



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. 7 July 2019

This Month's Meeting . . .

Thursday, July 11th, 2019 at 8:00 PM
Pratt Room***

Harvard-Smithsonian Center for Astrophysics

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

Member's Night



July 2016 Member's Night. (L-R) Glenn Chaple and Mario Motta. *

The July meeting will feature talks by ATMOB members. Our list of speakers includes George Roberts (Bath Interferometer), Corey Mooney (German Equatorial Mount OnStep GoTo conversion) and Rich Nugent (Observing the Moon, a Conjunction preview).

We will also have a Member Equipment/Book Swap. Please feel free to bring astronomy items of interest to sell or swap. We will be in a smaller room so larger items may not be appropriate.

*** The main entrance to the Center for Astrophysics, Harvard-Smithsonian is up the driveway opposite Linnean Street (by the Radcliffe Quadrangle and just past the Radcliffe Quad Athletic Center). Go up the driveway and the large 3 story building is the Perkin Laboratory for Astrophysics. The Pratt Conference Room is on the ground floor of Perkin. Enter the building, the Library

should be on your left. There is a black doorway just in front of you (right opposite the entrance) which leads to a stairwell. Go down one flight to the G level, turn right as you leave the stairwell and Pratt is at the end of a short corridor.

Reminder: There will be no August meeting.

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 . . .

Greetings Earthlings!

It has been a very busy month for me related with club business. I noted lots of progress at the Clubhouse with our most recent work party. Work was carried out on most of our existing observatories which are open for business. At the same time, we had a contingent of folks helping to clean out the grinding and polishing room. Work continued on the Mirror-o-Matic with a setback or two. Running wires for the motors and encoders into the control box should be a trivial matter but I ran into a few technical difficulties. Steve Clougherty and John Reed, our fearless Clubhouse managers kept level heads throughout the process. A new motor controller has been ordered and is on the way and I feel Barry Jensen can't return from parts unknown soon enough to set things right. Dave Prowten fabricated some really nice mirror clips for the system using our workshop equipment. All the while, Eric Johansson and Corey Mooney experimented with new tools for the grinder. Times are exciting for mirror making!

We held our annual board meeting where we reviewed proposed budgets. We approved upgrades to the Clubhouse, observatories and workshops. We plan to upgrade the Bridgeport Mill with digital readouts to enable members to have more control of the milling process. We also approved significant funds for outreach including a budget for initiating a library telescope loaner program with impassioned support from Kelly Beatty. This effort provides a great vehicle for outreach and club recognition while providing an opportunity for members to make a significant impact on our local communities. Please be on the lookout for announcements on how you might assist with this important project.

I am excited for the July member meeting! Corey Mooney will speak of his efforts to automate a standard German Equatorial Mount to great effect. George Roberts will cover the finer details associated with Bath Interferometry as it relates to our mirror making efforts and Rich Nugent will investigate the art of lunar observation. Please join us this coming July 11th, in the Pratt Room at the Harvard Smithsonian Center for Astrophysics. If you have astronomy items you wish to sell or swap, feel free to bring them along. It may be a good idea to catalog your items so folks are prepared to view them. I intend to post a list of my items using atmob.discuss@atmob.org prior to the meeting.

Clear Skies and enjoy the summer break!

~ Tom McDonagh - President ~

ATMoB Executive Board Meeting Minutes Summary . . .

June, 20, 2019

- Budget for 2019 - 2020 Fiscal Year
- Required Clubhouse Operations, Club Events, and Administrative expenses budgeted.
- ATMoB Research and Imaging Observatory (ARIO) maintenance items and camera to filter wheel adapter budgeted.
- Collimating knobs for Clamshell and 16" telescopes budgeted.
- Interferometer budgeted.
- Digital read out for milling machine budgeted.
- Library Telescope Program budgeted for 8 telescope build.
- 3D Printer and BVIR filter set for ARIO were not budgeted, but will be funded externally via sales of surplus equipment and donations.
- Discussed pricing of ATMoB Pins. \$5 proposed.

Budget for 2019 - 2020 Fiscal Year Approved.

Approved change of grinding room of Clubhouse to multipurpose room with rules to be defined by Clubhouse Committee.

Approved creation of Light Pollution Forum/Email List to reduce messages related to light pollution discussions on Discuss. Important announcements regarding light pollution bills and events shall continue to be allowed on ATMoB-Announce or ATMoB-Discuss.

Meeting Refreshment schedule will be handled over email.

June Meeting Minutes . . .



Kelly Beatty holding a Library Scope *

Minutes of the 921st ATMoB meeting held June 13, 2019 at the Harvard-Smithsonian Center for Astrophysics in the Phillips Auditorium. Club President Tom McDonagh called the meeting to order at 8:00 pm and thanked Bruce Berger for bringing refreshments.

- Secretary John Harrington read the minutes of the Club's May meeting.
- Treasurer Eileen Myers gave the Treasurer's report, including a brief discussion of the Club's annual budget. One new budget item is a higher premium for liability and directors & officers insurance policies, which will now cover Club members participating in ATMoB star parties.
- Membership Secretary Chris Elledge presented the Membership Report, showing 341 total memberships covering 449 Club members.
- Vice President Nugent presented the Observer's Report and noted upcoming lunar and planetary conjunctions. The summer solstice will occur on June 21st and there will be a total solar eclipse on July 2nd visible from Chile. June's Observers Challenge object is NGC 5377, an 11th magnitude barred spiral galaxy in Canes Venatici. Mario Motta and Doug Paul have both contributed images of the object.
- Steve Clougherty gave the Clubhouse Report and noted that 13 Club members participated in the last work party on May 18th, which focused on mowing the lawn and working on the Mirror-o-Matic machine. He thanked those members who went to Paul Valleli's house to pick up the 16-inch primary mirror for the Club's original Dobsonian telescope. Steve announced that the upcoming work party on June 15th would focus on the spin grinder, among other tasks.
- Vice President Nugent presented the Outreach Report and noted the upcoming star party at the Farrington Nature Center in Lincoln, which will be devoted to observing the Perseids meteor shower. Date to be announced.
- Old Business: None.
- New Business:

Corey Mooney announced that the club would now vote on nominees for the Executive Board for the upcoming year. The current slate of Board members, having all indicated that they would like to run for reelection, Corey asked for a voice vote from the assembled Club members. By voice vote, the Club members present approved reelection of the current slate of Board members. The Club's Board members for the new year will therefore be: President Tom McDonagh, Vice President Rich Nugent, Treasurer Eileen Myers, Secretary John Harrington, Membership Secretary Chris Elledge, and Members at Large Maria Batista, Alan Sliski and Al Takeda. Former ATMoB Presidents Mike Hill and Glenn Chaple will also continue to serve on the Board.

The John F. Kennedy Library will hold its Space Expo on Wednesday, June 19th, and the event will include talks by both former astronauts and cosmonauts.

Mario Motta announced that he will be traveling to California for an American Medical Association meeting and will then have the opportunity to participate in a shared observing run at the Mt. Wilson Observatory afterwards.

Treasurer Myers announced that the Club's annual picnic will be held on September 7th at the Clubhouse.

President McDonagh announced that the Club's July meeting will be held in the Pratt Room rather than the Phillips Auditorium.

President McDonagh then introduced *Sky & Telescope* Senior Editor Kelly Beatty, who spoke on the subject of the Library Telescope Program (LTP), which was started by the New Hampshire Astronomical Society (NHAS). The idea for the program originated with NHAS member Marc Stowbridge in 2008, when he modified a small telescope for his local library's use. LTP has expanded greatly since then, and now includes over 100 telescopes distributed in libraries across not only New Hampshire, but also central and western Massachusetts.

Kelly showed a video with NHAS member Peter Smith, who provided a detailed explanation of how to modify 4.5" F/4 Orion "Starblast" reflectors for library use. Mr. Smith explained that some telescopes are funded directly by the libraries, some by the NHAS, and some by private individuals. The modified telescopes cost about \$325 each. The extensive modifications include: permanent attachment of an 8-24mm zoom eyepiece and of an E-Z red dot finder, as well as attachment of a Moon map sticker, an accessory pouch that includes the National Audubon Society Field Guide to the Night Sky, and a red LED light. All telescopes are carefully collimated and then the collimation is permanently set. Modifications are accomplished in assembly-line fashion at occasional NHAS "Mod Parties." More information, including a list of all participating libraries, can be found at www.librarytelescope.org

Kelly stated that, if the ATMob wished to get started with a library telescope program of its own, a committee should be appointed, to consist of at least three persons. One person would be charged with contacting local libraries, another with arranging acquisition of the 'scopes and accessories, and the third would serve as coordinator of the program. President McDonagh asked for volunteers and a number of Club members indicated their interest.

Kelly then gave a brief presentation on SpaceX's recent launch of the first wave of the Starlink constellation of satellites. The first 60 satellites launched proved to be considerably brighter than expected, reaching 2nd to 4th magnitude. The Starlink constellation will eventually provide internet service around the world, but Phase 1 of the project will include about 1,600 satellites with orbits at about 550km altitude. Phase 2 will add some 7,500 more satellites, some in orbits as low as 335km. Inclinations will range from about 42 degrees to over 80 degrees,

meaning the satellites will be present throughout the sky at virtually all latitudes. Ultimately, the Starlink constellation is expected to include 12,000 satellites.

Given the unexpected brightness of the Starlink satellites, especially just after release into orbit, optical astronomy may face a considerable threat. The impact will likely be especially severe on all-sky survey telescopes such as Pan-STARRS, Vista and the forthcoming LSST. Radio astronomy may also be impacted as Starlink satellites use radio frequencies and will overfly formerly radio-quiet locations of major radio observatories. SpaceX's Elon Musk has ordered that SpaceX engineers examine ways to reduce the reflectivity of future Starlink satellites in hopes of reducing the optical problem.

President McDonagh thanked Kelly for his presentation and then adjourned the meeting at 9:36 pm.

~ *John Harrington, Secretary* ~

Meeting Recordings . . .

The recording of ATMob meeting #921 is available on YouTube: <https://youtu.be/MpSjGSDK-bo>

I would like to thank Kelly Beatty 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 Tom Bergman, Anubama Chinnakannan, Calvin Clark, Tom English, Jeffery Keffer, Kay Paulsen, and Jonathan and Colleen Lyna.

As of June 25th, 2019 we have 345 memberships covering 453 members. This is broken down as follows:

- 158 Regular Members
- 112 Senior Members
- 9 Student Members
- 61 Family Memberships covering 169 Members
- 3 Guest Member
- 2 Honorary Members

Yearly membership renewals are due by September 1st. If you joined the club after January 1st of 2019 your membership is not due for renewal until June 2020.

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

You can also download the membership application from the website at <http://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 . . .



Tom McDonagh working on the Mirror-o-Matic controller *

The monthly Clubhouse work party took place on Saturday June 15 under mostly sunny skies with a total of 16 volunteers on hand. Our biggest challenge was having to mow the entire property without the benefit of John Blomquist's tractor mower which is currently being repaired. Our volunteers got right to work with all three of our power mowers and remarkably the job was completed in just over two hours! Other volunteers handled the weed whacker and trimmed around the perimeter of the Clubhouse and observatories. Thanks go out to all who helped out with this task.

Dave Prowten repaired a broken window on the second floor of the Clubhouse and also cut a plywood barrier guard for the new Mirror-o-Matic (MoM) grinding/polishing machine. Corey Mooney fabricated a mold from a 3D printer and Eric Johannsen installed it on the new spin grinder machine. Several of us took time during the afternoon and cleaned and organized the new optical clean room now that the work is 90% complete. The room is ready for hand mirror grinding, and we hope to have both the MoM and spin grinder fully operational and available late Summer to early Fall. Our next project will be to fabricate and install a Bath type interferometer. Any member who may be

interested in this project should speak with Tom McDonagh or George Roberts.

Thanks to Maria Batista for setting up a beautiful flower box which is located on the South side of the Clubhouse. Nina Craven spent a good deal of time weeding and arranging plants and flowers in our "garden."

Many thanks to both Eileen Myers for arranging a wonderful lunch and Al Takeda who manned the grill.

Our Clubhouse budget for the new year will total \$9118. This amount represents a small increase in operational costs eg., fuel oil, maintenance etc. However, there are fewer special projects funded compared to last year, so the overall budget for the Clubhouse is actually less than last year's. We are happy to report that MIT-Haystack will include our snow plowing needs in their budget for the year. We will still call upon volunteers to help with snow blowing and shoveling following any winter storms this coming year.

We would like to thank the following member volunteers for their tremendous work during the June work session: Maria Batista, Bruce Berger, John Blomquist, Steve Clougherty, Tom Consi, Nina Craven, Chris Elledge, Pierre Fleurant, Dick Koolish, Corey Mooney, Keira Mooney, Eileen Myers, John Stodieck, Art Swedlow, Al Takeda and Bill Toomey.

Our July work session is scheduled for Saturday, July 13.

Clubhouse Saturday Schedule		
July 6	Joe Henry	Glenn Meurer
July 13	WORK PARTY # 7 ** Dave Siegrist	
July 20	Bruce Berger	Mike Hill
July 27	Brian Maerz	Rich Nugent
Aug 3	Closed - STELLAFANE CONVENTION	
Aug 10	John Maher	George Paquin
Aug 17	WORK PARTY # 8 ** John Panaswich	
Aug 24	Glenn Chaple	Bill Toomey
Aug 31	Nina Craven	Tom Wolf
Sept 7	PICNIC Eileen Myers + Al Takeda	
Sept 14	WORK PARTY # 9 ** John Maher	
Sept 21	Dave Siegrist	John Stodieck

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

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

~ Clubhouse Committee Chairs ~

~ Steve Clougherty, John Reed and Dave Prowten ~

Observing Challenge . . .

July 2019

NGC 6482 – Elliptical Galaxy in Hercules

Mag: 11.3

Size: 2.1' X 1.8'



NGC 6482 image by Mario Motta, MD (ATMoB)

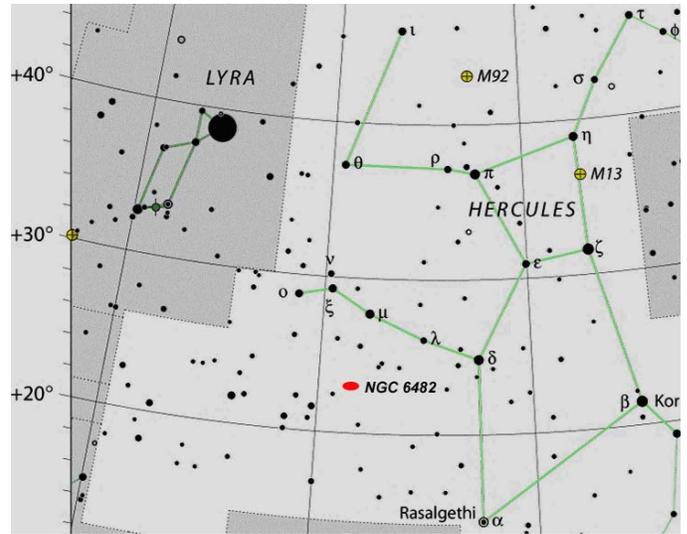
Our Observer's Challenge "Galaxy Quest" continues this month with NGC 6482, an elliptical galaxy tucked away in the southeast quadrant of Hercules. Missed by William Herschel, it was discovered by his son, John, on July 12, 1830. In Dreyer's New General Catalogue (1888), NGC 6482 is described as, "a remarkable object, very faint, small, round, very suddenly very much brighter middle and very small round nucleus."

NGC 6842 is located at 2000.0 coordinates 17h51m48.8s, +23°04'19.0". The accompanying charts will show the way should you prefer to find it by star-hopping. You can either work your way SSE from mu Her or NW from 95 Her. I recommend the latter path, as 95 Her is a showpiece double whose magnitude 4.9 and 5.2 components are currently separated by 6.4 arc-seconds.

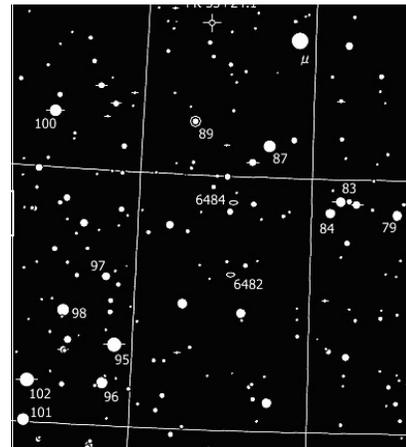
The elder Herschel likely missed NGC 6482 because of its small size. The nucleus is a planetary-nebula-sized 40 by 30 arc-seconds, mandating a magnification of 200X or more. Viewed with my 10-inch f/5 reflector at 208X, NGC 6482 looked stellar when viewed directly, a roundish smudgy patch when viewed with averted vision.

Before you dismiss NGC 6482 as just another run-of-the-mill elliptical galaxy, think again. That insignificant-looking puffball is the nearest example of what astronomers refer to as a "fossil galaxy" or "fossil group" – an isolated giant galaxy whose mass (particularly in dark matter) and X-ray luminosity are comparable to those of an entire group of galaxies. It's possible that NGC 6842 is a result of the mergers of a group of galaxies into one.

Distances to NGC 6842 are uncertain, with several sources citing 190 million light years.



IAU and Sky & Telescope



Map by Toshimi Taki. Stars shown to magnitude 8.5

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). To access past reports, log on to <https://rogerivester.com/category/observers-challenge-reports-complete/>

~ Glenn Chaple ~

Outreach Report . . .

Summer 2019

Farrington Nature Linc Star Party

The folks at the Farrington Nature Linc in Lincoln, MA are planning another evening of astronomy and have asked us to support the event by providing our telescopes and expertise.

Attendees will be spending the entire night of Friday, August 8/9 at the center with the hope of catching a few early Perseid meteors. Earlier in the evening, we'll provide views of the 9-day old moon, Jupiter, and Saturn as well as colorful double stars and deep-sky objects.

As always, volunteers are need! If you've never participated in a star party, the Farrington event may be for you. The crowd is relatively small and the spacious observing field offers clear views to the north, west, and south.

Please register for the event on the club's event calendar so we'll have a head count. Hope to see you there!

Member's Event at the Clubhouse

July 20th will mark the 50th anniversary of the Apollo 11 moon landing and what better way to celebrate than by joining your fellow ATMoB members for an evening of observing at the Clubhouse. As darkness falls, telescopes will be trained on Jupiter and Saturn and some of the brighter stars. A bit later deep sky objects will come into view and at 10:56 pm EDT—the moment Neil Armstrong planted the first footstep on the moon—Luna will be rising in the east! Tranquility Base will be just beyond the terminator but there will be plenty of favorite lunar features to observe! Bring a telescope or just view through the club's scopes. Whether you're a new member or club veteran there will be something for everyone. If you haven't visited the Clubhouse in a while, do consider joining us.

Please register for the event on the club's event calendar so we'll have a head count. And again, hope to see you there!

~ Rich Nugent - Vice President and Outreach Chair ~

A Day at the JFK Space Summit . . .



Caroline Kennedy. Image by Maria Batista

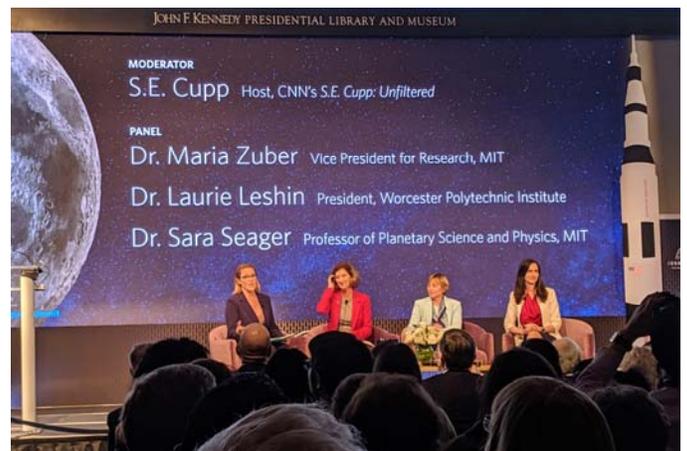
On June 19, 2019 I had the pleasure of skipping work to spend a day with fellow space enthusiasts. We heard fascinating stories from people who've devoted their lives to improving our understanding of, and our place in, the cosmos.

Caroline Kennedy started the day by welcoming us to the summit and speaking of her father's vision and legacy. Doug Brinkley moderated the first panel, which included astronauts Chris Cassidy and Tracy Caldwell Dyson (United States), Koichi

Wakata (Japan), Paolo Nespoli (Italy), and Oleg Kotov (Russia). They discussed topics such as medicine, engineering, experiments, waste management, and the challenges of living in space. All astronauts agreed that cooperation among nations is the best way forward in space.

The afternoon sessions began with Michael Freilich's presentation on how satellites have changed our understanding of Earth. His sobering talk about climate change included some very disturbing before-and-after photos of affected areas.

S.E. Cupp moderated a panel of women scientists including Maria Zuber, Laurie Leshin, and Sara Seager. They spoke about the Earth, Moon, Mars, and exoplanets. I was awestruck by these pioneering women; heard from their perspective, even facts I already knew seemed surprising. All of the panelists mentioned the importance of mentorship, given the low numbers of women in STEM. They also encouraged the audience to find local star parties to attend. (I wanted to stand up and yell "Come talk to me after; I can tell you where to find some!")



Panel of Woman Scientists. Image by Maria Batista

When we signed up, the registration for the final panel was full. Jerry and I had to wait in the overflow room and hope that they would call our numbers. I had resigned myself to sitting in the overflow room when they announced that more seats were available, and we could make our way to the main room. Our seats were in the back, which is usually a problem because I'm short and there's always someone taller in front of me. Not only was I surprised by the few empty seats in front of me, I was shocked that seated next to me was ATMoB member and presenter, Hugh Blair-Smith. During the panel, we applauded his, and others', contributions to the Apollo program.

Ellen Stofan moderated the final panel, which included Michael Collins, Charles Bolden, Ella Ochoa, and Dava Newman. The panelists spoke about NASA's past, present, and future, and whether we should focus on the Moon or Mars.

The day ended with Caroline Kennedy and Jeff Bezos having a fireside chat (although I was a little disappointed that they didn't play a fireplace video in the background). Bezos spoke about Blue Origin and said we could only move forward with contributions from both the private and public sectors.

I encourage members take some time to watch the summit. Recordings of all panels are available online at: <https://www.jfklibrary.org/watch-the-jfk-space-summit>

~ Maria Batista - Member at Large ~

Annual Club Picnic . . .

Saturday, September 7

You like food.
We like food.

That's a good reason for a picnic.

All Members and their Families are invited to this year's Annual Club Picnic at the Clubhouse in Westford.

Date: Saturday, September 7

Start Time 3:00 pm

Enjoy a day with good food and lots of astronomy talk with other ATMob members.

We will provide hamburgers, hotdogs, drinks and chips.

Please bring a favorite dish to share - salad, main dish, dessert, soup, appetizer, fancy bread,...

A serving utensil would be helpful.

Club members, their families and friends are invited. There will be astronomy activities for kids of all ages. Planned activities are a tour of the clubhouse facilities, a demonstration of mirror grinding, and the ever popular walk "up the hill", stopping along the way to talk about the MIT Haystack Observatory facility.

Share your astronomy stories and experiences. Bring any astrophotography you would like to show. There will be daytime H-alpha and white light solar viewing, and night sky observing after sunset (all, weather permitting). Confirmed celestial attendees include 1st Q Moon, Jupiter, Saturn and Uranus. Deep sky objects have been invited.

The picnic is on rain or shine. Bring lawn chairs or blankets to sit on. Bring your favorite suntan lotion and mosquito repellent. Observing will continue until Midnight if the sky is clear, so bring your telescope and your observing clothing and gear. The club's scopes will be open too.

Setup will start at 10:30 am Saturday morning. We need help setting up and breaking down the various tents, tables and chairs.

Help is needed for setting up food, keeping things tidy during the event, and cleanup after.

We need help with the kids' astronomy activities. Please email or phone Eileen your availability to make sure there are enough helping hands.

Directions to the Clubhouse can be found on the last page of Star Fields and at the club website www.atmob.org.

Questions - Email Eileen Myers at starleen@charter.net

Don't miss the fun!

~ Organized by ATMob's Good Times Co-Hosts and Co-Chefs Eileen Myers, Al Takeda, John Reed ~

Jupiter's Great Red Spot . . .

This month, Jupiter's Great Red Spot is making quite a few central meridian crossings visible during the early evening hours here on the east coast. These predictions are from the *Sky & Telescope* magazine's July issue with times converted to EDT.

1 @ 11:46 p.m.	18 @ 10:47 p.m.
4 @ 9:15 p.m.	21 @ 12:25 a.m.
6 @ 10:53 p.m.	21 @ 8:17 p.m.
9 @ 12:53 a.m.	23 @ 9:55 p.m.
9 @ 8:23 p.m.	25 @ 11:34 p.m.
11 @ 10:01 p.m.	28 @ 9:03 p.m.
13 @ 11:39 p.m.	30 @ 10:42 p.m.
16 @ 9:09 p.m.	

This summer, the GRS is small but still orange in color. I recently observed it using a 60mm refractor but larger telescopes are better and will show the spot unmistakably. I often use an 80a (light blue) filter to improve contrast and an off-axis, unobstructed mask to reduce brightness and improve the effects of poor seeing. There has been recent evidence and speculation suggesting the spot might be disappearing. Perhaps this is the summer to check it out!

Enjoy!

~ Rich Nugent - Vice President and Outreach Chair ~

Stellafane - The Original Star Party . . .

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

Thurs - Sun, Aug 1-4



Editor: * Photos by Al Takeda unless otherwise noted.

September Star Fields DEADLINE
Sunday, August 25th

Email articles to Al Takeda at
newsletter@atmob.org

Articles from members are always welcome.

ASTRONOMY THINGS FOR SALE

Contact Steve Mock - steve_mock@hotmail.com

TELESCOPES

12½" Dob: Meade Starfinder.
w/ 2" r&p focuser / 80mm finder / Telrad / casters.

11" Dob: Celestron Star Hopper
w/ 2" Crayford focuser / 80mm finder/ Telrad / casters.

BOOKS

Sky Catalogue 2000.0 Volumes 1 and 2
Uranometria 2000.0 Volumes 1 and 2

COLLIMATION

Autocollimator Eyepiece
Cheshire Eyepiece
Kendrick 2" Laser Collimator
Orion 1¼" LaserMate Collimator

EYEPIECES

Celestron 16 mm Erfle
Orion 3.8 mm Ultrascopic
Solar Prominence Eyepiece - no name
Tele Vue NAGLER Eyepieces - 4.8 mm, 9 mm, 12 mm type 2
Tele Vue 55 mm Plössl
Tele Vue 2.5x Barlow
University Optics 32mm Wide Scan [2"]

FILTERS

Celestron LPR filter #2 [for visual back]
Celestron 2" Neutral Density [Moon] filters - .3 and .9
Lumicon OIII filter
Parks 1¼" Color Filters for planetary observing
Solar Filter - white light 8" clear aperture

MISCELLANEOUS

Adaptor - 2" to 1¼"
Celestron Reducer/Corrector f/6.3
Celestron 1¼" Visual Back
Eyepiece Case - customizable
Keuffel and Esser Surveyor's Transit
Mirrors - 3 large fast [think "birdbath"] mirrors
Skylab 1 Limited Edition Collector's Decanter in box

VERNONSCOPE, BRANDON, DAKIN sold as a set [I hope]

Brandon eyepieces: 12mm, 16mm, 24mm, 32mm
Vernonscope 40mm Erfle [2"]
Dakin Barlows: 2.4x and 3x
21 color filters et al. with leather slot cases

POSTMASTER NOTE: First Class Postage Mailed July 5, 2019

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

EXECUTIVE BOARD 2019-2020

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

PUBLIC OUTREACH		
COMMITTEE CHAIR:	Rich Nugent	starparty@atmob.org
STAR PARTIES:	Bernie Kosicki	
	Laura Sailor	
	John Harrington	

How to Find Us...

Web Page 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 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.

July 9 First Quarter Moon (Moonset at midnight). Saturn at opposition
July 14 Pluto at opposition

July 16 Full Moon. Saturn 0.2 degrees North of the Moon

July 25 Last Quarter Moon (Moonrise at midnight)

Aug 1 New Moon

Aug 7 First Quarter Moon (Moonset at midnight)

Aug 13 Perseid meteors peak

Aug 15 Full Moon

Aug 23 Last Quarter Moon (Moonrise at midnight)