



REFLECTIONS / REFRACTIONS

REFLECTIONS \ REFRACTIONS

University Lowbrow  
Astronomers

December 2018

VOLUME 42, ISSUE 12

**Astronomy at the Beach Needs You!** By Brian Ottum Ph.D.



Twenty-three years ago, a small group of enthusiastic amateur astronomers from southeast Michigan set out to share our fantastic hobby with the public – in a big way. Since then, over 80,000 people have come to look through our telescopes, listen to talks, see demonstrations and meet the various local clubs. Over the years, the event has grown in both attendance and in the activities offered. We successfully transitioned from Kensington Metro Park to Island Lake State Recreation Area. The September 14-15, 2018 event had a whopping 5,000 attendees! Lowbrows have always supported the event, both financially (\$400/year) and by bringing many telescopes. As the original planners have gradually stepped aside, younger volunteers have stepped forward. However, an increasing load has fallen on fewer shoulders. This year's highly successful event was put on by a planning committee of less than seven people. In order continue this event, we need more help. Here are some volunteer jobs:

- **Social Media Manager** – help get the word out via active Facebook, Twitter, Instagram and GLAAC.org website. This person works closely with the V.P. of Communications – which has been me for the past few years. Requires experience with the social media tools and small daily efforts in August-Sept.
- **Telescope Field Coordinators** – we need 2-4 people to work with the DNR (they are very nice) to put together a plan that is safe, provides a fantastic public viewing experience, and is sensitive to telescope volunteer needs. In addition, these folks are on-site to put the plan into action both nights. Lowbrow Chuck Steele was our first coordinator this past year – and we learned that it is such an important job that we need to triple the effort!
- **Planning Committee Member** – attend the monthly meetings and help plan & execute the event. Be the conduit for information/requests back to the Lowbrows. The meetings are online via computer, but simply calling in also works. Usually on Sunday afternoons or evenings. Activity ramps up in the summer.

Please email or call me if you have any questions at all.  
Brian Ottum [ottum@comcast.net](mailto:ottum@comcast.net) (734) 260-0597

## Astro Photography Equipment and Technique

By Awni Hafedh

Awni Hafedh wrote in an email to members on Oct. 22nd. “June 12th, 2016 – Lagoon Nebula (M8) is a giant interstellar cloud in the constellation Sagittarius. It is classified as an emission nebula and as an H II region. The star-forming nebula has an apparent magnitude of 6.0 and lies at a distance of 4,100 light years from Earth. It has the designation NGC 6523 in the New General Catalogue.”

“When I began with astrophotography I started with Canon SL1 which was back then the smallest APS-C canon sensor which was convenient with Hyperstar as it wouldn't block a big area in front of the corrector plate. With that said I was having lots of issues with noise and I really wanted a camera that was cooled. I was also fascinated with all the images that I had seen on the web that had more contrast and beautiful colors. They called it “Hubble Palette” and shot using narrowband filters, which was for me a huge learning curve.”

“I knew that meant I needed an astro-camera and set of filters. I was debating because I didn't like the idea that most astro-cameras are very expensive and the idea of capturing three times (RGB) or (Ha, OIII, SII) filter for each object which means more time and many things might can go wrong ... etc. On May 26th, 2016, I finally pulled the trigger and purchased (ZWO ASI1600MM-cooled) camera and a set of Astronomik 2” (LRGB) and (Ha, OIII, SII) (12nm) and I got the proper adapter and filter slider from Starizona for my Hyperstar to connect the ZWO and 2” filters.”

“I was learning new thing every night (I still do), the more I used this setup I realized that I needed to upgrade, so I purchased (Sequence Generator Pro) for capturing, guide, focus and plate solving and I also made a few DIY stuff to make life much easier, (Remote focuser), (Bahtinov focus mask) to help me with focusing, (hyperstar circular degree tape) to help me with field rotation, (PixInsight) for image stacking and processing. “



Now the results of this upgrade were breathtaking, I can't explain how happy I am by the details and clean data from the cooled camera. Using the filter system and mono camera give's you lots of flexibility, great sensitivity and frames with much better signal to noise ratio. The image of the Lagoon Nebula (page3) was captured with a gain of 300 and the following sub details

- 1) 30 subs 25sec each of Ha
- 2) 30 subs 60sec each of Ha, both subs were combined as HDR
- 3) 30 subs 60sec each of OIII
- 4) 30 subs 60sec each of SII

Continued on Page 3

**Astro Phtography Equipment and Technique**

Continued



(from left to right, Ha, OIII, SII)

Once you combine those three frames together and with some editing and patience you will end up with an image that looks like this.

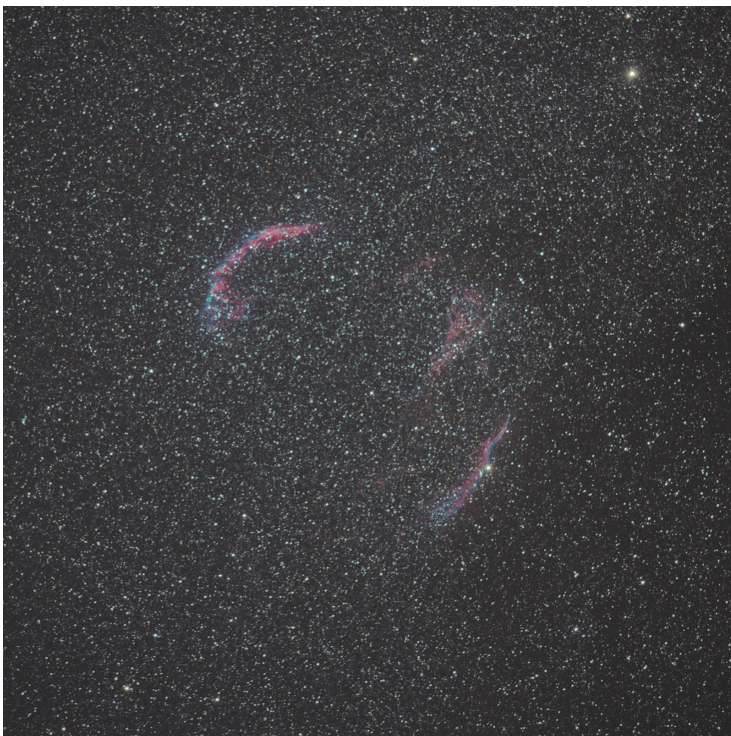


© Awni Hafedh

Lagoon Nebula (M8) (used with permission)

**Comet 46P/Wirtanen** by Robert Wade

Comet 46P/Wirtanen will be closest to Earth on Dec 17th, 2018. Robert Wade wrote in an email to members Nov. 30th. "I took the attached (above) this morning from Telescope 13 at Siding Springs ([iTelescope.net](http://iTelescope.net)): 10-min 1-shot color, SBIG ST2000 XCM, Takahashi SYK90 refractor . No post processing (yet)."

**Veil Nebula** by Brian Ottum Ph.D.

Brian Ottum Ph.D. wrote in an email to members on Oct 17th. "About 8,000 years ago, a star 30 times bigger than our sun exploded. The supernova's shockwaves cleared out the random dust & gas in "empty" space. You can see the clearing effect in this shot of the Veil Nebula. Look to the lower right, where the western curve is moving out to the lower right. There are many more faint stars above than below it – behind it rather than in front. The effect is still seen, though less pronounced, in the upper left (western portion)."

"I took this a month ago in northern MI with a Canon 6Da, motor drive. 200mm lens @ f/3.2. My focus was poor, so the stars are not pinpoints. Oh well. Five hours' worth of five minute exposures, stacked."

<https://photos.app.goo.gl/3f2qcj4dRHfStdVN8>

**Triangulum Galaxy** by Awni Hafedh

Sep 24<sup>th</sup>, 2016 - The Triangulum Galaxy (M33) is a spiral galaxy approximately 3 million light-years from Earth in the constellation Triangulum. It is catalogued as Messier 33 or NGC 598. The Triangulum Galaxy is the third-largest member of the Local Group of galaxies after the Milky Way and the Andromeda Galaxy. I decided to capture with multiple filters to create a HaLRGB image. I will explain later on how this is done. During capturing of the Ha data I did notice a lot of nebulas within the galaxy's arms and I captured many exposures to bring in all the beautiful details of this galaxy. I captured all with EdgeHD 9.25" hyperstar and ZWO ASI1600MM at gain 300.

Red filter, 20subs at 60sec  
Green filter, 20subs at 60sec  
Blue filter, 20subs at 60sec  
Lum filter, 15subs at 30sec, 56subs at 60sec, 20subs at 120sec  
Ha filter, 20subs at 120sec, 36subs at 180sec

The reason I captured a longer exposure using the Ha filter is because there were lots of amazing shapes and nebulas that I really wanted to bring out in the final image. The processing bit took me a while to digest and understand and I really wanted to be perfect so here is how I've done it. I mainly did all of it in PixInsight.

Continued on Page 6

### Triangulum Galaxy Continued

1. Calibrated each of the Ha, Lum, Red, Green, Blue filter with its (Dark, Bias and Flat) frame
2. Stacked each individual filter/exposure together.
3. HDR combines all three exposures of Lum and the two different exposures of Ha so I ended up with two master frames of Lum and Ha data.
4. LinearFit both (Ha, Lum) and (Ha, Red) to match their background and then opened PixelMath and run MAX(Ha, Lum) and (Ha, Red), the final frames were simply HaL, HaR, G, B with Ha data added to both Lum and Red channel.
5. Combined all the color channels to create a master (HaRGB) and boosted up the saturation.
6. Run (Deconvolution, Background noise reduction, Star Reduction) to the HaL frame to improve the details and reduce the noise.
7. Combines the HaL to the HaRGB to create the final HaLRGB which I enhanced it a little bit in Photoshop to improve the sharpness and color pattern.

I have to say, the final image (page5) looks really WOW especially with all the Ha data, if you zoom in you will see shapes that simply look amazing. In our Milky Way galaxy we have many nebulas that look great but compared with M33, M33 really has a lot more nebulas. Just imagine if there is a planet there that contain people with Astrophotography as a hobby, They are lucky to have so many DSO within their galaxy, I really hope you like it.

### Deer Lick Group and Stephan's Quintet

By Doug Bock



(Stephan's Quintet upper left, Deer Lick Group lower right)

Doug Bock wrote in an email to members on Oct 18th. "I actually took dark frames last night. First time since March. This is two nights of data collection this week. 73 frames by 5 minutes each > 6 hours. 24 frames by 5 minutes of darks. Stacked in DSS. Processed in PixInsight. (10/15 and 10/17/2018 data collection). 10" f/8 RC. ZWO asi071mc cooled to -5C. Losmandy G11 mount. Lodestarx2 guide camera. Northern Cross Observatory"

Open House Reports 11/3/18 and 11/10/18

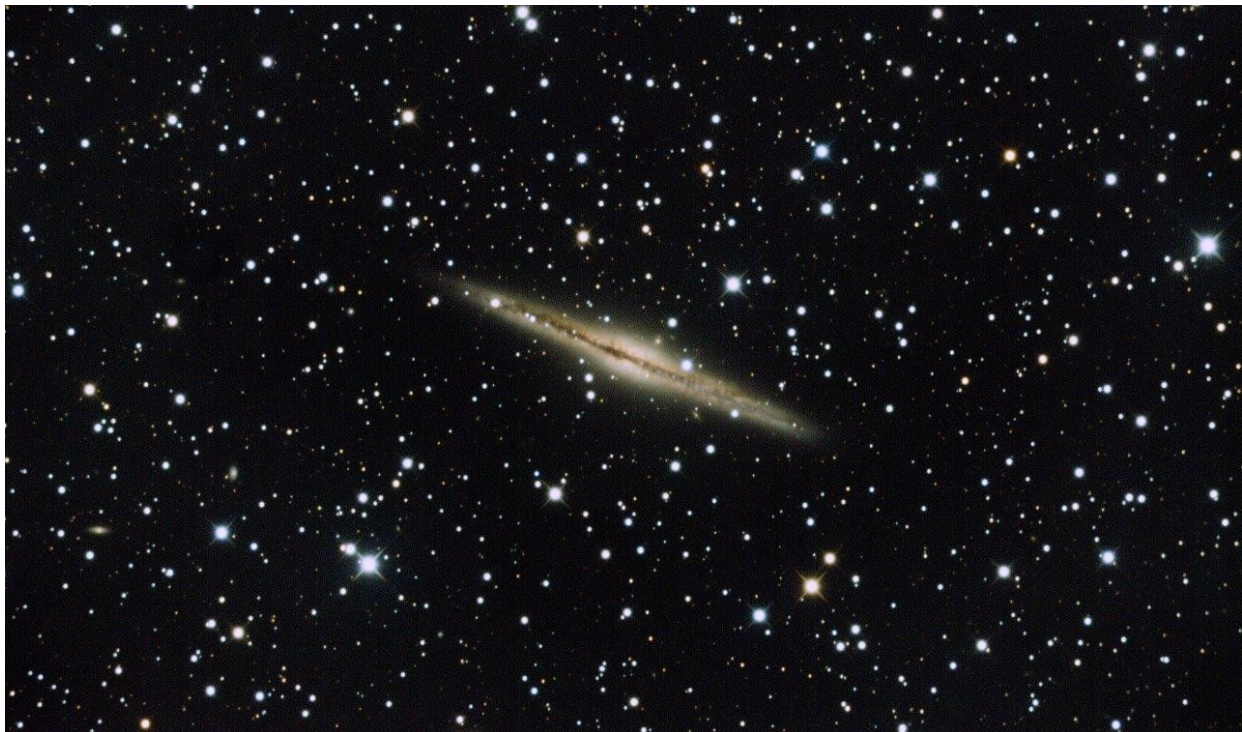
Open House coordinator John Manney wrote. “ We were pleased to have a clear sky at dusk, and had a good chance for some observations. Unfortunately, the cloud cover set in at 9:00 PM, which was earlier than expected. We had approximately 25— 35 guest , and 5 Lowbrows. Many of the guests had never been to an Open House before. So, the event was enjoyable but a bit brief. Thanks to everyone!” Jack Brisban reported. “There was a group of about 6 students from the Albion College Astronomy club that visited the Observatory. (included in the 35)”

Coordinator Adrian Bradley canceled the 11/10 Open House because of inclement weather.

Upcoming Events

DATE	EVENT	LOCATION	
Friday December 7:30pm	Monthly Meeting Friday December 21st	Room G115 Angel Hall 435 South St. Street Ann Arbor, MI	Fred Schebor "Artsy-Meaningless Slide Show"

NGC 891 by Doug Bock



Doug Bock wrote in an email to members on Sept 13th, 2018. “NGC 891 - 7 hours of data integration over the past year. 84 frames x 300 seconds. 10" f/8 RC. ZWO asi071mc camera. Losmandy G11.

Note: This image was processed September 13, 2018 after 3.5 hours of additional data collection on this date.”

“NGC 891 is an edge-on unbarred spiral galaxy about 30 million light-years away in the constellation Andromeda. It was discovered by William Herschel on October 6, 1784. The galaxy is a member of the NGC 1023 group of galaxies in the Local Supercluster. It has an H II nucleus.”

## University Lowbrow Astronomers - Meeting Minutes – November 16, 2018

Club President Charlie Nielsen called the meeting to order at 7:34 PM, introducing the distinguished Amateur Astronomer and Comet Hunter David Levy. Dr. Levy gave a very interesting and informative talk on his life as an amateur astronomer and how it influenced his professional life as a Professor of English Literature. Dr. Levy is the sole discoverer of 9 comets and co-discoverer of 14 more, including Comet Shoemaker-Levy 9, which crashed into Jupiter in 1994. He has also discovered 61 minor planets.

David asked us to inform the membership of his free web magazine, *Sky's Up*. It can be found here:

<https://newsstand.joomag.com/en/skys-up/M0250572001441728171> . He also has written a new book, *A Nightwatchman's Journey*, to be published next June. His observing logs, dating from 1956, can be found on the Royal Astronomical Society of Canada's website.

### **Business Meeting:**

**President Charlie Nielsen** has already received requests from community organizations for both observing sessions and presentations. The Leslie Science Center has asked for the Lowbrows to provide astronomers and telescopes for Saturday, April 27, which is also a Peach Mountain Open House Night. The club decided to attempt staffing both events. This led to a wider discussion of our resources for public outreach, but no concrete proposals were developed. The club also voted to award David Levy a \$100 gift certificate to his favorite Tucson, AZ area restaurant.

**Vice President Jim Forrester** proposed the 2019 Peach Mountain Open House schedule. The membership approved the following dates :

April 6, April 27 and May 4

June 1 , June 8 and June 29

July 6, and July 27

August 3, August 24 and August 31

September 21 and September 28

October 26 and November 2

The club will not host any March, 2009 Open Houses. The Saturdays bracketing March 6 new moon are too early in the year to dodge both the cold and the clouds and the club decided to again travel to Lake Hudson State Recreation Area for a Messier Marathon March 30.

**Newsletter Editor Don Fohey** [needs articles!!!](#)

**Member John Wallbank** is a member of the jury for exhibits at the Brighton Art Guild and asked for astro photo submissions.

**Observatory Director Jack Brisbin** recounted the recent building contractor inspection tour of the University's Peach Mountain facilities. Also in attendance was Vice President Jim Forrester. Both reported the Inspector's favorable comments about the Club Observatory. Jack also reported the roads up the Hill from North Territorial Road and down to the Observatory were drivable.

**Vice President Adrian Bradley** delivered **Treasurer Doug Scobel's** monthly report. We have 149 memberships and a balance in the Club Treasury of \$7113. *(The order of Royal Astronomical Society Handbooks and Calendars arrived November 21 and Doug will have them at our December meeting. If you are unable to secure your materials at the December meeting, you must contact Doug to be sure he has your materials at the next meeting you attend.)*

**Joe Valez, GLAAC Treasurer**, is looking for more participation from members of the southeastern Michigan area astronomy clubs in planning next year's Astronomy At The Beach. AATB, held annually at Kent Lake Beach, is Michigan's largest annual public observing event. You do not have to attend GLAAC meetings to participate, just add yourself to the GLAAC mailing list. This can be done by contacting President Charlie Nielsen to obtain contact information for the UM Astronomy Department's Outreach Coordinator, Shannon Murphy.

The meeting was adjourned at 9:28 PM

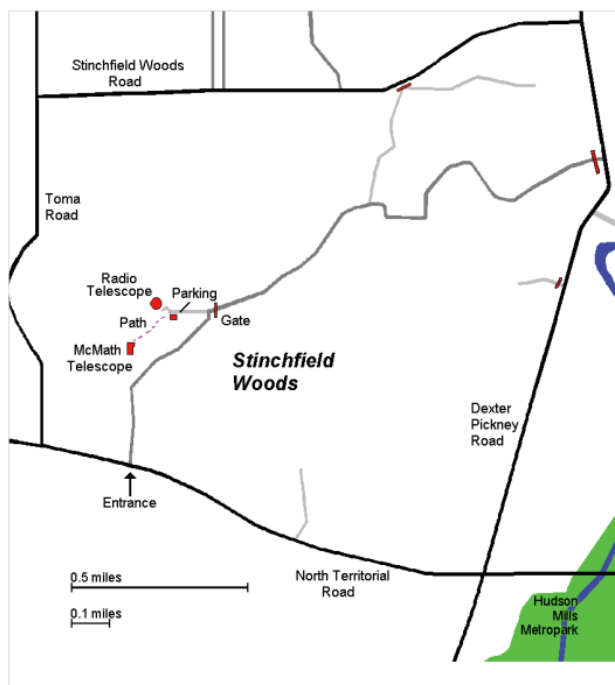
Submitted Respectfully by, Jim Forrester, Vice President



### 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
	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](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