



## 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. 27, No. 8 September 2015

### This Month's Meeting . . .

Thursday, September 10<sup>th</sup>, 2015 at 8:00 PM  
Phillips Auditorium

Harvard-Smithsonian Center for Astrophysics

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

### Restoration of a 1916 Warner & Swasey Telescope



This month's speaker will be Alan Sliski. He will cover a few aspects of this telescope's restoration, and the history around the telescopes made by Warner and Swasey. The idea of first designing then making instruments with standard, interchangeable parts was relatively new in 1916 and was pioneered by machine tool builders in the Connecticut River Valley. This telescope is a wonderful example of Industrial Art from the Turn of the Last Century, and inspired what we call Steampunk today.

Alan Sliski is an inventor with 28 patents. He is an expert in new and old-school electronic, medical, mechanical, and optical research & development. Some of Alan's major interests are radiation therapy system design, precision measuring systems for the physical sciences, analog electronics, servo systems, magnetics, electron optics, high vacuum, and light optics. He is also very interested in restoring antique telescopes, and is an active member of the Antique Telescope Society.

Please join us for a pre-meeting dinner discussion at Changsho, 1712 Mass Ave, Cambridge, MA at 6:00pm before the meeting.

### Lunar Eclipse . . .



Lunar Eclipse. February 21, 2008, ATMoB Clubhouse. Image by AI Takeda

Starting on Sunday evening, September 27th, we will have the privilege of observing a total lunar eclipse. The full moon will also be at perigee so this event will also allow us to see a "Super Moon Lunar Eclipse".

Unless we have bad weather for this event, which is always a possibility, the Clubhouse will be open for ATMoB members and their guests.

~ AI Takeda - Member at Large and Newsletter Editor ~

### July Meeting Minutes . . . . .



Norm Sperling \*

Minutes of ATMob meeting held on July 9, 2015 in the Phillips Auditorium at the Harvard-Smithsonian Center for Astrophysics.

President Neil Fleming called the meeting to order at 8:00 PM.

- The Secretary's Report was not given.
- Eileen Myers gave the Treasurer's report.
- The Membership Report was not given.
- Glenn Chaple gave the Observing Committee Report which included:

Images of the recent aurora taken by Al Takeda.

Reminder of the Astronomers Conjunction star party that is scheduled for this coming weekend.

The Sue French "fan club" observing list.

Challenging observing lists from the Las Vegas Astronomical Society.

- No Clubhouse Committee Report was given.
- Old Business: None
- New Business:  
Paul Valleli recognized Phil Rounseville for his work in making some of the imaging spectroscope optics used in the New Horizon spacecraft that made a fly-by of the planet Pluto. Some of the pictures of Pluto returned by the spacecraft were taken through optics made by Phil. Congratulations to Phil!!

President Neil Fleming introduced Norm Sperling as the invited speaker. Sperling is an author, editor, publisher, teacher, and telescope designer living in San Mateo, California. Sperling received a BA from Michigan State University after graduating from Montgomery Blair High School in Silver Spring, Maryland. (Wikipedia). Norm maintains a blog at the URL:

<http://www.everythingintheuniv.com/blogs/norman-sperling>

Norm's talk described the design of the Astroscan telescope which Norm and Mike Simmons designed for Edmund Scientific. The telescope was designed to let the user see all of the objects in the Messier catalog. Also, the telescope was designed for quick setup, ease of use, shock resistant (so as to withstand a drop), and affordable to the general public. The telescope is a 4-1/8-inch, f/4 Newtonian that has a protective flat glass front and has the secondary mirror glued to the inside of that flat. The primary mirror is held in place by a shelf and cushioned by a springy material. The telescope is wide field and has low power so that objects, such as those in the Messier list, are easy to find by an inexperienced user.

The telescope was first advertised in 1976 and was expected to sell about 800 units in the first year. Instead, about 3,200 units were sold and shipped during the first year.

In a contest to name the telescope, 9,000 names were submitted. A printout of the suggested names was about an inch thick, using 1976 computer technology. After a brief review, the name Astroscan, was selected.

The telescope body is constructed in two parts and is made of ABS plastic. The mold used to cast the plastic structure has been used 180,000 times but unfortunately it broke about 1.5 years ago. The Astroscan was the top grossing telescope for 38 years and 90,000 have been sold before production ended.

Norm is planning to make a new mold and go back into production with a similar telescope. The color and name may change, but the design goals are the same, and construction using solid American construction standards will be used.

The creation of the Astroscan was accomplished 40 years ago, and the same high standards are planned for the new telescope. Additions for a new telescope include a finder scope, a wide field of view, a 4-inch main mirror designed for f/4, a magnification of 16 power, and a 3-degree field are planned.

Sperling is hoping to crowd source some of the funding to build the telescope and the plan is to start the new production in the fall of 2015.

The meeting was adjourned at 9:30 PM.

~ *Sidney Johnston, Secretary* ~

## Membership Report . . .

Membership count as of August 24, 2015 is 332 individuals.

Please welcome our newest members: Charles D'Amico, Joseph O'Boyle, Vivek Agarwal, Michael Borkum and Patrick Leiker.

I have signed these new members up for the Newsletter and ATMob Announce mailing lists. If you wish to receive the newsletter and club announcements also via email please contact me at [membership@atmob.org](mailto:membership@atmob.org).

The membership renewal period ends September 1st. Please note membership subscription rates rise as approved by members on this date! If you renew after September 1, 2015, the new rates will apply. If you have paid already, thank you!

The proposed increase can be seen below for the classes of membership:

Category	Current	Effective 9/1/15
Student	\$12.50	\$15.00
Senior	\$12.50	\$15.00
General	\$25.00	\$35.00
Family	\$35.00	\$45.00

Many members' subscriptions to S&T and Astronomy magazine are tied to their last renewal date. You can avoid interruption of subscription delivery by renewing now! Instructions are outlined below:

- Please log into the [www.atmob.org](http://www.atmob.org) website using your email on record with the club as your login ID.
- If you cannot access the website or have forgotten your password, please contact me via email at [membership@atmob.org](mailto:membership@atmob.org).
- Once you have successfully logged in, click the "Your Details" tab found on the top right portion of the page.
- In the middle of the page, click on the "Renewals" tab.
- Click on the "Renew your membership" tab and follow the instructions.

One can renew using PAYPAL or personal check. Please feel free to contact me with any questions, concerns or issues.

New members on record in 2015 are not required to renew at this time.

The Amateur Telescope Makers of Boston, Inc. is a 501(c)3 organization. Many returning members have made significant donations at the time of renewal this year. These donations are gladly accepted and are tax deductible to the fullest extent allowed by law. Consider making a tax-deductible contribution to the club during your estate and tax planning this year. Many companies make matching contributions at an employee's request. It is a simple way to make your donation go twice as far.

~ Tom McDonagh – Membership Secretary ~

## Annual Club Picnic at the Clubhouse . . .

Saturday, September 19, 2015 at 3:00 PM

All Members and their Families are invited

Saturday, September 19th is the date of this year's Annual Club Picnic at the Clubhouse in Westford, start time 3:00 P.M. Enjoy a day with good food and lots of astronomy talk with other ATMoB members.

Please bring a favorite dish to share - salad, main dish, dessert, soup, appetizer, fancy bread,... A serving utensil would be helpful. We will provide hamburgers, drinks, potato chips, ketchup, mustard, coffee, paper goods and plastic cutlery.

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 images 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). 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.

Directions to the Clubhouse can be found on the last page of *Star Fields* and at the club website [www.atmob.org](http://www.atmob.org).

Questions - Email Eileen Myers at [starleen@charter.net](mailto:starleen@charter.net)

Don't miss the fun!

Organized by ATMoB's Good Times Co-Hosts and Co-Chefs

~ Eileen Myers – Treasurer ~

## Clubhouse Report . . .



Dave Prowten installing the water heater \*

### Summer 2015 Clubhouse Report

This years Work Party calendar gave us two working sessions, each in May and August, and no sessions in June or July (with a blue moon in July).

The first August session was held on August 1st, with Sai V. opening and starting the coffee pot at 9:20am under partly cloudy skies and 89 degrees F. Thanks to the 15 members who signed in the log book for donating their Saturday to keep the Clubhouse running smoothly: John Blomquist, Paul Cicchetti, Steve Clougherty, Eric Johansson, Dick Koolish, John Maher, Nkosi Muhangi, Eileen Myers, Dave Prowten, Cheryl Raynor, John Reed, Phil Rounseville, Art Swedlow, Al Takeda, and Sai Vallabha.

Major projects worked by these members were as follows:

- Following the tractor mowing by John B., power mowing, trimming, raking and composting was led by Al T.



- Four old tree stumps in the middle of the lower field, impeding the tractor mowing that field, were removed with their roots by John B., Dick K., and Eric J. while temps reached 90 degrees F.



John Blomquist with one of the removed tree stumps. Image by Dick Koolish

- The mixture required for potty composting operation was again prepared by Steve C. while supplies were purchased by John R.
- Porch railing repair was continued led by Dave P., followed by scraping, preparing and staining the three sides led by Steve C., Cheryl R., Phil R., Dick K., Sai V., and assisted by other members.

Lunch of burgers, dogs, baked chicken, salad, followed by watermelon and cookies was presented by Eileen M.'s team of Eric J., Sai V., Art S., Dick K. and others who ventured inside.

- After lunch, the bi-annual tree topping along the observing field continued. Ladder prep and the required logistics followed by topping several more trees was completed by the team led by Paul C. and Nkosi M. Cleanup throughout this effort was tackled by Al T., Sai V., Phil R., and others as the porch staining was completed.

As the work effort faded with the onset of dusk, member-on-duty Rich Nugent led discussions regarding the hot working conditions, New Horizons flyby of planet Pluto, the upcoming Stellafane convention, our September 19th club picnic and tracking the ISS with a telescope. Phil R.'s telescope awaiting viewers outside. Slowly the group dwindled such that only the most hardy observers remained.

The second work session on August 29th started early with John B. mowing the premises before the heat of the day. 26 members and friends signed the log sheet; we're wondering who were the two who didn't sign in? Thanks go out to John Blomquist, Sai Vallabha, Bill Toomey and student Leanne McDonald, Al Takeda, Art Swedlow, Alan Sliski, Phil Rounseville, John Reed, Cheryl Raynor, Dave Prowten, Erik Piip (former member visiting from Europe), Eileen Myers, John Maher, Penny Lucinian, Michael Langlois, Dick Koolish, Eric Johansson, Mike Hill, John Harrington, Jim & Charles Gettys,

Nina Craven, Paul Cicchetti, Barbara Bosworth, and Bruce Berger.

- Mike H. opened the house at 10 am under clear skies with an 80 degree temperature, and tackled the cleanup of the near barn and machine shop.
- Several other projects were also undertaken:
  - Front porch railing and columns were stained by Cheryl R. She then proceeded to stain the field electrical posts and wooden piers and finished up the old solid white stain. We have 6 gallons of new stain stored on the bathroom shelves for next month.
  - Following tractor mowing by John B., Al T. mowed, edged trimmed with the string whip and raked and discarding the clippings. Al needs a few more volunteers next month to help keep the tick population at bay.
  - The ARIO dome was worked on by Alan S., Bruce B. and Jim & Charlie G. throughout the day and was declared operational by day's end.
  - The corner brush growth removal between road and driveway was started, and matted roots attacked by Bill T., Michael L., Barbara B., Leanne M., John H. and others. Barbara also tidied up the flower garden along the porch. We really need some big chipper support to reduce the huge annual growth debris pile. Do you know of someone willing to help? It is difficult to observe the heavens from under trees and vines.
  - Dave P. finished the installation of the long awaited hot water heater in the grinding room. This unit was purchased by Ed Dougherty many moons ago, and a new location near the sink was chosen. Hands and mirrors look much cleaner with warm water. Please remember, IF YOU TURN THE WATER SUPPLY OFF, UNPLUG THE HOT WATER HEATER at the grinding room electrical outlet.
  - John M. continued work and checkout of members in the Clamshell observatory. Also Dave P. was seen checking the ladder platform and shelving and making some woodwork repairs.
  - Paul C., Eric J., Penny L., Leanne M., Erik P., Al T., Cheryl R., Michael L., John H., and others were seen assisting with ropes, electrical cables, cut limbs, and limbs that needed cutting up for removal; all helping Paul C. continue the "topping" project. Next month we need 5 or 6 dedicated members to link up with Paul C. to be an efficient team to take the "topping" further down the line. We could really use a big chipper here too. Give Paul C. a shout/email.

Lunch was started a little early to have more project time in the aftermath. The grill was manned by Erik P., John R., Eric J. and Leanne M. Inside lunch prep was conducted by Eileen M, Cheryl R., Sai V., Nina C and assisted by others. Having a water heater is very much appreciated. Burgers, dogs, kielbasa, baked

chicken, salad, watermelon & cookies fed the group. Thank you to the cleanup crew.

High cirrus clouds did not dampen the enthusiasm of those setting up scopes as twilight fell.

Clamshell checkout continued, and old members Tony C., Vlad V., and Stelita C. arrived to liven the discussion. Karl and Jeffrey D. worked on their project in the shop. Al T. gave his illustrated Stellafane talk in the meeting room. It was a late night for everyone.

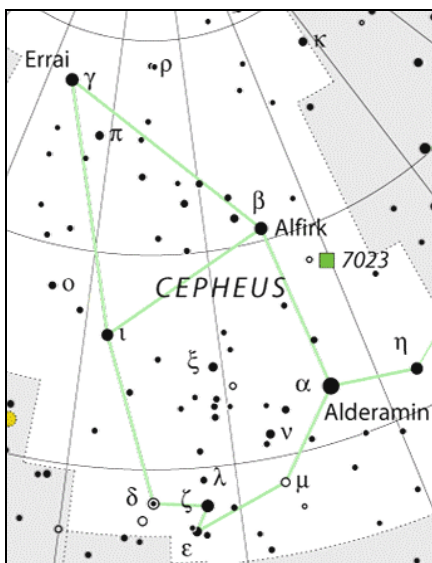
Next work party follows the Sept. 19th picnic, on Sept 26th. There will be plenty to do following coffee at 10 am on Sept 26th. Join the party. You are welcome.

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

Clubhouse Saturday Schedule		
Sept 5	<b>ARUNAH HILL DAYS</b> Jim Gettys + Eileen Myers	
Sept 12		Rich Nugent
Sept 19	<b>PICNIC</b> John Maher + Tom Wolf	
Sept 26	<b>WORK PARTY # 10</b> Brian Maerz + Glenn Meurer	
Oct 3	Joe Henry	Cheryl Rayner
Oct 10	Karl Dean	Nina Craven
Oct 17	Bruce Berger	Mike Hill
Oct 24	<b>WORK PARTY # 11</b> Bill Toomey + Neil Fleming	
Oct 31	John Panaswich	Dave Siegrist

## Sky Object of the Month . . .

Sky Object of the Month – September 2015  
 S Cephei – Carbon Star in Cepheus



This past August 15th, I presented a talk on carbon stars at the Stellafane Convention. The library at the McGregor Observatory, which served as the setting, hosts a typical audience of 12 to 20.

This time, more than 30 Stellafaners showed up. The topic was obviously one of intense interest!

The reason is obvious to anyone who has ever looked at a carbon star like R Leporis (“Hind’s Crimson Star”), T Lyrae, or V Aquilae. At certain times, they can appear red – drop-of-blood red!

Popular fare for backyard astronomers over a century ago, carbon stars have enjoyed a resurgence in popularity, particularly with individuals seeking a change from the usual deep-sky fare of nebulae, clusters and galaxies. They have become so popular that the Astronomical League recently initiated a carbon star observing program that lists 100 of these cosmic rubies.

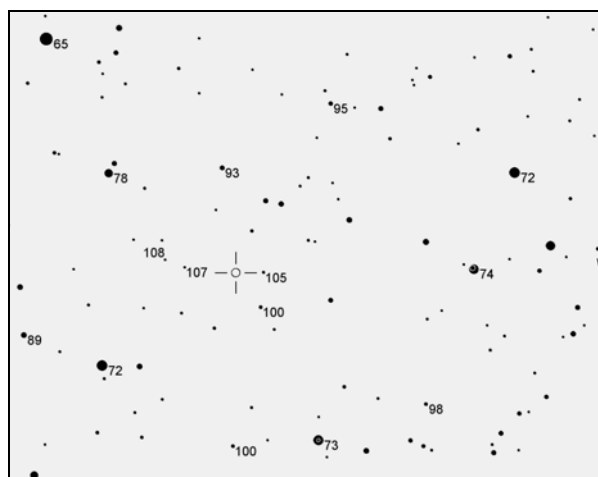
Like its kindred carbon stars, of which nearly 7000 have been catalogued, S Cephei is a red supergiant with a ‘sooty’ carbon-laced outer atmosphere that enhances its ruddy appearance. Typical of its stellar class, it varies in brightness, ranging from 7th to 11th magnitude in a period averaging 485 days.

Lest I be accused of false advertisement, I should point out that not all carbon stars are ruby red. The color you see will depend on your vision, the nature of binocular or telescope used, sky conditions, and the star’s magnitude (carbon stars tend to be reddest when near minimum brightness). At the very least, a carbon star will shine with a rich golden yellow hue.

The accompanying finder charts point the way to S Cephei. A line from gamma ( $\gamma$ ) to the wide pair rho ( $\rho$ ) and 28 Cephei and extended an equal distance beyond brings you to a triangle of 7th magnitude stars perched atop a 6th magnitude star labeled 59 (its magnitude without decimals) on Chart B. Chart C will help you star-hop from the triangle to S Cephei. Magnitudes of surrounding stars are added (decimals omitted).



Finder Chart B. (AAVSO)



Finder Chart C. (AAVSO)



You'll find more information on S Cephei at:

[www.aavso.org/lcotw/s-cephei](http://www.aavso.org/lcotw/s-cephei).

The Astronomical League's Carbon Star Program is described at:

[www.astroleague.org/content/carbon-star-observing-program](http://www.astroleague.org/content/carbon-star-observing-program).

~ Glenn Chaple – Observing Committee and VP ~

## Dennis diCicco is Presented the 2015 NERAL, WSH Award . . .



Dennis diCicco \*

Long time ATMoB, Springfield Telescope Maker (STM) member and former writer and senior editor of *Sky & Telescope* magazine, Dennis diCicco, was presented the 2015 Walter Scott Houston Award of the North East Region of the Astronomical League (NERAL) at the Saturday evening program at the Stellafane convention.

The award was given in recognition of his work in astrophotography since the 1960s, his educational work, asteroid discoveries and his presence as a leader in amateur astronomy.

### WALTER SCOTT HOUSTON AWARD of the North East Region of the Astronomical League (NERAL)

*In Recognition of his Massive Body of Work in Astrophotography since the 1960s,  
his Pioneering Work in Tricolor CCD Imaging and the Creation of  
Sky Publishing's quarterly publication CCD Astronomy,  
his Contributions to Astronomy Education through talks, workshops and eclipse trips,  
his many Astronomical Observations of Lasting Significance in Lunar and Planetary Astronomy  
including his Numerous Asteroid Discoveries in the 1990s,  
his ATM articles and Test Reports on Astronomical Equipment,  
his Immense Legacy of Popularization of Amateur Astronomy since 1974 as a  
Writer and Senior Editor of Sky & Telescope Magazine,  
and his Presence as a Leader in Amateur Astronomy here at Stellafane and beyond  
we hereby present this award to*

Dennis di Cicco

*Presented this day, August 15, 2015 at Stellafane  
In fond remembrance of Deep Sky Observer,  
Science Writer and ATM Historian,  
Walter Scott Houston.*



~ Al Takeda – Member at Large and Newsletter Editor ~

## Stellafane Winners . . .

Two members of ATMoB showcased their skills at the Stellafane Telescope Convention by producing a perfect mirror and an advanced mirror testing device.

Paul Courtemanche won first place in the Small Optical competition by making an 8-inch, f/9 mirror, placed in a brilliant yellow Newtonian-Dobsonian tube assembly. One of our master opticians commented that the mirror was "perfect".

A number of ATMoB members were on Breezy Hill Saturday night, when the winning announcement was made. After congratulations were given, Paul treated us to an observing session with his winning scope. The views through the scope were tremendous.



Paul Courtemanche with his Newtonian-Dobsonian. Image by Ken Slater

Alan Sliski won the first place in the Mechanical Special Award category for his "Advanced Foucault Tester".

This tester combined the classic Foucault platform with modern optical and digital imaging systems.



Alan Sliski and his Advanced Foucault Tester \*

Congratulations to Paul Courtemanche and Alan Sliski!

~ Al Takeda – Member at Large and Newsletter Editor ~

## Free Telescope . . .



The executive board has declared a telescope to be surplus and is offering it free to the first respondent:

Edmund Scientific Newtonian optical tube assembly  
4.5" mirror, f/11, rack and pinion focuser

If interested, contact Bernie Kosicki  
Phone : 978 263 2812  
Email: [Kosicki@verizon.net](mailto:Kosicki@verizon.net)  
First response gets it.

*~ Submitted by Bernie Kosicki ~*

## For Sale . . .

George East has retired and is selling his house and observatory in Sudbury. The following items are for sale:

- Vintage fork-mounted Celestron 14 with Byers retrofit drive, wedge and tripod. Primary mirror needs re-coating. \$2000
- SBIG ST-8XE CCD Camera and CFW-8 5-position Filter Wheel with L, R, G, B, H-Alpha filters. \$1000
- Mirror grinding machine. \$100
- Bridgeport vertical milling machine with J Head and 9" x 36" table, 1 Hp motor and phase converter, collets, vise, rotary table, drill chuck, boring head, and misc. milling cutters. \$2500
- South Bend lathe, 16" swing x 36" between centers, phase converter, collets, taper attachment, 3 and 4 jaw chucks, face plate, boring bar, follower, steady rest, drill chuck and misc. tool holders and cutting bits. \$1800
- Note: Phase converter allows 3-phase motor to operate from household power.

Please contact George at [George.East@comcast.net](mailto:George.East@comcast.net) or 978-460-3049.

*~ Submitted by George East ~*

## Upcoming Conventions . . .

### AstroAssembly 2015

Friday, October 2, 2015 through Saturday, October 3, 2015

47 Peepthead Road North Scituate, Rhode Island  
[www.theskyscrapers.org/astroassembly2015](http://www.theskyscrapers.org/astroassembly2015)

Highlights: Solar observing, lectures, swap tables, raffle prizes

Speakers:

- J. Kelly Beatty - "New Horizons Flyby of Pluto – The Latest Discoveries"
- Kim Arcand - "Light and IYL 2015"
- Andrew Vanderburg - "Kepler's Second Chance: Planet Discoveries from the K2 Mission"
- Keynote Speaker: J. Kelly Beatty – "Light Pollution and the International Dark-Sky Association"

## SAO Engineering Job Openings . . .

The Smithsonian Astrophysical Observatory in Cambridge has two open engineering positions in the Optical and Infra-red Division. The senior position is appropriate for an engineer with significant experience with software system architecture as well as hardware interfaces. The lower-level position is appropriate for a software engineer with training in development, integration and testing. Candidates would work on instrumentation for ground based telescopes in the US and Chile. The formal postings are at:

<http://www.usajobs.gov/GetJob/ViewDetails/396900400>

<http://www.usajobs.gov/GetJob/ViewDetails/409352300>

You need not precisely fit either position, there is flexibility, and don't be concerned about the cut-off dates. You may contact Maureen Conroy, OIR engineer, at [mconroy@cfa.harvard.edu](mailto:mconroy@cfa.harvard.edu) for more details, particularly if your background does not closely match the stated requirements.

*~ Submitted by Tom Calderwood ~*

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

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**October Star Fields DEADLINE**  
**Sunday, September 20<sup>th</sup>**

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

**Articles from members are always welcome.**

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**POSTMASTER NOTE:** First Class Postage Mailed September 9, 2015

Amateur Telescope Makers of Boston, Inc.  
c/o Tom McDonagh, Membership Secretary  
48 Mohawk Drive  
Acton, MA 01720  
**FIRST CLASS**

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<b>PUBLIC OUTREACH</b>		
STAR PARTY COORDINATOR:	Virginia Renehan	<a href="mailto:starparty@atmob.org">starparty@atmob.org</a>

**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.**

Sept 13 New Moon  
Sept 21 First Quarter Moon (Moonset at midnight)  
Sept 23 Autumnal Equinox  
Sept 24 Mars 0.8-deg North of Regulus  
Sept 27 Full Moon (Perigee) / Total Lunar Eclipse / Super Moon  
Sept 28 Uranus 1.0-degree North of Moon  
Oct 2 Aldebaran 0.5-degree South of Moon  
Oct 4 Last Quarter Moon (Moonrise at midnight)  
Oct 8 Draconid Meteor Shower