



STAR FIELDS

Newsletter of the
Amateur Telescope Makers of Boston
Including the Bond Astronomical Club
Established in 1934
In the Interest of Telescope Making & Using

Vol. 34, No. 4 April 2022

This Month's Meeting . . .

Thursday, April 14th, 2022 at 8:00 PM

[Zoom On-line Meeting](#)

All ATMoB meetings scheduled for the Center for Astrophysics (Harvard & Smithsonian) in Cambridge, MA have been **canceled indefinitely** due to concerns over the [coronavirus](#) outbreak.

We are holding virtual on-line meetings using the Zoom application. Please refer to the [ATMoB website](#) for future meetings. Members should check their email on the ATMOB-ANNOUNCE list for additional information. Please [select this Zoom link to attend the 951st Meeting of the Amateur Telescope Makers of Boston.](#)

Astronomy Sketching Workshop



Moon Sketch. Credit Mary McIntyre.

Our featured speaker this month is Mary McIntyre. Mary is an amateur astronomer and astronomy communicator based in Oxfordshire, UK. She is a keen astrophotographer but also

loves creating and teaching astronomy sketching and art. During this astronomy sketching workshop Mary will take you through how to sketch the Sun, the Moon and deep sky objects. You are strongly encouraged to sketch along as she will show you step by step, in real-time with a camera pointing at her hands, how to create beautiful sketches of each object. Even if you think you can't even draw stick-people please give it a try because you may be very surprised with your results. To take part you will need:

- A few sheets of plain white paper.
- Pencil, HB pencils are fine but if you also have a 2B that would be great.
- Pencil eraser with a clean, sharp edge.
- Q-tip for blending.
- A circular bowl or plate that fits onto your page that you can use to draw around.

Mary McIntyre is passionate about astronomy outreach and was awarded the 2021 Sir Patrick Moore Prize by the BAA for her outreach activities. She is a Fellow of the Royal Astronomical Society and a regular contributor to Sky at Night Magazine and the Yearbook of Astronomy. She is also a co-presenter of the Comet Watch radio show and a regular panel member on the Astro Radio Reach Out and Touch Space show.

I am sure that Mary's presentation will provide each of us with the guidelines to begin sketching at the telescope. I hope you'll take part! Then, with practice, your observing skills will improve, and your notes will be more meaningful. So, sharpen your pencils and join me for an evening of astronomical sketching.

~ Rich Nugent – President ~

President's Message . . .

I hope you read Roger Ivester's and Sue French's monthly Observer's Challenge report. If you do, you'll notice two very distinct groups of contributors. The digital observers produce and share outstanding images of the monthly objects while the reports from the visual observers oftentimes include sketches. Roger has been an avid and dedicated sketcher for many decades, and he is very skilled at it. The Observer's Challenge report which was originally intended for visual observers to share their observations are now read by thousands of amateurs across the globe. The report for February (M42/43) was organized a little differently. The visual observations and imaging reports were showcased separately. As a visual observer, I enjoyed the grouping and paid particular attention to the wonderful sketches. It made me wonder why I don't sketch more. It's rather easy and there are benefits and, while I'm no expert, I've gathered some thoughts on the process.

The next time you make up an observing list for an evening of viewing, set aside a block of time for sketching. You'll want to be comfortable so, as always, prepare yourself with warm

clothing for winter nights and bug spray for the summertime. I find myself more willing to sketch during the warmer weather months! It doesn't matter which telescope you use but I think it's important to think ahead. What type of object will you be sketching? How much magnification should you use? How wide should the field be? If you're new to this, pick an object that will be bright and easy. Let's consider the April Challenge Object, NGC 3079. This is a rather bright galaxy in Ursa Major. I like to be seated when I sketch so I typically use a Dobsonian. Ideally, you'll want your scope to track the stars. My Dob is on an equatorial platform but many observers own Go-To scopes that track. I have found that the width of the field is important. You'll want to have it wide enough to include field stars but not so wide as to overwhelm you. I like eyepieces that give 68 degree apparent field of view. To gauge the appropriate magnification, I preview the field using a digital star atlas. I like Sky Safari and check the field for a variety of eyepieces. When I've decided which to use, I add bright field stars to help set the scale and to give reference to the object. I also note the cardinal directions on the template with north at the "12-o'clock" position. Then, it's out to the telescope.

I make sure I have all the supplies I need. Of course, paper, pencils, and an eraser. I also keep handy a Q-tip or stubbing pencils for smearing. Don't forget a clipboard or some other surface to sketch on. Do you wear glasses for reading? Don't forget those! And a red headlamp will not only make seeing your sketch easier but will free up your hands. I fill in the fainter field stars and finally sketch the object. Galaxies like NGC 3079 are smudges of light on your background. I try to make my sketches as realistic as possible. If a galaxy is faint, then I sketch it that way. While you can make a rough sketch of your object at the eyepiece and finish it indoors, be careful, sometimes that will cause you to embellish your drawing! No matter which setup you use, it's important to sketch only what you see, not what you imagine! If you compare your sketches of the same object, you might find you're seeing more detail as you become more experienced.

Do we have to limit ourselves to galaxies? Of course not! I recently talked about safe solar observing. Using a front-end filter, a Herschel Wedge, or a simple projection of the solar image, you can sketch sunspot activity. These spots can be very dynamic and sometimes evolve over a period of a few hours. Also, if you have a spell of clear skies, a rarity here in New England, you can chart the sun's rotation. If you own an H-Alpha telescope you can record prominences, dark filaments, and the occasional flare in active regions.

Observing the Moon is an entirely different ballgame! The detail is, for me, simply overwhelming! If you do choose to sketch the Moon, focus your sketch on small parcels of lunar real estate! Pick a crater or an isolated mountain or perhaps a rille near the terminator. When you're paying such close attention, you might be surprised by how quickly the shadows and light change, so you'll want to be efficient. A rough sketch of the features can be done at the eyepiece. Include lots of notes on brightness levels. The finished sketch can be done later.

When earthshine is bright, many of the nearside features can be seen. Try recording them during the lunar night.

As for planets, evenings with steady seeing are best. In order to see fine details, make sure your scope is collimated. You may want to start with Jupiter. Lots of detail can be seen with 6-inch or larger scopes. You won't need wide-field eyepieces, but I suggest using an eyepiece that gives a magnification between 150-200x. Watch for those moments of steady seeing to record the fine detail usually smeared by our turbulent atmosphere! I know I need to work quickly. Before you know it, Jupiter's rapid rotation will cause its features to move across its face and out of view! How many cloud belts can you see? Is the Great Red Spot visible? What about festoons streaming from the North Equatorial Belt? What colors can you make out? During transits of Jupiter's four large satellites, you can record their subtle color differences and inky black shadows! Bonus: a template for Jupiter's oblate disk can be found here: <https://www.cloudynights.com/topic/22634-jupiter-drawing-template/>

Mars is very tricky! Usually far away with a small angular diameter, the "red fuzz ball planet" can be challenging. The good news is that Mars is heading for a reasonably favorable opposition this coming December. Use as much magnification as the atmosphere will allow and record the (very) subtle areas of dark and light and any hint of the brilliant white polar cap.

There has been some recent speculation that rare, large, white storms will soon erupt in Saturn's atmosphere. This may be the year to watch and record what you see. Online news reports will alert us to the presence of these storms. The rings are closing but this season they'll be tipped some 15-degrees along our line of sight. I find sketching their general shape challenging but that's okay! Do look for and add the Cassini division if you see it.

Stars, especially double or multiple stars, can be strikingly beautiful! Use colored pencils to record them. Small refractors at high magnifications show lovely Airy Disks and diffraction rings. I am always taken by the pureness of a star's color in the Airy disks! I tend to shy away from sketching star clusters. For me, well-resolved star clusters are daunting because of the sheer number of stars filling the field.

Emission nebulae can be fun to sketch. Don't forget to use filters to enhance the view. Planetary nebulas can contain a wealth of detail when viewed at high magnifications but are usually smallish. Can you see a central star? Are there any subtle hints of blue or green? One of my favorites is IC418, the Spirograph Nebula. With large apertures and the right magnification, the nebula's pinkish-orange color and central star can be seen! Great starter planetary nebulas include M57 (The Ring Nebula), M27 (The Dumbbell Nebula), NGC 7662 (The Blue Snowball Nebula), NGC 2392 (The Eskimo Nebula), NGC 1535 (Cleopatra's Eye Nebula), and NGC 3242 (The Ghost of Jupiter Nebula).

Of course, the springtime skies are chock full of galaxies! The Coma-Virgo Cluster is home to a swarm of them, including fourteen Messier galaxies! Try Markarian's Chain or some of the brighter Hickson Compact Galaxy groups. A favorite is HCG 61 (The Box) in Coma Berenices. From the Clubhouse we can see four members of this tight group. Of course, darker skies are best for galaxies but many of Messier's galaxies can be seen from suburban towns and cities.

Don't forget to record the date and time of your observation. Add info about the telescope/eyepiece/filter combination and be sure to include magnification and exit pupil info. Note your sky conditions: seeing, transparency, and the naked-eye limiting magnitude (NELM) of your observing site are important to know.

There are plenty of resources to get you started! Try a Google search or go directly to these websites:

<https://astronomy.com/columnists/glenn%20chaple/2010/01/glenn%20chaples%20observing%20basics%20sketching%20101>

<https://astronomy.com/magazine/erika-rix>

<https://skyandtelescope.org/observing/stargazers-corner/sketching-celestial-observations/>

<https://www.astroleague.org/content/sketching-resources>

<https://www.astroleague.org/programs/sketching-observing-award>

Remember, your sketch doesn't have to look like a photo of the object. It serves to keep an accurate record of what you've observed. Then by sharing your work in the monthly Observer's Challenge Report for example, others may be inspired to try their hand at it. For me, the main goal of sketching is to improve my observing skills by spending more time on each object. But never forget that observing should always be fun, right? Since sketching requires lots of patience and practice, if the thought of sketching an object sounds too much like work, it's okay! There will be other nights. Put the pencils away and just enjoy the views through your scope. By carefully studying your target you will become a better observer. By becoming a better observer, you'll find this hobby more enjoyable and rewarding! I truly hope you'll give astronomical sketching a try! In the meantime, be well and best wishes for clear skies, my friends!

~ *Rich Nugent – President* ~

Meeting Recordings . . .

The recording of ATMoB meeting #950 is available on YouTube: https://youtu.be/4vPheNU3_90

I would like to thank John Briggs for giving his talk.

This link is to the publicly available cut of the meeting recording. To view the original version of the meetings, please see the Announce Forum on the ATMoB Website <https://www.atmob.org/forums>.

~ *Chris Elledge - Membership Secretary* ~

March Meeting Minutes . . .



John Briggs on Zoom. *

ATMoB 950th Meeting Minutes March 12, 2022

Rich Nugent presented the President's welcome. At the upcoming Executive Board meeting next week we will consider whether and when to resume the Saturday work party schedule. Also to be considered will be whether and when to resume Friday/Saturday Clubhouse open hours, including mirror grinding.

Rich reported that the Northeast Astronomical Forum (NEAF) in-person event was canceled. If the Connecticut River Valley Astronomers Conjunction at the Northfield Mountain Recreation and Environmental Center in Northfield, MA is held, it may be scheduled for the last week of August, but this is not certain.

- Alva Couch presented the Secretary's report, including a summary of the wonderful talk at the February meeting by Dr. Sara Seager, reviewing the evidence for and against the existence of life on Venus.
- Eileen Myers presented the Treasurer's report and reported a small inflow. The club received an order from the Boston Public Library for 12 Library Telescopes, for which they will pay in advance.
- Chris Elledge presented the Membership report and welcomed new members Stephen Hoffman and Sam Zipes.
- Glenn Chaple and Rich Nugent presented the Observer's report, and discussed the (626) Notburga occultation on March 11; Eta Leonis occulted by the Moon on March 15, and a close encounter of Venus, Mars, and Saturn one hour before sunrise in the last week of March. On Sunday, March 28, a very thin crescent Moon will appear to the south of the trio.
- The Observers Challenge for March 2022 is Abell 21. You will need a filter, either UHC or H-alpha. Prior images of

Abell 21 were contributed by Mario Motta, Mark Helton, Doug Paul and Chris Elledge.

- The April observer's challenge is the NGC 3079 galaxy in Ursa Major. Please consider contributing your images to Glenn Chaple and/or Rich Nugent in advance of the April meeting!
- Steve Clougherty presented the Clubhouse report. Work parties were canceled in February and March. Thanks were given to Chris Elledge, Bruce Berger, and others for snow shoveling before observing nights. The Clubhouse committee chairs are also considering cutting down the large spruces at the edge of the observing grounds.
- Alan Sliski presented the Mittelman-ATMoB Observatory (MAO) report. In certain weather conditions, the foam-rubber seals on the roof get frozen and the roof will not open. There is a plan to install heaters on the roof rails. Chris Elledge is doing a great job in managing the observatory software. Al Takeda and Chris Elledge are working on an observing request form. Down the road, the group is planning to implement an imaging pipeline to provide users with standardized calibration images.
- Rich Nugent presented the Outreach report.
Upcoming events:
 - There will be a Telescope Modification Party from 12:30-5:30 pm at the New England Sci-Tech Center in Natick, MA on Saturday, April 9.
 - Star parties are planned for Harvard, MA, and Weston, MA.
- Maria Batista presented the Website Committee Report. We are looking for a few volunteers to test the website, including a mix of users, ranging from novices to experienced members.
- Old business: <https://smile.amazon.com> is a great way to donate to ATMoB while shopping on Amazon.
- New Business:
 - Upcoming board elections:

April - Announce the results of the Nominating committee vote.

May - Announce the slate of candidates for the Executive board.

June - Election of Executive board members.
 - Members interested in the nominating committee or running for office should contact any board member.

- Astronomy Day at New England Sci-Tech has been canceled.

- Rich Nugent received a notice from MIT Wallace Observatory manager, Tim Brothers, about light pollution concerns from a planned housing development situated toward the northwest of the Clubhouse. There is a high potential for light pollution affecting the Clubhouse and MIT's Wallace Observatory, as well as a potential for radio interference affecting the Haystack Observatory. There will be a discussion about this development at the quarterly Board meeting on March 17.

Our speaker for March was John Briggs, whose talk title was *An Antarctic Odyssey - Winter-Over at South Pole Station*. In 1994, John was involved in a one year research assignment in Antarctica. His group operated an infrared telescope in the extremely dry air at the South Pole Station, where the environment is ideal for radio astronomy. His adventure began with his arrival during the brief South Pole summer, when the Sun is always above the horizon and aircraft can safely land at the station. This was followed by nine months without sunlight and in almost total isolation, with one supply drop from an airplane unable to safely land. The altitude was 9301 feet above sea level, and snow accumulation was 4-6 inches a year, where large snow drifts from the incessant wind were common. Combating the nearly constant snow drifts was a constant chore, and to use instruments, one commonly had to dig them out of the drifts. Among a multitude of images documenting his experience, John showed an image of the collision between pieces of Comet Shoemaker-Levy 9 and Jupiter taken at the site. The main challenge was keeping the electronics warm enough to function!

~ *Alva Couch* – Secretary ~

Summary of Executive Board Meeting . . .

Thursday, March 17

On Thursday, March 17, the ATMoB Board met for its quarterly board meeting.

The first item on the agenda was to discuss the threat of light pollution from a new housing development to the northwest of the clubhouse. Kelly Beatty has been discussing this with Wallace Observatory manager Tim Brothers, and MIT has concerns about frequency interference with the Haystack radio telescopes. MIT has convened a legal team to draft a letter, and it seems that our best strategy would be to provide content to the letter and add our names to that letter.

We also discussed several aspects of re-opening the Clubhouse, including expanding to a regular weekend schedule for Friday and Saturday nights, making mirror grinding possible, etc.

Haystack Facilities Manager Michael Lessard contacted Steve Clougherty about the possibility of cutting more trees that are currently obstructing views from the MAO and Ed Knight observatories, and we will follow up by meeting with his tree contractor in the future.

Michael Lessard also reported that MIT Facilities has safety concerns about our currently unused water tank in the clubhouse, and is looking into removing that tank at MIT's expense. They might also be willing to remove or replace the oil tank with the same justification. We are pursuing this with MIT.

We also discussed the need for a furnace replacement in the immediate future.

We then discussed the new website design with Maria Batista, chair of the Website Committee, and reviewed the current top-level mockup of the proposed site.

We then discussed what to do with the large number of equipment donations currently in the clubhouse. We informally decided to organize this equipment into three piles, including (1) things to keep for the club, (2) things to discard, and (3) things to sell. This will be a task at a future work party.

Finally, we discussed how to spend Ed Los' December donation. Several options included 3D printing a memory plaque of past members, as well as establishing a "memory garden" on the grounds with memorials to past members. We are holding off on plans for events until the Covid situation becomes clearer.

~ *Alva Couch – Secretary* ~

Membership Report . . .

I am pleased to welcome our newest members: Larry Ciummo and Timothy Coull.

As of March 28th, 2022 we have 342 memberships covering 432 members. This is broken down as follows:

- 144 Regular Members
- 135 Senior Members
- 10 Student Members
- 51 Family Memberships covering 141 Members
- 2 Honorary Members

Please contact me if you need any help with renewing or logging into the website.

~ *Chris Elledge – Membership Secretary* ~

Clubhouse Report . . .



Clubhouse view from Millstone Hill road. 19 March 2022 *

We did not hold a work session at the Clubhouse during the month of March due to Covid precautions. However, we plan to hold our first work session of the Spring on Saturday, April 16. Volunteers are needed for clean-up around the Clubhouse and observatories. This includes spreading gravel in the driveway and filling potholes, removing debris and some raking. We also need a few volunteers to help sort through a considerable amount of donated equipment located in the second floor library. Other tasks will be assigned depending upon the number of volunteers on hand.

Lunch will be provided to all who volunteer.

~ *Clubhouse Committee Chairs* ~

~ *Steve Clougherty, John Reed and Dave Prowten* ~

Astronomy Day at NE Sci-Tech Canceled . . .

Astronomy Day that was planned for Saturday, May 7, at New England Sci-Tech in Natick must be postponed due to construction scheduled during that week. We thank ATMob members for your past participation and look forward to inviting you to fall Astronomy Day on Saturday, Oct 1, 2022. Thank you!

Best regards,

Bob

~ *Submitted by Bob Phinney (Sci-Tech President)* ~

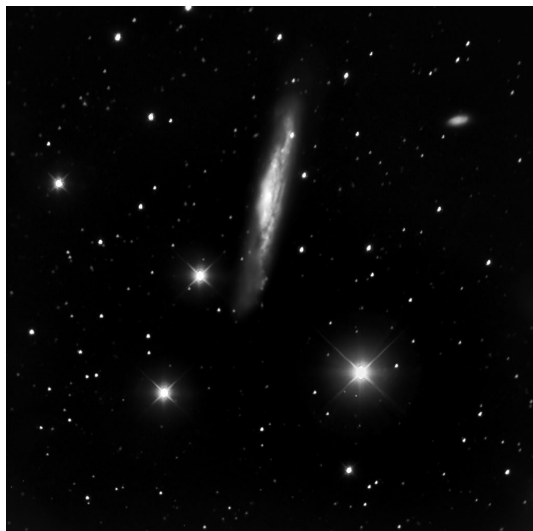
Observer's Challenge** ...

April, 2022

NGC 3079 Barred Spiral Galaxy in Ursa Major

Magnitude 10.9

Size 7.9' x 1.4'



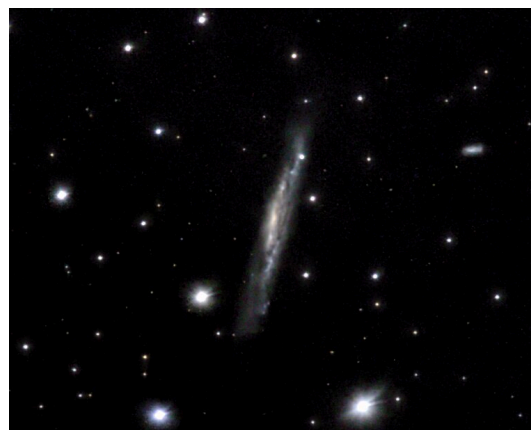
32-inch f/6, STL 1001E camera, about 1 hour total integration. North is up. The galaxy at upper right is CGCG 265-55, mag. 14.8. Image by Mario Motta

If you're a fan of edge-on or nearly edge-on galaxies, you'll love this month's Observer's Challenge, the barred spiral galaxy NGC 3079 in Ursa Major. Modern observations reveal a 3,000 light-years wide gaseous "bubble" emanating from the galaxy's center, created either by a massive black hole or a burst of star formation.

By chance, I was in the neighborhood of NGC 3079 on the evening of April 28, 1976 when I viewed the double star Struve 1402 (magnitudes 8 and 9, separation 33") with a 3-inch f/10 reflecting telescope. The pair was faintly seen, as was a 10th magnitude companion, 132" south of the main star. NGC 3079 was less than a half degree north-northwest of Struve 1402, but there is no way I would have glimpsed the 11th magnitude galaxy with this little scope.

On the evening of March 21, 2022, I sought out NGC 3079 with a 10-inch f/5 reflector. Plugging the galaxy's 2000.0 coordinates (RA 10h 01m 57.8s, Dec. +55° 40' 47") into the AAVSO's online Variable Star Plotter (VSP), I came up with a finder chart that showed a star-hop pathway connecting it to the nearby 4th magnitude star upsilon (ν) Ursae Majoris. Low power eyepiece in place, I followed a path 3 degrees south-southeast from upsilon to a triangle of 8th and 9th magnitude stars which lies just south of NGC 3079. Increasing the magnification to 141X, I spotted a faint, elongated smudge just northwest of the northernmost star in the triangle. The bright central region was barely visibly directly, while averted vision fleshed out the outer extensions, which ran roughly north to south.

NGC 3079 was discovered by William Herschel on April 1, 1790. A recent calculation indicates a distance of 54 million light-years.



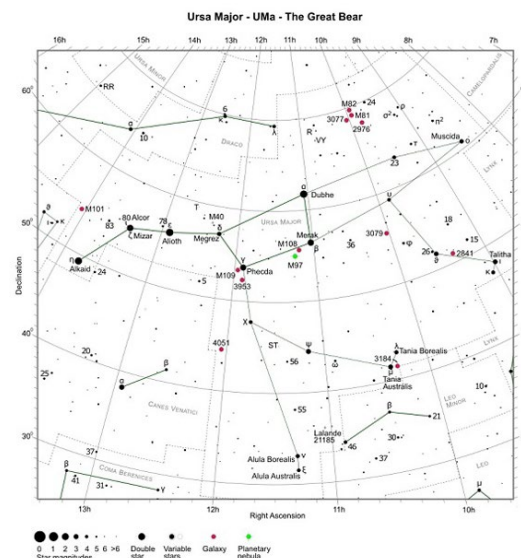
Canon 80D, 1200mm FL f/8.0 lens, ISO 800, 64 x 2min subs = 2hr 8min total exposure, 1/2 scale, North up, no filters. Image by Doug Paul.

NAME: _____ DATE (M/D/Y): 3/31/2022 TIME: 10:05 PM
OBSERVING SITE: 825 Harbor Rd. Townsend MA
SKY CONDITIONS: Seeing (Antoniadi Scale) _____ Limiting Mag _____
OBJECT: NGC 3079 TYPE: _____ CONSTELLATION: _____

SKETCH (note direction of west)

OBSERVING EQUIPMENT
Binoculars: ☒ _____
Telescope: 10-inch f/5 reflector Eyepiece: 9mm Nag
Mag: _____ X Field Diam: _____ ° Filter (if any): _____

NGC 3079, as seen with 10-inch f/5 reflector at 141X. Field diameter +0.6 degrees. Sketch by Glenn Chaple.



Finder Chart A. Image credit: www.tristateastronomers.org

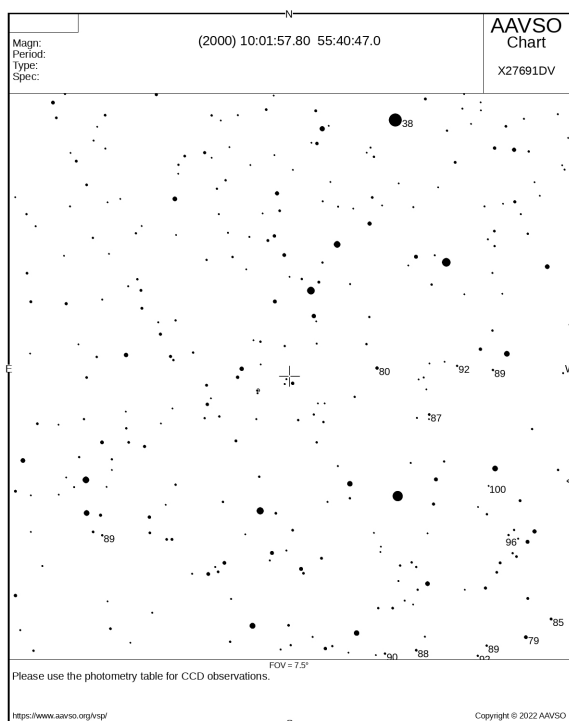


Chart B: Chart created using AAVSO's Variable Star Plotter (VSP). Numbers indicate stellar magnitudes, decimals omitted. Magnitude 3.8 star is upsilon (υ) Ursae Majoris. Stars plotted down to magnitude 10. North is up in this 3.5 by 2.5 degree field.

****The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'll be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge or access past reports, log on to <https://rogerivester.com/category/observers-challenge-reports-complete/>.**

~ Submitted by Glenn Chaple ~

Skyward . . .

By David H. Levi
April 2022

Omicron!

Over the last few months you must have read dozens of articles, online or in print, about the Omicron variant of COVID-19. Fortunately, this is not one of them. This article is about Omicron² Eridani. It is a faint star in the constellation of Eridanus, the River.

Actually, there are two Omicron stars in that constellation. The first is brighter, and is a variable star. The second one is one of the closest stars to the Sun. Omicron², also known as 40 Eridani, happens to be not a disease but one of the most interesting star systems in the entire sky.

Omicron² is a triple star system that is only about 16 light-years away. Its brightest component is a Sun-like star faintly visible to the unaided eye on a good night. It lies in northern

Eridanus, the River, just a few degrees west of Rigel at the foot of Orion. The secondary is a white dwarf star. Unlike the companion of Sirius, this star is 9th magnitude and not near the brighter star so it is easy to see in a small telescope. The third star is not far from the secondary, but at 11th magnitude it is also not difficult to spot. This third star is a red dwarf.

Although red dwarf stars are the most plentiful, by far, in our region of the Milky Way galaxy, they are almost impossible to see because they are so small. The closest one to us is Proxima Centauri, or Alpha Centauri C, which at 4.24 light-years is the closest star to the Sun. Also because they are so small and intrinsically faint, only a few of them are easy to find. 40 Eridani C is one of the easiest to find.

This interesting star has something else going for it. In 2018 astronomers discovered a planet orbiting the primary star. With a rapid orbit around Omicron², such a planet would receive much more radiation from the primary star than Earth gets from the Sun. But in 2021 new observations cast doubt on whether this planet exists at all.

Whether Omicron² Eridani really hosts a planet is subject to debate. But in the universe of Star Trek, it surely does. It is the home of Vulcan, Mr. Spock's home world. In the episode "Operation Annihilate", which appears near the end of the first season, Spock is blinded by the intense light used to immobilize the invading parasites on the planet Deneva. However his blindness is temporary because of the existence of an inner eyelid. Vulcan is said to orbit Omicron² Eridani's primary star, and since it is so much brighter than our Sun, even though Vulcan is at the same distance that Earth is from our Sun, they need the inner eyelid to protect their eyes.

I rather enjoy the idea that the fictitious Vulcan happens to orbit one of my favorite real stars. And unlike the Omicron variant, which one hopes will be eradicated soon, we admire Omicron² Eridani, the real star, and wish it to "Live long and prosper."

~ Submitted by Mario Motta at the request of David Levy ~

*Editor: * Photos by Al Takeda unless otherwise noted.*

May Star Fields DEADLINE
Sunday, April 24th

Email articles to Al Takeda at
newsletter@atmob.org

Articles from members are always welcome.

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c/o Chris Elledge, Membership Secretary
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STAR PARTIES: Bernie Kosicki

Laura Sailor

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How to Find Us...

Web Page www.atmob.org

MEETINGS: Zoom On-Line Meetings until further notice. Meetings held the second Thursday of each month (September to July) at 8:00 PM. For meeting details go to www.atmob.org and check your email on the ATMOB-ANNOUNCE list.

CLUBHOUSE: Latitude 42° 36.5' N Longitude 71° 29.8' W

The Tom Britton Clubhouse is currently closed. It is the white farmhouse on the grounds of MIT's Haystack Observatory in Westford, MA. Take Rt. 3 North from Rt. 128 or Rt. 495 to Exit 33 and proceed West on Rt. 40 for five miles. Turn right at the MIT Lincoln Lab, Haystack Observatory at the Groton town line. Proceed to the farmhouse on left side of the road. Clubhouse phone #: (978) 692-8708.

Heads Up For the Month . . .

To calculate Eastern Daylight Time EDT subtract 4 from UT.

Apr 1 New Moon

Apr 4 Saturn 0.3 degrees north of Mars

Apr 9 First Quarter Moon (Moonset at midnight)

Apr 16 Full Moon

Apr 19 Moon at perigee

Apr 22 Lyrid meteors peak

Apr 23 Last Quarter Moon (Moonrise at midnight)

Apr 27 Venus 0.01 degrees South of Neptune

Apr 29 Mercury at greatest eastern (evening) elongation (21 degrees)

Apr 30 New Moon, Venus 0.2 degrees South of Jupiter