

REFLECTIONS / REFRACTIONS

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University Lowbrow Astronomers Monthly Newsletter

March 2022, Vol 46, Issue 3

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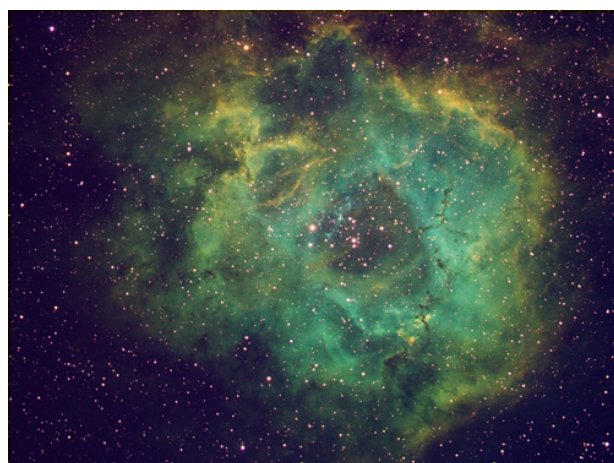


THE ROSETTE

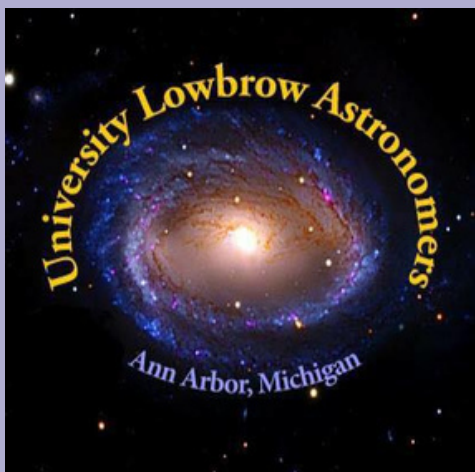
BY JODI &
ROY MCCULLOUGH

All this NE Ohio cold has made for some clear skies. The greenish view → is narrow band with H-alpha, OIII and SII combined using the

Hubble Pallet (R-SII, B-OIII, G-Ha). This consists of six images of each color, 900 seconds long each. They were taken on February 5, 2022. The pink image is R,C,B with H-alpha as Luminance. The R,C,B was a combo of 5 images of each color, 600 seconds long each taken on January 31, and the H-alpha from February 5.



ROSETTE continued p. 10



GEAR REVIEW: NinjaBatt 300W PORTABLE POWER STATION and the ASTROBERRY SERVER

BY JEFF KOPMANIS

My remote control quest has been making some progress this past year, but the last item was how to power things up without an extension cord and line power. Clearly a battery or generator was called for. Around Christmas-time, rather conveniently, there was a sale on the NinjaBatt 300W Portable Power Station for only \$120 (regularly \$250). It had more capacity than any of the other packs I'd looked at, and the price was hard to beat.

When it arrived, it was almost fully charged, so I connected it up and brought its Lithium-Ion internal battery up to 100% in about 10 minutes.

This summer, I'd rigged up all of my AC adapters, USB hubs, and an Astroberry Raspberry Pi 4B onto a clipboard that I could hang from the tripod center tray. I rigged it up with a single power strip so that a single cord could power my entire setup, making a single extension cord a pretty practical connection.

So, the next question was how long a "300W" unit would actually power my contraption. I did the



volt-amp calculations from my AC adapters and came up with 86 volt-amperes, also known as watts (W). This seemed high, and probably was calculated from "max" or "worst-case" values, but I really didn't know what the real current draw was. Time for a test!!

I set up my tripod, mount, cameras, focuser motor, and my power/control contraption to the NinjaBatt and planned to find out 2 things: 1) how much all of this stuff draws and 2) how long I could expect to run my rig on a single charge of the battery. I also hooked up a Wyze camera so I could watch the progress.

I fired up the rig around 4:15 p.m. and while it was running only with the rig, it drew around 15W of power on average. If the mount was slewing, it would rise to about 22W. Battery life hovered around 22 hours, which seemed incredible. I ran the rig, taking numerous shots with the cameras, using the focuser, and tracking with the iOptron ZEQ-25GT for about 2 hours with virtually no drop in the estimated hours.

Since I usually have an Acer Windows laptop in the field, I decided to plug that into the powerstrip on the contraption. The laptop had about 40% battery remaining, so part of the test would be how a charging laptop affected the wattage counter. Answer: 55-60W while charging, with the display on with no power-saving screensaver. Once the laptop battery was charged, the counter went down to around 25W depending on what the laptop might be doing. Note that this was still running the entire telescope rig and the Wyze monitoring camera.

GEAR REVIEW continued p. 3

GEAR REVIEW by Jeff Kopmanis continued from p. 2

Under that load, the range dropped to about 6 hours. I ran this setup for about 4 hours, leaving 2 hours on the battery and about 15% charge. Just to recheck, I unplugged the laptop and usage dropped down to 15W once again. Successful test!

As I shut things down, I found that it takes about 1W to run the Raspberry Pi 4B...probably double of any previous RPi computers.

It was clear after running my rig for 6 hours, leaving 2 hours to spare, that the **NinjaBatt 300W** unit would be more than adequate for most nights in the field. Obviously, outdoor temperatures will affect runtime. I looked up lithium battery efficiency at below-freezing temps and the consensus of the sources was that you take about 30% off of your runtime when it's cold.

ASTROBERRY SERVER

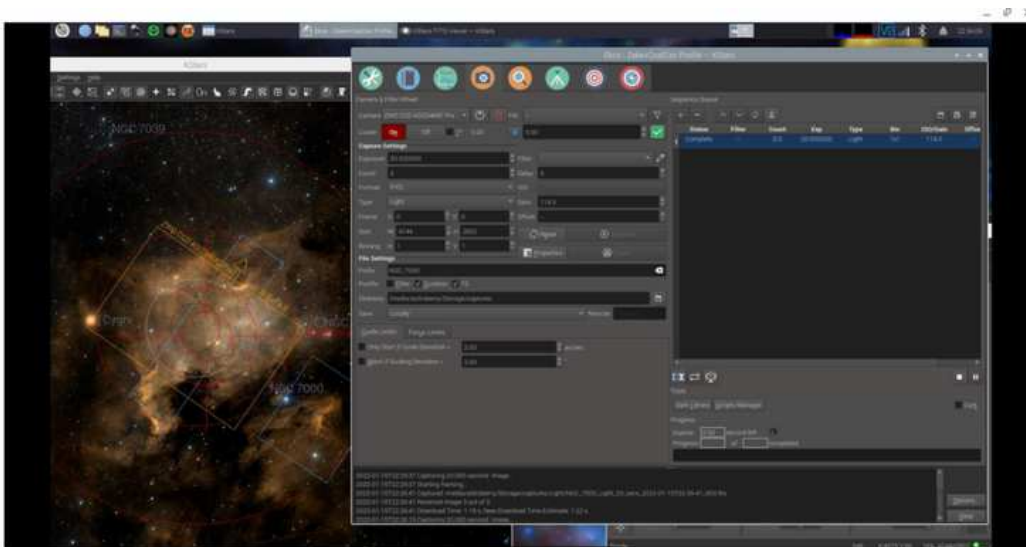
Astroberry is a **free** collection of software that you can put onto an SD card that preloads a Raspberry Pi for astronomy use. It's nearly identical to the commercial StellarMate system, which also provides the same software, but includes support for their price. The popular ZWO ASlairPro system is another commercial option, which uses ZWO software in some cases instead of the open-source software that Astroberry and StellarMate use. ASlairPro and the latest StellarMate systems use a Raspberry Pi 4B as the basic computer. If you're not comfortable with computers or Linux loads, I might recommend the StellarMate solution, since

the support they offer might come in handy.

The Astroberry system comes with FireCapture (planetary), Kstars/Ekos, and PHD auto-guiding pre-installed amongst other software. They use the common Linux INDI drivers, which supports most of the hardware out there. Note that ASlair systems are more limited in this regard, so check the drivers if you're looking at getting an ASlair. I was interested in Kstars/Ekos because it offered an automated capture/control system with auto-guiding and focuser support built into the excellent Kstars planetarium software. Astroberry runs remotely either through a web browser or with a VNC remote control system. I found that using VNC was more reliable. I have screenshot below of what a running Astroberry system looks like.

Astroberry is a little more "hobbyist" than some might like, but it can save you some money. I recommend getting a kit with 8GB of RAM memory, looking for a 256GB SD card (as the computer's main storage), and a large USB key (1-2TB) to quickly move your files to your Windows or Mac machines for post-processing. I save my captures directly to the USB key so that when I'm done, before shutting down, I simply eject the key and read it with my Acer Windows machine. Having the larger main storage is nice if you need faster speed during capture.

Astroberry Server running on a Raspberry Pi 4B is a way to get a reasonably powerful, affordable, lightweight, power-efficient capture and remote control system for your telescope rig. ■



Links:

NinjaBatt 300W
<https://smile.amazon.com/NinjaBatt-Portable-Station-Lithium-Flashlight/dp/B08F9FM4LX>

Astroberry Server
<https://www.astroberry.io/>

Raspberry Pi 4B 8GB RAM starter kit
<https://www.canakit.com/raspberry-pi-4-starter-kit.html>

THE HORSEHEAD & FLAME

BY ABE ORAIQAT

& THE PLEIADES



This is the first photo taken since we moved to the Tampa area. It is the Horsehead/Flame nebula in Orion. The equipment was William Optics Z81 w/ 0.8x Reducer/Corrector, EQ6-R Pro mount, ASI071MC Pro Camera, Optolong L-Enhance filter. This is about 90 minutes of data (3 min subs). Acquisition was controlled using an ASlair Pro, I polar aligned using their experimental All Sky polar alignment, and did multi-star guiding (was getting about 0.45" RMS guiding; not bad).

I took a bit of hiatus from AP due to the move to Tampa and work. I am still learning PixInsight, so hopefully my processing skills get better. Where I live the light pollution is roughly Bortle 6.4.

To the right is my first shot at M45. I used an Optolong L-Pro filter to help with light pollution. The subframes are two-minute exposures. I did the preprocessing and processing in Pixinsight. ■



THE COSMIC GENERATION

-- LIFTS OFF!

BY TAARA JAFFER

My name is Taara, I'm 14 years old and my love for astronomy started six years ago when I used a telescope for the first time after my family and I joined RASC (Royal Astronomical Society of Canada). Late last year, we joined the Astronomical League and the University Lowbrows. Around the same time, I was invited to a meeting for youth astronomers where we talked about activities we could do to get more youth involved in astronomy. After a few meetings we realized that more youth would get involved if the activities were run by youth than by adults, so a bunch of us youth worked towards making an international club run by youth for youth ages 17 and under – the **Cosmic Generation**.

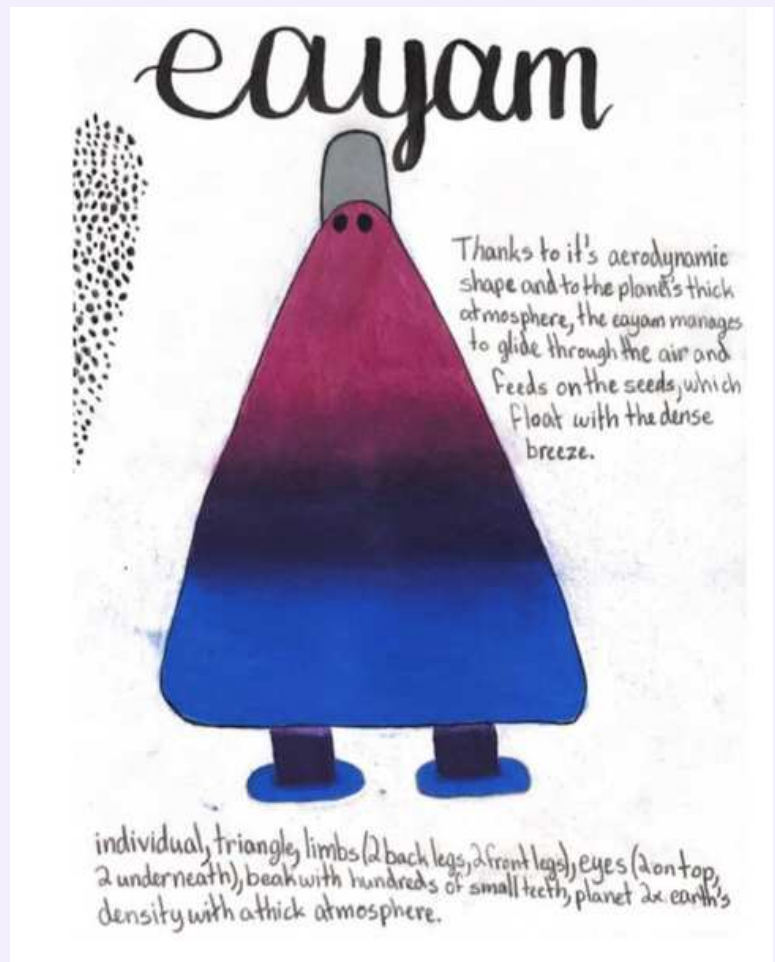
We are currently making a Cosmic Generation newsletter that our members are encouraged to contribute to. We also plan on posting fun at-home activities and projects on our upcoming website and on having monthly workshops run by our youth. In fact, we had our first one on Sunday, February 13th, which was an alien drawing workshop that I ran where we talked about what aliens would actually look like; whether they would look the same way they look like in comic books and cartoons; or whether they would look like extremophiles, which are life forms that can survive in the most extreme environments. We also talked about the environments where we could find aliens, like hydrothermal vents in the oceans under Europa's icy shell. Next, we started creating our aliens by thinking about the extreme environment in which the alien lived, the type of alien (individual or colony), its shape, how it moved (whether it had limbs, fins, or wings), and how it detected predators or prey around it (eyes or antennae). Finally, we drew our aliens and encouraged the participants to talk about their interests in astronomy. This is one of the things I love about the Cosmic Generation since I know that a lot of us youth love to share the things we know and enjoy with our friends and that they often end up getting tired of hearing about them. But here, everyone enjoys astronomy and is happy to hear and talk about it.



We also spoke about our club and showed the aliens many of the participants created during the Tuesday, Feb 22nd Global Star Party:
<https://youtu.be/vJXlzy8kLSc?t=3041>

For youth interested in joining (no membership fees!), or if you'd like to learn more about the **Cosmic Generation**, please reach out to us at: thecosmicgen@gmail.com ■

I've included the sketch of my alien, and what features I chose to draw it this way:



FROM THE DESK OF THE NORTHERN CROSS OBSERVATORY

BY DOUG BOCK

This month the nights were mostly cloudy. The few clear nights we had were sub-zero temperatures, so I didn't get any DSO imaging in. Equipment doesn't work well at -10F degrees. Neither do I. However, a few hours during a couple of days gave me a chance to capture some sunspots as the sun has been relatively active recently.

These two images were taken one day apart, February 8th and February 9th, 2022. Note the rotation of the groupings from one day to the next.

Using a 6" f/10 SCT with a white light filter and with the ZWO asi2600MC PRO camera at prime focus, I took several 30-second videos of raw data. Once collected, I processed them using Autostakkert3 to stack the best 25% of the frames. This is done so we collect the seconds of good

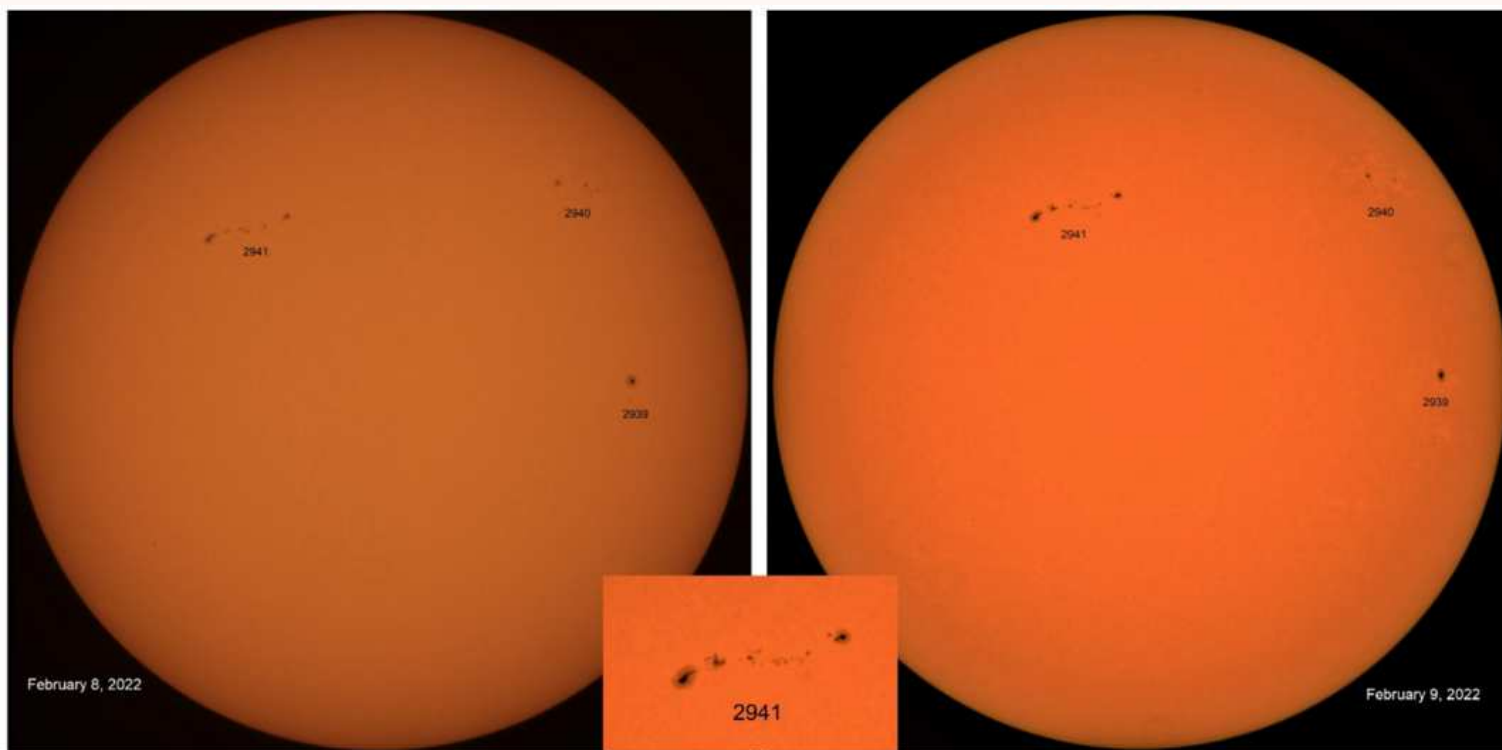
seeing to improve the quality of the final image.

On the 8th, the seeing was about 1/5, and on the 9th about 2/5, so it wasn't the best, but still a nice change of pace to night-time imaging. Clouds rolled in early afternoon on the 9th, so I was a bit lucky to get anything.

My processing varied a bit with me brightening up the picture on the right a bit. This may or may not make the spots a little more pronounced. This ends up being another learning opportunity for me, which I like. I've highlighted the group 2941 from February 9, 2022.

I also made a short video while I was collecting data. It is located on my YouTube channel. <https://youtu.be/DgE03NAXslg>

If you have solar filters for your equipment or an actual solar scope, you might consider checking out the sun this year as the activity increases through its cycle. ■



Celestron 6" f/10 SCT with the ZWO asi2600MC PRO camera, White Light filter.

OVER THE HORIZON

BY JACK SPRAGUE

10 Mar	Thursday	1st Quarter	Rise 10:59	set 03:03. (11th)
18 Mar	Friday	Full Moon	Rise 19:04	set 08:08. (19th)
25 Mar	Friday	Last Quarter	Rise 03:34	set 12:16
1 Apr	Friday	New Moon	Rise 07:41	set 20:34
9 Apr	Saturday	1st Quarter	Rise 03:37	set 12:24

MOON PHASES

We are crawling out of the heart of the Michigan winter though our historical rain and snowfall totals both tick up this month. Evening cloud cover recedes to seventy-five percent: an improvement from the ninety percent we know from late December through the middle of February.

The Observing section now includes passes by notable man-made objects by reader request while winnowing the field for optimal viewing.

This month's **Low Power Lovely** is a bargain hunter's delight: a two-for-one! Bode's Galaxy (M81) and the Cigar Galaxy (M82) seem appropriate with the cool weather and the observing time short in the evening elements.

The **Optical Challenge** is indeed a challenging object through the eyepiece for any but a mighty HD light bucket. Moderate AP techniques for gathering and stacking helps Caldwell 48 show its amazing structure. You'll find it worthwhile to make the effort.

Lastly, we pay tribute to the James Webb Space Telescope in our **Of Special Note** section.

OBSERVING: (all times EST)

Average Sunrise 07:25, Sunset 19:40.

NOTE Daylight savings time switches March 13. Spring Forward to EDT. (See Moon Phases, above.)

Events

- **Saturday 12 Mar, Conjunction of Venus and Mars**

Too widely separated for a telescope (AP) or eyepiece, but one should be able to view both planets simultaneously in a binocular F.O.V.

Venus | 20hr 27'50" | -16° 06'

Mars | 20hr 27'50" | -20° 06'

Visible from 04:53 until dawn around 06:30.

- **Sunday 13 Mar, daylight saving time**

begins at 02:00 - Spring forward

- **Tuesday 15 Mar, Ides of March** - Julian reckoning.

- **Thursday 17 Mar, ISS pass - Mag -3.7**

From 21:08 (dec 10°, SSW) | 21:11 (dec 66°, SE) | 21:12 (dec 49°, E)

- **Saturday 19 Mar, ISS pass - Mag -2.6**

From 21:03 (dec 10°, WSW) | 21:08 (dec 52°, NNW) | 21:06 (dec 19°, NE)

- **Sunday 20 Mar, March Equinox - 11:27**

Spring. Only 10 more weeks of frost for Ann Arbor!

- **Sunday 20 Mar, ISS pass - Mag -3.2**

From 20:12 (dec 10°, SSW) | 20:15 (dec 89°, WNW) | 20:18 (dec 10°, NE)

Travels through Taurus, splitting the bull's horns ending the pass just below the bowl of Ursa Major.

- **Monday 21 Mar, X39B pass - Mag 0.3**

From 20:42 (dec 10°, WSW) | 20:45 (dec 76°, NNW) | 20:47 (dec 18°, ENE)

- **Thursday 24 Mar, Tiangong pass - Mag 1.1**

From 20:49 (dec 10°, W) | 20:52 (dec 71°, S) | 20:54 (dec 23°, ESE)

- **Monday 27 Mar, Conjunction of Moon and Mars**

Too widely separated for a telescope (AP) or eyepiece, but one should be able to view both planets simultaneously in a binocular F.O.V.

Moon 21hr 20' 40" | -20° 51'

Mars 21hr 15' 50" | -17° 06'

Visible from 05:35 until dawn at 07:02. Mars passes with 4° 6' of the Moon.

- **Monday 28 Mar, Conjunction of the Moon and Saturn**

Too widely separated for a telescope (AP) or eyepiece, but one should be able to view both planets simultaneously in a binocular F.O.V. at 4° 25'.

Moon 21hr 42' | -19° 13'

Saturn 21hr 36' 20" | -15° 15'

Visible from 05:38 until dawn 07:02.

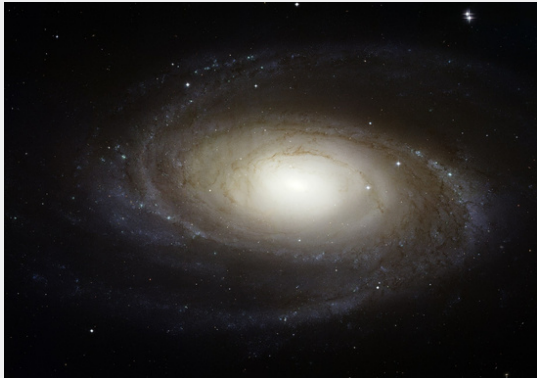
Early April presents a poor window for conjunctions.

- **Comet C/2021 O3 (PanSTARRS)** may possibly appear during late April and May. "Possibly" is the operative word. Perihelion is on 21 April, and we'll have little news on its survival until after this date. Stay tuned!

OVER THE HORIZON continued p. 8

Low Power Lovely

The "schoolboy's delight" pair of Bode's Galaxy (M81, also NGC 3031) and the Cigar Galaxy (M82, also NGC 3034) provide an excellent target for a brief winter session in the sudden clear sky of a cold night. Bode's Galaxy is larger at 27' x 14' and magnitude 6.9 (09 hr 55', 69° 04'). Discovered in 1774 by Johan Elert Bode (Berlin), Messier notes his observation on February 9, 1781, while using a three-and-a-half-foot refractor.



M81 (Hubble)

As a boy under Bortle 1 skies, I could nearly resolve the galaxy visually; but, it became clear with only 7x35 field glasses. Such is the power of dark skies. Today I use 15x70 binoculars and see a faint halo that grows across the cross-section of the galaxy, significantly inclined at a distance of 12M ly.

The Cigar Galaxy at 11' x 4' and magnitude 8.4 (09 hr 55' 52", 69° 40' 47") is much more difficult to acquire. The Hubble Space Telescope recently discovered over 100 young globular clusters around M82, probably resulting from the gravitational interaction with M81. The gases pulled out from the encounter condensed into star fields resulting in this high number of clusters.



M82 (Hubble)

On March 26, 1992, F. Garcia discovered supernova SN1993j in M81 5' SW of the nucleus. There are two confirmed supernovae in M82: SN2004am and SN2008iz. These all are thought to result from the close encounter of the pair some 300M years ago.

The two galaxies are part of a local group (the M81 group), which is the nearest to our own.

M82 has radiating filaments similar to M1, the Crab Nebula in Taurus, and as were recently discovered in our own Milky Way [Charles Q. Choi, Space.com, Feb 01, 2022. <https://www.space.com/meerkat-milky-way-mosaic-filaments>]. What is not known is if these filaments have common sources of origin.

A small wide-field refractor aids tremendously in the observation of these two galaxies. A modest focal length of 250mm proves sufficient.

The following image illustrates my perception in 15x binoculars under Bortle 5 skies.



M81 & M82, photo by Jack Sprague

The Optical Challenge

Spectacular arms of twisted matter tightly wrap Caldwell 48 (also NGC 2775, UGC 4820, PGC 25861) (9 hr 10' 20", 7° 02' 16.5"), which is this month's optical challenge. At a magnitude of 10.4 and an apparent size of 4.3' x 3.3', this third most-famous object in Cancer (behind M44 and M67) demands serious magnification and light-gathering power.

OVER THE HORIZON continued p. 11

GEAR REVIEW: MOVE SHOOT MOVE ROTATOR

BY ADRIAN BRADLEY

I purchased this equipment when my Skywatcher Star Adventurer stopped changing modes and was no longer able to track. Because I already have an Explore Scientific iEXOS-100 PMC-8 mount for small instrument and tracking for DSOs, I wanted to get an even smaller unit to continue shooting nightscapes.

The MSM rotator you see pictured fits in one hand, and easily supports a DSLR with a modest-sized lens. The weight limit on this mount is 6.6lbs (3kg), while on the Star Adventurer it was 11lbs. This is definitely designed with a camera in mind and not a larger telescope.

It has modes for time-lapse photography, but I mainly bought it for its sidereal tracking and half sidereal tracking. The sidereal tracking follows the night sky for gathering more data out of the sky (used in creating composite images), while half sidereal helps with a single shot nightscape. In ½ sidereal mode with a wide-angle lens at 24mm or wider, you can extend the exposure time of a scene to around 30 seconds. Normally you would only have 20 seconds at 14mm to get round stars (I've tested this) as well as 8 seconds for a 50mm lens to get round stars. With the tracker and a 50, shoot time is extended, although I haven't tested how long it's extended.

To polar align, you can use a polar scope or a laser attached to the MSM and point that laser at Polaris. For nightscapes that won't go beyond 30 seconds, a rough polar alignment will do. It's best to try and align a little more closely if you use this to track unguided for more than 1 minute. Please be careful if using the laser, since this will not make passing aircraft very happy, nor will you make friends at serious star parties such as the Great Lakes Star Gaze or the Okie Tex Star Party. Use with caution.

MY GEAR

- Sirui Carbon Fiber Tripod
- Star Adventurer Equatorial Wedge
- MSM Rotator, mounted to Wedge
- Ball Head mount to mount DSLR to
- DSLR with remote shutter

And that's it for doing nightscapes or very wide field astrophotography.

CONCLUSION

For those who are looking to do nightscapes or wide-field astrophotography on a budget, and who already have DSLR or Mirrorless camera gear, the Move Shoot Move Rotator is a viable option. It's a lighter weight than some of the other options from Sky-Watcher or iOptron. If you can find a suitable mounting plate, you can mount it to any of these other wedges or buy the wedge made from the company itself. It works fairly quickly, is easy to set up, and will enable you to start shooting within minutes of arriving at your site.

To see more info about the product, check out the company's website at <https://moveshootmove.com> Or, you can do a search on YouTube for the many reviews of the Move Shoot Move Rotator by some of their brand ambassadors. ■



Photos taken with MSM



See next page for another photo taken with the MSM!

ROSETTE by Jodi & Roy McCullough
continued from p. 1

The scope was a TEC 110 mm with a flat fielder; camera was a ZWO ASI2600 MM; filters were the Baader CMOS optimized filters in a ZWO 7 position filter wheel.

Tracking was on an AP-900 mount and for guiding we used a Baader Vario Finderscope and Phd2 software. Capture software was ASISStudio. Processing was done in Images Plus. ■

ASTROPHOTOGRAPHY TIP OF THE MONTH:

When you see light pillars, pull over and take your photo pronto! They may not last long. Adrian

Bradley did just that recently, catching this shot just as clouds were moving in. It helps to have a portable tracker like the MSM. (See review of the Move Shoot Move Rotator, p. 9.)

UPCOMING MEETING SPEAKER SCHEDULE

MARCH 18: Adrian Bradley, Lowbrow VP.

Topic: *A Travelogue of the Night Sky*

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: Tentative 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**



OVER THE HORIZON by Jack Sprague continued from p. 8

Discovered on December 19, 1783, by William Herschel, this galaxy is part of the Virgo supercluster at a distance of 67M ly.

The Arms. The Arms. The Arms.

Herschel observed in his notes, "tiny knots, like filigree, adorn the arms, which become frayed at the ends."

Edwin Hubble once observed, "Notice the arms cannot be traced as individual structures but rather as separate segments ... The boundary between the lens and the spiral structure is sharp."

At low magnification through my refractor, the galaxy resembles merely a star core surrounded by a fuzzy cloud. At high magnification, the arms resemble barred hackle feathers of some great cosmic bird encircling the starless core. However, my guiding set-up is insufficient to capture a suitable image. Many of you will have no trouble (does that sound like Losmandy envy? Well, it is).

The galaxy is on the Hydra-Cancer border inclined at 44° presenting a good profile. Caldwell 48 is formally a type SA(r)ab unbarred spiral galaxy. The unique arms result from the gravitational interaction with a small dim companion galaxy which has orbited many times twisting up the arms and distorting the more common galactic spiral structure with the repeated tidal encounters.

On September 23, 1993 supernova SN1993z - a type 1a explosive supernova - was observed. This supernova is believed to result either from the collision of two dwarf stars or the very rapid accretion of scavenged matter by a single dwarf. The accretion theory is currently the leading candidate.

As you'll see from the Hubble image, → it is a spectacular sight if one can resolve the arms even briefly. The challenge pays off with an unforgettable view.

Of Special Note

As I write this, focusing continues apace for the James Webb Space Telescope. Its early target is HD 84406 (also Hip 48034) (09 hr 47' 30", $63^\circ 14' 52''$) in Ursa Major.

We usually talk about looking into the past when we do the cocktail party routine. "Jack does amateur astronomy," as a statement from my wife usually brings polite questions.

"Distance is time," I say. "We're looking back in time when we look at the stars." [I shamelessly borrow that from Carl Sagan, of course.]

When looking at HD84406 as Webb's target, we look into the future.

Considering the knowledge gained from the Hubble Space Telescope, I cannot begin to predict what we will learn from the Webb though I am confident it will prove astounding.

At magnitude 6.4, this type G star provides a solitary target in the preliminary alignment stages for the eighteen-panel composite primary mirror.

A good set of field glasses allowed for a solid view as I attempted the evening of February 19 through a rare break in the mid-winter gloom. I did have my Cambridge Star Atlas under one arm (chart 4, labeled star #28), but many of you have a much better innate 'feel' for the sky than I.

Please, have a look at the future and spend a minute with HD 84406 to connect with the Webb and what is to come. ■



Caldwell 48 (Hubble)

University Lowbrow Astronomers – Meeting Minutes – Feb 18, 2022

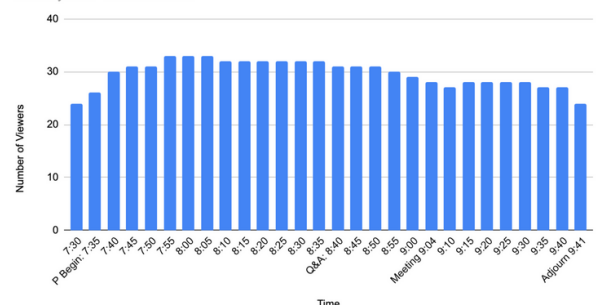
President **Charlie Nielsen** opened the meeting at 7:35 and introduced our fellow member, Professor **Claude Pruneau** who spoke to us about the continuing work being done at the LHC in Switzerland and the Brookhaven National Lab on Long Island to determine the physical properties of quark plasmas. Q&A followed with our talented Lowbrow members.

Business Meeting

- President **Charlie Nielsen** reported that Lowbrow **John Wallbank** is now President of the GLAAC organization. John reported that the Cromaine Library is looking for a presentation in April with the Webb telescope as a possible topic. **Jeff Kopmanis** reported that GLAAC elections had just been held and is well represented by Lowbrow members. A general discussion continued regarding AATB this year.
- Charlie mentioned a meeting held this week regarding Wheelchair Access to Peach Mountain. Member **Jim Forrester** added meeting details including the possibility of having a composting toilet available. Discussions continued about the issues of just getting to the observatory.
- VP **Joy Poling** reported that she is continually updating our calendar with the virtual and/or live status of upcoming meetings.
- VP **Adrian Bradley** reported that he now has access to many potential speakers as he is now involved with several astronomy organizations.
- **Charlie** reported that our scheduled March speaker would not be available. **Adrian Bradley** has now volunteered to be our March speaker.
- Newsletter Editor **Amy Cantu** requested articles for the upcoming Newsletter.
- VP **Dave Jorgensen** had nothing to report.
- Treasurer **Doug Scobel** reported: (1). We have 177 memberships. This count also includes about a dozen memberships that would have expired but for grace extended due to COVID-19 pandemic considerations. (2). We have \$12,505.04 in the treasury. About \$400.00 of that amount is money owed to the RASC for the 2022 observer's handbooks. Amazingly and bafflingly, RASC has not sent us the bill for them yet! (3). VP Liz Calhoun reports that all RASC calendars and handbooks have been delivered. MANY THANKS AND KUDOS TO LIZ FOR MAKING THAT HAPPEN! (4). Since our January meeting our expenses consisted of our usual monthly open house hotline and newsletter printing/ mailing costs, and the cost of a Chili's gift certificate for January guest speaker Dan Durda. (5). Some members report that Sky and Telescope magazine has changed how to enter and renew subscriptions to obtain their club discount. I will investigate and update the instructions on our website.
- Online Coordinator **Jeff Kopmanis** reported that there were 33 attendees to tonight's meeting. He also reported about the Feb 2 Communication Committee meeting which focused on updating the format of the Lowbrow website: (1) The new web site will run on a UM WordPress installation. (2) We'll want to organize it better than the current site is organized. (3) The YoungAstronomers.org domain will be transferred from **Jack Brisbin** to the same management as the rest of the Lowbrow domains. (4) We discussed a more focused role of the web site as more of a reference source versus the role that social media (Facebook, Twitter, Instagram, et.al.) plays in announcements and current events. There was some discussion about costs for renewing subscriptions to Sky and Telescope magazine.
- Observatory Director **Jack Brisbin** reported that everything looks good at the observatory and that he is looking forward to our first Open House event.

Charlie closed the meeting at 9:41PM. Submitted by VP David Jorgensen

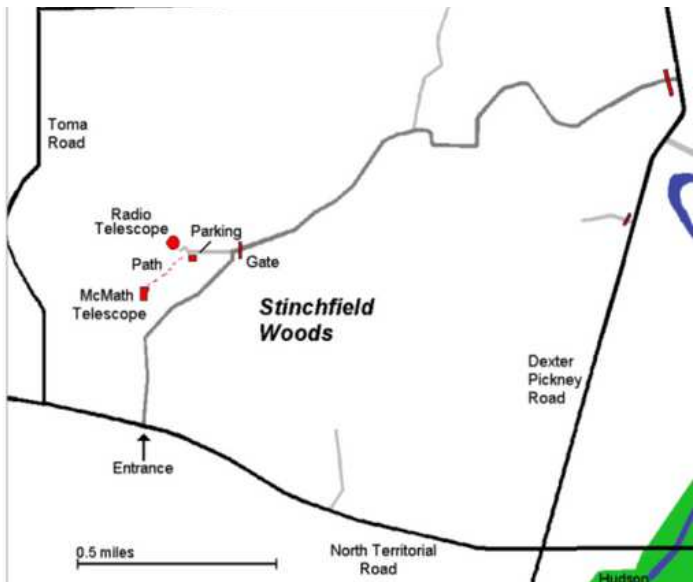
Meeting Attendance
February 2022 - Claude Pruneau



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.



MEMBERSHIP

Annual dues are \$30 for individuals and families, or \$20 for full time students 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
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	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.

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.

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

Email to all members
Lowbrow-members@umich.edu



University Lowbrow Astronomers



www.youngastronomer.org