



## 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. 8 September 2022

### This Month's Meeting . . .

Thursday, September 8th, 2020 at 8:00 PM

Phillips Auditorium

Center for Astrophysics (Harvard & Smithsonian)

Parking at the CfA is allowed for the duration of the meeting

ATMoB will attempt to simulcast the September meeting. Please [select this Zoom link to attend the 955th Meeting of the Amateur Telescope Makers of Boston.](#)



## NUGENT LAB

Image courtesy of the Nugent Lab, Olin College of Engineering

### Near-Earth Asteroids (or, Why Dinosaurs Should Have Learned Physics)

Our guest speaker this month is Dr. Carrie Nugent. Her talk will provide an overview of asteroids, including some historic impacts. She will highlight the urgent importance of our search for near-Earth asteroids, and what we might be able to do to prevent a future impact.

Dr. Carrie Nugent is a scientist, a professor, an author, a TED senior fellow, an enthusiastic science communicator and a firm

believer that space exploration is for everyone. Dr. Nugent received her Ph.D. in Geophysics and Space Physics at UCLA (University of California, Los Angeles). She is currently an Associate Professor of Computational Physics and Planetary Science at Olin College of Engineering in Needham, Massachusetts. Her research focuses on asteroid detection using machine learning. She is the author of the popular science book [Asteroid Hunters](#) (2017, TED Books, Simon and Schuster). She also produces and hosts [Spacepod](#), a podcast that features casual conversations with astronomers, planetary scientists and engineers.

Please join us for a pre-meeting dinner discussion at [House of Chang, 282 Concord Ave., Cambridge, MA.](#) at 6:00 pm before the meeting.

~ Cory Mooney – President ~

### President's Message . . .

#### ATMoB is back at the CfA

The Center for Astrophysics (Harvard & Smithsonian) has started to open to outside groups, and thanks to Rich Nugent's timely persistence and close communication with the building manager, Charlie Hickey, we now have our original time slot back in the Phillips Auditorium. After two years away, I look forward to seeing many of you there in person.

I will do my best to make the meetings hybrid, with a Zoom component for those who cannot safely attend in person. Although I can't guarantee excellent hybrid interactivity we will make this as seamless as possible. It will greatly depend on what AV interfaces are available, and how effectively we can figure out how to use them prior to the meeting.

For those wanting to attend in person, please assess your own personal risk tolerance. The Phillips Auditorium is a wonderfully historic venue, but it is not a breezy open air pavilion; masks are highly encouraged. If you don't feel well, or you know that you have recently been exposed to anyone with Covid, please stay home. There is always the next meeting, and I will try to have a Zoom component open for this one.

I look forward to the many separate discussions that break out after the meeting. It's a running joke that the real meeting starts after the close of the official meeting. It is a great time for new members to meet and greet fellow members and to exchange stories and tips and tricks. Oftentimes 5 to 8 different discussion groups naturally form around the room and you can wander around until you find a topic of interest or meet an old or new friend. Oftentimes the die-hards among us can end up closing shop after 11pm.

The long ride home from the meeting is always a smiling one.

See you all soon.

~ Cory Mooney – President ~

## Meeting Recordings . . .

The recording of ATMoB meeting #954 is available on YouTube: <https://youtu.be/uZsleBAfWkU>

I would like to thank Christine Zacharer and Tom Consi for giving their talks.

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* ~

## Membership Report . . .

I am pleased to welcome our newest members: Sarah Burns; Laura Campagna; Sharon Gentges and Alden MacNulty; Viswanath Natarajan and Anusheya, Pranav, and Vidyasri Viswanath; John O'Neill; Neil Perlin; and John Sherffius.

As of August 29th, 2022 we have 379 memberships covering 481 members. This is broken down as follows:

153 Regular Members  
152 Senior Members  
13 Student Members  
59 Family Memberships covering 161 Members  
2 Honorary Members

Renewals for FY2022-2023 are past due for all members except for members who joined after January 1st this year. Please visit the website at <https://www.atmob.org/renew> to begin your renewal. You may need to login and revisit the link to proceed. If you want a printed newsletter mailed to you each month, then you need to select one of the membership levels that include "with Mailed Newsletter" in the type.

You can also download the membership application from the website at <https://www.atmob.org/signup> by clicking on the "Download an application" link.

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

~ *Chris Elledge - Membership Secretary* ~

## July Meeting Minutes . . .

**ATMoB Meeting #954**  
**July 14, 2022**

Corey Mooney presented the President's welcome. As the club's new president, he stated that "it's an exciting time to meet a large group of people passionate about astronomy". Cory congratulated Rich Nugent on doing a fantastic job as the president. He also mentioned that all of the Board members have been awesome. Corey would like to have more informal club member meetups around Boston, e.g., astro events at a

park, organize a "meet and greet", or possibly set up telescope to observe together.

- Alva Couch presented the Secretary's report, including a summary of the wonderful talk given by Phil Levine on the life of Fred Hoyle.
- Eileen Myers presented the Treasurer's report, and reported a net inflow for the month of June with minimum expenses.
- Chris Elledge presented the Membership report and welcomed new members Donald Beahm; Paresh Khanapurkar; Yoav Orot and Inman Skyler; Allen Scalise; David Schwartz; and Rasil Sheikh.
- Glenn Chaple and Rich Nugent presented the Observer's report. In July, Saturn, Jupiter, Neptune, Uranus, Mars, and Venus are all in the morning sky. The Perseid meteor shower peaks on August 12. The July Observer's challenge is NGC 6210, the "Turtle nebula," with images by Mario Motta, Doug Paul, and Chris Elledge, and a sketch by Glenn Chaple. The August Observer's challenge is NGC 6772, with images contributed by Mario Motta, Doug Paul, and Chris Elledge and a sketch by Glenn Chaple. The September Observer's challenge is NGC 6751.
- Steve Clougherty presented the Clubhouse report. During the last work party on June 11, we had 22 volunteers. We cleared junk out of the second-floor office, which is the last room to be cleaned out. We'll install an air conditioner donated by Maria Batista on Saturday, July 16. The 25-inch Dobsonian is tracking wonderfully and is worth a visit! The 8mm Ethos eyepiece has arrived for the 25-inch, and it's time to design the filter slider! We're having an ongoing discussion with MIT facilities about the oil furnace. They want to replace the oil tank, but we would prefer a simple electric furnace, while MIT staff advocates an HVAC system, which is considerably more expensive.
- Alan Sliski presented the Mittelman-ATMoB Observatory (MAO) report. Things are working well. We've refined cable management so that cables don't get caught when the pier raises and lowers. The automated procedures need more work and calibration flat fields (sky and panel flats) are being compared. The team is slowly sorting through those details. An all sky camera is the next thing to be installed.
- Maria Batista presented the Website Committee report. We have approvals from the Board for the new website design, and we're updating content and images before going live.
- Corey Mooney reported on an email from Kelly Beatty containing the Outreach Committee report, with commentary by Rich Nugent. A new telescope was delivered to the Medford Public Library, and the Belmont library telescope received a tune-up and cleaning.
- Old business: <https://smile.amazon.com> is a great way to donate to ATMoB while shopping on Amazon.

- New Business: None

## Members' Presentations

### An Overview of Amateur Rocketry



Christine Zacharer \*

Christine Zacharer gave us a talk on her other hobby, that of amateur rocketry. Christine is a certified and licensed high-powered model rocketry enthusiast.

This hobby has several unique challenges. The main propellant of high-powered rocketry was classified as an explosive after 9/11/2001, temporarily ending the hobby. More recently, rules have evolved for several classes of rocketry and licensing of rocket pilots. Rocket classes include low and mid-power rockets with commercially made, unmodified motors, and high-powered rocketry capable of reaching 100,000 feet or more in altitude. There are several complications: high-altitude flights require FAA approval, and adding directional control on the ascent is a federal crime due to the fact that this more or less makes the rocket capable of functioning as a guided missile. Recovery of high-powered rockets can be problematic, as they can come down several miles from the launch site.

### Exploring the Universe in the Frequency Domain



Tom Consi \*

Tom Consi spoke about observing the universe through the “lens” of radio astronomy. Tom is a teaching professor of Electrical and Computer Engineering at Northeastern University.

His talk outlined his project of building a simple radio telescope to map the neutral Hydrogen (HI) signal from the Milky Way. Starting with a surplus one meter dish antenna, he added a detector, several pre-amplifiers and a computer-controlled software-defined radio (SDR) to do signal processing. Realizing that there was no way his computer could do ideal signal processing from the SDR, he added analog circuitry to allow SDR sampling at a lower, practical frequency while being able to detect presence or absence of the HI signal.

By aiming the antenna at the zenith and sampling for 17 hours, he was able to detect when the antenna was pointed at the Milky Way! He hopes in the future to use the rig to do rough HI imaging of the sky. One big advantage of this particular rig is that he doesn't need darkness or even a clear sky to detect HI signals.

~ *Alva Couch* – Secretary ~

## Clubhouse Report . . .



Marsha Bowman cleaning the observing field \*

During the summer months the Clubhouse Committee held two work sessions; July 16, with 27 members volunteering and the second on August 13, with 19 volunteers. We are very grateful to the members who helped out this summer!

Outdoor grounds work continued over the summer with volunteers mowing and trimming the entire Clubhouse area. Special thanks to Chris Elledge who arrived early at each session and took charge of our riding mower. Other volunteers used the power mowers and weed trimmers to maintain the property. Drought conditions in August called for minimal mowing, but the grounds have been kept trim to mitigate the tick population. We urge all members who use the observing field to take precautions against ticks and mosquitos. There are DEET sprays and lotion kept in the kitchen area of the Clubhouse for anyone to use.

Several members pitched in during the summer to help clean and organize our second floor library and conference/archive

rooms. Both rooms have been cleared of old junk and furniture which is no longer used. We now have meeting space available in the library and the conference room can be used as an office when needed. Thanks to Mike Hill for removing our heavy, old printer.

During July we held a mirror cleaning clinic under the supervision of our master optician, Phil Rounseville. A total of 5 mirrors were cleaned, including our 25 -inch Dob.

Our observatories have been in full operation all season, save for the WilliamToomey Observatory which had the C-14 removed and replaced with our donated 5-inch Meade APO refractor. Tom McDonagh and Eric Johansson will be bringing this observatory online this fall, if all goes well.

The MAO observatory now has an all-weather camera installed and will be available for members to utilize in the near future. *Editor: The camera had a mount fixture failure and is currently off-line.*

We encourage members to consider being trained on the telescope and observatory of their choice. Training is normally scheduled during our monthly work sessions at the Clubhouse.

We would like to thank Eileen Myers for providing home cooked meals at each work session this season!

Thanks to the following members and friends of the ATMoB for helping during July and August: Bill Bakes, Maria Batista, John Blomquist, Marsha Bowman, Glenn Chaple, Paul Cicchetti, Steve Clougherty, Tom Consi, Alva Couch, Nina Craven, Chris Elledge, Pierre Fleurant, Maureen Galevi, Mike Hill, Eric Johansson, Dick Koolish, Bruno Leung, Ed Los, John Maher, Jim McLaren, Corey Mooney, Walter Mulligan, Eileen Myers, Rich Nugent, Kiera Powell, Phil Rounseville, John Reed, Allen Scalse, Art Swedlow, Al Takeda, Michael Toup, David Wilbur, and Tom Wolf.

Our next work session is tentatively scheduled for Saturday, September 10.

~ *Clubhouse Committee Chairs* ~  
~ *Steve Clougherty, John Reed and Dave Prowten* ~

## Observer's Challenge\*\* . . . September, 2022

NGC 6751 Planetary Nebula in Aquila  
Magnitude 11.9  
Size 26"



NGC 6751, 32-inch f/6, ZWO ASI 6200 camera, Luminance, H-alpha, OIII, SII filters. North is up. Image by Mario Motta.

For the third consecutive month, the Observer's Challenge features a planetary nebula. Having explored NGC 6210 (July) and NGC 6772 (August), we turn to NGC 6751. Nick-named the "Glowing Eye Nebula" or the "Puffball Nebula," NGC 6751 is located a little over one degree directly south of the 3rd magnitude star lambda ( $\lambda$ ) Aquilae at the 2000.0 coordinates RA 19h05m55.6s, Dec -5o59'32.9". It shares the same low-power field with the ruddy-hued carbon star V Aquilae, which lies one-half degree to its northwest (refer to the accompanying Finder Charts).



NGC 6751, 1200mm f/8.0 lens, Canon Ra camera, ISO 1600, 60 x 2min subs = 2hr total exposure, 200% scale, North up. Image by Doug Paul.

As was the case with NGC 6210, NGC 6751 was another William Herschel "miss." It was discovered on July 20, 1863 by the German astronomer Albert Marth, who spotted it with a 48-inch reflecting telescope. Despite the large aperture of this instrument, NGC 6751 can be picked up with a 6-inch scope, even smaller under dark-sky conditions. Visual observers will see the bright, inner part of NGC 6751, which, at 26 arc-seconds in diameter, is approximately equal in apparent size to

Saturn's disk. Imagers might be able to capture a faint outer halo that spans twice that diameter.

I tackled NGC 6751 on the evening of August 24, 2022, using a 10-inch f/5 reflecting telescope. It took on the appearance of a 12th magnitude star at 40X. A wide-field eyepiece at 80X revealed its non-stellar nature. At 208X, NGC 6751 was small, dim, and roundish. I was unable to glimpse the 14th magnitude central star. Switching to a 6-inch f/8 reflector, I was still able to pick out NGC 6751 from a rich Milky Way field. An O-III filter held between my eye and the eyepiece dimmed or eliminated the surrounding field stars, while NGC 6751 maintained its brightness.

As with many planetaries, the distance to NGC 6751 is uncertain. A NASA website cites a distance of 6500 light-years and a total diameter of 0.8 light-years.

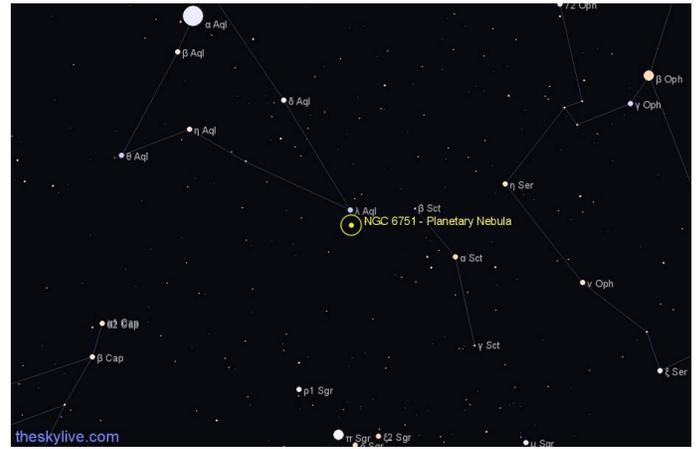
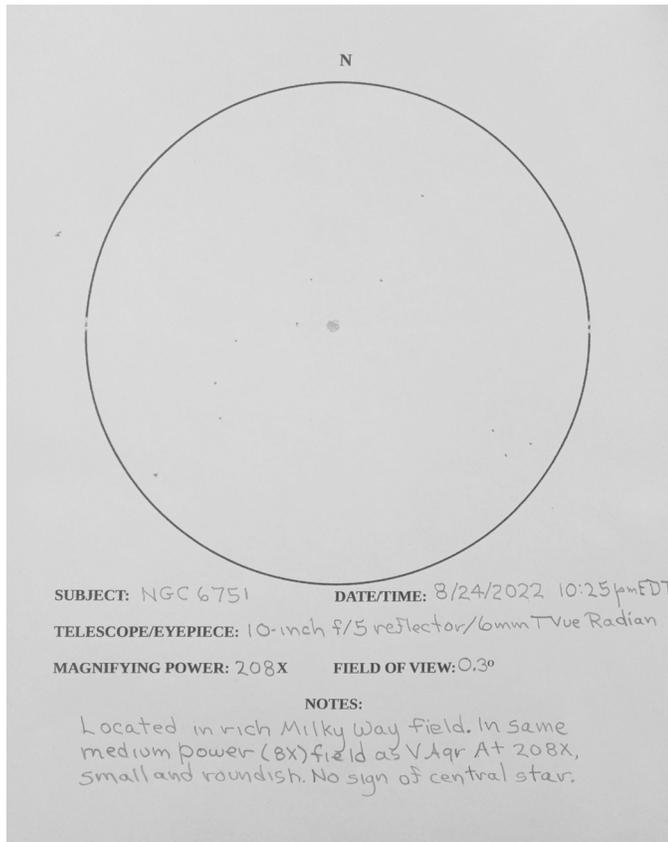


Chart A - theskylive.com



10-inch f/5 reflector at 208X. North is up in this 0.3 degree field. Sketch by Glenn Chaple. [Click this link for an enlarged view.](#)

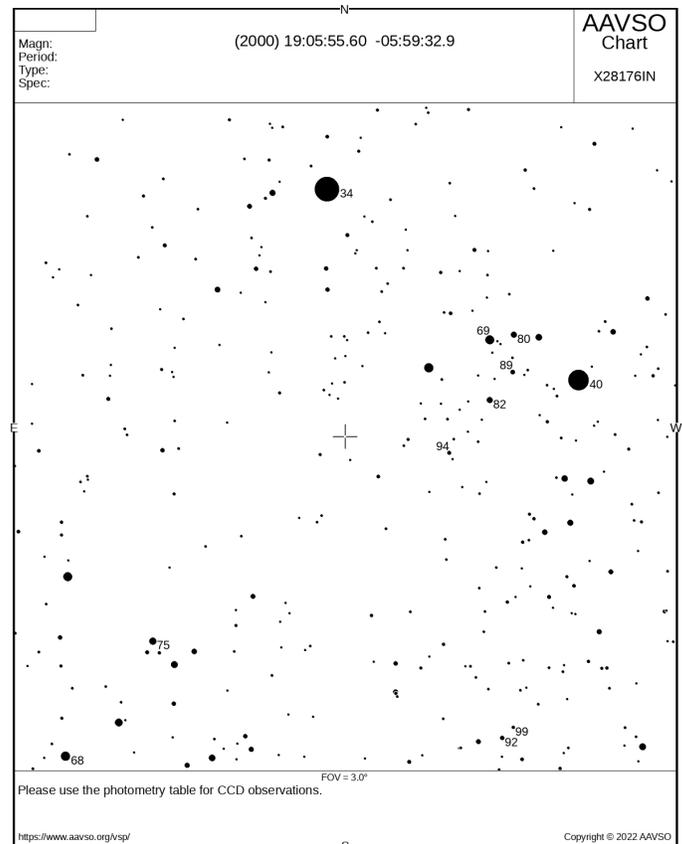


Chart B - Created using the AAVSO's Variable Star Plotter (VSP). Numbers are stellar magnitudes, decimals omitted. The magnitude 3.4 star is lambda (λ) Aquilae, the magnitude 4.0 star is 12 Aquilae, and the unmarked star near lower center is V Aquilae. Stars plotted to 11th magnitude. North is up in this 1½ by 1½ 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](mailto: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 ~

## 2024 Total Eclipse Trip . . .

The 2024 eclipse trip is organized and is now accepting reservations from ATMoB members till next week (August 27, 2022), then open to all (eclipse is April 8, 2024). The eclipse planning committee has worked diligently on this, and deserves quite a bit of credit in getting the trip together. I am late to the committee, as I was originally planning on viewing the eclipse from Mexico. But given all my grandkids and family, I decided it would be best if we all go to Texas. So now I am happy to contribute and will be part of the pre eclipse safety and weather discussion the night before, and dinner party with early results the night of the eclipse itself.

We have arranged with "[Great Getaways](#)" of 313 Cambridge St, Boston, a travel agency to handle the logistics. Details can be seen on the [following link, which also has the sign-up info](#) and deposit info.

As in past eclipse trips, this will prove to be a sellout, and I would reserve early.

The deposit is nonrefundable. You can buy trip insurance of course.

I am part of the American Astronomical Society eclipse planning and safety committee, and they feel 40 million people will be traveling to see this eclipse. If you want to see this do not wait till next year to sign up!

We have found an ideal location: The Bevy Hotel, in Boerne, Texas. This is a Hilton, with all the amenities, including a conference room for our use.

We have buses reserved. Though you could stay at the hotel for 3 min 15 seconds, we will have a location that Peter Bealo has arranged that is very close to the centerline and gives 4 min 20 seconds of totality.

This of course allows us mobility if we need to travel further to get a "clear" spot" which has been needed in about 40% of all eclipses I have ever attended (15). Buses were needed for the 2017 eclipse in Missouri, thus everyone will be included for the buses, in the trip costs.

This will be a memorable and fantastic time in Boerne, Texas, a city of about 22,000 located just northwest of San Antonio.

[Sign up soon, and reserve your spot!](#)

~ *Submitted by Mario Motta* ~

## Skyward . . .

By David H. Levi  
September 2022

**On first looking through Baade's window**



Baade's Window with NGC 6522 (center) and NGC 6528 (lower left).  
Photograph taken and used by permission of Adam Block/Mount Lemmon  
SkyCenter/University of Arizona)

*Much have I travell'd in the realms of gold,  
And many goodly stars and clusters seen;  
Round celestial islands have I been  
With telescope after telescope to the night sky hold.  
Oft of one wide expanse had I been told  
That Galileo ruled as his demesne;  
Yet did I never breathe its pure serene  
Till I heard Baade speak out loud and bold:  
Then felt I like some watcher of the skies  
When a new star cluster swims into his ken;  
Through his majestic window looks upon the Milky Way  
He star'd at the centre of our galaxy.  
Like a diamond shining in the sky, with a wild surmise—  
Silent, through the mists of space and time.*

(--Keats, Chapman's Homer sonnet, adapted for this article.)

Lying in the western portion of Sagittarius, the Archer, is a small region of sky that has unusual importance for astronomers around the world and is one of the most beautiful things in the whole sky. It was most thoroughly studied by the German astronomer Walter Baade while using the great 100-inch Hooker reflector at Mt. Wilson Observatory in California while searching for the center of the Milky Way galaxy. Before this time, the location of the Milky Way Galaxy's center was not well understood.

Walter Baade had an interesting and unusual life. In the mid-1930s, he lost his application papers for United States citizenship. Consequently, in 1941 he was classified as an enemy alien and was held virtually under house arrest. Somehow a compromise was reached and he was allowed to state his address as Mount Wilson observatory. With a monopoly of observing time on the great 100-inch telescope, he concentrated his efforts on the Milky Way galaxy.

One of Baade's most important projects was a search for a region of the sky that could be close to the center of the galaxy. He took good advantage of the wartime blackout over the city of Los Angeles. Intended to help obscure the city from attacking warplanes from Japan it also darkened the sky significantly so that Baade could try to find areas near the galactic center. Although he did not find it, he did uncover a small area in Sagittarius relatively free of dust. This "window" was slightly south of the main center of the galaxy. The globular cluster NGC 6522 is at the middle of this area, and NGC 6528 is near its edge.

Astronomers still use this "window" to study stars in the Milky Way's central bulge. Important information on the internal structure of the Milky Way is still being better understood by measurements made through this "window". The window's shape is irregular in outline and delimits about 1 degree of the sky, an area of about 2 moon diameters. It is centered on NGC 6522, which might be, at 12 billion years, the oldest star cluster in the sky. Baade's Window (BW) is the largest of the six areas through which stars in the Milky Way's central bulge can be seen. Stars observed through Baade's Window can be called BW stars, similarly giant stars can be called BW giants. [OGLE \(Optical Gravitational Lensing Experiment\)](#) and other observation programs have successfully detected extrasolar planets orbiting around central stars in this area.

On a rare clear evening during the summer of 2022, I gazed at the clusters and stars through this window. I shall never forget the exquisite majesty of this distant region which, thanks to Walter Baade, allows me to peer toward the middle of the enormous Milky Way galaxy which is our home.

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

## Stellafane Winners . . .

ATMoB member, Michael Toups, won the 3rd Place Mechanical Design competition at this year's Stellafane Telescope Convention. He built a 6-inch f/8 Refractor with an inverted fork mount with a Byers Gear.



Michael Toups with his 6-inch f/8 Refractor. \*

Two other ATMoB members, Peter Bealo and Drew Prescott, won the Saturday evening raffle prizes.

Peter Bealo won a set of TeleVue 14mm, 10mm, 6mm and 3.5mm Delos eyepieces.



Peter Bealo with his winnings. \*

Drew Prescott won a set of TeleVue 17.3mm, 12mm, 8mm and 4.5mm Delos eyepieces.



Drew Prescott with his Delos eyepieces. \*

We also had many ATMoB members that participated in and successfully completed the 2022 Telescope, and Binocular Olympics list. Those that observed the required number of objects received a golden "Olympic" pin with a medal ceremony for their efforts. Thanks to Eileen Myers, Larry Mitchell and Phil Harrington for offering this challenge at Stellafane.

~ Al Takeda - Newsletter Editor ~

Editor: \* Photos by Al Takeda unless otherwise noted.  
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**October Star Fields DEADLINE**  
Sunday, September 25<sup>th</sup>

Email articles to Al Takeda at  
[newsletter@atmob.org](mailto:newsletter@atmob.org)

Articles from members are always welcome.  
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Amateur Telescope Makers of Boston, Inc.  
c/o Chris Elledge, Membership Secretary  
99 College Ave  
Arlington, MA 02474  
**FIRST CLASS**

#### EXECUTIVE BOARD 2022-2023

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## How to Find Us...

### Web Page [www.atmob.org](http://www.atmob.org)

**MEETINGS:** Held the second Thursday of each month (September to July) at 8:00PM in the Phillips Auditorium, Center for Astrophysics (Harvard & Smithsonian), 60 Garden St., Cambridge MA. For INCLEMENT WEATHER CANCELLATION see [www.atmob.org](http://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 open every Saturday from 7 p.m. to late evening. 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.

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## Heads Up For the Month . . .

*To calculate Eastern Daylight Time EDT subtract 4 from UT.*

Sept 3 First Quarter Moon (Moonset at midnight)  
Sept 10 Full Moon  
Sept 17 Last Quarter Moon (Moonrise at midnight)  
Sept 22 Autumnal Equinox  
Sept 25 New Moon  
Sept 26 Jupiter at opposition  
Oct 2 First Quarter Moon (Moonset at midnight)  
Oct 8 Mercury at greatest western (morning) elongation, 18 degrees