ATM of BOSTON Established 1934

STAR FIELDS

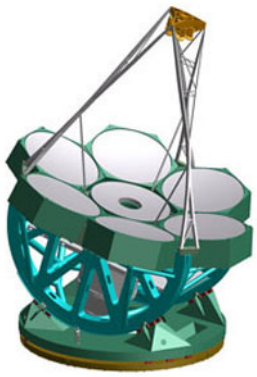
Newsletter of the
Amateur Telescope Makers of Boston
Including the Bond Astronomical Club
Established in 1934
In the Interest of Telescope Making & Using

Vol. 19, No. 2 February 2007

This Month's Meeting…

Thursday, February 8th, 2007 at 8:00 PM
Phillips Auditorium
Harvard-Smithsonian Center for Astrophysics
Parking at CfA is allowed for duration of meeting

Dr. Dan Fabricant



The Giant Magellan Telescope

Construction of the world's largest, state-of-the-art, next generation telescope is underway. The Giant Magellan Telescope (GMT) is a 25-meter diameter optical-infrared telescope that will be sited in Chile. It is being designed and funded by a consortium of institutions including the Harvard-Smithsonian Center for Astrophysics, with a planned completion date of 2016. GMT's key science areas include formation of the very first stars and galaxies, the nature of planets beyond the solar system, and new discoveries. This month, Dr. Dan Fabricant, Senior Physicist at Harvard-Smithsonian Center for Astrophysics and Project Scientist for the GMT, will describe this extremely large telescope and its scientific mission.

The GMT's giant primary consists of seven 8.4-meter segments, six of which are identical off-axis segments. This arrangement will give the GMT 4.5 times the collecting area of any current optical telescope and the resolving power of a 25.6-meter (84-foot) diameter telescope, or 10 times the resolution of Hubble. The GMT's primary mirror segments are light-weight spun cast borosilicate mirrors to be cast and polished at the University of Arizona's Mirror Lab. The first primary segment has been cast and is being prepared for polishing.

Dr. Fabricant, a leader in the design of new instruments for optical astrophysics, led the development of the optical and instrument design for the Multiple Mirror Telescope (MMT) in Arizona. When the MMT was converted from a six 1.8-meter telescope array to a Cassegrain telescope with a 6.5-meter primary, Dr Fabricant served as PI for the MMT conversion instruments including the Hectospec, Wide Field Corrector, Binospec imaging Spectrograph, and f/5 Wavefront Sensor.

His research interests include optical and x-ray astronomy, galaxy clusters, large scale structure and galaxy spectral evolution, and instrumentation for optical astrophysics. Along with his work on the GMT, Dr. Fabricant serves as OIR Division Associate Director, and Associate Editor for Instrumentation Publications for the Astronomical Society of the Pacific. He has authored /co-authored over 150 papers, and has pioneered the development and design of new technologies for large instrumentation such as the MMT and GMT.

Please join us for dinner with Dr. Fabricant at 5:45PM at Chang Sho Restaurant located at 1712 Massachusetts Ave. in our fair city, Cambridge, MA.

President's Message…

February and March bring a long list of star parties as many schools look for hands-on opportunities to address the guidelines for space science and astronomy as contained in MA Curriculum Frameworks. Amateur Telescope Makers of Boston volunteers play an important part in helping spark student interest in science and extend classroom learning experiences in fun ways. For those of you who have not already done so, please take a moment to explore the ATMoB web site's Star Party listings and details. Consider joining us at a star party event even if you have no experience in this venue. It isn't necessary for you to bring a telescope – just come and talk to students about astronomy, help with an activity, say a word about your favorite Messier object or explain something about the telescope you use. You will have a great time – guaranteed!

This year on March 3rd we will be able to observe a total lunar eclipse, weather permitting. Several members have posted information regarding that event including the following web links:

http://aa.usno.navy.mil/data/docs/LunarEclipse.html

http://sunearth.gsfc.nasa.gov/eclipse/OH/OH2007.html#2007Mar03T

For those interested in photographing the event check out Mr. Eclipse - Fred Espanak's lunar photography web page for some good hints: http://www.mreclipse.com/LEphoto/LEphoto.html

Or check the following general resources for eclipse photography
http://www.mreclipse.com/MrEclipse.html#Moon

For those of you heading to a star party or otherwise observing the March lunar eclipse with your kids, the club has some great educational materials on hand to prepare for the event. These materials, developed by the Astronomical Society of the Pacific in collaboration with NASA, are available to the club as a participating member of the Night Sky Network (NSN), a network of more than 200 astronomy clubs and amateur astronomers who are interested in sharing astronomy with the public. The new NSN materials "Shadows and Silhouettes" provides ideas for demonstrations, hands-on activities, and mini-lessons on shadows and silhouettes in the astronomical context: how shadows help us observe craters on the Moon, activities to demonstrate phases of the Moon, eclipses, and why eclipses don't happen every month. These tools can be used at any star party.

The materials also include activities to demonstrate and explain transits and their importance for NASA's Kepler Mission. Due to launch in 2008, Kepler is NASA's first mission dedicated to detecting transits of Earth-sized planets in the habitable zones of sun-like stars. Again, we have great educational resources available for fun with shadows and silhouettes. For those interested in learning more about the availability of these free instructional materials please give me a call or send me an email.

.~ ***Virginia Renehan, President*** ~

Jan. Meeting Minutes . . .

The January meeting started with the announcement of the passing of Dr. Martha Hazen, curator of the Harvard College Observatory's Photographic Glass Plate Collection on December 23, 2006.

Our 2 speakers for January were Jim Foy of the North Shore Amateur Astronomy Club and John Boudreau of ATMoB. Jim Foy started his astronomy adventures only 10 years ago and quickly upgraded his equipment to take astrophotographs. John Boudreau has been doing astrophotography all his life and moved from film to digital in 2002.

Jim Foy began with an explanation of his philosophy on his astrophotography setup. He really wanted to photograph from his front yard. He now lives near a school, cars pass his house quite frequently and light pollution is an issue. To a lot of people this would be frustrating but Jim thought differently. "I like rolling the little gray cells. To me one of the most important things is learning. And what I like are things that are hard." So he set about customizing his setup to allow imaging under those conditions. Jim mentioned that he had to make choices to compensate for those factors and that led him to where he is today.

His suggestion was to start by learning. Jim recommended the books "The New CCD Astrophotography" by Ron Wodaski and "Photoshop for Astrophotographers" by Jerry Lodriguss.

Foy started from the ground level and worked up. He used Wodaski's suggestion that one should place 60% of the budgeted money into the mount. The better mounts tend to be more stable and the periodic error, the slow sine wave pattern generated by the worm gears are tiny. Mounts that are appropriate are the Astrophysics, Takahashi, Mountain Instruments and the Losmandy G-11. The Losmandy can be a good mount but it's worm gear requires more adjustments and maintenance than any of the others. The drawback is that the better mounts tend to be very expensive. Jim now has an AstroPhysics mount.

Moving on to telescopes, Jim noted that "I live in New England." He can shoot big targets and a lot more of them by using a shorter focal length. He also noted that "the better the optics the sharper, the crisper and more color corrected your images will be." His Takahashi FSQ106N satisfies that requirement.

To optimize your imaging potential from your camera, it should be matched to the telescope. In general, "the shorter the focal length… you want to have a smaller pixel for the CCD camera." Jim's ST-2000XM CCD camera has small 7.4u square pixels. He also talked about the one shot color camera verses the monochrome ones with a filter wheel, blooming gate verses anti-blooming gate and guiding verses non-guiding ones. When choosing the camera, "there's not a wrong answer." It depends on the target, type of telescope and how much control over quality you want.

Foy then walked us through a photo session and described what software program is needed to focus and guide on a target. He uses Maxim DL to get a Full Width Half Max (FWHM) readout to achieve critical focus. Jim describes this process "as a kind of Zen in focusing. You need to spend time on it. And it takes a little bit of practice." He also warned that because of the short focal length, a 2- degree change in temperature will cause a focus shift.

When he finally opens the shutter to expose the first image, he has already studied the object and has determined the type of object and its characteristics, what the sub-framing looks like, whether it will fit on the chip, exposure times and what filters to use to enhance its appearance.

The final issues deal with compensating for problems with the CCD chip itself. Electronic heat noise, variation between each pixel and dust bunnies on the chip must be removed by taking a dark frame, taking a bias frame and a flat field image respectively.

John Boudreau started by showing his high definition webcam produced images of the planets Mars, Jupiter and Saturn. John described the making of his Mars rotational images that he produced during the opposition of Mars in 2005. New England skies usually limit the seeing to 150 to 200 miles and his images were at that limit as he presented his favorite Martian feature Gomer Sinus. During the nights of good seeing, John used his Celestron C-11 using eyepiece projection with a Philips 2U 840K.

Having been asked by a lot of people, John ran a short program on how to navigate Registax. He used a short 20-second video instead of his normal 4-minute one. The image of Mars were stacked and aligned using a spectral image that Registax creates. The graphic then showed a rough matching curve. The higher the red curve gets, the image is better. A slider will allow the user to reject the outer ones. The wavelet control, while a powerful tool, creates artifacts and Boudreau only recommended using the first 2.

John proceeded to describe his deep sky images, taken with his TEC 140 refractor and his SBIG ST-10 CCD camera from light polluted Saugus, MA and from the darkness of Bailey Hill, NH.

The Cresent Nebula image gave us an example of a narrowband filter being used. The Hydrogen alpha filter that has a bandpass of 4.5 nm can allow "decent deep sky photos from downtown Boston. It's that effective!" It requires longer exposures that are then stacked but it allows nebulas to be recorded in Saugus. He showed IC1396, M16 (Pillars of Creation), Pickering's triangle, North American, Pelican Nebula and the Horsehead Nebula, all taken with the ST-10 and a hydrogen alpha filter.

John had some advice for the novice. "If you can't get through webcamming, I don't think you want to mess around in deep sky CCD. It can get very frustrating."

Photo by Jim Foy

Photo by John Boudreau

Virginia made an announcement from Kelly Beatty from Sky and Telescope. He emailed Virginia with some news that that the Outdoor lighting bill was filed by Representative Jim Marzilli. He met the filing deadline yesterday. It is now House docket 1092.

NELPAG has claimed the domain nelpag.org. and will be redesigning their website. They are looking for someone with web design experience to be willing to help with that effort. It need not be a long term commitment so if someone wants to be the NELPAG webmaster contact Kelly Beatty at skytonight.com or (617) 864-7360 ext 148 or Dan Green at Harvard.

The business meeting began with reports by Secretary Al Takeda, Treasure Gary Jacobson and Clubhouse Director John Reed.

John Reed asked that members please write in their activities that they are doing at the clubhouse in the signup sheet. The clubhouse committee would also like to find out who has taken the C-14 classes.

Virginia acknowledged the people that participated in the CfA star party on Dec. 16. The members were Dick Koolish, Ross Barros-Smith, Nanette Benoit, Bruce Tinkler, and John Sheff. She also asked for volunteers for some of the star parties coming up this year.

Eileen Myers was congratulated for her work organizing the New Year's Eve party.

Bob Naeye will be moving to Washington, DC to work at the Goddard Space Flight Center, promoting NASA's missions. He asked Virginia to say goodbye to the group. He will be missed.

Steve C. announced that 2 classes for the C-14 would be held in January and that the signup is on the club's website.

Peter Richardson discussed the changes to the events calendar. He has added features that make it easy to manage the signup of attendees to all of the events. He has also added the ability to renew membership on-line but payment is still by check. New people can also join using the public website. Peter also described how postings of comments and questions can be made on the message boards in the members section.

Dr Fred Ward has reported that the Dept of transportation of NH has replaced 2 fixtures with full cut-off fixtures.

Eileen Myers is promoting the idea of having a workshop every full moon weekend. Please give her suggestions or volunteer for a class.

Virginia and Dick Koolish reported that the Model Engineering Show is on Feb 17.

~Al Takeda, Secretary ~

Membership Report . . .

We have four new members this month;

Grace Cho from Allston
Marc Emmerich from Winchester
Julie Kaufmann from Medford
Christopher Levins from Somerville

The current membership of the club is 312 based on the information in the "new to you" section of the atmob.org web site.

~ Dan Winchell, Membership Secretary ~

Clubhouse Report . . .

Warm weather provided the January 6th work party (2007#1) another day for outdoor projects. George P., Brian M., Al T., and Steve C. continued the tree trimming effort to regain the east view on the Dennis Millon observing field. A recent check showed Brian M. has again reduced the brush pile to chips and spread them over the field west of the observatory to retard summer growth. The grounds also received a general cleanup with snow fence in place.

Lunch was provided by our crew led by Art S.

Dave P., Paul C., and John B. continued the effort to minimize the drag on the roll-off-roof of the Knight Observatory. Their efforts paid off very well; too well for the recent high winds when some members opened the roof and found the wind was closing it! David has designed and will be installing a locking mechanism to be used when the roof is opened. Please note we are to USE this lock EVERY time the roof is rolled fully open to preclude telescope damage.

The ground still being thawed allowed the installation of the conduit between the tool shed and the near barn; this will be continued when near barn work is completed. Work slowed considerably after 3pm to allow the first monthly Workshop to be conducted by Phil Rounseville; everyone agreed this was a great beginning for this series.

For the Feb. 17 and Mar. 17 New Moon weekends, we intend to have a Messier Marathon at the Clubhouse. Plan to stay late and spend the night if you want to capture all 110 Messier objects.

The next Work Party (#2) is this Sat Feb 3rd at 10am. Inside work will finally dominate the day with near barn, library/office, and general cleanup taking top priority. Workshop #2 conducted by John Maher, on CCD camera operations, will start at the end of the work party on Feb 3rd.

~ John Reed, Steve Clougherty, and Dave Prowten ~

Clubhouse Saturday Schedule

Feb. 3	Dave Prowten + workshop leader	
Feb. 10	Gary Jacobson	Eileen Myers
Feb. 17	Rich Nugent	John Panaswich
Feb. 24	Bill Toomey	Tom Wolf
Mar. 3	Dave Prowten + workshop leader	
Mar. 10	Bruce Berger	Mike Hill

C14 Training Sessions…

This month 12 members graduated from the C14 / Paramount Training sessions held at the Ed Knight Observatory on January 18 and 25. Graduates became familiar with operating the C14, Paramount GT1100 and The Sky systems, as well as general observatory operation. Both sessions filled up quickly with long wait lists, and more sessions are planned. Great thanks go to Mike Hill for writing the manual used as class guide during training.

Graduates of the first session were (l to r) Art Swedlow, Glenn Meurer, Eileen Myers, Al Takeda, Mark Schlak, Ross Barros-Smith and Dave Simonich. Image by Bruce Berger.

Graduates of session two are (l to r) Peter Richardson, Tom McDonough, Bill Toomey, Jerry Stiles, John Boudreau, Bernard Murphy and Joe Kristl. Image by Bruce Berger.

~ Bruce Berger ~

Executive Board Meeting…

There will be an Executive Board Meeting on Tuesday, February 27th, 7PM at the clubhouse in Westford. The meeting is open to the membership.

~ Virginia Renehan ~

Star Parties, Thank You!. . .

John D. O'Bryant School, Roxbury Crossing

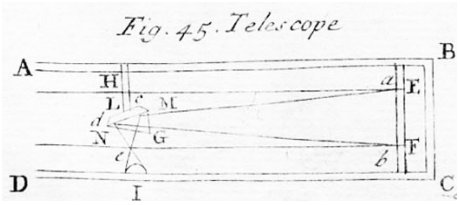
January 27th - while only the Moon was visible and even then, only for a short time, students and parents had a great evening just looking at distant city objects and talking about telescopes. Beyond their initial surprise about how big things looked, questions such as, "why is it upside down and backwards", "how far can you see", were heard at every telescope station. Kids seemed to walk away with a deeper understanding of how a telescope works. Along with ATMoB telescopes, students had the opportunity to try out 6 other "exploration stations" with hands-on activities and demonstrations, including star lab, robotic micro-observatory, Big Dipper Star Clock, Moon Predictions, Kinesthetic Astronomy, and Getting Started in Astronomy.

This event was a collaboration of the MIT Kavli Institute for Astrophysics, Harvard-Smithsonian Center for Astrophysics and Amateur Telescope Makers of Boston. We look forward to holding more events together. (No lollipops next time).

Thank you ATM's Ross Barros-Smith, Nanette Benoit, Bernie Kosicki, Haldun Menali, John Reed, George Roberts, John Sheff and Bruce Tinkler for your willingness to help out - even under cold, overcast skies! It was great working with you that night!

~Virginia Renehan~

Roxbury Star Party Star party volunteers at the end of the night. (l-r) Bernie Kosicki, Virginia Renehan, Ross Barros-Smith, Nanette Benoit, Haldun Menali, John Reed, Bruce Tinkler and John Sheff. Image credit: Mike Sullivan - school administrator.



Historian's Corner…

I found it disturbing that the Center for Astrophysics and Harvard College Observatory show no signs of acknowledging the 50th anniversary of "Moonwatch Cambridge" or Moonwatch Central as I refer to it. This was the main gathering place for all data for observing Sputnik and Vanguard. Due to restrictions and copyright infringements: I am not able to display newspaper articles or share the information I have in the Amateur Telescope Makers of Boston's archives. Smithsonian in Washington, D.C. plans a Symposium for October 2007, but has not as yet received any funding. There is a kick-off celebration in Vienna, Austria. India has been planning all of 2006. There is a website for the International Heliophysical Year. But, nothing for the United States.

I am just a lowly Amateur waiting for something to happen where it all began in October 1957.

~ Anna Hillier – Historian ~

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Bob Naeye on his way to a new post at the Goddard Space Flight Center donning his ATMoB sweatshirt. Image by Virginia Renehan.

Newsletter Corrections…

January 2007 Clubhouse Duty - Ed Budreaus not John Boudreau was suppose to have clubhouse duty on January 13.

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March *Star Fields* deadline
Friday, Feb. 23rd

Email articles to Al Takeda at

secretary@atmob.org

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POSTMASTER NOTE: First Class Postage Mailed March 3rd, 2007

Amateur Telescope Makers of Boston, Inc.
c/o Dan Winchell, Membership Secretary
20 Howard St.
Cambridge, MA 02139-3720

FIRST CLASS

EXECUTIVE BOARD 2006-2007

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	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

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

Feb. 2 Full Moon, Moon passes 1.5 deg. N of M44 (Beehive star cluster)
Feb. 7 Mercury at greatest eastern elongation (18 deg.) – evening object
Feb. 10 Saturn reaches opposition, Last Quarter Moon
Feb. 17 New Moon
Feb. 24 First Quarter Moon
Feb. 28 Moon passes 1 deg. N. of M45 (Pleiades star cluster)