



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. 10 November 2017

This Month's Meeting . . .

Thursday, November 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

Howard LeVaux in Antarctica with IGY - 1959-1960



LeVaux Peak (Executive Committee Range). Image courtesy of the USGS

As you all know, long-time ATMoB member Howard LeVaux passed away last September. Among his many and varied lifetime experiences was a 15 month stint in Antarctica As part of the 1959-1960 International Geophysical Year. Howard's primary work was in the study of the Aurora Australis. At our November meeting, Tom Lepisto and Jean LeVaux will recount Howard's adventure as a young Antarctic scientist.

Tom Lepisto is a frequent visitor to ATMoB meetings. He and Howard traveled to a number of solar eclipses and often spent time skiing together. He and his wife Linda live in Medford, Massachusetts. Jean LeVaux, Howard's wife of 52 years and mother to their 4 children, lives in Cambridge, Massachusetts.

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 . . .

As I write this, the 53rd Head of the Charles Regatta is getting underway. The 53rd! As a junior at UMass Amherst, I rowed in the 3rd HOC. That was 1967 - 50 years ago. A half century! I've changed a lot since then. Less hair, a bigger waistline, creakier knees. Back then, a pretty coed would send my heart fluttering; now a pacemaker does the job.

The universe has changed a lot, too. Well, it hasn't changed – our perception of it has. In 1967, Jupiter had 12 moons, Saturn 10. Nowadays, thanks to space probes like Pioneer, Voyager, Galileo, and Cassini, as well as CCD and adaptive optics technology to improve the capabilities of earthbound telescopes, each planet has over 60. The moons we once thought were barren cratered bodies like our own are unique worlds - some with active volcanoes and geysers, even subsurface oceans of liquid water! In 1967, there were 9 planets in the universe. We lost one when Pluto was demoted, but gained thousands of extrasolar planets (over 3500 confirmed to date, according to a NASA website), in a large part due to transits detected by the Kepler space observatory. The 1967 universe was expanding, but at some time in the future, gravity would pull in the reins and everything would come crashing together in the Big Crunch. We didn't know about dark energy and the role it would play in expanding the universe forever. Dark energy was theoretical and almost never discussed in astronomy textbooks. Now we know that it comprises over 70% of the mass of the universe. Textbooks can no longer ignore it.

What will the universe look like in 2067? If scientific and technological progress continues to improve exponentially, we won't just have pretty pictures of the moons in our solar system. We'll have manned bases on some of them. We'll have close-up images of some of the exoplanets - analysis of their atmospheres indicating that some harbor life. Star Trek may still be a thing of the future, but we could be sending unmanned probes to the nearest stars. Gravity wave astronomy will have an equal role to optical and radio astronomy, rendering discoveries we can't even imagine. And when rowers compete in the 103rd Head of the Charles, science may have made the greatest discovery of all – that we are not alone in the universe.

Clear Skies,

~ Glenn Chaple – President ~



Antarctica. Image courtesy of Tom Lepisto

October Meeting Minutes . . .



Tom Calderwood *

Minutes of the monthly ATMoB meeting held October 12, 2017, in the Phillips Auditorium at the Harvard-Smithsonian Center for Astrophysics. Club President Glenn Chaple called the meeting to order at 8:00 pm.

Mario Motta made a short presentation on an occultation of Neptune's moon Triton by a distant bright star. Tim Brothers of M.I.T. Haystack calculated the occultation would cast a grazing shadow visible in Gloucester, MA, where Mario has his observatory. Mario obtained light curve data of the occultation, showing a characteristic luminosity "U" shaped dip. At the same time, the [Stratospheric Observatory for Infrared Astronomy \(SOFIA\)](#) aircraft obtained data during the occultation. The goal is to calculate Triton's size, position, and atmospheric pressure, temperature, and density. Mario indicated that a scientific paper will be forthcoming to summarize their findings.

<https://hubble.mit.edu/prediction.html>

- The Secretary's Report was read by Phil Levine
- A highlight of the Treasurer's Report was presented by Glenn Chaple
- The Membership Report was presented by Chris Elledge
- The Observing Report was given by Glenn Chaple
- Announcements:

John Sheff mentioned the rings of Saturn will soon be at its maximum tilt of 27 degrees.

Glenn Chaple informed the membership about the AstroAssembly convention being held on October 13th and 14th, sponsored by the Rhode Island Skyscrapers.

Glenn indicated that an upcoming play, "Silent Sky", will be held from October 18 - November 12 at the Merrimack Theatre in Lowell MA. The play will highlight the work of the "Harvard Computers" (the women who worked at the Harvard College Observatory).

The Pollard Memorial Library in Lowell, as part of their public reads program, presented various astronomy related events in October. Dava Sobel, author of *Glass Universe*, gave a talk and discussed her book, which tells the story of the women who worked analyzing glass photographic plates at the Harvard Observatory. The Pollard Memorial Library on October 21st will have Harvard staff from Project DASCH talk about the project to transcribe, scan and digitize photographic glass plates, some dating from the late 1800's.

Paul Valelli, who worked in the plate stacks years ago, highly recommended Dava Sobel's book, *Glass Universe*, to the membership.

<http://pollardml.org/events/lowell-reads>

<http://dasch.rc.fas.harvard.edu/project.php>

M.I.T. Haystack will be having an Open House on October 18th, Glenn and other ATMoB members will be bringing telescopes to the Open House for public outreach.

A "mini" Messier Marathon (a goal of 39 Messier objects) will be held at the Westford Clubhouse on October 21st, from 7:30 pm to midnight. This event will be led by Rich Nugent of the Observing Committee.

A sheet was passed for the membership to reserve a copy of the 2018 edition of *The Royal Astronomical Society of Canada Observer's Handbook*. The cost is \$22. See Eileen Myers if you interested in purchasing a copy. (*Editor: The sign up period for the handbook has ended. All members who have placed an order can pick up a handbook at the November meeting. There are no extras.*)

Editor: The 2018 Astronomy Deep Space Calendar will be sold at the November meeting for \$8.00 each. First come first served.

The International Dark Sky Association (IDA) Annual Conference will held in Boston on November 10-12.

John Sheff mentioned that the Harvard CfA Public Astronomy Night's Oct. 19th topic will be "Space Junk", addressing the problem of thousands of active and defunct satellites in orbit around the Earth.

<https://www.cfa.harvard.edu/publicevents>

- Old Business:
John Reed informed the membership that he collected \$250 by selling eclipse glasses at \$1 each. The proceeds will to be donated to ATMoB.

Bernie Volz indicated that a surplus of \$2450 from the ATMoB Total Solar Eclipse trip funds will be donated to ATMoB.

- New Business:
Paul Valelli brought books to the meeting that were donated by ATMoB member Steve Mock. Titles included *Burnham's Celestial Handbook* and Jay Pasachoff's *Stars and Planets*. Paul suggested that members taking books consider making a small

donation to ATMob. *Editor: \$35 dollars was collected that evening.*

Ken Launie informed the membership that Dr. Sara Schechner will be conducting a reenactment of Professor Winthrop's 18th century electrical generator experiment on October 13th at the Harvard Science Center. Dr. Schechner is curator of Harvard's [Collection of Historical Scientific Instruments](#), which includes numerous historical telescopes.

The guest speaker of the evening, Tom Calderwood, gave a presentation entitled "Building the 100 Inch Telescope – in Boston". Tom discussed the Boston connection to the construction of the Hooker 100-inch telescope located on Mount Wilson in Pasadena, California. The building of the mechanical mount (1913-1916) for the Hooker telescope was a project given to M.I.T. professor emeritus Peter Schwamb. (Note: the Schwamb family business in Arlington MA along Mill Brook was once the location of the ATMob workshop).

The job of constructing the mechanical mount was contracted out to the Fore River Shipyard in Quincy MA. Peter Schwamb's job title was Consulting Engineer and Inspector but the research material (letters, blueprints and telegrams) Tom utilized showed Schwamb's duties entailed much more. Tasks included engineering design, quality assurance, sub contractor selection, cost tracking, troubleshooting, logistics, and not the least – motivation of the staff at Fore River.

The major issues with the mechanical mount included design and fabrication of the tube, yoke, pedestals, and bearings. The bearings in the yoke presented a particular challenge. These were filled with mercury to offset the weight of the telescope which was over 100 tons.

Challenges faced by Peter Schwamb included maintaining the budget, handling the "politics" at Fore River and deal with a change of ownership. Bethlehem Steel purchased Fore River Shipyard and management changes impacted the mount construction timeline. Military contracts also delayed the mount's construction.

Transporting the mount to Mount Wilson was a major logistical problem. Schwamb decided to ship the mount in sections, trusting that the final assembly on-site would be successful.

First light of the Hooker telescope took place on November 2, 1917. Later a very historic discovery came about as a result of a photograph taken with the telescope. A glass plate image of the Andromeda "nebula" was used by Edwin Hubble to identify a Cepheid variable star within the "nebula". Utilizing the period luminosity relationship, discovered by Henrietta Leavitt of Harvard, Hubble determined that the Andromeda "nebula" was a separate distant galaxy.

<http://www.npr.org/2015/04/25/401843663/hubbles-other-telescope-and-the-day-it-rocked-our-world>

<https://www.asme.org/getmedia/bab6c179-f602-4ea9-b180-14cf138e397e/66-Mount-Wilson-Observatory-100-inch-Hooker-Tele.aspx>

Refreshments for the evening were provided by Bernie Kosicki

Glenn Chaple adjourned the meeting at 9:30 pm

~ Phil Levine - Secretary ~

Meeting Recordings . . .

The recording of ATMob meeting #902 is available on YouTube: <https://youtu.be/eOWenLPbE8E>

I would like to thank Tom Calderwood for allowing us to record his presentation.

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 members Mathew King; Derek Lowe; Avery and Seth Mangum; Susan and Tom Spuhler; James Mullaney; Alexander Patton; Brian, Randee, Eli, Josephine, and Samantha Rusch; and Andrew Zucker.

As of October 23rd, 2017 we have 277 memberships covering 339 members. This is broken down as follows:

- 145 Regular Members
- 93 Senior Members
- 7 Student Members
- 30 Family Memberships covering 92 Members
- 2 Guest Members

There are 87 renewals that are still due. Memberships that are not renewed by December 1st will expire.

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. Credit card payments will be charged through Club Express.

Please contact me if you need any help with renewing or logging into the website.

~ Chris Elledge – Membership Secretary ~

Clubhouse Report . . .



Meade 16-inch setup (L-R) John Blomquist, Nkosi Muhangi, John Maher, Steve Clougherty *

October 2017 Clubhouse Report

Our monthly work party was held on Saturday, October 7 and there were a total of 25 members and friends on hand to help with a number of projects.

Scraping and staining of the front porch roof and siding continued and much progress has been made. Thanks to John Stodieck, Chris Elledge, David Figueroa, John Hinz, Al Takeda and Tom Wolf. Approximately one half of this porch area has been completed so far and we would like to make a final push to complete this project at the November work session.

Outside ground work included raking grass clippings and weed trimming. Nina C. completely cleaned and trimmed Anna Hillier's garden in front of the house. Once again we owe thanks to John Blomquist who has hauled his tractor mower to the grounds during the week preceding the work party.

Dave Prowten spent a couple of hours raising the roll off roof with a scissors jack and greasing each of the 10 steel wheels. The roof now rolls out much easier!

Steve C. and Slav M. handled cleaning out the composting toilet. This task must be done yearly.

John Maher and John Blomquist installed a temporary counter weight system on our recently acquired Meade 16-inch Schmidt-Cassegrain telescope (SCT). Since the dew shield was added a permanent counter weight system is being designed and machined by John B. and will be ready to install and test in the near future. The new telescope has been performing very well!

John Stodieck and Dave Prowten completed repairing and staining the back far barn doors.

Rich Nugent helped Sai V. collimate the 17-inch Dob.

Many thanks to the lunch crew (Eric Johansson, Eileen Myers, John Reed and Sai V.) who provided a wonderful meal for all of our volunteers!

Mike Mattei ran a mirror making workshop in the afternoon.

Mold on the walls in the evaporator room will be tackled at the next work party. The dampness problem was due to several leaks that were subsequently fixed and then followed by sweating pipes dripping water on the floor.

Our next work session will take place on Saturday, November 4th beginning at 10 am.

Thanks to the following volunteers for all of their help during the month of October:

Bruce Berger, John Blomquist, Paul Cicchetti, Steve Clougherty, Nina Craven, Chris Elledge, David Figueroa, Eric Johansson, Tom Harpin, John Hinz, John Maher, Nkosi Muhangi, Avery Mangum, Mike Mattei, Vladislav Mlch, Eileen Myers, Rich Nugent, Dave Prowten, John Reed, Sergio Simunovic, John Stodieck, Art Swedlow, Al Takeda, Sai Vallabha, Tom Wolf and Andy Zucker

Important Notice: Mirror making sessions will now take place on **Saturday afternoons 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		
November 4	WORK PARTY # 11 Dave Siegrist & John Small	
November 11	Eric Johansson	Tom McDonagh
November 18	Karl Dean	Sai Vallabha
November 25	Phil Rounseville	Joe Wolfe
December 2	WORK PARTY # 12 NO DUTY **	
December 9	Paul Cicchetti	Tom Wolf
December 16	Rich Nugent	John Reed
December 23	Closed for Christmas	
December 30	Work Party # 13 ** New Year's Eve Party Preparation	
December 31	New Year's Eve Party	

** 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 messages posted to ATMOB-ANNOUNCE.	

Sky Object of the Month . . .

November 2017

Courtesy LVAS Observer's Challenge***

NGC 772 - Spiral Galaxy in Aries

Mag. 10.3; Size 7.2' X 4.3'



NGC 772 (middle) and NGC 770 (top center). Mario Motta, MD



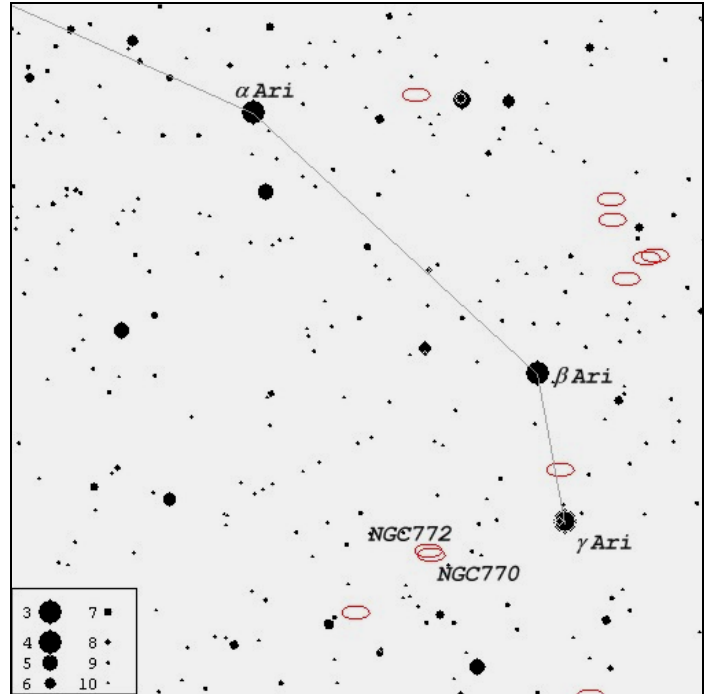
Courtesy of Canada-France-Hawaii Telescope/Coelum

The only times I've ever made a telescopic foray into Aries have been to admire its beautiful double star Mesarthim (gamma [γ] Arietis). This striking pair of white magnitude 4.8 twins gleams like the headlights of some interstellar automobile or perhaps the eyes of a celestial cat. From now on, though, I'll take a moment to redirect my scope 1½ degrees eastward to take in this month's LVAS Observer's Challenge, the galaxy NGC 772. A unique feature of this spiral is a long arm extending westward from the nucleus. Stephen James O'Meara likens its appearance to that of an emerging springtime fern, hence his nick-name the "Fiddlehead Galaxy." The stretched-out arm is likely a result of a tidal interaction with the nearby elliptical galaxy NGC 770 (refer to the Mario Motta and Canada-France-Hawaii Telescope/Coelum images).

There are several challenges to consider when tackling NGC 772. What is the smallest aperture telescope with which it can be

glimpsed? O'Meara states that it's as bright as some of the fainter Messier objects. Are you able to discern any structure – the long spiral arm in particular? Can you pick out 12th magnitude NGC 770?

NGC 772 was first observed by William Herschel on November 29, 1785. At a distance of 106 million light years, it's twice as large as the Milky Way.



Finder chart for NGC 772 (www.astrosurf.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:Roger_Ivester@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 ~

Editor: * Photos by Al Takeda unless otherwise noted.

December Star Fields DEADLINE
Sunday, November 26th

Email articles to Al Takeda at
newsletter@atmob.org

Articles from members are always welcome.

POSTMASTER NOTE: First Class Postage Mailed November 5, 2017

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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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

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 (EDT) from Universal Time (UT) subtract 5 from UT.

Nov 4 Full Moon
Nov 5 Daylight Saving Time Ends
Nov 6 Aldebaran 0.8 deg. S. of Moon, occultation 03:00 UT (23:00 EST)
Nov 10 Last Quarter Moon (Moonrise at midnight)
Nov 17 Leonid meteors peak
Nov 18 New Moon
Nov 26 First Quarter Moon (Moonset at midnight)
Dec 3 Full Moon