



## 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. 22, No. 3 March 2010

### This Month's Meeting...

Thursday, March 11<sup>th</sup>, 2010 at 8:00 PM  
Phillips Auditorium

Harvard-Smithsonian Center for Astrophysics  
Parking at CfA is allowed for duration of meeting

#### Exoplanets and the Search for Habitable Worlds

For thousands of years people have wondered, "Are we Alone?" With over 400 planets discovered to orbit nearby stars, the existence of exoplanets is firmly established. Astronomers are now able to routinely measure planetary sizes, masses, and atmospheres for a subset of hot, big exoplanets. The race to find habitable exoplanets is on with the realization that big Earths orbiting small stars can be both discovered and characterized with existing technology. Professor Seager will answer the four questions she gets asked most often: "What could aliens see, looking at Earth from afar?"; "When will we find another Earth?"; "Can we go there?"; "If we cannot go there, why look?"

Professor Sara Seager is a planetary scientist and astrophysicist at MIT. Professor Seager's research focuses on exoplanets. She develops theoretical computer models of atmospheres and interiors of all kinds of exoplanets, to make predictions and interpret data, with a prime interest in "biosignature" atmospheric gases. Her research has helped to form the field of exoplanet characterization, including work that led to the first detection of an exoplanet atmosphere. Professor Seager is a member of the Kepler Science Team. Her work has been recognized by Harvard University's Bok Prize and by the American Astronomical Society's Helen B. Warner Prize. In the popular media she was named in *Popular Science Magazine's* Fifth Annual Brilliant Ten in 2006 and *Discover Magazine's* "Best 20 under 40" in 2008.

Please join us for a pre-meeting dinner discussion at Changsho, 1712 Mass Ave, Cambridge, MA at 6:00pm before the meeting.

### President's Message...

Since buying a house and building an observatory, I find myself spending way too much time alone at the eyepiece (and later a computer monitor). While it's great to have the convenience of an observatory it lacks the social aspect that I really had come to enjoy when I used to go every Saturday night to the clubhouse with my 60mm refracting telescope. In the past few years I've brought a little more of the social aspect into my life mostly via outreach and education. I've listed a few below in hopes that it may be of enough interest to some of you to do something similar.

A core of ATMoB volunteers attend the thirty to forty star parties that the club supports each year. Most of these parties are for elementary and middle schools in Eastern Massachusetts and Southern New Hampshire with a smattering of public events thrown into the mix. Star Party sizes range from twenty or so attendees to hundreds – i.e. "The Acton Star Party". Regardless of the size of the party, there is always room for more telescopes.

I prefer to get involved locally by holding a small star party for the neighborhood families and children or by giving a talk at the local middle school. These are great ways to keep in touch with my neighbors, local youth and of course, the sky. I get good questions during these sessions that keep me on my toes and have also put me directly at the eyepiece rather than at a computer monitor.

Currently, I am volunteering as the instructor for the "Astronomy Merit Badge" for a local Boy Scout troop. I get thirty minutes with them every Thursday night to guide them through meeting the requirements of finding their way around the night sky and the basics of astronomy. It does not take much time out of my schedule and it's a lot of fun. I did my first merit badge session last year at Harvard University when Virginia Renehan asked me to be a counselor with her and Nanette Benoit for "Merit Badge University" where various merit badge classes were taught on the campus – astronomy being one of them. One big tip I learned from Virginia last year was to ask the students what they know to get an idea of where to start and correct any misconceptions. More importantly, I learned it really opens students up for a deeper discussion – rather than a lecture.

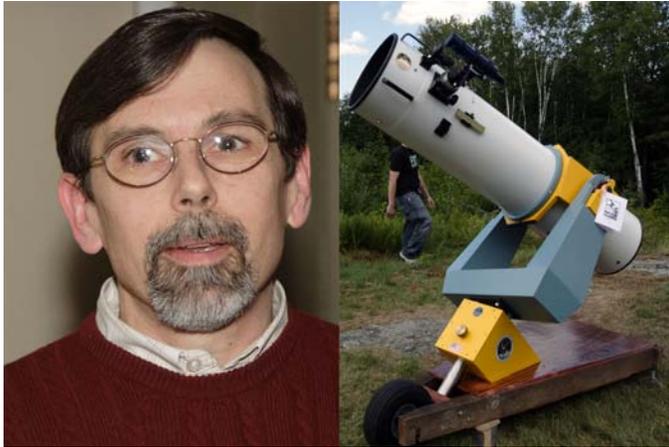
Eventually I can see myself drifting back to those Saturday nights at the clubhouse to observe with other members. Despite the things I do locally, there's nothing more relaxing than a quiet night under the stars with friends with a similar passion for astronomy.

Clear Skies,  
-Steve

~ *Stephen Beckwith, President* ~

## February Meeting Minutes . . .

The February meeting of the Amateur Telescope Makers of Boston presented a "Member Show and Tell Night". The featured speakers were Mike Hill, Tom Calderwood, Gerry Sussman, Mario Motta and Paul Valleli.



Mike Hill and his 10-inch Fork Mounted Newtonian. Images by AI T.

The 1st speaker was Mike Hill whose talk was an addendum to the lecture that he gave in March 2009 at which time the telescope had not been completed. Mike began with a synopsis of his project telling us that he wanted to build a telescope (a 10-inch Newtonian), that was portable and on an equatorial fork mount. He presented his conceptual drawings of his initial design which is almost identical to the actual assembly.

Mike described the sonotube material as "pretty flimsy" when you get it from Home Depot, but with the addition of the mirror cell holder, the yoke mount in the center, the 3-point diagonal holder in the front and additional reinforcements the tube became very stiff.

The polar axis assembly required a lot of parts which required precision cutting. It is a ribbed construction for strength which translates into less weight.

The base assembly is similar to a wheel-barrel to allow for portability. Some of the wood pieces are from his 150 year old Victorian house. The single wheel is made from solid core rubber and the 2 handles are stainless steel plumbing pipes.

In order to fit the entire assembly into his van, the forks had to be as squat as possible. To make sure that his design would fit he made a full sized prototype. Once he was comfortable with measurements he started to build the mount assembly.

When the base assembly was completed in March, Mike puttied all of the screw holes and painted all of the pieces. The tube assembly was then mated to the forks and the major construction was completed.

The last item to be built was a ramp to get the telescope into the van. The ramp is a narrow board with a V groove to keep the

base assembly wheel from falling out. The assembly fits into the van with a 1/4 inch to spare.

The scope was entered into the telescope competition at the [Stellafane Convention](#) in 2009 but due to the stiff competition did not win any awards. He mentioned that "just being up there at Stellafane is really part of the fun."



Tom Calderwood and the CD-ROM Plate Data

Our 2nd speaker was Tom Calderwood who has been participating in a few volunteer projects while on "temporary retirement". The most recent project has been at the [Maria Mitchell Association](#), particularly the [Maria Mitchell Observatory](#) on Nantucket. Tom noted that Maria Mitchell was the first professional woman astronomer in the United States and was active in the 19<sup>th</sup> century. She became famous for the discovery of a telescopic comet and was presented with a gold medal from the King of Denmark. She eventually became the President of Vassar College. After she passed away, friends and students raised money to build an observatory and it was completed in 1908.

Tom showed us images of the current facility. It has a 24-inch Richey-Cretien and a Princeton Instruments CCD camera. The facility performs photometry work and variable star measurements.

He started volunteering in October 2009 by helping out with an observing program. Tom showed us the log book for one of his first solo observing runs. It read: "Clouds at 8:19, Thick clouds at 8:25, Aborted 9:01. As you see, it didn't go so well."

Tom walked through the relatively involved procedure to get the system set up for an observing run. "First you go through a scope setup list, then a dome setup and then when you are done at the end of the night you do the scope shutdown and then the dome shutdown and then you have to make sure you turn off the coffee pot and microwave." He also showed us some of the data that he collected.

The Observatory has a collection of 8000 glass plates going back to 1913. The Maria Mitchell Observatory received a grant to digitize their plates and the data was written out on CD ROMs. One of Tom's jobs was to help load the CDs and to have them copied into the disk storage system. Some of these

CDs go back to 2001 and a few of them are starting to delaminate. He was able to process 2300 disks. Each CD has 3 images of each 8x10 inch plate. There is a low resolution image and one high resolution “east” half and one high resolution “west” half. A proposal has been made to make these images available on the web.

One of his last projects was to type up notes from the scanning logs to make them into a form that can be used on a computerized system.

Tom showed some of the antique instruments at the Observatory



Gerry Sussman and the ATMoB Schupmann Telescope. Images by Al T.

The 3rd speaker was Gerry Sussman who talked about his involvement with Eric Johansson in “making the 6-inch Schupmann actually work.” He commented that he initially didn’t know anything about the history of the scope and that it was a “great big pile of work.”

The Schupmann is a refractor telescope with an uncorrected objective. Amazingly it has no chromatic aberration. The reason is that it has a very clever arrangement of a 2nd surface corrector mirror (Mangin mirror) which is used to cancel the chromatic aberration of the objective. As a consequence, it has a very small field of view but it is “super good for planets.” You get enormous contrast and high resolution, perfect correction of chromatic aberration and by small adjustments by the field mirror one can get compensation for atmospheric dispersion. The optical path is over 100 inches long and the scope is heavy with a weight of 40 pounds.

Gerry projected a diagram of the system from Jim Daley’s book, The Schupmann Telescope: The Story, Design, Construction and Use of a Neglected Telescope Type. Light first goes through the primary lens and focuses onto the field mirror. At this point the light has both under-corrected spherical and chromatic aberrations. The field mirror has a slight concave curve and the light passes to the corrector “lens” (Mangin). The Mangin has a negative meniscus refractive component, which has a reflective coating applied to the rear surface. The negative meniscus must be made of the same glass (from the same melt) as the objective to get the chromatic aberration correction. The light passes from the Mangin

reflective coating to the folding mirror and then to the focal point where you can look at it with your eyepiece. Throughout the interior of the telescope body are an elaborate set of baffles due to the complicated light path.

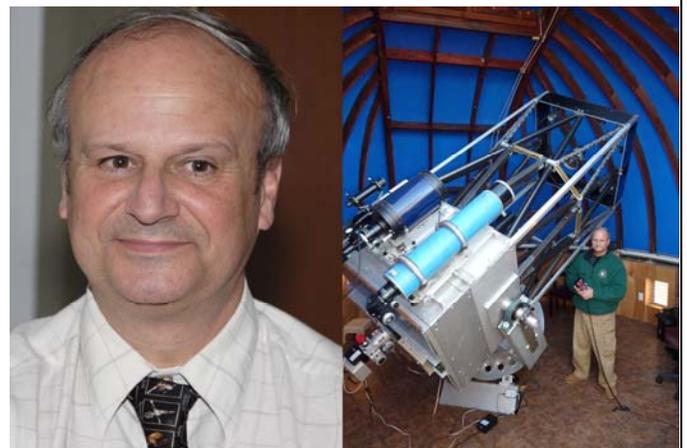
While working on the Schupmann, Gerry and Eric discovered that the diagonal assembly was in “rotten shape”. To correct the problem the entire unit was rebuilt. Gerry noted that all of the set screws were loose or attached to the wrong places; all of the grease was dirty and dried out; the clutches had to be adjusted and the scope had to be balanced. The bearings on the declination motor are bad and the motor should be replaced as soon as possible.

It was discovered that the focuser had been moved by various people to various places. Gerry emphatically stated that “the optical prescription is extremely rigid and you can’t fiddle with this!” To understand this system he read Jim Daley’s book and then worked out the equations. He performed the paraxial geometric optics and did some of the diffraction optics to understand what was going on.

The most interesting problem was that they found severe astigmatism when they started to work on the telescope. There is an angle between the center of the focus of the eyepiece to the field mirror focus which produces unavoidable astigmatism. It can be canceled to the 2<sup>nd</sup> order by slightly tilting the objective, in this case by 0.6 degrees.

Gerry noted that “this was the most complicated telescope I’ve ever worked on, optically speaking”. He then showed us pictures of the Schupmann being tested on a pipe mount on the Home Dome platform at the Clubhouse.

Eric Johanson commented that he fell in love with the Schupman during the 2001 Mars opposition and has been an advocate for its use. When the scope is operational he would like to build an observing program around it.



Mario Motta and his Modified 32-inch Relay Telescope

Our 4th speaker was Mario Motta who talked about his recent modifications on his 32-inch, f/6 relay telescope. He started by giving the audience a short history of the observatory construction and telescope construction and assembly.

Mario's observatory is integrated with his house but the pier and telescope are isolated from the rest of the structure. The pier and framing for the observatory was actually built before the rest of the house. Many members of ATMob helped to raise the dome and assemble the scope, and he thanked everyone for their assistance.

The original plan was to build a Newtonian telescope but Scott Milligan had a design that he had been working on for years to make the "perfect scope". The primary is a 32-inch spherical curve and all other mirrored surfaces are spherical. A perfect sphere is much easier to make than a parabola. The scope has a Mangin which eliminates spherical aberration created by the primary mirror. There are field stops which prevents off-axis light from affecting the contrast. The lenses after the field stop are a doublet, a singlet and another singlet. These lenses color correct and make a flat field over 44mm circle. There are 11 surfaces on this telescope making it a very complex system.

After using the telescope for a few years, Mario discovered a problem. He can collimate perfectly facing in one direction but when he moved the scope to the zenith or to the side he would get some "funny star images", sometimes looking like triangles. After lengthy discussions with members of ATMob he realized that part of his scope was not a Serrurier truss. A Serrurier truss is designed so that you have sag in both directions simultaneously. The truss was moving the Mangin out of its optimum position.

There were 3 ways to fix this problem (1) reduce the unsupported length in half, (2) add more elements or (3) lighten the upper end. After much discussion and thought Mario did all three. He added clamps to the carbon fiber long tubes and rigidly connected those clamps together in a ring. He added more carbon fiber tubes to create a double cross structure. He eliminated flexure anywhere and everywhere he could think of. He also lightened the upper cage by using carbon fiber sheets which changed the weight from 40 pounds to 14 pounds. The added benefit was that he could now remove up to 60 lbs of counterweights off of the back. All of the modifications solved the problem.



Paul Valleli and his StellaCam-3 Video Camera. Image by Al. T.

The 5th and last speaker was Paul Valleli talking about imaging with video or webcam. He first showed a StellaCam-3 camera which puts out a monochrome NTSC signal that is fed into a DVD recorder. It can make exposures at 1/10000 second and integrate up to 30 seconds. One can do live video, with time lapse effects, of nebulosity and galaxies for public display.

The 16<sup>th</sup> of January was Paul's day for looking at Mars. The Martian North Pole is tipped toward us and you can see a dark band around the pole called Vastitas Borealis. That was Paul's target because that was what was up. He showed us the results from his imaging session. He took 3000 images in 5000 frames which correspond to approximately 2.5 minutes of video.

Paul showed us his workflow using Registax 3. First you load the AVI file into the program and select the area you want to stack. You align the image, optimize it and stack the images for a wavelet analysis.

He showed us another video taken through his 14-inch Meade ACF scope taken at f/25 and the StellaCam-3 camera. The sky that evening had some high frequency turbulence which caused some strange artifacts. He was very disappointed with his images during this Mars opposition. The 2003 opposition was about 6 million miles closer than this opposition.

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The Secretary's report for January's meeting was given by Al Takeda.

Tom McDonagh gave the Membership Secretary's report.

The Treasurer's report was given by Nanette Benoit. She announced that she is giving out donation confirmation letters for monetary donations to the club in 2009.

John Reed gave the Clubhouse report for the work parties on January 2<sup>nd</sup> and 30<sup>th</sup>.

**New Event Announcements:**

- New Member Night – Sat., Feb 20 at 7:00 pm
- Clubhouse Work Party – Sat., Feb 27

**New Star Parties:**

- Harvard Elementary School - Monday, Mar 15
- Wilson Middle School - Mon., Mar 17
- Sullivan Middle School – Mon., Mar. 22

Star Party Coordinator, Virginia Renehan announced the above Star Parties and asked the membership to volunteer for those events.

Virginia also mentioned that there will be a program at Harvard University called Merit Badge University on March 6 and April 17. About 500 Scouts will visit the school to experience what it is like to attend college. During those sessions, work on merit badges, such as Chemistry and Astronomy are undertaken. If anyone is interested in teaching

the Astronomy merit badge course let Virginia know and she can give you more details on what is involved.

Bruce Tinkler reported that Astronomy Day at the Clay Center will probably be held on Saturday, May 15<sup>th</sup>.

John Briggs announced that there will be a pre-Stellafane convention workshop on Lunar Morphology on Thursday, August 5<sup>th</sup>.

Mario Motta gave us a light pollution legislation update. Due to a change in leadership, Kelly Beatty and Mario visited the new Director of the Energy Committee at the Statehouse. The bill is still in the committee.

Paul Valleli reports that the observational report for Kuiper Belt Object 55636 has been submitted for peer review and publication.

~ *Al Takeda, Secretary* ~

## Clubhouse Report . . .

### February 2010

-As mentioned in the January report, work sessions were held on January 30<sup>th</sup> and February 27<sup>th</sup>. This report is being written as rain is pecking at the windows while 30 miles West and North of Boston over 16 inches of snow is piling up. We are now looking at MUD season by this Saturday's Work Party (Feb 27). The big white saw horses are up so heed the warning and park on the road.

- Since the full moon work session is not in phase with our monthly meeting we can only report on the January 30, 2010 efforts, made possible by the volunteer time donated by Dave Wilbur, Sai Vallabha, Al Takeda, Art Swedlow, Sergio Simonvic, John Reed, Dave Prowten, Eileen Myers, Mike Mattei, John Maher, Brian Maerz, Dick Koolish, Steve Clougherty, Paul Cicchetti, John Blomquist, and Bruce Berger. Major projects tackled were the bathroom renovation and further work on the new machine shop in the barn.

- The bathroom ceiling and walls were washed with a bleach solution and old separating paper tape removed. When dry, new self sticking fiber mesh wallboard tape was applied and the first coat of joint compound applied to the room. This was worked by Paul C. and Eileen M. Subsequent visits allowed two more coats of joint compound to be applied after sanding, with the primer Kilz2 applied after the last sanding. The bathroom is now ready for the top coat painting this Saturday.

- New lumber, cut to measured bath wall dimensions earlier by Brian M. and John R., was assembled, sanded, and undercoated with Kilz2. Three coats, with sanding between, preceded two coats of new bath paint now curing in the old machine shop. This was worked by Brian, John, Dave W., Sai V., Art S., and Al T., and provides the shelves to store water based paint products in the bathroom.

- Work continued in the rebuilt outhouse attached to the near barn at the new machine shop. The flooring was removed, framing rebuilt, insulation installed, and flooring reinstalled. Rigid insulation and framing material purchased and delivered from Home Depot await installation on the walls and ceiling. This was worked by Dave P., Dave W., John B., Bruce B. and Sergio S.

-Snow removal and outside work was tackled by John B., John M., Sergio S., Dave W. Dick K., and Steve C.

- As advertised, a delicious lunch of baked chicken, Bailey Hill spaghetti, garlic bread, and salads by Sai was presented by Sai V., Art S., and Eileen M.

- Dick K. donated a heavy duty pick/mattock and Eric Johansson donated a double finished wall cabinet for the clubhouse. Thank you Dick and Eric. We also have an old 20" polished mirror with one off axis plug cut out; with the possibility of two off axis mirrors available after a lot of work.

- We also now have three red exit lights, permanently illuminated, installed over the front and side house doors and above the rear near-barn door. These were installed by MIT and give good red lights at these exits for our red light observing sessions at the dark of the moon. Should power fail we will lose all dark adaptation since each red light has a pair of white lights which immediately come on from battery power. Plan your observing sessions accordingly. They blend in during normal activities and provide assistance in locating the doors during a power failure. The rechargeable batteries should last several hours before needing automatic recharging when power returns.

-The next report will summarize activities at the Feb 27 session. Those projects will continue at the following Work Party on March 27. Thursday mirror grinding and Friday Astronomy classes continue. Saturday night observing will be highlighted by the anticipated Messier Marathon on the March 12/13 weekends. Come on out and join us at our clubhouse.

~ *Clubhouse Committee Directors* ~

~ *John Reed, Steve Clougherty and Dave Prowten* ~



John Blomquist Plowing the Observing Field . Image by Al T.

## Clubhouse Saturday Schedule

Mar 6	Ed Budreau	Rich Burrier
Mar 13	Myers + Nugent - <b>Messier Marathon 2</b>	
Mar 20	Art Swedlow	Sai Vallabha
Mar 27	A.Takeda+B. Toomey- <b>Work Party 4</b>	
Apr 3	Henry Hopkinson	Tom Wolf
Apr 10	George Paquin	Dave Prowten
Apr 17	Kosicki + Siegrist- <b>Messier Marathon</b>	
Apr 24	J. Blomquist, J.Maher, T. McDonagh	

## New Member Night Report . . .



The New Member orientation evening held on February 20 was well attended. Eight new or recent members toured the clubhouse facility, including the mirror making area, mechanical shop, library and electronic workshop. They learned about the loaner scopes that ATMOB has for member use, and also saw the permanent observing facilities on the clubhouse observing field.

Thanks to longtime members John Maher, Al Takeda, Mike Hill and Glenn Chaple for being on hand to answer questions, explain facilities and policies, and demonstrate observing in the partially clear skies that night.

The next New Member night is planned for May. Watch for the date as we get closer - and remember that it is open to all members.

~ *Bernie Kosicki, Vice President* ~

## Membership Report . . .

Membership as of 02/24/2010 - 316 members.

Having trouble with your Astronomy or Sky and Telescope Magazine subscription? Please feel free to contact me via email. I'll do my best to sort out any problems.

Consider making a New Year's resolution of attending a

monthly meeting in Cambridge and a workshop/observing session at the clubhouse in 2010. There is always something new and exciting going on! The Amateur Telescope Makers of Boston, Inc. is a 501(c)3 organization. Donations are gladly accepted and are tax deductible to the extent allowed by law. While the deadline for 2009 charitable donations has passed, please consider making a tax-deductible contribution to the club when planning for 2010 and beyond.

All members are encouraged to seek out and welcome our new members:

**James Chamberlain**

**Ashley Crosby**

[membership@atmob.org](mailto:membership@atmob.org)

~ *Tom McDonagh - Membership Secretary* ~

## Sky Object of the Month . . . March 2010 - h 3945 Canis Majoris

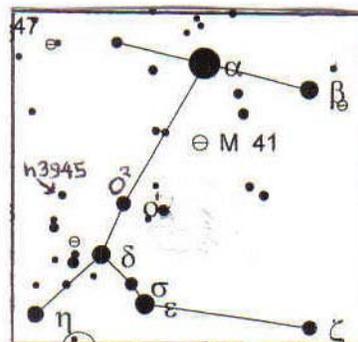


Chart for h3945 CMa  
From Cartes du Ciel

What is the most colorful double star in the night sky? Most amateur astronomers would vote for  $\beta$  Cygni (Albireo). Others might cite  $\gamma$  Andromedae (Almach),  $\iota$  Cancri,  $\xi$  Bootis, or  $\eta$  Cassiopeiae. Sadly overlooked is a double star that might challenge them all – h 3945 in Canis Major. It is arguably the most colorful double star in the winter sky and, in fact, has been nick-named the “Winter Albireo.”

h3945 (aka 145 Canis Majoris) is one of more than 5500 double stars catalogued by John Herschel (William's son) in the early 1800s. The magnitude 5.0 primary is accompanied by a 5.9 magnitude companion 26.8 arc-seconds away. Their spectral types (K0 and F0) give rise to a stunning color contrast. In her book *Double Stars for Small Telescopes*, Sissy Haas writes, “Showcase pair: A bright, wide, and easy pair with deep colors. The stars are bright citrus orange and royal blue; these colors are seen vividly and in strong contrast.” In early 2008, 3945 was the subject of a forum on the Cloudynights website. The general consensus was that this is one of the most beautiful double stars in the night sky. That was my thought when I included h3945 in a “Top 100 Doubles” series written for *Deep Sky Magazine* in 1983.

Despite these kudos, h3945 still gets the cold shoulder from most backyard astronomers. In the February, 1980, issue of Deep Sky, I described h3945 as “one of the most colorful, yet underrated, double stars in the heavens.” Richard Dibon-Smith, on his Constellation Web Page ([www.dibonsmith.com](http://www.dibonsmith.com)) concurs, noting that, “h3945 is a gorgeous yet rather unknown binary.” In the Cambridge Double Star Atlas, co-author James Mullaney laments that h3945 is “Largely unknown & unobserved – a pity!”

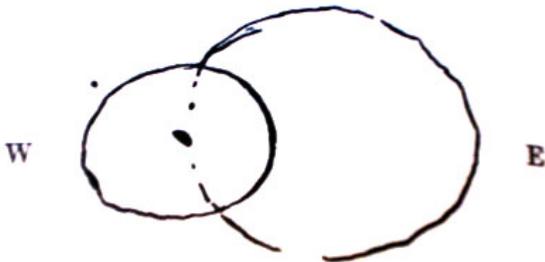
Why would such a beautiful double star be so grossly ignored? There are two parts to the answer - h3945 is in a southerly location, and it isn't as bright and easily seen as Albireo or Almach. The first isn't a problem if your observing site affords a clear view of the lower half of Canis Major. As for finding h3945, just trace a line from o1 CMa past o2 CMa and extend it about 3 degrees beyond (see finder chart). (Editor's note: o2 CMa is Omicron 2 Canis Majoris and o1 is Omicron 1 Canis Majoris).

Sissy Haas, Richard Dibon-Smith, James Mullaney, your truly, plus a batch of backyard astronomers on the Cloudynights website have all raved about h3945. Now it's your turn to experience one of the night sky's true gems.

Your comments on this column are welcome. E-mail me at [gchaple@hotmail.com](mailto:gchaple@hotmail.com).

~ Glenn Chaple ~

## Thoreau on Astronomy . . .



Observed a singular circle around the moon tonight between nine and ten, the moon being about half full, or in its first quarter, and the sky pretty clear, - a very bright and distinct circle about the moon, and a second, larger circle, less distinct, extending to the east of this, cutting the former and having the moon on its circumference or at least where its circumference would be. This inner circle is very contracted and more distinct on its eastern side, included within the larger, and it appears to shed a luminous mist from all sides.

Journal, 28 March 1852

~ Submitted by Tom Calderwood ~

## Pro-Am in Brazil . . .



Bruce Berger recently completed a successful expedition to Brazil, representing ATMoB and MIT in a pro-amateur collaboration to collect data on the minor planet 20000 Varuna. Bruce recruited amateurs from 4 astronomy clubs across Brazil to set up 7 observing stations across Varuna's path on February 19th. The teams managed to collect some good data despite the very early evening event time and Brazil's annual wet season.

~ Bruce Berger ~

## Preservation of Archival Materials . . .

Update from the Working Group: Three members, Eileen Myers, Al Takeda and Nina Craven, have been working together organizing *Sky and Telescope* magazines and documenting events. The working group will discuss among themselves to prioritize what needs to be done. So far, Ed Boynton has the enthusiasm to be an historian-in training; Chase Green, Paul Valleli and Anna Hillier are working on archival storage and exchanging information; Ed will be scanning older documents and letters, and pictures and other items relating to current events. I would like us to work together at the March 27<sup>th</sup> Work Party, as well as at all of the scheduled monthly work sessions at the Clubhouse. It is understood that we all cannot be at each work session, and that we can continue work independently. If the group wants a more structured meeting, we can discuss this at any time. Of course all of the above volunteers can always communicate their thoughts to me and each other via e-mail. We welcome any new volunteers to this group. Hope to hear from you. Best

~ Anna Hillier ~

## For Sale . . .

FOR SALE: 6-inch Aperture, F/8 Galileo Brand Refractor with finder bracket and large split mounting cage and dovetail. Some internal coating damage but resolves great. Near perfect imaging with 25mm Minus-Violet Filter included.

**\$325 or B.R.O.**

3-inch Aperture, F/15 Home-built Refractor with Doublet Achromat and Crayford 2-inch E.P. Holder. Has White Aluminum and Brass tube sections.

**\$150 or B.R.O.** Can bring both to next meeting for inspection.

Paul Valleli valleli@rcn.com 781-272-8946 Burlington, MA

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**April Star Fields DEADLINE**  
**Wednesday, March 24<sup>th</sup>**

**Email articles to Al Takeda at**  
**secretary@atmob.org**

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**POSTMASTER NOTE:** First Class Postage Mailed Mar 4<sup>th</sup>, 2010

Amateur Telescope Makers of Boston, Inc.  
c/o Tom McDonagh, Membership Secretary  
48 Mohawk Drive  
Acton, MA 01720  
**FIRST CLASS**

**EXECUTIVE BOARD 2009-2010**

PRESIDENT: Stephen Beckwith (978) 779-5227  
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2005-06 Bernie Volz (603) 968-3062  
2002-04 Eileen Myers (978) 456-3937

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Steve Clougherty (781) 784-3024  
David Prowten (978) 369-1596

OBSERVING: Stephen Beckwith (978) 779-5227  
John Maher (978) 568-1253

**OBSERVING AND PUBLIC OUTREACH**

STAR PARTY COORDINATOR:  
Virginia Renehan [starparty@atmob.org](mailto:starparty@atmob.org)

**How to Find Us...  
Web Page [www.atmob.org](http://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 or (DST: subtract 4 from UT).*

- Mar 7 Last Quarter Moon
- Mar 14 Daylight Saving Time begins
- Mar 15 New Moon
- Mar 20 Vernal Equinox
- Mar 23 First Quarter Moon
- Mar 29 Full Moon
- Apr 6 Last Quarter Moon