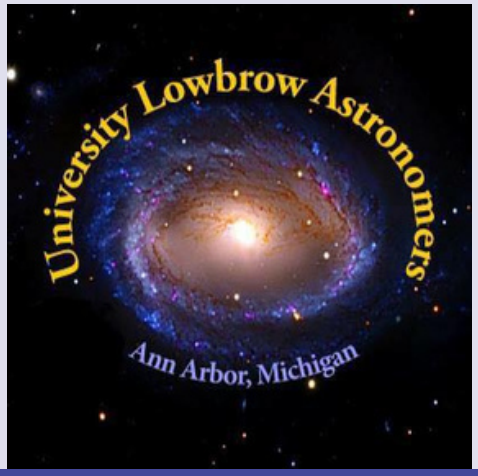
REFLECTIONS / REFRACTIONS

University Lowbrow Astronomers Monthly Newsletter

April 2022, Vol 46, Issue 4

Inside this issue:



FROM THE DESK OF THE NORTHERN CROSS OBSERVATORY: THE LEO TRIPLET

BY DOUG BOCK

This past month I had one night that was clear long enough to do some extensive data collection. The Leo Triplet was the target I worked on the morning of March 4th, 2022, using the William Optics 105mm f/7 APO refractor and the ZWO ASI2600MC PRO camera at a gain of 100 and a temp of 0C. 53 x 300 second light frames were used to generate this image. I stacked the data in Deep Sky Stacker and processed in PixInsight. The image was cropped as well.

According to Wikipedia the Leo Triplet is a small group of galaxies about 35 million light-years away in the constellation Leo. This galaxy group consists of the spiral galaxies M65, M66, and NGC 3628. ■

2021 YEAR IN REVIEW

BY CHARLIE NIELSEN

The year 2021 was another unusual one for our club, but then when you have done something different long enough … is it "unusual" anymore? I bet many of you thought as I did that this year we would be free of the pandemic that changed everything so much through 2020. It forced us to hold our meetings virtually and erased all our open houses and public events … except for one. More on that later. So, we continued to do Zoom meetings up until October, when we tried our first hybrid meeting.

Although we never used the McMath telescope and the observatory, Observatory Director Jack Brisbin continued to monitor the condition of the telescope. Jack and a crew of Lowbrows repainted the building the previous year. So we were extremely disappointed and displeased when one day Jack discovered graffiti all over the outside walls. Fortunately, it painted over nicely and looks good again. Now we hope it stays that way!

January featured U of M Astronomer and club member Dr. Pat Seitzer. Pat has presented to us many times and this edition was about something that has been problematic to astronomy, especially astrophotography. The title says it all: "Mega Constellations of Satellites and Astronomy." Pat is one of the leading experts on this subject and 44 people attending via Zoom could see why.

February was a presentation by Professor Sean Gavin from Wayne State University titled "Delusion, Fusion and The Age of the Sun: How a collision between Darwin and Lord Kelvin (sort of) gave rise to modern cosmology." As the title suggests this was about differences of opinion about the nature of the Sun and how we arrived at our current understanding. We had 43 online attendees.

March had 37 people online to watch a presentation by Tom Field about how amateurs can take spectra of stars and a few other objects without spending a large amount of money and without a steep learning curve. This is something that our club may want to consider adding as part of our public outreach work.

April brought us club member Brian Ottum, who spoke to us about the steps involved in astrophotography; from gathering the light until the finished product. We had 48 participants via Zoom. We also held officer elections, with two changes. Amy Cantu became our Newsletter Editor and Liz Calhoun became a Vice President. Bravo to both of them. Much appreciation goes out to Don Fohey for his years of great service as Newsletter Editor as well as Jim Forrester as VP and the large effort he has put into outreach and open house schedules. He may no longer be a VP, but his involvement and value to our club is undiminished.

May had 36 people online to hear Jim Shedlowsky talk about the Vera Rubin Telescope, which is going to do a very thorough survey of the southern hemisphere sky; and how amateur astronomers can become involved in it. The title was "The LSST - Faster, Wider & Deeper."

June provided us with an excellent presentation by club member Awni Hafedh about solar imaging and processing. Awni is one of our finest astrophotographers and he showed the 34 people watching how he does it.

July would normally be our annual trip to Sherzer Observatory at Eastern Michigan University to be entertained by Norb Vance. But for the second year in a row, we could not hold an in-person meeting there. Instead, we convened via Zoom to witness a presentation by Dr. Thomas Zurbuchen, NASA's Associate Administrator of Science titled "Together We Explore." It covered many of NASA's recent and current projects as well as the (then) anticipated launch of the James Webb Telescope. This was an example of how our club reaches high in recruiting speakers. We have had many famous people speak to us and some have become regular or repeat speakers. We had 33 people attending.

August produced 25 viewers for a fine presentation by club members Jodi and Roy McCullough about how to use Images Plus software. This was our third presentation of the year about astrophotography. Jodi and Roy, along with Awni and Brian, are examples of the abundant talent we have in this club.

2021 YEAR IN REVIEW continues, p. 3

2021 YEAR IN REVIEW continued from p. 2 ...

September had Dr. John Monnier from the University of Michigan presenting to us about his pioneering work in infrared interferometry using CHARA and ALMA technologies. His title was "Infrared Interferometry at the University of Michigan - Imaging surfaces of stars and their nearby environments." We had an attendance of 28.

October's meeting was attended by 33 people. Our speaker was U of M Astronomer, Keren Sharon. She gave us a great description of her observation and research of gravitational lensing and what it has shown us about mass, gravity, and dark matter. This was our first hybrid meeting. We had 11 in-person attendees and 22 via Zoom. We stopped live broadcasting on YouTube, but we are still recording the meetings and then uploading the recording to YouTube.

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November was our second hybrid meeting. We tried a simpler way to set it up, but it did not work as well as the October meeting. Lesson learned. But not that it was a disaster and the 38 people watching got to enjoy a great -- and at times scary -- presentation by Dr. Fred Adams (UofM Physics professor) titled "The Future of Computation." It was about the exponential growth rate of computer processor chip speed, storage, etc. versus the need for power to feed them. Is it sustainable? Will it saturate? Could computers take over humans? We had 11 in-person attendees, and 28 via Zoom. Fred is one of those famous and repeat speakers I mentioned earlier, as well as being an honorary Lowbrow member.

December was a return to a Zoom-only meeting format for a variety of reasons. We enjoyed an exceptionally fine presentation by club member and previous Newsletter Editor, Don Fohey. Don spoke about how Pluto was discovered, how difficult it was, and how fortunate that Pluto happened to be positioned near the ecliptic at the time. He then went on to describe the New Horizons mission and the precision and difficulty involved in getting it to Pluto, and then on to another Kuiper Belt object. The attendance was 33.

As mentioned in my opening, we did not do any open houses or public events last year. However, an exception was Astronomy At The Beach, which was (as last year) an online event. AATB is managed by the Great Lakes Association of Astronomy Clubs (GLAAC), with most of the officer positions held by Lowbrows. There was a change this year with Adrian Bradley becoming Treasurer and John Wallbank replacing him as President.

In conclusion, 2021 was another year that was frustrating for astronomy and outreach. Several of our officers found themselves often explaining to people why we could not open Peach Mountain or run events that involved crowds. I am hopeful that we are close to getting back to what our club was doing before the pandemic. It is possible that by the time you are reading this we are also starting an open house schedule.

Our membership continued to grow. The most recent number I heard before authoring this article is 177 members! What will it be when you read the 2022 "Year in Review"?

Written by your humble President, Charlie Nielsen ■

UPCOMING MEETING SPEAKER SCHEDULE

APRIL 15: Adrian Bradley, Lowbrow VP. Topic: ***The Dark Skies of Michigan***

MAY 20: Professor Rudi Lindner, U-M History. Topic: ***The Michigan-California Axis in Astronomy***

JUNE 17: Dr. Zachary A. Constan, MSU. Topic: ***"(almost) 14 Billion Years of Nuclei"***

JULY 15: TBA

AUGUST 19: Professor Karim Jaffer, John Abbott College. Topic: **Pending**

SEPTEMBER 16: TBA

OCTOBER 21: Associate Professor Elena Gallo, U of M Dept of Astronomy. Topic: ***Seeing and Hearing Black Holes, (big and small)***

NGC2244 (ROSETTE NEBULA)

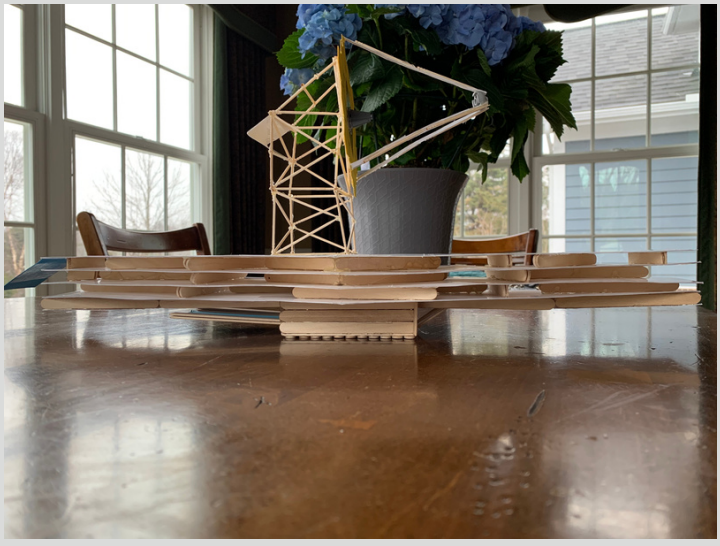
BY GLENN KAATZ

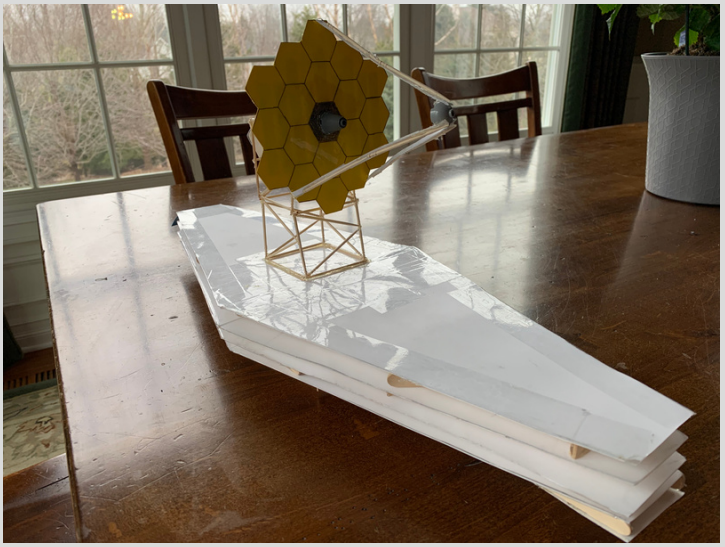
Here's my narrow band rendition of the Rosette Nebula, one of my favorite winter sky targets. I used my wide-field William Optics Z61II refractor fitted with a field flattener, ZWO mini filter wheel (5 position), a ZWO off-axis guider with an ASI120mm mini guide camera, and an ASI1600MM pro main camera cooled to -15C. The mount was a Celestron CGX and everything was controlled with the ASIAIR Pro. 42 five-minute images were captured through each of my H-alpha, SII, and OIII filters over three nights due to my tree-limited view of the southern sky from my backyard in Canton, MI (Bortle 7-8).

Total integration time was 10.5 hours. Processing was done with Pixinsight, Photoshop, and Topaz Denoise AI via a Photoshop plug-in. ■

MODEL OF THE JWST TELESCOPE

BY MATTHEW WEST





These photographs present two views of a model of the James Web Space Telescope built by Lowbrow member Matthew West. ■

NEW FEATURES COMING SOON TO REFLECTIONS

BY JACK SPRAGUE

Our Reflections newsletter is introducing two new features. "The Objective Lens" will be a recurring monthly roll of images submitted by Lowbrow members. Additionally, an annual electronic aggregation of the images from throughout the year will be produced as a volume under the title Backfocus as an ongoing effort to document and record our Lowbrow pursuits and interests.

Each month, "The Objective Lens" will feature themes well in advance. Don't think that the new feature only applies to astrophotographers or EAA astronomers! Any member's astronomy image will be accepted. We like on-themed shots but we love the "observer" side of the pursuit.

Showing the neighborhood kids at the Dobsonian in the driveway? Perfect!

A pre-observing session snack standing around the OTAs at an impromptu Any Clear Nights observing session? Wonderful!

Your best Andromeda image from its return to our skies? Please!

Images submitted will be included in 'The Objective Lens" and in the annual Backfocus compilation without any rights transfer beyond your permission allowing The University Lowbrow Astronomers to use your image for inclusion in these two documents. Should you subsequently sell an image and need to honor exclusive rights of use elsewhere, we will remove it from our archives.

Backfocus will group themed images together in chapters while member "candid" photos will be represented chronologically.

This is not a contest. The intent is to recognize that many Lowbrows produce and share wonderful images – some of stellar topics and some of friends and family. In these new editions to the Reflections production, we want both.

UPCOMING MONTHLY THEMES:

May – Galaxies.

June – Telescopes, binoculars, observatories, mounts, and observers observing (or preparing to as is more likely)!

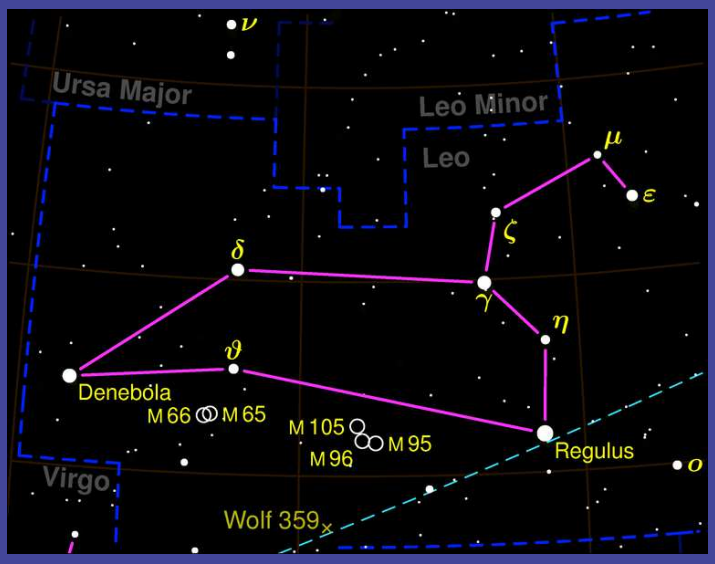
July – The Milky Way (widefield, dark nebulae, nightscapes, reflected images, constellations within … the whole ball of wax).

Please consider submitting your pictures to the editor for inclusion in our new image features. If you would mention in the subject line that your email contains an image for use, all the better. ■

ASTROPHOTOGRAPHY TIP OF THE MONTH: Look to Leo!

Astrophotographers call spring "galaxy season" because galaxies are everywhere in our northern spring skies. (This is also why we chose galaxies as the first theme for next month's new "The Objective Lens" feature.)

Where can you find all these galaxies? There are plenty in Ursa Major and Virgo, but one of the best spots for popular targets such as the Leo Triplet or Markarian's Chain is in -- or near -- Leo, an easy constellation to locate in the sky. (See Doug Bock's photo, p 1, for inspiration!)



(Wikimedia Commons)

OVER THE HORIZON

BY JACK SPRAGUE

The Moon Phases:

01 Apr	Friday	New Moon	Rise 07:44	set 20:37
09 Apr	Saturday	1st Quarter	Rise 03:39	set 12:27
16 Apr	Saturday	Full Moon	Rise 06:59	set 20:25
23 Apr	Saturday	Third Quarter	Rise 03:25	set 12:32
30 Apr	Saturday	New Moon	Rise 06:32	set 20:35
08 May	Sunday	1st Quarter	Rise 02:53	Set 12:19

April sees a return of temperate conditions and the enjoyment of observation on a warm spring evening defined in Michigan as an evening not requiring a parka.

When the moon is high, it is cluster season which we celebrate with our Low Power Lovely in Cancer: M44 the Beehive.

Our challenge object is a stunning pair of interacting galaxies that I certainly hope we all have an opportunity to view at Peach Mountain sometime soon. I'm raising a glass (objective lens, actually) to a return to something approaching normality in temperature, pandemic, and social conditions.

Observing: (all times EST)
Average Sunrise 06:55, Sunset 20:15.

EVENTS

- **Monday, 04 Apr, Conjunction of Saturn and Mars**

The conjunction is difficult as the pair are only 12° above the horizon. Nevertheless, the planets are close enough to be visible in a telescopic eyepiece.
Saturn 21hr 39' ||-15° 02'
Mars 21hr 39' || -15° 22
Visible from 05:15 until dawn around 06:34

- **14 Apr through 30 Apr, Lyrid meteor showers**

The shower originates from a radiant point near Vega - the brightest star in Lyra. The show is predicted to peak on 21/22 Apr, though the Lyrids are highly variable.

- **19 Apr through 27 May, Eta Aquariid meteor showers**

The shower originates from its radiant point near Aquarius but is not visible in Ann Arbor until it rises over the eastern horizon at around 03:00 each morning. These are early morning meteors. Peak activity of around 40 meteors an hour is most likely on May 6, just before dawn.

- **Thursday 21 Apr, Tiangong pass. Mag 1.2**

From 06:13 (10° WSW) -> 06:16 (65° s) -> 06:19 (10° E)

The Week 24 Apr through 30 Apr: Conjunction Week!

- **Sunday 24 Apr, Conjunction of Moon and Saturn.**

The moon passes 4° 30' south of Saturn when 23 days old. The pair is visible in binoculars.
Moon 21hr 45' || -19° 06'
Saturn 21hr 45' || 14° 35'
Visible from 04:01 until dawn at 06:20.

- **Monday 25 Apr, Conjunction of Moon and Mars**

The moon passes 3° 54' south of Mars when 24 days old. The pair is visible in binoculars.
Moon 22hr 40' 10" || -13° 54'
Mars 22hr 40' 10" || -09° 59'
Visible from 04:34 until dawn at 06:18.

- **Tuesday 26 Apr, Conjunction of Moon and Venus**

The moon passes 3°47' south of Venus when 26 days old. The pair is visible through binoculars.
Moon 23hr 37' 10" || -07° 26'
Venus 23hr 37' 10"|| -03° 39'
Visible from 05:04 until dawn at 06:16.

- **Wednesday 27 Apr, Conjunction of Moon and Jupiter**

The moon passes 3° 38' south of Jupiter when 26 days old. The pair is visible through binoculars.
Moon 23hr 50' 20" || -5° 50'
Jupiter 23hr 50' 20" || -2° 12'
Visible from 05:07 until dawn around 6:15.

- **Saturday 30 Apr, Conjunction of Venus and Jupiter**

Venus (Mag -4.1) passes 14' south of Jupiter (Mag -2.1) and is visible to the naked eye, binoculars, and through the eyepiece of a telescope.
Venus 23hr 53' || -2° 10'
Jupiter 23hr 53' || -01° 55'
Visible from 04:47 until dawn at 06:11.

- **Saturday 30 Apr, ISS pass. Mag -3.5**

From 04:18 (68° NE) -> 04:21 (10° NE)

OVER THE HORIZON continues, p. 7

OVER THE HORIZON, continued from p. 6 ...

LOW POWER LOVELY

For April, our lovely is the star cluster M 44: the Beehive Cluster or Praesepe (also NGC 2632). Cancer is the location of this object (8hr 40' || 19˚ 59') east of the line between Asellus Borealis and Asellus Australis (the two central stars in Cancer) and just above the ecliptic.

The world has known M 44 since antiquity. In 130 B.C.E., Hipparchus called the cluster "little cloud" while Aratus, a couple of generations before, called the cluster the "little mist" in his celestial-themed poem "Phenomena." The Roman Pliny asserted the cluster was a weather-predicting object as when it was invisible in otherwise clear skies, a storm was likely to follow.

It was not until 1610, when Galileo turned his telescope to Cancer, that we found the cluster of stars we know today. Galileo recorded "a mass of more than forty small stars," which we now know holds more than 200 members at magnitudes from fourteen to six. Eighty are brighter than a tenth magnitude.

John Herschel — William's son — records the cluster in a modern reckoning within his 1833 Treatise on Astronomy and is the first modern astronomer to introduce the name "the beehive." The ancient name Praesepe — enclosure or more loosely manger — may have contributed to an inside joke as in Herschel's day, beehives were made of straw. Mangers are usually full of straw, and so we have the connection as the two central stars in Cancer come down to us in Christian literature as representing two donkeys guarding the manger of biblical reference.

The cluster is 650M years old and is 610 light-years distant. Its core measure twenty-three light-years in diameter. The cluster's collective luminosity is magnitude 3.6.

Observing The Beehive on a spring evening -- and it resolves nicely into a jewel box with binoculars and even better in a low-powered (25x) 4' refractor — puts one in the company at the eyepiece with Galileo which is a fine state of affairs, how ever you imagine it.

OPTICAL CHALLENGE

The optical challenge this month — Arp 269 — is a pair of interacting once-spiral galaxies in Canes Venatici, most famous for the larger one of the pair: The Cocoon Galaxy. William Herschel discovered the pair in 1788.

Hamilton Arp included the interacting pair in his originally published Atlas of Peculiar Galaxies in 1966 as a series of photographs and examples of possible galactic evolution profiling 338 galaxies. They belong to the NGC 4631 galaxy group, located 25.1M light-years away.

Arp 269 consists of NGC 4490 (the Coccoon Galaxy) and NGC 4485 in an encounter where NGC 4490 has lost all of its spiral distinction while NGC 4485 retains a few spiral elements.

NGC 4490 is the key to framing the pair as the larger of the two (6.3 x 3.1) lying at 12h 30' 36" || 41˚ 38' 38" with an apparent magnitude of 9.8.

Hot blue stars form the interaction trail in a corridor linking the pair. These radiate strongly in the UV spectrum and excite a marked HII nebular glow.

Interestingly, NGC 4490 has a double nucleus. All en Lawrence, a retired electrical engineer, discovered this in 2011 while pursuing a master's in astronomy at Iowa State University by comparing radio telescope and detailed visual measurements. His results were published in the Astrophysical Journal in 2018 as he turned 77. One nucleus radiates in the x-ray spectrum and one in visible light.

The discovery currently leads to the theory that NGC 7780 is a merger remnant of the collision of the galaxy pair 400M years ago. There is a suggestion that this pair's particular collision style leads to a buildup of supermassive black holes in a galaxy's core. ("Revealing the Double Nucleus of NGC 4490" by A.L Lawrence, C. R. Kerton, Curtis Struck, Beverly J. Smith, 16 January 2020, Astrophysics of Galaxies.).

Both galaxies are small for their (original) spiral class. NGC 4485 has one quarter the mass of NGC 4490, and at diameters of 49K ly and 18K light year, they are much smaller than the usual average 75K ly spiral galaxy diameters.

OVER THE HORIZON continues, p. 8

M101 & FRIEND

BY DONOVAN DREW

Specs: 128, 120s images with an ASI294mc pro and 8" F5 Newtonian on a Celestron avx mount.

OVER THE HORIZON continued from p. 7...

The pair are framed nicely for me in my z73 430mm focal length refractor using a 3x focal length extender and my ASI 462MC camera employing EAA techniques. I recommend faster ratios however as my image suffers from the extender's use. A magnification factor of 100+ is required for me.

OF SPECIAL NOTE

April sees the Lyrid meteor shows from April 14 through April 30. The peak is around April 22.

Early morning produces the most dramatic strikes due to the relative geometry of the collision vectors. At peak, expect five to ten bright encounters per hour. Unfortunately, the full moon occurs in April on the sixteenth so there is some significant light in the sky. The good news: the Lyrid origin point -- the radiant -- is approximately 18hr || 34˚ at 23:00 on 21 April, whereas the moon does not rise until nearly 03:00 on the 22nd. Some isolation is possible for time-lapse photography without extensive moonglow.

The location of the incoming meteors should be easy enough to discern: Vega is the brightest star in Lyra with a magnitude of 0.02 at 18h 36' 56" || 38˚ 47' 1". Experienced meteor hunters know that while the radiant is "near" Vega, the location of the individual streaks of atmospheric encounter can occur anywhere in the night sky.

What is the source of the Lyrids? Comet Thatcher, discovered in 1861. Its period is 417 years, so it is unlikely we will observe the comet in our lifetimes (or our children's lifetime). Its return is predicted in 2278.

The Lyrid shower is among the earliest recorded astronomical event. Observation records from China in 687 B.C.E. describe the Lyrids as "falling like rain."

The Lyrids are known to be irregular and can surge to over 100 strikes per hour. Perhaps this year will produce similar excitement. ■

TREASURER'S REPORT

BY DOUG SCOBEL

Overview:

We have $12,515.32 in the treasury, an increase of $2338.73 over last year.

As of March 31, 2022, we have 177 memberships, an increase of 12 over last year. Our membership categories break down as follows:

- 41 (23%) Family/Individual
- 93 (52%) Senior (age 55+)
- 5 (3%) Student
- 24 (14%) Reside outside of Michigan's lower peninsula
- 14 (8%) Lifetime/Honorary/Hardship
- Of the 177, we are "carrying" 13 memberships due to COVID-19 considerations

Seven members subscribe to the printed/mailed version of the newsletter. One member receives the newsletter for free because of personal hardship.

Balance sheet:

University Lowbrow Astronomers Balance Sheet 01 April 2021 - 31 March 2022

Income		**Expenses**	
Dues collected	$3,345.00	Phone hotline (AT&T Messaging)	$174.35
Extra for mailed newsletter	$198.00	Newsletter printing/mailing	$311.15
Astronomical League	$232.50	Astronomical League	$242.50
Donations	$52.55	Donations	$160.00
Shirt/Cap member sales	$74.00	Shirt/Cap club order	$243.72
Shipping/mailing	$18.45	Shipping/mailing	$88.35
RASC publication sales	$692.00	RASC publications cost	$673.05
Miscellaneous	$4.00	Miscellaneous	$249.70
		Observatory/equipment	$84.95
		Guest speaker expenses	$50.00
Total Income	**$4,616.50**	**Total Expenses**	**$2,277.77**
Balance 01 April 2021	**$10,176.59**	**Shirt Inventory**	**48**
Plus Income	**$4,616.50**	**Cap Inventory**	**29**
Minus Expenses	**$2,277.77**		
Balance 31 March 2022	**$12,515.32**		
Net Increase (Decrease)	**$2,338.73**		

Income and expense details:

TREASURER'S REPORT continues, p. 10

TREASURER'S REPORT continued from p. 9 ...

The disparity between newsletter payments and outlay is partly due to the club paying for a subscription for one of our disabled members. Additionally, printing and mailing costs have risen but we still charge subscribers the same $18.00 extra per year.

This year 30 Lowbrows are also Astronomical League members, an increase of three compared to last year. The difference between what members paid and what we paid out is the $10.00 annual fee that the A.L. charges its member societies.

Donations we received this year consisted of smallish donations from several members that included them with their dues payments. Often these are senior members who pay at the family rate ... hint, hint! All these donations are greatly appreciated!

We had two donations going out, our annual $100.00 to the International Dark Sky Association, and our $60.00 annual donation to sponsor the Peach Mountain Clear Sky Chart. Because the annual Astronomy at the Beach was a virtual event in 2021, we did not make a donation to the Great Lakes Association of Astronomy Clubs (GLAAC).

Members bought $74.00 worth of shirts and caps. To shore up our inventory we purchased 16 low-profile caps from Sunrise Printing at a cost of $243.72.

Mailing income was payment from a couple members for shipping Lowbrow apparel that they purchased. Similarly, shipping and mailing expenses were for mailing shirts and caps to members and to several of our guest speakers.

We collected a little less than $20.00 more for the 2022 RASC Observer's calendars and handbooks (17 and 22, respectively) than we paid out. A very modest "profit".

Miscellaneous income was from the sale of four sheets of red "Rubylith" film. Thanks, Jack!

Miscellaneous expenses included $146.00 for post office box rental for the year; reimbursement to Dave Jorgensen for the cost to heat his workshop where we store the club's 17.5" telescope during the winter ($40.00 per year for 2020-21 and 2021-22); the cost for a new ledger book (I'm down to the last three pages of the one we've been using since 2005), and a handful of bank and PayPal fees.

Observatory and equipment expenses consisted mainly of $58.12 for painting the exterior of the observatory building. The rest was for replacement heat lamps and other maintenance items inside the building.

Our lone guest speaker expense was a gift certificate for January guest speaker Dan Durda. Astronomy and Sky & Telescope magazine subscriptions no longer appear as a line item because members now handle their discounted subscriptions on their own.

If you have questions or would like further detail then please do not hesitate to contact me. ■

Come out and support Lowbrow Brian Ottum on May 5 !

Starting at 9 pm on May 5, Brian will be in the parking lot of the Ann Arbor District Library's newest offsite facility located at 265 Parkland Plaza (off Jackson Rd west of Ann Arbor) to share with AADL patrons the EAA program he's been presenting across the country. Here's your chance to see how he does it. (Rain date: Jan 1.)

THE MILKY WAY IN TWO STATES

BY ADRIAN BRADLEY

Same Milky Way region, different states. In both images, the constellation of Cygnus is setting to the Northwest. In the Bortle 1 skies of Kenton Oklahoma at the Okie-Tex star party (below), the greenish glow is called 'airglow'. But in this image, with the mostly frozen Au Sable River at bottom -- a Bortle 3 zone in Alcona County -- the greenish glow is very likely distant aurora. At a KP level of 3 and interplanetary magnetic field pointing south (which is when aurora can be seen in northern latitudes), the conditions were right to capture just enough of the glow to make it in the photo.

This area of the Milky Way doesn't get nearly as much publicity as the galactic center, nor do you see this region imaged as much by Milky Way photography enthusiasts. It's a shame because in both places it was a beautiful sight to see with the naked eye! The cold weather may play a big part in why fewer people in the northern hemisphere are as willing to compose a shot of this fainter region.■

Lowbrow Meeting - March 18, 2022, 7:30pm
Speaker: Adrian Bradley - Pictures of the Sky
https://umich.zoom.us/j/96335537161

Call to order: 7:35pm

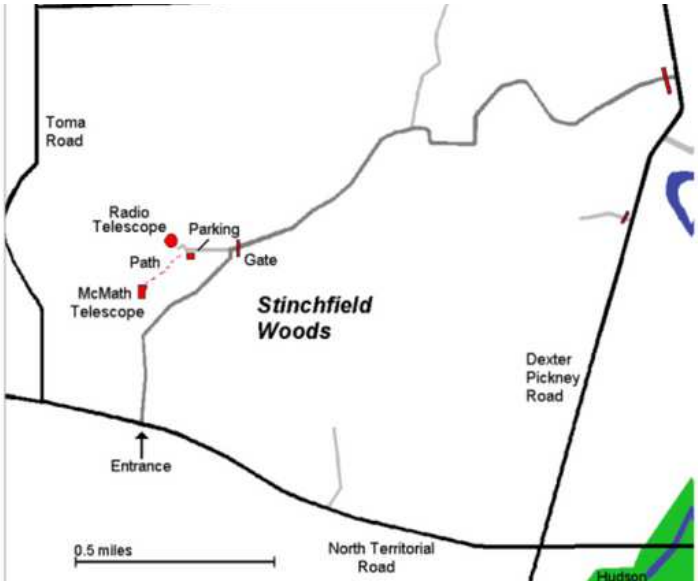
1. Speaker: Adrian Bradley: Pictures of the Sky
    a. Warren Astronomical Society
    b. Royal Astronomical Society of Canada
    c. University Lowbrow Astronomers
    d. GLAAC - Great Lakes Association of Astronomy Clubs
    e. Quotables:
        i. "Donuts are good to eat, but ruin your images"
    f. Bortle MilkyWay Quick Presentation
    g. Finished: 8:38pm - Floppy Hat
2. Reminder: Elections in April
    a. Nominations open now until voting
    b. Looking for 3 VPs (Liz, DaveJ and Joy are stepping down)
    c. Also looking for Treasurer
3. Open Houses - Charlie will send email
    a. Help in running an OH
    b. Covid precautions are a concern
    c. Don: suggest running a members-only night to service members for the first time in 2 years
4. Reports
    a. Joy Poling: Updating website updates with live vs. hybrid status
    b. Adrian Bradley: next month's presentation
    c. Amy Cantu: color AP PDF publication (which timeline to follow?)
    d. Jack Brisbin:
        i. Getting ready for open houses
        ii. Submitting for Obs. Director for 2022
        iii. Still have Red Rubylith sheets for $1 each
    e. Jeff Kopmanis - Online Coordinator
        i. 31 max attendees tonight (9 in-person)
        ii. WordPress at UM may cost money; gathering alternative hosting
        iii. Gave presentation last night
    f. John Wallbank - GLAAC President
        i. AATB 22 Sept 16/17 – In-person
        ii. Event tent, speakers, participation of member groups (presentation or otherwise)
        iii. Working out security for big equipment
        iv. Asking clubs for contribution this year for in-person event
        v. Funds have all been transferred to GLAAC from WAS
        vi. Jim Forrester suggested donating for 2020, 2021 and 2022 when donation is asked for
    g. Doug Scobel:
        i. We have $12,398.36 in the treasury and 177 memberships.
        ii. RASC finally billed us for the 22 Observer's Handbooks that we ordered. I paid that bill, our only outlay since the February meeting.
        iii. Now that in-person meetings are starting to return, if the club deems that we need an in-person treasurer, then I would be willing to step down. Otherwise, I will happily continue on as your treasurer.
        iv. Shameless plug: birding and occasional sky and landscape pictures are found on Flickr.com - do a people search for "Doug Scobel".
    h. Jim Forrester:
        i. Member-only night
            1. Covid-risk mitigation needs to be considered and what the Lowbrows are comfortable with
                a. Vaccination
                b. Distancing
                c. Masking
            2. UM regulations do not seem to be restrictive at this time
            3. Lowbrows might have to come up with a "Code of Conduct" with some additional rules
    i. Don
        i. Messier marathon this year? (first Saturday in April)

9:09pm: Motion to Adjourn: Adrian, 2nd Jack

PLACES & TIMES

Monthly meetings of the University Lowbrow Astronomers are held the third Friday of each month at 7:30 p.m. The location is usually Angell Hall, ground floor, Room G115. Angell Hall is located on State Street on the University of Michigan Central Campus between North University and South University Streets. The building entrance nearest Room G115 is the east-facing door at the south end of Angell Hall.

Peach Mountain Observatory is the home of the University of Michigan's 25-meter radio telescope 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 radiotelescope, 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 canceled if the forecast is for clouds or temperatures below 10 degrees F. For the most up-to-date info on the Open House / Star Party status call: (734) 975-3248 after 4 pm. 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. Evenings can be cold so dress accordingly.

MEMBERSHIP

Annual dues are $30 for individuals and families, or $20 for full time tudents and seniors age 55+. If you live outside of Michigan's Lower Peninsula then dues are just $5.00. Membership lets you access our monthly newsletter online and use the 24" McMath telescope (after some training). You can have the newsletter mailed to you with an additional $18 annual fee to cover printing and postage. Dues can be paid by Venmo, PayPal, or by mailing a check. For details about joining the Lowbrows, contact the club treasurer at: lowbrowdoug@gmail.com

Lowbrow members can obtain a discount on these magazine subscriptions:

Sky & Telescope - $43.95/year

Astronomy - $34.00/year, $60.00/2 years or $83.00/3 years

Newsletter Contributions:
Members and non-members are encouraged to write about any astronomy-related topic. Contact the Newsletter Editor: Amy Cantu cantu.amy@gmail.com to discuss format. Announcements, article, 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
	Joy Poling
	Liz Calhoun
	Dave Jorgensen
Treasurer:	Doug Scobel (734) 277-7908
Observatory Director:	Jack Brisbin
Newsletter Editor:	Amy Cantu
Key-holders:	Jim Forrester
	Jack Brisbin
	Charlie Nielsen
Webmaster:	Krishna Rao
Online Coordinator	Jeff Kopmanis

A NOTE ON KEYS: The Club currently has three keys to the Observatory and the North Territorial Road gate to Peach Mountain. University policy limits possession of keys to those whom 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.

Lowbrow's Home Page
http://www.umich.edu/~lowbrows/

Email to all members
Lowbrow-members@umich.edu

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