



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. 32, No. 1 January 2020

This Month's Meeting . . .

Thursday, January 9th, 2020 at 8:00 PM

Phillips Auditorium

Harvard-Smithsonian Center for Astrophysics

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

Member Talks



Phillips Auditorium, Harvard-Smithsonian Center for Astrophysics *

Our speakers this month are Amateur Telescope Makers of Boston (ATMoB) Club members Sal LaRiccia and Glenn Chaple.

Our first speaker is Sal LaRiccia who will talk about his ATMoB Club photo history project and will give us an update.

Sal has been an amateur astronomer since he was 11 years old. In 1967 he entered his homebuilt 6-inch Newtonian reflector telescope in his high school science fair. He went on to the state science fair at MIT and met some life long friends (some still in ATMoB). He joined ATMoB in 1967 and attended Stellafane that same year. Sal was shop chairman from 1971-1973 when our Club shop was at the old Schwamb Mill in Arlington, MA. Most of Sal's photography is not of objects in the sky but of the astronomers who study such objects.

Sal spent most his career as a Mechanical Engineer and a Quality Systems professional. He is currently retired. Sal resides in Somerville, MA with his wife Ellen. They have many children and grandchildren. They both work as church volunteers in addiction recovery programs. Sal also plays keyboards and is active in his church's worship band.

Our second speaker will be Glenn Chaple who will provide and an update on the Astronomical League's Variable Star Observing Program.

Glenn has been an avid amateur astronomer since the summer of 1963 when a high school friend showed him Saturn through his telescope. He received a BS degree in astronomy from the University of Massachusetts in 1969, and then worked for two years at the Alice G. Wallace Planetarium in Fitchburg, Mass. After that, he spent 30 years as a middle school science teacher in the Fitchburg and Groton-Dunstable school systems. He currently writes the monthly "Observing Basics" column for *Astronomy Magazine* and is a former esteemed ATMoB President of the Amateur Telescope Makers of Boston and member of the American Association of Variable Star Observers.

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 . . .

Tom's Tops for 2019

With the new year upon us it is important to note all the great milestones and accomplishments we have realized throughout 2019. Please entertain me in reading what I think are some of the more important events and achievements over the last year.

We were lucky to enjoy the Club's major social events, the Summer Picnic and the New Year's Eve Party, where we celebrated with friends old and new. Both parties require a lot of planning and preparation which led to wildly successful affairs. Thanks to all on the ad hoc Social Committee for your unsung efforts. I always see Eileen Myers, Al Takeda, Julie Kaufman, John Reed and John Stodieck, working on these events.

A major aspect of ATMoB's charter revolves around outreach to our communities. Star Parties play an important role in meeting this goal. While interest in star parties has fallen off in the last years, our Outreach Committee has made great strides in re-invigorating the process of supporting these events. It is satisfying to see an uptick in calls for Star Parties. Now, if the weather would just cooperate! Special thanks go to Rich Nugent, Bernie Kosicki, Laura Sailor and John Harrington. Another aspect related to outreach is the new Library Telescope Loaner Program driven by Kelly Beatty. Kelly almost single handedly pushed the agenda of starting the new ATMoB program of retrofitting smaller, easy to use telescopes and placing them in local public libraries. Our first Telescope Mod party was great fun and very successful. We now have 8 telescopes ready to be situated in our communities, enabling library patrons the opportunity to experience the night sky.

Monthly meetings provide an important venue to meet as an organization to review Club business and enjoy astronomy related topics. I want to personally thank all the speakers. If you meet up with our speakers, please take the time to thank them for their time and energy. Topics covered Galaxy Formation, Black Holes, NASA Apollo History, Quantum Mechanics, TESS Update, Library Telescope Loaner Program, Bath Interferometry, DIY Goto GEM Mount Building, Observing the Moon, DSLR Astrophotography Imaging, Planetary Defense, New Star Type Discovery, and Appreciating Astrophotography As Art.

Our monthly meeting allows us to recognize and meet many of our Club officers who tirelessly work to keep the Club moving forward. Thanks to John Harrington for note taking and comprehensive meeting and newsletter reporting. Eileen Myers adeptly handles our finances with reporting and management of debits and credits. Chris Elledge takes the Membership management to a new level assisting new members navigate the Club. He is usually the first touch point for new members and interested individuals and does an outstanding job. Rich Nugent manages our Outreach effort and reporting with ease, assisting our clients with the process of putting on a great star party. Steve Clougherty and John Reed provide a comprehensive record of what's going on at the Clubhouse. Glenn Chaple and Bruce Berger provide important comprehensive notice of what is coming up in the night sky over the new month. Officers also play double duty by providing refreshments for our meeting. The coffee provided certainly helps me to arrive home safely after late nights at the CfA. Chris Elledge's effort to produce the YouTube channel recording so that members not in attendance as well as the general public can participate is greatly appreciated. Our At Large members, Maria Batista, Al Takeda and Alan Sliski all play important background roles in keeping the Club meetings and Clubhouse running smoothly.

I want to recognize and thank the Nominating Committee (Chair Corey Mooney, Bruce Berger and Laura Sailor) as well as Dick Koolish and Al Takeda for their help and institutional knowledge in holding elections. Elections for new board members are coming up! If you have an interest in being a Club officer, please feel free to reach out to me.

The Clubhouse Committee provides the underlying structural support for our efforts in Westford. Thank you to Steve Clougherty, John Reed and Dave Prowten for tirelessly working to keep our facilities top notch! I also want to thank all the members of the Club who attend our work parties to keep the house and observing facilities standing and usable. I find these events a fun time to meet with new and old friends and hope you will join us at the next work party. Interest in mirror making has seen an uptick in the last year. Phil Rounseville hosted an introduction to mirror making class after our December work party. It was a great introduction to the process, and I look forward to working on my own mirror. Thank you, Phil, for making your time and experience available to all members. To assist on the mirror making process, the newly complete Mirror-O-Matic built by Barry Jensen with the help from many members of the Club is ready for fine grinding and figuring of larger

mirrors. The newly built grinding machine spearheaded by Eric Johansson and Barry Jensen is online to speed the process of rough to fine grinding of small to large mirrors. Chris Elledge has graciously offered to take on the role of managing the mirror making efforts. A special mention and kudos go out to the "A" members that open and close our Clubhouse on Saturday nights. It's a huge commitment and service to all members of the Club. Let's not forget our Friday night DVD seminar series. Eileen Myers and John Stodieck have picked up the torch to ensure relevant and interesting topics are covered on these evenings. Thank you!

I am encouraged to see the ATMoB Research and Imaging Observatory (ARIO) fully up and running with a new science initiative started by Bill Toomey and Bruce Berger. I anticipate ARIO will be providing important scientific contributions over the coming year in the field of variable star study, asteroid orbit confirmation, in addition to deep sky imaging. We have also seen a marked increase in the use of the 16-inch SCT and the 25-inch Dobsonian telescopes in the last year. I cannot begin to describe the stunning views I have been afforded with the help of Steve Clougherty. I encourage everyone to take a break on a Saturday night to visually enjoy our night sky at the Clubhouse.

Last but certainly not least, I want to thank Editor Al Takeda and Assistant Editor Eileen Myers for their outstanding production of our monthly newsletter Star Fields. I believe it is the cornerstone of our outreach effort and provides a permanent historic record of our Club's accomplishments over the years. I also want to thank all the contributors for their thoughtful submissions.

Here's to 2019 and on to 2020!

Keep looking up with your feet firmly on the ground!

Tom

~ Tom McDonagh - President ~

Meeting Refreshment Assignment . . . 2020

Jan. - Bruce Berger

Feb. - Eileen Myers

Mar. - Glenn Chaple

Apr. - Chris Elledge

May - Al Takeda

Jun. - TBD - A volunteer from the membership is requested

Jul. - Tom McDonagh



December Meeting Minutes . . .



Babak Tafreshi *

Minutes of the 926th ATMoB meeting held December 12, 2019, at the Harvard-Smithsonian Center for Astrophysics in the Phillips Auditorium. Club President Tom McDonagh called the meeting to order at 8:15 pm and announced that the business portion of the meeting would follow the evening's presentation.

President McDonagh then introduced Babak Tafreshi, one of the world's leading night scape imagers and the founder of [The World at Night \(TWAN\)](#) organization. Mr. Tafreshi opened his presentation by noting the historical significance of the Phillips Auditorium, where many important professional astronomical presentations have been made over the years. Mr. Tafreshi considers himself to be a science journalist at heart, but astrophotography has been his profession since the late 1990s.

TWAN's overall goal is to help raise awareness of the importance of a natural night sky, which is vital for the survival of some species. Mr. Tafreshi founded TWAN in 2006, and the group now numbers over 40 imagers. He believes that "the night hides a world, but reveals a universe," an old Iranian saying. Nonetheless, he fears that our "natural heritage of the night sky" will soon be gone due to spreading light pollution. His cityscapes, awash in light pollution, are designed to show urbanites what they are missing compared to a truly dark night sky.

Mr. Tafreshi's images often use moonlight as their major source of illumination, but sometimes depend only on the faint glow of the Galactic center in Sagittarius. He uses a variety of different imaging equipment, but sometimes employs cameras (such as a Nikon D810A or Canon EOS Ra) that are designed for sensitivity to hydrogen alpha light, in order to highlight nebulae. He tries to obtain realistic images of the Milky Way, without creating unrealistic colors.

Despite often imaging from remote locations, Mr. Tafreshi still encounters various forms of light pollution. Problems include trails created by aircraft lights, and, increasingly, by artificial satellites. He often images after 2 am local time in order to reduce the number of aircraft likely to pass by. Urban light domes are an increasing problem, especially those from brightly-lit cities like Las Vegas that are visible for 100 miles, or Los

Angeles for 200 miles. The spread of overly bright, blue-intensive LED lights is further harming the night sky and affecting the quality of our lives.

Mr. Tafreshi emphasized the deep connection he feels to the night sky when he is imaging alone in some remote place. He currently spends 70-80 nights awake per year, in order to acquire his outstanding images. This enforced wakefulness has actually had some health effects on him, due to reduced levels of melatonin.

During the course of his presentation, Mr. Tafreshi showed an array of gorgeous nightscape images taken from a wide array of countries, including Algeria, Brazil, the Canary Islands, the Czech Republic, Germany, Greece, Guatemala, Iceland, India, Iran, Kenya, Mexico, New Zealand and Sweden. He also images throughout the U.S., recently including Colorado, Grand Teton National Park, the Maine Astronomy Retreat, and west Texas. Among the most memorable of his remarkable images were those of moonlit petroglyphs in Iran and red sprites adjoining a thunderstorm in west Texas. A collection of Mr. Tafreshi's best images can be seen in his new book, *The World at Night: Spectacular Photographs of the Night Sky*.

President McDonagh thanked Mr. Tafreshi for his presentation and then opened the business portion of the meeting.

- Secretary John Harrington read the minutes of the Club's November meeting.
- Treasurer Eileen Myers gave the Treasurer's report and announced that the Club had received its first small donations from the smile.Amazon.com website.
- Membership Secretary Chris Elledge presented the Membership Report, showing 309 total memberships covering 400 Club members.
- Glenn Chaple gave the Observers Report, noting several upcoming meteor showers, including the Geminids, Ursids and Quadrantids. The Observers Challenge object for the month is IC 1805, an emission nebula in Cassiopeia that is also known as the Heart nebula and spans 2.5 degrees in the sky.
- Steve Clougherty gave the Clubhouse Report, noting that 33 Club members participated in the November 9th work party. Alan Sliski installed a readout on the Bridgeport machine at the Clubhouse. The snow fence was also installed. Steve announced that the next work party on December 14th would concentrate on organizing equipment in the barn portion of the Clubhouse. Phil Roundsville will speak on mirror-making at that work party.
- Rich Nugent gave the Outreach Report and noted that the scheduled Center School star party was cancelled due to poor weather. The Timberlane Middle School star party was held on its backup date. He also discussed the successful library telescope-making session held at New England SciTech on

November 17th. Due to winter weather, no other outreach events are scheduled in the next few months.

- Old Business:
ATMOB pins are still available
Purchases made through the [smile.amazon.com](https://www.smile.amazon.com) website will result in a small donation to the Club.
- New Business:
Club members are reminded that the forthcoming New Year's Eve party will be the Club's 21st!

President McDonagh thanked Maria Batista for supplying delicious home-baked refreshments and then adjourned the meeting at 10:38 pm.

~ John Harrington, Club Secretary ~

Meeting Recordings . . .

The recording of ATMOB meeting #926 is available on YouTube: <https://youtu.be/x02MbwygTA0>

I would like to thank Babak Tafreshi 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: Garrison Jorge; Carrie Rainwater; Richard Goss II, Deborah Goss, and Richard Goss III.

As of December 29th, 2019 we have 312 memberships covering 405 members. This is broken down as follows:

- 138 Regular Members
- 110 Senior Members
- 7 Student Members
- 52 Family Memberships covering 145 Members
- 3 Guest Member
- 2 Honorary Members

Please contact me if you need any help with [renewing](#) or logging into the [website](#).

~ Chris Elledge – Membership Secretary ~

Clubhouse Report . . .



Phil Rounseville teaches an Introduction to Mirror Making class *

December 2019 Clubhouse Report

The Clubhouse was opened by Paul Cicchetti at 9:40 am for the December Work Party under warm (41deg) but cloudy skies with rain. Thirty members signed in the log book and provided their skills needed for this effort: John Blomquist, John Cassidy, Paul Cicchetti, Steve Clougherty, Alva Couch, Nina Craven, Keith Davies, Peter Doherty, Chris Elledge, John Harrington, Tom Harpin, Marion Hochuli, Eric Johansson, Dick Koolish, Jon Lyna, Tom McDonagh, Vladislav Mlch, Corey Mooney, Keira Mooney, Eileen Myers, Rich Nugent, Dave Nugent, John Reed, Steve Scampini, Hal Schaefer, Alan Sliski, John Stodieck, Art Swedlow, Al Takeda and Bill Toomey. A big Thank You to each and every one. We were met by thawing snow and standing water in the driveway. The driveway and parking area had been plowed by MIT after the first double snow storm in December. Ten observing pads and each observatory had been then cleared with Club snow blower and shovels by Paul C., Art S., Steve C., and John R. Now snow ceased being the problem as an early mud season was here, refreezing each night.

Our efforts during the work party focused on work inside the Clubhouse. Dave Prowten took measurements of the outside polishing room door for insulation. Two weeks later Dave picked up 1.5" styrene insulation and installed it during the New Year's Eve prep work party which took place on Saturday, Dec 28. The newly refurbished polishing room with the Mirror-o-Matic machine is now well insulated and heated. Corey Mooney set up and ran another demo project for the new 3D printer. The printer is working well after a couple of test run projects which took place over the past two work sessions. Steve C. and a few volunteers tackled the upper barn during this work session. Two large capacity modular shelving units were purchased for storage in the upper barn. The shelving was installed and several hours were spent organizing the large amount of scrap aluminum, steel and brass that we have collected over the years. In addition, we cleaned out the entire attic and made room for our portable planetarium which is now stored in this area. There is now a designated space for scrap metal, machined parts, Teflon and miscellaneous stuff. Members should be aware of the fact that we have a designated ATM parts shelf which contains several mirror

cells, spiders and various ATM components. Anyone who is interested in acquiring such parts for their own use should ask one of the Clubhouse committee members for permission. A small donation will be requested for items taken. We ask that anyone planning to donate material, equipment or machinery to the Clubhouse first check with one of the Clubhouse Committee Chairmen. Very often we find ourselves having to throw out a vast amount of accumulated material from well intentioned people!

Phil Rounseville conducted a very successful mirror making workshop-lecture which ran well over two hours that afternoon. Phil gave attendees a tour of our optical shop, testing area and our glass and compound storage room. Thanks again Phil for this great workshop!

Many thanks once again to Paul Cicchetti and John Reed for coordinating our Clubhouse duty roster! Tom McDonagh generously donated a remote temperature detecting apparatus which alerts us to any significant temperature drop at the Clubhouse. Over the past couple of years we have experienced several furnace shut off instances requiring service calls. This alert system will help us to monitor the furnace remotely.

We would like to give a special thank you to Eileen Myers who tirelessly worked with Verizon to reconnect our telephone service to the Clubhouse.

Happy New Year!! Next work session will take place on Saturday January 11, starting at 10 am.

Clubhouse Saturday Schedule		
Jan 11	WORK PARTY # 1 ** Closed	
Jan 18	Paul Cicchetti	John Reed
Jan 25	Phil Rounseville	Joe Wolfe
Feb 1	John Stodieck	Al Takeda
Feb 8	WORK PARTY # 2 ** Closed	
Feb 15	Jim Gettys	John Panaswich
Feb 22	Bruce Berger	Glenn Meurer
Feb 29	Eileen Myers	Rich Nugent
Mar 7	WORK PARTY # 3 ** Chris Elledge and Slav Mlch	

** 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 ~

ATMoB Research and Imaging Observatory Science Update . . .

Even with the cold weather and ice, the ATMoB Research and Imaging Observatory (ARIO) continues to perform well. A number of members have visited the observatory to help during observing sessions.

Over the past month we have had limited observing nights due to bad weather and the holidays, but we have managed to take variable star data on 5 stars in 4 filter bands and have an additional 10 stars in the pipeline. We have had some technical difficulties obtaining flat field calibration frames, but hope to have this issue solved before you read this.

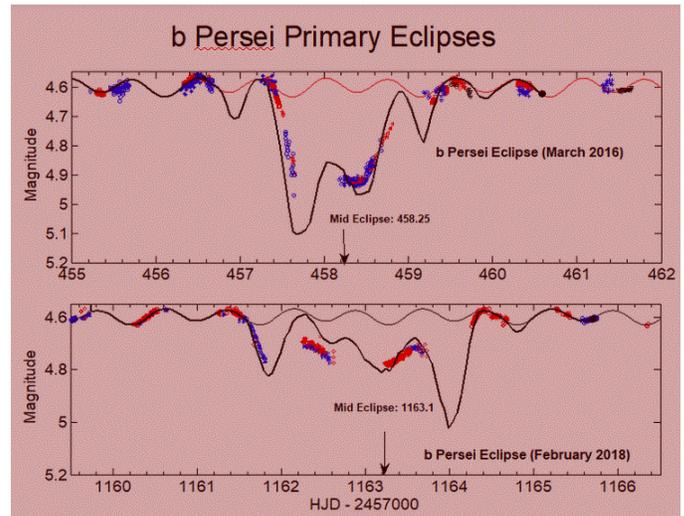


Image from AAVSO Alert Notice 688

On 20 December the American Association of Variable Star Observers (AAVSO) issued an alert notice (<https://www.aavso.org/aavso-alert-notice-688>) requesting time series data for the two weeks from 5 January to 2 February for the anticipated primary eclipse of the star b Persei (a three star system) which is expected to occur on 19 January. This would be a good opportunity for us to hone our needed exo-planet skills. This variable varies between 4.51 magnitude and 4.68 magnitude, well in the range of our current configuration. The dip in magnitude is expected to be between 0.15 to 0.3 magnitudes. This is a much larger dip than we would need to measure for exo-planet transits, but it will give us an opportunity to see what we are capable of and do some real science at the same time. Tom McDonagh will be taking the lead on this project. If you are interested in helping out, please contact Tom McDonagh, Bruce Berger, or me.

The primary requestors are also asking for spectral data. We have had a group of members who were exploring using spectrographs with our clamshell observatory. If anyone is interested in pursuing this opportunity to try out their spectral skills, this would be a good opportunity to do some science.

~ Submitted by Bill Toomey ~

Observer's Challenge . . .

January 2020

NGC 1999 – Reflection Nebula in Orion

Magnitude: 9.5; Size: 2° X 2°



32-inch f/6 scope and SBIG 1001E camera, 166 minutes of H-alpha, Sulfur II, and O3 filters. Processed in PixInsight. North is up. Image by Mario Motta

This month's Observer's Challenge takes us to a nebula in Orion – not *the* Orion Nebula (M42), but one located a little over a degree further south. This “other Orion Nebula” is NGC 1999. Unlike M42, which is an emission nebula that produces its own light, NGC 1999 is a reflection nebula whose light source is the embedded variable star V380 Orionis.

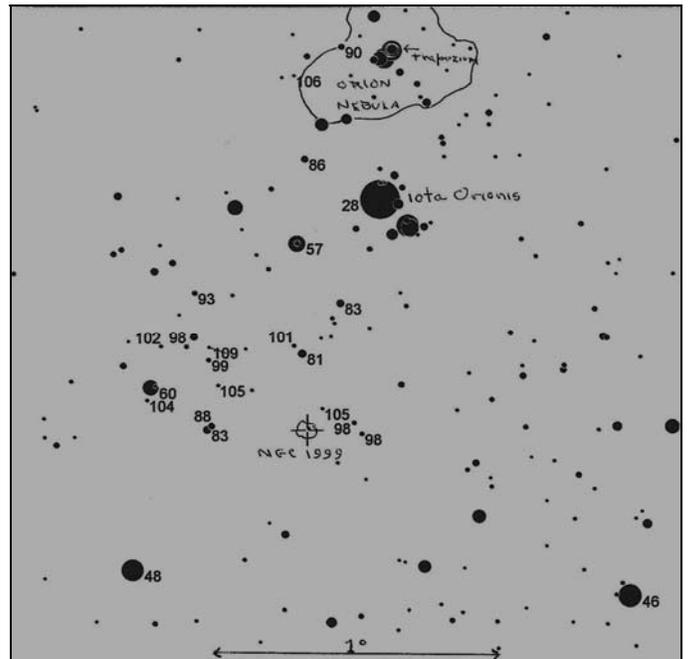


Stock Canon 80D, 400mm, f/2.8 lens, ISO200, 104 subs X 15 sec = 26 minutes. North is up. Image by Doug Paul

NGC 1999 was discovered by William Herschel in 1785. He categorized it as a Class IV object (Planetary Nebulae) and assigned it the Herschel Catalog designation H.IV-33. What makes NGC 1999 so remarkable is a dark area just west of V380 Orionis. It's not an obscuring patch of unilluminated gas and dust, but an actual hole in the nebula. The mechanism for this anomaly is unknown but may be a result of outward-pushing radiation from V380 Orionis.

When viewed with my 4.5-inch f/7.9 reflector at 88X, NGC 1999 looked like a fuzzy star. A switch to a 10-inch f/5 reflector and boost to a magnification of 250X failed to reveal the hole, but I was able to detect a very faint surrounding nebulosity that spanned several arc-minutes.

At a distance of some 1500 light years, NGC 1999 is about 0.3 light years in diameter.



NGC 1999 finder chart, adapted by Glenn Chaple from AAVSO Variable Star Plotter (VSP). Numbers indicate star magnitudes (decimals omitted). North is up.

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/>

~ Submitted by Glenn Chaple ~

2020 New Year's Eve Party . . .



Corey Mooney, Julie Kaufmann, Ray Bowman, Marsha Bowman, Sue Whitney and Pierre Fleurant, John and Monique Reed, Eileen Myers, "The Globe". *

All partygoers survived trudging through puddles of slush and mud, eventually reaching the happy destination of a warm and lavishly decorated ATMob Clubhouse. Revelry greeted the arrival of the second decade of the 21st century, 7 times. The midnight celebration was by far the longest and noisiest.

The food brought by members and their families and friends was savory and succulent, and rich and sweet. No food group was left out.



Ed Los playing Auld Lang Syne. *

Almost all of the approximately forty merrymakers wore a hat from the Club's accumulated collection of 57 hats, and most

partygoers changed their "identity" several times during the evening. New friendships formed as older members met newer members. The dance floor was crowded as Julie Kaufmann led us through the now classic line dances. Fiddler Ed Los' Irish and Scottish music and his playing of Auld Lang Syne reminded us that this is truly an international holiday.

Thank you to all partygoers who put away food and straightened everything up before leaving. Thank you everyone for the delicious food!

The work party to clean the Clubhouse and put up decorations allowed the seven participants to show off their analytical and decorating techniques. We frequently stopped to admire each other's talents. The "One More Chance to Welcome 2020 at the Clubhouse" bagels-and-lox work party to take down decorations was another success. The task was accomplished by eleven members in record time, and everyone enjoyed the traditional post-New Year's brunch.

We are grateful to Club Photographer Al Takeda, who did not have any rest. When he wasn't taking pictures of members, he was fixing broken things or decorating or straightening out messes. We are indebted to Julie Kaufmann, who coordinated each day's work efforts and kept the recycling organized.

And a special acknowledgement and thank you to the record-breaking number of members who worked at the three work parties, making the whole event fun and so much easier to hold: Steve Clougherty, Alva Couch, Keith Davies, Pierre Fleurant, Marion Hochuli, Julie Kaufmann Sandra Lobo, Tom McDonagh, Corey Mooney, Keira Mooney, Eileen Myers, John and Monique Reed, Steve Scampini, John Stodieck, Art Swedlow and Al Takeda.



~ Co-coordinators Eileen Myers, Al Takeda, Julie Kaufmann ~

Editor: * Photos by Al Takeda unless otherwise noted.

February Star Fields DEADLINE
Sunday, January 26th

Email articles to Al Takeda at
newsletter@atmob.org

Articles from members are always welcome.

POSTMASTER NOTE: First Class Postage Mailed January 6, 2020

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 (781) 325-3772

MEMBERSHIP: Chris Elledge (978) 456-3937

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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 Saving Time (EST) from Universal Time (UT) subtract 5 from UT.

Jan 4 Quadrantid meteor shower peaks. 09 UT (04 EST)

Jan 10 Full Moon

Jan 17 Last Quarter Moon (Moonrise at midnight)

Jan 24 New Moon

Jan 27 Venus 0.08 degrees south of Neptune

Jan 28 Venus 4 degrees north of Moon

Feb 1 First Quarter Moon (Moonset at midnight)

Feb 9 Full Moon

Feb 4 Mercury at greatest Eastern (evening) elongation (18 degrees)