

REFLECTIONS / REFRACTIONS

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University Lowbrow
Astronomers

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The Clear-Sky Blues

By John Manney

The sky is clear and black, and the Moon is out of sight. I am far away from the city lights. There are no mosquitoes, and it isn't cold yet. The telescope isn't broken. Best of all, I don't have to get up for work tomorrow. It is a perfect night to go out and enjoy the sky.

However, I am enjoying the skies already. I am in my overstuffed chair with my new book of Hubble images. Plus, I am a bit tired. And, it can be a big deal to set up the scope. It weighs 5 pounds, and the tripod legs will probably hit the doorway. This can be stressful. Besides, the go-to drive may decide not to go anywhere.

A little voice is scolding me: This is a good night to go out and observe. It may be a long time before we have another one. You're just a wimp! What would Herschel say about this? Is this the way Galileo worked? What about the Arabian and Chinese astronomers of long ago? Would they see it your way?

OK, so what if I am a wimp. I'm not under any obligation to go out, just because it is clear, dark, warm, mosquito-free, and Moon-free.

But the memory of this lost opportunity will haunt me in February, March, and April. Worst of all, I will have to keep an awkward silence the next time we're whining about the cloudy skies of Southern Michigan.

In short, I am in turmoil because this is a perfect night. If it were cloudy, cold, Moonlit, or mosquito-infested, I wouldn't feel bad about anything. Astronomy is supposed to be fun, not a Greek tragedy.

I have an idea. I have a compromise. I have to take the trash out, anyway. I'll just look at the sky for a couple of minutes. I'll be able to say it was a great night to look at the stars, and I took advantage of the opportunity. Maybe, I will find that it is cloudy after all.

So out I go. Wow...the Milky Way is thick tonight...Polaris beckons from the north...My right eye catches the Seven Sisters. Capella is rising in the northeast. In the west, Arcturus is fading away. In the south, Jupiter almost hurts my eyes.

I had better set up the scope, before we get clouds, or some other problem

[No clear nights were used in preparing this article]

Collecting and Identifying Micrometeorites

By Sandy and Betsy Dugan

Clouds, rain, and snow hamper star gazing, but, if they occur during a meteor shower, there can be a silver lining, or rather an iron one. That's what we discovered recently.

Here's the story: Lowbrow President Charlie Nielsen's call for volunteers to help with the Exhibit Museum Open House, scheduled for March 2011, included a chance for a few Lowbrows to see the full-dome planetarium show called "Oasis in Space," shared by Exhibit Museum Planetarium Director Matthew Linke. A teacher's guide accompanying the show includes the suggested activity of collecting micrometeorites. According to the guide, "... scientists can study meteorites to find out more about our solar system, including finding evidence of water in meteorites." ("Oasis in Space, Teacher's Guide," p. 17) While full-bodied meteorites are beyond our capability, the micro-sized ones that frequently reach the earth's surface seemed inviting.

During the Leonid meteor shower of November 17-18, 2010, we gathered rain water; during the Geminid shower a month later we gathered snow. Following instructions selected from the teacher's guide and several websites, we isolated and identified microscopic, magnet-attracted, round particles, which we assume to be fragments of meteorites. We do not have the equipment to look for evidence of water, but seeing the micrometeorites is exciting for newcomers to amateur astronomy.

While a lot of micrometeorites reach the earth's surface daily, meteor showers are supposed to bring even more. You can consult a meteor shower calendar for upcoming optimal collection times. (See website list below.)

Below are the materials and illustrated steps in our activity.

Materials:

an open pan, preferably plastic

distilled water, cost: about \$3.00 a gallon at a drug store

a plastic bag

a magnet, cost: about \$2:50 at a hardware store

a needle with a little thread

a microscope



Step 1. We placed a couple of open pans under the sky and collected about an inch of rain in each. On another occasion we collected about two inches of snow (If there is no rain, add distilled water to a pan and let it sit outside for a few days.)

Step 2. Placing the magnet in a plastic bag, we dragged the plastic bag through the water in the pan looking for particles attracted to the magnet.



Step 3. We removed the bag from the rain water and, holding it over a shallow dish with some distilled water, removed the magnet from the bag and swished the bag in the distilled water to remove the particles.

Step 4. We magnetized a threaded needle by rubbing it

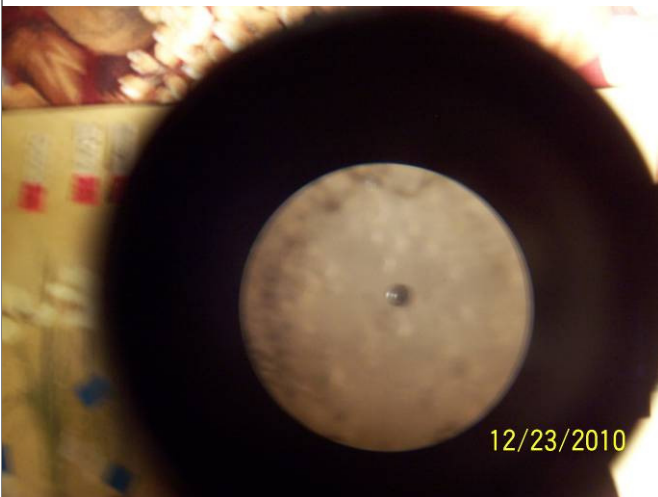
several times in one direction over the magnet.



Step 5. Holding the thread, we dragged the needle through the distilled water seeking particles attracted to the magnetized needle.



Step 6. We transferred the particles to the adhesive part of a sticky note. Placing the sticky note on a glass slide (for support), we searched for spherical particles. >>



Step 7. We identified spherical objects about 5 to 30 μm in diameter. They were few and far between, perhaps 1% or less of the particles on the sticky notes.

Some useful websites:

--**Lab 9, The Hunt for Micrometeorites - Physical Science 21 Laboratory**

<http://zimmer.csufresno.edu/~fringwal/09-The-Hunt-for-Micrometeorites.pdf>

--**Phoxes,**

<http://phoxes.com/Classroom/tabid/54/EntryID/6/Default.aspx>

--**Mad Sci Network**

<http://www.madsci.org/experiments/archive/913517663.As.html>

--**Skyscrapers, Inc. Schedule of meteor showers for 2011**

<http://www.theskyscrapers.org/meteors/index.php/year/2011>

Journey to Flabeg

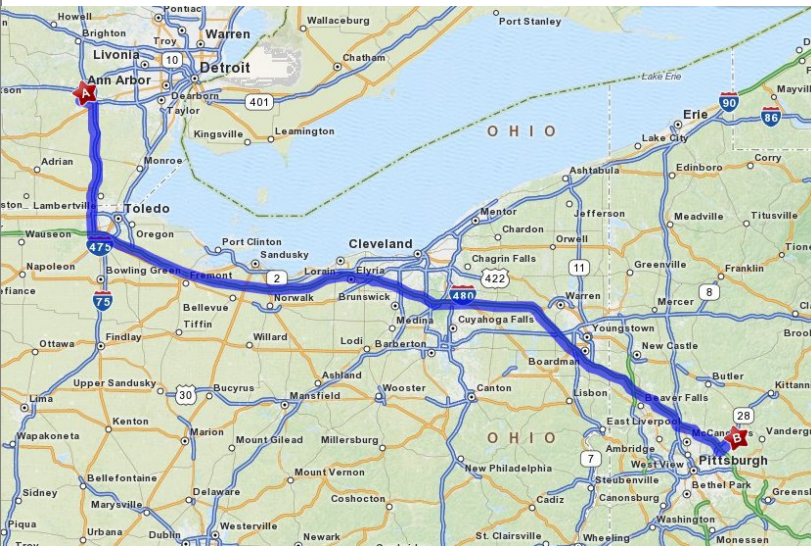
By Tom Ryan

The mirror on the 24" telescope once again needed to be re-aluminized, its coating having been exposed to the contents of the South-Eastern Michigan breezes for several years and having suffered greatly for it. After a wide search for coating companies which are both Near and Cheap, the club settled on a coating company called Flabeg, in Pennsylvania.

The Lowbrows had previously had the mirror recoated by a multi-generational company in Chicago, but it was generally felt that the job done by that company's present owner, while considerably better than that done by his father, was still not up to the standards of the grand-pere and consequently, that we should give someone else a chance to screw up our mirror.

Not much was known about Flabeg, other than rumors and vague accusations that floated around on the web, so after the mirror was dropped off for coating by our current vice-president, Jim Forrester, I decided to accompany Jack Brisbin as he picked up the mirror, and to inspect the plant myself, and to additionally see what kind of trouble the two of us could get ourselves into in PA.

It was 300 miles to Flabeg. We had a full tank of gas, half a pack of cigarettes, it was dark, and we were both wearing sunglasses.



We left before dawn. I was already thinking about side trips to the great cultural centers of Euclid, Ohio, and Steubenville, but Jack insisted that we get the mirror first, before our money and strength ran out. That made sense to me, so I just sat back and bided my time as the miles rolled under us.

Flabeg is located in an old Pennsylvania town called Brackenridge. It is just outside of Pittsburgh, in a country that is composed of small hills carved out of the earth by "cricks" feeding the Allegheny and Kiskiminetas rivers. The towns in this area are old, run down, and worked out. The abundance of coal and natural gas in the area led directly to early steel making and glass manufacturing plants, all powered by cheap energy and immigrant workers. The first immigrants to settle were

the Anglo-Saxons and Scotch-Irish, followed by the Poles, Germans and Italians, then the African-Americans, Hungarians, and Czechs. The groups didn't mix much then, and don't mix much today. Brackenridge is just twenty miles from the town where my own Czechoslovakian ancestors settled in 1899. A lot of them are still there, and, no doubt, wondering why.

Flabeg is part of the glass-making tradition in the area. Around 1896, James Alexander Chambers started the Chambers Glass Company, which became the American Window Glass Company in 1929, and then was purchased by the St. Gobain Glass Company of France. In 1882, immigrant John Ford started the New York City Glass Company, which became Pittsburgh Plate Glass in 1883. The Liberty Mirror Company moved from East Liberty to Brackenridge in 1930, then became Libbey-Owens-Ford Co, Liberty Mirror Division, then Pilkington Technical Mirrors (England), then was purchased by the Germans who renamed it Flabeg. When Jack and I rolled into the parking lot across from the tract houses, they were flying the flags of the U.S., Pennsylvania, and Germany.





The Flabeg company is famous for their dielectric thin film coatings, and their sign advertises that fact. They also do a considerable amount of work for the automotive companies, particularly in processing rear-view mirrors. The plant itself is quite large and contains engineering and business offices, specialty coating bays, and production areas, but because they've had some layoffs recently (much of their current business is automotive), the plant seemed like it had a lot of unused space. On the other hand, they had the largest coating chambers I've ever seen.

Jack and I were greeted at the door by Steve Zebert, manager of Technical Products. He took us directly over to the crated Lowbrow mirror and secondary, and asked if we'd like to inspect them before loading them up. We said yes, not because we doubted their work, but because if anything happened on the way back, we could at least say it wasn't Flabeg's fault.



A woman with a Green Lantern shirt removed the lid, and the mirrors both looked perfect. Jack and I recalled how, when we first had the 24" coated in a lab in Detroit, many years ago, the mirror had a rainbow tinge going from blue on one side of the mirror to pink on the other when it came out of the coating chamber. Flabeg's coating was infinitely better, primarily in that it looked like a mirror.

As we were talking, Steve asked us about the environmental conditions of the observatory. He noticed the water streaks on the deteriorated McMATH coating when it was brought in. Steve explained that the mirror's new coating of enhanced aluminum was protected by a layer of titanium dioxide, and water streaking will deteriorate the titanium dioxide overcoat and then ruin the enhanced aluminum coating. Depending on the Observatory's environmental conditions (temperature, humidity, acid rain) the overcoat could last for years before the enhanced aluminum started to deteriorate, or it could last for months. It was a good discussion with Steve and we said we would relay his concerns back to the club.

Steve also pointed out that the mirror's crate handle bolts extended inside the crate by about an inch, and he thought this wasn't good. We looked in and agreed. Jack and I packed foam around the bolts and against the mirror and loaded the crated mirror into Jack's SUV. Then, Steve gave us a tour of the plant.

Flabeg has the most, and easily the biggest, coating chambers I have ever seen in one spot. Steve showed us a row of chambers, one of which was used to coat the 24", and I thought these were big. Then, he showed us their really big coating chambers.

These chambers were big enough to park a Volkswagen inside. Flabeg had just coated a 60 inch mirror in one of the chambers. In the picture, the 60" mirror is inside the crate in the middle of the floor. A 55 gallon drum is next to one of the coating chambers.



Steve then took us on a tour of the production side of the plant. Flabeg is doing amazing things with automated technology and rear-view mirrors, but because Germany closely guards its technology and processes, I don't have pictures of any of the things they were doing in that part of the plant. I will say, though, that those activities were even more impressive than the coating chambers.

Finally, Steve showed us some chemicals which were compatible with the coating process (which was the real reason I went). We thanked Steve for his gracious hospitality, belted up, and went looking for some fun.

Our first stop was just down the street from Flabeg for lunch in a perfectly restored diner next to a very nice Harley-Davidson dealership.



While there, Jack and I met the woman who owns the diner and her friend, who owns the dealership. They sat down and told us about the history of the town while Jack and I ate hamburgers and drank root beer. Then, we went over to see the Harleys, and a couple of guys asked us if we needed anything.

Well, that's about all we have time for today, but briefly, Jack and I eventually made it back to Ann Arbor, the mirror is safely back in the observatory, and the next time it needs to be coated, Jack and I'll be ready to take it back to Flabeg.



LOWBROWS ON TOUR, PART 1

By Charlie Nielsen

The University Lowbrow Astronomers are very popular around the area, and generally well-liked. Despite us joking around about being a little goofy and “lowbrow” in our behavior, we are actually respected and taken seriously by the public at large. Oh, if only they knew.... Because of these factors we often get asked to do presentations and observation sessions in a variety of locations. During 2009, the International Year of Astronomy, we were extremely busy. The highlight of that year was our appearance as presenters for Saturday Morning Physics. That was a great honor and we did a fine show in front of a crowd of about 350. That event led to us being invited to do even more events through that year and early 2010.

Then things slowed down a bit, and we probably needed the break. We made our annual trip to Camp Hazelwood in early summer, and a bit after that we had a great event at Leslie Science Center. Otherwise it was a bit slow until this fall, when suddenly the event requests exploded. Within less than a month’s time we had requests for 9 events. Last week (before this writing) I received yet another one, but it was in conflict with a full day for us already. This one, Ann Arbor Free Skool, will likely be scheduled in the future. This article will be a quick review of the events that have been completed. I call it “Part 1” because not all the events have occurred as of this writing. This way Mark gets another article from me in the near future, and maybe, just maybe his crosshairs will not be on me for a little while.

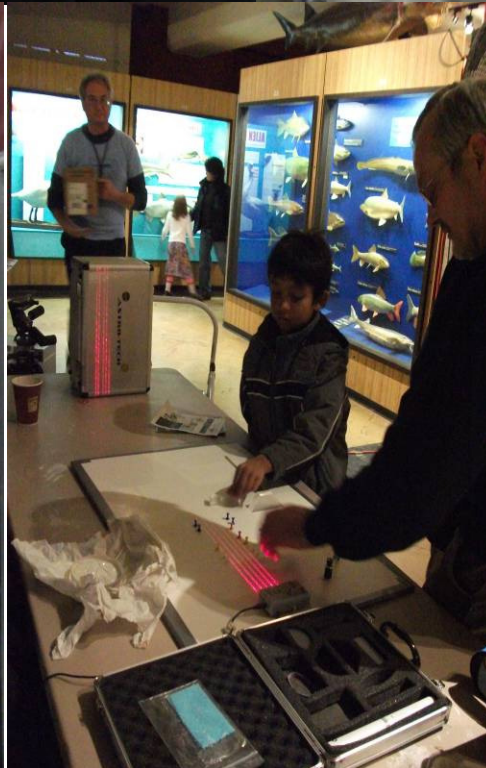
The first event was scheduled for October 21 at Whitmore Lake Schools. We made a similar appearance there a few years ago. The idea was to set up telescopes near a door of a building where students and parents would be exiting a meeting. We would intercept them to show them some telescope views. It turns out the weather did not cooperate that night and I hesitantly cancelled. Later that night I went outside and noted that it had cleared in my area just west of AA. It did not last long, but it still haunts me that maybe we could have shown a few things after all. I am hoping this gets rescheduled later and we have a better weather situation; as in we do it and it is not one of those stressful decisions like so many have been this last year. Well OK, the weather usually does stress us, but 2009 seems like it was especially that way.

Our next venue was Emerson School, November 11. This one seemed so simple at first. I just needed to recruit 6 to 10 members with scopes to set up and show parents and students the night sky. The school was going to turn off the parking lot lights, and establish a light block for car headlights as they pulled into the parking lot. The difficulty was getting my contact at the school to see the calendar correctly. Even though I thought we had solidly decided on November 10, and confirmed and re-confirmed the date to each other, they scheduled it for November 11. I had a meeting conflict on that night so I could no longer attend, and I was concerned how many Lowbrows could make it on a very short change notice. But, it has been reported to me that 8 or 9 Lowbrows with scopes showed up, and the skies generally cooperated. The crowd estimate was 80, about 50 percent students. Some of the kids got a bit rowdy for our comfort level, and the lights did not get turned off, but I hear it was otherwise a great event and our guests were very appreciative. We are trying this event again on December 10 and I hope things are smoother and more controlled. This event will be covered in Part 2.

On November 18 we spent most of the day at Pinckney High School. A crew of 6 Lowbrows showed up at 7:30 AM (way too early for astronomers) to get set up. This event was spilt into 2 parts. One was a classroom presentation of computer software for astronomy, with the concentration on freeware and programs that worked on both PC and Mac platforms. These students were all a part of the school’s “New Tech Center” and every student was issued a Mac laptop. This session was just under 1 hour long. Simultaneously, in another room, we were giving a presentation on the types of telescopes and how they work, as well as some info on how our eyes work, dark adaptation, and light pollution. That took about 10 minutes after which the students were taken out to a balcony where we showed them the actual scopes, let them handle them, and aim and focus on some targets we placed on a wall about a 100 feet or so away. Each part was just about an hour, after which the 2 groups switched places. That way they all got to do both activities. We then had a break and were served pizza and salad provided by our contacts at the school. We then did the whole program again in the early afternoon for a second group of students. The total number of students for the day was around 120. Our contact at the school was very pleased with our program and most of the students really enjoyed it, and learned something. We also attracted a lot of students to the scope area that were not part of the New Tech Program. I have been informed that a letter of appreciation from some of the students is headed our way. We are likely to be asked to repeat this presentation next year. So beware, I will go on the recruiting trail and stalk you down.

Stand by for part 2 which will cover December 4 Space Day at the Exhibit Museum, December 10 part 2 of Emerson School, and December 18 at U of M Botanical Gardens. We have yet another event coming this March. This is a presentation for the Exhibit Museum on water in the solar system, and may include demos. Maybe that means Lowbrows on Tour, Part 3?

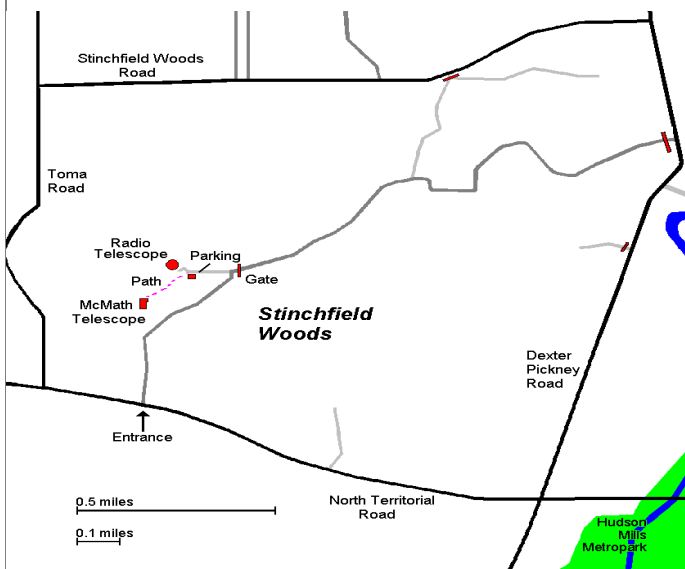
The images of these events appear on the next page are courtesy of Yumi Inugi.



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

c/o Liz Calhoun

P.O. 4465

Ann Arbor, MI 48106

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

Sky & Telescope - \$32.95 / year

Astronomy - \$34.00 / year or \$60.00 for 2 years

For more information contact the club Treasurer. Members renewing their subscriptions are reminded to provide the renewal notice along with your check to the club Treasurer. Please make your check out to: "University Lowbrow Astronomers"

Newsletter Contributions

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

Call or Email the Newsletter Editor: **Mark S Deprest (734)223-0262 or msdeprest@comcast.net** to discuss length and format. Announcements, articles and images are due by the 1st day of the month as publication is the 7th.

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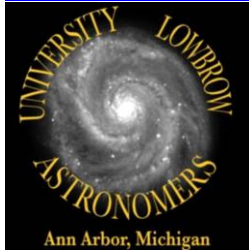


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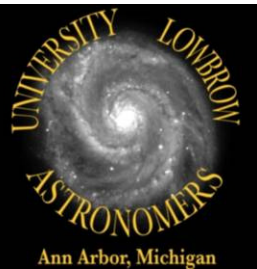
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Image by Ligustri Rolando—Comet 103P , M46 and M47

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