not too high. Alas, the day we were there a rain storm was starting that evening that would dump an inch of rain on Arizona.



Observation Chair for the Clark Refractor



Pluto Discovery Telescope Observatory Building

In 1905 Percival Lowell put the observatory to work to search for a proposed planet "X", the name for the hypothetical ninth planet in the solar system. He died in 1916 and left behind a substantial legacy to continue the search.

It was a cold walk into a stiff wind to reach the observatory in the photo to the left which housed the Pluto Discovery Telescope. Clyde Thombaugh discovered Pluto in 1930. He did not use the 24" Clark Telescope as it was not suited for the task.



Clark Refractor Mechanical Tracking Apparatus

## Visit to the Lowell Observatory continued



Pluto Discovery Telescope (Astrograph)

The telescope or astrograph (or astrographic camera) was built in 1928-1929, by Alvan Clark and & Sons, expressly for the purpose of searching for "Planet X". The 13 inch aperture telescope focuses light onto a 14" x 17" glass photographic plate. The smaller telescope attached to the main telescope was the guide telescope used by Clyde Tombaugh to correct the tracking of the telescope during a photographic session which typically lasted an hour or so. Photographic plates exposed on different nights were then scrutinized using a Zeiss blink comparator.

We visited the Rotunda Museum which was interesting. I enjoyed trying a Zeiss Blink comparator on glass negatives which I assume were replicas of the Pluto discovery plates. I couldn't find Pluto, it takes a lot of time, blinking for every object on the plates. The gift shop was large with every kind of toy, shirt, globe and item you could imagine. Lastly I paid my respects to the Percival Lowell.

Mausoleum Right



## A Night at Briarwood, March 9th.

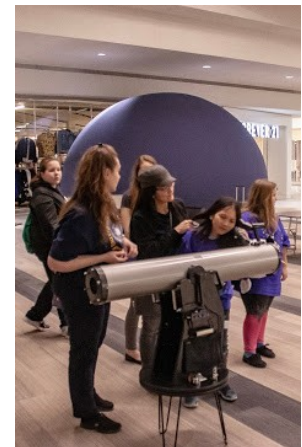
Charlie Nielsen email report to members.

Adrian Bradley Photos posted to <https://photos.app.goo.gl/DgDhiXHtoFTn5uNf7>

We had a successful and fun event for the Girl Scouts. We arrived around 9:30 PM amid driving rain and some ice. But we managed to get our equipment in without incident. The entry to the event was jammed full of scouts and adults. Joy had to plow her way through to get her tricked out 6 inch DOB in there. It was also a long walk once in the building because the entrance was down by Sears (used to be) and we had our table down at the opposite end in front of Pennies. But once there we had plenty of room to spread out, and we used it. Although there was supposed to be almost 700 people attending, we were visited by about 100. Not many stores were open, and the ones that were mostly closed at midnight. The food vendors at center court had a line the entire event, and there were scouts camped out with sleeping bags all over the place. Most of the people that made it to our setup came after midnight, so we were pretty busy from then until about 3 AM. We packed up and left starting about 3:30 AM and Adrian and Jeff were there talking to members of a brand new astronomy club until 4 AM. Our crew was composed of me, Joy Poling, Adrian Bradley, Jeff Kopmanis, and Jack Brisbin. We agreed that it was a fun event and the time went by really fast. Also a very good thing it was an indoor event!



Left:  
Charlie Nielsen demonstrates lenses to a group.



Right:  
Joy Poling offers views thru the Dobsonian



Jack Brisban always enjoys talking with young people.



Jeff Kopmanis shows onlookers his telescope

IC410 and IC405 - The tadpoles and the flaming star nebula

Federico Spotti email to members March 9th

Beautiful night yesterday, the air was unusually still for Michigan. Unfortunately I've been plagued by technical issues (i forgot the power supply for my main imaging computer and I lost an hour downloading all my software on the laptop... then I discovered that the first 30 minutes of exposures were corrupted.). The result of the hour 10 minutes of images I took is below, IC410 (tadpoles nebula) and IC405 (flaming star nebula). As usual, a bit of noise due to the short total integration time and the very aggressive stretching. I like the subject and I will surely add data in the future...



Upcoming Events

DATE	EVENT	LOCATION	
Saturday April 6th	Open House	Peach Mt. Observatory 10280 North Territorial Road	Adrian Bradley Coordinator Volunteers Needed.
Friday April 19th 7:30pm	Monthly Meeting	Room G115 Angel Hall 435 South St. Street Ann Arbor, MI	Dr. Claude Pruneau
Saturday April 27th	Open House	Peach Mt. Observatory 10280 North Territorial Road	Coordinator TBD, Volunteers Needed.
Saturday April 27th 8:30-10:00pm	Stories of the Night Sky	Leslie Science and Nature Center 1831 Traver Rd, Ann Arbor, MI 48105	Star party as enhancement to their pro- gram. This is a private event for about 20 children. Volunteers and Telescopes needed

## Treasurer Report by Doug Scobel

**University Lowbrow Astronomers Balance Sheet 01 April 2018 - 31 March 2019**

<b>Income</b>		<b>Expenses</b>	
Dues	\$3,395.00	Phone (AT&T Messaging)	\$190.20
Extra for mailed newsletter	\$180.00	Newsletter printing/ mailing	\$192.86
Magazine subscriptions	\$478.00	Magazine subscriptions	\$478.00
Astronomical League	\$232.50	Astronomical League	\$242.50
Donations/Gifts	\$185.00	Donations	\$690.00
Shirt/Cap sales	\$247.00	Guest speaker expenses	\$186.75
Shipping/ mailing	\$15.00	Shipping/ mailing	\$14.85
RASC publication sales	\$540.00	RASC publications cost	\$539.20
Miscellaneous	\$27.00	Observatory maintenance	\$330.10
<b>Total Income</b>	<b>\$5,299.50</b>	17.5-inch Dob enhancements	\$11.00
		Miscellaneous	\$388.47
<b>Balance 01 April 2018</b>	<b>\$5,852.46</b>	<b>Total Expenses</b>	<b>\$3,263.93</b>
<b>Plus Income</b>	<b>\$5,299.50</b>		
<b>Minus Expenses</b>	<b>\$3,263.93</b>	<b>Shirt Inventory</b>	<b>16</b>
<b>Balance 31 March 2019</b>	<b>\$7,888.03</b>	<b>Cap Inventory</b>	<b>3</b>
<b>Net Increase</b>	<b>\$2,035.57</b>		

As of March 31 we have 156 memberships, an increase of 13 over last year. This is a high water mark for the club, at least since I joined in the mid-1980s.

The disparity between newsletter payments and outlay is mainly due to the overhead of printing a newsletter for one of our life-time members.

Magazine subscriptions break even exactly. The dollar amount seems high; that's due to the annual group Astronomy magazine order that the treasurer makes every summer. There's a scattering of Sky and Telescope subscriptions in that number also.

This year 32 Lowbrows are also Astronomical League members (we have been an A.L. member society since 2017). The difference between what members paid and what we paid out is the nominal \$10.00 annual fee that the A.L. charges its member societies.

The bulk of the donations we received this year was from a "thank you" from the city of Westland, for the library event we did for them. The rest is from smallish donations from various members that include them with their dues payments. Those donations are greatly appreciated!

Our largest donation going out is our annual \$400.00 donation to GLAAC for Astronomy at the Beach, with the balance being our annual donations to the International Dark Sky association and to sponsor the Peach Mountain Clear Sky Chart. We also gave \$135.00 to Don Fohey to build a VLF-SID electronics box for a teacher at the Gordon Parks High School in the Minneapolis/St Paul School district. The expense for this high school activity was discussed and approved by the club officers in August.

Our guest speaker expenses were gift cards to Ed Cackett and Dr. David Levy, and to ship shirts to Ethan Siegel and Dan Davis. We also paid a nominal fee for a short term license for the Blue Jeans online video meeting service we used for one of our remote meetings.

### Treasurer Report continued

Our shirt/cap sales were from the sale of thirteen t-shirts and six caps.

There is a nominal difference between what we collected for shipping and mailing, and what we actually paid out.

As you can see we pretty much break even on our purchase and sale of RASC calendars and handbooks late in the calendar year. The \$3.00 per item we add to our price is offset by the donation of an Observer's Handbook to your club president Charlie Nielsen, and one for use in the observatory.

Our miscellaneous income is from the sale of red rubylith screen filter sheets that were donated to the club by members David and Mary Shindell.

The bulk of our observatory expenses went towards paying for encoders and parts for the "push to" capability added to the 8-inch f/7 Cave Dob, with the rest being for observatory maintenance items.

The single 17.5-inch Dob expense was to replace a couple lost springs for the upper cage truss pole mounting hardware.

Miscellaneous expenses include the annual fee for our post office box, the cost of food and drink at the July meeting at EMU, expenses for maintaining our web presence, and the cost for printing checks for our checking account.

If you have questions or would like further detail then simply contact me. Also, I always bring the ledger with me to our monthly meetings should you wish to take a look.

---

## University Lowbrow Astronomers

### Monthly Club Meeting Minutes

*March 15, 2019*

President Charlie Nielsen called the meeting to order at 7:35 PM and Vice President Don Fohey introduced his neighbor and guest speaker, retired public school science teacher and administrator Tom Drummond. His talk: *"Orion's Quest: Authentic Research for Today's Youth"* was informative, interesting and well received. The project pairs classes of public school students with cutting edge researchers to help with data collection from experiments running on the International Space Station. For example, experiments in space often have paired control experiments running on the ground and students will do comparative counts from photographs and submit their findings to the researchers. Orion's Quest is always looking for more partners and can be reached through their website: [www.orionquest.org](http://www.orionquest.org)

### Business Meeting

**President Charlie Nielsen**—Charlie updated our growing list of outside events.

**Cromaine Library:** This event is in the capable hands of Jeff Kopmanis. He is doing a presentation about how to get started in astrophotography and has set the date for Monday, June 10 at 1:30 PM. Thank you Jeff!

**Hidden Lake Gardens:** This is a star party event at a beautiful and potentially dark site on the eastern edge of the Irish Hills area. The date is Saturday, June 22 at 8:00 PM. I am doing a short indoor presentation before releasing the attendees to the telescopes. We have the Moon, Jupiter, and Saturn well placed such that we should be able to begin before dark. WE NEED LOWBROWS WITH TELESCOPES! Thank you.

## Monthly Club Meeting Minutes Continued

**Brighton Library:** Tentative date July 12. Stay tuned for details and confirmation, and a plea for help. I believe Don Fohey and Jim Forrester are working on this one.

**AA Hands On Museum:** Is set for July 20 at 10 AM till sometime in the afternoon. We will be doing optics demos inside and hopefully have solar telescopes outside. WE NEED HELP! Also looking for ideas from you about more inside stuff than just demos. Consider the theme is the anniversary of Apollo 11.

**Dexter Library:** Set for Monday, July 29 at 7 PM. This one has taken some work and it is not yet done. I am doing a presentation about how our eyes work and how telescopes help us. I will also talk a bit about some things we can observe without any optical aide. I am going to use our laser optics kit and maybe our Glass and Mirrors NSN tool-kit. HELP WITH THIS ONE IS VERY WELCOME.

**Salem-South Lyon Library:** This one has taken too much time as well. Finally, our contact has decided on August 10th after all, but I am still trying to get a definite time. I think it will be around 3 PM. I will be doing something similar to Dexter Library, but they want me to include something regarding how to use their loaner telescope. John Wallbank may be helping me with this one.

The above events are by no means all of the events that we have scheduled this year. I just listed ones that have updates. I will be looking for help as we approach the others.

**Newsletter Editor Don Fohey**—The Brighton Library has requested we do an evening program, including observing, Wednesday, July 10. Don and Vice President Jim Forrester are meeting with the Library contact March 26 to work out details. Also: SEND NEWSLETTER ARTICLES!!!

**Vice President Adrian Bradley**—The Lowbrows had a strong presence at the March 9/10 Girl Scout all night lock-in event at Briarwood Mall. Five Lowbrows (Jeff Kopmanis, Joy Polling, Charlie Nielsen, Adrian Bradley, and Jack Brisbin) and several hundred area Girl Scouts attended.

**Observatory Director Jack Brisbin**—The Observatory is in fine shape, dry and with all maintenance systems functioning. The road is still passable, at least to all-wheel drive vehicles. One of the key holders will soon have to take a sedan to Peach Mt. To be sure the road is fit for upcoming public events.—A new astronomy club, The Pleiades Astronomy Club, has formed on the west side of the state and was at the Briarwood event.

**Vice President Jim Forrester**—Ken Ruble and Jim Forrester have been working on wireless connection issues and drive problems with the club's 17.5 inch telescope at ACNO events in John Causland's driveway. (With the advice of Don Fohey and help from Doug Scobel, the connection issues, for now, have been resolved. The failure of the altitude drive to lift a 2 lb. eyepiece requires more attention.)

**Treasurer Doug Scobel**—The Club has 156 active memberships and \$7858 in the Treasury. Our annual contribution to the Clear Sky Chart has been paid. The supply of swag is low, so an order of t-shirts, caps and the rest will be placed. If you have a size (want some for your kids? Larger than 2xxx?) or other request, let Doug know soon: **lowbrow-doug@gmail.com**

**The April meeting is the Annual Business Meeting and Election of Officers.** You are free to nominate yourself via the club email. It is all but an absolute guarantee your nomination will be seconded. Qualifications are minimal: You must have been a member for a year for most offices. To serve as President, you must have previously been an officer. To serve as Observatory Director, you must have served on the Observatory Committee for one year. To serve as Webmaster, you must have the requisite skills.

The current officers but one Vice President have agreed to serve another year. However, do not let this collection of the trusty but dusty discourage your dreams of grandeur. If you are qualified, by all means run.

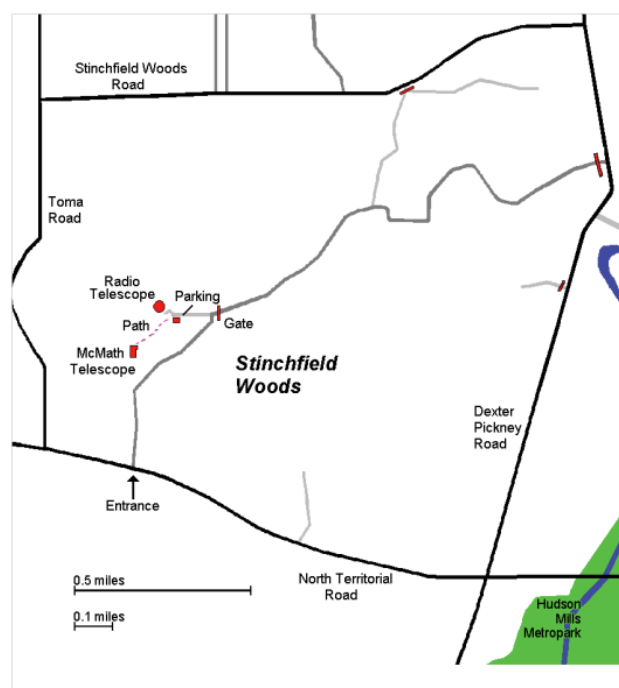
Submitted respectfully, Jim Forrester, Vice President



### 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

The University Lowbrow Astronomers membership dues are \$30 per year for individuals or families, \$20 per year for students and seniors (age 55+) and \$5 if you live outside of the Lower Peninsula of Michigan. Membership entitles you access to our monthly Newsletters on-line at our website and use of the 24" McMath telescope (after some training). A hard copy of the Newsletter can be obtained with an additional \$18 annual fee to cover printing and postage. Dues can be paid at the monthly meetings, by PayPal, or be 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 \$62.95/2 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](mailto: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](mailto:donfohey@gmail.com) to discuss format. Announcements, articles and images are due by the 1<sup>st</sup> day of the month as publication is the 7<sup>th</sup>.

### Telephone Numbers

President:	Charlie Nielsen (734) 747-6585
Vice President:	Adrian Bradley (313) 354 5346
	Jim Forrester (734) 663-1638
	Elizabeth Calhoun
	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](mailto:Lowbrow-members@umich.edu)



## University Lowbrow Astronomers



Member Club



Astronomical League Member Society  
#201601, Great Lakes Region

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

STAMP