



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. 29, No. 2 February 2017

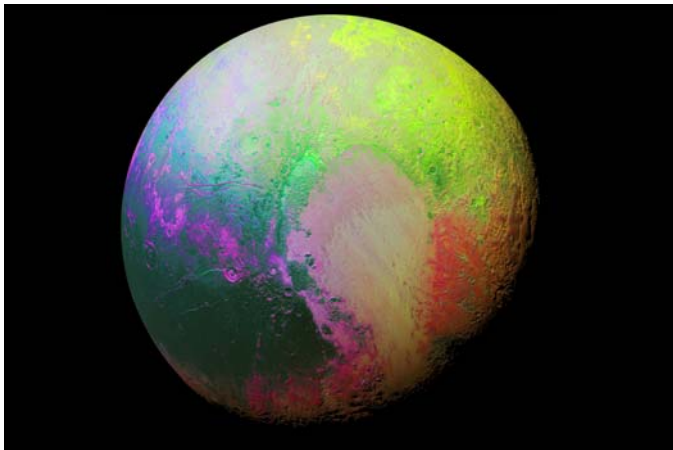
This Month's Meeting . . .

Thursday, February 9th, 2017 at 8:00 PM
Phillips Auditorium

Harvard-Smithsonian Center for Astrophysics

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

Update: New Horizons Mission to Pluto



Pluto in False Colors. Copyright NASA/JHUAPL/SwRI

On July 14, 2015, the New Horizons space probe made a historic flyby of the planet Pluto. At our November meeting that year, *Sky and Telescope* Senior Editor Kelly Beatty summed up preliminary results from that mission. Data from New Horizons continued to be received until last October. At our meeting Kelly will summarize what New Horizons has taught us about Pluto.

Kelly Beatty, a *Sky and Telescope* Senior Editor, writes many of the feature articles and news items for the magazine and its website. He joined the staff of Sky Publishing in 1974 and served as the editor of *Night Sky*, a magazine for beginning stargazers, from 2004 to 2007. 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. He has been an ATMob member since 2004.

Besides being honored twice by the Division for Planetary Sciences of the American Astronomical Society, Kelly has also received the [Harold Masursky Award](#) for meritorious service, the [Astronomical League Award](#) for his contributions to the science of astronomy, and in 2009 the inaugural [Jonathan Eberhart Journalism Award](#) and the American Geophysical Union's [Cowen Award](#) for Sustained Achievement in Science Journalism.

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

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

President's Message . . .

Last month, Alyssa Goodman of the CfA received an email, forwarded it to Christine Pulliam, who forwarded it to me. The email was sent by Mansur Kılıç, a psychological and guidance counselor at the Sehit Ibrahim Karaoglanoglu Secondary School in Ipekyolu town, Van City, Turkey. Mansur wrote that the student populace is comprised of children of low social economic status and fragmented families. He had noted that many were fascinated by astronomy, and he regretted the fact that the school had few resources to bring that interest to life. He asked for the possible donation of a telescope to his school, as well as information on starting an astronomy club. Mansur summarized the purpose of his request succinctly. "We should take care of children more and more and help them have a better future."

I forwarded the email to the ATMob membership and within an hour received a half dozen replies. Joe Henry suggested that Mansur contact "Spaceturk", a Turkish space research group that holds events around the country to commemorate space exploration and promote public interest. Haldun Menali (a native of Turkey) emailed that he would contact an ATM group he helped establish in Turkey and asked for Mansur's email address so he might be able to contact him personally. His wife Gamze, an ex-technical assistant at the AAVSO and a member of Astronomers without Borders, offered her help as well.

As for the telescope, Juan Jimenez stepped up to the plate by offering to donate an Astroscan to the school. *Editor: The Astroscan is a 105mm, f/4.2 wide-field Newtonian telescope made by the Edmund Scientific Corporation from 1976 - 2013.* All he asked for was reimbursement from ATMob for shipping costs, which came to \$56. The money was quickly collected at

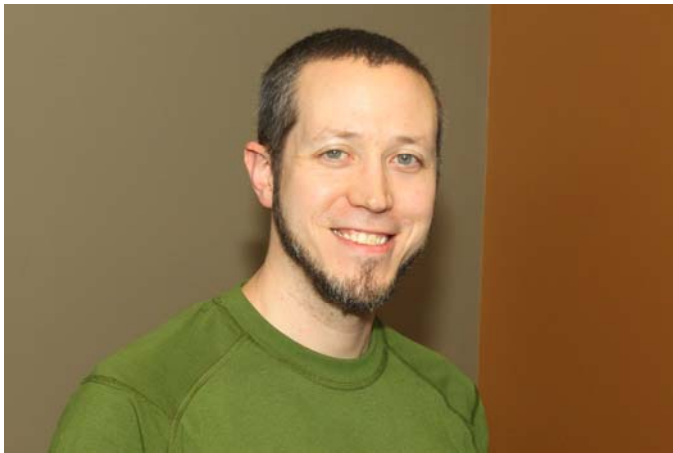
the January monthly meeting, and Treasurer Eileen Myers promptly reimbursed Juan via PayPal. The scope has been shipped to Mansur, and I sent him an email offering any advice and/or assistance he and his school might need.

I was impressed with how rapidly and eagerly ATMoB members pitched in to help Mansur and the students at the Karaoglanoglu Secondary School. I'm proud to represent such a fine organization!

Clear Skies,

~ *Glenn Chaple* – President ~

January Meeting Minutes . . .



Tim Brothers *

Minutes of the monthly ATMoB meeting held on January 12, 2017, in the Phillips Auditorium at the Harvard-Smithsonian Center for Astrophysics. President Glenn Chaple called the meeting to order at 8:10 pm.

When the meeting was started we discovered that the Phillips Auditorium video projector was broken. We would like to thank Tom McDonagh for going back to his workplace to borrow a portable video projector to allow us to show Tim Brothers' presentation.

- Phil Levine read the Secretary's Report.
- Eileen Myers gave the Treasurer's Report.
- Chris Elledge gave the Membership Report.
- Maria Batista, Member at Large, gave an update on the new club website, and thanked the Web Committee members, past and present, for their hard work. Participants included Maria Batista, Bruce Berger, Chris Elledge, Neil Fleming, Kristy Glidden, John Harrington, Bernie Kosicki, Brewster LaMacchia, Ricky Leiserson, Tom McDonagh, George Paquin, Peter Richardson, Dave Stanley and Bernie Volz.
- Glenn Chaple gave the Observing Report.

On January 12th, Venus and Neptune were in conjunction. Venus is currently at its greatest eastern elongation (evening).

On January 17th, the asteroid Vesta is at opposition. <http://www.skyandtelescope.com/astronomy-news/vesta-the-brightest-asteroid-now-high-overhead/>

On January 31st, Venus, Mars, and a crescent Moon will form a nice triangle just after sunset.

The Sue French Object of the Month is NGC 1300, a barred spiral galaxy in Eridanus.

The Las Vegas Astronomical Society Object for January is NGC 1545, an open cluster in Perseus.

- Bernie Kosicki's observing objects for January are M42/43, M44 and M45. These are good selections for binocular viewing during Star Parties.
- The Clubhouse Report was given by John Reed. Painting will continue in the grinding room, lighting repair is needed in the meeting room, the land-line phone at the Clubhouse needs an inspection and the snow blower is in need of repair. For details please see this month's Clubhouse Report.
- Announcements:
Glenn announced that ATMoB member Juan Jimenez has donated an Edmund Astroscan telescope and eyepieces to the Sehit Ibrahim Karaoglanoglu secondary school in Turkey. The club membership took up a collection to reimburse Juan for shipping costs.

Glenn informed the membership that the AAVSO is offering a 6 ft observatory dome to any ATMoB member who is interested. (Note – the dome has now been taken).

John Scheff announced that there will be an Astronomy Day event at the Center for Astrophysics on April 22nd. There will be activities during the day, and into the evening. ATMoB members are encouraged to volunteer and bring their solar and/or nighttime telescopes. John also mentioned that there will not be a Sidewalk Astronomy Day this year.

Mario Motta gave the membership an update on LED lighting projects. Montreal, Canada is now going to revisit their proposed installation of 4K LED lighting, in light of the recent AMA paper (author- Mario Motta MD) reporting on the adverse health impacts of LED lighting brighter than 4K. Mario also mentioned that Houston, Los Angeles, Tucson, and Phoenix are stopping installation of 4K LEDs, in favor of 3K LED lighting.

- Old Business: none
- New Business: none

Glenn Chaple introduced the guest speaker for the evening, Tim Brothers, Observatory Manager for MIT's George R. Wallace Astrophysical Observatory. Tim's talk was titled

"Wallace at 45: Charting a Course for the Future." The talk was very detailed and interesting to club members, many of whom have worked in various capacities at the Wallace Observatory, and many members provided added detail and information to the talk. Tim gave an overview of the facilities at the Wallace Observatory (<http://web.mit.edu/wallace/>), which include a number of optical and radio telescopes.

Tim gave a brief historical perspective on the history of telescopes. He indicated that it took many years before Robert Hooke made important advances in mechanics and proposed sidereal tracking of telescopes.

<http://www.roberthooke.org.uk/leonardo.htm>

Moving forward, Tim outlined how MIT was a pioneer in developing computer controlled telescopes. Former Wallace Observatory Director Jim Elliot made important contributions toward the development of remote automated telescopes, thereby enabling planetary occultation studies.

http://web.mit.edu/physics/people/faculty/elliott_james.html

Tim gave an in-depth review on the 24-inch telescope used at Wallace, listing a number of innovative updates engineered by the Wallace staff, including the "Tappin Drive" which permitted even gear wear and the use of brushless servo motors. The Wallace staff has used a number of different telescope control systems for the 24-inch. In 2013 a SiTech Force One TCS was installed.

Tim detailed the upgrades performed on the "Shed", which is used to house the 24-inch and several other telescopes. LED sensors that are used to detect the roof position and prevent damage from roof /scope collisions. An audio and email alert system remotely notifies the staff when telescope tracking or other technical problems arise. Tim summarized the technical challenges to remote automated telescope tracking/data acquisition. Some of those issues are the operation of the roof system, weather predictions/conditions (Wallace staff constructed a high tech "Weather Tower"), a security/safety system, planning software challenges, and horizon obstruction limitations.

Tim outlined the other telescope observatories, such as the 10 foot dome housing an 11-inch telescope on a Software Bisque Paramount mount. On November 14, 2014, Wallace conducted its first local robotic operation, providing good images of M110. The first fully automated operation occurred on November 21, 2014, which was a planned asteroid search. Tim went on to mention the increasing challenges to observing and data collection due to light pollution. He indicated that viewing toward the south is limited to 17th magnitude, but toward the north, 21st magnitude is possible.

Future plans at Wallace include continued undergraduate student research projects, such as continuous light curves and spectroscopy, aided by automated observatories. Other projects such as satellite tracking are performed at Wallace. Tim showed a video of the ISS (International Space Station). A number of engineering support facilities at Wallace were listed, including a workroom and machine shop, used by trained staff to repair technical problems as they arise.

Tim presented an interesting hardware discovery he recently made at Wallace – a long forgotten 40-inch parabolic mirror was hidden away behind a closed wall. After some detective work, Tim found out this mirror was used in a thesis project by MIT graduate student Lauren Sompayrac. Unfortunately his thesis was missing in the MIT thesis collection. Sompayrac used this mirror to detect the momentum, direction, and sign, of pions and electrons, after injecting K⁺ mesons into a spark chamber. Tim was able to contact Lauren Sompayrac and obtain the original thesis, which will be digitized and added to the MIT thesis collection.

Tim ended his talk by listing the challenges of light pollution to astronomical observing, and how blue LEDs present a health hazard. A discussion ensued about the current status of Massachusetts bill S.2453 and how we can help promote the bill, which is now again up for passage. Public outreach importance was discussed and how social media and technology can help promote astronomy for the wider public, as well as helping to give momentum to passage of S.2453. Tim gave an overview of what future student and research projects are envisioned at Wallace. It includes new telescopes, mounts and observatories, with automated research in mind. The next big "thing" under development will be portable occultation systems to be used for exoplanet discovery.

Refreshments for the evening were provided by Phil Levine.

Glenn Chaple adjourned the meeting at 10:15 pm.

~ *Phil Levine - Secretary* ~

Membership Report . . .

The Website Committee has completed the transition to the new website at Club Express. All club email handling now goes through the new site and <http://www.atmob.org> also directs to it. There is still ongoing work progressing on the website as we figure out how to best arrange all the existing and new content. If you need any help with using the website you can direct questions or concerns to one of three places:

- Issues with your membership or login can be directed to me (Chris Elledge) by email (membership@atmob.org) or phone (781-325-3772).
- Questions or comments about the content, navigation, or layout on the website should be emailed to admin@atmob.org.
- Member account technical support issues with the Website, Email Settings, and Credit Card Billing (on-line membership renewal) can be handled by the ClubExpress Tech Support 1-866-HLP-CLUB (457-2582).

I am pleased to welcome our newest members Jorge Cancellieri, John Cannistraro, Will Doyle, Maureen Galevi, Reed Prior, and Ken Steeves. I also want to welcome back former member Chris Rode.

As of January 22nd, 2017 we have 383 members. This is broken down as follows:

- 179 Regular Members
- 91 Senior Members
- 6 Student Members
- 32 Family Membership covering 101 Members
- 6 Guest Members

~ *Chris Elledge – Membership Secretary* ~

Meeting Recordings . . .

The recording of ATMob meeting #895 is available on YouTube: <https://youtu.be/ocEiU1cIBww>

See Glenn Chaple relive his teaching days as we resort to drawing on the whiteboard for our business meeting.

I would like to thank Tim Brothers for allowing us to record his presentation "The Wallace Observatory at 45: Charting a Course for the Future."

~ *Chris Elledge – Membership Secretary* ~

Clubhouse Report . . .



Marsha Bowman prepping the ceiling for painting *

January 2017 Clubhouse Report

January has been a kind month for weather related work projects at the Clubhouse since we had very little snow clearing work to handle. We were able to tackle a few projects that have been on our to do list for several months. During the work party, which was held on Saturday, Jan 14th, we had a total of 25 members and friends sign in and volunteer.

Vladislav Mlch, Paul Cicchetti Marsha Bowman and Dick Koolish took charge of the lighting problem in the first floor meeting room. All 4 light fixtures were removed, cleaned and

inspected for repair. Fortunately the fix was a relatively easy one since the wrong size bulbs had been installed in two of the four fixtures. A new box of 40W T-12 bulbs was purchased and the old bulbs were replaced. The lighting is much improved after the new installation was completed.

Bill Toomey, Paul Courtemanche and Paul Cicchetti spent several hours in the basement re-mortaring and worked to shore up the west side wall where the basement drain and sump pump are located.

Marsha Bowman, Steve Clougherty, Maureen Galevi and John Stodieck tackled the ceiling in the grinding room during the work party. New paint has been applied and all equipment has been put back in place. Next month we would like to clean, patch and paint the walls in the grinding room, thereby completing two of the four downstairs rooms.

Sergio Simunovic and Paul Cicchetti disassembled the snow blower and found a jammed rock in the auger body. This problem halted snow removal during the earlier storm. The height adjusters were raised to the high position and the snow blower is operational again. We are now ready for the snow.

Al Takeda and Penny Lucinian inspected the Clubhouse telephone and telephone internal wiring for a noise problem. Even after disconnecting the entire Clubhouse telephone system a 60 cycle hum could be heard coming from the wires originating from the "pole". It was determined that the Clubhouse wiring and telephone are in good shape.

Mike Mattei conducted a mirror grinding session with Julie Sage and her parents during the afternoon.

Lunch was served to all volunteers, and thanks go to Eileen Myers, John Reed and Sai Vallabha for their efforts.

Our next work party will be held on Saturday, February 11.

Many thanks to the following volunteers for help during the month of January: Bruce Berger, John Blomquist, Marsha Bowman, Paul Cicchetti, Steve Clougherty, Paul Courtemanche, Nina Craven, Maureen Galevi, Jim Gettys, Dick Koolish, Donald Leblanc, Penny Lucinian, Mike Mattei, Vladislav Mlch, Eileen Myers, John Reed, Sergio Simunovic, John Stodieck, Al Takeda, Bill Toomey and Sai Vallabha.

Important Notice: Due to changing work schedules and commuting times for our optical experts, the Clubhouse **WILL NOT** be open on Thursday evenings. Mirror making sessions will now take place on **Saturday evenings beginning at 7:00 pm**. We hope that you will have patience with us as we transition to this new time period.

~ *Clubhouse Committee Chairs* ~

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

Clubhouse Evening Schedule	
Friday Night Educational Videos	7:00 pm - 10:30 pm #
Saturday Night Mirror Making	7:00 pm - ##
Saturday Night Observing	7:00 pm - ##
# Closing time is determined by the organizers	
## Closing time is determined by the "A" members on duty	
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 messages posted to ATMOb-ANNOUNCE.	

Clubhouse Saturday Schedule		
February 4	John Panaswich	Jim Gettys
February 11	WORK PARTY # 2 NO DUTY	
February 18	Nina Craven	Brian Maerz
February 25	MESSIER MARATHON #1 Bruce Berger & Glenn Meurer	
March 4	Eileen Myers	Rich Nugent
March 11	WORK PARTY #3 Paul Courtemanche & Al Takeda	
March 18	Karl Dean	Mike Hill
March 25	MESSIER MARATHON # 2 George Paquin & Tom Wolf	

Surprise Visit at the Dec 10, 2016 Work Party Lunch . . .



(L-R) John Reed and Fritz Ledford

While sitting at the Dec 10th Work Party lunch tables, a knock at the door preceded old member Fritz Ledford, entering with cane in hand, to visit his old haunts at our Clubhouse.

A few years after the loss of his first wife, Fritz remarried and moved to the Carolinas, where he tried to finish grinding his 10" mirror.

Some years later I made a phone call to Fritz and found him moving again to live with his son in Missouri, having just lost his second wife.

The most recent contact was at the VA hospital in Columbia, MO where I had an impromptu meeting with Fritz and son between his doctor appointments. Like so many amateurs, Fritz had spent many hours sharing his hobby with others at the ATMOb Clubhouse. His picture of comet Hale-Bopp over his Ayer, MA home chimney hung near the meeting room light switch for years. It was nice to have Fritz visit with old friends for a few hours. He enjoyed seeing the changes made to the Clubhouse, especially the evolution of his old machine shop, and the addition of all of the new observatories.

He currently lives some 50 miles south of our observing site for the August 21, 2017 total solar eclipse, just west of Columbia, MO. We hope to share the 2 ½ minutes of totality with Fritz in attendance.

~ John Reed - Clubhouse Chair ~

Sky Object of the Month . . .

February 2017

Courtesy [LVAS Observer's Challenge](#)***

h3945 – Double Star in Canis Major

Magnitude . 5.0 + 5.8; Sep. 26.4"; P.A. 52° (2008)



What is the most colorful double star in the night sky? Most amateur astronomers would vote for Albireo (beta [β] Cygni). Others might cite gamma (γ) Andromedae, iota (ι) Cancri, xi (ξ) Bootis, or eta (η) Cassiopeiae. Sadly overlooked is a double star that might challenge them all – h 3945 in Canis Major. It is arguably the most colorful double star in the winter sky and, in fact, has been nicknamed the "Winter Albireo."

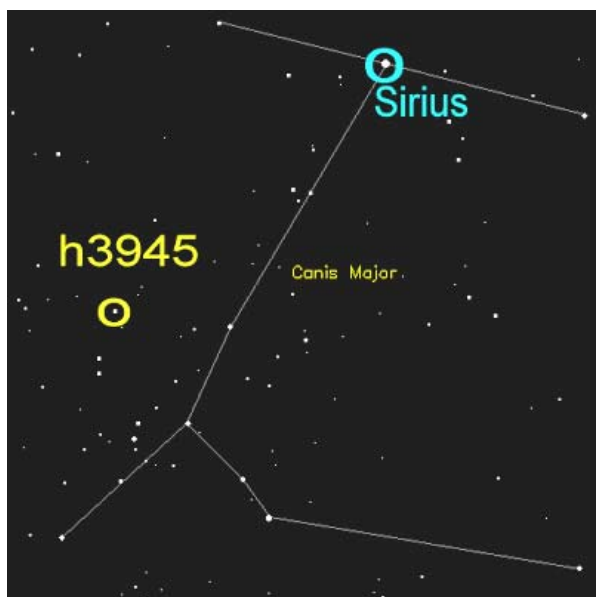
h3945 (aka 145 Canis Majoris) is one of more than 5500 double stars catalogued by John Herschel (William's son) in the early 1800s. The magnitude 5.0 primary is accompanied by a 5.8 magnitude companion 26.4 arc-seconds away. Their spectral

types (K3 and F0) give rise to a stunning color contrast. In her book *Double Stars for Small Telescopes*, Sissy Haas writes, "Showcase pair: A bright, wide, and easy pair with deep colors. The stars are bright citrus orange and royal blue; these colors are seen vividly and in strong contrast." In early 2008, h3945 was the subject of a forum on the [Cloudy Nights](#) website. The general consensus was that this is one of the most beautiful double stars in the night sky. That was my thought when I included h3945 in a "Top 100 Doubles" series written for *Deep Sky Magazine* in 1983.

Despite these kudos, h3945 still gets the cold shoulder from most backyard astronomers. In the February, 1980, issue of *Deep Sky*, I described h3945 as "one of the most colorful, yet underrated, double stars in the heavens." Richard Dibon-Smith, on his Constellation Web Page (www.dibonsmith.com) concurs, noting that, "h3945 is a gorgeous yet rather unknown binary." In the *Cambridge Double Star Atlas*, co-author James Mullaney laments that h3945 is "Largely unknown & unobserved – a pity!"

Why would such a beautiful double star be so grossly ignored? There are two parts to the answer - h3945 is in a southerly location, and it isn't as bright and easily located as Albireo or Almach. The first isn't a problem if your observing site affords a clear view of the lower half of Canis Major. Because h3945 is marginally visible to the naked eye from mildly light-polluted suburban skies, the accompanying finder chart will help you find it.

Sissy Haas, Richard Dibon-Smith, James Mullaney, yours truly (Roger Ivester), plus a batch of backyard astronomers on the [Cloudy Nights](#) website have all raved about h3945. Now it's your turn to experience one of the night sky's true gems.



whassupinthemilkyway.blogspot.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 ~

ACEAP 2017 Applications . . .



Image courtesy of the National Radio Astronomy Observatory (NRAO), Associated Universities, Inc. (AUI), and the National Science Foundation (NSF)

The Astronomy in Chile Educator Ambassadors Program will be accepting applications through February 19, 2017!

This program, in its third year, brings amateur astronomers, planetarium personnel, and astronomy educators of all levels to U.S.-funded astronomy facilities in Chile. While there, ambassadors receive in-depth, behind-the-scenes information on the instruments, science, and research coming out of some of the world's most productive and advanced astronomy observatories.

Eligible individuals for this program, who must be U.S. citizens or permanent residents, include amateur astronomers, kindergarten through college (formal and informal) educators who teach astronomy as part of their curriculum or program, and planetarium educators and others who communicate astronomy to the public.

Link to News Article -

<https://public.nrao.edu/news/pressreleases/2017-aceap>

Application located here -

<https://public.nrao.edu/look-deeper/aceap/about-aceap>

Thank you!

Timothy Spuck <tspuck@au.edu>
STEM Education Development Officer
Associated Universities Inc.

~ Submitted by Michael O'Shea ~

Penumbral Lunar Eclipse . . .

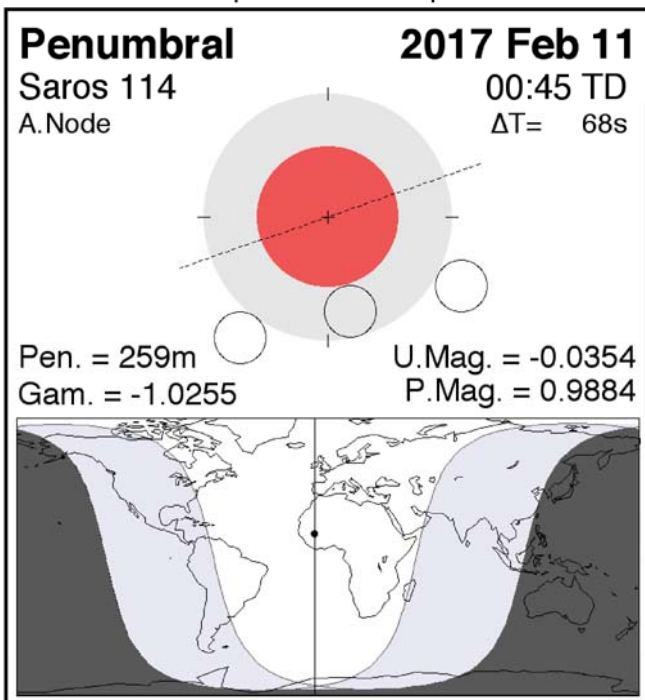


Penumbral Lunar Eclipse. October 18, 2013, 18:57 EST. Image by Al Takeda

On Friday evening, February 10th, between 22:34:14 UT and 02:53:29 UT (5:34:14 pm to 9:53:29 pm EST) a penumbral eclipse of the Moon will take place. Maximum eclipse will occur at 00:43:54 UT (7:43:54 pm EST).

This event will have a deep penumbral eclipse magnitude of 0.9883 (the magnitude is the fraction of the Moon's diameter occulted by the Earth's penumbral shadow). Generally the penumbral shading will not be visible until approximately 2/3 of the Moon's disk is immersed in the penumbra. This will allow us to see the shadow between 00:00 UT to 01:30 UT (7:00 pm to 8:30 pm EST). The shadow visibility will depend upon your local seeing conditions.

www.EclipseWise.com/eclipse.html



Thousand Year Canon of Lunar Eclipses

©2014 by Fred Espenak

<http://www.eclipsewise.com/lunar/LEprime/2001-2100/LE2017Feb11Nprime.html>

Eclipse Predictions by Fred Espenak, www.EclipseWise.com

~ Submitted by Al Takeda ~

Northeast Model Engineering Show (N.E.M.E.S.) . . .

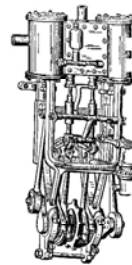
On Saturday, February 18th from 10:00 am to 4:00 pm, The [New England Model Engineering Society](http://www.neme-s.org) will be presenting the N.E.M.E.S. Model Engineering show. The show will be held at the Charles River Museum of Industry in Waltham, Massachusetts.

Click on the [image](#) below to download the [flyer](#) for details and directions.

FEBRUARY 18, 2017

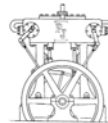
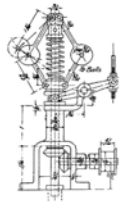
10:00 AM TO 4:00 PM

**CHARLES RIVER MUSEUM OF INDUSTRY
WALTHAM, MA**



SEE OPERATING SCALE:

- STEAM ENGINES
- GASOLINE ENGINES
- AIRCRAFT ENGINES
- STIRLING CYCLE ENGINES
- CLOCKS
- MACHINIST'S TOOLS AND FIXTURES
- LOCOMOTIVES
- TRACTION ENGINES
- MODEL BOATS - STEAM AND GAS
AND MEET THE CRAFTSMEN
WHO BUILT THEM



EXHIBITORS SETUP STARTS AT 8:00 AM
 COMPRESSED AIR FOR RUNNING MODELS
 GAS ENGINES ALLOWED
 NON-MEMBER EXHIBITORS WELCOME

GENERAL ADMISSION FOR SHOW AND MUSEUM

ADULTS	\$10.00
CHILDREN 5 - 17 WITH ADULTS	\$5.00
EXHIBITORS AND CHILDREN UNDER 5	FREE

Directions:

Take Rte. 128 to Rte. 20. Go East on Rte. 20 to Central Square, about 2 miles. Right on Moody Street. Cross the river, left on Pine Street to municipal parking lot on left. Short walk over the footbridge to the museum.

For additional information call the Museum at 781-893-5410 or go to www.neme-s.org

www.neme-s.org

~ Submitted by Dick Koolish ~

Editor: * Photos by Al Takeda unless otherwise noted.

March Star Fields DEADLINE

Sunday, February 19th

Email articles to Al Takeda at

newsletter@atmob.org

Articles from members are always welcome.

POSTMASTER NOTE: First Class Postage Mailed February 4, 2017

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

EXECUTIVE BOARD 2016-2017

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NEWSLETTER	Al Takeda	newsletter@atmob.org

PUBLIC OUTREACH

STAR PARTY COORDINATOR:
Virginia Renehan starparty@atmob.org

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

Feb 3 First Quarter Moon (Moonset at midnight)
Feb 10 Full Moon
Feb 10 Penumbral Lunar Eclipse. 07:43:49 EST (00:43:49 UT - Feb 11)
Feb 18 Last Quarter Moon (Moonrise at midnight)
Feb 26 New Moon
Feb 27 Mars 0.6 degrees North of Uranus
Mar 5 First Quarter Moon (Moonset at midnight)
Mar 12 Full Moon, Daylight Saving Time Begins
Mar 20 Last Quarter Moon (Moonrise at midnight), Vernal Equinox