



# Astronomy At The Beach

*Friday and Saturday, September 9 & 10*

By Paul Walkowski

Are you ready for a 2-day star party with a 2,500 in attendance? Are you ready to see Fred Espenak (Mr. Eclipse) talk to us about taking a road trip to see the August 21, 2017 full eclipse? Ready for some camaraderie with a hundred or so of your fellow SE Michigan astronomers? Astronomy at the Beach 2016 (AATB) is right around the corner for your participating pleasure; all you have to do is come to Maple Beach at Kensington Metropark with your telescope.



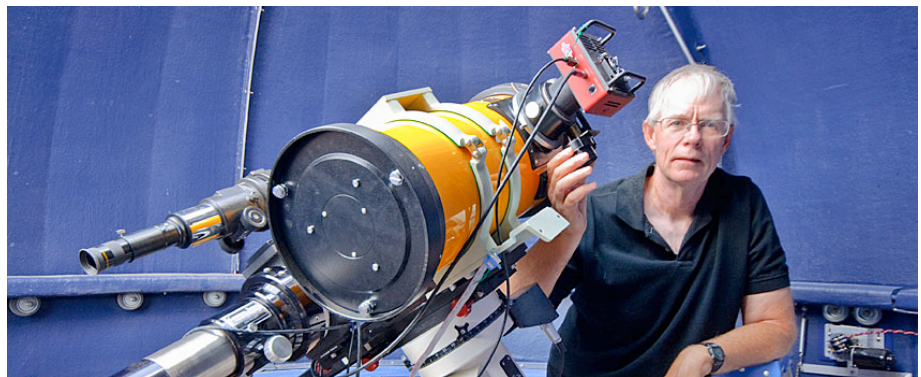
*A blast from the past: Our intrepid author (center) sets up for AATB 2000.*

*Photo: Lowbrow Archives*

Fred is a retired NASA astrophysicist who has traveled worldwide to attend many eclipses and written a considerable number of articles, books, and eclipse guides on topics ranging from photography, choice of site location based on chance of cloud cover and duration of totality, to lists of interesting things to observe. He will be giving

a special technical talk to astronomers at 1:00 pm on Saturday afternoon at Kensington (Likely at the main tent, but possibly at the nature center if weather is a consideration). If there are changes as the date draws near Paul will email them to the Lowbrow members. Fred is an engaging speaker; his talks are abundant with personal observations, and remarkably free of the insider jargon that one might expect from a seasoned scholar.

As for the Star party, the Lowbrows are again claiming the grassy area at the bottom of the stairs leading from the pavilion. This year the stairs leading from the pavilion will be blocked and taped off, foot and vehicle traffic will be traveling on the wide cement walkway immediately to the east of the pavilion. The usual agenda is to unload cars and drive them to the parking lot before 6pm. Friday is a work day and setup may start later so vehicles moving through crowd should be escorted by a GLAAC organizer to help safely



*Fred Espenak*

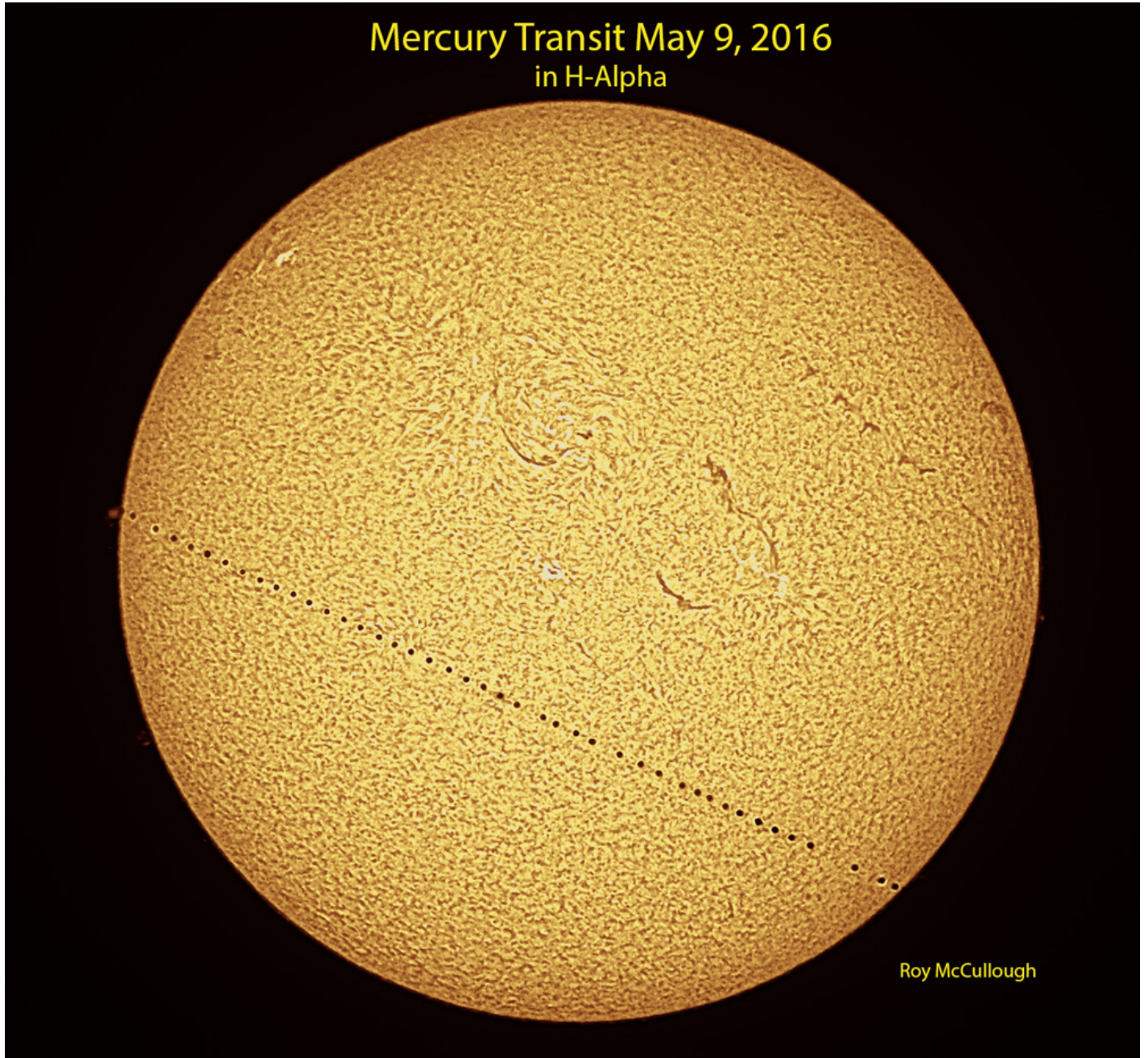
*Photo courtesy of Fred Espenak*

clear the way. Those with solar scope will be given yellow Balloons. Solar observing runs from 6 until sunset, then planetary and lunar observing until late twilight, and then deep sky observing. Yellow solar balloons and youth "Sky Scavenger Hunt" forms will be available from the pavilion. Youth who complete the hunt will be eligible for a prize, a deck of space photo cards from NASA. Astronomers who show youth an object should ask to initial the Scavenger Hunt forms. A pen along with a dim red or green light may prove useful.

# Lowbrows in Transit

By Roy and Jodi McCullugh

Mercury Transit May 9, 2016  
in H-Alpha



Roy McCullough

*In looking at weather maps beforehand, it appeared that the only location which had a good chance at seeing most of the transit was a section from Buffalo to Rochester. Since the college term had ended, I was free to go and so went off to a park East of Buffalo. Woke to drizzling around 3 AM, but magically it cleared by 4:30. Took images every 5 minutes, the attached picture is a composite with approximately 10 minute gaps (sometimes more/less depending on the clouds and other complications like passing the meridian). Images taken with a Point Grey Grasshopper Express monochrome camera, 200 images stacked, through a Televise 101 IS with a 90 mm Coronado filter. Images processed using ASCII and photoshop color added to enhance contrast.*

## ***Astronomy At The Beach...continued***

In such a large crowd security is a consideration for both attendees and equipment. We should be vigilant for small kids getting underfoot, guiding them on ladders, and encouraging them to tell us what they saw. Often time's parents will not even try to take a look through a scope until the kid says, "I saw Saturn with 2 rings around it and it was really COOL!!!" or "I saw mountains and craters on the moon". Valuable electronics, eyepieces, wallets, computers, and cell phones should be kept away from easy public access so they don't disappear. I would never leave my scope unattended after incidents where I used the rest room for perhaps 2 minutes returning to find unsupervised kids spinning my wood scope around like a maypole, and then spent another 30 minutes realigning the optics. Similarly, because this is our event we need to actively take charge of developing situations: stop children from running among scopes, pavilion, or the main tent, look out for each other's equipment, and direct cyclists driving through the crowd to dismount and walk the bike (this should be blatantly obvious). Unfortunately in other years we had cyclists yelling "bike coming through" simultaneously with their charging into the crowd. I am told the park will post signs requiring cyclists to dismount, but common courtesy is becoming particularly uncommon.

There will be the usual series of 5 or 6 short basic astronomy talks and demonstrations between 6 and 9 pm when the main talk is scheduled to start. Observing begins during the talks because about ¼ of the folks, usually those with the youngest children who go to bed early, come around trying to show their kids the moon and planets before they leave.

What is new this year? A million dollars of insurance on the event paid for by GLAAC. The park notified us 6 weeks before the event that we had to fill out two forms per astronomer to put on the event. The first signed us up to be "park volunteers", acquired a bit of personal data, enquired about our past felonies, and took a signature allowing the park to perform a background search. The second was an individual insurance waiver absolving the metropark from accidents and bad things that happened during the event. Apparently 2 smaller star parties involving folks from FAAC, WAS, and 7 Ponds were all but shut down when these forms were brought out without prior warning earlier this year and most people refused to sign. There are no future events at Lake Erie and Wolcott Mills under consideration by the affected clubs. To be fair, Mike Broughton, the ranger we had been working with for the last 19 years was only a messenger from the Metropark Commissioners, but we were upset with him anyway. In negotiations with the park, there were six iterations of Plan B until we settled on the one where we buy our own insurance for AATB and sign a "group waiver" for use of the park. Plans for AATB 2017 are completely unsettled, we would like to continue the event but similar insurance would cost us an additional \$800. Moving to a new location like the Brighton Recreation area or Island Lake would likely require insurance and a second tent to replacing the pavilion would cost around \$1500 more. Apparently other SE Michigan clubs have run the "lack of insurance" issue at a community college star party as well, and they were glad to hear that the Astronomical League offered insurance at a more reasonable cost, in the \$300 range. We do not know the details of the AL coverages or how the two insurance plans compare. We anticipate that any insurance may be site specific.

The GLAAC organizers plans to attend a Metropark Commissioner meeting this fall (after AATB) to express our dissatisfaction for their tampering with an event that worked well for 19 years and to strongly request reconsideration. We will also send a letter with the same thoughts to the park commissioners, and likely the folks who appointed them. We have heard about two other events at Kensington that were impacted by the policy, a civil war reenactment was cancelled and a bicycle event caved in and accepted the volunteer background searches and individual waivers. We can only speculate that the forms are an attempt by the commissioners to cover their hind quarters in the event of a potential lawsuit or an act of violence. If a person was so amoral as to molest children or commit acts of violence, I doubt that signing a form would be either a deterrent or inflict sudden and debilitating pangs of conscience so as to stop or hinder the altercation. So the additional paperwork changes nothing for the criminal while it serves to make events more costly and difficult for the organizers.

Other interesting side issues are identity theft and privacy considerations. The park has no policy concerning retention of the forms, their eventual destruction, and the control of the documents. If we had accepted the two forms and signed them most of the members of FAAC, WAS, and 7 ponds would not participate in the event, and the GLAAC organizers would have their backgrounds checked weeks prior to the event, although checking the astronomers who did come with telescopes likely would not happen as the state police offices would be closed for the weekend after 6pm on Friday. We were told that the forms would be moved to the Park headquarters in Brighton after the event, and if there was an unfortunate occurrence, other background checks may be performed. One could imagine that the forms could be requested by anyone using the freedom of information act and any individual's information found could be then made public.

Astronomers can see Fred Espenak give a private technical talk targeted towards Amateur Astronomers on the Eclipse of Aug 2017 at 2pm on Saturday Sept 10 in the main GLAAC tent at Kensington, weather permitting. This is a great time to ask very technical

questions and rub elbows with Fred without being concerned about the security of your equipment. Usually there are fewer than 25 folks in attendance and these private talks and the speaker pulls out all the stops discussing the knitty-gritty details of photography, equipment ratings, and equipment setup that go way over the heads of the general public. Traditionally any astronomers that wish to join us will have lunch/dinner with the main speaker at Bakers Restaurant just outside the Park's Milford entrance, (BYO of course). We will have a reservation for 25 people at Bakers so there is no waiting involved. If there is an ongoing thunderstorm we will move the talk to the Kensington Nature Center. The talk is free however daily park admission is \$10—BUT some rangers will let Astronomers in for free if they are bringing telescopes, so it is very worthwhile to ask. In most previous years astronomers had to purchase a daily or yearly passes. There is a slight fee reduction for seniors for the daily or yearly passes so if it applies, ask for that as well.

The Hot dog/beverage vendor, Tony's Dogs, will NOT be coming to AATB so please bring a picnic or fast food meal to the park. Coffee will be supplied to astronomers only inside the pavilion at the Park Ranger area. The park is trying to secure another food vendor but considering the park's insurance requirements, background checks, and other red tape involved it is unlikely that this will happen with only a few days left to make arrangements before the event starts. I have thought for a number of years that it would be more than cool to have a catered candlelight dinner for astronomers (with wine and beer of course) on the beach on Friday night, but have never had the moxie required to pull it off. In addition to the caterer, the park signatures required a month in advance, and the careful threading the needle to not violate numerous park rules – all make this idea a logistical nightmare. But that doesn't mean that astronomers don't deserve a reward for their fine effort, year in and year out, of presenting their hobby to the public.

In a late development there will be door prizes for astronomers again this year. Orion, Celestron, and OPT have promised to gift us with binoculars, and an 8" imaging Newtonian telescope and one other item TBA. The raffle happens at 11 pm on Saturday. See George in the Pavilion for a ticket; 1 per customer. You need not be present to win, if you have already left or came only on Friday, someone from your local club will notify you and hand the item off to you after the event.

Two Golf carts will be available from 6pm till midnight to take equipment from the parking area to the beach and back. Rangers will be stationed inside the pavilion and should be contacted for this service. This is the only way to leave early if the need arises, as private vehicle traffic is restricted from 7pm till midnight on Friday\* and 6pm till midnight on Saturday. A GLAAC volunteer with an orange vest will escort vehicles to and from the Beach between 6 and 7pm on Friday\* (when the public is already present) in order for astronomers coming from work to unload. As in other years motor vehicles should leave the beach area after equipment drop off prior to the first talk, although equipment trailers can be left on the beach. The only vehicle entry/exit point is on the sidewalk leading to the pavilion and information table, as in previous years. Driving on the grass near the pavilion and parking lots is prohibited because of potential damage to sprinkler heads. There are no sprinklers in the immediate beach area surrounding the sidewalk.

We are anticipating being short on astronomers this year because a few of our member clubs are significantly down in membership, although two fairly small new clubs (The Farmington club and one other) have just joined GLAAC a week ago. If anyone is on the fence about coming, please consider coming anyway and bringing a telescope. Even if the weather seems questionable, having the scope in the car until the last minute has proven very fortuitous a number of times in the past. If past years are any indication, we will have 800 or more guests on Friday night and close to 2000 on Saturday night. That translates to 5-10 people in line at every scope on Friday and twice as many on Saturday. Traditionally there are two somewhat distinct groups of people that we serve: Families with young children who come early catch one talk or demonstration and come to the scopes at dusk or sooner wanting to see as much as their kids have patience for before they plan to depart around 10pm to put the kids to bed; and Families with middle schoolers and teens who come closer to 8-9pm, stay for every talk, and want to see every telescope and every object. Two years ago we had an entire college astronomy class (from Oakland U. I think) and each student had a list of 30+ objects they needed to see and describe. That was interesting and kept everyone very busy well past midnight. In the past 5 years we have also had increasingly large groups of seniors either looking through our scopes out of curiosity or asking enough questions to be seriously thinking about becoming astronomers themselves. Do not forget to bring ladders or step stools, especially thos-glow tape is very helpful in having folks unfamiliar with our equipment find the edges and corners in the dark e with hand rails to hang on to, for our younger and height challenged customers. And please always remember to hold the ladder and offer a hand if need be as newbies mount and exit ladders to look through our scopes. A little chivalry goes a long way towards an enjoyable evening. This is where day -glow tape is very helpful in having folks unfamiliar with our equipment find the edges and corners in the dark.

# My 16" Dobsonian Telescope

By Russ Vente

*Russ has submitted a well illustrated article highlighting certain aspects of the construction of his new telescope. The rocker and mirror box fabrication were discussed in the May issue. Russ originally planned to build a scope around a 14" mirror he already had but then saw a good deal on a 16" Hubble Optics sandwich mirror and adapted the 14" structure to the larger diameter glass. It should be noted Russ has passed his 14" mirror to another member of the club and I'm sure an article on that new scope will appear soon.*

## Primary Mirror Cell

The primary mirror cell is some what different then I have seen before but it's one of those nice features I liked as I mentioned before. This design allows for mirror adjustment to be made from the front of the mirror box, not the back, which is easier to get at. As you can see below I used a nine point flotation system to support the mirror.

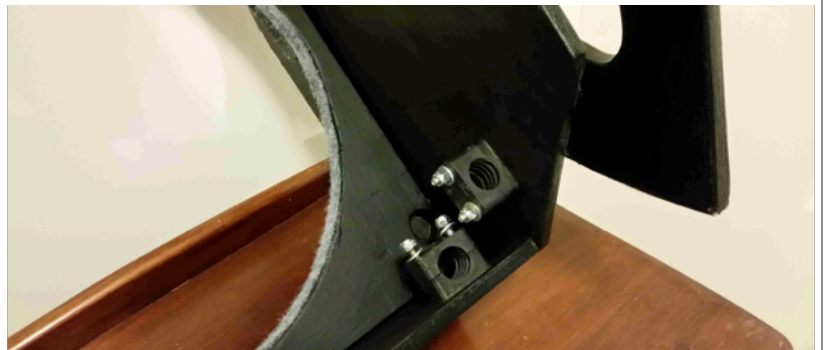


## The Mirror Box

The mirror box was designed to be easy to build, and it was. The truss tubes are installed inside the box which makes the bearings easy to build and assemble. A real cost effective approach.

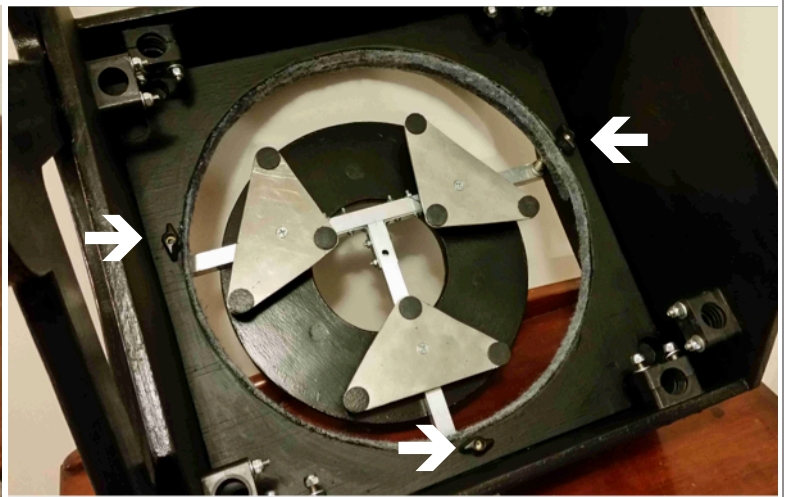
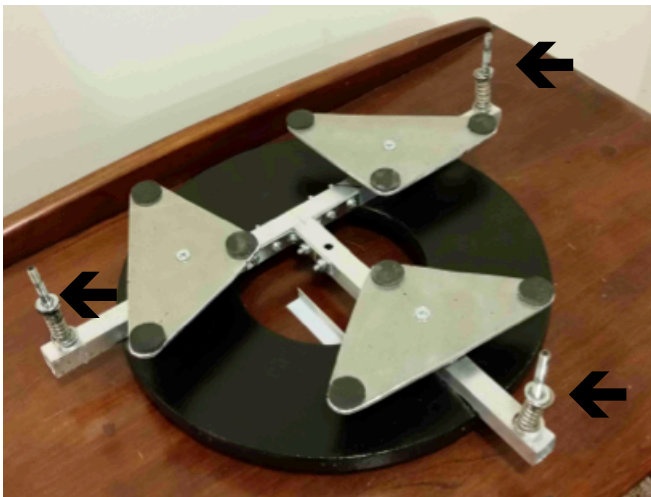


The original design called for making truss tube locks out of wood. This looked like a lot of work. Instead I purchased tube vibration clamps from McMaster-Carr Supply Co. These are shown (right), again a cost effective approach.



## Assembly of the mirror cell and mirror box

The mirror cell is connected to the mirror box via the three mirror adjustment screws.



## Primary Mirror

The primary mirror was purchased from Hubble Optics through eBay. Their site address is below. The delivery cost about \$130.00 and took around 6 weeks. <http://www.hubbleoptics.com/index.html>

I would also like to add that these folks are very good to work with. Communication was excellent. All email questions were answered within a day or so.

*Front of Mirror*



*Front and Side of Mirror*



*Back of Mirror*



*Edge of Mirror*



*We'll finish Russ Vente's scope in the next issue of **Reflections**.*

# University Lowbrow Astronomers

6/17/2016 Meeting Minutes

The meeting began at approximately 7:35 PM in G115 Angell Hall and was attended by approximately 35 members and guests.

Jack Brisbin brought a collection of 235 astronomy related books which were donated to the club by Harry Juday. They were offered freely to club members.

The guest speakers were Jodi and Roy McCullough. The title of their presentation was "Solar Eclipse Chasing" and "Getting ready for 2017". They presented material on eclipses and photos of their eclipse chasing trips to Australia, Indonesia, and Svalbard. The presentation was well received and included a wealth of information. The follow on member discussion and questions ended about 9pm.

## **Officer Reports:**

### **President Charlie Neilsen gave an overview of the next Lowbrow events:**

Leslie Science and Nature Center Saturday June 25th to show planets and other objects at their "Urban Campers" program. We are scheduled for 9 to 10 PM. Observation can continue after 10PM.

The event is weather dependant and volunteers are needed.

There will be the Michigan Math Scholars event at Peach Mt. July 7th. Volunteers are needed.

The next Peach Mountain Open Houses are July 2nd and 9th. There is no coordinator for either date.

**V-P. Don Fohey** reported that he and John Wallbank operated the McMath telescope at the open house Saturday June 11th. Mike Radwick set the variables on the hand controller and R.A. tracking was working nicely. R.A. slew and DEC. slew were also working. Partway thru the evening DEC. slewing stopped working. Mike came back to the observatory and determined the cause to be a wire detached from the DEC. motor terminal strip which is to be repaired. Don will make a replacement box for the hand controller which has a cracked lid. He would attempt to decorate it so that it looked "Lowbrow" hopefully using artistic talent of Lowbrow members.

**Mark Cray** commented that he thought the McMath telescope 6" finder scope had the crown and flint objective elements out of alignment. He explained that they needed to be rotated and matched at a particular position to provide for the best image.

**V-P. Ken Ruble** reported that he cleaned and repaired the 6" cave telescope and returned it to the observatory. He noted that the coating on the mirror is in very poor condition.

**Newsletter Editor Jim Forrester** reported he expects to have a July newsletter but has no material for an August. He passionately requested material and explained that the success of the newsletter depended on member contributions.

**Observatory Director Jack Brisbin** reported that he is working to repair the McMath telescope DEC. motor connection and will work to enter star sightings into the Argo Navis controller's TPAS (Telescope Pointing Analysis System) system. Jack explained that he would like implement a WEB key when connecting via WIFI to prevent other Sky Safari users from attempting to connect to the Sky WIFI device.

The club should decide what to do with the Cave 6" telescope. If it is to be used by the club or sold the mirror will require recoating. Harry Juday, now in his mid 80's, wanted to reduce his astronomy book collection and provide them to others who would appreciate them. A plan is required for those books not taken by members. A few may be selected for the Lowbrow Library, which has very little room, but the others should be donated to another library or organization.

**Treasurer Doug Scobel** reported the treasury at ~\$6420 and a current membership of 127. He has received 20 individual payments for Astronomical League membership. Other interested members had until the end of the month to send in their payment. He will submit the Lowbrow members names and payments in July.

**The meeting adjourned at 9:25pm**

**Submitted by Don Fohey**



# ***University Lowbrow Astronomers***

*7/15/2016 Meeting Minutes*

The meeting, scheduled for 7:30 PM, was held at the Eastern Michigan University Planetarium. Free pizza, cookies and pop were available before the meeting. The remaining book inventory from Harry Juday was brought to the meeting by Jack Brisbin and were made freely available to members and guests.

The speaker was Dr. Nebil Misconi who's presentation was title "An Immigrant's Journey Into the Cosmos" which was also the title of his book available for purchase and signing afterwards. The presentation include his early life in Baghdad, education in Turkey, his work in Iraq and his research in the U.S. on solar system and cosmic dust.

After a short break Norb Vance had two presentations. The first included slides showing the moving and set up of the 29" telescope purchased by the Great Lake Star Gaze organization. He explained the dismantling of the scope in western New York and the re-assembly at the EMU Biology Reserve at Fish Lake. It will be a fixture at the September GLSG events and at Fish Lake. The second presentation was portions of a few planetarium movies including "Waiting Far Away" which had spectacular special effects.

After the business meeting members went over to Sherzer. The 10 inch refractor and a Celestron 9,25 inch SCT was utilized to observe the Moon, Mars, Jupiter, Saturn and a few DSO's and double stars. It was a long evening with everything put away and cleaned up about 1 AM.

## ***Officer Reports:***

### ***President Charlie Neilsen announced:***

- 1) An Officers' Meeting is scheduled for Sunday July 24th.
- 2) We need an Open House Co-Ordinator for July 30th.
- 3) An officer is working on a possible guest speaker for November. Charlie will ask member Fred Schebor if he will again present an "Artsy-Meaningless Slide Show" for the December meeting.

No other events are scheduled for July.

***V.-P. Jack Brisbin*** reported that he will continuing to enter star sightings into the Argo Navis controller's TPAS (Telescope Pointing Analysis System) system. Work will continue on a new hand controller box. Jack informed the group that Krishna Rao has updated the Young Astronomers Web Site to include 2017 Solar Eclipse observing materials and links. Jack gave an overview of Camp Burt Surely which weekly has about 80 Detroit public school students attend summer camp. Brian Ottum has asked for volunteers to bring telescope for the students to observe various celestial objects. The program continues thru the week of Aug 8th.

***V.-P. Jim Forrester*** needs articles for the newsletter. He suggested that someone write a review of Nebil Misconi's book. Jim also suggested that the club purchase one of Don Fohey's optical encoder to BlueTooth electronic devices for the club 17" telescope. Don replied that the cost would be \$90 and that it works with Sky Safari on Andriod devices. It does not work with Apple devices.. There was no objection to the plan.

Jim requested additional volunteers with telescopes for the Camp Burt Surely program. He explained that it is very rewarding to show the sky to the students. The students are managed in small groups and are well behaved.

***V.-P. Don Fohey*** reported that the DEC motor on the McMath telescope is now operational.

***Treasurer Doug Scobel*** reported the treasury at \$6116.78 and a current membership of 128.

The week of July 4 Doug sent the application, roster, and payment for the Lowbrows to join the Astronomical League via US Mail and email. He is awaiting word that we are a member society. 26 Lowbrows signed up.

***Submitted by Don Fohey***

# University Lowbrow Astronomers

8/19/2016 Meeting Minutes

**President, Charlie Nielsen opened the meeting at 7:45PM.**

He introduced UofM professor Rudi Lindner to the group whose topic was "The long dark night of cosmology". His talk was a history that told of the impact of general relativity to the beginnings of modern cosmology in the 1930's. Because the effects predicted were so small, the ideas were nearly abandoned by astronomers until the 1960's when radio astronomy found a need for general relativity to explain their observations, thus supporting Einstein's original ideas. Professor Lindner fielded questions from our talented audience following his talk.

## Business Meeting

**President, Charlie Nielsen**, mentioned that the Tecumseh event is scheduled for November 19 and expressed his concern for decent weather.

Charlie reported an officers' meeting had taken place with all officers present. It had been suggested that a survey be conducted of existing and new members to assist new members and understand their concerns.

Charlie said that we now have 3 gate keys for Peach Mountain access, but at this time those keys would be restricted primarily to 3 officers: Charlie Nielsen, Jack Brisbin, and Jim Forrester.

Charlie also asked members to volunteer as Open House Coordinators for August 27 and Sept 3. VP, Ken Ruble and Charlie, accepted responsibility for these open house dates.

Our GLAAC representative, **Paul Walkowski**, reported that the 2016 AATB was on. He reported that no volunteers would be required to provide personal information or sign any forms and that Eaton Corporation had donated \$800 to pay for insurance of the AATB volunteers.

Member **John Causland** said that the number of volunteer telescopes at AATB had recently declined from about 100 to about 60 last year and that more telescopes were needed. He also talked about whether more people should be included on the list of ACNO. He continued to tell us that this year, in his driveway, that great views of Pluto had occurred.

**VP Ken Ruble** had nothing to report.

**VP Larry Halbert** showed us a brochure he is working on for a telescope event next year at Matthaei Gardens.

**VP Dave Jorgensen** reported that he thinks we have 4 speakers for the 2017 schedule. When asked that Lowbrow members might be asked for presentations, Dave requested help in composing such a requisition to the members.

**Substitute Webmaster Larry Halbert** had nothing to report.

**Substitute Newsletter Editor, Larry Halbert** requested articles from the audience for upcoming newsletters.

**Observatory Director Jack Brisbin** reported that work had been done on the 17.5" scope to reduce the wheel bending and improve the ease of transport. Member, John Wallbank, suggested that a full length axle might be considered. Jack will be taking the 17.5" scope to AATB. He also reported the 5 weekly Camp Burt Shurly observing sessions (coordinated by Member, **Brian Ottum**) was successful and requested additional support for next year.

**Substitute Treasurer Larry Halbert** reported that membership is at 126, and the treasury is at \$6113.26. We received confirmation of the club's membership in the Astronomical League.

Member **Shannon Murphy** reminded us of the April 7, 2017 Statewide Astronomy date and asked if Lowbrows would participate.

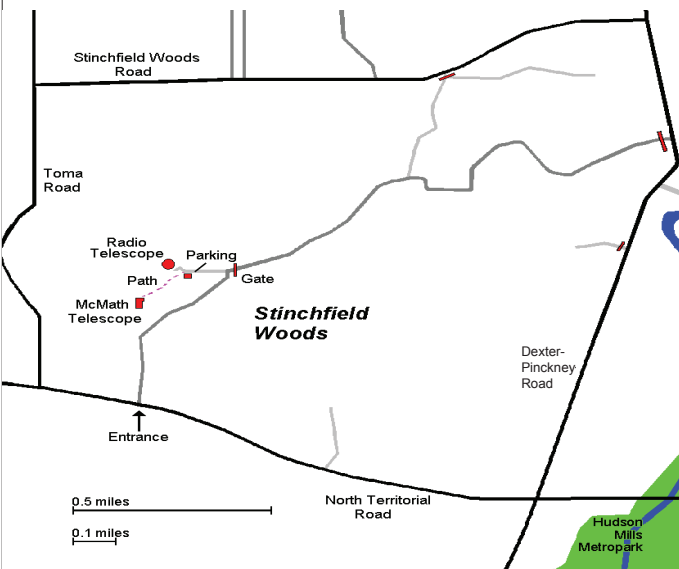
**President, Charlie Nielsen**, adjourned the meeting at 10:00 PM.

Submitted by **David Jorgensen**

**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 Angell 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 as well as the University's McMath 24" telescope, maintained and operated by the Lowbrows. Located northwest of Dexter, MI; the entrance is off North Territorial Road, 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 Mountain observatory, but are usually cancelled if the sky is cloudy at sunset or the temperature is below 10 degrees F. For the most up to date info on the Open House / Star Party status call: (734)975-3248. Many members bring their telescope to share with the public and visitors are welcome to do the same. Peach Mountain is home to millions of hungry mosquitoes, so apply bug repellent, and it can get rather cold at night, please dress accordingly.

**Membership**

Membership dues in the University Lowbrow Astronomers 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.

This entitles you to the 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 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**

Membership in the Lowbrows can also get you 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 \$85.95/3 years**

For more information contact the club Treasurer at:

lowbrowdoug@gmail.com

**Newsletter Contributions**

Members and (non-members) are encouraged to write about any astronomy related topic of interest.

Call or Email the Newsletter Editor: **Jim Forrester (734) 663-1638** or [jim\\_forrester@hotmail.com](mailto:jim_forrester@hotmail.com) to discuss length and 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 Presidents: Larry Halbert  
Dave Jorgenson  
Don Fohey  
Ken Ruble
- Treasurer: Doug Scobel (734)277-7908
- Observatory Director: Jack Brisbin
- Newsletter Editor: Jim Forrester (734) 663-1638
- Key-holders: Jim Forrester (734) 663-1638  
Jack Brisbin  
Charlie Nielsen (734) 747-6585
- Webmaster: Krishna Rao

**Lowbrow's Home Page**

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

**Email at:**

[Lowbrow-members@umich.edu](mailto:Lowbrow-members@umich.edu)

*A NOTE ON KEYS: The club currently has one gate key. The officers are negotiating with the University for additional copies. The Observatory Director usually has this key. All three Key-holders have keys to the Observatory.*





## University Lowbrow Astronomers

University Lowbrow Astronomers  
P.O. Box 131446  
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### Reflections & Refractions



### Website

[www.umich.edu/~lowbrows/](http://www.umich.edu/~lowbrows/)



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



Nick Scobel  
PHOTOGRAPHY 2014

*Nick Scobel found this colorful observer taking in the Florida night sky.*