ATM BOSTON inc.

STAR FIELDS

NEWSLETTER OF THE AMATEUR TELESCOPE MAKERS OF BOSTON, INC.

Vol. 2, No. 2 February 1991

THIS MONTH'S MEETING...

Thursday, February 14, 1991, 8 p.m.
Phillips Auditorium, Harvard-Smithsonian Center for Astrophysics

THE FORMATION AND EVOLUTION OF STAR CLUSTERS is this month's talk by Dr. Kenneth Janes, Professor of Astronomy at Boston University. Astronomers have an enduring fascination with star clusters: not only are they beautiful to look at, but they are natural laboratories for stellar evolution and stellar dynamics. Furthermore, it now seems likely that a large fraction of all stars are formed in, or at least in close association with, star clusters. The study of clusters has entered a new regime with the adoption of CCD's and the more recent IR array detectors. For the first time, astronomers can actually peer directly into dusty molecular clouds to see clusters in formation. This month's talk will review our present understanding of star clusters and prospects for future work.

Dr. Kenneth Janes received his BA from Harvard, an MS from San Diego State, and a PhD from Yale University. His research interests are directed towards the structure of our galaxy and its formation and evolution. He is a regular observer at Kitt Peak, Cerro Tololo Inter-American Observatory and Mauna Kea Observatory and is the author or co-author of more than 75 papers in journals and symposium proceedings.

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PLEASE JOIN US FOR DINNER before the meeting at the Changsho Restaurant at 5:45 p.m. The restaurant is located at 1712 Mass Ave. in Cambridge, near Linnean St.

LAST MONTH'S HIGHLIGHTS...

About 65 individuals were present at the January ATMoB meeting. Mario Motta and a representative from ITA Tours conducted a premeeting session that presented the latest information concerning the La Paz 1991 eclipse trip and answered member's questions. After the beginning of the regular meeting with its usual reports, John Reed and Bernie Volz reviewed the ATMob/ALCON 91 committees that still need people power. Unfortunately, only a very few members volunteered. David Aucoin and Bernie Volz reminded members of the occultation of Vesta on Jan. 18 and Antares on Feb. 8. A new 1991 membership list showing some 287 members was made available to all by Ed Los. A little difficult but never-the-less fascinating talk on hydrogen maser atomic clocks and their use to prove relativistic gravity was given by Dr. Robert Vessot.

ANNOUNCEMENTS...

GET READY FOR ASTRONOMY DAY, Saturday April 20th. Noreen Grice of the Charles Hayden Planetarium (617-589-0270) has asked us to take part in the all day activities at the BMOS and an evening star party on the roof. Telescope displays, mirror making, talks, and other demonstrations of amateur astronomy are welcome. Mark your calendars and plan to participate. As usual our Observing Committee Chairman, John Reed, will coordinate ATMoB activities.

AN ASTRONOMY RECEPTIONIST is wanted by S&T to answer telephone inquires on astronomy and astronomical books and computer software. This is a full time position for an amateur who is familiar with the above astronomical resources. For more info call John Simmons, 617-864-7360.

AN EXECUTIVE BOARD MEETING is scheduled by the president for Saturday, March 9 at 7 p.m. at the clubhouse. Snowdate is March 10.

OBSERVE JUPITER WITH THE 18-INCH CLARK REFRACTOR at the Amherst College Wilder Observatory, Amherst, MA. Friday, February 8. This is an invitation from the Amherst Area Amateur Astronomers Assoc. The observatory will be open at 6:30 p.m. Call Tom Whitney for further info at 413-256-6234.

VOLUNTEER PROJECTIONISTS are needed to set up and run the slide projector at our monthly meetings. If several people volunteer, no one individual will have to do it very often. See Marion Hochuli if you can help.

A REMINDER TO ALL to extend greater courtesy to our speaker and other members by not gathering and talking out in the hall of Phillips Auditorium while our meeting is in progress. Also, please suppress your urge to partake of refreshments until the meeting is over and then remember to deposit your napkins and paper cups and plates in the waste basket provided. Thank you for your cooperation.

-- ATMoB Executive Board

THE EXECUTIVE BOARD made the following decisions at its meeting on January 5, 1991:

- SINCE THE IMMEDIATE FAMILY of a regular member has always been welcome at our meetings, club-house, and other activities, the board felt that there was no need to change the by-laws to establish a specific family membership.

- ALL CLUB EXPENDITURES of $50.00 or more must be approved by three executive board members: the president, treasurer, and one other board member.

- ALL CHILDREN under the age of 12 years old who are present at the clubhouse must be accompanied by a parent or other adult guardian.

LATEST ATM NEWS...

Work is commencing on restoring the Harvard 15-inch Refractor's observing chair by ATMoB. Members ED KNIGHT, KEN LAUNIE, ED DOUGHERTY, GREG CHASE and MARION HOCHULI have already helped. PHIL ROUNDSEVILLE and STEVE BECKWITH are both in the throws of grinding 10-inch mirrors at the clubhouse. A pig-out and solar orgy (that's what they called it) was held at the home of ED DOUGHERTY on New Years Day. Ed along with STEVE MOCK, JOHN REED, and VLADIMIR VUDLER observed the sun with four different scopes. Two scopes were fitted with T-Scanner type hydrogen alpha filters while the other two with University and ATM models. All four showed excellent images of solar activity. CINDY DOUGHERTY has taken up a new hobby of making and selling astro-nomical sweat shirts.

ATMoB / ALCON 91... by Bernie Volz

First of all, thanks to the following individuals who have volunteered as ATMoB/ALCON committee members:

Greg Chase	Ted Poulos
Gary Clarke	George Roberts
Joan Coyne	John Samolyk
Margarita Drozdoff	Tim Solinski
David Emerson	Jeffrey Stulin
Mario Motta	Gary Walker
	Ed Wallner

If I have forgotten anyone, please let me know. Also, other volunteers are still welcome.

The agreement with UMass Convention Center has been signed and forwarded with a $500 deposit. Some speakers have been confirmed and others are in the works. ATMoB members are urged to register now for the convention. Forms will be available at the February meeting. The next meeting of the ATMoB/ALCON 91 committee will be at the clubhouse on Saturday, February 16 at 7 p.m.

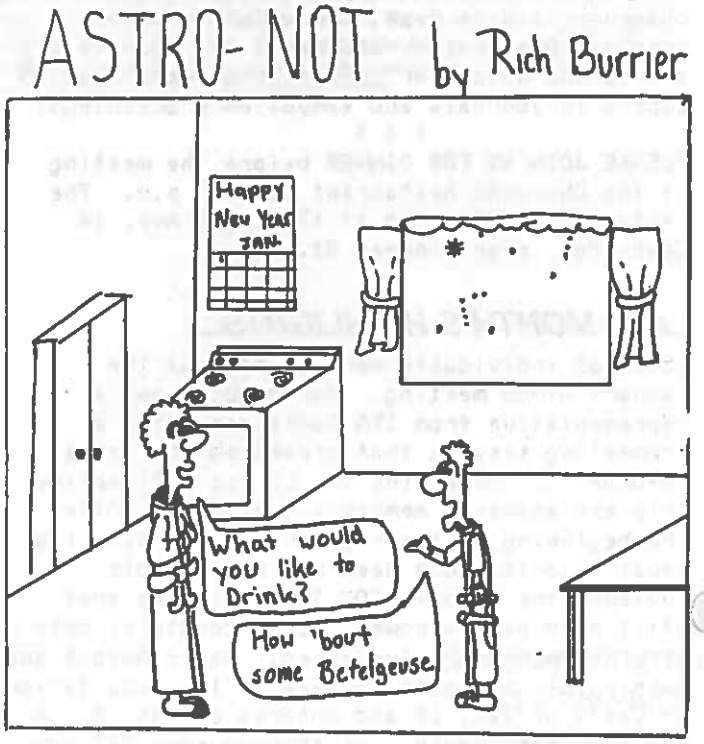
FROM THE EDITOR'S DESK...

Here are two versions of a star party conversation between an amateur astronomer (AA) and a member of the public (JQP). The first one I overheard at a star party, and the second is my attempt to show how the interchange might be improved.

JQP: "What are you looking at?" JQP hesitantly approaches the AA and his scope.
AA: "Albireo. Take a look."
JQP: What's albireo thinks JQP as he squints into the eyepiece. I hate to appear stupid, thinks JQP, but I don't see much! Oh well, "thanks" says JQP as he steps away unenlightened.
AA: "See yea!"

A better interchange between JQP and AA:

JQP: "What are you looking at?"
AA: "A star called Albireo. See its the star at the bottom of the northern cross." AA traces out the constellation for the visitor. "Look into the eyepiece here and adjust this knob until the star looks like a sharp pinpoint of light."
JQP: "I see two stars close together, which is Albireo?"
AA: "Ah, you've discovered something. Albireo is what is called a double star. To your eye it looks like one star, but in a telescope it is separated into two stars. These stars revolve around each other in space. Do you notice anything else?"
JQP: "One star is sorta bluish and the other yellowish."
AA: "Right! Do you have any idea why they have different colors?"



JQP: "No, not really."
AA: "Well, for the same reason that an iron bar heated in a forge changes from a dull red to orange to white as it gets hotter. The blue star is hotter than the yellow one."
JQP: "Wow, that's cool! How come the stars look so much brighter in the telescope?"
AA: "Because of the larger diameter of the scope, it collects thousands of times more light than your eye can and allows us to see much fainter objects. But even in the largest telescopes, stars still appear as tiny points of light because they are so far away."
JQP: "Aren't telescopes supposed to magnify things?
AA: "Yes, and they do magnify nearer objects like the moon and planets. Also the scope's ability to magnify is what separates the two stars of Albireo."
JQP: "Gee thanks for showing me Albireo. What else can I see?

Obviously, the second interchange is better because AA oriented the visitor and lead JQP to discover things for him or herself. Also, in the process, AA got across some good astronomical information.

NEW MEMBERS...

We welcome Joseph Gallo of Winthrop, MA as a new member. Currently the ATMoB has some 288 members.

THE MARKETPLACE...

FOR SALE Meade 6-inch f/5 reflector, Model 6600, with equatorial mount, finder, tripod, and 9 and 25 mm eyepieces. Like new. $500. Call Mary Sedach, 508-692-5060 after 4 p.m.

FOR SALE Takahashi portable equatorial camera mount with polar axis scope, precision quartz motor with drive corrector operating from 6 volts (4 D-sized batteries), and 40 mm guide scope. Weighs under 10 lbs and fits in special carry-on vinyl bag. $300. Heavy duty tripod, $50. Call Ted Poulos, 617-566-5127.

FOR SALE 7-inch f/15 apochromat by Roland Chriesten. Will sell with tube assembly or with just lens assembly, $3950.00. Call Jeff Blazey, Lebanon, OH, 513-932-9780.

WANTED inexpensive 1-1/4" eyepieces for a bunch of copy scopes I have made for gifts. Old binocular eyepieces okay. Call Bob at 603-891-2355.

ASTRO-TRIVIA...

WHY DOES THE MOON LOOK LARGER on the horizon than at the zenith? This illusion, that has puzzled men since the time of the ancient Greeks, is explained very clearly by Isaac Asimov. We apparently learn at an early age to assess the real size and/or distance of an object by taking into account:

- The visual angle the object subtends.
- The accommodation the lens of the eye must make to focus on the object.
- The amount the eyes must converge in order for both to focus on the same object.

This works fine for nearby objects. However, for distant objects, we judge distance by comparison with neighboring objects whose real size we happen to know. A distant blue spruce tree may not look unusually large until we happen to notice a man at its foot. We then realize how distant it must be, and it begins to look large.

The moon, high in the sky, presents a visual angle of about 0.5 degree, but without comparison objects of known size, we are loss to judge its real diameter. We unconsciously guess that the moon looks "about a foot across." An object of one foot in diameter subtends and angle of 0.5 degree when viewed from 60 feet.

When the moon is near the horizon, it is seen beyond the houses and trees, and we know at once that it must be more than 60 feet away. It might be, let us say, a mile away. To produce a visual angle of 0.5 degree from a distance of a mile, the moon would have to be 88 feet across. This unconscious alteration in our estimate of the moon's distance also alters our estimate of its real size. Therefore, the moon appears larger near the horizon.

Actual measurement of the moon's apparent diameter shows that at the horizon its visual angle is about 2 percent smaller than at the zenith. At the horizon, the refraction of its light around the earth's radius adds to its apparent distance.

TEXAS INSTRUMENTS' CCD GROUP, some years ago, fabricated 25,000 CCD chips with 800 x 800 pixels in order to get about 125 chips that worked reasonably well, of which eight were selected for use in the HST. Four of these chips also found their way in James Gunn's 4-Shooter camera for the 200-inch Hale Telescope.

THE DISTANCE TO A STAR was first measured in 1838 by Friedrich Bessel, a German astronomer. The star was 61 Cygni, a 5th magnitude double star. Its distance, measured by its parallax, is 11.2 lyr. Two months later in Jan 1838,

Thomas Henderson, of Edinburgh announced the parallax of alpha Centauri from observations he had made from the Cape of Good Hope.

VEGA WAS THE FIRST STAR to be photographed. On the night of July 16 and 17, 1850, Bond took a Daguerreotype of it using the 15-inch Harvard refractor. He needed an exposure of 1 minute 40 seconds to capture the stars image clearly.

OUR EYES RESPOND TO LIGHT intensities that vary by more than a factor of more 10^{12} yet the area of our pupil only changes by about a factor of 16. Neural systems that amplify weak signals allow our eyes/brain to respond to both starlight and daylight.

COMING EVENTS...

Feb. 8	JUPITER OBSERVING NIGHT, Amherst College Observatory, conducted by AAAAA. See 'announcements.'
Feb. 16	ATMoB/ALCON 91 committee meeting at clubhouse at 7 p.m.
Feb. 21	CfA MONTHLY OBSERVATORY NIGHTS. "The Big Bang: Current Views of the Origin of the Universe" by Dr. George Field, CfA, 8 p.m Phillips Auditorium, CfA, Cambridge, MA. For more info call 617-495-7461.
March 9	ATMoB Executive Board meeting at the clubhouse at 7 p.m.

EXECUTIVE BOARD 1990-91

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1985-87 E. Talmadge Mentall, Lynn, MA 01902

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WORKSHOP
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NEWSLETTER DEADLINE...

The 25th of this month is the deadline for items to be included in next month's STAR FIELDS. Mail or telephone your contribution to Ted Poulos, 18 Cushing Rd., Brookline, MA 02146, 617-566-5127.

HOW TO FIND US...

MEETINGS: Held the second Thursday of each month (September to July) at 8 p.m. in Phillips Auditorium, Harvard-Smithsonian Center for Astrophysics, 60 Garden St., Cambridge, MA. Parking available on the grounds.

CLUBHOUSE: 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 495 to exit 33 and proceed west on Rt. 40 for 5 miles. Turn right at the MIT Lincoln Lab NEROC sign at the Groton town line. Proceed to the farmhouse on the left side of the road. Clubhouse telephone 508-692-8708.

FIRST CLASS

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