



## 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. 31, No. 6 June 2019

### This Month's Meeting . . .

Thursday, June 13<sup>th</sup>, 2019 at 8:00 PM

Phillips Auditorium

Harvard-Smithsonian Center for Astrophysics

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

### Library Telescope Program and Stonehenge



Copyright *Sky & Telescope*, Kelly Beatty

Our guest speaker for the June meeting will be J. Kelly Beatty, MS. Kelly will update us on the status of the New Hampshire Astronomical Society's Library Telescope Program and how ATMoB could play a role in expanding the effort. He is interested in creating thoughtful discussions on the topic as well as promoting the idea that ATMoB gets involved in the program.

Kelly will also discuss his most recent trip to Stonehenge, tracking down the quarry where many of the stones were excavated to make up this pre-historic structure. Academics have suggested the site has possible connections with ancient astronomy as well as ritualistic purposes.

Senior Editor Kelly Beatty joined the *Sky and Telescope* staff in 1974. From 2004-07 he served as the editor of *Night Sky*, their magazine for beginning stargazers. After 43 years of pounding the keyboard, in early 2018 he retired from full-time work. He remains actively involved in many *Sky & Telescope* articles, tours, and other projects.

Kelly holds a Bachelor's degree in geology from the California Institute of Technology and a Master's degree in science journalism from Boston University. During the 1980s he was among the first Western journalists to gain firsthand access to the Soviet space program. Asteroid 2925 Beatty was named on the occasion of his marriage in 1983, and in 1986 he was chosen as one of the 100 semifinalists for NASA's Journalist in Space program.

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.

### President's Message . . .

Happy June Folks! I am really excited to celebrate the 50th anniversary of the historic Apollo 11 Moon landing. I have distinct memories of sitting around a little black & white TV on a Sunday evening with my parents and seven siblings (at the time). We sat transfixed and silent until we heard the words, "Tranquility Base here, the Eagle has landed". Everyone stood, hugged and cheered. I was 8 years old at the time, and I was sure we would not experience another moment such as that in my lifetime. I was proven wrong as we watched transfixed as Neil Armstrong stepped off the lander onto the Moon's surface and heard him utter the words, "That's one small step for Man, one giant leap for Mankind".

At that age I had no idea of the geopolitical ramifications of the event, and no real understanding of the Cold War to put the event into context. I had no idea of the effort required or the technology developed for such an audacious endeavor to be accomplished. I did realize this was something very special, and that has remained true for the near 50 years that have followed. This one event may have had more of an impact on my life than all others. Without those amazing moments I wonder if I would have pursued a career in science, and how different the world would be if President John F. Kennedy in 1962 had not challenged the Nation to put a man on the Moon before the decade was out. I long to see another national or international purpose that can bring the people together as the Apollo missions did. I too wonder if you experienced the same feeling of wonder and euphoria, and encourage you to share your thoughts and experiences of those heady times.

I wish to thank Bernie Kosicki, Rich Nugent and Eileen Myers for working tirelessly to secure a new insurance policy that covers all members while at the Clubhouse, our Cambridge meeting site and at volunteer venues, for liability and injury. This is a significant upgrade and will provide more peace of mind in the event of accident or incident. Please contact Bernie, Rich, me or Eileen if you have questions regarding the policy.

I also would like to personally recognize Al Takeda for the fantastic job he does in putting together our monthly newsletter. It's a labor of love and a showpiece for all other astronomy organizations. Thank you Al!

I hope to see you all at the upcoming June meeting in Cambridge where we will elect club officers for the upcoming year. If you have an interest in running for one of the Officer or Member-at-Large positions, you must be nominated from the floor at the Annual Meeting in June as per our Club Bylaws. To be eligible, suitable written notice containing the name or names of the person or persons to be nominated, with the signatures of at least seven members supporting the candidate(s), is filed with the Secretary not less than ten days prior to the date of the Annual Meeting. Please contact John via email (secretary@atmob.org) if you have any interest.

~ Tom McDonagh – President ~

## Annual Meeting Notice . . .

Thursday, June 13th is the Annual Meeting for the members of the Amateur Telescope Makers of Boston.

ARTICLE VI, Section 2 of the Bylaws; "Annual Meeting - The first regular meeting of the members in June of each year shall be the annual meeting for the election of officers and the hearing of the annual reports."

The 2019 Nominating Committee, Chair Corey Mooney, Bruce Berger and Laura Sailor has proposed a slate of nominations to be voted on at the Annual Meeting in June. The nominees are:

President: Tom McDonagh  
Vice President: Rich Nugent  
Secretary: John Harrington  
Treasurer: Eileen Myers  
Membership Secretary: Chris Elledge  
Member at Large: Maria Batista  
Member at Large: Alan Sliski  
Member at Large: Al Takeda

Per Articles IX of the ATMob Bylaws: Members shall have the right to offer additional nominations from the floor of the annual meeting, provided only that a suitable written notice, containing the name or names of the person or persons to be nominated from the floor at the annual meeting, and the signatures of at least seven members, is filed with the Secretary not less than ten (10) days prior to the date of the annual meeting.

## Meeting Refreshment Assignment . . . 2019

Jun. – Bruce Berger  
July – TBD

## May Meeting Minutes . . .



Dr. George Ricker \*

Minutes of the 920th ATMob meeting held May 9, 2019 at the Harvard-Smithsonian Center for Astrophysics in the Phillips Auditorium. Club Vice President Rich Nugent called the meeting to order at 8:04 pm.

- Vice President Nugent announced that the Club needed to elect its Nominating Committee.
- Secretary John Harrington read the minutes of the April Club meeting.
- Treasurer Eileen Myers gave the Treasurer's Report.
- Membership Secretary Chris Elledge presented the Membership Report, showing 336 total memberships covering 442 club members. He presented graphs showing that there was a small decrease in regular club memberships, more than offset by an increase in family memberships.
- Vice President Nugent presented the Observer's Report and noted that the Moon would transit across the Beehive Cluster on May 10th, and the asteroid Ceres would be at opposition on May 28th. He also noted that Jupiter would reach opposition on June 10th. April's Observers Challenge objects were NGC 4036 and 4041, both galaxies in Ursa Major.
- John Reed gave the Clubhouse Report and noted that a search of the Clubhouse had located the 16-inch Dobsonian, which had long been missing. Paul Valleli reported that he had been acting as caretaker for the scope's primary mirror. The next work parties are scheduled for May 18th and June 15th, both of which will focus on the Mirror-o-Matic machines and the spin grinder.
- Vice President Nugent presented the Outreach Report and noted that the Stratton Elementary School star party went well, despite poor weather. The next star party is scheduled for New England SciTech in Natick on May 10th.
- Old Business: None

- **New Business:**

Bruce Berger spoke on the requirement in the club's Bylaws to elect 3 members as a Nominating Committee and the election was duly held by secret ballot. The Committee will consist of club members, Chairperson Corey Mooney, Bruce Berger and Laura Sailor.

Vice President Nugent then introduced Dr. George Ricker of MIT's Kavli Institute to give an update on the Transiting Exoplanets Survey Satellite (TESS) mission, in which he serves as Principal Investigator.

TESS is performing a wide-field survey of the sky for transiting exoplanets around nearby stars, especially Earth-sized water worlds. Approved by NASA in 2013, launch date was April 18, 2018. The mission will monitor Sun-like stars and M-class dwarf stars out to about 200 light years and down to the 12th magnitude. TESS will survey virtually the entire sky over its scheduled two-year mission life, as opposed to Kepler, which monitored only 0.25% of the sky. The mission began with a survey of the southern sky and will soon switch to surveying the northern sky. An extended mission has been proposed, which would begin in late 2020 and allow TESS to hunt for exoplanets with longer-period orbits.

The TESS satellite will monitor both primary and secondary eclipses. Primary eclipses allow astronomers to examine planetary atmospheres by examining light passing through an exoplanet's atmosphere. TESS is sensitive to transits down to only 25 parts in a million, or about 1/40th of a milli-magnitude. To the date of this presentation, 38 planetary transits observed by TESS have been confirmed by ground-based observations. TESS functions something like a "finderscope" for NASA's upcoming James Webb Space Telescope by locating nearby exoplanet systems.

TESS is a relatively small satellite, but has 4 widefield cameras that together take in some 2300 square degrees at a time, which is 6% of the sky! It was launched on a SpaceX Falcon 9 rocket into a "lunar resonant orbit," which keeps Earth out of the field of view but permits a data download at perigee once per month. A particular advantage of TESS's orbit is that it is quite stable, with virtually no station-keeping fuel required. So the satellite carries 300 years worth of fuel on board!

In addition to its exoplanet monitoring mission, TESS also compiles light curves for any supernovae within its field of view. The mission has discovered some 53 supernovae through the date of this presentation. TESS has also discovered lots of asteroids, including some near-Earth objects (NEOs).

Vice President Nugent thanked Dr. Ricker for his presentation and Al Takeda for providing the refreshments, and then adjourned the meeting at 9:52 pm.

~ *John Harrington, Secretary* ~

## Meeting Recordings . . .

The recording of ATMoB meeting #920 is available on YouTube: <https://youtu.be/CXtnvnZHCxg>

I would like to thank Dr. George Ricker for giving his presentation and allowing us to record it.

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>

~ *Chris Elledge – Membership Secretary* ~

## Membership Report . . .

I am pleased to welcome our newest members: Margaret Murphy, Simba Pasipanodya, and Melvin Townsend.

As of May 27th, 2019 we have 337 memberships covering 443 members. This is broken down as follows:

- 157 Regular Members
- 108 Senior Members
- 8 Student Members
- 59 Family Memberships covering 165 Members
- 3 Guest Members
- 2 Honorary Members

June 1st is the beginning of our renewal period. Members with an email address registered with the club should receive an email notifying them of their need to renew. Members that joined after January 2019 are not due for renewal until next year.

You can check if you need to renew and start your renewal process on the website at <https://www.atmob.org/renew>

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

Donations are encouraged during membership renewal to help keep our club running smoothly, our clubhouse maintained, and telescopes in good condition. Donations are tax deductible to the extent allowed by law. If you choose to pay by credit card please consider making at least a small donation since credit card companies take a few percent of your payment to the club.

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

~ *Chris Elledge – Membership Secretary* ~

# Clubhouse Report . . .



Pierre Fleurant mowing the lower field \*

Our monthly Clubhouse work session was held on Saturday May 18 under beautiful sunny skies! We had a total of 13 members volunteer for a variety of projects including both outdoor and indoor work. Paul C, Phil L and Phil R had solar telescopes set up for viewing during the session.

John S, Pierre F, Al T and Maria B spent the better part of the morning mowing the grounds around the Clubhouse and observing field. John Blomquist's tractor mower was unavailable for this work session and all mowing had to be done manually. The grounds at the Clubhouse are in very nice shape at this time.

Dave Prowten milled new hardwood mirror clips on the Bridgeport milling machine. This set of clips will be epoxied and installed on the new Mirror-o-Matic grinding/polishing machine. Dave and Eric J cut and installed plywood sides for the new spin grinder machine which is located in the clean room adjacent to the test tunnel. Both machines are better than 90% complete and we plan on testing, grinding and polishing blanks in the not too distant future. Safety measures will be in place before the machines are deemed operational.

Dave P also cut and installed new treads on the metal shed ramp. Thanks go out to Phil Levine for repairing the latch mechanism on the hallway door leading to the barn. Dick Koolish donated a 4-foot digging bar for our use.

Peter Bealo purchased a surplus 6-inch Newtonian telescope from the club for \$150. We thank Bernie Kosicki and Maria Batista for maintaining our surplus equipment auction site on the ATMoB website. Going forward, as surplus equipment is identified we will post such items on the website for auction.

On the following Friday, a crew of 4 members met with Paul Valleli at his home to finish crating the full thickness f/6 Coulter 16" mirror for the Yellow Bird DiCicco Dob. The crated mirror was delivered to the barn loft with the parts awaiting John Briggs trailer for transport to New Mexico. Paul V has supplied the optical surface and internal stress data he obtained before he professionally coated and wrapped the mirror. The crew included Dave P, Art S, Paul C, and John R. We are still searching for the ~10" diameter engine bearing.

Many thanks to Eileen Myers for making a wonderful chili, grape leaves plus salad for the work party lunch!

Our next work party will be held on Saturday, June 15.

Thanks to the following members who volunteered at the May work party: Maria Batista, John Blomquist, Paul Cicchetti, Steve Clougherty, Pierre Fleurant, Jim Gettys, Eric Johansson, Dick Koolish, Phil Levine, Eileen Myers, John Reed, Phil Rounseville, John Stodieck and Al Takeda.

Clubhouse Saturday Schedule		
June 8	Eileen Myers	Dave Prowten
June 15	<b>WORK PARTY # 6 **</b> Chris Elledge	
June 22	Phil Rounseville	Joe Wolfe
June 29	Paul Cicchetti	John Reed
July 6	Joe Henry	Glenn Meurer
July 13	<b>WORK PARTY # 7 **</b> Dave Siegrist	
July 20	Bruce Berger	Mike Hill
July 27	Brian Maerz	Rich Nugent
Aug 3	<b>Closed - STELLAFANE CONVENTION</b>	
Aug 10	John Maher	George Paquin
Aug 17	<b>WORK PARTY # 7 **</b> John Panaswich	
Aug 24	Glenn Chaple	Bill Toomey
Aug 31	Nina Craven	Tom Wolf
Sept 7	Eileen Myers	Al Takeda

\*\* Closing time for the Clubhouse is determined by the work crew

Clubhouse Evening Schedule	
Friday Night Educational Videos	<b>ATMoB-Announce</b>
Saturday Afternoon Mirror Making	<b>ATMoB-Announce</b>
Saturday Night Observing	7:00 pm - ##
# Closing time is determined by the organizers	
## Closing time is determined by the "A" members on duty.	



Observing the Sun with Phil's 4.25-inch f/12 "Little Dob".  
(Left to Right) Eileen Myers and Phil Rounseville \*

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

## Loaner Scope . . .

This 6-inch, f/7 Meade Starfinder Dobsonian is available for an off-site loan to any club member. To borrow this or any of the other available scopes please contact a Clubhouse Committee member or visit the Clubhouse on Saturday evenings for details.



Meade Starfinder 6-inch, 1092mm, f/7 Dobsonian. \*

~ Al Takeda - Member at Large and Newsletter Editor ~

## Outreach Report . . .

Astronomy Day, 2019



(Left) Rich Nugent with his 10-inch Dob viewing Venus in the daytime. \*

The weather cooperated nicely for Bob Phinney, Bruce Tinkler, and Rusty Moore for their Astronomy Day celebration on Saturday, May 10 at New England Sci-Tech in Natick, Massachusetts. The crowds were sparse for this first-time event but their spirits were high! Quite a few ATMob members helped out by setting up scopes for daytime and evening observing. Paul Cicchetti offered amazing views through his solar setup as did Phil Levine, Al Takeda, and Phil Rounseville. Despite being in the midst of a deep solar minimum, the Sun put on quite a show. Active Region 2741 consisted of a large sunspot with bright and dark filaments surrounding it. The filaments were stunning in the H-alpha scopes, while the sunspot itself was beautiful through Al's white light set-up. Al used a Herschel wedge solar filter for crisp, sharp views of the Sun's photosphere. Phil Rounseville had

both white light and H-alpha scopes set up. Meanwhile, John and Monique Reed and I had 10" Dobs trained on the Moon. At first- (and last-) quarter Moon, the Moon's location is 90° from the Sun and, coincidentally, in the same part of the sky where the natural polarization of skylight is at its greatest. Using a single element polarizing filter in an eyepiece allowed me to dial out much of the sky's brightness (by simply turning the eyepiece) and vastly improve the contrast. While not as contrasty as at night, the Moon really pops out when you use this little trick! I also used the altitude and azimuth of Venus to locate this planet for viewing. Some 135 million miles away that afternoon, the planet was tiny but fun to observe! Members, Eric Johansson, Ed Los, and Brian Zelma were also on hand to help out.

Inside Eileen Myers set up a demonstration of how a telescope works and a demonstration of mirror grinding. She worked with small groups of visitors, handing a member the optical tube and then a part of the telescope, explaining how it functioned, then letting some of them figure out for themselves where each part went. Eileen let the group look closely at glass blanks using a loupe, learn how a spherometer measures the radius of curvature, examine different grades of grit, and practice several grinding and polishing strokes. Each small group had at least one member who continued to grind until other members pulled them away, which is why the demo mirror now has an f-ratio of f/2.3. Thanks go to Art Swedlow who helped Eileen with set up.



Eileen Myers with her Mirror Grinding and Telescope demonstration setup \*

NASA Ambassador Jim Zebrowski had a display set up. Galileo (Mike Francis) gave his presentation and later invited folks to take a peek through his own replica Galileo telescope. New England Sci-Tech had their inflatable planetarium set up and offered shows during the afternoon.

For the evening observations, we were joined by Pierre Fleurant and New England Sci-Tech's resident astronomer and ATMob member Rusty Moore. While Rusty used Sci-Tech's 12-inch Meade Schmidt-Cassegrain Telescope (SCT), Pierre was using the Skywatcher 120 refractor that he won at this year's Northeast Astronomical Imaging Conference (NEAIC) at the Northeast Astronomical Forum (NEAF). The images of the Moon through the scope were outstanding! I continued to observe the Moon with the polarizing filter still in place as a Moon filter. The scopes had reached ambient temperature and the

views were crisp and sharp! Mars was too low to observe but we offered M44 and Castor as well as other mid-Spring objects.



Eric Johansson demonstrates cell phone imaging using Pierre Fleurant's scope.\*

Several ATMoB families were in attendance, taking in afternoon and evening views and enjoying the day. Despite the small turnout, everyone had a wonderful day spending time with friends and enjoying some wonderful telescopic views. We are certainly looking forward to the next event at New England Sci-Tech!

~ Rich Nugent - Vice President and Outreach Chair ~

## Observing Challenge . . .

June 2019

NGC 5377 – Barred Spiral Galaxy in Canes Venatici  
 Mag: 11.3  
 Size: 3.7' X 1.8'

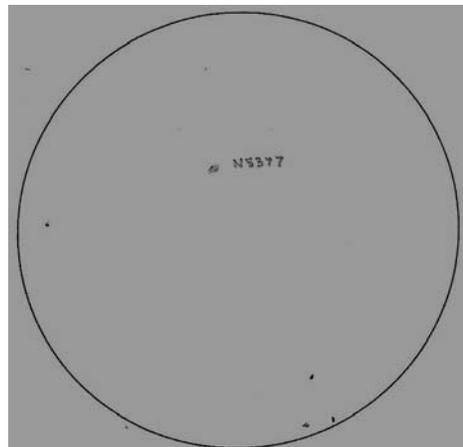


Image by Mario Motta, MD (ATMoB) North is up

On the evening of May 12, 1787, William Herschel came upon a nebulous object in what is now the extreme northeast corner of Canes Venatici. He considered it bright enough to qualify as a Class I (Bright Nebulae) object, and it became his 187th entry in that group.



Image by Doug Paul (ATMoB) North is up



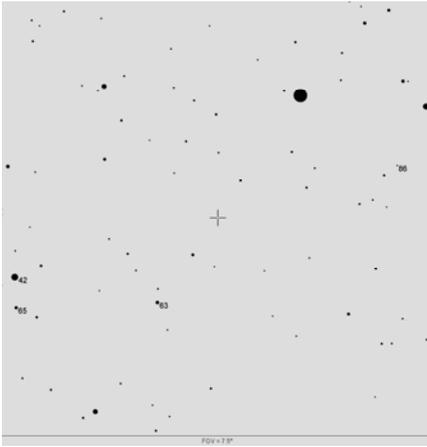
Sketch by Glenn Chaple (ATMoB) 10-inch f/5 reflector at 141X. North is to the right

H187-1, better known by its New General Catalog designation NGC 5377, is an 11th magnitude barred spiral galaxy. It lies some 85 million light-years away, which means that the photons greeting your eye as you peer into the telescope left during the latter part of the Cretaceous period, when dinosaurs still roamed the land.

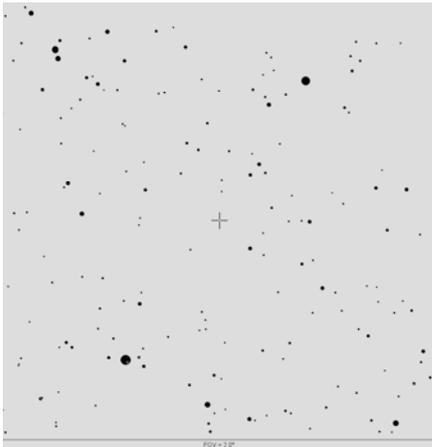
With my 10-inch f/5 Dob and a magnification 141X, I found NGC 5377 to be extremely faint – an “amorphous averted vision object at best.” In all fairness to my scope (and my eyes!), I was observing under typical suburban skies with a limiting magnitude of about 5. Its appearance in a similar-sized instrument under darker skies is described in Kepple and Sanner’s *The Night Sky Observer’s Guide – Vol. 2*. They write: “This galaxy has a fairly faint 2.5' X 0.5' NNE-SSW halo containing a bright oval core with a stellar nucleus.” This would correspond to its interesting similarity to the Greek letter theta as shown in the accompanying Mario Motta image.

Locating NGC 5377 is somewhat of a challenge as it lies in a rather barren area 2-degrees south and slightly east of Alkaid (Eta Ursae Majoris). Those of you with GoTo technology can plug in coordinates R.A. +47° 14' 08", Dec. 13h, 56m 16.7s. Star-hoppers can use the accompanying finder charts created using AAVSO’s Variable Star Plotter program.

Finder charts for NGC 5377 are below. In each, north is up, and NGC 5377 is plotted by a "+" at the center.



Wide field (7.5 degrees) chart showing stars to 9<sup>th</sup> magnitude. Bright star near upper right is Eta Ursae Majoris. Courtesy AAVSO's Variable Star Plotter program.



Narrow field (2 degrees) chart showing stars to 13<sup>th</sup> magnitude. Courtesy AAVSO's Variable Star Plotter program.

The purpose of the Observer's Challenge is to encourage the pursuit of visual observing and is open to everyone who is interested. Contributed notes, drawings, or photographs will be published in a monthly summary. Submit them to Roger Ivester ([rogerivester@me.com](mailto:rogerivester@me.com)). To access past reports, log on to <https://rogerivester.com/category/observers-challenge-reports-complete/>

~ Glenn Chaple ~

## Stellafane - The Original Star Party . . .

Don't Miss this year's Stellafane Convention,  
Springfield, VT

Thurs - Sun, Aug 1-4

It's a 2-3 hour drive from Boston. Camp or stay at nearby lodging.

- Support the six ATMoB members who will be presenting this year.

### Friday August 2 - Flanders Pavilion

2:00 pm Al Takeda- Imaging Satellite Galaxies of the Milky Way

3:00 pm Rich Sanderson - A Dipper Full of Stars



### Friday August 2 - McGregor Observatory Library

1:00 pm Corey Mooney - Intro to 3D Printing for Amateur Astronomers

3:00 pm Phil Rounseville - The Gregorian Telescope

### Saturday August 3 - Flanders Pavilion

2:00 pm Gary Walker - Is sCMOS the Next Imaging Revolution?

3:00 pm Mario Motta and (Brad Vieje - not ATMoB member)  
Getting Started in Amateur and Pro/Am Astronomical Research

- See fantastic homemade telescopes and other instruments
- Participate in the Stellafane Telescope and Binocular Observing Olympics. Find 15 of the objects on a list and win a lapel pin. Don't miss Larry Mitchell's talk if you enjoy observing with a telescope.
- Fantastic programming for beginner, intermediate and advanced levels: astrophotography, advanced observing, Bath Interferometer for mirror testing, observing for beginners, how to choose binoculars, advances in sCMOS technology, Einstein's theories, building a Gregorian telescope, Hubble Space Telescope fine guidance system, mount accuracy, backyard spectroscopy, Pro/AM research, 3D printing techniques, and many more topics. <http://stellafane.org/convention/2016/2016-schedule.html>
- Outdoor barbecue; breakfast, lunch dinner, snacks available on site.
- Dark skies and great view of the Milky Way.
- Solar observing.
- Mirror and telescope making demonstrations all day.
- Activities for kids and teens.
- Advanced Telescope Making Workshop - Thursday at the Hartness House.
- Friday night short talks presented by convention attendees.
- Keynote Speaker: Dr. Alan Stern - New Horizons Update.

~ Eileen Myers - Treasurer and Stellafane Programming ~

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

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**July Star Fields DEADLINE**  
Sunday, June 23<sup>rd</sup>

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

Articles from members are always welcome.

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**POSTMASTER NOTE: First Class Postage Mailed June 2, 2019**

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

**EXECUTIVE BOARD 2018-2019**

PRESIDENT: Tom McDonagh (617) 966-5221  
VICE PRES: Rich Nugent (508) 935-8158  
SECRETARY: John Harrington  
MEMBERSHIP: Chris Elledge (781) 325-3772  
TREASURER: Eileen Myers (978) 456-3937

MEMBERS AT LARGE: Maria Batista (617) 347-3730  
Alan Sliski  
Al Takeda (508) 494-7877

PAST PRESIDENTS:  
2015 - 18 Glenn Chaple (978) 597-8465  
2012 - 14 Mike Hill (508) 485-0230

**COMMITTEES**

CLUBHOUSE: John Reed (781) 861-8031  
Steve Clougherty (781) 784-3024  
David Prowten (978) 369-1596

OBSERVING: Bruce Berger (978) 387-4189

NEWSLETTER Al Takeda [newsletter@atmob.org](mailto:newsletter@atmob.org)

**PUBLIC OUTREACH**

COMMITTEE CHAIR: Rich Nugent [starparty@atmob.org](mailto:starparty@atmob.org)  
STAR PARTIES: Bernie Kosicki  
Laura Sailor  
John Harrington

**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, Harvard-Smithsonian Center for Astrophysics, 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 attendance varies with the weather. It is wise to call in advance: (978) 692-8708.

**Heads Up For The Month . . .**

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

Jun 3 New Moon  
Jun 10 First Quarter Moon (Moonset at midnight). Jupiter at opposition  
Jun 17 Full Moon  
Jun 19 Saturn 0.4 degrees North of the Moon  
Jun 21 Summer Solstice  
Jun 23 Mercury at greatest eastern (evening) elongation, 25 degrees  
Jun 25 Last Quarter Moon (Moonrise at midnight)  
July 2 New Moon  
July 9 First Quarter Moon (Moonset at midnight). Saturn at opposition