



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. 11, No. 4 April 2000

This Month's Meeting...

Thursday, April 13th, 2000, at 8:00 PM
Phillips Auditorium, Harvard-Smithsonian
Center for Astrophysics

OUR SPEAKER this month is David Lunt, president and founder of Coronado Instruments. His talk is entitled "Design and Use Considerations for Ultra-Narrowband Filters in Solar Observations". He will discuss the design principles of these filters and their use in telescope systems, and show sample images taken with them.

Join us and our most excellent speaker for dinner at 5:45 PM at the Changcho Restaurant located at 1712 Mass Ave. in our fair city, Cambridge.

President's Message...

JUPITER AND Saturn are now setting early in the evening along with the Orion Nebula. Once these bright objects have set, it is time to settle back and explore the Realm of the Galaxies in the Virgo Cluster. If you didn't get a chance to do so last month for the Messier Marathon, you can now find these Messier and non-Messier galaxies in a more leisurely fashion. Instead of star-hopping, you can start from M84 in the West or from Epsilon Virginis in the East and go "galaxy hopping". There are so many bright galaxies in Virgo that you can move from one to another by following the patterns they make, provided you have a good atlas like Sky Atlas 2000 or Uranometria to lead you the way. There have also been some good articles in *Sky & Telescope* (see Alan MacRobert's "Backyard Astronomy" article, May 1994) which can help guide you. The nights are also now warm enough so that you can make it through Virgo without having to thaw out your feet half-way through. Happy hunting! -Joseph Rothchild-

March's Minutes...

THE MEETING of the Amateur Telescope Makers of Boston, including the Bond Astronomical Club, was opened by President JOSEPH ROTHCHILD. Cathleen Clemens announced that recruiting season for next school year's Project ASTRO BOSTON has begun. Amateur or professional astronomers are partnered with teachers and together attend a two-day workshop to prepare for at least four classroom visits per year. Cathy recognized and thanked the many ATMoB members who have already participated in the program.

Our guest speaker was club member ZAC PUJIC, an amateur astronomer with a particular interest in observing Jupiter. He explained that the blue features in Jupiter's atmosphere are warmer areas that are windows into the deeper levels of Jupiter. White plume heads are storm fronts moving through. The Southern Equatorial Belt periodically fades and dramatically reappears. Often it begins with a small dark spot, followed by white clouds in a line, looking like a diagonal string of pearls. These white spots eventually spread out into a line. It is possible that this type of disturbance has its origin in several hot spots located deep within the Jovian atmosphere.

Morning twilight is best for observing Jupiter. There are usually no thermal currents to affect viewing through a telescope since the ground is as warm as the air. Also the background glare from the blue sky will cause the pupils of the eye to contract and see more of the image in focus. Books about Jupiter recommended by Zac are: *The Giant Planet Jupiter* written by amateur astronomer John H. Rogers, *The Planet Jupiter - The Observer's Handbook*, by Bertrand M. Peck, and *Jupiter: The Giant Planet*, by Reta Beebe.

The business meeting began with club officers' reports. Secretary EILEEN MYERS read the minutes. Treasurer BERNIE VOLZ gave the financial report. Membership Secretary JOHN SMALL welcomed new members, announcing that there are now 325 club members. Clubhouse Director PAUL CICHETTI described the upcoming March work party for inside projects. Many star parties were announced. Observing Committee's RICH NUGENT explained that we will be located at the same back wall in the Boston Museum of Science on Astronomy Day (Saturday, April 8th) because there are more power outlets back there. Volunteers are still needed to help out that day and at the evening star party. MARIO MOTTA announced that a gamma ray burster was observed by amateur astronomers from the Buffalo Astronomical Association. Using their club's 40-year old 12" reflector they were able to capture the 20th mag faint afterglow using a homemade CCD camera. BERNIE VOLZ said that forms for the next solar eclipse trip will soon be available on the club website. JOHN SMALL suggested that the club could use a small copying machine. MATT BENDANIEL is trying to get David Malin as a club speaker for the October meeting. Mario showed slides of his visit to the Whipple Observatory, and his visit to the home of Wendee and David Levy. Wendee does the film setup for the comet search photos. Carolyn Shoemaker stays about one week a month at their home looking at the images. David showed Mario the Emmy he won for his role in writing the Discovery Channel documentary "Three Minutes to Impact", even though he felt they didn't follow his advice.

-Eileen Myers-

Membership Report...

WE WARMLY welcome new member JAKOB JORGENSEN from Boston MA.
-John Small-

Clubhouse Report...

SATURDAY OPEN CLUBHOUSE SCHEDULE

April 8	CLOSED	Astronomy Day at the Boston Museum of Science
April 15 Public Night	David Prowten	David Richardson
April 22	Gary Walker	Tom Wolf
April 29	Paul Cicchetti	John Reed
May 6	CLOSED	StarConn - Wesleyan University in Middletown CT
May 13	Lew Gramer	Steve Herzberg
May 20	John Small	Art Swedlow
May 27	Steve Clougherty	Dan Feldkhum

AT THE last work party we continued on several projects. The conduit bending for additional electrical outlets was continued, as was the repair to the evaporator wall. A new footing was poured in the basement. Once this cures, we can incorporate a beam that will add greater strength to the floor below the grinding room and allow the new grinding machine to be placed there. A storage rack was built and secured to the back barn. This will be used to store the planking and wood products which are currently being stored in the main part of the barn. Thanks go to BRUCE GERHARD, JOHN REED, ANNA HILLIER, DAVE PROWTEN, DAVE SIEGRIST, ART SWEDLOW, SAI & VASANTHA VALLABHA, DAN FELDKHUN, STEVE CLOUGHERTY, and LEW GRAMER.

-Paul Cicchetti-

Treasurer's Report...

FOR THE month of February, we had \$5.89 in revenue and \$940.71 in expenses, for a net loss of \$934.82 for the month.

As of February 29th, 2000 our assets were:

Checking Account - Regular	\$13,863.33
Investments	\$18,553.21
Total Current Assets	\$32,416.54

Of the total, \$1,814.81 is in the Land Fund and \$145.00 is for clubhouse key deposits.

-Bernie Volz-

Star Party Thank You...

THE STAR Party held on Monday, March 13th at the Robinson/McAuliffe school in Lowell was a great success. We were a bit worried that we wouldn't have enough astronomers, but members pulled through at the last moment and all went well. We counted roughly 100 + families (about 250 people) at the event. In addition to an opportunity to do some observing through various member's telescopes (with a nice clear sky!)

participants also got a chance to experience the Star Lab Planetarium.

Special thanks to members who answered the call and brought telescopes: MIKE SCHEXNAYDRE, JOHN SMALL, BILL TOOMEY, PETER PSYHOS, and HOWARD LEVAU. I'm still missing a couple of names in my list so please e-mail me if you were at the event so I can announce your name in *Star Fields*.
-Paul J. Giguere-

Upcoming Star Parties...

Date	Location	Contact
Mon April 10	Marblehead MA	Charlie McDonald (781) 944-6140
Mon April 10	Wellesley MA	Rich Nugent (508) 879-3498
Mon April 10	Holliston MA	Steve Sargent sargescs222@aol.com
Mon May 8	Winchester MA	Charlie McDonald
Mon May 8	Weston MA	Rich Nugent

-Rich Nugent-

Lowell Lectures on Astronomy...

THE ANNUAL Lowell Lectures on Astronomy will be given in the Hayden Planetarium at the Boston Museum of Science on five consecutive Wednesday evenings beginning April 26th. Although free to the public, seating is limited and reservations are necessary. To obtain tickets for an individual lecture or the entire series, telephone the Planetarium at 617-589-0200. Tickets must be picked up in person at the Lecture Pick-up Desk in the Museum's Main Lobby no later than 7:15pm on the night of the lecture. After that time, any remaining tickets will be released to those persons on the waiting list and walk-ins. The lectures begin at 7:30pm.

The lectures highlight the contributions made by Massachusetts-based astronomers and engineers to the exploration of space and the understanding of cosmic phenomena. They will feature the most recent space science experiments and their results, as well as preview some of the advanced orbiting observatories planned for the future.

April 26 - "Watching the Sun: Space Experiments Across the Spectrum", Jay Bookbinder, Center for Astrophysics

May 3 - "The Ultraviolet Sky: From Telescope to FUSE", Andrea Dupree, Center for Astrophysics

May 10 - "The Violent Universe: Chandra and X-ray Astronomy", Claude Canizares, MIT

May 17 - "From Molecules to Stars: Tracing Stellar Formation in the Submillimeter with SWAS", Gary Melnick, Center for Astrophysics

May 24 - "A Window on the Future: SIRTf and the Infrared Cosmos", Giovanni Fazio, Center for Astrophysics

MIT Summer Session...

THE MAILMAN brings some interesting information to help update one's knowledge of Astrophysics and Astronomy. I received an announcement for the MIT Summer Professional Programs 2000: "Recent Exciting Development in Astronomy and Astrophysics", intended for interested laypersons. It will be held Monday - Thursday, August 7-10 (4 days) @ \$1,850. You can contact the presenter, Prof. Paul C. Joss via email at joss@mitlns.mit.edu or 617-253-4845.

Dr. Joss has devoted his career to research and teaching in astrophysics. This course will cover a very broad range of topics, from the origin and evolution of the Earth to the birth and structure of the universe as a whole. All subject matter will be presented on a level accessible to anyone familiar with algebra and Freshman-level physics. There will be five lectures each day, followed by a round-table discussion.

Participants are encouraged to read a basic text in astronomy prior to attendance. Recommended basic texts are *Astronomy*, by E. Chaisson and S. MacMillan, Pearson, 2nd Ed., 1998 or *Astronomy: From Earth to Universe*, by J.M. Paschoff, Harcourt Brace, 5th Ed, 1998. A more expanded text would be *Astronomy Today*, by E. Chaisson and S. MacMillan, Pearson, 3rd Ed, 2000. A more technical text is *Introductory Astronomy and Astrophysics*, by M. Zeilik, S.A. Gregory, and E. v. P. Smith, Harcourt Brace Jovanovich, 4th Ed, 1998. -John Reed-

Astronomy Events Calendar Update...

THE NEW date for the Connecticut River Valley Astronomer's Conjunction is for the weekend of August 26.

Stellar Lessons...

DURING A recent observing session with my astronomy class students, one of them asked a question about the Orion Nebula. As they peered at it through the eyepiece they noted the Trapezium and the string of three stars nearby. They wondered out loud if those three stars were the belt stars of Orion. That was the first time I'd ever been asked this question, and it made me think that the newbie observer doesn't have a feel for how much of the sky is visible through (even) a low-power telescope! With all of the star parties we are involved in, there are probably a lot of folks asking the same types of questions and making incorrect assumptions. What's an astronomer to do?

Well, I like to show off a group of stars which can help to answer some of these questions. Well placed in the autumn and spring skies is the famous asterism of the Big Dipper. The middle star in the handle is Mizar and it has a nice 4th magnitude companion, Alcor, lying only 12 arc seconds away. Most people can see the pair with their unaided eyes. In the low power field of a scope, the pair fit into the field nicely. Now, the folks can observe with the telescope and then look up at the pair and really see how little of the night sky the scope displays. Now for the bonus...you can teach them a lot of astronomy in the few minutes they are observing these stars!

Mizar is clearly a binary when observed telescopically. As a matter of fact, it was the first known double star and was discovered by Riccioli in 1650. Separated by 14.4 arc seconds, the stars are both white, A type stars with the primary shining at

magnitude 2.4 while the secondary is at 4.0. The pair lies at a distance of about 70 light years and the separation is about 380 astronomical units (nearly 5 times the diameter of Pluto's orbit). They also have the distinction of being the first double star to be photographed! None other than G.P. Bond accomplished this at Harvard observatory in 1857!

With the advent of spectroscopic techniques, even more was learned about this system. By examining the spectral lines of Alcor and the Mizar pair it can be shown that these stars are moving through space together! Some 0.23 light year apart, they are part of a larger cluster, the Ursa Major moving Cluster. Including the five central stars of the Big Dipper, the cluster may contain as many as 100 stars with its center located some 75 light years from us. Other members of the cluster are Sirius, alpha Ophiuchi, and alpha Coronae Borealis.

In 1889, closer examination of the spectrum of the Mizar pair showed that each of these stars is binary!! Radial velocities of the stars produce Doppler shifts in the spectral lines. In each pair, the unseen components orbit a common center of gravity. The star approaching the Earth has its spectral lines Doppler shifted towards the blue end of the spectrum while the other, moving away, has its lines red-shifted. The lines remain single as the stars pass across our line of sight but when the stars approach and recede the lines split, betraying the pair. Even Alcor has been detected to be a so-called spectroscopic binary so the system actually is made up of six stars!

Finally, the 8th magnitude star that forms a flattened triangle with Alcor and Mizar is Sidus Ludovicianum. Named in 1723 after Ludwig V, this star was thought to be a possible planet orbiting the distant stars!

We should take every opportunity to educate the public as they peer through our telescopes and these stars provide an excellent visual to go along with the lesson! -Rich Nugent-

Job Opportunities...

THE CHANDRA X-Ray Center (where I work) is looking for software people. See <http://careers.boston.com/search>. Search on keyword "smithsonian".

Click on "Database Developers" or "Software Developers".

See an example position at the CFA web page: <http://cfa-www.harvard.edu/cfa/hr/postings/index.html>. Click on #20-41. (For the right person, positions more senior than that listed are possible).

You can reach me at tcaldew@cfa.harvard.edu 617-496-7728 and I can put you in contact with the CXC software manager. -Tom Calderwood-

ATTENTION

May Star Fields deadline is SUNDAY, April 30
email articles to club secretary Eileen Myers at
starleen@ma.ultranet.com

Articles from members are always welcome.

POSTMASTER NOTE: First Class Postage Mailed April 7, 2000

Amateur Telescope Makers of Boston, Inc.
c/o John Small
9 Bear Hill Terrace
Westford MA 01886-4225

FIRST CLASS

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HISTORIAN:	Anna Hillier	(781) 861-8338
OBSERVING:	Richard Nugent	(508) 879-3498

How to Find Us...

MEETINGS: Held the second Thursday of each month (September to July) at 8:00PM in Phillips Auditorium, Harvard-Smithsonian Center for Astrophysics, 60 Garden St., Cambridge MA. For INCLEMENT WEATHER cancellation listen to: WBZ (1030 AM)

CLUBHOUSE: The Tom Britton Clubhouse is open every Saturday from mid-afternoon 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 farm house on left side of the road. Clubhouse attendance varies with the weather. It is wise to call in advance. (978) 692-8708.

OUR WEB PAGE IS www.atmob.org

Heads Up for April...

Thurs, April 6 - Jupiter, Saturn, Mars, and the 2-day old crescent Moon.

Sat, April 8 - Astronomy Day at the Boston Museum of Science - ATMob Star Party on the garage roof.

Fri, Sat April 14 and 15 - Most compact grouping of Jupiter, Saturn, and Mars - only 5° across. Low on the horizon at dusk.

Tues April 18 - Full Moon (Grass Moon or Egg Moon).

Fri-Sat, April 21-22 Lyrid meteor shower (48 km/sec) Due to glare from the waning gibbous Moon, best chance April 22 just before morning twilight begins.