

Volume 23, No. 1

Celebrating 39 Years of Observing

Spring 2006

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MEETING NOTICE

Spring Meeting

Saturday, April 22nd
2006

12:00 PM

**PCC Rock Creek Campus
Hillsboro, OR**

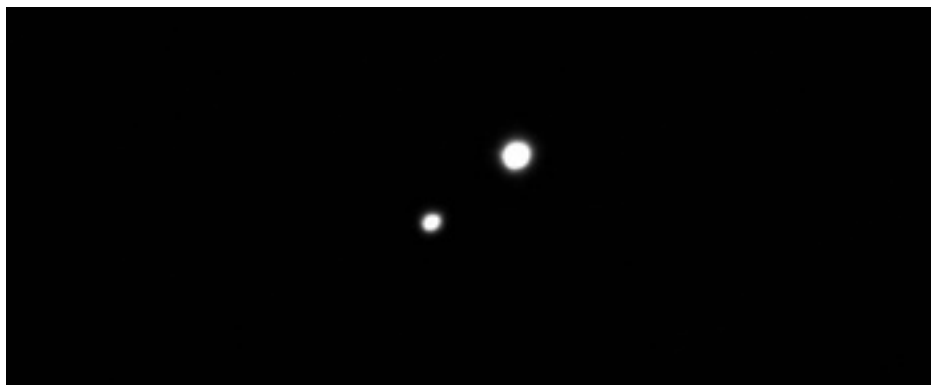
details on page 7

for more information:
Mary Hill
visions@pacifier.com

Mark Dunaway 2005 FOPMO Member of Year

CURRENT FOPMO TREASURER, MARK DUNAWAY, OF BEND, WAS RECOGNIZED IN December for his many years of service to Friends and to PMO. Mark was hired over 20 years ago as an Observing Assistant by Professor James Kemp, and then took over the Property Manager position when Gene Brandon retired. Mark has been the onsite Observatory Manager for the past two decades, seeing to all the various projects that need to be done to keep the buildings and roads in good shape, and working with the Forest Service to keep the environment protected while providing for visitors to enjoy the Observatory.

Mark has also organized and facilitated the weeknight tours attended by many school and civic groups, and serves as the scheduler for all group tours of the Observatory. Mark is also the historian of PMO, compiling and keeping files of articles and photographs that depict the evolution of the place. Recently, Mark volunteered to serve as Treasurer for Friends of PMO, and is actively working with the UO Development Office and on the Education Center Construction Committee to get this important project off the ground and underway. His knowledge and experience with the Observatory operation plus his long time residence in Central Oregon is a huge asset to his being able to get projects done and to keep the Observatory functioning smoothly. Thanks, Mark! ❖



*Albireo, a double star photographed with the 24" telescope at PMO.
Courtesy Richard Berry, August 2005.*



Pine Mountain Observatory dome taken on an August evening in 2005. Photo by Richard Berry.

Education Center Planning Committee Report

RICHARD BERRY, MARK DUNAWAY, KENT FAIRFIELD, Greg Hogue, Rick Kang, Norma Leistiko, Bob McGown, and Karl Oestreich, have held three meetings so far to develop specifications for the proposed Education Center to be located at the current 15" telescope site at PMO.

During the prior year, the Forest Service had gone through the process of preparing and approving the Environmental Assessment study for the footprint of the proposed new facility. Immediate benefit of the approval has been that a number of new growth trees that obscure viewing from all three telescope domes, have been removed or will be removed shortly.

In July, an initial meeting was held in Bend to establish a list of potential User Groups, Outreach Activities and Programs, and to formulate a detailed list of features that should be included at the new facility. This list accounted for specific types and specs of telescopes needed to facilitate the variety of observers and observing programs, plus details of floor plans that included a classroom/lecture hall, gift shop, washrooms, plus storage space, office space, and a variety of auxiliary areas. Consideration was also given to outdoor observing/viewing areas, both for daytime and nighttime

viewing, plus considerations for ergonomics, environment protection, safety, and to accommodate physically challenged visitors.

In January, the committee reconvened in Lyons, with the specific mission to prepare to raise the funds by clearly defining what we'll provide to whom, at the new Center. As the U of O Development Office entered the picture to begin the fund-raising process, we needed to develop a very focused picture that could readily show a potential donor exactly where we are headed.

We finalized our definition of our MARKETS: General touring public, Specific Organizations, Students of all ages, Teachers, Amateur Astronomers, and Distance learners. Then we finalized the PRODUCTS the Ed Center would provide to these MARKETS: Tours of current evening sky, live viewing and imaging opportunities of sky objects, information about science, technology, and learning/teaching of astronomy, astrophysics, and space travel, facilitation of research opportunities for students, teachers, and amateur astronomers, and access to databases/files of digital sky data. In addition, we'd provide camps, workshops, and development sessions for students and teachers, and

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Pine Mountain Observatory Wants You!

IF YOU HAVE NOT YET HEARD, PINE MOUNTAIN Observatory is launching one of its most exciting programs ever! We are going to build and staff a new state-of-the-art Science Education Center on the mountain at our present site east of Bend.

There will be a brand new building, which will include:

- A multi-purpose classroom and multimedia center
- New telescopes designed for specific teaching and research programs
- Facilities for expanded public outreach activities
- An outdoor amphitheater for teaching and enjoying the night sky
- An exciting new income-generating gift shop
- More, more, more!

Partner with the University of Oregon and Pine Mountain Observatory. Help us work with students and teachers across the State. Oregon and the Country at large must reverse a critical shortfall of trained scien-

tists and technicians. As a nation, we cannot long prosper unless this deepening trend is turned around.

The planning has been done and now we are in the fundraising phase. PMO is looking for contributors, large and small. If you are interested in backing this vital project or if you know of others who might also be interested in doing so, please contact me for further information. Better yet, consider a generous contribution now!

Kent Fairfield
541-536-5795
tualatinkent@aol.com

Checks should be made out and mailed to:

U O Foundation
Development Office
1245 University of Oregon
Eugene, OR 97403

Please be sure to note on check memo, "Pine Mtn. Obs. new Ed. Center". Thanks! ❖

Education Center

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offer educational and commemorative objects/souvenirs/images/software for purchase.

To offer these PRODUCTS, we decided that our facility had to include a classroom where 120 people could be seated, and 6 fixed telescopes (wide and narrow fields, optical and digital, group and physically challenged viewing, and TV camera feed), plus portable telescopes. We'd need storage cabinets for the portable telescopes, and amphitheatre area outdoors, storage areas inside for props and projects, washrooms, offices, giftshop, network cabinet, and exhibits gallery. We calculated that we'd use 3505 square feet for these items. We'd considered a kitchen/dining facility, library, break room, and staff residence, but deferred these items to other locations on the mountain.

We'll have the complete meeting minutes including details of the various lists posted at the FOPMO website shortly.

We are concerned that we'll need funding for a STAFF to operate the facility, including Manager, Gift Shop staff, Instructional Staff, Maintenance, plus tour guides for evening programs. The staffing is integral to the usefulness of the facility: Without adequate staffing all we're doing is building a monument.

Our MARKETS/PRODUCTS/SITE PLAN data was then used by Kent Fairfield to develop a greatly revised Powerpoint presentation that could be shown to perspective donors, clearly demonstrating our ob-

jectives.

On February 25th, the Planning Committee convened again at Lyons: This time our mission was to establish essential design criteria for the Ed Center Building/Complex so that actual architectural design could commence: Decide on a length and width, number of stories, basic rooms/functions, auxiliary buildings needed. The guideline would be to design only for ESSENTIAL criteria, yet to allow for efficient expansion and modification in near future

First we reconsidered what we currently do at PMO and who we currently primarily serve: This was simple: Sky tours for a variety of groups of clients, and workshops for teachers and students.

What do we URGENTLY need to do these tasks right away? Lecture room/Classroom, Network cabinet/room, Washrooms, larger/better gift shop, Storage space for props and supplies, display area for basic lessons and current events, hallways.

Plus, off-footprint, we URGENTLY need Education grade Telescope with camera for remote use, and convenient storage for portable scopes.

What else would be really useful/productive/handy? Large aperture telescope for optical viewing equipped with remote control access and camera for local display, office space, dining/meal preparation space, viewing deck, additional display areas for basics

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Army Ants in the Observatory in Namibia

by Bob McGown

I WAS GIVING THE NIGHTLY TOUR FOR GUESTS AT THE NAMIBIAN DESERT OBSERVATORY AT SOSSUSVLEI Mountain Lodge from Nov15, 2005 to Jan 5, 2006. I had been in the observatory in the early afternoon, reviewing star maps and tuning up the telescope, when I heard a strange sound. There was a slight hissing sound, kind of like the wind. I looked down and saw a 1.5 meter wide and 15 meter long brigade of Army Dune ants on the march. The brownish carpet marched up the stairs into the observatory floor. The soldier ants were lined up along the outside on the approach. There was an uneasy stillness; the army ants seemed like a million Zulu warriors approaching from higher ground.

Photos courtesy D. Murray 2005.



Bob McGown in front of Sossusvlei Mountain Lodge Observatory.

At first, I thought the ants were going to swarm the old LX-200 12.5" telescope. My first instinct was: sacrifice the telescope, not me! Jumping over the observatory wall, I ran to the pilot's quarters to get my charging digital camera. After returning a ½ hour later, the army ants had returned to the Namibian desert. I was told by one of the South African pilots that the whispering noise was caused from the soldier ants beating their heads on the rocks.

This was just the beginning of two months astronomical adventures in the Southern Africa with safaris in January with my friends Dareth Murray, Miles Paul, and the staff at Sossusvlei Mountain Lodge. One of our great Namibian adventures was a hot air balloon safari over Sossusvlei star dune formations with Dareth Murray, Susan Taylor, and Khephra Burns (author of *Black stars In Orbit*). During the day, I climbed rim rock mesas to study 680 million year old stromatolites & strange desert geology & plants. During our hikes in the desert and even near the lodge we encountered giant scorpions & black spitting cobras and saw an electrophonic barber pole meteor. I spent six weeks under the magnificent Large & Small Magellanic Clouds.

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Army Ants ————— continued from pg. 4

Photos courtesy D. Murray 2005.



Bob with the Hoba Meteorite, largest in the world. It shows minor damage by vandals.

Afterward, my partner Dareth Murray and I traveled to northern Namibia to the Hoba meteorite, the largest meteorite in the world, with an amphitheater built around it where it came to rest. We flew to Cape Town, and visited the South African Astronomical Observatory (SAAO), as well as the telescopes of Southerland in Southern Africa but that is another story! ❖

Tour Guides (and Visitors) Needed for Summer Season

WE'RE ALWAYS LOOKING FOR NEW TOUR GUIDES, we'll have our usual training sessions on Saturdays in April and May. Contact Greg Hogue (541-771-6987) if you are interested in joining our crew, whether as a beginner or an experienced sky guide. If you're a veteran Tour Guide, please give Greg your support, sign up early to select the weekends you'd like to help out at PMO. There's an e-mail list with weekly info for Tour Guides, contact Michael Rasmussen, list administrator, at mikeraz@patch.com to get subscribed.

If you're contemplating a visit, we cordially invite you, any Friday or Saturday, Memorial Day weekend through September. Programs in early summer start at 900 PM. Dress warmly and bring a small flashlight, preferably covered with red cellophane to subdue the white light that is detrimental to night vision. We typically have an introductory observatory and sky orientation program followed by viewing through telescopes. With the 15" out of service (the tracking motor, vintage

1900, finally gave up last Spring), we'll have the 24" plus portable telescopes depending on who is on-site that evening to set up and run the 'scopes. You're encouraged to bring your telescope, we have a large flat area to set up, and electricity if needed. You can also come up on most Saturday afternoons for solar viewing through our H-alpha filter, 2-5 PM.

When you visit, we suggest a \$3.00 - \$5.00 donation per person. Children are most welcome. There's a primitive Forest Service campground just across the road, first come, first serve, no fees, no reservations. Also no water and occasional restrictions on fires.

There's a virtual tour plus detailed info at the FOPMO website or you can phone 541-382-8331 for details or to make reservations if you're bringing a group larger than 8 people. Detailed weather information, plus current views from webcams are available at the FOPMO and UO PMO websites. (you can start from <http://zebu.uoregon.edu>) ❖



Photo courtesy R. Berry 2005.

Spending the night at Pine Mountain can deliver spectacular views as Richard Berry captured above last August.

Public Education, Outreach Report

First Quarter of 2006

by Rick Kang

OUTREACH DELIVERY HAS PICKED UP SINCE January. Although teachers face ever increasing in and out of class workloads, and have to wade through increasing amounts of spam e-mail, the good news is that elective astronomy courses have reappeared in quite a few High Schools, and demand for outreach has once again exceeded our capacity. I'm currently booked solid to do classes through the middle of April. We still don't have any reliable funding for our efforts, nor do the schools. At more than half of the schools I visit, teachers write personal checks to cover my travel costs and the donation to FOPMO that we request.

I want to bring to your attention the following report, as reported by Physics Today, and aired on Charlie Rose recently, the full text of the article from Physics Today is available at <http://www.physicstoday.org/vol-58/iss-12/p25.html> : "'Gathering Storm' Report Urges Strong Federal Action to Save US Science and Technology Leadership: A National Academy of Sci-

ences study warns that without strong steps to improve federal support for science and technology, the quality of life in the US is threatened: For several years the reports have been stacking up in offices throughout Washington, DC. One is by the Council on Competitiveness, another is by the Electronic Industries Alliance, and still another is by the Business Roundtable. There are more than a dozen similar reports, all carrying the same basic message: The US is losing its competitive edge because of a lack of investment in education and research."

The programs that the FOPMO/UO Electronic Universe provide are exactly what the National Academy is recommending: Inquiry based science and technology learning opportunities that will bring more students into science, engineering, and technology. We are doing what the pundits suggest, but we are not able to do very much until we are more robustly funded. Our teaching core is still essentially volunteer, and there is

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Education Outreach continued from pg. 6

only so much that volunteers can be expected to do out of their own pockets. We have the expertise, the desire, and the tools, but we need to be soundly funded. If you know of substantial potential long term funding, please let us know.

The North Coast Teachers Touching the Stars (NCTTS) program is progressing well, we're still working with the initial group, as they finish their learning and implement inquiry based strategies. They'll get to do a balloon launch of an instrument package perhaps into the stratosphere, from Millican, later in the Spring, as a grand finale. Meanwhile, we have another group ready to begin this coming summer. We also have a group of High School students from West Salem High School, along with their teacher, Graham Dey, plus a group of students organized by OMSI, who will spend a few days and nights with us at PMO this summer learning about the technologies of data collection, and working on some actual projects. One project we would like to attempt is the detection of transits of some of the recently discovered extra-solar planets (large planets that should obscure a relatively large percentage of

their star's light as they orbit in front of it relative to Earth, that we'd be able to detect the event with our CCD cameras). If we can confirm that we can perform this technique on known planetary systems, then we can commence our own search for extra-solar planets. Interestingly, Dr. James Kemp had attempted extra-solar planet detection by polarimetry 20 years ago at Pine Mountain. There wasn't any definitive data from those early experiments, but at that point many researchers were trying a variety of means to detect the elusive planets. Eventually the Doppler shift method was found to work reasonably well (revealing the wobble of the star due to the gravity of the orbiting planet), and to date, over 160 other solar systems are known.

Our planned Education Center on-site at PMO is another item that fits into our overall plan and capability to perform and deliver an effective science education program to students, teachers, and the general public. I hope you'll support this effort, described in other articles in this Observer. We'll continue to do all we can to promote scientific literacy and specific interest in the science of the sky. ❖

From the President's Desk

*Roses are red,
Violets are blue,
Spring is here,
So send in your dues.*

I WANT TO THANK ALL OF YOU FOR YOUR GENEROUS help and donations in previous years. 2006 should be a great year of touring and education. The gift shop is full and the tour guides are all excited to get busy. We hope most of you will be able to come up to the mountain this year. We've had some wonderful write-ups this winter in both the Bend and Eugene papers. Remember our opening is Memorial Day weekend and we are open every weekend after that through September, Friday night and Saturday night. Come up and explore the Cosmos. May all your skies be clear and may you see at least one "shooting star" each night you look up. ❖

Mary Hill
President

Spring Meeting Notice

THE SPRING FOPMO BOARD/MEMBERSHIP meeting will be Saturday, April 22nd, at PCC, Rock Creek, Hillsboro, in building 7 room 225. It is the same one we used to use. Meeting starts at noon sharp. Bring sack lunch and bring snacks/beverages to share as usual.

Directions: Bob Ewing
robert.ewing9@comcast.net

Agenda items: Mary Hill
visions@pacifier.com



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contact V.P. Bob Ewing

bewing@pcc.edu or (503) 614-7324

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Winter 2005 Meeting Minutes

FRIENDS OF PINE MOUNTAIN OBSERVATORY

DECEMBER 03, 2005

Minutes taken by Sean McGonigal

Meeting was called to order by President Mary Hill at 12:01 pm.

Attending

- **Executive Committee Members:** President Mary Hill, Vice President Bob Ewing, Secretary Sean McGonigal, Treasurer Mark Dunaway, Greg Hogue
- **Board Members:** Richard Berry, Dr. Greg Bothun, Lauri Crandall, Frank Crandall, Fred Domineack, Dave Hill, Rick Kang, Norma Leistiko, Karl Oestrich, Sig Peterson, III
- **Guests:** Michael Cochram, John Bakkensen, Kent Fairfield, Heidi Shuler (UO Development Staff) (hshuler@cas.uoregon.edu), Tom Conlin

Introduce Guest

- Michael Cochram, architecture department. 1st draft of designs for education center were presented and discussed. Mark and Sean will attempt to post on the FOPMO website for all to see.

Previous Meeting Minutes

- The summer 2005 meeting minutes were approved as written in the newsletter.

New Board member

- Rick nominated Kent Fairfield to the FOPMO Board of Directors. Approved.

Treasurer report - Mark Dunaway

- Report handed out*.
- Intel donation from Sean's hours noted - \$~2500 to the foundation.
- **Karl:** Lots of telescopes and other items being donated. Storage and usage is becoming an issue. Asking for 2 more piers for existing telescopes and the solar scope. Origami observatory is rotting and falling apart. Money for a new one that can encompass more scopes.
- Additions to budget handed out - Membership mailing; Origami Observatory replacement, etc.; Newsletter.
- Discussions of UO building more storage / possible replacement of the 15" telescope dome; storage behind 32" dome; etc.
- Budget approved as amended.
- Mark to work with Heidi and CAS on membership form clarifications.

Fundraising – Kent Fairfield

- (Kent – Contributions Coordinator)
- Pictures shown that will be used for fundraising talks.
- Presentation shown for fundraising events. Included photos, PMO Facts, Observatory Functions, Facilities, Public Education, Teacher Training, Student Training, Ongoing Programs, Current Facilities and Future Plans, PMO Goals, Supporting PMO.
- Heidi Shuler – Development officer in College of Arts and Sciences.

Membership report - Bob Ewing

- Still have lots of people getting the newsletter snail-mail. Please email Bob if you want to view online only. New link to Physics home page to the online newsletter.
- Mary and Bob will be working on Membership letter.
- Membership / donation forms being updated to be more specific.
- Membership and gift shop income discussion.
- Perks for membership. – USB thumb drive of photos, free attendance to PMO & special events, etc.
- Membership has been about the same throughout the year.
- Presentations at libraries, etc. could bring in members and income.

Visitor Program report - Greg Hogue

- Lower attendance due to higher gas prices.
- Education facilities / museums etc are being looked at by more travelers.

Gift Shop report - Norma Leistiko

- Starting to accept Visa and MasterCard (manual – not automated.) Norma will look into automated one.
- Inventory noted at the end of season. 60% profit margin.
- New reporting going to treasurer – lots more detail.
- New computer very helpful for inventory and budgeting.

Observatory Report - Mark Dunaway

- New weather station proposed.
- 24" camera moved.
- Trees are being removed.

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Winter Minutes ————— continued from pg. 8

Education Report - Rick Kang

- Rick handed out report.*
- Program continues – fair amount of travel (including to Nevada).
- Demand has gone down this fall over last year. (2868 down to 1359). FOPMO paid \$310 this year.
- E-mail communications to teachers becoming ineffective.
- Looking into creating a new program – teachers & students directly involved into using data.
- Teachers signed up again from Tillamook schools of former attendees.
- Funding source issue still being worked on.
- ASP Conference, September. Lots of great contacts and resources. Greg H. and Rick attended. Presentation in the next meeting.
- Future conferences – in Denver in April
- AAS in Seattle in 2007.
- Web site – slow progress due to conflicts. Still need material from everybody.

Publicity Report - Rick Kang

- Rick handed out report.*
- PMO Saturday programs – evidence shows better attendance in evening than afternoon. We need new programs/presenters for 2006.
- Brochures should be ready for early spring.

Planetarium program Demo – Sig Peterson

- Linux version of KStars Planetarium. Bootable to CD; Freeware. New versions available at <http://www.knopper.net/knoppix/>
- Discussion of giving away for membership, gift shop, demos at the mountain, education outreach, etc.

Awards – Mary Hill

- Certificates of Appreciation were handed out.
- Mark Dunaway was awarded the FOPMO Member of the year. Congratulations and a huge thank you!

Next Meeting

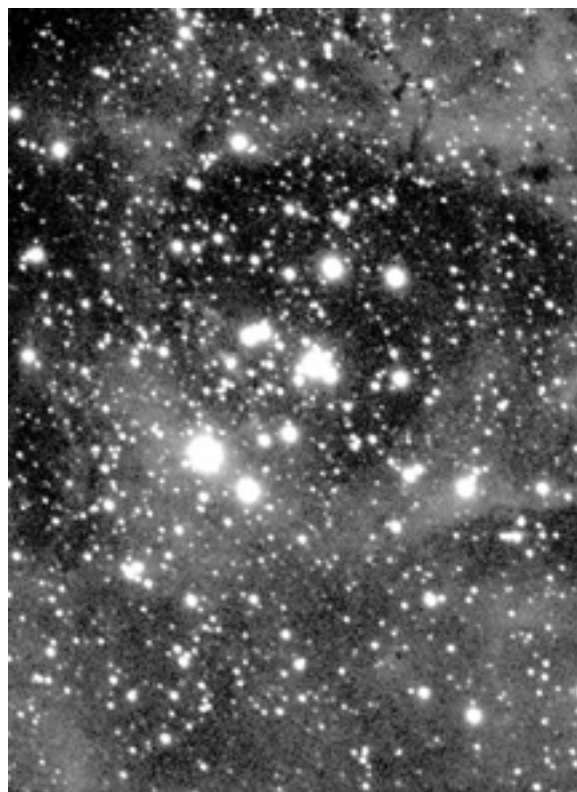
- The Spring 2006 Board of Directors meeting will be Saturday, April 1, 2006, 12:00 noon at {NOTE LOCATION CHANGE}: PCC Rock Creek Campus, Building 7, Room 225. Please send agenda items to President Mary Hill @ visions@pacifier.com. All members and guests are welcome to attend.

New Business

- Article deadline for next newsletter is March 1, 2006 (note earlier date than was posted in the newsletter). Send articles to Amy McGrew at a.mcgreg@comcast.net. Discussion on moving meetings – winter to January, summer in anything but August – probably September. We will discuss as we schedule in the next 2 meetings.
- **Richard:** Mel Bartels project – large public access telescope for public visual use. Possible mirror of 1.8 meters (6 ft.). Discussion of PMO as a possible site as well as funding the completion. Issues discussed with the PMO site. We have not been approached as a site, but Richard wanted us just to be aware if this group approached us.

Meeting was adjourned at 2:42pm ❖

* All handouts on file with the secretary. Copies provided upon request.



Rosette Nebula.

Photo courtesy Richard Berry 2003.

Education Center ————— continued from pg. 3



PMO visitors observing. Photo courtesy Richard Berry 2005.

and historical displays, large amphitheatre, “pipehenge” armillary educational model of sky, scale model solar system to walk through.

We detailed out the square footage for each feature in the Urgently needed category above. One simplification was to MOVE THE TELESCOPES TO SEPARATE STRUCTURES NOT WITHIN THE PRIMARY ED CENTER BUILDING, they could be built one by one later on, fine tuning as our needs become more apparent. Along these lines we figured constructing a separate structure for portable telescope storage, east of the 24” dome, serving as a light barrier as well as a storage unit. We’d also figure constructing a roll-off small building to house the current 10” automated Meade as well as one other viewing telescope. We also will investigate setting up a small dome for a research telescope nearby the 32” building.

The actual Education Center building now comes in at 3600 square feet, exactly matched to the original proposed footprint. Mark will take our specs to an architect for a working drawing. We will also have the architect cost out the construction, and add a basement, and figure the cost of adding the basement to the structure. We envision expansion to include items in the “what else would be...” category, and are thus considering the basement as the most reasonable area to expand into (second story would add several operating complications and may not fit into the overall site plan).

We discussed diverting our visitors’ program to Millican for one season, perhaps using a large portable tent as an auditorium, figuring that if we began construction on the new Ed Center at the end of next season, and resumed construction in early Spring, we would only need to have the upper mountain facility closed for one year.

We discussed a tentative budget of \$2.5 Million initial estimate for building plus operating costs: Construction costs ~\$1.5 Million, ~\$1 million for 1st year operation of which \$.5 million invested as endowment for continuing operations. These figures were essentially “picked from thin air”, and will be much more substantiated after the architectural review.

There will be several more Committee meetings as we hone the specifications and gain data on costs. We’ll decide on the final configuration, work out more details of specific telescopes, and work on operations plans.

The fundraising efforts are being stepped up and are reported in a separate article in this OBSERVER. If you have any questions, suggestions, would like to participate in the meetings, or can participate and/or assist in fundraising, please contact any of the current committee members. ❖

O

COLLEGE OF
ARTS AND
SCIENCES

University of Oregon

Pine Mountain Observatory

Yes! I want to give to the Pine Mountain Observatory.

My check is enclosed, payable to the UO FOUNDATION.

Please charge a one-time gift to my Visa Mastercard
of _____.

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Signature _____

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My address is:

My e-mail is (optional):

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College of Arts and Sciences
<http://cas.uoregon.edu>

Giving Information
<http://giving.uoregon.edu>

Mail payment form and checks to:
College of Arts and Sciences
Development Office
1245 University of Oregon
Eugene, OR 97403
(541) 346-3950

AS04



New Procedure, Address For Contributions Updated Membership Information

TO JOIN OR RENEW YOUR MEMBERSHIP IN FRIENDS AND TO DONATE TO OUR programs, please fill out and mail the form above and send along with your check to the address as printed (College of Arts & Sciences Development Office, 1245 University of Oregon, Eugene, OR 97403); not either of the P.O. boxes used in prior requests.

Please make your check out to the UO Foundation and note on your check's memo area, "For Friends of Pine Mtn." We are unable to include a return envelope at this time.

You can specify by writing a note that your donation is applied to specific Friends' programs: We have a new **Jim Girard Memorial Education Fund** specifically for outreach efforts, our **Education Center Fund** to support construction of our new building at PMO where we'll conduct summer programs and classes year-round, and our regular **Friends of PMO Fund** that is used to support all facets of our operation (this is the default account if none is specified).

We suggest \$20 as an initial annual membership donation. We welcome major amounts towards our Education Center project.

Thanks for your contribution! ❖



Oregon's Highway 20 leads to PMO. Photo courtesy Richard Berry 2002.

The Pine Mountain Observer is the newsletter of the Friends of Pine Mountain Observatory (FOPMO). The *Observer* is published three times per year and is made available at no cost to Friends, the members of FOPMO. Your participation is welcome.

If you have relevant material to contribute to this newsletter, **e-mail** your articles and images to the editor. **Please note**, when sending your images, use the best possible resolution with the least compression. Image files saved as TIF or JPG format along with some descriptive text is helpful.

*Deadline for the Summer 2006 issue is
Sunday, June 25th!*

Amy McGrew, Editor
a.mcgreg@comcast.net



The Pine Mountain Observer

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About the Friends of Pine Mountain Observatory

Friends are citizens across the globe who help PMO by contributing voluntary labor, materials, and/or funds. You are welcome to join the more than 200 current Friends by sending the attached form, with your check, to the address below.

Benefits of Membership and Activities of Friends

Friends may visit PMO free of charge. Members receive several copies of the newsletter each year. The newsletter describes current **Friends** projects, the status of the Observatory's operations, occasional technical articles about ongoing research, and informs

members about upcoming activities. Various **Friends** are directly involved with upgrading telescopes, improving educational programs, organizing publicity, and producing fact sheets, brochures and documents.

The **Friends Board of Directors** meets three times per year, usually in Portland, Eugene, and Bend. All members are welcome. There is also the tradition of a **Special Star Party for Friends**, at Pine Mountain, each summer. Check your newsletter. Contact any Friends officer about meetings. Get involved!

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