



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. 21, No. 9 October 2009

This Month's Meeting...

Thursday, October 8th, 2009 at 8:00 PM
Phillips Auditorium
Harvard-Smithsonian Center for Astrophysics
Parking at CfA is allowed for duration of meeting

Jay Cross will present *State of the Art Astronomy Circa 1540*. What did astronomers know and how did they know it in the era preceding Copernicus' posthumous revolution? Find out what kinds of tools were used, and how well they worked. This will focus on the Triquetrum and the table of Chords. This is a short talk with plenty of time for questions and answers.

Jay Cross has been perusing his interest in medieval astronomy for about thirty years, and has built and used some replicas of period instruments to better understand the limits of the abilities of medieval astronomers. In day to day life, Jay is a much traveled technical trainer for a local software company, and in his spare time is an administrator for the forum connected to Phil Plait's Bad Astronomy site and Universe Today.

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

President's Message...

I arrived at the clubhouse around 11:00pm Saturday (September 19th) after an evening of work. It was a clear, moonless evening and the sky at Westford was the best I had seen in many years. The observing field was absolutely packed with members and their telescopes. (I was later told that quite a few people had already left for the evening).

Steve Clougherty had the club's seventeen-inch Dobsonian out of its shelter and I was fortunate to get some time on it for some quick star-hopping across the sky.

Rich Nugent also had a twenty five-inch telescopes set-up, and he was kind enough to show me the "Egg Nebula", an elusive planetary nebula that was extremely difficult to track down.

We're a very fortunate club to have this facility in which to observe, build telescopes and just plain socialize. It's also a good way to do a little time traveling as well. If I went back twenty-five years earlier, some of the people at last Saturday's session would have been out observing way in 1984. It's really nice to have that kind of continuity in the club and in one's personal life. I also found it interesting that while physical changes to our appearances occur across the years, our voices sound just the same.

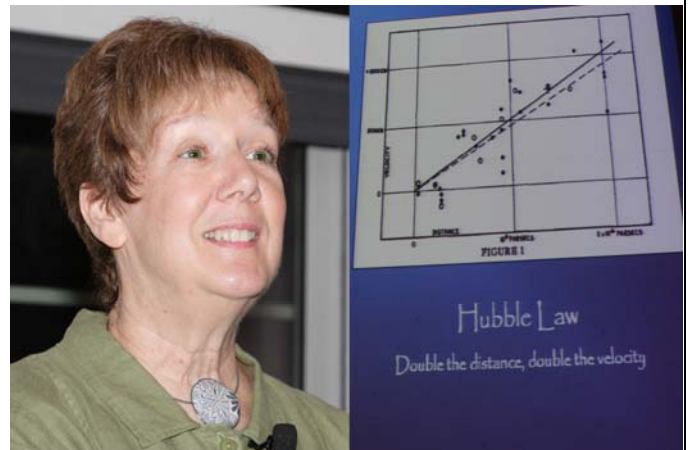
So while standing there under the night sky, hearing the same voices of twenty five years ago while not being able to clearly see facial features was something like a trip to my past.

Old friends, like the constellations of the night skies, will always be with us.

Clear Skies,
Steve

~ Stephen Beckwith, President ~

September Meeting Minutes . . .



(L-R) Marica Bartusiak and the Hubble Law Graph. Images by Al Takeda

The September meeting of the Amateur Telescope makers of Boston featured Marica Bartusiak, who talked about the discoveries that made the Universe a much larger and grander place than anyone had imagined. Though some of those discoverers' names have faded away, Bartusiak wanted to highlight their names again to show us how scientific breakthroughs are interwoven and not confined to a single person or event. She also gave a history of how strong personalities, incorrect interpretations and missing data come together to delay our understanding of our Universe.

The Universe at one time was perceived as simply the Milky Way. When astronomers such as the Hershel's started to train their telescopes outward they encountered nebulae which were interpreted as other island universes.

In the 19th century William Parsons, the third Earl of Rosse used his 6-foot diameter telescope and drew the spiral shape of those nebulae. Parson's view was that "this must be what the Milky Way looks like from afar."

Others looked at these drawings and concluded differently. Bartusiak stated that: "By the end of the 19th century everyone had sort of adopted the common wisdom that these spiraling nebulae were solar systems within the Milky Way in the making, coming into birth."

That view started to change when James Edward Keeler, Director of Lick Observatory using the 36-inch Crossley reflector started to look at nebulae and found many more that appeared to be farther away. He died before he was able to get spectra of these.

Ten years would go by before Heber Curtis would pick up where Keeler left off. He noticed that some of these nebulae had dark lanes similar to the ones in our Milky Way. While this was circumstantial evidence "he came to truly believe that they were distant galaxies." He also looked for novae but without a "cosmic yardstick" nobody knew the distances to these objects. That information came from Cepheid variables discovered by Henrietta Leavitt.

Harlow Shapley was the first to use this "yardstick" to measure the size of the Milky Way but still clung to the "Big Galaxy" model of the Universe. Curtis could have used the Cepheid "yardstick", but he resigned his post at Lick Observatory to become the director of the Allegheny Observatory in Pennsylvania.

It would take Edwin Hubble, using the 100-inch Hooker and the 60-inch telescopes at Mount Wilson, to "determine the relationship of nebulae to the universe". He arrived in 1919 after serving in World War I and studied nebulae for years. In 1923, while observing the Andromeda Nebulae, he found a Cepheid variable on one of his plates. Using Harlow Shapley's distance formula, Hubble was able to determine that Andromeda was 1 million light years away. This was direct proof that this was a separate galaxy.

As the textbooks state, 4 years later, Hubble would discover that the Universe was expanding. According to Bartusiak, there is another story. In 1912, "Vesto Melvin Slifer patched the spectrograph onto the 24-inch refractor at the Lowell Observatory in Flagstaff Arizona and he carefully obtained a spectrum of the Andromeda nebula. He then determined the speed, the velocity of spiral nebulae. In Hubble's published paper the "velocity data was Slifer's and the distance data was Hubble's". Hubble published his report but did not cite Slifer's data.

Hubble also did not interpret the red shift to distance graph as the evidence of an expanding universe. That interpretation was made in 1927 by Georges Lemaître by "setting up a cosmological model based on Einstein's relatively new general theory of relativity." This information was not widely known until 1930 because the paper was published in an obscure Belgian journal.

All those astronomers from James Keeler to Georges Lemaître led up to Hubble. According to Marica Bartusiak "the full story really hasn't been gotten out to the public".



Bob Naeye gave a talk and showed some images of his experiences during the total solar eclipse trip in China. He was with the Sky & Telescope tour group. They spent the first 5 days in Beijing and then ended in Shanghai for 5 days. Because the weather conditions in Shanghai were horrible they moved to a rest area on the south side of the 22 mile Shanghai Bay Bridge.

The conditions varied from thick clouds to rain. Sometimes the sun could be seen through the clouds. When 2nd contact arrived they were able to see Baileys Beads and a Diamond Ring through the clouds. Even through the clouds they could see some prominences but no corona.

Mario Motta played a video of the eclipse day that was shot by our tour operator, China Travel Service. Mario's group had 72 people from the ATMoB and Mass. Medical. An extra 40 people from California joined the group in Shanghai. The group then moved to Hangzhou where the weather conditions were also bad. The group decided to go west to try to escape the rain. The eclipse started out cloudy but slowly cleared up as 1st contact approached. When totality arrived it was clear with a light haze that only obscured the outer corona.

Al Takeda also showed his images of the eclipse taken through a Canon 20D DSLR with a 400mm +1.4X adapter. With this rig he was able to assemble a series of images to create a high dynamic range picture showing prominences, polar brushes and inner corona. Al also showed a short video showing the entire trip in short vignettes.

The Secretary's report was given by Al Takeda.

The Membership Secretary's report was given by Tom McDonagh. He reported that this is the rush time since memberships are due. You can pay on-line using the Pay Pal feature or sign up using the paper applications and pay by check.

The Treasurer's report was given by Nanette Benoit.

Steve Clougherty gave the Clubhouse report. He thanked Dave Prowten for replacing the Clubhouse bulkhead door. There was a tremendous amount of work done by all parties. For a full report read this month's Clubhouse report.

Bruce Berger has received the upgrade kit for the Paramount Mount but had to return it due to a wire problem. He wanted to acknowledge John Blomquist, Mike Hill and Alan Sliski for helping out on this project.

Announcements:

The 75th Anniversary is taking place on Saturday, September 26th at 3:00 pm at the Clubhouse.

Carlisle Star Party is on Friday, September 25th.

There will be an Astronomy Night at Robbins Farm Park in Arlington on Saturday, Sept 12th, if it is clear.

Steve Beckwith reported that 8 people respond to the request to help out with the ITEAMS program. He will be placing those people in contact with the coordinator, Bruce Ward of the Harvard College Observatory.

Clubhouse Report . . .

September 2009

It's great to see clear skies again! The temperature climbed into the upper 70's during our September Work Session on Sept. 5th. We observed a few solar prominences through Paul Cicchetti's Hydrogen-Alpha scope. Items accomplished were as follows:

- The lawn was power mowed by John Blomquist, with difficult areas tackled with hand operated mowers by John Maher, Gerry Sussman, Harry Drake, Dick Koolish and John Reed. Edge brush was cut by Bern Kosicki on the brush hogger. Cuttings were removed to the compost piles.

- The new bulkhead doors were upgraded by Dave Prowten with new hinges, hardware and shims, allowing for smooth operation.

- Dave then joined Steve Clougherty and Bernie Kosicki to refine the engineering concepts of a realistic entrance for the clam shell observatory. The 8" Dall-Kirkham reflector was collimated by Phil Rounseville and Steve Clougherty.

- Steve also replaced the broken drip edge flap structure over the doors to the hutch housing the 17" Wray – Coulter Dobsonian reflector.

- From early morning the Paramount C-14 mount repair was handled by Mike Hill and Bruce Berger. Portions of the assembly were later shipped to the factory for diagnosis and repair. Subsequent work over many days enabled the renovated components to be reinstalled and checkout to continue throughout September.

- The Schupmann optical tube and mount were mated and checkout continued on the home dome platform by Gerry Sussman and Eric Johansson, assisted later by Mike Mattei. The system was star checked later that evening. Lessons learned led to subsequent adjustments during follow up sessions. The next test will be at the picnic.

An Annual Picnic and 75th Anniversary planning session was held by Eileen Myers, Art Swedlow, Sai Vallabha and Al Takeda. They also prepared and served a delicious lunch, enjoyed by all.

- Paul Cicchetti selected granite stones and mortared them in place to provide a foundation support for the 4-holer structure behind the barn. Assisted by John R., this allows the interior work to create a tool crib to proceed. Several other places were noted around the barn foundation where added mortar during the October work session will prevent rain from entering under the barn.

- Al Takeda continued to scrape the house west exterior wall. The staining will follow during the October work session before winter closes in.

- The old dog house small observatory donated many years ago by Dennis di Cicco was dismantled during subsequent work on Sunday, September 13th by Paul C., Eric J., and John R. This makes way for the larger clamshell observatory. Several additional days of cutting the debris into burnable pieces saved the expense of another dumpster.

The next work party/session will be on Saturday October 10th at 10am. The grass will need cutting a few more times before winter, and outdoor projects will need to be secured before the first snowfall. It is time to trim the trees next to the observing field again as the horizon is being lost.

We have scheduled this work session so you can attend the annual AstroAssembly gathering the week before in N. Scituate, RI. This meeting is sponsored by our friends in Skyscrapers, Inc. of Rhode Island. Hope to see you there, and at our next work party October 10th.

~ *Clubhouse Committee* ~

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



Schupmann Checkout: (L-R) Gerry Sussman Eric Johansson and Mike Mattei

Clubhouse Saturday Schedule

Oct 3	Bruce Berger	Mike Hill
Oct 10	E. Budreau, H. Hopkinson- Work Party	
Oct 17	Rich Burrier	Eileen Myers
Oct 24	Eric Johansson	Brian Maerz
Oct 31	P.Cicchetti, J. Blomquist- Work Party	
Nov 7	Al Takeda	Bill Toomey
Nov 14	Shilpa Lawande	Nitin Sonawane
Nov 21	Bernie Kosicki	Tom Wolf
Nov 28	Glenn Meurer	John Panaswich
Dec 5	Dave Prowten	John Reed
Dec 12	Steve Mock	Rich Nugent

Membership Report . . .

Membership as of 9//23/2009 - 353 members.

Membership renewals were due by September 1st, 2009.

Please remit you membership payment ASAP to avoid *Astronomy* and *Sky & Telescope* subscription delays. You can re-new on-line or down load the renewal form from the website and send it to Tom McDonagh. Payments can be made with PAYAL through the ATMob website renewal system, or by mailing a check. Navigate using the following link after logging in to renew your membership today!

<http://www.atmob.org/members/person.php?frid=renewals>

Then click on the red renewal tab to renew online!

Please contact the Membership Secretary if you have any problems logging into the ATMob website or navigating through the renewal process, at Membership@ATMoB.org

New members in 2009 are not required to renew till September 2010. Members that fail to renew by December 1st will be dropped as a member. Please contact the President of the club at President@ATMoB.org if you are having trouble paying the dues.

The Amateur Telescope Makers of Boston, Inc. is a 501(c)3 organization. Donations are gladly accepted and are tax deductible to the extent allowed by law. While the deadline for 2008 charitable donations has past, please consider making a tax-deductible contribution to the club when planning for 2009 and beyond.

All members are encouraged to seek out and welcome our new members:

Barry Lloyd
Richard Post
Wayne Wagner, Jr.
Jim Pennock
Olivia Pennock
Arun Janapala

Welcome!

membership@atmob.org

~ Tom McDonagh – Membership Secretary ~

Thoreau on Astronomy . . .

I am struck by the superfluity of light in the atmosphere in the autumn, as if the earth absorbed none, and out of this profusion of dazzling light came the autumnal tints. Can it be because there is less vapor?

Journal, 12 Oct 1852

~ Submitted by Tom Calderwood ~

Astronomy VIP in Acadia . . .



Tom Calderwood and his Galilean replica

I spent most all of August in Acadia National Park as a astronomy volunteer. The Park Service is actively pursuing astronomy activities in selected parks, recognizing that dark skies are a valuable resource that visitors enjoy. Acadia has had some of these activities for a while, but this was their first year with telescopes. I was there to help them ramp up the "Night Sky Scoping" events. These were star parties held on Saturday and Sunday nights at various locations in the park. The Bar Harbor Chamber of Commerce gave the park a grant to buy equipment, and we had an 8" Dobsonian, an 80mm refractor, and 11x70 binoculars, plus we had a borrowed a 8" Celestron Nexstar. I helped them pick the gear and to shake out problems.

Acadia is the darkest park in the northeastern United States, and the Park Service is trying to get "Dark Sky Park" designation from the IDA. Towards this end, I conducted an inventory of all the outdoor lighting in the park (about 450 lights-most unshielded). The town of Bar Harbor has passed a light pollution ordinance, and there are hopes for more of the same from other Mt Desert Island towns.

We only had limited success with observing, but attendees still enjoyed it. The first weekend I was there, the moon was almost full, and the last two weekends we were dealing with the remnants of hurricane Bill and tropical storm Danny. We did have one really good night, when we were at Eagle Lake. Other gatherings were helped on Cadillac Mountain, Otter Point, and the Seawall picnic area. I brought a "replica" Galilean telescope that I built this summer, and it was a popular attraction at the star parties (see picture).

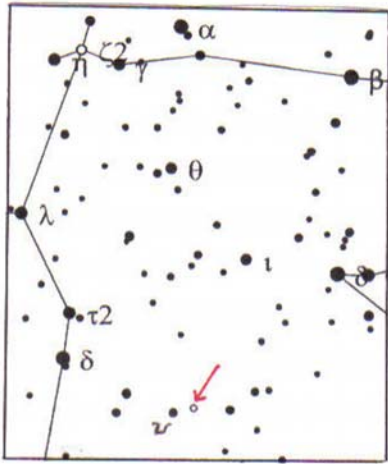
We had help from Peter Lord of the Island Astronomy Institute, which promotes astronomy in the Mt Desert Island area (<http://www.islandastro.org>), and from the Downeast Amateur Astronomers. During September, they helped stage the first-ever Acadia Night Sky Festival.

~ Submitted by Tom Calderwood ~

Sky Object of the Month . . .

October 2009

NGC 7293 – the “Helix Nebula”



Finder chart for NGC 7293 (the “Helix” Nebula)
From Cartes du Ciel

NGC 7293, the Helix Nebula, is the nearest planetary nebula (distance ~ 450 LY) and largest in apparent size (12 by 16 arcminutes). Moreover, it's a 7th magnitude object. An easy telescopic target? Hardly! The magnitudes listed for deep-sky objects are often misleading, and the Helix Nebula is a prime example. Were you to defocus a 7th magnitude star until the image covers half a moon diameter, you'd have an idea of the visual appearance of the Helix. In *Visual Astronomy of the Deep Sky*, author Roger N. Clark notes that its average surface brightness is 20.8 magnitudes per square arcsecond.

Despite its faintness, the Helix Nebula can be readily observed. On a clear, moonless night in dark-sky areas, it may be glimpsed with binoculars. In fact some keen-eyed observers in extremely remote locations have spotted the Helix with the unaided eye! The key to viewing the Helix by telescope is to use a telescope/eyepiece combination that can produce a field about one-half to a full degree across. Because of its southerly location, you'll want to select a viewing site with an open southern horizon, free of any sky glow.

I first saw the Helix on July 31, 1981 from the clear skies of Stellafane. Through my 3-inch f/10 reflector at 30X, it appeared as a “large, tenuous glow.” Stellafane regular Peter Kandefer peeked into the eyepiece and confirmed my sighting. More recently, I had no trouble spotting the Helix with a 4-inch f/8 reflector. The key in both instances was to know exactly where to look. The accompanying finder chart pinpoints the Helix Nebula's location in the southern part of Aquarius about 1 ½ degrees west of the 5th magnitude star upsilon Aquarii.

The Helix Nebula offers three challenges:

1. Capture it with binoculars or small telescope.
2. Discern its annular form with medium to large-sized telescopes.
3. Spot its 13th magnitude central star.

Are you up to the challenge? On the next clear, moonless autumn night, try your luck with NGC 7293, the Helix Nebula.

Your comments on this column are welcome. E-mail me at gchaple@hotmail.com.

~ Submitted by Glenn Chaple ~

Antares Occultation . . .



Gary Jacobson imaging the Antares occultation. Image by Kelly Beatty

Here is Gary Jacobson's setup for August 27th's grazing lunar occultation of Antares. Gary, Bruce Berger, and I gathered (along with Cheryl Beatty and CHS science teacher Mindy Lekberg) at a location in South Chelmsford that Bruce had scouted after getting detailed track info from occultation guru David Dunham. Gary stopped down the scope's aperture so he could adjust the gain on his video eyepiece (image was too bright otherwise).

We were very successful -- a review of Gary's video shows 7 (maybe 8) disappearances, made all the more impressive given that (1) it was a daylight event (5:59 to 6:05 p.m.), and (2) Gary had to track by hand at high magnification because the RA motor on my ancient Meade 8-inch SCT is dead. Ironically, Dunham flew up from the DC area and was supposed to join us, but he went to Peterborough, NH, because he thought we might have clouds. Instead, “he” was clouded out!

Clear skies,
Kelly

~Submitted by J. Kelly Beatty~

November Star Fields DEADLINE
Wednesday, October 28th

Email articles to Al Takeda at
secretary@atmob.org

POSTMASTER NOTE: First Class Postage Mailed Sept 30th, 2009

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c/o Tom McDonagh, Membership Secretary
48 Mohawk Drive
Acton, MA 01720
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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 listen to WBZ (1030 AM)

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.

Oct 4 Full Moon
Oct 11 Last Quarter Moon
Oct 13 Saturn passes 0.5 degrees from Venus (Morning)
Oct 18 New Moon
Oct 21 Orionid Meteor Shower peaks
Oct 25 First Quarter Moon
Oct 31 Mars passes through M44, Beehive Cluster