



**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. 17, No. 4 April 2005

This Month's Meeting...

Thursday, April 14th, 2005 at 8:00 PM

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

Parking at CfA is allowed for duration of meeting

THIS MONTH'S SPEAKER has not been secured at the time of the newsletter publication but rest assured the meeting will still take place and I am working on getting a speaker up as best I can. Watch the ATMoB website for further update. If no speaker can be secured then I'm sure there will be plenty of material by our own members to keep things interesting.

Feel free to join together 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.

- Bruce Berger, President -

President's Message...

Well, temps are rising — time for all you winter-shy observers to dust off those scopes and mounts and get them in top shape for the warmer months. They were in good shape the last time you used them, you say? Well so was your lawnmower, but you're going to change the oil and plug, sharpen and balance the blade, and treat those rust spots before the season gets underway, aren't you?

Here is a list of things you should check, adjust or replace on your telescope at least once a year. Look at both mirrors

– are they spotted and need recoating or cleaning? Are the mountings secure, can you easily adjust both, or would a spot of oil make the job easier? Remember how much you hated the focuser last year? Now's the time to replace it with that 2 speed Crayford, or maybe a little grease in the right place is all it needs.

Refractors need care too, you know. Would a blast of clean air and a camel hair brush on that objective make a difference? How about a little adjustment and lube on the focuser, or some touchup paint, or a coat of car wax on the tube to make it shine and resist dirt, dust and moisture?

Check your mounting saddle or cradle. Is the protective felt wearing through? Are the bearing disks on that Dob tight and secure?

What about your rocker box or mount? Are the Teflon pads or Formica bearings coming loose? Is it steady on the ground? Could your EQ or Alt-Az mount use a cleaning and re-greasing? What about gear backlash – does it need adjustment? Is your tripod rock-steady, or do some bolts need tightening or a little oil? How about some new levers instead of wing nuts on the leg adjusters to get more tightening leverage? Or maybe a couple of new 1-1/4" or 2" holes in the accessory tray to keep those eyepieces from rolling around?

Have you checked your DSC or GoTo computer? Is that nickel-sized CMOS battery going to give out at just the wrong time, or are you taking a proactive approach and replacing it now? What about those cables and connectors? Has the Winter stiffness caused some strain that could lead to breakage at a most unfortunate moment?

Be proactive – don't waste a precious night because your equipment failed.

April is the month when the Nominating Committee tackles the tough job of selecting a slate of officers for the coming year. At least two positions are open, that of Membership Secretary and Member-At-Large. Why not consider joining the Executive Board to help shape the future of ATMoB and the Bond Astronomy Club?

We have some exciting speakers lined up for the coming months, including David Charbonneau, co-detector of radiated light from an exoplanet, and weatherman Todd Gross, who will talk about the atmosphere and it's effects on observing. Hope you will join us.

Clear skies!

- Bruce Berger, President -

March Meeting Minutes. . .

Bruce Berger opened the 768th meeting of the Amateur Telescope Makers of Boston with an introduction to our speaker Dr. Arne Henden, who has very recently come to the Boston area as the new director of the AAVSO. Dr Henden's talk was titled "The Amateurs Role in Professional Astronomy." He broke down the role of pro-am collaboration into five time frames starting with pre 1900's when astronomy was a purely visual pursuit and the only difference was the size of the instruments in use. 1900-1960 was characterized as the photographic era with photography as a tool used mostly by professionals with amateurs following on in the later years. The period from 1960-1980 was characterized as the photoelectric area with professionals beginning to utilize photo multiplier tubes to make intensity measurements in the newly defined UB system. These instruments were very large and costly and remained for the most part in the professional domain except for a few very dedicated amateurs, some being members of the AAVSO. The 1980's began the CCD revolution, which once again began in the professional domain but around 1990 started to really catch on at the amateur level. This was followed in the year 2000 time frame with the advent of very large telescopes made available to amateurs. At this point with CCD/CMOS cameras increasing in performance and decreasing in price the pro-am dividing line has started to become rather fuzzy. Real science is becoming very possible for amateurs and what they do can be very helpful to the professional community. The range of projects currently being undertaken today which include looking for Exo-Planets and searching for Gamma Ray burst afterglows emphasizes this. Some of the leading edge technology available to the amateur today that makes this possible includes tip/tilt adaptive optics technology, small spectrographs, and near-infrared photometric instrumentation. The primary amateur advantages, as Dr Henden pointed out, are the exclusive use of a single stable telescope with which an owner is an expert at operating using better than ever software and even hardware. Dr Henden concluded with a substantial list of groups undertaking leading edge amateur work. This list includes AAVSO, CBA, SAS, International Supernova Network, Collaborative Asteroid Lightcurve Link, and Spectrashift.com.

The business meeting followed with standard reports by the committee members. Dave Prowten and others are making great progress on the roof work with preliminary work to be completed by April. Bruce Berger and others are working to get the club computers networked and this work is moving ahead as planned. The messier marathon was announced and will be held April 8/9. A number of star parties were announced and Bob Phinney talked to us about Astronomy Day at the Clay Center in Brookline. Bruce announced that the ATMob now has an official Green Laser Safety policy. Steve Beckwith raised the issue of how we can gauge our success in public outreach and wondered why we do not see more younger members. A good discussion ensued from this and will be followed up by our

President. The meeting concluded with a presentation of slides by Paul Vallenga on the Winter Star Party and an announcement by Bob Naeye about the latest news with the Saturn Cassini mission.
- *Michael Hill* -

Treasurer's Report...

As of March 29, 2005

Checking account balance: \$5,863.42
Money market savings account balance: \$39,321.93

Income: \$159.66
Expenses: 458.24
Net outflow: \$298.58

Land fund balance: \$3,092.61
Clubhouse donation fund balance: \$1,116.80
General donation fund: \$1,484.15
- *Gary Jacobson, Treasurer*-

Membership Report...

This month we would like to welcome the following new members

IVAN DOBRIANOV Acton
SIDNEY JOHNSTON Acton
PAULO TIBERIO M. BULHOES Somerville
RICHARD HANSEN Westford
ROB SCHARE Hopkinton

The membership count as of Mar 31 2005 is 316.
- *Shilpa Lawande, Membership Secretary*-

Clubhouse Saturday Schedule

April 9	Ed Budreau	Eileen Myers
April 16	Rick Burrier	Lew Gramer
April 23	Brian Maerz	Dave Prowten
April 30	Shilpa Lawande	Nitin Sonawane
May 7	Gary Jacobson	Tom Wolf

What Am I Looking At?

(A Brief Guide to Observing Deep-Sky Objects)

One of the things I enjoy most about astronomy, is actually being able to look through an eyepiece (or up from my lawn chair), to see the physical universe “in action” for my very own self! Nothing is a keener or more satisfying thrill, than to have read about some amazing bit of physics or chemistry out in the vastness of space – and then to actually be able to glimpse its effects *directly*, under the gorgeous night sky.

Unfortunately, nebulae and galaxies are shy creatures – only sharing a faint glimmer of their true beauty with the naked-eye observer. Still, a trained eye and a patient mind can glean a great deal of the amazing nature of these denizens of deep space: “You can see a lot just by looking,” as the saying goes...

To inspire (or irritate) others into trying to see some of these fascinating features for themselves, here is a summary list of the things that I try to look for (and *to log*) in different objects, when I’m at the eyepiece:

Multiple star – **How many** stars appear to be together? Is it just the primary (brightest or “A” star) and the *comes* (“B” or secondary star, pronounced “koh-meez”)? Or is there a third-brightest companion (“C”), and even a fourth (“D”)? What is the **separation** of each companion from the primary star? (How far apart are they in arcseconds, arcmins, or “fractions of your eyepiece field”?) What **Position Angle** does each make with the primary – PA tells a companion star’s orientation in the field, with PA 0° meaning a companion lies due *North* of its primary, PA 90° meaning due *East*, etc. (Remember, you can always tell due north by “nudging” your telescope in the direction of Polaris: where ever you see new stars entering the field, that’s north!) Lastly, do you see any colors or **contrast effects** between the primary and its brightest companions?

Variable star and “carbon star” – these are individual stars that are mostly interesting because of either their color, and/or the fact that their brightness can change. Estimating the star’s magnitude (using one of the AAVSO’s approved methods, or just by “kentucky winding”) is always interesting. Estimating color or **spectral type** can be tougher – but appreciating the beauty of a bright red “blood drop” carbon star is easy! And always remember – understanding the physics of what you see, and therefore also of what you *might* be able to see, is a big part of the fun!

Planetary nebula – Can you see a **central star** or “core nebula” (central star is fuzzy)? Is the PN **annular** (darker or “empty” toward the center), and/or **bipolar** (two or more *lobes* or brighter areas are visible on opposing sides)? How many **rings or outer shells** can be glimpsed? (Remember, some PNe have an extremely faint **outer halo** which may extend to 2, 3 or even 4 times the published extent of the object!) Can you glimpse any **internal structure** within the inner or outer nebula – any brighter parts, irregularities, “striations”, unusual darkenings, etc.? What **Position Angle** (see Multiple stars above) does each of these features make with the center of the nebula? Finally, how does the nebula as a whole, and each feature you have noted (above), respond to different **nebular filters**? (Every PN is different – a few kinds respond best to no filter, or a broad-band or “DeepSky” filter. Many more respond better to a narrower-band or “Ultra-High Contrast/UHC” filter. And probably most will respond best to an Oxygen-III (“OIII” or “O3”) filter – try them all, including a “Hydrogen-Beta line” or “Hbeta” filter, or color filters if you have them! And remember, different filter responses mean *different physics* within that particular object... Amazing! ☺)

“Diffuse” or “Galactic” (non-planetary) nebula – Like Baskin-Robbins, these nebulae come in many flavors: emission, reflection, dark nebula, supernova remnant, “Wolf-Rayet” object, “proto-planetary” nebula, etc. Thanks to their radically different origins, and their differing mechanisms and wavelengths of illumination or excitation, each of these types responds differently to **nebular filters** (see Planetary nebula above), and will also show its own characteristic features or **structure**. And of course, many of the most interesting GNe are a mix of two, three, or even *four* of these different “flavors”! For instance, it is not uncommon for one “object” to include an **emission component**, a **reflection component**, and also **dark nebulae** involved or in front of it. For these fascinating “smoosh-in” nebulae, you may be able to spend hours just exploring the way different regions and features of the GN respond to different kinds of filters and magnifications... Now THAT is good fun. ☺)

Galaxy – Can you see hints of the *morphology* (shape and gross features) of this galaxy: spiral, barred-spiral, Seyfert, spindle, elliptical, irregular? How many different gradations or “brightness steps” can you see in the galaxy? Is there a broader “**outer halo**”? A **core** – and maybe even a smaller “**inner core**”? A tiny or even “stellar” **nucleus**? If it has arms, how many can you untangle with your eye? Are they loose, or tightly wound around the core? Do they even form a complete **outer** or **inner ring**? Can you see **dark features** or *mottling* along the arms or in the core? Brighter spots or *stellarings* – or even tiny nebulae – in or *near* the visible extent of the galaxy? Remember, *nebular filters* – and even color filters – can sometimes be used to bring out unique features even in the brighter galaxies! What orientation (*Position Angle*) do each of the features you see make? Finally, does the galaxy have any **companion galaxies**, or does it seem to be **interacting** with any other nearby galaxy (interactors sometimes have a number in the “Arp” catalog of galaxies)? Is it part of a **galaxy group** - an informal “NGC group”, or a compact “Hickson” or “Shakhbazian” group? And/or is it part of a larger **galaxy cluster**, like an “Abell cluster” (AGC)? What other tiny, faint nearby members of that group or cluster can you glimpse? Don’t forget to try averted vision, field “jiggling”, concentrated vision, and even deep breathing if it helps! ☺

Globular star cluster – These are some of the brightest and prettiest – and *also* some of the faintest and most elusive deep-sky objects. The basics of logging a GC include: Is it tight (mostly core and little halo), or loose (a smaller core, and then many stragglers on the periphery)? Can you resolve its stars? Just at the edges, or right down to the center? (Some globulars, even a few brighter ones, will not resolve at any power, because their constituent stars are *too faint* to be individually visible!) How many stars would you estimate are resolvable total? (A trick for counting stars is to choose just one wedge or “quadrant” of the GC in the field, to count the stars in that quadrant, and then multiply by four!) Finally, does the GC show any unusual features – in particular, can you see any blank areas, “cuts”, or *indentations* in the core of the cluster? (These may or may not be actual physical phenomena... Whether they are due to some trick of the eye in a crowded field, or to some obscure orbital dynamics, or possibly even to dark material in the GC core, I have never heard a convincing explanation – but a surprising number of GCs will show “dark features” like this, at one power or another, and at different contrasts. For example, sometimes these features are most visible when observing a GC in some twilight or moonlight... Who knew! ☺)

Open star cluster – I don’t often turn my attention to open clusters – but they are by far the most numerous of the objects that appear bright in a small telescope... When logging an OC, how many stars do you estimate are definitely visible? How many are just on the edge of visibility? Are there any clumps of fainter, unresolved stars in or near the OC – and what *Position Angle* do they make with the cluster central area? Is this OC more or less *rich* (many bright stars), and more or less *concentrated* (stars close together)? Also, remember that OCs are sometimes associated or *involved* with a **galactic nebula** of one kind or another – can you see any hints of this nebula or nebulae? Finally, do you note any particularly pretty double stars, or *strikingly colored* stars in the cluster? (Many OCs of all types, for some reason I have never understood, seem to have a nice orange or red star near their center! And some clusters are populated mostly by very young, “blue-white” members, while others are clearly **older clusters** – because many of their stars are on the yellow or orange end of the range of spectral types.)

To learn more about deep-sky observing techniques, or about a *particular* deep-sky object, or to archive your *own* observing log of any object for posterity, visit the *Internet Amateur Astronomers Catalog of Visual Deep Sky Observations* (IAAC or ‘netastrocatalog’), online at:

<http://www.visualdeepsky.org>

Clear skies!

Lew Gramer
dedalus@alum.mit.edu

April 16th is National Astronomy Day!

Family Fun for all ages! Open to the Public.

The Clay Center Observatory hosts its annual astronomy day with the Amateur Telescope Makers of Boston (ATMoB). Located at the Dexter and Southfield Schools, Brookline.

Free Astronomy Red Light on a keychain for first 300 children!

Many different types of telescopes will be set up for you to see and use. Safely view the sun in the daytime, and see the moon and stars in the evening, weather permitting. Indoor events held rain or shine!

*Demonstrations, lectures, planetarium shows, rocketry, celebrity appearances, educational activities for all ages.

*Galileo himself will lecture about telescopes and entertain. *Lecture by astronomer Ron Dantowitz - his team provided live telescopic coverage of historic SpaceShip One launches. *Lecture by Dr. Irene Porro - M.I.T. Center for Space Research. *Lecture by Prof. Esther Zirbel - Tufts University Astronomy Dept.

Daytime events 2:30-5:30 p.m. Evening events 7:00-10:00 p.m. Come anytime to each or both.

For detailed schedule and to pre-register, please go to

www.claycenter.org/astro
<<http://www.claycenter.org/astro>>.

National Astronomy Day Your ATMoB help needed!

For details and to register for the event, please go to www.claycenter.org/astro **15- 20 Scopes Needed**
- If you plan to bring a telescope, please let me know vrenehan@gis.net or (978) 283-0862.

~ Virginia Renehan

Upcoming ATMoB Star Parties

Club Star Party Coordinator - Virginia Renehan - 978-283-0862

April 26th - Squannacook Elementary School, Townsend, Tuesday April 26th (cloud date April 28th). Telescopes needed. Set-up time 7pm, Observing 7:30-9:30pm. Contact Mike Brown (978) 635-9600 wk or (978) 597-6743 hm for directions and further details. Email: Brownesc@rcn.com

ATMoB Librarian

On June 4th, 2004 Marsha Bowman was appointed as the acting club Librarian at the request of Anna Hillier, our club Historian. Marsha is going to be working on the categorization of the books in the library and others that have been donated but not yet placed in the library with the help of Anna and Eileen Myers. She is also involved in the organization of the sky and telescope magazine collection. If you would like to help out in these endeavors or wish to donate books to the club please contact Marsha directly.

May *Star Fields* deadline Saturday, April 30th

Email articles to Mike Hill
at noatak@aol.com

POSTMASTER NOTE: First Class Postage Mailed April 8, 2005

Amateur Telescope Makers of Boston, Inc.
c/o Shilpa Lawande, Membership Secretary
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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.

April 8 New Moon
April 13 Neptune is 1.3° NW of Mars
April 16 First quarter Moon
April 24 Full Moon
April 26 Mercury at greatest western elongation