



**STAR  
FIELDS**

NEWSLETTER OF THE AMATEUR TELESCOPE  
MAKERS OF BOSTON

Vol. 3, No. 10                      November 1992

### **OUR NOVEMBER MEETING...**

Thursday, November 12, 1992, 8 p.m.  
Phillips Auditorium, Harvard-Smithsonian  
Center for Astrophysics

**DARK LIGHT, LIGHT MATTER** is the title of Dr. Philip Morrison's talk at our November meeting. Dr. Morrison obtained his BS degree from Carnegie Institute of Technology and his PhD in physics from University of California. He has received honorary degrees from Case Western Reserve University, Rutgers, and Denison University. Since 1976 he has been Institute Professor Emeritus at MIT. Dr. Morrison served as chairman of the Federation of American Scientists from 1972 - 1976. He is more popularly known for his PBS series, *Ring of Truth*, and his monthly science book reviews in *Scientific American*.

Join us and our speaker at a pre-meeting dinner in honor of Edward Knight, who was recently named an ATMob Honorary Member. Please meet at the Changsho restaurant, 1712 Mass Avenue, Cambridge between 5:45 and 6:00 p.m.

COMING UP at our December meeting is a talk by ATM'er, Dennis DiCicco. Our January meeting will be a Show-and-Tell. Since it will be limited to only about four presentations, if you are interested in taking part, call Bernie Volz now.

### **OCTOBER MEETING HIGHLIGHTS...**

Our last month's meeting was attended by some 54 members and guests. All the usual reports were given. The bylaw amendments to articles V and IX were passed unanimously. Tony Costanzo conducted our monthly 50/50 raffle and the \$22 winnings went to John Samolyk. The President and Observing Chairman emphasized the need for more volunteers for the Observing and Clubhouse committees. Scott Milligan and Ed Knight brought up the subject of four boxes of ATMob historical material that originally belonged to Jim Gagan who died in 1991. Scott has three boxes and Ed has one which contains Jim's attempts to create a club history. The President asked for a volunteer to become a club historian to go through this material and develop a history of the club. Mario Motta

thanked all those ATM'ers who helped him to complete and install the 18-ft. dome on his NH observatory. Vladimir Vudler, back to his old tricks again, showed off a low current micromotor that operated off of two electrodes stuck in an orange. Finally, our speaker, Glenn Chapel, gave an inspiring talk that was the very epitome of what amateur astronomy is all about as he described what could be observed with a small telescope (in his case an old Edmund 3-inch Newtonian). His enthusiasm for observing, note taking, and drawing what he sees should be an inspiration for all amateur astronomers.

### **THINGS YOU MAY WANT TO KNOW...**

A FOUCAULT TEST DATA REDUCTION PROGRAM that Mario Motta has found very useful and easy to use is the IBM-PC program, ADMIR by Suiter. According to the publisher's blurb, this program eases the cumbersome calculations required to reduce a set of raw zonal Foucault test measurements to a representation of a wavefront. While it is easy to visually determine if a mirror has unacceptable slopes, it is time-consuming (and error prone) to manually convert knife edge measurements to surface heights of the mirror or, equivalently, deformations of the wavefront. It is loosely based on the methods found in Jean Texereau's *How to Make a Telescope*. It further includes the Millies-Lacroix method for rapid mirror slope analysis. Finally, it employs a third technique which has been named The Method of Exploratory Focus. The software is available on either a 360K, 5-1/4 or 720K, 3-1/2 diskettes from Willmann-Bell, P.O. Box 35025, Richmond, VA, 23235 (804-320-7016) for \$19.95.

NEXT MONTH'S STAR FIELDS will be your last if you have not renewed your ATMob membership. If it slipped your mind, please renew NOW! Dig out your June issue of STAR FIELDS and use the renewal form published there or simply send your check for \$37 (dues plus S&T subscription) or \$17 (without S&T) to JOHN SAMOLYK, 65 Court St., Medford, MA 02155.

SKYGLOBE 3.5, the fast, fun, and easy to use desk-top planetarium astronomy program for the PC, has many new features. It is a Shareware Product of Mark Haney of KlassM Software. The program requires a VGA display for best results. An unregistered copy is available from Ted Poulos (617-588-5127) for the cost

**NOTICE TO ALL MEMBERS.** If you have a telescope or any other personal property at the clubhouse, you **MUST REMOVE** or clearly **LABEL** it with your name and telephone number by **December 31, 1992**. Any property not removed or properly labeled becomes the property of the ATMob on January 1, 1993. This property will then be used, sold, or disposed of as the officers of the club see fit.

-- ATMob Executive Board

of a disk and mailing (if necessary). If you like it you can then obtain a registered copy with printed manual and other goodies from the author for \$20.

### **ATMoB ACTIVITIES...**

**VIEWS OF COMET SWIFT-TUTTLE** were afforded those visiting the clubhouse on Oct. 17 by **STEVE MOCK** with his 14.5-inch Dobsonian. The comet was about 7th magnitude, a bit fan shaped, and was moving westward along and just above the handle of the Big Dipper. **GARY WALKER** using his 6.3-inch Takahashi Epsilon reflector equipped with a Photometric's 512 x 512 pixel CCD camera, captured several images of the comet over about 1.5 hours in early October. Gary could not see the 9th magnitude comet through his scope in the less than dark skies of Dover, MA. However, by setting the scope to the comets coordinates, the CCD camera was able to capture the comet with a short exposure. When the images were displayed on his Mac computer at our last meeting, the comet's rapid movement with respect to background stars was quite noticeable. For additional info on this comet see the December issues of *S&T* and *Astronomy* magazines.

**THOUGH CLOUDED OUT** of viewing the June 30th solar eclipse in Uruguay, our president, **Bernie Volz**, obtained a spectacular photo (published in both *Astronomy*, Oct. 92, p. 67 and in *S&T*, Nov. 92, p. 581.) of the Moon's shadow as it headed eastward just as totality ended. Bernie used a 16-mm fish-eye lens and Fujichrome 100 film to obtain this fine photo.

**ATMoB MEMBERS TOOK PART** in CFA's annual Science Day for Children on Oct. 17. They were **LIZA** and **SCOTT MILLIGAN**, **RICHARD BURRIER JR.**, **BERNIE VOLZ**, **PAUL CICCETTI**, **TOM CALDERWOOD**, **ED DOUGHERTY**, and **JOHN REED**. Scott, Liza, and Richard demonstrated mirror grinding and testing techniques while the others provided views of the sun through various filters. Attendance was high, and a constant stream of youngsters and their parents did solar observing all afternoon long.

**THE FIRST MEETING** of the New England chapter of the International Dark-Sky Association (IDA) was attended by ATMoB members: **JOHN REED**, **BERNIE VOLZ**, **PAUL CICCETTI**, and **STEVE MOCK**. Stephen O'Meara will report on the meeting in a upcoming issue of *Sky & Telescope*.

**A WRISTWATCH** was found at the clubhouse. Call **Bernie Volz** (508-881-3614).

**CLUBHOUSE REPAIRS** has continued through October. A **VERY SPECIAL** thanks to **JOHN REED** who has spent many, many days, both during the week and on weekends, painting, puttying, and more. Thanks also to **ED** and **CINDY DOUGHERTY** and **PAUL CICCETTI** for all their time spent working on the Clubhouse. Further sessions are needed to do mainly painting. If you can help one or more days in November, sign up at the

meeting or call me and someone will contact you to let you know when a work session is planned.

--Bernie Volz

**ATMoB MEMBERS** using the Clubhouse shop facilities must sign a release form before doing so. These forms can be found in the sign-in book. The use of Clubhouse facilities is always at your own risk.

--Bernie Volz

**AN EXECUTIVE BOARD MEETING** was held on October 17, 1992 at the clubhouse. The following items were approved by the board:

1. Purchase of the AL liability insurance for \$714/year.
2. Re-establishment of a student membership for %50 of the dues of a regular member.
3. The expenditure of about \$332 to make the vacuum evaporator operational.
4. The expenditure of about \$1000 to cover the cost of paint and other supplies used for the ongoing clubhouse repair and maintenance.
5. The re-arrangement of the clubhouse per the plans shown in last month's *STAR FIELDS*.
6. The Observing Committee budget of \$400.
7. The presentation to the membership a proposed amendment to the Bylaws (see below).
8. A new position, club historian, to which the president will appoint an individual.



-- Courtesy of Ed Dougherty

## **BYLAW AMENDMENT PROPOSED...**

The ATMoB Executive Board has proposed the following amendment to the ATMoB Bylaws.

Article V, Section 1C, Honorary Members:

Persons especially distinguished for their contributions to the Amateur Telescope Makers of Boston, astronomy, or telescope making may be proposed for Honorary Membership by any ten members and shall be designated as Honorary Members upon their election to such membership by the majority vote of the members present at any regular meeting of the members at which a quorum is present. Any honorary member, who is not also a Regular Member, shall not be liable for the payment of any future dues, and shall not be entitled to vote at any meeting of the members, and shall not be eligible to hold any office. Any honorary member, who is also a Regular Member, shall have his regular membership dues waived for life and shall have all rights and privileges of a Regular Member for life. The membership shall add no more than one (1) Regular Member to Honorary Member status each fiscal year.

-- Bernie Volz

## **NEW MEMBERS...**

We extend a cordial welcome to the following amateur astronomers:

James Baker	Bedford, MA
W. Alan Bodnar	Wellesley, MA
Michael Dedekian	Newton, MA
Steven Feinstein	Arlington, MA
Charles Mahon	Plymouth, MA
James McAlear	West Roxbury, MA

**THE EYES HAVE IT...** by Darcy K. Fox, D.C.

Most amateurs have heard about "dark adaptation", but many of us may not fully understand the principles behind it. The eye is said to be dark adapted after a period of time in darkness. The ability to see well in the dark is at a maximum after approximately 20 minutes under the dark skies. When the dark adapted eye is exposed to white light, the return to light adaptation begins instantly and continues rapidly so that full bright light adaptation takes place in about 5 minutes.

What actually occurs in the eye for dark adaptation to occur? There are two types of receptor cells found in the eye, the rods and the cones. The cones are the receptor sites of the retina which allow fine detail and color images to be gathered and sent (via nerve cells) to the visual area of the occipital lobe of the brain where the images are "seen." The cones are located in the center of the retina and they are not very sensitive to faint light. The most important part of the eye to astronomers are the rods which are located around the cones on the periphery of the retina. They also send the information they collect to the brain where it is perceived. The rods do not "see" color, but respond to faint light extremely well. The rods are also very sensitive to movement of objects in the visual field. We

use them to observe meteors!

Biologically, dark adaptation occurs as the stores of rhodopsin (a pigment which absorbs light and in turn allows the light to be perceived), in the rods are rebuilt. The cones have some similar pigments that respond to light of different wavelengths. Because both rods and cones are present in the human eye, dark adaptation occurs in two stages. First, the cones show a small increase in sensitivity over about 7 minutes. Second, and the most important, the rods gain sensitivity over the next 13 minutes to give you a significant adaptation to darkness.

Red goggles may be worn in white light situations and will help avoid the 20 minutes needed for dark adaptation. The wavelengths of red light allow cone vision to continue while only stimulating rods slightly. Therefore, using red lights at observing sites does help, but you should avoid even these lights as much as possible.

Only the rod populated periphery of the retina is sensitive to light in the dark adapted eye. Therefore, the technique of averted vision is often used to view faint objects. Averted vision utilizes the superior low light sensitivity of the rods. To use averted vision, move the object you are viewing to the side of your field of view. Look to the center of the field, while mentally concentrating on the object at the side of your field of view. This may sound a little tricky, but with practice, it is an invaluable observing technique for faint objects. Try this after being under the stars for the required twenty minutes to have reached maximum dark adaptation. --From The *Webfooted Astronomer*, newsletter of the Seattle Astronomical Society, August, 1992.

## **WANTED...**

ACCESS to the Webb Society Quarterly Journal for July, 1990 for a research project. If you can help, leave a note for ATMer, Bryant Stone, on the clubhouse bulletin board.

USED tilt-out storm windows for the clubhouse. Need six of minimum size: 30 x 53" and 1 27 x 45". Call John Reed, 617-861-8031.

## **ASTRO TRIVIA...**

THE FIRST SOLAR SPECTRUM was obtained by Newton in 1666, but other than proving that white light consisted of light of many colors, he never took his investigations much further. The discovery of dark lines in the solar spectrum was made in England by E.H. Wollaston in 1802. However, Wollaston merely thought the lines were the boundaries between the different colors. It was left to J. von Fraunhofer of Germany to make in 1814 the first systematic study of the dark lines. Fraunhofer realized that the lines were permanent—he recorded 574 of them and mapped 324. The first explanation of the dark 'Fraunhofer lines' was given by G. Kirchhoff and R. Bunsen in 1859. They

showed that the sun's photosphere produces a continuous spectrum and that the gases of the overlaying solar atmosphere absorb certain characteristic wavelengths of light to produce the dark lines. In 1861, Kirchhoff produced the first detailed map of the solar spectrum.

**COMING EVENTS...**

- Nov. 18 OPEN NIGHT AT THE BU OBSERVATORY, "Vistas Opened at the South Pole: A Site for Sub-millimeter Radio Astronomy, by Dr. Richard Chamberlin, 7:30 p.m., Rm 522, 725 Commonwealth Ave., Boston. Call 617-353-2630 after 5:30 p.m.
- Nov. 19 CfA MONTHLY OBSERVATORY NIGHTS, "Exploring the Cosmos: Observatory Hill in the 19th Century" by Barbara Welther, CfA,

**EXECUTIVE BOARD 1992-93...**

- PRESIDENT: Bernard Volz, 508-881-3614
- VICE PRESIDENT: Mario Motta, 617-334-3648
- SECRETARY: Ted J. Poulos, 617-566-5127
- MEMBERSHIP SEC: John Samolyk, 617-391-9290
- TREASURER: Anthony Costanzo, 508-521-5382
- MEMBERS AT LARGE: Peter Bealo, 603-382-7039  
Anna Hillier, 617-861-8338
- PAST PRESIDENTS: 1990-92 Marlon Hochull  
1989-90 David Aucoin  
1987-89 Gary Walker

**COMMITTEES...**

- OBSERVING: Edward Dougherty, 508-458-8857
- CLUBHOUSE: -- Open --

**FIRST CLASS**

- 8 p.m., Phillips Auditorium, CfA, Cambridge, MA. For more info call 617-495-7461.
- Nov. 21 ATMOb MONTHLY OBSERVING NIGHT at the ATMOb clubhouse.
- Dec. 9 TOTAL ECLIPSE OF THE MOON, mid-eclipse 6:44 p.m. EST. See S&T, Dec. '92, p. 670.
- Thru-Jan. 3 STAR TREK: FEDERATION SCIENCE exhibit Boston Museum of Science.

**DECEMBER STAR FIELDS DEADLINE...**  
November 25th is the deadline for items to be included in the Dec. issue of *STAR FIELDS*. Mail or phone 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, Haystack Observatory sign at the Groton town line. Proceed to the farmhouse on the left side of the road. Since clubhouse attendance varies with the weather and other activities, it is wise to call ahead: 508-692-8708.