



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. 14, No. 11 December 2003

President's Message...

OUR DECEMBER MEETING has become an ATMoB tradition: Tal Mentall and Bob Collara will offer seasonal recitations. Anyone wishing to add another should contact me.

At this time of Thanksgiving we are all grateful for our hard-working executive board, clubhouse directors and committee, star party coordinator, area coordinators, mirror grinding mentors, and all club members who put much devotion into helping the club and into public outreach. We are grateful to everyone who shares views through their telescopes with club members. It is this kind of one-on-one teaching that makes observing at the clubhouse such a fun experience. And we are grateful that sometimes New England weather is actually clear and steady and the seeing is terrific.

Just as an advance announcement, January's meeting will be a Show-and-Tell and Swap Table. *-Eileen Myers-*

This Month's Meeting...

Thursday, December 11th, 2003 at 8:00 PM

**Phillips Auditorium
Harvard-Smithsonian Center for Astrophysics**

THIS MONTH'S SPEAKER will be David Aguilar, the Director of Public Affairs at the Harvard-Smithsonian Center for Astrophysics (CfA). The title of his talk will be "Telescopes I've Known And Why We Study Astronomy". David will talk about why human beings find astronomy so fascinating, as told from the viewpoint of a long-time glass-pusher.

For the past 25 years, David has been actively involved in space/science education programming, media publicity, and public speaking for academic and corporate environments. He is the author of "The Seven Wonders of the Universe," a 3-D IMAX movie slated for production in 2005, as well as numerous popular science articles for Sky & Telescope, Astronomy, and Challenge magazines.

Please join our speaker 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.

-Eileen Myers, President-

November Meeting Minutes. . .

Eileen Myers opened the 763rd meeting of the Amateur Telescope Makers of Boston with two short recollections from the club history. One was of an observing session on April 12th, 1975 on Boston Common organized by the ATMoB to view a Lunar Eclipse. The other was about a time around 1984 when a number of members had formed a small group who would go on regular observing treks to each others homes, mountains tops and local parks. These sessions would often include the members' wives and children and also a cookout if it wasn't a wintertime session. Eileen also mentioned that on March 26th of next year we will celebrate our 70th anniversary, and would like to organize some sort of celebration of this event. Our featured speaker tonight was Joshua Roth who is an editor at Sky and Telescope. Joshua spoke to us on Cosmology, Dark Energy and the Accelerating Universe. It was really a very good history lesson as to what has been done in the past 100 years since Hubble first showed that the Milky Way is not isolated or at the center of our universe but instead just a small part of it. Hubble used RR Lyra and Cepheid variable stars to make the first estimates of galactic distances and later used spectroscopic methods to infer that the farther away a galaxy is, the faster it is moving away from us; The first evidence of an expanding universe. Hubble compared the observed velocity with distance and came up with an equation that included a constant, aptly named the Hubble Constant (H_0). By 1968 the idea was put forth that gravity should be slowing down expansion over time. In connection with this idea was the fact that the visible stars only amounted to 1% of the material needed to slow it down which led to the concept of Dark Matter. The Hubble constant was eventually used to calculate the age of the universe which came out around 8 billion years. The problem with this was that other research into stellar formation and the H.R. diagram were showing the age of the oldest stars to be 14-20 billion years old. The Hubble Constant was in question and a way was needed to pin this down more accurately. This came about through the use of another, newer, distance yardstick – Type Ia supernova. Research using these brought about a surprising discovery – the universe was in fact no longer slowing down but was now speeding up - accelerating. Although scientists were puzzled with this fact, the concept of Dark Matter and Dark Energy were applied to the solution to this new discovery. These ideas are still under investigation and there will undoubtedly be more discoveries in the future as astronomers probe deeper and farther and more accurately into the universe. This is a hot topic nowadays and one that requires much thought. I have done my best to summarize this talk but apologize if I have missed some of the finer points. For those of you who would like to learn more I would recommend a book called "The Extravagant Universe" by Robert Kirshner. It covers all of these topics in much detail and does a good job of putting the same historical perspective on the subject as our speaker did so well tonight. Following the speaker was the regular business section of the meeting. Membership

Secretary Shilpa Lawanda announced three new members. Paul Cicchetti summarized the last work party which included the final conduit installation for the observatory data run and more brush removal around the observing field. Steve clougherty presented an observing report focusing on the recent aurora and Lunar eclipse. Glen Chapple provided us with the opportunity to acquire a set of colored filters in small sheets to make up a filter slide for planetary observing. Bruce Berger presented a short summary of a book review he has done on the new "Cambridge Encyclopedia of Amateur Astronomy." Bruce also informed us of three recent donations made to the club. Mario Motta provided a short but encouraging update on Janet Matties health. Mario also asked for volunteers to assist in putting together his new observatory dome. The meeting concluded with aurora pictures presented by John Reed and a Lunar eclipse video put together by Bernie Volz using Marios' pictures. – *Michael Hill* -

Treasurer's Report...

As of November 24, 2003:

Checking account balance: \$14737.07
Money market savings account: 30594.80
Total: \$45331.87

Of that:

Land fund: \$3001.01
Clubhouse key deposits: \$155.00

During this time period, the club received:

Land fund donations: \$ 16.05
General donations: 135.00

Thanks to renewing members for their generous contributions to the club's fund base. - *Gary Jacobson, Treasurer* -

Membership Report...

Please welcome our new members,

ANDREW LEVIN, Burlington MA
ROBERT NAEYE, Watertown MA
ALEXANDER HILLER, Watertown MA
JOHN KULOWIEC, Marlborough MA
TOM MCDONAGH, Acton, MA
CHRISTOPHER PIKULA, Lexington MA

We also welcome back some old friends, Chris Houghton, Joshua Roth, Richard G. von Blucher and John Webb, who have re-joined us this year.

- *Shilpa Lawande, Membership Secretary* -

Executive Board Meeting...

AN EXECUTIVE BOARD meeting was held at the clubhouse on Monday, November 17th.

Clubhouse Report

To be presented at meeting.

Clubhouse Saturday Schedule

Dec 6	Dan Feldkhun	Peter Psyhos
Dec 13	Jack Drobot	Joseph Rothchild
Dec 20	David Richardson	Tom Wolf
Dec 27	Dave Siegrist	Jim Suslowicz
Jan 3	TBD	TBD
Jan 10	TBD	TBD

Upcoming Star Parties...

Wed, December 4 (cloud dates Thurs Dec 4 or Tues Dec 9 or Wed, Dec 10) Time 7:00-8:00pm - Hennigan Elementary School, 200 Heath St., Jamaica Plain in Boston. 3 classes of 6th graders, ages 10-11. Expected attendance 200. They apparently have a nice location with a field, fairly free of light pollution, adjacent to parking. Teacher is Tamikha Cantave. Coordinator Howard Le Vaux at levaux@theworld.com

Monday, December 22 - Harrington School, Chelmsford Time TBD, setup is in school parking lot – 3rd graders, expected attendance 200. Coordinator Bruce Berger at bruce@scopemaker.com

Star Party Thank You's...

November 8th Lunar Eclipse Party - Thank you so much to all the folks who helped with the Museum of Science Lunar Eclipse star party! It was a great success and we estimate that at least 1,000 people attended (maybe more!). The evening was crisp, but warm with enthusiasm! Thanks Again!! Sincerely, *Noreen Grice, Planetarium*

An impromptu neighborhood star party to watch the Lunar Eclipse on Saturday night was held by Bruce Tinkler of Lexington. Bruce reported that he let many neighbors know shortly after the eclipse started and went outside with two Orion UltraView 10X50 binoculars and his Meade ETX125EC (5"). A total of 17 people attended the viewing, mostly children. The preferred optics was the binoculars because of the ease of viewing and the wider field of view. Ages for the children ranged from 2 to teens. "Everyone had a good time, although it was very cold

(temp at the end was 20F). We were out there from 6:30pm to about 8:45pm. I attempted some digital pictures of the eclipse but they did not turn out. I didn't think to take any of the crowd!" - *Bruce Tinkler-*

Three Boston University graduate students from the Knight Center for Science and Medical Journalism, coordinated by BU student Gaia Remerowski, worked with Amy Grossman, daughter of ATMoB member Martin Grossman, on a television project with the Museum of Science to film the exhibit called the "Community Solar System", the to-scale exhibit of all the planets in the solar system scattered around the city. On Saturday, November 8th they went to see the planets at the various locations around the city and then ended the day on the roof of the Museum of Science for the "Lunar Eclipse Star Party." Amy is 14 years old, a freshman at Lexington High School, and had just completed her first quarter science lab on astronomy. Her father reported that Amy jumped at the idea of working on the project. Amy also found a friend to do it with her. The plan was to shoot a movie of 10-15 minutes total duration. Both kids were filmed talking about each of the planets for about a minute each. The movie is a project for a film festival. Amy and her friend also used the time towards their needed high school community service requirement.

The lecture at the Lynnfield star party on October 30th started with the entire audience of about 250 5th graders with their families (5 classes), along with the new astronomy club of Lynnfield High School (40 teenagers) getting up and going outside to witness the most massive aurora display in years. The group saw brilliant red bands, pulsing green flares, and curtains in the sky. It eventually died down a bit, so we all went inside, and I continued the lecture. Afterwards we all went outside to look through the telescopes, and had a grand night, though it was a bit hard to see things due to the bright aurora sky. I've been clouded out, rained out, never aurorad out before for a school star party! Quite a night. Thanks to the following volunteers: John Blomquist, D. Ronnow, Jack Drobot, Eileen Myers, George Hawkins, Brewster LaMacchia, and Jonathan Hopewell. There were a couple of other scopes out there, so if I missed a name, please let me know. -*Mario Motta-*

Our thanks go to those who were able to help out at the star party at the Fiske Elementary School in Lexington on Monday, November 3rd. They are diving into astronomy with great enthusiasm, thanks to the PTA's new science coordinators (Pat Slane and his wife - Pat works at CfA). The skies were mostly cloudy, but there were many astronomy related activities to see and do indoors in the gym for the kids (kindergarten through 6th grade). Eileen was even able to catch glimpses of the moon. Thanks go to Eileen Myers and Charlie McDonald. Anna Hillier also dropped by. Were there any other ATMoB members who were there? We want to make sure we acknowledge everyone. -*Peter Psyhos and Kathy Cunningham-*

A Three-Tube Dobsonian

For those of you who don't know me, my name is Bob Smith. I live in Marlboro, Mass, and have been an ATMOB member since May 2001. This is my first attempt at telescope building. I felt that since I belonged to the Amateur Telescope **Makers** of Boston, that I should at least attempt a scope-building project at some point.

This scope started life as a Coulter 13.1", F4.5 Odyssey. I originally obtained the scope from ATMOB club member Dave Aucoin, who had transformed it from the Coulter into a scope optimized for planetary nebula observing. Dave has an excellent article on this transformation on the ATMOB website.

Once I used the scope a few times, I realized that it was a little too large and heavy for me to want to take out at a moments notice. As a result, I decided to rebuild the scope into something even smaller and lighter, re-using as many of the parts as possible. I bought "The Dobsonian Telescope", by Dave Kriege and Richard Berry. It provided some valuable insight into what to do and what not to do when building a Dob. I didn't want a scope like all the others, however, so I searched the web for alternatives.

I found this scope at <http://www.ultralightsopes.com>. The design is by Albert Highe, and has all of the features I was looking for. It's simple, lightweight and fairly small. I had been looking at some of the other ultralight designs by guys like Bruce Sayre, but I didn't have the ability to work in metal that easily. Albert's design is a minimalist design in wood, so I decided to go for it and set to work. I used 1/2 inch thick Appleply plywood throughout. I have a friend who kindly loaned me the use of his woodshop to perform all of the woodwork.

Since I wanted a lightweight scope, I left off everything I didn't consider essential. That meant that the drive system and battery, dew heater system, and the motor on the focuser had to go.

The optical tube assembly consists of a single ring of 1/2 inch Appleply plywood, with the Astrosystems spider with 2.6 inch secondary and the Moonlite crayford focuser attached to it. I also have a bracket that holds a Rigel Systems QuikFinder 1x finder and the Sky Commander digital setting circles computer/control box. The Sky Commander allows you to "zero in" on any of the 9000+ objects in its database. I was able to find any object I desired the first night using this system.

The mirror box is a little unusual. It uses two pieces of 1/2 inch Appleply, one for the base and mount for the mirror cell, and a ring above it. I bought the mirror cell from Ultralight Scopes. It's a triangular piece of cast aluminum and uses six pads (T-nuts) in a circle to support the mirror. I know this is a deviation from the "recommended" 9-point

support system, but it was designed using PLOP, and it works great for this size mirror. The mirror is held in place with silicone caulk. There are no clips or slings to hold the mirror in place. The original design uses a fiberglass tube to connect the mirror base plate to the top ring to form the mirror box. I tried to make a fiberglass tube, but failed miserably. I decided to build the mirror box like a standard secondary cage instead, using aluminum tubes with push-in inserts. I used Kydex to keep out stray light.

The rest of the OTA consists of three parallel aluminum tubes. They're 1 1/2 inch diameter, .065" thick. The two lower tubes hold the altitude bearings, held in place with two, 1-inch thick Appleply clamps. The altitude bearings can slide up and down the tubes about an inch as needed to compensate for balance. The upper tube holds the 10x50 right-angle viewfinder. I made a mounting bracket out of an aluminum conduit connector and used thumbscrews to hold it in place.

All three tubes are retained at the mirror box and the secondary ring using nine, 1-inch thick Appleply clamps, three at the secondary and six on the mirror box. I had to make 13 clamps in all.

The rocker box consists of 1-inch Appleply sides and bottom with a 1 inch thick ground board. All of the bearing surfaces used by the scope are the standard Teflon on Ebony Star laminate.

This scope has proven easy to balance and use and weighs a total of about 50 pounds. I hope more people will become interested in this design and in ultralight Dobs in general. There are many excellent designs out there. This is only one. A lighter scope is a lot more likely to be used than a heavier one, which is the goal after all, isn't it? - **Bob Smith** -



Another Mirror Finished

KEN KENYON has finished his 8" mirror and is ready to put it into his new telescope. His mirror is an 8" F/7.3 and took a little over a year to complete. Ken had to parabolize three times as the first two he overshot the mark and ended up with a hyperbola, a very easy thing to do. The first two attempts, however, were good practice for the third time all went very smoothly requiring only two times around the barrel and ending up with a very nice mirror with a wavefront error of 1/9th wave. This means the surface is good to 1/18th wave! Congratulations to Ken and I hope this inspires some of the other mirror makers to come back and set themselves to completing their mirrors as well.

New Year's Eve Party...

WHERE CAN YOU go to celebrate First Night with your family and friends and not have to drop a whole bundle of money? The ATMoB clubhouse of course! Festivities will begin around 7 pm and will go on past midnight. There will be the opportunity to shout "Happy New Year" every hour on the hour, starting with Greenwich New Year's and continuing through Eastern Daylight Time New Year's. Please come and join the fun at any time. Bring any sort of food to share. There will be plenty of non-alcoholic beverages. The clubhouse will be warm, and your favorite planets, stars and galaxies will be joining us too. The forecast looks good (ok, so it is a bit early to know). Don't forget your warm observing clothes and boots. See you there. P.S. In keeping with tradition, the club's sensational singing lobster will attend. Please contact John Reed to help set up the festivities.

Website Thank You...

WE WISH TO thank Terry Magrath for hosting our club website and email lists. Thank you Brewster LaMacchia, Lew Gramer and Bernie Volz for doing the necessary coordination and making a smooth transition. We appreciate and applaud all of your labors. *-Eileen Myers-*

Donations...

Donations were received from past club member Edgar O. Parker, 84 years old, who studied astronomy with Harlow Shapley at Harvard College Observatory. Shapley was the director that oversaw Oak Ridge during the commissioning and installation of the 60-inch reflector. As a teenager Mr. Parker attended club meetings at the Harvard Extension on Jarvis Street in Cambridge while they were under the direction of Mr. Hargboll. Mr. Parker told quite a few stories, including belonging to an astronomy or ATM club that was in Cambridge but moved to Woburn sometime in the 40' or 50's. Items donated include: an 8" f/9, silvered, not AL; a 6" f/8; a homemade focault tester; some brass eyepieces; a couple of books, grit, rouge, misc mirrors, prisms and lenses, and a rack & pinion focus adjustment. *-Bruce Berger-*

A signed copy of "The Caldwell Objects" by Stephen James O'Meara, forward by Patrick Moore was donated by November's speaker, Joshua Roth, Senior Editor of *Sky & Telescope*. We now need to have Joshua sign it since he edited the book and "...checked every fact in this book", including taking out his telescope and looking at as many Caldwell objects as he could to check out the instructions.

**January *Star Fields* deadline
Sunday, December 27th**

**Email articles to Mike Hill
at noatak@aol.com**

POSTMASTER NOTE: First Class Postage Mailed December 5, 2003

Amateur Telescope Makers of Boston, Inc.
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FIRST CLASS

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

Dec 8 Full Moon
Dec 14 Geminid Meteor shower (morning)
Dec 16 Last quarter Moon
Dec 23 New Moon
Dec 30 First quarter Moon

Dec 31 New Years Eve PARTY at the CLUBHOUSE