

REFLECTIONS / REFRACTIONS

REFLECTIONS \ REFRACTIONS

University Lowbrow
Astronomers

JULY 2013

VOLUME 37, ISSUE 7

40 Years of Variable Stars:

Celebrating the Career of MSU's Horace Smith

by Norbert Vance



Dr. Smith is the tall gentleman in the center foreground. Our author, somewhat taller than usual, is ninth from the left wearing a light blue shirt.

I was pleased to be invited by Robert Miller of Michigan State University to attend the May 30-31 retirement party set for Dr. Horace Smith, now emeritus faculty at MSU, disguised as a two day conference on variable stars. Having modest experience on data runs at Sherzer with our SSP-5 photometer I was sure to gain valuable insight from the pros attending this event. I was not disappointed, nor as I discovered, in over my head. The information was presented in fine fashion from among the best in the business. The attendee list read as a who's who in variable stars; Arne Henden, Director of the AAVSO, Dr. Wayne Osborn, emeritus faculty at CMU now at Yerkes, Michigan resident and expert variable observer Mike Simonsen, also an AAVSO officer, numerous other professionals, observers, plus graduates of Horace's variable star group at MSU. Some folks came from as far as Sydney, Australia to bid well wishes to their graduate mentor.

Nearly two dozen abstracts and two days of light curves were dished out in half hour talks with breaks and snacks in between making for a wealth of information about variables, primarily RR Lyrae types (http://vger.pa.msu.edu/smith_website/mainpage.htm). Horace, a resident expert on the nature of RR Lyrae stars, presented the latest findings on these important calibration stars. As bright distance indicators they are invaluable for our understanding of the scale of the universe. The latest findings involve the wealth of unintended data weaned from surveys such as the Sloan Digital Sky Survey and, in particular, the Kepler mission. Kepler's goal of looking for extra solar planets meant revealing subtle magnitude variations of a small but stellar rich area of the sky between Vega and Deneb. Doing so reaped a harvest of newly discovered RR Lyrae stars- lots of them! It also meant that extended light curves could be taken free from the day/night cycle of the Earth. A better understanding of the Blazhko Effect (<http://www.aavso.org/now-less-mysterious-blazhko-effect-rr-lyrae-variables>) is now being studied as a result.

One particular annoyance of RR Lyrae stars is their typical $\frac{1}{2}$ day period. Take data one night and again the next and you essentially see a repeat performance. Or is it? What is happening during the daytime pulse you have missed? The surprising answer is "period doubling", a one tenth magnitude difference from one peak to the next. It is easy to see how the

subtle change could be missed from ground-based observations. Other papers detailed chemical abundances, internal mechanics and HR plots, even the Oosterhoff Phenomenon/Dichotomy- yes, I definitely had to look that one up. It's not a nuance described in Astronomy 105. I took several pages of notes.

Meeting new faces, specialists in the field was a rewarding part of this event. Horace, of course, shared his many years of experiences with us. One of his former students presented a "genealogy" of the numerous post docs and papers that resulted in working with and for Dr. Smith. Astronomical friend Robert Miller shared stories of his many trips to use telescopes at the McDonald Observatory, and of working with Horace. Great work is being done across state by the staff at Calvin College as described by Steve Steenwyk, Dan Van Noord, and Larry Molnar. I also was pleased to have finally met and chat at length with Dr. Wayne Osborn of sister MAC school Central Michigan University. He was the heart of CMU astronomy for many years, but in retirement now works at the famous Yerkes Observatory (see <http://astro.uchicago.edu/yerkes/visit.html>). Wayne's paper dealt with the myriad observations done visually and how they stack up against the electronic and CCD data of today. This is important since much of the work a century ago was done visually yet needs to be utilized in long term surveys.

A continuing theme is the important contribution of amateurs. Interested Lowbrows can sift the wondrous pages of the AAVSO website (see www.aavso.org) to consider how they can contribute to the science of astronomy by gathering valuable data. What was once a dedicated, time-costly exercise at an eyepiece can now be carried out in one's backyard with basic and relatively inexpensive CCD imagers and web accessible software. A superb example is being done by life-long friend Emery Erdelyi of Carlsbad, CA. Emery's equipment is a 10-inch SCT, SBIG ST-7E CCD, and AIP4Win by Richard Berry. The "observatory" is a patio setup named in honor of his late (and all too young) son, Kevin, who would have reveled in what his father is doing. An electrical engineer by day, I encourage you to investigate Emery's extensive nighttime activity by visiting <https://sites.google.com/site/kseobservatory/> His latest effort involved ground monitoring of cataclysmic variable IU Leonis as part of a Hubble Space Telescope pre-observation program. He is also an active member of the AAVSO.

The conference ended with an enjoyable dinner party at a favorite Horace eatery, a local pizza parlor east of the MSU campus. Think Lowbrows at the Jug! Dr. Smith, thank you for your years of dedication to students, the science of astronomy, the understanding of RR Lyrae stars, and promoting the importance of gathering meticulous empirical data. Enjoy your travels in retirement!

LOWBROW CALENDAR--JULY 2013

Saturday, July 6--Open House at Peach Mountain. Begins at sunset. May be cancelled if cloudy.

Saturday, July 13--Open House at Peach Mountain. Begins at sunset. May be cancelled if cloudy

Friday, July 19--Monthly Club Meeting. Room 402, Sherzer Observatory, EMU Campus, Ypsilanti. Jeff Heinline does show and tell with the latest and greatest astro equipment from Great Red Spot. This is the annual Pizza & Pop escape from the art fair. If you can find 15th magnitude galaxies, finding the July meeting will be a snap. Otherwise, check the map link on the web site.

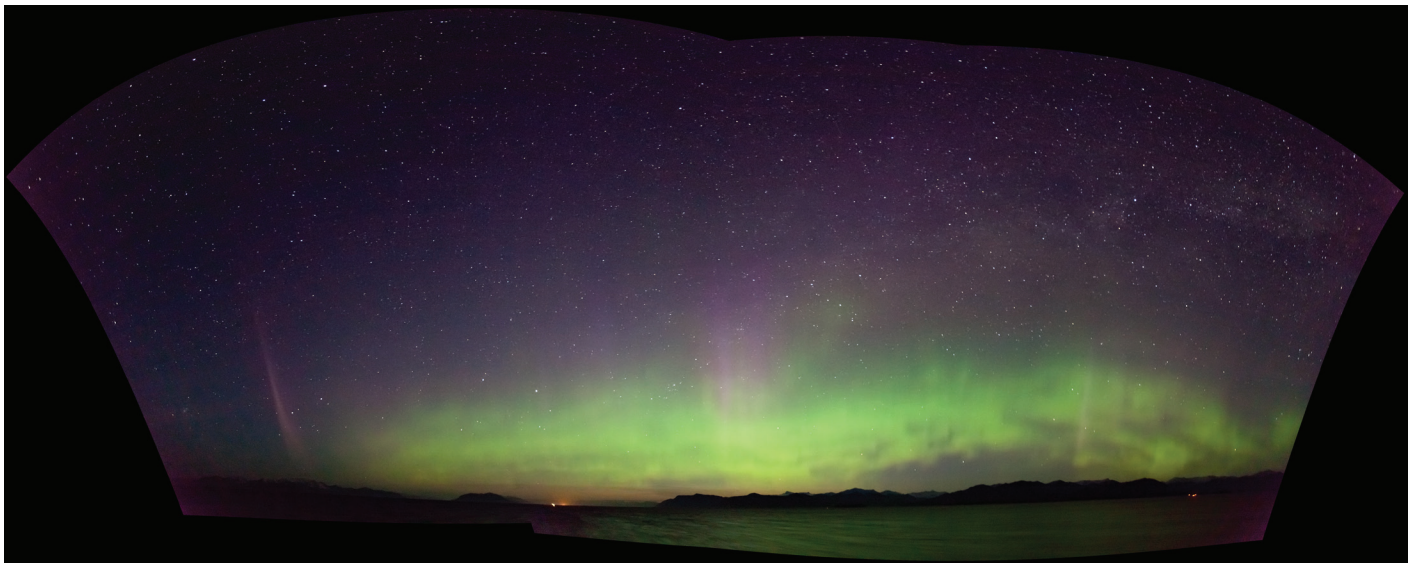
Saturday, July 20--Harlan Neville talks about his role as a Mission Control Engineer for Apollo 11, 12 & 13. Seven Ponds Nature Center, 3854 Crawford Rd., Dryden, MI

Saturday, August 3--Open House at Peach Mountain. Begins at sunset. May be cancelled if cloudy.

Another Kind of Faint Fuzzy

by Kurt Hillig

The June issue of *Reflections* featured one of the author's aurora photographs. This month we have three more and some notes on the trip up the Stephens Passage and the photography.--*Editor*



I missed the announcement the first night; on the second night I heard it but was too tired to get up (and it was cloudy, which didn't help). But the third night I was ready; shortly after midnight I bundled up, grabbed my gear and headed out on deck.

I was on the National Geographic Sea Lion (along with Kathy, 29 other passengers, six naturalists - not the kind who run around with no clothes on - and assorted officers and crew), headed NNW at 8 knots up the Stephens Passage just past Holkham Bay. The time was 00:30 AKDT, May 7 and the air temperature was hovering around freezing - except at high altitude, where things were clearly heating up!

There was a faint glow low on the northern horizon - the lights of Juneau about 40 miles away; and there were blowing curtains and shimmering streaks across most of the northern sky. The Alaskan skies are pretty dark outside of a few inhabited spots, and we were lucky enough to be up there when the weather was good - no clouds at all, unlike the previous night, and the skies were steady and clear.

Astrophotography from a moving object is done all the time - but it's usually only successful when the motion is steady and predictable - say, for example, from the surface of the Earth. But from the deck of a moving ship? There was only one way to find out!

I'd had the foresight to pre-focus the camera at infinity before going to bed, and I'd had the tripod ready to go in anticipation, so getting things set up was pretty straightforward - focal length 16mm, aperture f/2.8, the horizon was barely visible in the viewfinder (and not visible at all using live view on the LCD screen - like I said, it was dark!) but I thought maybe I had it pointed in the right direction.



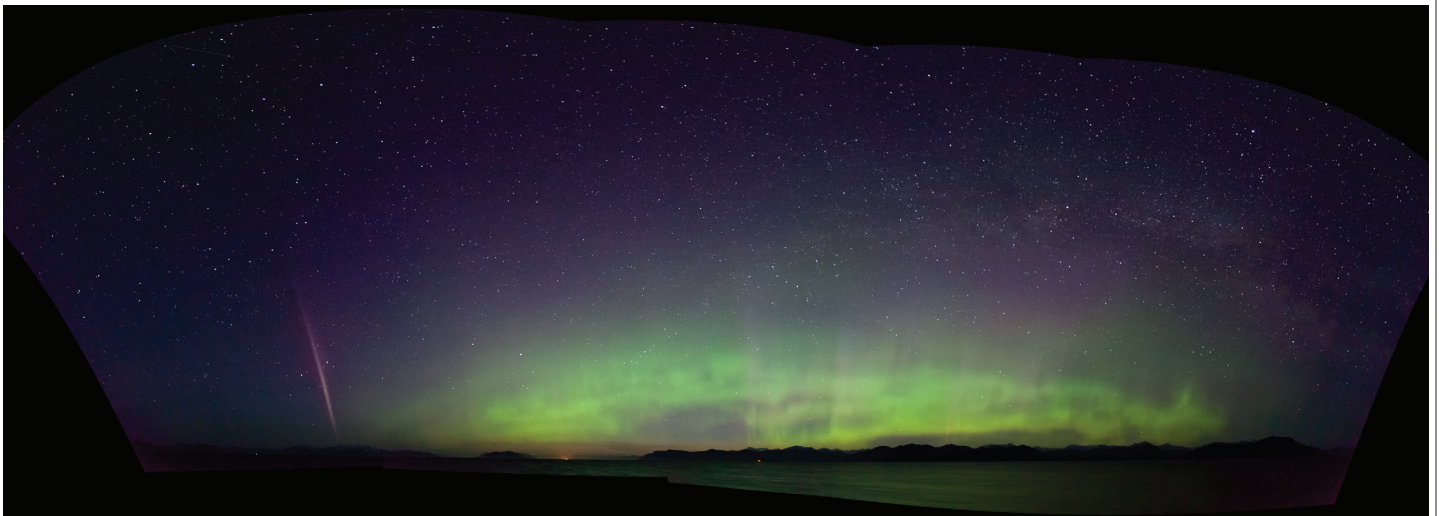
And there was one other passenger up there with me, so we traded notes on what settings gave what results. For my camera (Canon 5DmkII) the optimum seemed to be either 8 seconds at ISO 6400 or 10 seconds at ISO 5000; it looked like the latter was slightly less noisy, so that's what I ended up taking most of my shots with.

The structure of the aurora was easy to see by eye; the color was too faint to detect - aside from the occasional pastel green in the brightest areas - but the camera had no problem picking it up. So I stayed out there in the dark and the cold for a couple hours.

The water was pretty smooth, and the boat's autopilot did a darned good job of keeping it running in a straight line; it wasn't until I got home and had a chance to really look at the images until I could see just how well some of these turned out. (We came back from Alaska with a bit over 20,000 pictures - no way did I have time on the trip to go through them all!) I wouldn't call it exactly sub-arcsecond seeing, but about 1/4 of the pictures had small, round star images - and only one has all of the stars looking like barred spiral galaxies.

Anyway, I'd like to share with you a few of the more successful shots - panoramas stitched together from three or four images taken in succession - to give you a rough idea of what it was like (yes, I did tweak the colors a bit). The aurora covered an arc from Gemini to Aquila, from the horizon up to Cassiopeia (I'll let someone else calculate the solid angle); if you look carefully you can spot the nucleus of M31 in the middle of the auroral glow.

For the compugeeks among you, I used the open-source program Hugin to stitch the panoramas together; these use the equirectangular projection (see <http://hugin.sourceforge.net/docs/manual/Equirectangular.html>). If you're not a compugeek, please don't read the preceding sentence... Maybe they aren't on the Messier or Herschel lists, but I tell ya - the aurora borealis is still one heck of a faint fuzzy!



A Sojourn in the Desert Southwest

by Brian Ottum

In hopes of escaping the “Michigan Nebula” permaclouds of late winter, I spent the middle of March in New Mexico. My goals were to capture Comet PanSTARRS, check out the astronomy communities, and further my obsession with time lapse videos.

The wonderful Sky Safari program told me the first night to see PanSTARRS would be March 10. Looking at the map, I figured I could get to the “Very Large Array” radio telescopes that evening. So I envisioned some amazing shots of the comet setting behind a line of identical radio telescopes in the desert. A call to the VLA dampened my spirits. I was informed that I’d need advance permission, a guide and a million dollar liability policy in order to photograph on the grounds.

Well, I studied the map and decided to stalk the VLA on public land. However, a Denver blizzard kept me huddled in a cheap motel so I got a late start on the 10th. Saw the white line of tiny dishes in the distance as the sun went down. No comet to see. So I parked the RV in the desert and slept.

The next morning I travelled through the hot pepper capitol of the world – Hatch, NM. Strings of dried peppers for sale everywhere, even gas stations. Soon I saw hundreds of huge wind turbines, and huge fields of TURNABLE solar arrays. Very cool.

Just north of Deming, I visited two of the nicest and most generous astronomy ambassadors in the world. Tom and Jeannie Clark ran Tectron Telescopes in Florida for many years, and also published the great Amateur Astronomy magazine. I had met them at Florida’s Chiefland Astronomy Village, where they helped build it into a highly successful vacation/retirement/star party destination. Tom and Jeannie are now helping to grow the New Mexico Astronomy Village, a community of retired astronomers (and their understanding spouses).

Tom toured me around his new house, spacious workshop and huge homebuilt dome. The 42” dob will be installed soon. Then he drove me around the community, showing me the 5 acre lots that were for sale. Several other astronomers are either living there, have something under construction, or will break ground soon. I could see that Tom and Jeannie will attract and sustain a close community of folks who support each other.

Soon it was time for my 15 minute drive to the spectacular City of Rocks State Park. I had a reservation in the “Pegasus” campsite. All the sites have constellation names, as this is a big time observing area. Super dark, and contains an observatory for public observations. It’s like a Stonehenge where you get to camp in amongst the towering rocks (which are leftovers from an ancient volcanic ash fall).

I was in New Mexico for about a week before I saw my first cloud. The relentless clear weather is almost exhausting for an amateur astronomer. Something else to get used to is the huge desert temperature swings. Dawn sometimes saw a 35F low, and daytime highs were about 75F. I found myself deliberately closing up the RV in the late afternoon, to keep in the warmth. Lips and tips of fingers developed cracks.



The view of Comet PanSTARRS improved each night. I was fortunate to have perfect conditions: high desert dry skies, no clouds, low horizons. The comet never achieved more than barely-naked-eye status. Still, an impressive sight.





Sunset brings much anticipation.

Sometimes, when I was walking around I'd have a frightening vision of a boulder crashing down into my camper:



Recently I read that astronomers have observed some odd shells of gas that surround the supergiant Betelgeuse. It could go supernova in our lifetimes. I think about that when I look at this picture.



One night I took a bunch of shots while pointing at Polaris and the Big Dipper. StarStax, a fantastic freeware program from Germany, easily combines them.



It was a ton of fun taking night shots and videos. I decided to get artistic and do a black & white video of the sky. You can see the geosynchronous satellites in this one. They stay in the same spot in the sky as the stars slide by.

<http://vimeo.com/64237480>



After a wonderful five days at the City of Rocks, it was time to move on. I had heard great things about the Arizona Sky Village, another of those astronomer communities. So I drove toward the “boot heel” of New Mexico, where Arizona, NM, and Mexico meet. Turns out, developer Gene Turner is on his second (Rancho Hidalgo) and third (Granite Gap) phase after the Arizona Sky Village. The Granite Gap concept is very compelling. For \$2,500 you get a 99-year lease on a 1/3 acre RV plot, plus a ¼ acre plot that could contain an observatory. Gene toured me around the unfinished development. Though there’s room for several dozen observatories, only about a dozen are built. Electricity and Internet are expected “soon.” The development process can be frustratingly slow. But I did spend a great night in the desert solitude there at Granite Gap, viewing the HUGE Omega Centauri globular cluster with binoculars. Here’s a time lapse of the entire night. I used a filter to emphasize the colors of the brighter stars.

<http://vimeo.com/63199045>



At Rancho Hidalgo, Gene built his home. He has the telescope that used to belong to Pluto’s discoverer: Clyde Tombaugh. Also in his front yard are many observatories. Astronomy Magazine, Celestron and people from around the world operate roll-off roof observatories – all by remote control. To see from Google Maps satellite view, look 5 miles west of Animas, NM. The red roofs are the observatories.



All too soon it was time to drive north. But I made plans to be back.

Feel free to email me if you have any questions.

Brian

outm@comcast.net

Camp Hazelwood--2013

Each year in May, the Lowbrows travel to Holly, MI and Camp Hazelwood, a science camp of the Hazel Park Schools. This year John Wallbank, Don Fohey, Jason Maguran, Merry Celeste Donovan and your editor made the hour drive to show about 30 fifth graders the night sky. Haze made for poor transparency but the views of Saturn and the Moon made for a memorable evening. Here are Merry Celeste's comments on her experience:

Hi all!

It was so great to be out under the sky again! Thanks to Jim who provided the ride so that I could attend. I was unable to go to any nights out during the winter as I have a neuropathic condition that makes cold very hard on the fingers and toes. I was a little apprehensive about being in charge of anything, since my stamina is limited and speed definitely not up to that of your average 5th grader. And was I smarter than a 5th grader?

Jim coaxed me into setting up one of the tabletop scopes. I was able to sit at a table. It did give me and the kids a sense of moon and craters -- and in my case a hands-on opportunity for a kid to get an object in sight and then find it in the eyepiece. My "station" was somewhat boring, being low res, with the spectacular rings of Saturn set up just beside me in Jim's scope and moons of jupiter in Jason's on the other side. During a lull I went over to a group and "borrowed" a random youngster with his group leader's permission. I told him about the 2 axes of every scope, azimuth and altitude and explained how to line up the object with the red dot.

I realized I knew enough to teach kids about the celestial equator and ecliptic, the constellations, if challenged to do so at an indoor venue and I feel good about that. As I consider what to do when I get my life back after chemo treatments, it was definitely a push in the direction of working with kids and nature in a teaching capacity. Rewarding and healing for us both!

Anyway, this kid was so thrilled when he succeeded in locating his object that he shouted out to everyone that he found the moon! I was the only one listening to him and I was proud. Later, during the wonderful home-made peanut butter choco-chip cookies, coffee and conversation, the boy's counselor thanked me for singling out that particular child. He was challenged with a condition like autism and had a lot of intelligence but not a lot of social ease. Our exchange meant a lot to him -- it did my heart good to hear that!

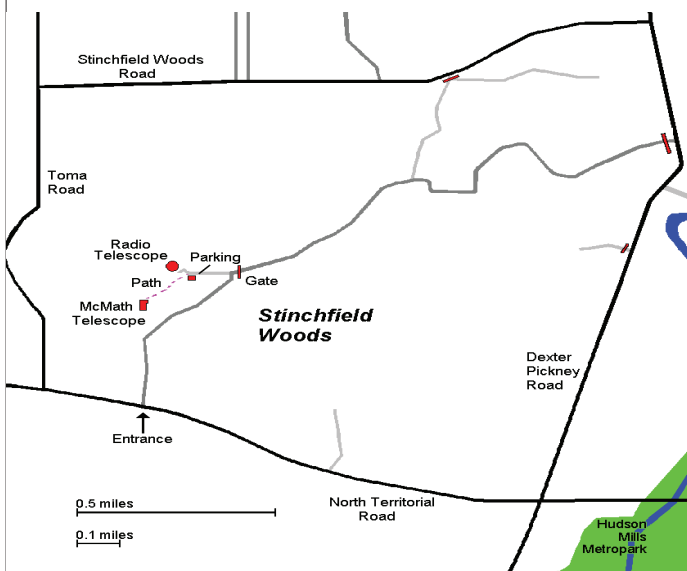
The last object I looked at personally was a globular cluster, M3 in the vicinity of Arcturus, c/o Jim's scope. I hope to do this all again next year! Thanks for letting me tag along.

Merry

Places & Times

Dennison Hall, also known as The University of Michigan's Physics & Astronomy building, is the site of the monthly meeting of the University Lowbrow Astronomers. Dennison Hall can be found on Church Street about one block north of South University Avenue in Ann Arbor, MI. The meetings are usually held in room 130, and on the 3rd Friday of each month at 7:30 pm. During the summer months and when weather permits, a club observing session at the Peach Mountain Observatory will follow the meeting.

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 which is maintained and operated by the Lowbrows. The observatory is located northwest of Dexter, MI; the entrance is on North Territorial Rd. 1.1 miles west of Dexter-Pinckney Rd. A small maize & blue sign on the north side of the road marks the gate. Follow the gravel road to the top of the hill and a parking area near the radio telescopes, then walk along the path between the two fenced in areas (about 300 feet) to reach the McMath telescope building.



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)332-9132. 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 \$20 per year for individuals or families, \$12 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 \$12 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. 131446
Ann Arbor, MI 48113**

Membership in the Lowbrows can also get you a discount on these magazine subscriptions:

Sky & Telescope - \$32.95 / year \$62.95/2 years

Astronomy - \$34.00 / year or \$60.00 for 2 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** to discuss length and 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 Presidents: Dave Snyder (734) 747-6537
Dave Jorgenson
- Jack Brisbin
- Belinda Lee (313)600-9210
- Treasurer: Doug Scobel (734)277-7908
- Observatory Director: Mike Radwick
- Newsletter Editor: Jim Forrester (734) 663-1638
- Key-holders: Jim Forrester (734) 663-1638
Fred Schebor (734) 426-2363
Charlie Nielsen (734) 747-6585
- Webmaster: Krishna Rao

Lowbrow's Home Page

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

Email at:

Lowbrow-members@umich.edu



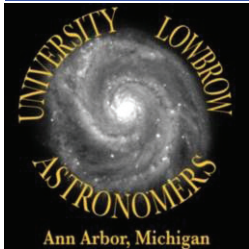


University Lowbrow Astronomers

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

lowbrowdoug@gmail.com

Reflections & Refractions



Website

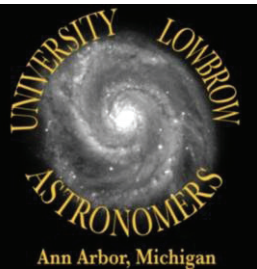
www.umich.edu/~lowbrows/



Great Lakes Star Gaze - Sept 14, 2012

Michael Radwick

Mike Radwick pointed his camera east at last September's Great Lakes Stargaze and captured this wonderful view of the fall Milky Way.



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