



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. 16, No. 8 September 2004

This Month's Meeting...

Thursday, September 9th, 2004 at 8:00 PM

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

Parking at Cfa is allowed for duration of meeting

This month's speaker will be Tye Brady, a senior member of the technical staff in the Vehicle and Ground Systems Group at Draper Laboratories. He has worked for 15 years on spacecraft instrumentation, design, and integration. Before joining Draper, he participated in the development of numerous satellites including ASCA, HETE, Chandra, Astro-E, and HETE-II as a technical research staff engineer at MIT's Center for Space Research. In addition, he has served as a consultant for the small satellite community specializing in spacecraft hardware systems and the development of low-cost, remote ground stations around the world.

Tye will be speaking about Draper's Inertial Stellar Compass (ISC), a real-time, miniature, low power stellar inertial attitude determination system, composed of a wide field-of-view active pixel sensor (APS) star camera and a microelectromechanical system (MEMS) gyro assembly, with associated processing and power electronics. The ISC underwent initial field testing at ATMob's Edward Knight Observatory earlier this year.

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.

President's Message...

I hope that all of you had a pleasant summer. I had an opportunity to shed my day job and do some things I really enjoy. I worked hard on the landscaping at our home – planting a new lawn, shrubbery and flowers. Working outdoors has been healthy for my soul and body. I started planning for my observatory which I hope to have in place before old man winter arrives. And I bought the shell of a 16" Cassegranian minus the optics, and have started to do the paperwork part of planning the optical design.

There has been a lot going on at the clubhouse too. Clubhouse directors John Reed & Paul Cicchetti and their crew are nearly done installing a new tool shed; Mike Hill has renovated the electronics room and secured a donated oscilloscope. Andrew Levin and Barry Jensen have started new mirrors, and several others have kept up the work on theirs. The field was abuzz during observing weather, even though it seems that Mother Nature cheated us of quite a few clear nights this year.

The Stellafane telescope making convention was a great success. I went up a couple of days early and helped out with the immense task of preparing the field for 2,000 visitors. Dave Siegrist and Dave Prowten were up there working all week, and Paul Valleli also arrived early to lend a hand. Like last year, observing was pretty much a washout, but a few of our members had entries in the mechanical and craftsmanship categories and took home awards. Congrats to Tom Luminello for his unique solar observing scope with integrated digital imaging, and to Jeff Albro for his 6" travel scope Newtonian. At least 25 ATMob members traveled to Springfield this year, and Mike Hill, Dave Siegrist and Mario Motta were featured speakers.

As I write this we've just ended a few days of exceptional observing weather, and though the moon presented a bigger obstacle each succeeding night, I studied the bright globe for the first time, using free lunar software available online. I've got to admit that the 'ol man in the moon isn't just a big ball of light pollution to me anymore. Try lunar observing if you haven't already, and regain that lost observing time each month.

There are several projects that need doing in the clubhouse. Please contact John Reed or Paul Cicchetti and tell them that you want to get involved. I believe that Brewster still needs help with the website upgrades, and Eric Johannsen with networking the computers and connecting the Ed Knight Observatory.

I've lined up some interesting speakers for the rest of the year, but I'd like to hear your suggestions for the coming year. Give me a ring or drop me an email with your ideas or contacts.

- Bruce Berger, President -

July Meeting Minutes. . .

The 771st meeting of the Amateur Telescope Makers of Boston was presided over by our new President Bruce Berger. The first portion of the business meeting was taken care of while some technical issues with the slide projector were ironed out. Reports were made by the board members. Membership Secretary, Shilpa Lawande indicated that she is working on coordinating Sky & Telescope renewals with membership renewals so that there will be no lapse in coverage as has been the case for some members. Steve Clougherty, standing in for Paul Cicchetti reported on the progress of the installation of the new shed that will house the lawnmowers and snow blowers making room to begin work on the new workshop in the barn. Our speaker for the night was Dan Faulk whose talk was titled "The universe on a T-Shirt". Dan's talk was about the theory of everything, a historical account and a look towards the future about the concept of the entire universe, both in the realm of the large (universe) and the small (atomic) being described with a single theory. i.e a unified theory. He began with quotes from some thinking men of the past; Heraclitus – "From all things one, and from one all things", Emanuel Kant, Alfred Lord Tennyson, Leon Lederman, and John Barrow – All of them thinking in terms of a simplified universe. The idea of a simplified universe goes back even further to Thales (620-550 BC) who felt that water was the basis for all matter. Empedocles (493-435 BC) who conceptualized the idea of earth/air/fire/water being the root of all matter. Democritus who came up with the idea of the atom which is Greek for "undividable." Later on great thinkers and scientists furthered the work that forms the basis for current knowledge of the universal theories, including Galileo who stated that mathematics was the language needed to describe the universe, Newton who applied mathematics in simplified forms to describe such universal forces such as gravity, Einstein who came up with the theory of relativity to explain the universe in terms of the very large and massive and Max Planck whose theories described the very small (Quantum Mechanics). Scientists now have four basic forces that describe the universe both large and small and these are Gravity, Electromagnetism, weak nuclear and strong nuclear. These are still not unified but work continues. The latest work, as Dan explained, is in the realm of string theory. Here may be the unifying concept, it's still too early to tell but in dealing with string theory one is dealing with the very, very, very small. Whereas an atomic nucleus is in the realm of 10^{-12} cm, strings are postulated to be on the order of 10^{-33} cm. Very small indeed and difficult to test. Following the talk we had a few more announcements. Charlie McDonald brought in 100 copies of the Night Sky, the newest publication by Sky Publishing. He also informed us of a new NASA publication called "Space Science" and asked Bruce to consider forming a committee to work on coordinated public outreach in collaboration with the materials being made available by NASA. Charlie also talked about possible venues for next year's astronomy day, including the option of having it at the Clay Center once

again. Bruce announced a star party for July 20th. Virginia Renehan reminded everyone of the upcoming Mew Member orientation night. John Blomquist informed us that the MIT 14" telescope is out of the observatory so the new 20" scope can now be permanently installed. Gary Walker is working on that. Mike Hill gave a short presentation highlighting the Equatorial Mount he has refurbished and donated to the club along with a permanent shed to house the scope outside when not in use. The mount is intended to be used by anyone having an optical tube assembly but no mount yet to try it out on. Steve Feinstien and Dan Faulk presented some pictures of the Venus transit and Paul Valleli presented some pictures of his trip the Antique Telescope Convention in Dartmouth.

. – *Michael Hill* -

Membership Report...

Please welcome our new members:

Carl Butters - Wilmington, MA
Jeffrey Albro - North Andover, MA
Brian Primeau - Chelmsford, MA
Barry Jensen - Windham, NH
Mike Lawrence - Medford, MA
David McGaw - Canaan, NH
Peter Richardson - Chestnut Hill, MA
David Gardner - Lexington, MA
John Osswald - Norfolk, MA

You should have received 2005 membership renewal emails or letters by now. We will be updating our mailing lists at the end of September. Please send in your dues as soon as possible to avoid missing future newsletters.

- *Shilpa Lawande* -

Clubhouse Saturday Schedule

September 11	Steve Herzberg	Paul Cicchetti
September 18	John Panaswich	Dave Prowten
September 25	Eric Johansson	Art Swedlow
October 2	Lew Gramer	Glen Meurer
October 9	Steve Clougherty	Steve Mock

New York City Road Trip

Planning has begun for another visit to New York City and the Hayden Planetarium, Rose Center for Earth and Space and the American Museum of Natural History. The date selected is Saturday, October 9th. This date coincides with Urban Star Fest, the annual night sky observing in Sheep Meadow in Central Park, an event run by the Amateur Astronomers Association of NYC and the Urban Park Rangers.

Everyone is invited. We will go by chartered bus. The bus will pick up passengers first at the Gokey & Quinn bus company office located at 294 Ayer Rd. (Rte. 111) in the town of Harvard. Anyone who wants to leave their car there and take the bus from the town of Harvard can do so. The bus will leave Harvard at 5:30AM and head for Billerica. The second pick-up location will be the Treble Cove Plaza in Billerica located at a traffic light near the intersection of Treble Cove Rd. and Route 129 East. The bus will leave Treble Cove Mall at 6:00 AM. The third pick-up location will be at the Riverside MBTA Station (Green Line) in Newton. The bus will depart at 6:30 AM. Directions will be posted later.

We will plan to eat dinner together in our usual spot, Gabriella's Mexican Restaurant, which can accommodate a crowd of our size. We will then go by bus to Central Park for night sky observing. Sci-fi and astronomy movies will be shown on the bus.

Some riders may choose not to see the Planetarium show again. We will also try once again to see if we can get a behind the scenes visit to the planetarium. Do look at the museum website to see if you want to see either of the Planetarium shows, an Omni show, or any of the special exhibits. There is a discount on group purchases. The meteorite hall has been re-done and looks quite exciting. Send me an email at starleen@charter.net or call me at 978-456-3937 if you are interested in going. Updates will be posted to atmob-discuss and announce. Pricing will depend on the number of participants. The last time we went, in 2002, the cost was \$100 per person, which included bus fare, breakfast on the bus, water bottles, admission, planetarium show, tour, and dinner.

-Eileen Myers-

Perseids ahead of a Hurricane

Member Lew Gramer returned late Sunday night, August 15th, from an adventure-filled trip in South Florida to observe the glorious Perseid meteor shower. He began tent camping Sunday night Aug 8th, amid the star-filled skies and gentle breezes of the Florida Keys. And thanks to the laminar (ocean-like) airflows across the Florida straits, Lew enjoyed mostly clear skies all the way to Wednesday morning the 11th - when the park ranger dropped by with the news that a mandatory Visitor Evacuation of the Florida Keys was about to begin! Lew had to pack up his site in a hurry and drive 3 hours North to get to safer ground. But he still managed to observe the peak night of the mighty Perseids - by heading out into the dank, still, mosquito beclouded airs of the Florida Everglades... Skies cooperated to the north, and some 200 meteors were logged that night - among them a startling -6 Perseid fireball, and quite a few brighter than magnitude 0. He returned thankful for the clear skies that week, but also saddened by the devastation visited on the people of Florida's hurricane-ravaged West Coast.

First ATMoB New Member Orientation Night

New Member Orientation, the first of what we hope will be a regular event, took place on August 7th. It was an enjoyable evening, well attended by old and new ATMoB'ers alike.

New members were given a tour of the clubhouse and grounds. Several current members were on hand to assist, including Dave Seigrist who demonstrated our mirror making setup, John Blomquist who showed off our roll-off observatory and Schuppman telescope, Mike Hill spoke about our electronics capabilities, and John Reed spoke on our facility and upcoming projects. The weather could have been better but it was a good opportunity to meet other members and talk astronomy. Thank you to all those veterans who attended, telescopes in hand, ready to show others the night sky.

The next orientation meeting will take place on Saturday, November 6th. All new members are cordially invited to attend. Observing will follow, weather permitting. If any of our veteran members would like to help out during the orientation with a special presentation or demonstration, please contact us with your ideas. And if you are a new member and plan to attend contact: Shilpa Lawande at (603) 891-2702 or Virginia Renehan at (978) 283-0862. Refreshments will be served. Hope to see you there!

- Virginia Renehan -

The Creation of My One Trip Dream Scope

By Jeff Albro, jeff@antistatic.com

It all started with long hair. When I was 16 I had long, shaggy hair, and my mother "hated" it. She said she wanted me to cut it. I said I wanted to build a telescope. Several hundred dollars and a haircut later we were both happy. That was my first telescope, an 8" f6 Dobsonian. Later on, after college, I got a car that was too small for the 48" tube. I had to replace the mirror, cut the tube down, to end up with an 8" f5. Living in an apartment, it was still too big to take out for short sessions. I started using my binoculars more than my scope. I decided it was time to make my portable dream scope. I promised myself I would have it done in time to compete in this years Stellafane.

Aperture fever is a terrible thing. It makes you waste time thinking about cramming a 10" collapsing tube assembly into carry-on luggage. That is where the sensible girlfriend comes in. Every time I'd show her a sketch of a complicated contraption, Amy would remind me that I was trying to make it easier to observe, not harder. Our discussions made clear what I actually meant by the word "portable;" a one trip system. I needed to get outside and set up in one trip out the door. I also decided on some secondary goals: design for airline carry-on capability, and use the best materials and components I could get to build something nice enough for display in my living room. This was a scope for a lifetime. After much layout work in AutoCAD, I came up with a design that fulfilled all my requirements. I had plans for a 6" f 4.5 truss tube Dobsonian telescope. It would break down into a space 7" x 12" x 20", giving me plenty of room to fit into the airline carry-on standard of 9" x 14" x 22".

I built a 8" x 8" x 7" maple plywood box with splined miter joints for the mirror box. Without the splines the miter joint is weaker and MUCH harder to glue up. The secondary cage is a 8" diameter, 6" tall maple plywood tube. Instead of pulling my hair out trying to bend maple, I bought a maple drum shell to get a super strong and great looking tube. Connecting the two parts are aluminum C channel struts. The struts connect with small bolts and t-nuts in the plywood. I didn't need quick release clamps, because I only disassemble it for carry-on. I wouldn't assemble it in the field, only a well-lit hotel room. The maple plywood rocker box is a bit unusual as it is open both front and back and narrower than the mirror box itself. This allows for the rocker box to be the same height as the mirror box for packing into a smaller space. Many hours and hundreds of dollars later, I entered the 2004 Stellafane competition with my new scope. It turns out the judges liked it, and I won 2nd prize for craftsmanship and an innovative component award for my retractable secondary shield. Now, I would go outside in one trip and observe if I could just get rid of these clouds!

Some Special Features:

Retractable secondary shield - A semi-circular shield is connected at the center of the circle to the inside of the secondary cage opposite the eyepiece with a single screw. When properly sized and located, this allows the thin shield to be rotated up inside the tube for security. Well tuned balance - Because the scope is so light and the balance point is close to the bottom, I had to take special care to get the balance right. I built the whole tube assembly and found the balance point before placing the altitude bearings. Even then I had some trouble. I had to move the bearings deliberately off center towards the top of the telescope because at the zenith the weight of the eyepiece wanted to pull the scope over backwards. I also had to plan for a set of eyepieces that are all the same weight as my primary eyepiece, the Tele Vue 24mm Panoptic. (29x, 2.3 degree field). Carrying handle - Because getting out of the house in one trip was so important I added a dowel for a handle right at the balance point. At under 12 lbs with eyepiece and finder, the tube assembly is easy to lift with one hand. Tripod mount - I decided on a tripod mount instead of a tall Dobsonian rocker box for three major reasons: A tripod was much lighter than a chair and a rocker box tall enough to use with a chair, a tripod gave me much more height adjustment, and the rocker box could be small enough for airline-carry on. Primary cell - The full thickness 6" primary is cemented to a 1/4" thick aluminum plate in three locations. The plate is attached to the mirror box with three spring loaded collimation screws. This thin plate allows me to get the back of the mirror within 1/2" of the back of the telescope for a more compact design.

Materials and Component Sources:

Aluminum, teflon, and assorted hardware: <http://mcmaster.com>

Helical crayford focuser: <http://kineoptics.com/HC-1.html>

Applyply maple faced plywood: <http://boulterplywood.com/>

Drum shell for secondary cage: <http://www.aitwood.com/>

Spider (with custom upside-down vanes) and diagonal
<http://www.fpi-protostar.com/>

Ebony star formica: Home Depot

Rigel Quickfinder: Various astronomy stores.



Jeff and his Girlfriend Amy with his 6" F4.5 reflector

Upcoming Events

Black Forest Star Party

September 10th through Sunday, September 12, 2004, The Central Pennsylvania Observers (CPO) will host the Black Forest Star Party at Cherry Springs State Park, Potter County, PA. Registration is limited to 450 people so, if you have an interest go to www.bfsp.org for details. Contact Bruce Berger or Gary Jacobson if you would like to carpool, since they will be attending.

Arunah Hill Days

September 17th through 19th, 2004 dark sky star party. Arunah Hill Natural Science Center, home of the 13" Henry Fitz Refractor. Rustic camping at 2000ft. Tent talks, planetarium shows, nature trails. Go to www.ARUNAH.org

More events are listed in the electronic newsletter attachment.

ATMoB Board Meeting

There will be a board meeting this month up at the clubhouse on September 19th. Meeting starts at 7:00 PM. Light refreshments will be available.

Star Party Thank You

ATMoB President Bruce Berger welcomed the 75 or so folks that showed up for the Gleason Library's first Star Party, held Wednesday July 21 at the Spaulding Sports field in Carlisle, MA. Youngsters and adults alike gazed in awe at such stellar delights as the Moon, Jupiter, M57, M13 and Albierio. Library organizer (Ms.) Marty Seneta provided cold drinks and sweet refreshments to the ten ATMoB volunteers who set up around one of the Little League baseball diamonds. Marty and her associate Kay Edelberg did an excellent job of keeping car lights to a minimum by diverting attendees to a nearby school parking lot and then leading them to the observing field.

Thank you's go to ATMOB members Petur Nielsen, Carolyn Luminello, Tom Luminello, Dave Simonich, Steve Feinstein, Dave Ronnow, John (haven't missed a star party yet!) Blomquist, Gary Jacobson, Scott Romanowski, and Chuck Evans. Thanks also to NHAS member and Carlisle resident Erik (Rick) Margolies for bringing his equipment over for the show.

Bruce Berger
Chelmsford, MA

Observers Log by Lew Gramer

Observer: Lew Gramer
Your skills: Intermediate
Date and UT of Observation: 1996-09-11, 06:15 UT
Location: Sheepsfold, MA, USA (42N)
Site classification: suburban
Limiting magnitude: 6.3
Seeing: 2.5 - medium to good
Moon up: no
Instrument: Naked Eye
Magnification: 0x
Filters used: none

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Object: NGC869/884
Category: Open Cluster Pair
Constellation: Per
Data: mag 4.3 and 4.4 size 30' and 30'

RA/DE: 02h19m to 02h22m +57o09m to +57o07m
Description: h and chi Persei are by far my favorite open clusters, and the only ones which keep me coming back to them year after year: On this particular night, a cold-air mass conspired to allow me to see them as individual, lumpy patches of haze with the naked eye, not completely separated by a star-field "haze" between them. They're a subtle but lovely little nuance to the beautiful naked-eye star field formed by the adjoining constellations Perseus and Cassiopeia. Note that with direct (unaverted) vision, the two clusters were seen as one elongated hazy patch, with little featuring.

October Star Fields deadline **Saturday, October 2nd**

Note that the deadline is now on the last **SATURDAY** before printing rather than Sunday. Entries submitted after the deadline are not guaranteed to make it into publication.

Email articles to Mike Hill
at noatak@aol.com

POSTMASTER NOTE: First Class Postage Mailed September 3, 2004

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 (EDT) from Universal Time (UT) subtract 4 from UT.

September Last quarter Moon
September 9 Mercury reaches greatest elongation (morning sky)
September 14 New Moon
September 21 First Quarter Moon
September 22 Autumnal Equinox (Fall begins)
September 28 Full Moon