University Lowbrow Astronomers
Ann Arbor, Michigan

REFLECTIONS / REFRACTIONS

University Lowbrow Astronomers

November 2018

VOLUME 42, ISSUE 11

Clouds and the New Frankenscope

By Clay Kessler – Seven Sisters Observatory

A picture of the finished scope .

A while ago I found an Explore Scientific 127ED Triplet lens assembly for sale over on Cloudy Nights. As I had been thinking about a 5 inch APO for astrophotography it seemed like this was a great opportunity. I missed the first one but the seller had several and I was successful in getting one eventually.

For a good while I have been planning out the build and locating the various bits and pieces that I would require. I rummaged through the pile of "stuff" I hang onto and even found a piece of 6" 1/8" wall aluminum tubing. I happily started sketching lens and focuser adapters based on the 6" tubing and acquired the aluminum stock to make them. Before I started to actually cut metal the same seller had an ES127 Carbon Fiber tube for sale. I was fortunate enough to snag that so the aluminum tubing went back in the parts pile.

This was getting pretty easy. As I was looking at the focuser requirements I decided to use a Moonlite 2.5" focuser that I had available. Once I had the commercial tube in hand a quick call to Ron at Moonlite determined that he had the required tube to focuser adapter in stock.

Now it was just a matter of me finding time to make a few parts. The lens countercell was re-designed to fit the CF tube and some thought was given to a dew shield. Finally I had a Saturday morning without a conflicting task.

Clouds and the New Frankenscope Continued

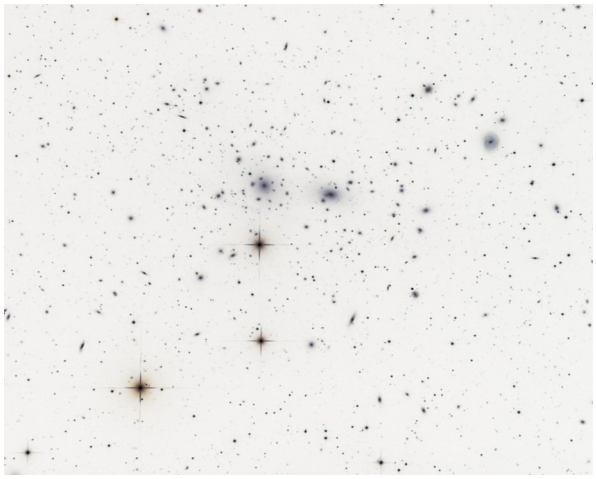
The cell was machined and fit to the commercial cell. I also made a dew shield using a short piece of 7" Hastings Irrigation tube left from the 6" f10 build a couple of years ago. I wasn't sure how to finish the home brew parts – everything else looked great. I didn't want to polish the dew shield and I really did not want to wait for anodize to get done with them. I settled for paint on the countercell. I used self-etching primer, then flat "camoflauge" black on the inside. I taped off the parts that fit into the tube and dew shield and painted the remaining small area with black wrinkle paint.

I wanted the dew shield to look appropriate with the carbon fiber tube. I decided to try a Vinyl wrap in glossy carbon fiber pattern – which worked out pretty well. Felt completed the inside treatment.

The only thing lacking was a cover for the objective. A trip to Menards netted me a PVC clean out cap that worked well with about 10 minutes lathe time. I was going to paint it black but Frankenstein had bolts in his neck – I have one over the objective!

All in all I am thrilled with this scope. I was able to get "first light" on October 3rd and it worked very well showing fantastic views. I can't wait to get some astrophotos with it.

So – what do clouds have to do with this scope? I assembled it on September 29th and it was crystal clear out. When I got home from work I decided to set up a mount on my "spare" pier and go for first light – I was really wanting to know how the views through the scope would be. All afternoon the sky was clear. I was out looking at farm silos and such, generally having a good time while I waited for sunset. All was going well until about a half hour before sunset. That's when I noticed the clouds building in the west and north. The race was on and the clouds easily won. By sunset nary a patch of blue sky was visible and first light got postponed until Wednesday. Worth it though….. the views through the scope are fantastic!



Member Photo

Brian Ottum Ph.D. wrote in an email to members on Oct. 13th.
"Lowbrows, here's a thousand galaxies in a single shot.
https://photos.app.goo.gl/YbxKf1DA7CkjQisP9
The Coma Cluster is not far from the Big Dipper's handle. With a 10" or larger scope at Peach Mountain, you can pick out many of the brighter fuzzies in this shot. The two brightest are are NGC 4889 (biggest) and NGC 4874 (on the left).
Details: Canon 5DmkIII, 10" f/5 reflector, Paramount MX, 8 hrs total exposure, April 2018 ."

From Zero to Photo
My journey in astrophotography, by Adrian Bradley

Through the 8 in telescope

I would learn that in order to take pictures of stellar objects such as nebulas, galaxies, etc… I would need to track the object.

Cheap Tracking Scopes and the 'R2'

Most of my beginnings with astronomy involved just looking up at the night sky. I would graduate to observing objects in the night sky via the 8" telescope. I began to learn all about the effects of light pollution on finding places to observe. I even witnessed first hand the effects of light pollution. I used to use a family friend's home in a relatively dark area near Milan, MI. Gradually I saw the light domes from neighboring towns get brighter and brigher. It eventually made the view of the Northern part of the sky all but washed out. I would eventually sell my 8" Newtonian scope. I used the cash to purchase a small Celestron Nextstar SLT 130 tracking scope and mount. Now objects were staying in the field of view, and even though they were smaller, it was making night observing a little more fun. Then, I came across an ad for 'the best $299 eyepiece you'll ever get!'

After reading about what this 'Revolution Imager' could do, and how it took what the telescope was showing and pushed it to a small monitor, I thought it would be a great idea. Here I could take my small scope, hook this imager to it, and produce a live view of objects that you would only see if you had a much larger telescope with much darker skies. The version I would later purchase was called the 'Revolution Imager 2', or 'R2' for short. It was an improved camera body with a UV filter and focal reducer. This imager did help me capture some live images of galaxies, star clusters, nebulas, etc… After showing some of the long time club astronomers what I was getting, even in less than ideal skies, I got some mixed reactions and confessions about this being the way observation would be done in the future.

Later on I would realize that the 'R2' was basically an introduction to the concepts of astrophotography. All of those pretty pictures we see from the Hubble Space Telescope, as well as other very large telescopes, and even from modest-sized rigs, were gathered through a lot of painstaking work. The R2 on it's own, stacked 6 5-second photos together to reproduce a stellar object. With those other telescopes, they often gather hundreds of frames or more, with much longer durations or exposures, then stack all of those together to produce a base image. Then they use further software to process the image, changing the distribution of light, colors, and doing other things to create an image that we enjoy. So once you understood how the R2 worked, you could take those concepts toward using other cameras/sensors to create images.

From Zero to Photo Continued

This is NGC897, a 10th magnitude edge on spiral galaxy in Andromeda. Most publications that explain how to see this galaxy will tell you that this type of detail is only visible with 10" of aperture or more in a dark sky. For direct observation this is true, but for the CCD chip in the R2, I was able to get it with a 5" scope. This is a 30 second exposure in a countryside night sky.

As time went by, my interests in showing live images began to wane. I saw what some long time astrophotographers with enough instrumentation to gather some breathtaking images could do. I looked at my little R2 rig and said "I think I'll go back to observing." I knew I didn't have the deep pockets nor the inclination to spend a lot of money to produce those amazing types of photos. But then… fast forward to this year. A DSLR camera suddenly comes into my possession, thanks to a co-worker who loves photography and was willing to give away a 12 year old Canon EOS 30D with no lenses because he knew I could find a way to use that camera.

DSLR and Rekindling a Love of Photography

I did start taking some photos through my telescope with the DSLR camera. By chance I had bought a 't-adapter' for the SCT11 scope that I have now. I also have a Losmandy G11 tracking mount - both are old but very good when it comes to viewing the night sky. Once I got an adapter for the camera, I was able to produce some pretty good shots through that camera.

Using the telescope as a lens for my DSLR made my sun and moon pictures a lot more detailed. But some objects were still too wide to be captured in the field of view. Also, since I had a camera now, I was interested in taking images of the night sky. I saw that long exposures were possible with this camera, so I deduced that I could maybe get a starry night if I pointed the camera with a regular lens at the night sky and let the exposure go long enough. This resulted in some images of constellations and my favorite asterisms. I was also able to create some of my first Milky Way shots.

NGC457, also known as the owl cluster. I acquired this via the same modest 5" Celestron scope. You'll see the difference between the detail here and the image I took with a different rig.

Here's NGC457 again, this time shot through the C11 with my

Above is NGC7789, Caroline's Rose. Note that I forgot to cover the viewfinder in this shot, resulting in some unwanted light near the middle of the image.

From Zero to Photo Continued

Above are two nightscapes. One is of Orion and Taurus rising. The other is an image of the Cygnus Rift.

Above is a moon image, taken from my DSLR through an 8" SCT

But while these shots looked pretty good, I began to learn that I couldn't just expose the night sky for longer than a certain amount of time, or I would get stars that started to 'trail' or become oblong shaped. I realized that we're still rotating under the night sky and it moves, just as it does in a telescope. In order to focus on a distant object such as a tree, and capture the night sky above it, I could only open the shutter for so many seconds. The sweet spot is 500 divided by the focal length of the lens… e.g. an 18mm lens can point at the same part of the sky for around 20 seconds or so before the stars show up as little footballs.

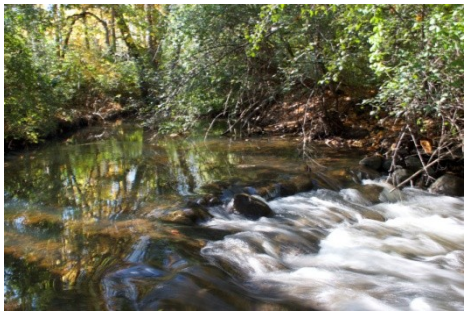
To get more detail out of a sky image with no background trees or anything else on earth, I would need to track that part of the sky or be able to expose enough in 20 or so seconds. Fortunately my telescope has a mount for the camera on top of it, and I was also able to bring out an old EQ1 mount that I can attach the camera to. I have options for my future night sky efforts.

What About Daytime or Cloudy Nights?

One thing I've discovered is that somewhere in my youth I developed a love for the night sky and for nature. My avid interest in doing photography seems to have been passed on by my grandfather, who was a school portrait photographer and had his own studio in Indianola, Mississippi. My mother, who has seen some of my photos, warmed my heart by telling me that he would be proud if he saw my work that I've done in only a short period of time. The camera came into my possession in August of 2018 and I haven't stopped taking photos with it since.

From Zero to Photo Continued

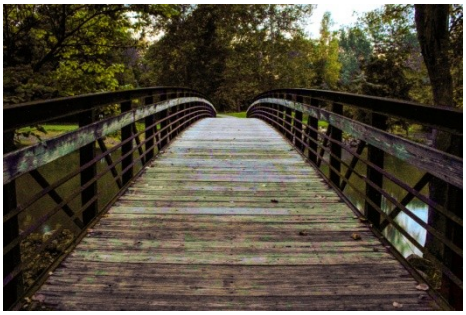
I would be remiss if I didn't also mention how much help I have received from the Lowbrows. Any of you reading this article who have given me advice, assistance, and/or equipment along the way, you deserve a great amount of thanks. In addition to the advice and tips, I have been reading and watching several photography videos for daytime and 'typical' nature shooting. But as for the night time, I discovered that many of the tips and tricks professional photographers use do not apply at night. With this, I've found some of my own methods and have been able to produce some photos that many have enjoyed viewing.



I'm continuing to learn more things about photography in general. One of my new favorite hobbies is to go to a park or nature preserve and practice trying to catch a bird or animal with a photo. I've shot at birds, swans, geese, and squirrels. As for night time photos, I've begin doing long exposure of clouds, creating some very interesting scenes. I've also learned that taking pictures of ordinary things like bridges can turn into very poignant photos when taken at dusk. Post processing of these photos enables a deeper color of the target object to be visible.

I've even forayed a bit into 'mashups' where I take two different photos and splice them together via photoshop to produce one photo. In some cases, it's done to make a scene look the way it does with our eyes, such as seeing both the moon and it's features, along with a nearby planet. Taking a picture of that is very difficult due to the light of the moon being much brighter than the light coming from a planet. It often takes two shots and a layer of one photo over the other to get the intended effect.

In conclusion, I leave you with these pictures I've taken (below) as a part of my continuing journey in photography.



Saturday Oct. 13th. Open House Report

Adrian Bradley wrote in an email to members Sunday October 14th. "On a cool Saturday evening, while the Michigan Wolverine football team was in the process of winning a big football game against Wisconsin, a few of us Lowbrows braved the cold and held an open house…. … wait…. what am I typing? 40 degrees is nowhere NEAR cold for a Lowbrow… we observe in the 20s… … well anyways we had about 30-40 guests show up, along with the following Lowbrows:

Jack Brisbin - Ran the observatory like a well oiled machine.

DC Moons - Stole the McMath for a bit then gave it back.

Mike Radwick - Brought his telescope and taught several kids how to put it together.

Joy Poling - Helped with OHC duties then went to see what was going on in the observatory.

Barry Wissman - Brought his telescope, also helped with OHC closing duties.

Adrian Bradley - OHC and tested his tracking rig for his DSLR. it worked but the stars were way out of focus.

Mark Cray - aAways there in spirit, observing us as we observe the heavens.

We showed people things like M13, Mars, the moon (when it was up), and M57, among other bright objects. After around 11pm, we decided the cloudiness and haze was too much and called it a night. Before the last of us left. "

William P Faust Public Library of Westland Event

Photo during setup by Adrian Bradley

Charlie Nielsen wrote in an email to members on Oct. 18th

"To add to the comments and pictures that have been sent; I counted 12 club members attending and helping. They are: John Wallbank, Chuck Steele, Jim Forrester, Jack Brisbin, Kim Luff, Lexie Luff, Mike Radwick, Glen Kaatz, Adrian Bradley, Don Fohey, Abe Oraiqat, and Charlie Nielsen. If you were there and I missed you please let me know. As I had predicted we had a very good turnout. We originally estimated about 60, but then later I remembered seeing at least three groups of people show up after we did the estimate. Therefore I am going to increase the estimate to about 75 people. It is a good thing we had a large turnout of Lowbrows because we needed you...and you are very much appreciated!"

Upcoming Events

DATE	EVENT	LOCATION	
Saturday Nov. 3rd	Open House	Peach Mt.	Coordinator: John Manney
Saturday Nov. 10th	Open House	Peach Mt.	Coordinator: TBD
Friday Sept. 21st. 7:30pm	Monthly Meeting	Room G115 Angel Hall 435 South St. Street Ann Arbor, MI	David Levy: "A Nightwatch-man's Journey"

University Lowbrow Astronomers - Meeting Minutes – October 19, 2018

President Charlie Nielsen opened the meeting at 7:37PM. He introduced our speaker, Jim Shedlowski. Jim gave a fine presentation of the history of those involved with designing, building, and funding of our McMath telescope, including the important work it did in early solar research. Jim closed his presentation by singing a tribute song to McMath and Hulbert, which he accompanied by playing his guitar. Very nice. He then fielded questions from the audience. Charlie presented Jim with a Lowbrow hat as a thank you for his talk.

B**usiness meeting:**
President, Charlie Nielsen, reported that we had a successful event at Westland Library and passed the check to Doug Scobel for the $150 they presented to our club. He also stated that we had a star party scheduled for Emerson School on Thursday, Oct. 25.

Treasurer, Doug Scobel, passed out a box of chocolates to the audience that he received from Professor Dragan Huterer as a thank you for our event for the MMSS students recently.

VP, Dave Jorgensen, reported that the speaker schedule for 2019 now has openings only for November and December. He also mentioned that the 17.5" scope was brought to his workshop and awaits testing of its electronics.

WebMaster, Krishna Rao, reported that the website is up to date. He also mentioned that some people did not see on the website information which they had sent. Contact Krishna if you need help.

VP, Adrian Bradley, reported that we have 783 "likes" to our website. He also noted that he has sent many photos to our members and thanked the members for providing help with his astrophotography work.

VP, Jim Forrester, gave a report about his and Ken Ruble's experience at the Okie-Tex Star Party. It rained much of the time and the 17.5" scope suffered some wetness. The scope will be inspected and tested soon at Dave Jorgensen's workshop. Jim said the talks at the Star Party were very good. Jim will provide a suggested schedule for 2019 Open House dates which can be finalized at our November meeting.

Treasurer, Doug Scobel, reported that we have 145 memberships, and $6699.00 in the treasury (not counting money collected for RASC calendars and handbooks and money collected at the meeting). He took last call for RASC items. The order is going out in the mail this weekend.

Observatory Director, Jack Brisbin, reported that he and Jim Forrester met with the U of M people at Peach Mountain to review the status of the buildings. Jack said they seemed satisfied with their condition. Jack provided business cards for Michigan Dark Skies to the audience.

Newsletter Editor, Don Fohey, reported that he completed the Solar Ionospheric Receiver and sent it to teacher Chris Faust at Gordon Parks High School in St. Paul Minnesota. The students have built the loop antenna and were receiving "boat loads" of signal. They have begun monitoring for solar flares. Don commended all the club members who have been taking outstanding astronomy photos. He will include a few in the newsletter as space permits. He wants to keep the newsletter primarily for member articles. He feels the club facebook, and instagram accounts are a better places for images and also provides for a record of the member astrophotograhy. Don also suggested that if you read an article you like in the newsletter, send the author a private note that you enjoyed it. Authors often get no feedback and wonder if anyone is reading their work. He also asked that club members attending club activities write a report to be included in the Newsletter.

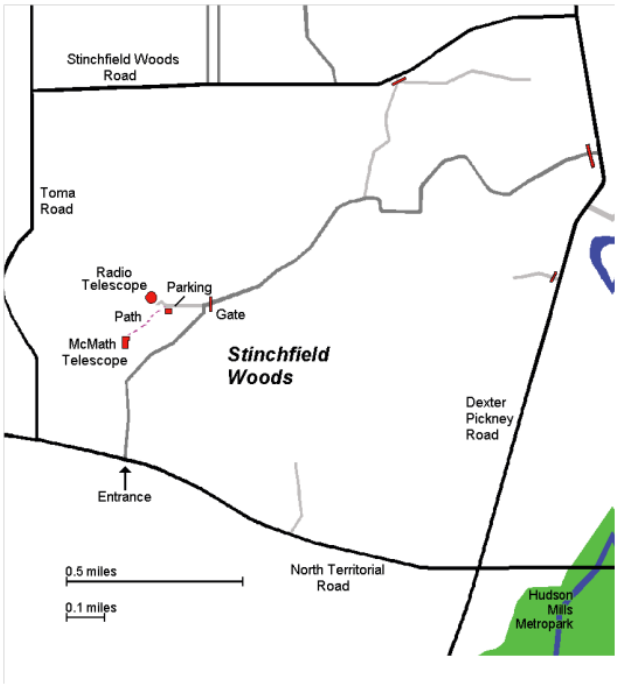
Member, Chuck Steele, reported for Brian Ottum about this year's AATB event. There were about 5000 attendees and 60 scopes. He asked for volunteers for next year's event to help to inform and enforce the rules of behavior for both the astronomers and public. Several members (Jim Forrester, John Causland, Ken Ruble, Jack Brisbin) had comments about how safety and convenience could be improved in cooperation with the DNR.

President, Charlie Nielsen, reminded us that David Levy is our November speaker.
Member, Doug Warshow, reported that the price for handbooks is now $13.90. He will accept orders at his email address:
Douglas Warshow galaxies@umich.edu
Charlie adjourned the meeting at 9:21PM 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 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 of $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
	Larry Halbert	
	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

Night Sky Network

Member Club

Astronomical League Member Society
#201601, Great Lakes Region

University Lowbrow Astronomers
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