



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. 18, No. 3 March 2006

This Month's Meeting...

Thursday, March 9th, 2006 at 8:00 PM

Phillips Auditorium
Harvard-Smithsonian Center for Astrophysics

Parking at C/A is allowed for duration of meeting

THIS MONTH'S SPEAKER will be Dr. Leon Golub of the Harvard-Smithsonian Center for Astrophysics. Dr. Golub's talk will be "Observing the X-ray Sun." Our Sun is a variable star, with activity due to the presence of magnetic fields. These cause sunspots, flares, mass ejections, and a hot atmosphere called the corona. Such magnetic activity is common throughout all of astrophysics, but our Sun is one of the few objects which we can see with enough detail to provide strong tests of our theories. Unfortunately, the light emitted by the corona is primarily at wavelengths that are absorbed by our atmosphere and so do not reach the ground. We must therefore put our observing instruments into space and combine those observations with the data which can be obtained from the ground in order to study the full extent of solar activity. With a Ph.D. in Experimental High Energy Physics, M.I.T. 1972 and as a member of the Solar Physics Group at A.S.&E., he was responsible for all aspects of the Skylab S-054 X-ray telescope data reduction, and worked on the solar-stellar connection using Einstein Observatory X-ray data. He is presently a Senior Astrophysicist at the Harvard-Smithsonian Center for Astrophysics.

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...

Jim & Rhoda Morris, who were scheduled to speak this month, ran into some unexpected problems with the Galileo Telescope replicas they are constructing and thus their talk will be rescheduled for a future meeting. In the mean time, check out their website - http://www.scitechantiques.com/Galileo_telescope.

Bruce Berger, John Blomquist and Mike Hill have been working on the GT1100 mount and C-14 to prepare for the GT1100 installation as mentioned in last month's Star Fields. Eric Johansson, Paul Valleli, and Gerry Sussman have also been working on the pipe mount and Schupmann. The change over of the mount should occur in early March, assuming all is ready as stipulated by the Clubhouse Committee. Thanks to all those who have worked together on this project!

Thanks to those that have provided refreshments over the past several months - Victor Anderson, Eileen Myers, Bob Collara, and Bruce Berger! The refreshments have been great! Bruce Tinkler is on deck for the March meeting.

At the April meeting, we'll need to vote on a nominating committee to propose a slate of officers for next year. If anyone is interested in being a candidate for this nominating committee, please let me know. This is your club -- this is one way you can contribute and influence who the officers will be. Of course, it is even better if you're interested in running for an office! With this issue, we complete the series on the responsibilities for the various offices. Thanks to the officers for writing them up and hopefully it cleared up questions about what we do and how much time it takes.

An Executive Board meeting is being planned for mid-April. While we have a fairly full agenda already, please contact me if there are any additional items. Some of the agenda items include:

- Creation of a Web Committee as suggested by Gary Walker at the February meeting. The committee would have primary responsibility for our web site, mailing lists, and any other services offered over the Internet to our members or the public.
- Creation of an Education/Public Outreach Committee as suggested by Charlie MacDonald.
- Review the need for and responsibilities of the Observing Committee (our bylaws has none for this permanent committee).
- Defining the priorities for a new 5-10 year plan for the Clubhouse.
- Review our insurance requirements with respect to our assets.

Bernie Volz, President -

Also This Month . . .

Following Dr. Golub's talk, Rick Fienberg, Editor in Chief of Sky & Telescope, will briefly discuss the sale of Sky Publishing to New Track Media LLC as announced on February 13th 2006, and answer questions we may have about the future of Sky & Telescope magazine.

February Meeting Minutes...

Our featured speaker for February was Dr David Latham from the Harvard Smithsonian Center for Astrophysics. Dr. Latham spoke to us about the "Search for Habitable Planets" around other stars using the method of photometric detection as a planet transits across the distant stellar disk. Otto Struve predicted this was possible to do almost 50 years ago and in 1999 the first such detection, classified as HD209458, was made. So far eight others have been detected this way and more will be discovered no doubt as there are currently 25 ground based surveys currently looking for transiting planets. All the planets discovered so far have been Jupiter sized planets resulting in a 1% drop in light on average. What astronomers would really like to find is small rocky planets that could possibly support life. Transits by these types of bodies would produce a much lower drop in light, something on the order of .01% which is very small indeed. The only way to be able to do this is via space based observations and this is exactly what is going to be done. The NASA Discovery Class "Kepler" mission slated for launch in 2008 will be able to detect such light variation. It will monitor 100,000 stars in the constellations Cygnus and Lyra continuously for four years. The stars to monitor are being picked carefully now out of a possible 20 million stars in the 108 square degrees of sky to be surveyed. The candidates will be sun like or cooler resulting in a deeper transit if a planet should cross the solar disk. Much of the ground based candidate selection work is being done at the Whipple Observatory in Arizona which as many of you remember from last year came very close to being lost to a forest fire that came quite close to the observatory. With a lot of help from the forest service and forest fire fighters, the observatory was spared. Once Kepler is up and the observations begin, Dr. Latham predicts that within 10 years we will be able to definitively answer the question "Are Earth-like planets common around stars or are they a rarity?"

The business meeting followed with standard committee reports. Dan winchell indicated the membership was now 294. John Reed announced the upcoming work party at the clubhouse. Steve Clougherty announced the dates for the next Messier Marathon which are Feb 25th and Mar 25th. Glen Chapple was last years winner with a count of 96. Eileen Myers announced that the Sky and Telescope collection has been condensed and we now have almost two full sets, one to be bound and one to be put in storage bins for easy access. There are a few issues missing and a list will be made available so anyone who has missing issues could donate them to make the set complete. Virginia Renhan announced that there were 10 star parties coming up. Bernie asked that the Star Party listing be put in the Newsletter. Bernie also thanked Bruce Berger for the new club logo that will now replace the old one. Glen Chapple announced that the Groton Lions club will be hosting an evening with astronaut Storey Musgrave and urged all that could do so to attend this free event. Bruce

Tinkler recounted his experience with speaking on the WUML radio station on a short astronomy segment. He felt it went well and was a great experience and fun to do. Mario warned all those that are going to be going to the eclipse to declare all camera equipment. Virginia spoke about hers and Marios experience working on lighting ordinance creation in their home town of Gloucester.

- *Michael Hill* -

Membership Report...

We have two new members this month

DENNIS MAHER from Waltham

VANESSA THOMAS from Framingham

- *Dan Winchell* -

Clubhouse Saturday Schedule

March 4	Mike Hill	Steve Clougherty
March 11	Closed for Work Party	
March 18	John Panaswich	Bill Toomey
March 25	Gary Jacobson	Rich Nugent
April 1	Glen Meurer	Joseph Rothchild

CLEANING PROCEDURES for OPTICAL COMPONENTS -

V.3 Feb. 13, 2006 By Paul A. Valleli, ATMob

1. SCOPE

This two-part procedure is a general purpose method for cleaning aluminized Telescope Mirrors, Objectives, and Eyepiece Lenses up to about 18- inches in diameter. Above that size, Carbon Dioxide Snow works better.

Optics should only be cleaned when the instrument performance is significantly impaired.

CAUTION: When using FLAMMABLE SOLVENTS, beware of open flames and Explosive Conditions.

2. CLEANING MATERIALS AND EQUIPMENT

2a. Surfactant Cleaner, one of the following: Clear Ivory Liquid, Proctor & Gamble. – 10 drops per gallon of warm water, any equivalent brand of neutral dishwashing liquid – absolutely no perfumes or dyes. Simple Green for oily deposits. No alkaline or acidic solutions for aluminized surfaces or soft flint, stainable optical glasses. They may cause pitting or etching of the surface. Windex with Ammonia is good for non-stainable lens materials but not mirrors.

2b. Rinse : Distilled or deionized water, or filtered tap water as a minimum; with Sink or Catch Basin.

2c. Plastic Dishpan, basin, or container that is large enough to submerge the mirror. 3 clean plastic blocks to raise the lens or mirror above base of the basin.

2d. Isopropyl or Methyl Alcohol, reagent grade preferred

2e. Acetone, reagent grade preferred. Lower purity may be available at hardware paint department and will work if not contaminated. Both are FLAMMABLE.

2f. Sterile Cotton Wadding or Balls,

2g. Soft Lens Tissue such as Aldine #51 Aldine Paper Co., 315 Park Ave. So., New York, NY 10010, Berkshire Products equivalent, KAYDRY (NOT KimWipes), Tissue wipes, Kimberly - Clark Corp., Roswell, GA., or Kleenex Tissue, Kimberly – Clark (but lots of lint).

2h. Canned Air, “Dust-Off).

2i. High-intensity flashlight (MagLite) for inspections.

2j. Surgical or Nitrile Gloves or finger cots, (unpowdered). Camel’s Hair Brush – at many Artist’s Stores

3. PREPARATIONS

3a. Prior to cleaning the optical component, the work area should be organized and all unneeded equipment and tooling should be removed from the area. The cleaning materials should be placed conveniently at hand.

3b. Remove pens, pencils and rulers from uniform shirt pockets, as well as jewelry and watches. They could drop on the optical surface or scrape it.

3c. Thoroughly clean dish pans and basins prior to using.

3d. Never try to wipe a dry polished surface with a dry material. It will most likely act like sandpaper, dragging grit across the surface and cause scratches.

3e. Always examine the optical surface and edges prior to cleaning for loose chips of glass on the perimeter or gross contaminants on the surface.

3f. Change to new swabs frequently. Constantly replace water-saturated tissues until the surface is completely clean and dry.

3g. Inspect the surface under the high-intensity lamp to be sure there is no residue.

3h. Keep the optic covered with lens tissue when not working on it.

4. MIRROR PROCEDURE

Remove the mirror from the mounting cell, and blow away any loose particles with the canned air – hold the can steady and move the mirror in front of the air stream. Avoid shaking or inverting the can. This will leave a whiteish deposit on the mirror. Otherwise, flush all the surfaces of the component with filtered water at a glancing angle before starting any cleaning. This will remove many loose particles. Set the mirror in a basin of liquid detergent and warm water at about 100F - 120F. Allow the mirror to set in the basin for about one-half hour. Rinse the component to remove all detergent. Bad smudges may require the local application of a full strength detergent. Soak and flush again, thoroughly. The idea is to try to release as much entrained grit, oily and aerosols as possible, without rubbing.

There should be no polishing compound residue on the edge or back surface. Set the mirror aside on a soft pedestal and refresh the detergent in the basin. Soak the component again. This time, under the water, wipe the surface with a light, circular motion with a large pad of cotton. Use only the weight of the pad. Start at the center of the component and work outward toward the edge. If the part has a hole in the center or has recesses, it may be necessary to clean them out with a swab or Q-tip first. At this point, the flush should be followed with a secondary flush of distilled water.

Set the component up on edge and examine it carefully. The water may run off in beads, leaving an oily film or spots that were not broken down by the detergent. Rinse the component while it is on edge with acetone from the wash bottle. Catch the runoff in a pan or tissue. Next, it may be desirable to follow with an alcohol rinse from another wash bottle and then swab with a cotton wad. Now finish with another flush of acetone. If the mirror is still warm and the acetone very pure, the last traces of acetone will evaporate in a flash and leave a pristine surface.

More than likely, however, the oily spots or film may have been covered with a dirt film. Silicone grease is a particularly difficult compound to decompose. After the solvent rinse, these areas will now respond to the detergent soak. Repeat it again, then flush with pure water, then the acetone flush again.

In the majority of cases, this four-stage cleaning cycle of flush-detergent soak-flush, solvent flush, detergent soak-flush, solvent flush, will remove a many tiered layer of aerosols, water marks, and oil films that result from outdoor exposure. In some cases, the water rinse will be good enough, with no beading effect. This is a water-break free surface and indicates a pretty clean surface. The mirror can be set on edge to dry and excess water blotted from the bottom edge with tissue. A small fan could be used at this stage to accelerate the drying before dust and lint begins to cling to the wet surface. On occasion, really stubborn spots may be caused by drops of pine tar, asphalt, soot, or spit droplets being baked onto the surface. The only recourse is to attack these areas with local pressure from a cotton swab. Remember the multi-layer effect, and alternate solvents, do not keep scrubbing away with just one system. More powerful solvents be needed.

5. LENS CLEANING PROCEDURE

All of the prior procedures for mirrors can be used on lenses but first mark a small index line near the edge of the lenses as temporary witness marks. As the lenses are removed look for the original opticians' witnesses and maintain their orientation with respect to the cell index and the temporary ones.

Objectives and eyepiece lenses can be cleaned in place by first brushing or blowing away loose contamination.

Next, run a number of Q-tips soaked with acetone or alcohol around the retaining ring and then the lens perimeter.

Fold a sheet of soft lens tissue over and over until no sharp edges are exposed. Put a few drops of Windex on the rolled-over cylindrical tissue surface and wipe in arcs from center to edge. Use a new tissue for each wipe. Now, use a Q-tip with alcohol to locally clean away any grease marks. Finally, repeat the lens tissue process with a few drops of acetone on the rolled edge of the tissue. Never use pressure against the glass. This process is known as "drag wiping" and is very effective in picking up tiny residues. It can also be used on mirrors as long as they have been Hard Coated.

6. TECHNICAL COMMENTARY

6A. There are many variations of optical cleaning chemicals and procedures. All depend on the skills and knowledge of the person doing the cleaning. Understanding the multilayer nature of atmospheric contamination can minimize the number of cleaning steps.

6B. It is important to remember that any form of wiping or mechanical rubbing on a dirty glass surface will cause some amount of scratching to an optical surface, depending on the hardness of the contamination. The contamination may drop onto the surface, may be on the wiper, or in the cleaning solution.

6C. The light scatter caused by surface contamination will cause a halo or aura around bright star and planet images. This effect must be weighed against the possibility that greater harm may come from the cleaning process in the form of scratches and streaks.

6D. Fingerprints and growths of Fungi must be stopped as soon as possible because there is an acid residue that can etch the glass with time. "Simple Green" enzyme detergent seems to destroy the growths.

6E. Precautions.

Some general precautions should be taken to achieve and maintain a high quality surface finish:

a. Avoid unnecessary exposure of optical components to a contaminating atmosphere. Use lens covers and maintain low humidity, avoid dew or condensation.

b. Wash hands thoroughly and scrub fingernails before handling optical components.

c. Wear plastic/rubber gloves or finger cots whenever feasible.

d. Never re-use a sheet of lens tissue or an old wipe that might be contaminated with grit or grease.

e. Never use toilet tissue for cleaning, it may have an unacceptable amount of abrasive silica dust.

f. Washing or wiping with precipitated chalk powder or rouge may cause hairline scratches. (Some coating labs do this.) Use only with great care, when necessary.

g. Use care to avoid contamination of the cleaning solutions. Use polypropylene wash bottles fitted with a nozzle.

h. Brushing a component with a soft, camels' hair brush can remove loose specks of dust and lint. However, this technique could drag abrasive particles across the surface and cause scratches. Also, it might tend to leave grease streaks, unless cleaned in a vapor degreaser.

i. After opening, store the facial, wiping, or lens tissue box in a clean plastic bag to prevent contamination.

Upcoming Star Parties

Star Party Coordinator – Virginia Renehan (978) 283-0862 vrenehan@gis.net

Do not hesitate to contact me with questions regarding any of the events. .

March 1st (cloud date March 2nd) – Greenhalge School, 149 Ennell Street, **Lowell**.

150 students and parents expected. School contact - Ann Pellegrino (978) 549-0504 cell, (978) 446-7084 school. Refreshments. Observing 6 – 8pm.

March 7th (cloud date March 8th) – Bulter Middle School, 1140 Gorham St., **Lowell**.

250 students and parents expected. Spaghetti dinner from 5- 7pm. Observing 6:30 – 8:30pm. School contact – Carol Sutton (978) 606-8041 cell, (978) 970-5496 school.

Pick up VIP dinner pass at front entry.

March 7th (cloud date March 8th) – Birch Meadow, 27 Arthur B Lord Dr., **Reading**

150 students and parents expected. School contact – Carol Wertheim (781) 944-2335. ATMob contact – Charlie McDonald (781)944 -6140.

March 7th (cloud date March 8th) – Wood End Elementary, 85 Sunset Rock Ln, **Reading**

100 students and parents expected. School Contact – Ellen Comito (781) 942-5420. ATMob contact – Charlie McDonald (781) 944-6140.

March 13th (cloud dates March 14th, 15th, 16th, + week of 20th) – Fourth annual 4th Grade Star Party -

Acton. Contact Steve Feinstein (781) 515- 5313. For more information on time, directions etc. go to www.actonstarparty.com Refreshments and lots of fun!

March 15th – Endicott College, **Beverly**. 75 students expected. Refreshments for astronomers. College contact- John Galloway (978) 927- 0585 x2191.

March 15th - Clear or cloudy. Cummings School, 42 Prospect Street, **Somerville**. Set-up 6:30pm.

Observing 7-8pm. Activities will move indoors if cloudy – telescope show and tell combined with an informal “ask an astronomer” session with astronomers. Slide show / space exploration video – exploring Mars and Saturn; first humans on the Moon. Pizza for astronomers afterwards.

March 20th (cloud date March 22nd, 23rd) High Plain Elementary School, **Andover**. 150 students and

parents expected. 6pm set-up. Observing until 8:15pm. ATMob contact Brewster LaMacchia (978) 725-3306. School contact Katherine Iworsley (978) 623-8900 x 5212. Indoor activities. Refreshments for astronomers. School info at: <http://www.aps1.net/HPE/>

March 21st - Prospect Hill Park, **Waltham**. Set-up at 6:15pm. Observing until 8:30pm atop Big Prospect

Hill – a nature preserve and highest point in Waltham. 30-40 attendees expected. Refreshments for astronomers.

April 3rd (cloud date April 4th, 5th) – Chenery School, **Belmont**, School contact – Jessica Garrett. (617)

417-1021 cell. Set-up 6:pm – observing until 8:30pm. 300 students expected. Indoor activities.

Refreshments for astronomers.

April 5th Groton Lion’s Club Astronomy Event – Groton High School, **Groton**. Astronomy, telescope

demo’s, space derby, astronaut talk. Contact Bryan McKay (978) 448-5988 or b.mckay@earthlink.net.

April 10th (cloud date April 11th, 12th) Bowman School, 9 Philip Road, **Lexington**

School phone (781) 861-2584 School contact- Fran Ludwig.

April 17th (cloud date April 18th) Ottoson Middle School, 63 Acton Street, **Arlington**. School contact - Gwen Podenza (978) 692-9706. 200 students expected. Set-up 6:30pm observing until 8:30pm. Refreshments for astronomers.

April 19th (cloud date April 20th). Winn Brook Elementary, 97 Waterhouse Road, **Belmont**. School Contact - Joanne Daskalakis (617) 489-3449. Set-up time 6:30pm Refreshments for astronomers.

May 6th – National Astronomy Day – Clay Center Observatory, Dexter-Southfield School, **Brookline**. For details go to www.claycenter.org Join us for our third year!

June 6th – Harvard Center for Astrophysics – Garden Street, **Cambridge**. Time to be announced.

An Evening with Story Musgrave

The Groton Lions Club proudly presents an evening with Astronaut Story Musgrave. Come hear Story talk about human spaceflight, The Hubble Space Telescope repair, his career as a six time astronaut, poet, doctor and Marine. He will inspire and thrill all ages.

When: April 5, 2006

Time: 7:00pm

Where: Black Box, Groton Dunstable High School
703 Chicopee Row, Groton, MA

This event is free to all and seating is limited. So reserve your seats today by emailing : grotonlions@earthlink.net

Job Descriptions (Continued from last month)

Treasurer

The ATMoB Treasurer is responsible for the club's finances. Duties include:

- Periodically mailing checks to Sky & Telescope and Astronomy for member magazine subscriptions based on reports supplied by the Membership Secretary
- Reviewing submitted receipts and issuing checks to club members for expenses such as clubhouse expenses, mirror making supplies, meeting refreshments, club meeting speaker's dinner, Star Fields printing and mailing
- Recording club income from dues; donations; sale of shirts, RASC handbooks, calendars, mirror making supplies and other materials.
- Balancing the club's checking account and moving funds between the checking and savings account as necessary. Evaluating the most favorable vehicle for the club's savings (money market savings account or certificate of deposit)
- Delivering a monthly report of the club's financial activity for the previous month
- Delivering an annual report of the club's financial standing
- Paying the annual liability insurance premium

The above duties typically take about two hours per month on average. Other duties include, on an annual basis, completing and submitting State forms regarding:

- New club officers and Board members
- Annual State financial report for Public Charitable organizations
- Federal tax form 990 submittal to the State as part of the annual filing

These forms typically take a few hours to complete once per year. Use of previous year's documents as a guide help make the task more organized and efficient. The club owns a license for Peachtree Accounting software to maintain the financial affairs. Rudimentary knowledge of accounting principles is helpful but not required, and the required tasks are easily learned and applied.

- *Gary Jacobson, Treasurer* -

Member-at-large (2 positions)

Voting member of the executive committee. Represents the members at meetings. Available for special duties as requested by the president. Time requirements beyond attending regular club meetings: 1) attend periodic Executive Committee meetings (each is an evening commitment of several hours). 2) Participate in the "boardmeeting" email discussion list (a few hours a month). This is where much of the pre-meeting discussion takes place in preparation for the meetings so it is important to participate.

- *Bruce Tinkler, Member at Large* -

April Star Fields deadline
Saturday, April 1st

Email articles to Mike Hill
at noatak@aol.com

Upcoming Speakers

Just to keep you posted, here's the speaker line up for the next several meetings:

April - Member's night and March 29th Total Solar Eclipse review

May - Scot Milligan & Mario Motta on building the 32" in Gloucester

June - Joshua Semeter (BU) on Aurora

POSTMASTER NOTE: First Class Postage Mailed March 3rd, 2006

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

FIRST CLASS

EXECUTIVE BOARD 2005-2006

PRESIDENT: Bernie Volz (603) 968-3062
president@atmob.org

VICE PRES: Virgina Renehan (978) 283-0862
SECRETARY: Michael Hill (508) 485-0230
MEMBERSHIP: Dan Winchell (617) 876-0110

TREASURER: Gary Jacobson (978) 692-4187
MEMBERS AT LARGE:
Bruce Tinkler (781) 862-8040
Dave Prowten (978) 369-1596

PAST PRESIDENTS:
2004-05 Bruce Berger (978) 256-9208
2002-04 Eileen Myers (978) 456-3937
2001-02 Bob Collara (781) 275 9482

COMMITTEES

CLUBHOUSE : Paul Cicchetti (978) 433-9215
John Reed (781) 861-8031
Steve Clougherty (781) 784-3024

HISTORIAN: Anna Hillier (781) 861-8338

OBSERVING: Virginia 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.

March 6 First Quarter Moon
March 14 Full Moon
March 20 First Day of Spring
March 22 Last Quarter Moon
March 26 Neptune passes 1.8° south of Venus (21h UT)
March 29 New Moon – Total Eclipse of the Sun