



Newsletter of the  
Amateur Telescope Makers of Boston  
Including the Bond Astronomical Club  
Established in 1934  
In the Interest of Telescope Making & Using

Vol. 18, No. 8 September 2006

## This Month's Meeting...

Thursday, September 14<sup>th</sup>, 2006 at 8:00 PM

Phillips Auditorium  
Harvard-Smithsonian Center for Astrophysics

*Parking at CfA is allowed for duration of meeting*

This month's meeting will feature Jim and Rhoda Morris speaking on the Replicas of Galileo's Telescopes. This is the first public showing of perhaps the most detailed and accurate replicas made to date of Galileo's two existing telescopes, the "red leather presentation" and the "wood data gathering" telescopes. The authors will discuss the processes they used to fabricate these telescopes for the Griffith Observatory and the Adler Planetarium. They will review the novel construction method they found on their visit to see the originals in Florence, the wood and leather materials, the optics and why it took so long for the telescope to be invented, and the processes to transform photographs of the ornamental designs into dies for the more than 400 individual hot stampings required on the curved tube surface. They will show extraordinary photographs they took of the originals. Also come to hear why these telescopes are more important than their beauty and that they ushered in the beginning of modern astronomy. Hear about the "Galileo syndrome" and its significance today. A more detailed description of the meeting can be found on the website.

Please join us for a pre-meeting dinner at 5:45 PM (seating at 6:00 PM) at the Changsho Restaurant located at 1712 Mass Ave. in our fair city, Cambridge.

## President's Message...

It is hard to believe the summer is already over and Orion is back for early risers! Stellafane Convention in July, hosted by the Springfield Telescope Makers, was great fun and this year marked the opening of the Flanders Pavilion for talks and demonstrations. ATMoB member Dave Siegrist gave the first opening talk in the new pavilion. Club members Peter Bealo, Mike Hill, and Mario Motta also gave technical talks while Phil Rounseville demonstrated how to make a lap for polishing. Dave Prowten's hand behind the scenes was obvious in the construction of Stellafane's new ash dome. Friday night on Breezy Hill brought beautifully clear skies for optical judging and observing went well into the wee hours. I am happy to announce that ATMoB member Brian Lecau won 1<sup>st</sup> Place in the *Optical Competition for Newtonians 12 1/2" and Under* for his 8" f/6.53 Newtonian. He scored 95 points out of a possible 100 from a panel of 8 judges! The awarding judge commented this year's judging was difficult since the quality of optics entered was extraordinary. This was Brian's first mirror and first entry at Stellafane. Our warm congratulations to Brian for his high accomplishment.

Also at Stellafane, ATMoB member Paul Vellei won the Northeast Region of the Astronomical League (NERAL) 2006 Walter Scott Houston Award in recognition of his many years of service to the astronomical community and his efforts in promoting public interest in astronomy. Paul's contributions, to name only a few, include observational work for Operation Moonwatch in the 1950's, six years as NERAL chair, invaluable work as mentor to amateur and professional opticians, optical and mechanical judging at Stellafane, restoration of telescopes for handicapped-access, written works popularizing the design and use of focal reducers, his work toward preserving ATM and astronomy history, and his many volunteer efforts. Thank you and congratulations, Paul.

The Clubhouse Committee hosted the annual club picnic on August 5<sup>th</sup> which included a tour of the Haystack Observatory narrated by Eileen Myers. Some 80 members attended the picnic. Food was delicious and the dessert table was incredible! Thank you to all those who helped organize and prepare for the event. Special thanks to Sai Vallabha, Art Swedlow, Eileen Myers, John Reed, John Maher, and Dave Prowten. And thank you to all those who brought and shared a culinary delight.

This month's start of school has already brought several star party requests. Peter Bealo will kick off star party season with the annual Plaistow Star Party on September 29<sup>th</sup> (cloud date October 2<sup>nd</sup>). Keep an eye out for this and other star party postings on the website and email list. A word to those members who use Comcast: be aware that we continue to have problems with Comcast's aggressive spam filters. Users may want to take this up directly with Comcast.

Sky & Telescope has an improved new website [www.skytonight.com](http://www.skytonight.com). Senior S&T editor and club member Bob Naeye has a blog posting on there as well, "Bob's World of Astronomy." Go to [www.skytonight.com/community/skyblog/worldofastronomy/](http://www.skytonight.com/community/skyblog/worldofastronomy/). For those of you who enjoy Bob's informative science updates at

our monthly meetings, this blog is a great read – fun, intelligent, insightful, and passionate.

Join us for a trip to Astro Assembly on September 29<sup>th</sup> and 30<sup>th</sup> at the Seagrave Observatory in Scituate, Rhode Island. Visit [www.theskyscrapers.org](http://www.theskyscrapers.org) for information and directions. Several ATMoB members will be carpooling down on Saturday, so if you need a ride don't hesitate to send me an email. I look forward to seeing many of you there.

The Executive Committee will hold a Board meeting at 7pm on October 19<sup>th</sup> at the Clubhouse in Westford. As always, if you have any questions, comments or ideas to share concerning club matters, feel free to drop me a line.

*-Virginia Renahan, President -*

## July Meeting Minutes . . .

The July meeting of the Amateur Telescope Makers of Boston started with Mr. Robert Benoit, Manager of the Optical Division and Systems Engineer at SSG Precision Optronics in Wilmington, MA. He spoke about optical systems design and fabrication for aerospace applications. SSG's Optical Fabrication Division specializes in the polishing of small to moderately large (up to 1 meter) off-axis, low scatter, aspheric optical components for use in space environments to cryogenic temperatures. Mr. Benoit, with a degree in applied physics, brings 20 years of experience in optical systems project management and is responsible for overseeing all aspects of fabrication of optics for SSG's flight telescope systems.

He discussed the wide variation of sized of optical systems that his company produced, from the Moon Mapper, that will look at the crust of the Moon and whose entire assembly will fit in the palm of your hand to 40 inch mirrors. His initial talk focused on what the company has produced in the past. One of those was a Cassagrain telescope that was 3.5" in diameter that was used on a successful NASA mission to look at a comet nucleus. Other optics that his company produced was placed in the next generation of weather satellites, European Space Agency (ESA) infrared spectrometers, Department of Defense (DOD) systems investigating chemical and biological agents and in the NEAR spacecraft, which landed on the asteroid EROS .

In talking about the MICAS project (NASA's Deep Space One spacecraft), Benoit stated that "this is near and dear to my heart. I was the project manager... It was the primary optical sensor, which had a rendezvous with an asteroid and Comet Borrelly. All silicon carbide. Very light and very stiff. It had 2 visible cameras, an IR spectrometer, and an UV spectrometer."

He then proceeded to show us some of the mirrors in process. He stated that, "most of the mirrors are off-axis..., parabolas, hyperbolas, ellipsoids and they are not round.

You guys would know, round mirrors are easy, non round mirrors are not." The difficulties in polishing these mirrors were brought to light when he explained that "you can't use an full aperture polishing lap like you can for a round mirror. The polishing tool is the size of a nickel. You have to constantly re-cut the lap in different zones on the mirror". Most of the systems are made out of silicon carbide. "This is a new material that is used for a lot of space instruments because it is very light and very stiff. And weight is money when lifting things into orbit." Benoit then explained the process by which his company would compete for contracts to build optical systems for commercial applications, NASA, and the DOD.

He returned to the fabrication of aluminum mirrors which are first diamond turned on a high precision lathe which leaves a specular finish but leaves high frequency diffraction marks. This has to be polished out. His company has produced mirrors out of aluminum, nickel plated aluminum, beryllium, silicon carbide and glass. Only 10 percent of what the company produces is in glass. One is the Costar optics for the Hubble Space Telescope was produced by the Tinsley division. Benoit's final animation showed the Webb Space Telescope. His company will be in charge of polishing the beryllium mirrors.

Paul Valleli showed an 11-minute video of Mario Motta and his 32 inch being interviewed about light pollution. Mario Motta showed some images and talked about the 32 inch assembly and first light. He stated that "using the 41 mm Panoptic, which is 120 power, the view of the Veil is not just stunning it will blow your socks off when you guys get to see it. When I threw an O3 filter on it, it looked like a photograph. I kid you not. You'll have to see it to believe it." Ross Barrow demonstrated the Linkeos software (similar to Registax) and his 1st attempts at astrophotography. Ross stated that this is "something that a person with a digital camera and tripod can do." Bob Naeye reported that (1) Pollex has a planet that is 2.5 Jupiter's and has 590 day orbit. (2) A paper in the journal Nature has a proposal by the University of Colorado and Northrop/Grummand to fly a mission to take a spectrum to find earth sized planets. The business meeting followed with the standard reports by the executive board. John Reed gave the clubhouse report. He thanked Brian Maerz for the 4 days that he spent brush cutting, mowing, and tree trimming. This helped Mike Hill, Bruce Berger, Dave Siegrist, Virginia Renahan and John Mauer to get the observing and lawn area cut down. He announced the Aug 5 picnic and the Aug 12 work party. He also told us to "Bring your Deet. Don't leave home without your Deet". The far barn doors were completed by Dave Prowton and Paul Cicchetti. Bruce Gerhard fixed the ground fault protection problem in the Knight Observatory. Don Dillworth is donating a clamshell dome. John Reed and company will be driving up to Booth Bay to look at it. Virginia announced a star party tomorrow night (July 14) at Halibut Point State Park. The CFA is having a star party on Aug. 4<sup>th</sup> at Hopkinton State Park. Paul Valleli announced that the Stellafane work party is being held on the weekend before the convention.

*- Al Takeda -*

## 2006 Conventions . . .

The 24<sup>th</sup> Annual Conjunction was held August 19<sup>th</sup> at the Northfield Mountain Recreation and Environment Center (see <http://www.philharrington.net/astroconjunction/>). At least 15 ATMoB members were there to support this convention, located only 1.25 hr drive from a Boxboro, MA carpool meeting spot. Of particular interest were the discussions by Sue and Alan French (*S&T*), John Davis, Phil Harrington and ATMoB member Glenn Chaple, on stargazing through a small telescope. There will be copies available at the September meeting of their handouts on fun asterisms to find with small telescopes and binoculars. Other presentations were on astrophotography in light polluted areas, how to evaluate binoculars, and a debate over the status of Pluto (there were many loud shouts of “Pluto is a dog”). The evening speaker gave an interesting cosmology presentation on galaxies with low surface brightness. LSB galaxies are galaxies whose contrast with respect to the background sky brightness is low, so much so that they are difficult to discover and therefore are easily missed. Although Barlow Bob setup his wonderful solar scope for all to use, the sun peaked out for only a few isolated moments.

Arunah Hill Days, August 26, Cummington, MA (in western MA) A group of five ATMoB members (keynote speaker Art Swedlow, Al Takeda, Sai Vallabha, Eileen Myers and John Reed) traveled about 2.5 hours from their meeting spot at the Holiday Inn in Boxboro to support the annual and free Arunah Hill Days. Despite the cloudy skies, the enjoyable day consisted of a tour of the 6", f/17 historic Gaertner Refractor and Observatory, winning raffle prizes, participating in the horseshoe throwing contest, rocket launches, and conversations with the amateur astronomers from the area. John Davis was present, and if you've never met him, at least read his excellent newsletter observing column “Deep Sky Treasurers” at [www.arunah.org](http://www.arunah.org). Evening events included Egypt eclipse traveler Alan Rifkin's exciting slides, topped off by Art Swedlow's historical perspective on stellar composition and spectroscopy. Art engaged the boy scouts and girl scouts in the audience in the discussion, making for a lively evening. No vendors, no observing. The group drove home in a light rain, only to find starry skies in eastern MA.

– *Eileen Myers* --



Stellafane - Brian Leacu won 1<sup>st</sup> Place in the Optical Competition (L-R) Phil Rounseville, Eileen Myers, Dave Prowton, Brian Leacu



Paul Vellelli won the Northeast Region of the Astronomical League (NERAL) 2006 Walter Scott Houston Award at Stellafane



ATMoB Members at the Conjunction

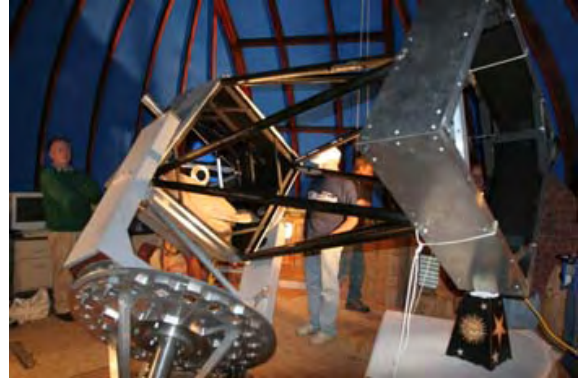


Art Swedlow is the Keynote Speaker at the Arunah Hill Days

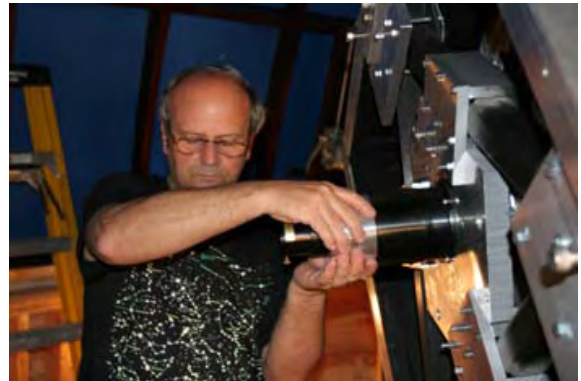
## A Night at the Wingaersheek Observatory . . .

A chance encounter with Scott Mulligan at the Conjunction star party allowed me the opportunity to observe through Mario's 32" relay scope for the first time. Scott had mentioned that he and Mario would be observing on Monday evening after the convention. I contacted Mario the next day and I arrived at his house at 9 p.m. that evening. We proceeded to open the dome and start up the electronics when we ran into trouble. Mario had commented that the motors were overheating and stopping after a short period. He had just changed the couplings for his RA motors but kept insisting that nothing else was changed. It was when he mentioned that the drive system was "so good that there was no backlash" that we realized that the gears were too tight. You have to have a little backlash or the gears will bind up. He loosened the gears, the motors cooled off and the drive worked flawlessly for the rest of the night. As an unbiased observer, I was asked to give comments on the scope and what I could see. When I looked at the stars at the edges they had no coma or flaring on any star up to 700X. I did notice that the stars were a bit soft at those levels. Mario confirmed that observation and he said that further collimation was needed to correct this. We then started to look at planetaries. This was the first time that I have been able to see colors and structures in those nebulas by using direct vision. We continued to "planetary hop" throughout the sky marveling at the structures that we could see through the scope. We briefly looked at M13. You can see stars right to the core without averted vision. Galaxies such as Stephen's Quintet actually can be seen and have structures that you can see without using your imagination. The highlight of the night was when Mario slewed over to the Veil Nebula. The amount of detail is unimaginable. The filaments in the main portions are interwoven with each other and look 3 dimensional. One part looks like the double helix. Mario insisted that I take the controls and slowly move around the complex. As I do, I start to notice patches of nebulosity all around the center portion of the Veil region. Some are like cirrus clouds and other areas show up as lighter patches against the black background. These are areas that I have never seen before in any telescope. I must have spent at least 20 minutes in that region of sky. We stopped observing at about 2 in the morning because we both had to go to work at dawn. Scott never showed up and I think that he missed a fabulous observing night.

– *Al Takeda* --



Mario Motta's 32" Relay Scope



Mario Inserting a Collimator



32" Primary, Mangin Secondary and Relay Optics

## Membership Report . . .

We have three new members to the club;

Bill Carney from Westford  
George Fishman from Waltham  
Richard Johnson from Milford, NH

- Dan Winchell -

## Clubhouse Report . . .

As a follow up to the July 8th work party, the August 12th effort used the previous accomplishments as a springboard. Good weather allowed considerable progress in painting the first coat on the East side of the barn and portions of the house South side above the bulkhead; this was done around the clapboard replacement lead by Dave P. Brian M. continued to cut brush on the observatory West side the next day. We are looking forward to the offer of the use of a bobcat by one of our members to allow ground leveling in the parking area. This and continued clapboard replacement/painting will be a large part of the September 9 work

party. PLEASE MARK YOUR CALENDARS. We look forward to the delicious lunches provided by the hard work of the Art-Sai Eileen food team. Progress in cleaning the 17" shows need for re coating the primary; this is being programmed in the near future. A big thank you to Bruce Gerhard, Paul Cicchetti, Dave Prowten, Jun-ichi Sano, Barry Jensen, Richard Johnson, Sai Vallabha, Bruce Berger (& Daisey), Al Takeda, Eileen Myers, Steve Clougherty, John Maher, Bernie Kosicki, Gary Jacobson, and Ross Barros. See you on September 9th!

- John Reed, Steve Clougherty, and Dave Prowten-

### Clubhouse Saturday Schedule

|         |                    |                  |
|---------|--------------------|------------------|
| Sept 2  | John Reed          | Paul Cicchetti   |
| Sept 9  | Closed -Work Party |                  |
| Sept 16 | Dave Prowten       | Tom Wolf         |
| Sept 23 | Sonawane           | Shilpa Lawande   |
| Sept 30 | Brian Leacu        | Phil Rounseville |
| Oct 7   | Closed -Work Party |                  |

## Executive Board Meeting . . .

The Executive Board will be meeting on October 19<sup>th</sup> at 7 p.m., at the clubhouse in Westford, to discuss club business and proposals.

- Al Takeda --

## Astro Trivia . . .

Astro Trivia was a monthly column in Star Fields in the early days when I was editor. Our new president has asked me to revive it, so here goes:

**APERTURE ROCKS**, ask Mario. Author and astronomer, Timothy Ferris, described this observation in his book "Seeing in the Dark." He was observing the cluster 30 Doradus in the Tarantula nebula with the 2.5 meter telescope at the Las Campanas Observatory in Chile. It was so bright it made him squint. "I recoiled, and found myself gazing at a stream of light that spilled out from the eyepiece like a flashlight beam. Looking up, I saw that it projected a fuzzy, circular image of the cluster on the inside of the dome".

**NEWTON'S REFLECTING TELESCOPE** was built in 1668 according to Mark Pendergrast in his book "Mirrors", Basic Books, 2003. Newton cast his own alloy--3 parts copper, 1 part tin with a touch of arsenic. He ground it against a convex copper tool, then polished it with pitch. The mirror was 1-1/3 inch in diameter. He tried to make it a parabola, but it turned out spherical with a turned-down edge. He mounted it in a 6-inch tube and used a small diagonal flat mirror in the center of the tube. Newton made an improved model in the Fall of 1671.

**THE BIG BANG MODEL** of the universe was first proposed by George Lemaitre, a Belgian Catholic Priest and physicist, in a paper in 1927. By the way, Laemaire got his PhD from MIT. Even earlier, 1922, Alexander Friedmann, a Russian mathematician, proposed an evolving and expanding universe. He set the cosmological constant in Einstein's general relativity to zero and showed the possible results. Remember, Hubble did not discover receding galaxies until 1929.

Any comments? You can reach me at TPoulos829@aol.com . Also check out my blog at www.simpisci.blogspot.com

- Ted Poulos-

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**October *Star Fields* deadline  
Friday, Sept. 29<sup>th</sup>**

**Email articles to Al Takeda at  
secretary@atmob.org**

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**POSTMASTER NOTE:** First Class Postage Mailed July 7<sup>th</sup>, 2006

Amateur Telescope Makers of Boston, Inc.  
c/o Dan Winchell, Membership Secretary  
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## FIRST CLASS

### EXECUTIVE BOARD 2005-2006

PRESIDENT: Virgina Renehan (978) 283-0862  
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2004-05 Bruce Berger (978) 256-9208  
2002-04 Eileen Myers (978) 456-3937

### COMMITTEES

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Steve Clougherty (781) 784-3024  
David Prowten (978) 369-1596

HISTORIAN: Anna Hillier (781) 861-8338

OBSERVING: Virgina Renehan (978) 283-0862

## 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 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.*

Sept. 7 Full Moon

Sept. 14 Last Quarter Moon

Sept. 15 Moon reaches greatest geocentric northern declination (+28d 43.4m)

Sept. 22 New Moon

Sept. 23 Autumnal Equinox

Sept. 30 First Quarter Moon