



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. 1 January 2010

This Month's Meeting...

Thursday, January 14th, 2010 at 8:00 PM
Phillips Auditorium
Harvard-Smithsonian Center for Astrophysics
Parking at CfA is allowed for duration of meeting

Best Targets for Astrophotography and What They Reveal About Our Universe

Ruben Kier's photos, articles, and letters have appeared regularly in *Astronomy* and *Sky & Telescope* magazines. He has recently joined the Astronomical Advisory Council of the University of Florida, which helps to operate the world's largest telescope in the Canary Islands. This year, Ruben summarized a decade of experience with CCD imaging in his new book, [*The 100 Best Astrophotography Targets: A Monthly Guide for CCD Imaging with Amateur Telescopes*](#). His goal has been to show how amateur astronomers, using moderately priced equipment, can obtain excellent images rivaling those obtained with the most costly telescopes. Ruben's presentation will (1) explain how the 100 Best Targets were chosen, (2) explain how they help us understand what we can see at the eyepiece, and (3) provide valuable tips for imaging. This talk should appeal to both photographers and visual astronomers.

Ruben Kier's favorite memories from his youth include studying astronomy with Carl Sagan at Cornell, and traveling with Isaac Asimov and Neil Armstrong to an eclipse in Africa. After medical training, Dr. Kier served as Associate Editor of the *Journal of Radiology*, and published over 50 scientific articles. Over the past decade, he has returned to his childhood love of astronomy.

Ruben's talk will first reveal how the 100 best targets for astrophotography were chosen, and then will show what these photographs reveal about our universe.

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...

The first decade of the twenty first century has come and gone and we have lived through "interesting times" during the past ten years. The new millennium started with a bit of a whimper when the Y2K threat failed to bring the world to its technological knees but ended with an explosion of technological advances that have changed not only our daily lexicon, but our daily lives – i.e. blogs, twitter, iphones, facebook, etc.

However, since we're a collection of astronomers and telescope makers, I've made a list (below) of a few astronomy related items that took place in the past decade. While far from complete, it's a few items off the top of my head that I thought would help get all of you pondering the discoveries or innovations in this fast moving decade.

1. The adoption of webcams to be used for planetary and lunar imaging – coupled with free processing software from the internet made astro-imaging accessible to most amateurs.
2. At a price accessible to most amateurs (below \$100), one could now take images better than the high-end CCD cameras that cost well into the thousands of dollars.
3. Mars makes three very close passes to earth in the decade in time for many amateurs to take advantage of the webcam technology and capture many marvelous photos of the planet.
4. Most amateurs are cured of "aperture envy" when advances in low-dispersion glass along with low manufacturing costs in the PRC, allowed several old (and new) telescope manufacturers to market affordable apochromatic refractors. In addition, manufacturers seem to have been putting more effort into the mechanics of the telescope as they have improved both their mounts and focusing mechanisms.
5. The rovers, Spirit and Opportunity, landed on Mars in January, 2004 and started their ninety day missions of exploration. Five years later, they're still "alive" and while Spirit is currently bogged-down in sand, data is still coming back from the "Red Planet".
6. The Kepler Telescope was launched in 2009 and the search begins for earth size planets in the habitable zones of other suns.
7. Then NASA's LCROSS probe finds water ice on the moon when it slammed into the lunar South Pole. This discovery increases the chances of Man's permanent presence on the moon as it would not only provide drinking water and oxygen, but also hydrogen for rocket fuel.
8. Amateur astronomers detect evidence of extraterrestrial planets using backyard telescopes and CCD cameras to observe transits of the planets across their parent star.
9. The age of the universe was firmly established (again) at 13.73B years.

Clear Skies

~ *Stephen Beckwith, President* ~

December Meeting Minutes . . .



Dr. Patricia Udomprasert and the WorldWide Telescope Interface

The December meeting of the Amateur Telescope Makers of Boston featured Dr. Patricia Udomprasert who talked about the WorldWide Telescope Ambassador program.

The WorldWide Telescope, according to Udomprasert, was created to provide a “seamless environment for viewing some of the best astronomical images that are available from the world’s best telescopes. And literally you have the whole universe at your fingertips.”

This project grew out of the work of a computer scientist named Jim Gray. As part of the Microsoft Research Group he partnered with professional astronomers to try to sort the terabytes of data coming from telescopes around the world and at all parts of the electromagnetic spectrum. Unfortunately Gray, a solo sailor, was lost at sea in 2007. As a tribute, Microsoft commissioned Curtis Wong and Jonathan Fay to build the WorldWide telescope interface.

The interface is currently in a pre-release (beta) form but it can be downloaded and installed from the [WorldWide Telescope site \(www.worldwidetelescope.org\)](http://www.worldwidetelescope.org). Once the interface is installed it accesses the images and data stored on the Microsoft servers. It is a free service but will require a fast Internet Service Provider (ISP) connection, a reasonably “beefy” gamer type computer, and at a minimum, run on a Windows XP or newer operating system. Macintosh users must use “Boot Camp” and run a Windows emulation.

Udomprasert then proceeded to introduce us to the interface and began to highlight some of the 3-dimensional visuals. She began by viewing the solar system and proceeded to zoom in and around the planets and the Sun. Udomprasert demonstrated the concept of the phases of our moon by using Jupiter’s Galilean moons as an example.

She pointed out that there are still misconceptions about the phases of the moon and what causes the seasons on Earth. Udomprasert felt that those concepts are very difficult to explain when a 2-dimensional textbook is used. She played a famous video of a Harvard graduation in which students were

asked about the causes of the seasons. It turned out that 22 out of 25 students got this concept wrong.

Udomprasert continued to demonstrate the WorldWide Telescope’s capability by moving the viewpoint out of our solar system to the nearest stars and demonstrated how parallax could be visualized using data from the Hipparcos Catalogue. She then seamlessly moved millions of parsecs away from our Milky Way galaxy using the Sloan Digital Sky Survey data to view the other local galaxies and then zoomed farther out to view the large scale structure of the universe.

The default mode is a 2-dimensional optical view, but other wavelengths can also be visualized. Udomprasert zoomed into M-82, which in an optical view looks like a “funny irregular galaxy”, but in infrared shows itself to be a starburst galaxy spewing out ionized gas.

While exploring the WorldWide Telescope interactively can be entertaining it is the educator’s ability to create custom interactive programs or “tours” that can be visually appealing and to explain what you are viewing.

The WorldWide Telescope program will be putting together an NSF (National Science Foundation) proposal in February 2010 to launch this on a nationwide scale. Training materials will be developed throughout the year and large scale recruitments will be started at the end of 2010.

During this pilot phase, Patricia Udomprasert is hoping to recruit members of ATMob as WorldWide Telescope Ambassadors to “become experts in using the software”, teach educators and others how to use the interface, use our astronomical expertise to create tours and to be “cheerleaders” for the program.

Dr. Patricia Udomprasert is currently working with Alyssa Goodman, Principle Investigator (PI) of the WorldWide Telescope Ambassador program at the Harvard-Smithsonian Center for Astrophysics and Annie Valva, Director of Research & Development for WGBH Interactive. If you are interested in assisting the WorldWide Telescope Ambassador project, send an email to Patricia at pudomprasert@cfa.harvard.edu.

The Secretary’s report was given by Al Takeda.

The Membership Secretary was absent and the report was given by President Steve Beckwith. He noted that the grace period for membership renewals ended on Dec. 1st and if dues were not paid that person was dropped from the rolls and denied access to the Club’s members section on the ATMob website.

The Treasurers report was given by Nanette Benoit.

Steve Beckwith gave the Observing Committee report. John Maher mentioned that the current Cosmology course will be ending soon and that the membership should watch the Announce list for the next video course.

Steve Clougherty gave the Clubhouse report. The Clamshell steps were assembled and indoor electrical work is being performed in the new workshop and the Clamshell during the December 5th work party. A new pitch lap warmer, designed by Ed Los, is now operational. The warmer can accommodate up to a 12 inch tool. The next two work sessions are on January 2nd and January 30th.

Star Party Coordinator, Virginia Renehan awarded International Year of Astronomy (IYA) pins to John Blomquist and Bruce Tinkler. She also awarded IYA buttons to other star party participants.

Steve Beckwith handed out hand drawn thank you cards from the town of Harvard's 3rd grade class to Neil Fleming, Eileen Myers, John Reed, Mike Brown, John Blomquist, Brewster LaMacchia, Al Takeda, John Maher and Phil Rounseville.

Eileen Myers has a few copies of the Club History for sale.

Bernie Volz has a few Astronomy calendars for sale.

Gary Jacobson has the RASC *Observer's Handbook 2010* for those that ordered them.

Paul Valleli reported that the field of view of the Finger Lakes Instrument (FLI) CCD camera mounted on the Boller & Chivens 30-inch, f/13.5 telescope, that was used for the occultation of KB55636, was 3x3 arc minutes.

Mario Motta announced that he had purchased a triplet 6-inch, f/1.2 lanthanum refractor lens for \$300 at the Surplus Shed. He noted that this lens is worth \$3000 and there were a few left.

A motion was made by Mario Motta to send a condolence message (Get Well Soon!) to Fred Ward for his knee replacement. Motioned seconded. Unanimous voice vote.

Steve Beckwith picked up a few 4-inch, 6-inch, 8-inch and 10-inch blanks and some grit as a donation to the club. The same person that donated the above items also requires assistance in collimating his 12.5-inch Cassegrain.

Steve also mentioned that Britain has announced its first Dark Sky Park at Galloway Park in Southwest Scotland. They are also coming out with the Galloway beer to celebrate it.

December Event Announcements:

- Clubhouse Work Party – Dec 5th
- ATMoB New Years Eve party at the Clubhouse
- Geminid Meteor Shower – Dec. 14th

December Star Parties:

- Lexington Christian Academy Star Party – Dec. 7, 2009
- Boys and Girls Club Star Party Postponed until Spring

New Event Announcements:

Bernie Volz reported that 50 people have registered for the Australian 2012 Total Solar Eclipse trip. There are 20 slots left. See the Events section at the ATMoB website for information.

New Star Parties:

- Lexington Planet Party - Jan 19, 2010
- Butler Middle School Star Party - Feb 23, 2010
- Cambridge Science Festival Sidewalk Astronomy - April 26th and May 1st

~ Al Takeda, Secretary ~

Clubhouse Report . . .

December 2009

--Our clubhouse work sessions, scheduled for the Saturday nearest full moon throughout the year, follow the vagaries of the Gregorian calendar. October's dual work parties were followed by an absence of a Full Moon Saturday in November. Work sessions resumed on December 5th and will be followed by two in January: Jan 2nd and Jan 30th.

--The December 5th session was made possible by Dave Wilbur, Sai Vallabha, Al Takeda, Gerry Sussman, Art Swedlow, John Small, Phil Rounseville, John Reed, Dave Prowten, Eileen Myers, John Maher, Dick Koolish, Eric Johansson, Sydney Johnston, Anna Hillier, Mike Hill, Steve Clougherty, Paul Cicchetti, John Blomquist, and Bruce Berger volunteering their time. A Bailey Hill spaghetti lunch was served by Sai V., Art S., Eileen M., and J. Reed. Before lunch the weather was cloudy with a 40 deg F temperature.

--While the weather held, the new metal stairs were uncrated, assembled and test fit to the clamshell structure. Efforts then transferred to continuing electrical wiring and circuitry for opening/closing the clam shell dome. Work halted when the weather deteriorated. The ongoing rehabilitation of the Schupmann 6-inch refractor continued indoors and progress is reported later. Outdoor hoses, tools, stands were secured for the winter; trash was secured. The Schupmann team discovered window deterioration upstairs and temporary repairs were made. Electrical work continued in the near barn machine shop. Snow pellets changed to snow which needed shoveling by closing.

--Dick Koolish donated a hefty pick and 8# sledge. Eric Johansson donated the third batch of optics, optical parts and supplies as well as a folding ladder and a Sawsall. Anna Hillier brought the morning donuts. Thank you Dick, Eric and Anna for thinking of our clubhouse. Anna brought the new copies of our Club History for Eileen M. for distribution.

Sunday Dec 27th Sai V., Art S., Al T., and Eileen M. spent 6 hours cleaning and decorating the clubhouse for the New Years eve party. On Wed Dec 30th Brian Maerz removed the packaged pieces of the stair crates for disposal.

--Our next work party is Saturday January 2, 2010 starting at 10am. We will relocate the water based paint into another heated area from the pump room as requested by our landlord, and continued clam shell and machine shop efforts. We will start to resume the evaporator room and basement projects as time permits. We can use any time you can spare to help on these indoor projects. See you Saturday.

~ *Clubhouse Committee Directors* ~
 ~ *John Reed, Steve Clougherty and Dave Prowten* ~

Report on the 6-inch Schupmann Refractor . . .

We are happy to report that the venerable 6-inch Schupmann has been brought back to life thanks to the efforts of Eric Johansson, Mike Mattei, Paul Valleli, and Gerry Sussman.

Even with the complexity of the Schupmann optical design, we were able to use relatively simple techniques (eyepiece lasers, artificial stars, the sky as flat-field target and Polaris) for star testing. One tool for understanding was a ray tracing program built by Gerry Sussman which we were able to use to match what we were seeing in optical tests and then in software, determine the correction.

The repair addressed numerous mechanical problems in the drive. We documented the drive wiring, adjusted the clutches, worked out balance, cleaned the worm gear and drive gear, reset the set screws, tested the drive electronics, and verified the rate. Optically, we replaced the field mirror (and we have a backup mirror); the optical surfaces have been examined for dust or deterioration and were found clean; and a minor baffling problem was fixed. The focuser was cleaned, appropriately lubricated and mated to a new mounting plate. The diagonal was replaced with a larger and more rigidly mounted one.

The telescope was aligned as specified by Jim Daly in his manual on the Schupmann. The last step, using Polaris as a target, was to adjust the tilt of the objective to cancel the astigmatism. Vladimir Vudler observed Polaris after this adjustment. He was impressed with the quality of the image.

We look forward to sharing the joys of the Schupmann with other club members in the near future.

(The Clubhouse Directors would appreciate members respecting the effort put forward by these four gentlemen and refrain from adjusting anything on this telescope. We look forward to getting it back in use as soon as possible.)

~ *J.R., S.C., D.P.* ~

~ *Eric Johansson & Gerry Sussman* ~



(L-R) Paul Cicchetti, Dave Prowten, John Blomquist and Dave Wilber assemble the Clamshell observatory stairs. Image by Al Takeda

Clubhouse Saturday Schedule

Jan 9	Gary Jacobson	Eric Johansson
Jan 16	Brian Maerz	Glenn Meurer
Jan 23	Shilpa Lawande	Nitin Sonawane
Jan 30	C.Evans + T.Lumenello— Work Party 2	
Feb 6	Bruce Berger	Mike Hill
Feb 13	Steve Clougherty	Steve Mock
Feb 20	Phil Rounseville	Brian Leacu
Feb 27	P. Cicchetti + J. Reed – Work Party 3	

Membership Report . . .

Membership as of 12/31/2009 - 307 members.

Please contact the Membership Secretary if you have any problems logging into the ATMoB website or navigating through the renewal process, at Membership@ATMoB.org.

Membership has its privileges. Consider making a New Years 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:

Tamar Gaffin-Cahn
Chet Myslinski
Phillip Kotsios
Louis Parente

membership@atmob.org

~ *Tom McDonagh – Membership Secretary* ~

Sky Object of the Month . . .

January 2010

omicron Ceti (Mira, the “Wonderful”).

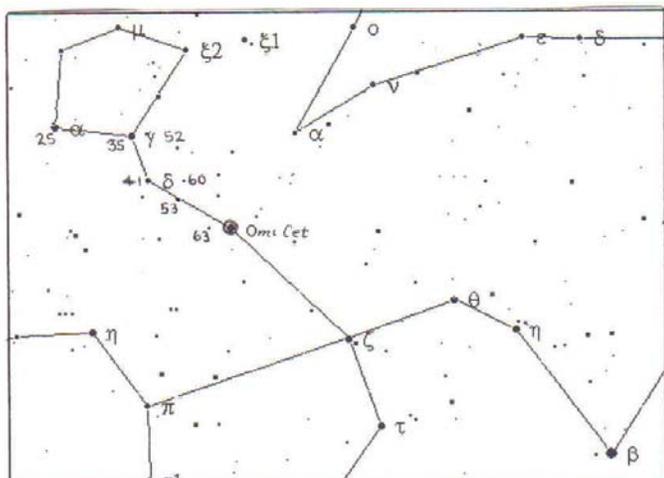


Chart for omicron Ceti
From Cartes du Ciel
Magnitudes to nearest tenth with decimals omitted
(courtesy AAVSO)

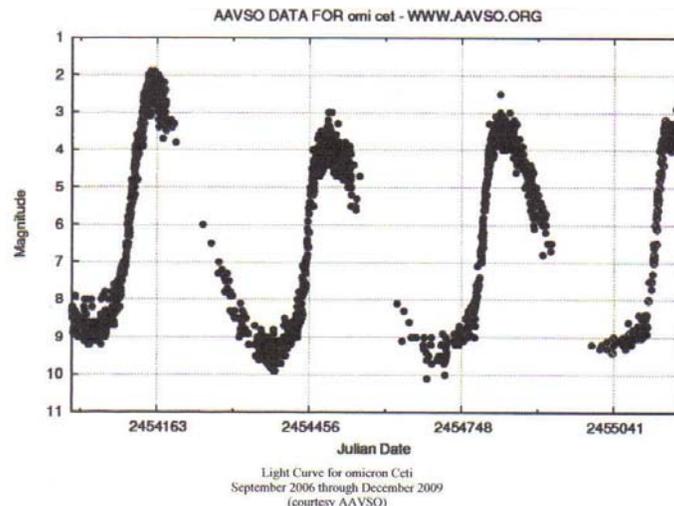
In November, we looked at the prototypical eclipsing binary beta Persei (Algol). This month, we turn to another prototype, the classic long-period variable (LPV) omicron Ceti. This star boasts a rich history, having been discovered by David Fabricius on August 13, 1596. Johann Bayer added it to his *Uranometria* star catalog as a 4th magnitude star. When it became apparent that this star would miraculously appear and disappear (a stellar behavior unheard of in those days), astronomers gave omicron Ceti the nick-name Mira “the Wonderful.” Mira’s periodicity was first described by Johann Holwarda, who determined a period of 11 months - a figure close to today’s standard.

Mira is the prototype of a class of pulsating variable stars called “long-period variables (LPVs).” The typical “Mira-type” star is a red giant with a range of 5 or 6 magnitudes and a period of several months to one or two years. The brightest of LPVs, Mira typically varies from magnitude 3 to 9 in a 331 day cycle. At times Mira will rise to 2nd magnitude, and in 1779 was observed by William Herschel to rival the first magnitude star Aldebaran.

With modest means, you can follow Mira through a complete cycle. Naked eye observations will cover magnitude 5 and brighter, binoculars will work for magnitudes 5 through 8, while a small rich-field telescope can handle Mira at minimum. A small scope magnifying 50X will also uncover Mira’s 9th magnitude optical companion, situated 120 arc-seconds away.

In November, Mira reached a peak brightness of about magnitude 3.5. The star has begun to fade, but should still be visible to the naked eye throughout December and the early part of January. The accompanying chart should help you make rough estimates of Mira’s brightness. If you want to follow it into the domain of binoculars and small telescopes, log on to www.aavso.org. First, click on “Make a Chart.” In the box

labeled “NAME,” type on “omi Cet.” Next to the “Plot a Chart of this Scale” prompt, scroll to “B” (the scale used for relatively bright variable stars). Click on “Plot Chart” and – voila! – you have a “B” chart for Mira.



Last month, I noted that observing and recording an eclipse of Algol should be on every backyard astronomer’s “to-do” list. Add Mira the Wonderful to that list.

Your comments on this column are welcome. E-mail me at gchapple@hotmail.com.

~ Glenn Chaple ~

Thoreau on Astronomy . . .

A blind man who possesses inward truth and consistency will see more than one who has faultless eyes but no serious and laborious astronomer to look through them. As if the eyes were the only part of the man that traveled! Men convert their property into cash, ministers fall sick to obtain the assistance of their parishes, all chaffer with sea-captains, etc, as if the whole object were to get conveyed to some part of the world a pair of eyes merely. A telescope conveyed to and set up at the Cape of Good Hope at great expense, and only a Bushman to look through it.

Journal, 12 January 1852.

~ Submitted by Tom Calderwood ~

And you thought YOU were having a bad day . . .

Early in September 2003, my brother sent me this photograph of the NOAA-N Prime weather satellite, which unfortunately had fallen to the floor of the test facility in California. His comment to me was “I look at this whenever I think I’m having a really bad day....thank goodness it wasn’t MY project!” I had it on the wall in my office in New York for a few years – it tended to generate a good bit of conversation as you might imagine!



I found the picture again sorting through some stored items and did a quick search for it on the internet. It turns out they've actually LAUNCHED the thing! On February 6th, 2009, aboard a Delta II rocket, NOAA-N Prime launched successfully and is now in polar orbit about the earth, joining its several cousins in mapping the entire earth twice every 12 hours, providing valuable information for medium- to long-range weather outlooks.



The story of NOAA-N Prime, the accident on September 6th, 2003 and its 5-year recovery to launch-readiness can be found in greater detail [here](#). The short version of the story is that on that Saturday, the team responsible for the satellite began the procedure required to move the instrument from its vertical position to one more horizontal, similar to the photo below, so as to be able to remove a piece of equipment. Unbeknownst to *that team*, a second team had come along and removed the all-important bolts holding NOAA-N Prime to its turn-over-cart, and neglected to inform the -N Prime team! So in a few seconds, the satellite was on the floor, and a half-billion dollar payload was in jeopardy!

Lockheed Martin took 5 years and some \$271 million dollars to repair the damage and ready the satellite for launch. Interestingly enough, it was scheduled to be completed in 2005 but stored for launch in 2008, so Lockheed Martin made good use of the anticipated storage costs for the repairs. And because there were several other versions of this same satellite already in orbit, there were many spare parts on hand to repair NOAA-N Prime, reduce overall repair costs and ultimately save the mission for its successful launch earlier this year!



These few sites have more interesting details about the NOAA-N family of polar orbiting satellites, and their 50-year plus mission to provide weather and climate information to scientists around the world.

http://www.nasa.gov/mission_pages/NOAA-N-Prime/overview/index.html

<http://www.spaceflightnow.com/delta/d338/090201preview.html>

<http://www.spaceref.com/news/viewsr.html?pid=10299>

~ Submitted by Nanette P Benoit ~

New Year's Eve Party . . .



(L-R) Art Swedlow, Paul Cichetti, Ross Barros-Smith, Eileen Myers, Julie Kaufmann, Eric Johansson and Ed Los. Image by Al. T.

Despite the snow earlier in the day, 2010 was welcomed at the clubhouse as scheduled. Around 30 members and family were present at different times. We learned completely new things about each other answering *Find Someone Who...* questions. The sky remained cloudy, but since we had Dennis Milon's wonderful Moon images on the clubhouse walls, we passed around a blue filter and laughed about seeing the Blue Moon. Except, no one expected that the filter would enhance the detail so well on those black and white photos! The good food, glitzy decorations, unusual hats, noisemakers and high spirits made the evening a success. Thank you to Coordinators Al Takeda, Art Swedlow, Eileen Myers, John Reed and Sai Vallabha.

~ Eileen Myers ~

Earl Hellerstein – In Memoriam. . .



Earl Hellerstein, M.D. was a member of the Amateur Telescope Makers of Boston since 1996. Earl enjoyed attending the club's monthly meetings and after meetings always started interesting conversations. Clubhouse Director John Reed wrote: "Can't think of any phrase other than I'll miss his coming up and tugging on my sleeve and then the handshake; with a gleam in his eye and the beginning of a discussion on some topic starting with "the" question (with the emphasis finger poking me. Be at peace, Earl." Art Swedlow wrote: "From his memorial page, it appears I was not the only one to be graced by his marvelous irascibility. It was an honor."

An active participant in club activities, Earl helped out at Astronomy Day events, was a fellow traveler on a club road trip to the Rose Center in NYC, attended club picnics and New Year's Eve parties. If he could not attend an annual picnic or special party, Earl would phone in his regrets. He would call with reminders about the Museum of Science's special astronomy events. We always had fascinating conversations on many topics. Our last conversation was during the summer when I called to see if he needed a ride for the club's 75th Anniversary Picnic. He was not well. When I called to wish him a happy New Year and only reached an answering machine, I started to worry and then learned the sad news of his passing thru the Internet.

The obituary below was copied from the family's memorial website, The Earl Hellerstein Memorial Web Page:

Dr. Earl E. Hellerstein, a long-time member of the staffs of Harvard Medical School and South Shore Hospital, died at home in Newton on Sept. 7, surrounded by his family. He was 88.

Dr. Hellerstein was born Dec. 11, 1920, in Dillonvale, Ohio, the son of Samuel Kopel Hellerstein and Celia (Zeiger), both early 20th-century immigrants from Russia.

He attended Heights High School in Cleveland Heights, Ohio.

He earned his bachelors in chemistry at Cleveland College in 1942 and his medical degree from Western Reserve University School of Medicine in 1950.

While in the army during World War II, he researched explosives in Pittsburg and Los Alamos. He served in Japan as a captain in the Medical Corps from 1954 to 1955.

After completing his residency at Boston City Hospital in 1957, Dr. Hellerstein joined Harvard Medical School as assistant professor in pathology. He pioneered programmed mixed-media instruction in 1968.

He left Harvard Medical School and joined South Shore Hospital as a pathologist in 1970, retiring in 1990.

He was preceded in death by his wife, Marjorie Hope (Schecter).

He is survived by his children Deborah of Chicago, Marc of San Francisco, Daniel of Washington, D.C., Seth of Norwood and Nathaniel of San Francisco; grandchildren Leah, Erica, Sam, Andrew and Hannah.

Among Dr. Hellerstein's many interests were astronomy, ancient history and modern history, particularly the Roman general Scipio Africanus, the Civil War, the civil rights movement and Darfur.

The memorial service will be Sunday, Oct. 11, at the Museum of Science.

Contributions in his name may be made at SaveDarfur.org.

<http://family.danielh.org/earl/index.sht>

~ Submitted by Eileen Myers ~

14TH ANNUAL N.E.M.E.S.

MODEL ENGINEERING SHOW

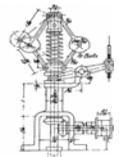
FEBRUARY 20, 2010

10:00 AM TO 4:00 PM

CHARLES RIVER MUSEUM OF INDUSTRY
WALTHAM, MA



www.neme-s.org



Correction: Dec. 2009 Newsletter: U-keck-2 should be UCAC2 for USNO CCD Astrogaph Catalog

February Star Fields DEADLINE
Wednesday, January 27th

Email articles to Al Takeda at

secretary@atmob.org

POSTMASTER NOTE: First Class Postage Mailed Jan 7th, 2010

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

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David Prowten (978) 369-1596

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John Maher (978) 568-1253

OBSERVING AND PUBLIC OUTREACH

STAR PARTY COORDINATOR:
Virginia Renehan starparty@atmob.org

**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.

- Jan 7 Last Quarter Moon
- Jan 11 Antares 1.1 deg. S. of Moon, Occultation (NE U.S.A.)
- Jan 15 New Moon
- Jan 23 First Quarter Moon
- Jan 27 Mercury at greatest W. Elongation – Mars closest approach
- Jan 29 Mars at opposition
- Jan 30 Full Moon