



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. 30, No. 6 June 2018

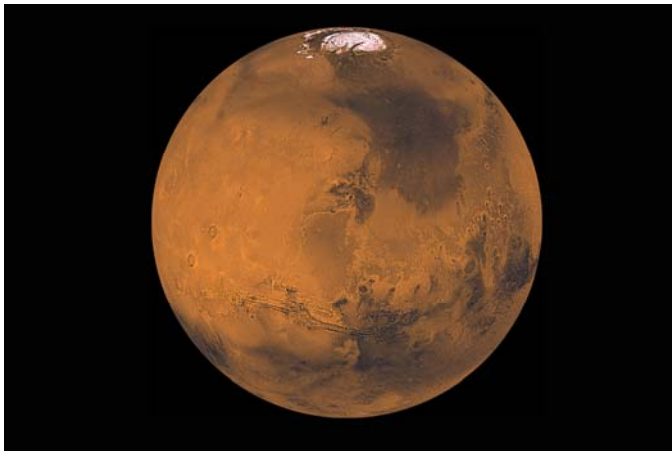
This Month's Meeting . . .

Thursday, June 14th, 2018 at 8:00 PM
Phillips Auditorium

Harvard-Smithsonian Center for Astrophysics

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

Mysterious Mars



Mars. NASA/JPL-Caltech/USGS

Why are we so fascinated with Mars, our neighbor in space? Why is it so like our own Earth in some ways -- and so utterly different in others? Come along as we explore the "Red Planet" from afar and up close. (You'll go right onto the dusty Martian surface, thanks to 3-D imagery -- glasses provided!) Meanwhile, spacecraft from NASA and the European Space Agency are scrutinizing every bit of its globe both from orbit and from the ground to determine the planet's geologic history. We'll delve into the real odds of finding life there. And get ready for the forthcoming favorable opposition of Mars this summer, its closest pass to Earth in 15 years!

Kelly Beatty, a *Sky and Telescope* Senior Contributing Editor, joined the staff in 1974 and served as the editor of *Night Sky*, a magazine for beginning stargazers, in 2004-07. After 43 years of pounding the keyboard, he retired from full-time work in early

2018 but remains actively involved in many *Sky & Telescope* articles, tours, and other projects.

Specializing in planetary science and space exploration, Kelly conceived and edited *The New Solar System*, considered a standard reference among planetary scientists. He also taught astronomy for six years at the Dexter Southfield School in Brookline, Massachusetts.

Kelly has been honored twice by the Division for Planetary Sciences (DPS) of the American Astronomical Society. In 2005 he received the [Harold Masursky Award](#) for meritorious service, and in 2009 he was honored with the inaugural [Jonathan Eberhart Journalism Award](#). He is also a recipient of the prestigious [Astronomical League Award](#) (in 2006) for his contributions to the science of astronomy and the American Geophysical Union's [Cowen Award](#) for Sustained Achievement in Science Journalism (2009).

You'll occasionally hear his interviews and guest commentaries on The Weather Channel and National Public Radio, and his work has appeared in numerous other magazines, newspapers, and encyclopedias. In fact, Kelly enjoys speaking to audiences of all ages and interest levels about his passion for astronomy. He observes when he can through one of his eight telescopes, and he is active nationally in the [fight against light pollution](#).

Kelly hails from Madera, California. He holds a Bachelors 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 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 . . .

Four years ago, Steve Clougherty, acting on behalf of the Nominating Committee, called to ask if I'd be willing to have my name put on the ballot as a candidate for ATMob Vice President. I hesitated to answer, because the VP traditionally moves on to the Presidency after his/her term expires. I had been a "background member" (one who doesn't get involved in club activities) for over 30 years and didn't consider myself to be Presidential material. I agreed to have my name put on the ballot as long as it was abundantly clear that I would under no way run for President when I became eligible!

I didn't consider that there's a second way the VP can become President -- that being to replace the existing President should he/she need to step down from the position. In retrospect, I'm glad things turned out the way they did. Serving as your President proved to be an incredibly rewarding experience. Sure, it could be a demanding and time-consuming task, but the job was made so much easier by a dedicated Board that included

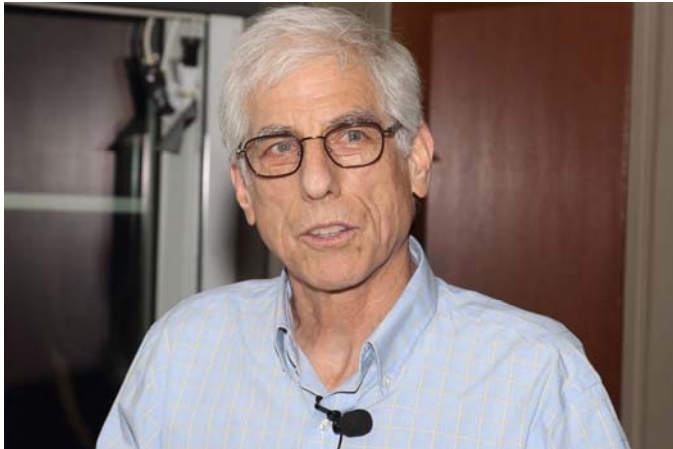
Vice President Tom McDonagh, Secretary Phil Levine, Treasurer Eileen Myers (who also did a yeoman's job organizing our annual New Year's party and summer cookout), Membership Secretary Chris Elledge (who also recorded our meetings for posting on the internet), Members-at-Large Al Takeda (who did double duty as editor of our Star Fields newsletter), Maria Batista, and Bruce Tinkler, and Past Presidents Mike Hill and Bernie Kosicki.

I'll close my final President's message with a heartfelt "thank-you" to the aforementioned Board members and to the Committee members who took the time to keep the Clubhouse up and running, helped out with star parties, updated us on what's "up there" in the night sky, and kept the art of mirror-making alive and well. Thanks also to those of you who offered names of potential monthly speakers or emailed suggestions for ways I could better serve ATMoB. And finally, I thank each and every one of you who support ATMoB simply by renewing your membership each year. If you're a "background member" like I was for so many years, I encourage you to look for ways you can get involved in future club activities to ensure ATMoB's continued success as a top-notch astronomical organization.

Clear Skies,

~ *Glenn Chaple - President* ~

May Meeting Minutes . . .



Dr. Alan Hirshfeld *

Summary of the ATMoB meeting held May 10, 2018 at the Harvard-Smithsonian Center for Astrophysics in the Phillips Auditorium. Club President Glenn Chaple called the meeting to order at 8:00 pm.

- The Secretary Report was read by Phil Levine.
- The Treasurer Report was presented by Eileen Myers.
- The Membership Report was presented by Chris Elledge.
- The Observing Report was presented by Glenn Chaple and Steve Clougherty.
- The Clubhouse Report was presented by Steve Clougherty.

Tom McDonagh presented the Mirror Making Committee Report. The Public Outreach Committee Report was presented by Rich Nugent.

• Announcements:

This year's Nominating Committee, consisting of Bruce Berger (Chair), Peter Bealo and James Synge, announced the names of members nominated for Board Member positions. Voting will be held at ATMoB's Annual Meeting on June 14th. The club's bylaw regarding how a member can be added to the ballot was explained, and is included in the "Annual Meeting Announcement" article in this newsletter. Basically the member should submit to the club Secretary a request letter with 7 signatures of other club members. The Secretary should receive the letter no less than 10 days before the June Annual meeting.

Maria Batista talked about the auction process for the sale of surplus club telescopes. Clubhouse Director Steve Clougherty set up one of the telescopes, an Orion 90-mm refractor, for members to examine and consider for purchase. The ATMoB website now includes a section named "Surplus telescopes" under "Members", where the surplus telescopes are described and where you can find further instructions, including "How to bid".



Glenn Chaple and the Orion 90-mm surplus refractor

• Old Business:

Paul Velleli emailed the membership a photo of an ATMoB pin. Eileen Myers indicated that the club is in the process of re-establishing a club pin to help promote ATMoB.

New Business: none

Glenn Chaple introduced the guest speaker for the evening, Dr. Alan Hirshfeld, whose talk was entitled: "From Backyard to Mountaintop: The Adventures of History's Best Worst Telescope".

Alan's talk detailed how a 36-inch reflector built in 1836, belonging to English astronomer Andrew Common, made its way from a London backyard ultimately to a mountaintop observatory in California. This telescope was important because it demonstrated the importance of astrophotography, and Dr.

Hirshfeld detailed some important discoveries which came about as a result of astro-imaging.

Glenn Chaple adjourned the meeting at 9:20 pm

~ *Phil Levine - Secretary* ~

Annual Meeting Announcement . . .

The Annual Meeting of the Amateur Telescope Makers of Boston, Inc. will be June 14, 2018. The election of the 2018-2019 Executive Board will take place at the meeting.

Nominations for 2018-2019 . . .

The 2018 Nominating Committee has proposed a slate of nominations to be voted on at the Annual Meeting in June. The nominees are:

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

ARTICLE XI: Elections

§ 1: Nominations - At the regular meeting of the members in April of each year, the President shall propose a list of the names of six members from which the members present at the meeting shall choose by ballot the names of three members to act as a nominating committee to select a full slate of candidates for the elected positions on the Executive Board. The approval of all members of the nominating committee shall be required for a nomination. The nominating committee shall advise the members of its nominations at the next regular meeting of the members, and those nominations shall be included in the notices sent to the members of the annual meeting. 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.

Summary of the Minutes of the ATMoB Executive Board Meeting June 7, 2018 . . .

Budget for 2018 - 2019 Fiscal Year
Approved

Star Party Online request Form
Approved

Discussions:

Should we help out at star partys that charge admissions?

ATMoB pins/ T-shirts
ATMoB Research and Imaging Observatory Update

Documenting Telescope sales

Procedure for Adding Candidate to for Board Election

Refreshment Assignments for 2018 - 2019

~ *ATMoB Executive Board* ~

Meeting Recordings . . .

The recording of ATMoB meeting #909 is available on YouTube: <https://youtu.be/8GrXoienygk>

I would like to thank Alan Hirshfeld for allowing us to record his presentation From Backyard to Mountaintop: The Adventures of History's Best Worst Telescope.

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 <http://www.atmob.org>

~ *Chris Elledge - Membership Secretary* ~

Membership Report . . .

I am pleased to welcome our newest member Sandra Manning.

As of May 21st, 2018 we have 323 memberships covering 397 members. This is broken down as follows:

168 Regular Members
104 Senior Members
9 Student Members
38 Family Memberships covering 112 Members
4 Guest 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.

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 . . .



25-inch Dobsonian shroud. (L-R) Steve Clougherty, John Maher *

May 2018 Clubhouse Report

During the month of May our volunteers helped maintain the grounds by cutting back brush, mowing and raking. We owe a big thank you to John Blomquist who hauled his tractor mower to the Clubhouse during the week and mowed the entire property.

Our monthly work party took place on the Saturday of Memorial Day. Attendance was lighter than normal, with a total of 15 members helping out. Volunteers raked the grass clippings that were left from the previous week's mowing. Chris Elledge inspected and primed our three power mowers, and he and Al Takeda used them to finish mowing those areas that could not be reached by the tractor mower.

Maria Batista planted flowers along the South and East side of the Clubhouse, lending some color to the property.

The new red shroud, which was recently ordered and purchased at a discount at NEAF, was installed on the 25-inch Dob. Two additional coats of varnish were applied to the wooden upper and lower cage assembly. Training was provided to a group of members who are interested in using the 25-inch Dob in the future. The telescope is now fully operational.

The dome and motorized slit for the ATMoB Research and Imaging Observatory (ARIO) have been working fairly well since the work on them was completed last year. Jim Gettys and Bruce Berger are working with member Alan Sliski to troubleshoot the Paramount drive's (probable) periodic error problem. We hope to solve the drive problem and have this telescope fully operational in the near future.

Surplus telescopes will continue to be offered to ATMoB members each month, either by direct sale or club auction. The second C-14 tube assembly with Parallax mounting rings will be offered for sale. *Editor: This telescope and rings have been sold.*

The telephone land line connection to the Clubhouse stopped working. The phone company came and repaired the outside line. Al Takeda completed the inside line repair.

Thanks to Dick Koolish for donating six 8" plate glass blanks along with an 8" Pyrex blank for anyone who is interested in making a mirror. Mirror grinding took place during the afternoon under the supervision of Mike Mattei.

Thanks to Eileen Myers and helpers who prepared a very nice lunch and handled the clean up.

Thanks to the following volunteers who helped out at the Clubhouse during the month of May: Maria Batista, John Blomquist, Paul Cicchetti, Steve Clougherty, Tom Conti, Chris Elledge, Jim Gettys, Dick Koolish, Bernie Kosicki, John Maher, Mike Mattei, Vladislav Mlch, Eileen Myers, Art Swedlow and Al Takeda.

Our next scheduled Clubhouse work session is scheduled for Saturday, June 30.



f/3, f/5, f/7, f/10? *

Important Notice: Mirror making sessions will now take place on **Saturday afternoon's beginning at 3:00 pm. Other times may be scheduled. Check your email on the ATMoB-ANNOUNCE list.**

~ *Clubhouse Committee Chairs* ~

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

| Clubhouse Saturday Schedule | | |
|-----------------------------|---|--------------|
| June 16 | Paul Cicchetti | John Reed |
| June 23 | Phil Rounseville | Joe Wolfe |
| June 30 | WORK PARTY # 7 ** | |
| July 7 | Joe Henry | Glenn Meurer |
| July 14 | Bruce Berger | Mike Hill |
| July 21 | Brian Maerz | Rich Nugent |
| July 28 | WORK PARTY # 8 ** Dave Siegrist | |

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

| Clubhouse Evening Schedule | |
|---|----------------------|
| Friday Night Educational Videos | 7:00 pm - 10:30 pm # |
| Saturday Afternoon Mirror Making | 3:00 pm - ## |
| Saturday Night Observing | 7:00 pm - ## |
| # Closing time is determined by the organizers | |
| ## Closing time is determined by the "A" members on duty. | |
| Saturday afternoon mirror making schedules will be posted to the ATMOB-ANNOUNCE email. | |
| Note: The Clubhouse is closed on the 2nd Thursday of the month for our monthly meeting in Cambridge. | |
| Due to inclement weather conditions on Saturday evenings, the "A" members on duty may elect to close the Clubhouse. Please call the Clubhouse at (978) 692-8708 or check for email messages posted to ATMOB-ANNOUNCE. | |

May Outreach Report . . .

I forgot to mention in last month's report that Phil Levine spent about 5 hours under the hot sun providing safe solar views at the Center for Astrophysics during the Cambridge Science Festival on Sunday, April 22nd. Thanks for your time and expertise!

On Thursday, May 17th we provided telescopes at an astronomy night for the 3rd grade students at the Fay School in Southborough, MA. Organizer Tim McCauley had the students construct small refracting telescopes while the sky darkened and we setup our scopes. ATMoB members brought an array of small telescopes: John Harrington (6-inch Dob), Tom McDonagh (90-mm refractor on an equatorial mount), Laura Sailor (small Dob), and Rich Nugent (60-mm refractor on an alt-az mount). Despite the broken overcast, the students got to view Venus, the slender crescent Moon, and for those staying later, Jupiter. The enthusiasm of the students and parents was contagious.



Fay School Astronomy Night. Image by Laura Sailor.

The very next night members helped out at a star party at the Farrington Nature Linc in Lincoln, MA. The event kicked off with Mike Francis's "Galileo" presentation to a crowd of about 50 parents and their children. Afterwards we were able to show the moon, Venus, and Jupiter as well as a few double stars and deep sky objects.

One of the organizers, Tina Dubois, mentioned to me that our presence was a "game changer" for the event. Tina and the other organizers were excited about our new relationship with Farrington, and we will certainly visit them again. Thanks go out to the ATMoB members who helped out: Glenn Chapel, Terry Manning, Tom McDonagh, Corey Mooney, Rich Nugent, Laura Sailor, and Bob Toop.

Upcoming: We've been asked to provide a star party for students and parents at the Innovation Academy Charter School in Tyngsborough, MA on June 18th. The cloud date will be the following evening. Despite the lateness in the season, we should be able to provide views of several solar system objects in the evening twilight. Later, we might be able to glimpse Saturn. The organizers expect approximately 150 middle school and high school students and parents to attend. A crowd this size requires at least 5 telescopes to keep lines reasonably short. Please consider helping out at this event. More info will follow as it becomes available.

Laura Sailor and I are planning a training class for members to learn what goes on at star parties. The plan is to hold a class during the summer in preparation for the next school year. Our goal is to increase the number of star party volunteers so we can increase our outreach presence. More info will follow...stay tuned.

I will be working with Maria Batista to add a link to the ATMoB homepage that will lead the general public (and ATMoB members) to astronomy resources. Kelley Beatty suggested this during a discussion with me at NEAF. It's an excellent idea that will make our web site a bit more welcoming to the general public. If you have a favorite link that might be useful please let me know!

As always, if you have been involved in outreach of any kind and I've omitted you, please let me know as soon as possible. Thanks.



Moon and Venus. Fay School Astronomy Night. Image by Laura Sailor.

~ Outreach Committee Chair: Rich Nugent ~

Sky Object of the Month . . .

June 2018

Courtesy LVAS Observer's Challenge***

Messier 51 – Face-on Spiral Galaxy in Canes Venatici
Mag. 8.4; Size 11.2' X 6.9'



www.astroblogs.nl

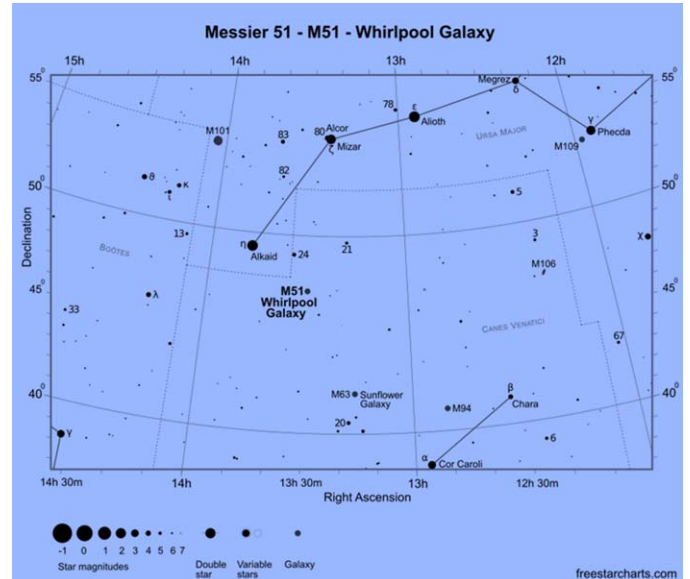
Mario Motta, MD

If you've been actively engaged in backyard astronomy for any length of time, you must certainly have trained your telescope in Messier 51. One of the brightest of Messier Catalog galaxies (it was discovered by the French comet hunter in 1773), it can even be glimpsed with binoculars from dark sky locations. M51 is actually two galaxies in one – an interacting system comprised of a face-on spiral (M51a [NGC 5194]) and a smaller galaxy of indeterminate type (M51b [NGC 5195]).

Through a small aperture scope (or medium sized instrument under hazy or slightly light-polluted skies), this galactic pair bears the “double nebula” appearance that Messier noted. The spiral nature of M51 was discovered by William Parsons, the 3rd Earl of Rosse, who viewed it with a 72-inch reflecting telescope (the “Leviathan of Parsonstown”) in 1845. Compare his drawing (below left) with a recent photographic image made by Amateur Telescope Makers of Boston member Mario Motta (below right).

The speculum metal mirror of Parsons' 72-inch scope reflected a fraction of the light that the aluminum-coated glass mirrors of modern-day reflectors do. You won't need a 72-inch scope to capture the spiral arms of M51, or the bridge of light that connects the two. What is the smallest aperture that will reveal both?

M51 is easily located 3½ degrees southwest of the 2nd magnitude star eta (η) Ursae Majoris. A quick search method is to make a low power sweep of the area one-fourth of the way between eta UMa and Cor Caroli (alpha [α] Canum Venaticorum). This magnificent spiral is about 25 million light years away and is about half the size of the Milky Way.



freestarcharts.com

***The purpose of the LVAS Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested, and if you are able to contribute notes, drawings, or photographs, the LVAS will be happy to include them in their monthly summary. If you would like to contribute material, submit your observing notes, sketches, and/or images to either [Roger Ivester \(rogerivester@me.com\)](mailto:rogerivester@me.com) or [Fred Rayworth \(fred@fredrayworth.com\)](mailto:fred@fredrayworth.com). To find out more, click on the following links: [LVAS Observer's Challenge past reports](#) and/or visit the [Las Vegas Astronomical Society website](#).

~ Glenn Chaple for the LVASS ~

New Outreach Opportunity . . .

As many ATMob members are aware, the Clay Center Observatory at Dexter Southfield School has for years hosted public telescope nights, outreach education, and other science events under the direction of ATMob member Bob Phinney.

In order to further the astronomy, space science, and STEM education he has provided at the Clay Center, Bob has now started a new non-profit STEM education start-up and high-tech maker space located near the Wellesley-Natick line near Rt 30.

New England Sci-Tech Inc. (NESciTech) located at 16 Tech Circle, Natick, will offer classes in amateur radio, electronics, astronomy, and many other STEM topics for adults, families with children, and high school youth.

High on a hill with 5 acres and ample parking, perfect for doing amateur radio and public astronomy nights, the facility contains several classrooms, woodworking shop, machine room, maker space, large meeting space, kitchenette, and storage.

NESciTech welcomes members of ATMob to come over on clear Wednesday, Thursday, and Friday evenings for observing, socializing, and educating the public.

Bob is also looking for ATMoB members who would like to lead educational workshops, day or evening, over the summer beginning in late June.

Check out the facility and programs on line at www.nescitech.org or email Bob Phinney to schedule a visit - bobphinney@nescitech.org.

~ Bob Phinney, Clay Center Director ~

Saturn at Opposition . . .

Friday, June 22, 2018

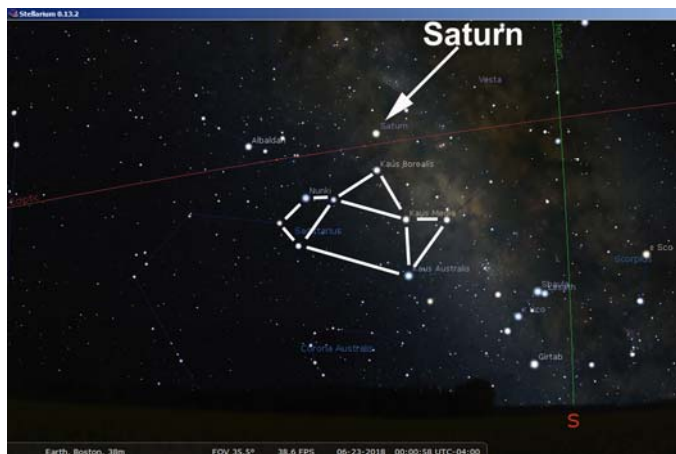


Saturn. Image by Al Takeda

This month Saturn will be directly opposite the Sun in the constellation of Sagittarius (the Archer). The planet will be visible for most of the night, but will be very low in the southern sky, floating just above the Teapot asterism.

The planet will shine brightly at magnitude +0.0 and the ring diameter will be 42 arcseconds. The rings will be almost tilted to their maximum extent at about 26.7 degrees.

A pair of binoculars will allow an observer to see the rings. A small telescope, during steady seeing, will reveal the dark gap in the rings named the Cassini Division.



Saturn at Opposition. Stellarium.

The Astronomers Conjunction . . .

Friday, July 13, 2018 through Sunday, July 15, 2018

Some ATMoB members stay over Friday night to observe; some go only for the day on Saturday

Northfield Mountain Recreation and Environmental Center
99 Millers Falls Road (Route 63), Northfield, MA 01360

Highlights: Solar observing ("Barlow Bob" Memorial Solar Star Party), dark sky observing, lectures, swap tables, raffle prizes

Speakers:

- Richard Sanderson - Fifty Years of Astronomical Adventures: My Own Personal Top-10 List
- Lynne Scott and Ed Faits - A Star-Filled Tribute to Dr. Richard Scott and John Davis
- Phil Harrington - The Next Great American Eclipse
- Dave Kelly - An Old-School Machinist's Version of the Classic Dobsonian Telescope
- Keynote Speaker: Grant Wilson, PhD - Unveiling the Enshrouded Universe with the Large Millimeter Telescope

<http://www.philharrington.net/astroconjunction/>

Stellafane -

The Original Star Party . . .

Presented by the Springfield Telescope Makers

Thursday, August 9, 2018 through Sunday, August 12, 2018
Springfield, Vermont

Highlights: Dark sky observing, solar observing, lectures, mirror grinding and telescope making demos, Observing Olympics, swap tables, raffle prizes

Workshop at the Hartness House - Thursday, August 9, 2018
Antique Telescopes, Observatories, and Related Equipment
Springfield, MA

www.stellafane.org

Editor: * Photos by Al Takeda unless otherwise noted.

July Star Fields DEADLINE
Sunday, June 24th

Email articles to Al Takeda at
newsletter@atmob.org

Articles from members are always welcome.

POSTMASTER NOTE: First Class Postage Mailed June 10, 2018

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

EXECUTIVE BOARD 2017-2018

PRESIDENT: Glenn Chaple (978) 597-8465
VICE PRES: Tom McDonagh (617) 966-5221
SECRETARY: Phil Levine (781) 956-6509
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MEMBERS AT LARGE: Bruce Tinkler (781) 862-8040
Al Takeda (508) 494-7877
Maria Batista (617) 347-3730

PAST PRESIDENTS:
2012 - 14 Mike Hill (508) 485-0230
2010 - 12 Bernie Kosicki (978) 263-2812

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.

Jun 6 Last Quarter Moon (Moonrise at midnight)

Jun 13 New Moon

Jun 20 First Quarter Moon (Moonset at midnight)

Jun 21 Summer Solstice

Jun 27 Saturn at opposition

Jun 28 Full Moon

July 6 Last Quarter Moon (Moonrise at midnight)

July 12 New Moon, Pluto at opposition