

Southern Skies

Volume 24, Number 2

Journal of the Southeastern Planetarium Association

Spring 2004

In This Issue

President's Message	1
IPS Report	2
Feedback	2
Editor's Message: Thanks for Making My Job Easier	3
SEPA Membership Form	3
Featured Facility: Ethyl Corporation IMAX®Dome & Planetarium, Richmond, Virginia	4
Digital Cosmos: <i>Lunar Map Pro 2.0</i>	6
Small Talk	9
News from SEPA States	10
HST's Greatest Hits of '96 Slides	12
HST's Greatest Hits of '97 Slides	13
HST's Greatest Hits of '98 Slides	14
HST's Greatest Hits of '99 Slides	15
JPL '98 Slides.....	16
JPL '99 Slides.....	17
Dual-Arm Binocular Mount	18
Candidates for President-Elect, IPS Representative, and Secretary-Treasurer	24
Paul Campbell Fellowship Award Nomination Form.....	28

The deadline for the next issue of *Southern Skies* is July 1. Send submission either on a 3.5" disk or *via* email attached file to <dteague2@midsouth.rr.com> or <teagued1@k12tn.net>.

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President's Message

The beginning of 2004 has provided the public with a tremendous amount of astronomical information. We have had the Mars Exploration Rovers sending us amazing information and photographs from Mars as well as a widely publicized near miss of Earth by an asteroid. We have continued debates on whether or not Pluto is a planet after discovering another large body at the edge of our Solar System. And we have had the early evening spectacular of five planets in the sky and the possibility of two bright comets on the way. These are the times when we realize that there is still a lot to be discovered and learned out there. Hopefully your facilities have had the opportunity to help spread the word of astronomy to the general public.

It is not too soon to prepare for this year's SEPA conference to be held June 22 – 26. Please keep in mind that this year's conference will be a joint conference in conjunction with the Mid-Atlantic Planetarium Society (MAPS). This means that this conference should be an exciting one and also an excellent chance to network with people outside of our conference area. I hope you will all try to attend. This year's conference is being held at Ethyl IMAX Dome and Planetarium Science Museum of Virginia in Richmond, Virginia. By the time you read this message you should have received registration information. But in case you have not or you need additional information, you can get up to date information at the conference Website <www.smv.org/sepamaps>.

As many of you already know, the 2005 conference will be held in Atlanta, Georgia. This was decided at last year's conference in Baton Rouge, Louisiana. At this year's conference we will decide on the 2006 conference and as some you will recall at the beginning of my presidency I appointed a three-man committee to be in charge of conference site selection. These three individuals are George Fleenor, Mike Chesman, and Richard McColman. All of which are former presidents and outstanding members of the organization.

Over the past year, they have been working on guidelines for conference sites and are continuing to do so. This is also the committee that accepts nominations for future conference locations. Therefore if you are interested in hosting the 2006 SEPA conference, please contact George Fleenor at 941-920-0246. Any of these three gentlemen are capable of answering potential questions you may have in hosting one of our conferences.

At this year's conference we will be holding elections for SEPA Council positions. This year's nomination committee consists of chairperson, Kris McCall from Nashville, Tennessee; Drew Foster

from Louisville, Kentucky; and Mark Bennett from Miami, Florida. They have done an outstanding job in producing candidates for this year's election.

Nominees for President-Elect are as follows: Gary Meibaum from Luling, Louisiana and Adam Thanz from Kingsport, Tennessee. Their biographies are located in this journal. Both of these gentlemen are excellent candidates and, in my opinion, would both make a fine president of this organization. Good luck to both of you

Nominee for Secretary-Treasurer is our incumbent, Duncan Teague. As many of you know, in addition to this role, Duncan is also the editor of *Southern Skies*.

And finally, for IPS Representative, we have incumbent, John Hare. I would like to say that year after year, both Duncan and John play vital roles in this organization and should be thanked for their fine work they carry out on a consistent basis.

I would also like to remind everyone that Patsy Wilson was appointed our current President-Elect and will take over as SEPA president next year. As you can see from this list, SEPA will be in capable hands for several years to come.

I also have the happy news that the SEPA Council has named our first emeritus member. We have bestowed this membership upon Mike Ryan. Many of you probably remember Mike. He was a SEPA member from 1976 to early 1990 and served as president from 1981 – 1982.

During his membership, Mike ran a school system planetarium for the Lake County Schools in Florida. Changes in the school system pulled Mike away from the planetarium, but we are all happy to have him back. Congratulations, Mike!



Michael Sandras
President
Kenner Science Center
Planetarium
Kenner, Louisiana

IPS Report

John Hare
ASH Enterprises
Bradenton, Florida

The International Planetarium Society (IPS) has become more international in flavor in the past couple of decades, as a larger proportion of the membership has come from locations other than the North American continent. The IPS Conference sites likewise have tended to become more international in location.

The first 5 IPS Conferences were held in the USA, and 11 of the first 12 IPS Conferences were held in North America. Since 1996, 4 of 5, including Spain, will be at locations other than the USA, although 2000 was in Montreal. The argument could be made that because the majority of IPS members are of North American residence, IPS Conferences should be mainly held in North America.

I would disagree with this idea, since we in North America have traditionally had a large number of active Regional organizations. There are several sizeable conferences available to us each year including this year's combined SEPA/MAPS meeting which should draw large numbers of participants. For

planetarians scattered in other locations around the globe, the opportunities for *any* conference, let alone an international conference, are relatively few and far between.

In light of that, it's not too late to join IPS and participate in the upcoming conference in Valencia, Spain! You'll also need to keep an international frame of mind for a while longer since the 2006 site has already been determined to be Melbourne, Australia. Sites that have submitted invitations for 2008 include Glasgow, Scotland and Morelia, Mexico.

The deadline for invitations for 2008 is prior to this year's IPS Council meeting which will take place beginning on July 3rd in Valencia. Council will decide from the invitations in hand at that time for the 2008 site. I will cast SEPA's vote at the meeting. Please contact me prior to July 1st or see me at the SEPA/MAPS conference to discuss anything you wish in regards to the site choice or any other business of consequence to IPS.

See you in Richmond.

Feedback

Editor, Southern Skies: Re review of *SkyGlobe*

If you use *SkyGlobe*, an "ancient" shareware night sky program, you are not taking "a step backward!" I have used many of the many other "planetarium" software programs, such as *Starry Night*. However, when teaching astronomy classes to high school students (8 classes) and teachers (one class), I have used the DOS version of *SkyGlobe* exclusively.

Why the DOS version? If you will look at the top screenshot in the article, you will notice a series of letters and words running vertically down the right-hand side. These are toggle on/off commands; you do not need a written list of commands to tell users what to do. Imagine a class of students at different computers in a classroom. You have loaded the program on each one. A master lesson is started by using each letter, one at a time, to let the class understand what that letter does. The letters, which code actions, are always displayed, so you don't spend all your time trying to get lost individuals several layers back to a specific page.

Then I presented them with some "projects." I found it easier to think of "projects" which required answers on paper, to keep them from just jumping all over the program with no goals in mind. It was so

easy to keep track of what everyone was doing, and get them back on track when they got lost. If anyone would like some project ideas, please e-mail me at <jhasting@pen.k12.va.us>.

Then, when the lesson is over, as Paul Trembly reported, you give them a copy. They might like a fancier program later, but, for beginners and basic information, this cannot be beat!

On another note: Thank you, thank you, thank you, Adam Thanz for the wonderful CD (the SEPA 2003 Archive, which accompanied *Southern Skies*, Volume 24, Number 1, Winter 2004). He said it took 300 hours to do it; I'll bet it was more like 3000 hours! It is fabulous!

—Jane Hastings, Richmond, Virginia

[How nice to get my very first letter to the Editor! Thank you, Jane.

Yes, sometimes a nice, simple program without a lot of bells and whistles will work quite nicely to introduce students to astronomy on the computer. It builds their confidence if they can master a few basic skills the first time they use it.

Well, Adam, pat yourself on the back... again.

—Ed.]

Editor's Message: Thanks for Making My Job Easier

Thank you for making my job easier. There was so little news from the SEPA states—a page and a half—that it didn't take much time to compose that part of this issue of *Southern Skies*. Perhaps that's one place where we should consider revamping this publication. We could eliminate the News from SEPA States section, and the members who regularly try to twist the arms of their fellow state Planetarians would have less stress in their lives.

Thanks go to Jane Hastings who sent in my very first (e-mail) letter to the editor. It's very comforting to get feedback from the previous issue.

Thanks go also to those who submitted meaty, substantial articles for this issue. The Featured Facility this quarter is one I've visited on the occasion of two other SEPA conferences. I look forward to going back to Richmond, Virginia to see the Universe... um, Ethyl Corporation Planetarium... um, IMAX@Dome... oh, read all about it on page four.

The Digital Cosmos column reviews software unlike the usual planetarium simulator fare. Check out the information on *Lunar Map Pro 2.0* on page six.

Adam Thanz has put together some more sleepless weekends to complete the design and execution of a Dual-Arm Binocular Mount. See pages 18 – 23.

Former SEPA Duke Johnson contacted me a few days ago with some information from his new role at the Clark Planetarium in Salt Lake City, Utah.

"NASA's Genesis Mission is slated for re-entry and capture in Utah on September 8, 2004. CalTech, JPL, McREL, Utah State Office of Education, and the Clark Planetarium are putting together a... two day workshop for secondary science teachers. Topics will include selected activities from Cosmic Chemistry: Cosmogony. Tentative activities include a Spongy Universe, Doppler Effect, Mathematical Models, Quarks, Tracing Origins, Dark Matter, and Cosmic Tug of War.... The featured speaker will be Don Sweetnam, Genesis mission project manager, JPL.

"There had been early... talk of... a Webcast of at least a small part of the session.... If there is sufficient interest by membership (SEPA), I believe that I can probably talk them into keeping it in the program."

If you're either capable of or interested in (or both) receiving this live event, please contact Duke at his new e-mail address: <DJJohnson@slco.org>.

Speaking of President-Elects, *et al.*, it's going to be election time again this June. You'll find biographical information and the handsome faces of the candidates starting on page 24.

Duncan Teague
Secretary-Treasurer
Southern Skies Editor
Craigmont Planetarium
Memphis, Tennessee

SEPA Membership Form

Please send your check for \$25 (or \$15 if outside the SEPA geographical region) to SEPA, c/o Craigmont Planetarium, 3333 Covington Pike, Memphis, TN 38128-3902

Name _____

Organization _____

Planetarium _____

Address _____

City _____

State _____ Zip Code _____

Voice Phone _____

Fax Phone _____

E-mail Address _____

Staff Position _____

IPS Member? Yes _____ No _____

Contribution to Scholarship Award Account: \$ _____

Featured Facility

The Ethyl Corporation IMAX®Dome & Planetarium, Richmond, Virginia

Mike Chesman
Bays Mountain Park
Planetarium
Kingsport, Tennessee

Author
Ken Wilson
Director of Astronomy
Eric Melenbrink,
Twyla Kitts,
Cyane Lowden, and
Randi Slaughter also
contributed to this article.

Right: An aerial view of the Science Museum of Virginia's main building, the historic Broad Street Station. The exterior dome of the planetarium is partially visible on the left.

Far right: This attractive and nicely landscaped view greets visitors at the exterior entrance to the planetarium wing.

The Ethyl Corporation IMAX®Dome and Planetarium is a part of the Science Museum of Virginia, an agency of the Commonwealth of Virginia. If you've been around SEPA for a while, you may know it by one of its former names: Universe Planetarium and Space Theater or Ethyl Corporation Planetarium and Space Theater. Although the name has changed, the location hasn't. It's still located in Richmond, Virginia and it opened its doors to the public on April 23, 1983.



The planetarium/space theater wing was the first major addition to the Science Museum of Virginia's main building, the historic Broad Street Station, which was originally built from 1917 – 19. Broad Street Station was designed by John Russell Pope who also designed the National Gallery of Art, National Archives, and Jefferson Memorial buildings in Washington, D.C. The planetarium wing contains 32,000 square feet. Exhibit space comprises 10,000 square feet of that total.

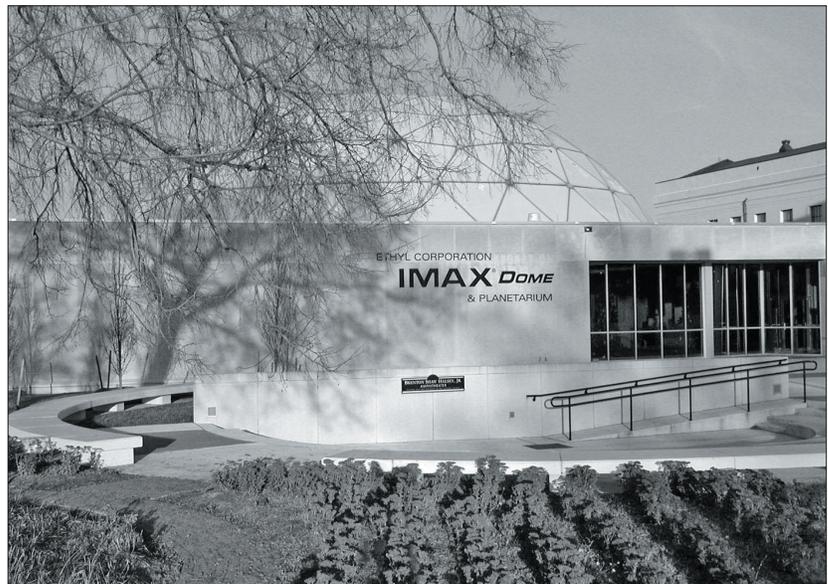
The planetarium dome is 23 meters in diameter with a 27° tilt. The original dome was manufactured and installed by AstroTec, but it was replaced by a

Spitz dome in 1998. The current dome is perforated aluminum and has a 40% reflectivity and a 25% void. The planetarium contains 253 fixed seats and 7 wheel chair spaces.

The planetarium is currently equipped with an Evans & Sutherland Digistar II computer graphics planetarium system. This is the third Digistar system installed in our facility. When we opened in 1983 we were the first permanent installation of a Digistar system anywhere. In addition to Digistar, the facility

contains a 15,000 watt IMAX®Dome projection system (a designation formerly known as Omnimax®). The current theater sound system was designed by MEGAsystems and contains six Peavey Cinema Acoustics two-way THX speaker systems and eight subwoofers, placed around and behind the dome screen. The 26 individual speakers are driven by 20 BGW amplifiers, with a combined output power of over 11,000 watts.

The sound system plays back six discreet channels of sound. House lighting, video projection, slide projectors, and special effects are controlled by a PC-based East Coast Control system. Controlled devices include 42 carousel slide



projectors, two zoom projectors, two Sony CRT video projectors, one LCD data projector, two laser disk players, one DVD player, and up to 60 special effect projectors. SMPTE time code is used to synchronize the automation system to soundtracks for pre-recorded shows.

Theater programming consists of a mix of large format films, pre-recorded planetarium shows, and a monthly live planetarium show, called *LiveSky*. Most planetarium shows are produced in-house by the museum's Multi-Media Department. Show scripts are both written in-house and contracted to outside authors. Narrators come from the local theater community, broadcast media, and in-house.

A variety of school and pre-school planetarium shows are offered throughout the year. Among them are *Night Light* and *Earthwise* that introduce the very young to the world and skies around them. School shows are tied to the Virginia Standards of Learning. They include *Rocks in Space*, an exploration through the eyes of a punk rocker of the first four planets of our solar system; *Solar Showroom*, a lesson in geology, a zany and informative adventure in a used star showroom that includes our Sun; and *Zoom on the Moon*, which explores our nearest celestial neighbor, the Moon. It's based on the PBS Zoom children's television show.

Most public shows are short—usually less than 20 minutes. Recent public show topics included celestial navigation, dark matter, and the Sun. Our latest show, *Black Holes*, will run through mid June. This show was

developed with funding from and in cooperation with the University of Virginia's astronomy department. Following its run at the Science Museum, the script, soundtrack, a show video, and visual components of *Black Holes* show will be made available to the Digistar Users Group and SEPA members free of charge. In September we will open a new show about Mars.

Astronomy education at the Science Museum of Virginia extends beyond the horizon of the planetarium in many ways. We've recently finished design and construction of a new astronomy and space science exhibit called "Space Travels" which is contained within a standard large truck trailer. It will travel around the state of Virginia as part of the museum's outreach efforts. Cooperative efforts with the Richmond Astronomical Society produce our free monthly Sky Watch telescope viewing sessions; annual Astronomy Day activities; and special viewing sessions for events such as eclipses and the upcoming transit of Venus. Ken Wilson regularly teaches classes on telescopes and naked eye stargazing. He also writes a monthly Sky Watch column that appears in the local Richmond Times Dispatch newspaper and writes and narrates a weekly radio program called Virginia Skylines that airs on our local public radio station.

To add color and depth to the word picture of this article, we hope you'll all come to see our facility this summer at the joint SEPA/MAPS conference, June 22 – 26. See <www/smv/prg/sepamaps/> for more information about the conference.

**Featured Facility
continued**



Left: A youth participates in the mirror grinding demonstration during the annual Astronomy Day programs.

Digital Cosmos: *Lunar Map Pro, 2.0*

Paul Trembley
Orlando Science Center
Planetarium
Orlando, Florida



Lunar Map Pro, 2.0

Published by Reading Information Technology, Inc. (RITI), Lunar Map Pro v2.0 (LMP) is one of those programs that does one thing and does it very well. LMP is intended for those observers who spend a great deal of time viewing the Moon. Granted after all these years of lunar probes, manned missions, and telescopic observations, there exist a multitude of good high resolution printed charts for the Moon. But in this day of CCD imaging and computer controlled telescopes, who wants to lug several inches of paper around with them when it can all be on your laptop?

LMP is available in two flavors—Basic and Advanced:

Lunar Map Pro Feature List	Advanced Edition	Basic Edition
Lunar Maps		
USGS Raster Image Map	Yes	Yes
GIS Vector Map	Yes	—
Vector Sketch Map	Yes	—
Geology Map	Yes	—
Raster Map with Vector Support	Yes	—
Real-time Libration Correction	Yes	—
Data		
Database*	7600+	1062
Advanced Feature Search Capability	Yes	—
Lunar Gazetteer	Yes	—
Real-Time Ephemeris (Data)*	Yes	Yes
Co-Longitude and Libration Data	Yes	—
Sunrise & Sunset Time/ Date by Feature	Yes	—
Manned & Unmanned Landing Sites	Yes	Yes
Lunar Phase Tool*	Yes	Yes
Distance Measurement Tool*	Yes	Yes
Local and Universal Time Settings	Yes	Yes
Observing Site Location Settings*	Yes	Yes
Observer Notes Link	Yes	—
Photographic Images Link	Yes	—
Field of View Conversion Table	Yes	—
Lunar Facts Sheet	Yes	—
Geology Legends	Yes	—
Lunar Glossary	Yes	—
Navigation Tools		
Eye-piece Field-of-View (FOV) Maps	Yes	Yes
Maps Flip and Reverse	Yes	Yes
Navigator Window	Yes	Yes
Compass	Yes	Yes
Mouse Hover (Provides Quick Feature ID)	Yes	Yes
Longitude and Latitude Grid Lines	Yes	Yes
Longitude/ Latitude Position Readout	Yes	Yes
Map Scale Readout	Yes	Yes
Custom Map Scale Display Setting	Yes	Yes
Center at Specific Longitude/ Latitude	Yes	Yes
Center by Mouse Click	Yes	Yes
Pan by 50% - Right, Left, Up or Down	Yes	Yes
Zoom by Rectangle	Yes	Yes
Change Map Location by Dragging	Yes	Yes
Night View Screen Display	Yes	—
Comprehensive User Guide	Yes	Yes
Quick Start Guide	Yes	—
Printing Tools		
Custom Labeling by Specific Feature	Yes	—
Image Export/Copying	Yes	Yes
Detailed Custom Map Printout*	Yes	Yes
Feature Group Labeler*	Yes	Yes
Retail Price	\$89.95	\$25

The system requirements are as follows: 450 Mhz, 128 MD RAM, Windows 98 or better, 100 MB of disk space (LMP is only available for Windows.).

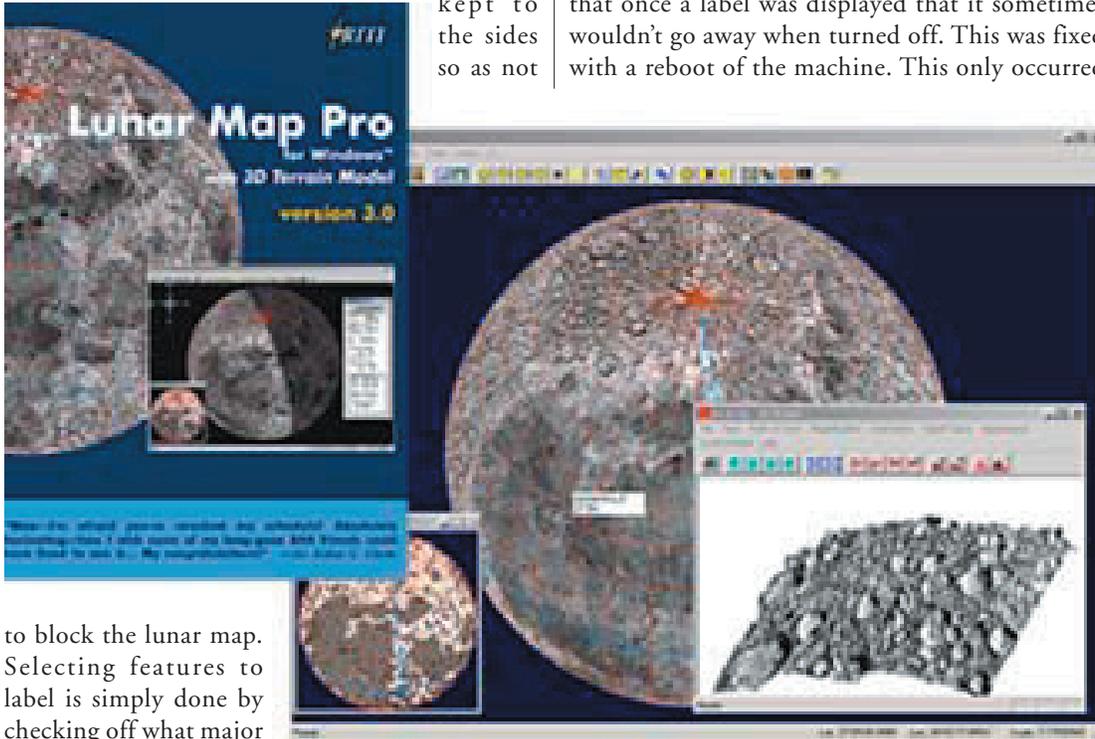
At first, this program seemed counter intuitive. But after reading the help file and experimenting for a while, I discovered that the reason this software seemed difficult was because I was used to looking for features commonly found in desktop planetarium software. That is the first thing to remember. This is not simulation software; it is *mapping* software—a completely different animal. Once that was out of the way, I discovered that LMP is quite easy to use.

There is one screen—a High Res view of the lunar disk. Everything that you do is based off of this one screen. All options such as setting phase, or picking labels is done through small windows

that can be kept to the sides so as not

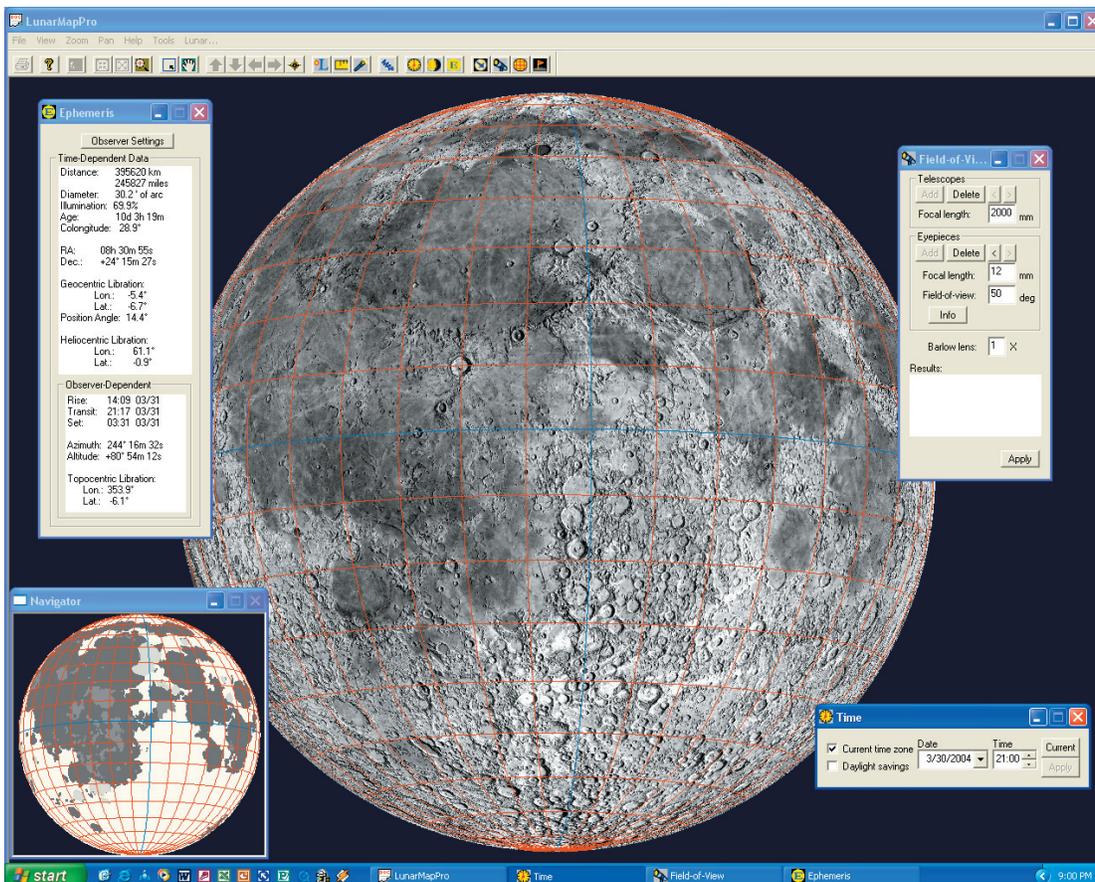
want. Finding a feature is just as easy, but you do have more of a selection. Instead of just geological features to pick from, you can pick based on name, or even naming source (in the case of astronaut named features). I did find that there were times that once a label was displayed that it sometimes wouldn't go away when turned off. This was fixed with a reboot of the machine. This only occurred

Digital Cosmos:
Lunar Map Pro, 2.0
continued



to block the lunar map. Selecting features to label is simply done by checking off what major geological feature you

Top Left: The newest version *Lunar Map Pro 3.0* is displayed on RITI's Web site.



Bottom Left: A high resolution map of the lunar surface is the main screen of *Lunar Map Pro*.

on my XP Pro box. When tested on Windows 98 SE and Windows 2000 machines, this was not an issue. I suspect that in order to make the software run on Windows 98 some incompatibilities with XP were created. (I have found this with other broad OS based software). Even with that I was able to locate features with out much effort.

Let's say you don't know what the feature is geologically or its name. How do you find out? Put your mouse over it and let the cursor hover for a few seconds. A small label pops up with the name or the latitude/longitude of the object.

A feature that I can see being used a lot is the FOV option. Enter your telescope's and ocular's focal length and the ocular field of view (Don't know it? Look it up on the included PDF file!), click on "Apply," and the image changes to a very good imitation of what you are seeing through your 'scope. You do have to position the FOV indicator by hand to match the section of Moon you are looking at, but you most likely already know where that is. I tested this while at a 'scope and found that it wasn't too hard to match the views; an ability to rotate the image on screen, however, would have made this better.

You can export this view as a JPEG file and then past it into other applications or place onto a Web site (with appropriate credit to RITI). You can also print your map (ink jet users be warned. This uses a lot of black ink). The printouts are very sharp and clear, but it is very hard to read the labels, as they get lost in the high detail.

Zooming in on a feature is a little better. Be

careful with your printer settings, as you can end up with a very soggy printout. (This is not an issue with laser printers, only ink jets) If you edit the label colors, you can get a good combination that is readable, but it does take some trial and error. All in all, however, the printouts are great. Print on photo paper, and it is hard to tell the difference between a true photo and an LMP printout. (This is not surprising, since LMP started with photos from which to build its map.) In truth, the printouts look better than the image on the screen.

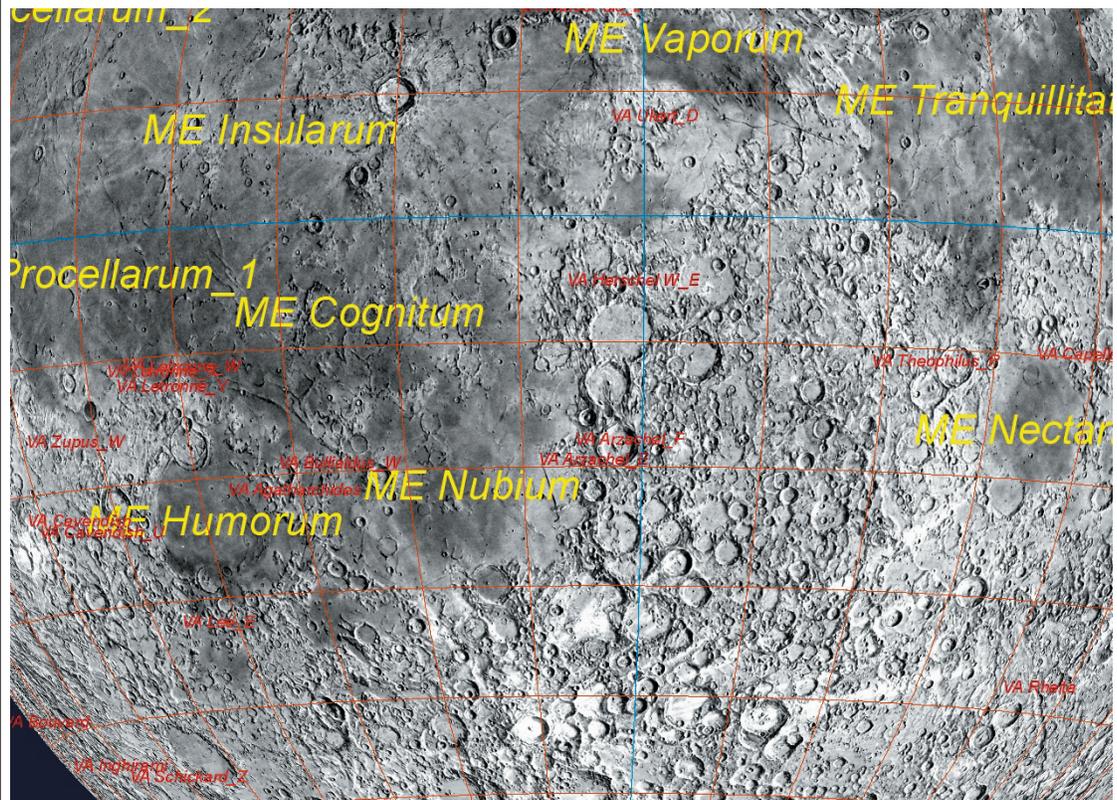
As you can see from the earlier chart, you can access USGS information, find landing sites, get sunrise and sunset times for lunar features, *etc.* Some of these features, such as the USGS data, are very graphic intensive; even on a 2.8 GHz machine, it was not fast.

So who is this software for? Not everyone. If you do not observe the Moon regularly or have a need to identify lunar features, then this is not the software for you. Any planetarium with a public observing program will find it useful in some fashion. Schools might find a use for the basic edition, but even that is questionable. Make no mistake, this is a wonderful software package. It meets a very specific need, and does not try to be more then it is—a fantastic mapping program of the lunar surface.

I have version 2.0, and according to the Web site <www.riti.com>, version 3.0 should be out soon. The new version should have 3D ability.

[RITI's Web site says that Lunar Map Pro 3.0 is now available. —Ed.]

Bottom Right: Lunar Map Pro provides the ability to print labeled, closeup views of the lunar surface.



Small Talk

Whoosh! That's how time went once March rolled around. To southern colleagues, the seasons mean little, but for those of us who experience winter, you can always tell spring is here when school buses start pulling up to the door.

Try as hard as I might, it is difficult to get school groups to come to the planetarium all year long. Who can blame them when they have to jump through hoops to get a bus and go on a field trip and then end up having to reschedule if school gets canceled due to bad weather. That happened a lot this winter, so the advent of the equinox brought lots of folks along with it. I wish I could get people to come earlier in the school year, but teachers haven't covered enough classroom material in September or October and are reluctant to leave school that early in the year. Come spring and warm weather and the need for revitalization, and the buses come out of nowhere.

I also opted to attend a special Astronomy Manager's Weekend held at the National Radio Astronomy Observatory in Green Bank, West Virginia. Check out images at <www.gb.nrao.edu/epo/edhome.shtml>. Those of you who attended the past SEPA meeting in Roanoke, Virginia may have remembered our field trip there. At the time the Green Bank Telescope, the largest steerable radio dish telescope in the world, with a revolutionary side lobe antenna, was being completed. I had not been to Green Bank since the dedication of the telescope in 2000. I am pleased to report that much has happened since then at NRAO.

It still remains isolated and a radio quiet zone, which means your telephone and wireless will not work there, and there are no radio or television stations easily receivable. The GBT is up and observing. The 140 foot telescope now sadly remains idle as it has gotten too expensive to get time on it. It was to become part of NASA's Deep Space Network, but that never seemed to happen, as it was too expensive and there wasn't enough time for the NRAO to get the telescope up to the standards needed.

The planned visitor center is spectacular. It has incorporated a hands-on learning center based on radio astronomy. You can listen to pulsars, hand crank a model to see how a pulsar works, and see a three dimensional Orion. I especially liked the display that showed how spectral lines could be turned into graphic representations on the computer.

There is a new film in the visitor's center, *Catch the Wave*. Lots of neat stuff in the gift shop, which will be going online soon, and a snack bar and lovely glassed in atrium with tables with stars all over them and a small telescope to view the GBT in the distance. There is even a well-designed area for local amateurs to hold star parties. It is one of the best I have ever seen with piers to place telescopes on and power outlets and a high wall to block stray light from the surrounding buildings and parking lot. There is also a new auditorium and classrooms and meeting rooms and a special room for

a starlab planetarium. I have nothing against starlabs, but I would have loved to see a major all-sky video planetarium in the facility. The place just cries out for one that projects a radio sky and dissolves into a visible one. This is the only place where I think the new visitor's center drops the ball.

We stayed in the new dorm. Just completed in December of 2003, it can accommodate a whole classroom group for overnight stays very economically and comfortably. What with educators being able to use the 40 foot radio telescope and NRAO being so isolated, the new accommodations will come as a welcome addition and get much use. You need to furnish your own towels and sheets and I brought along my Martha Stewart flannel ones with constellations on them, and towels with stars and moons on them. Check out the NRAO/Green Bank site for a virtual tour of the new facilities. If you are looking for an excuse to check it out yourself, there are summer programs for students, educators and a star party for amateurs in July. Go to the following websites for info: <www.gb.nrao.edu/epo/rarecats.html>, <www.CAACWV.ORG>, and <www.KVAS.org>.

Speaking of amateurs, the whole reason to be at Green Bank was for the Astronomy Manager's Weekend. This was organized for officers in east coast astronomy clubs to share common concerns. Discussed were topics such as attracting younger people to astronomy. One statistic given at the meeting was that the average age of amateur astronomers in the United States is sixty years old! Another topic covered was attracting new people to clubs and the amateur/professions liasons and clubs wishing to leave the Astronomical League due to increased costs to remain a member. The meeting was co sponsored by the Mid-Atlantic Region of the Astronomical League and attracted amateur astronomers from all over the Mid-Atlantic Region in clubs from five states. You didn't really have to be a club officer to attend. For example, I represented the Shenandoah Astronomical Society and The Tri-State Astronomers, two amateur clubs of which I am a member.

I hope your planetarium has a great working relationship with the amateurs in your community. You probably were thankful if you did during all the recent publicity for the viewing of five naked eye planets. I know that we had two successful star parties at the Antietam Battlefield in Sharpsburg, Maryland, March 26–27. Visit <www.tri-state-astronomers.org> for pictures. We had at least 500 people at each one despite intermittent clouds both nights. It was a good way to publicize our planetarium and amateur clubs and get people excited about astronomy. I hope you were able to cash in on the publicity. With the Venus transit coming up and two successful rovers on Mars, here's hoping summer will pack them in under your dome.

Remember, if you don't like what you see here, you are welcome to add comments or a column or two on issues for small domes. Just send your contributions to me at <ewasiluk@access.k12.wv.us>.

Elizabeth Wasiluk
Hedgesville High School
Planetarium
Hedgesville, West Virginia

News from SEPA States



Jon Elvert
Irene W. Pennington
Planetarium
Baton Rouge, Louisiana

Irene W. Pennington Planetarium, Baton Rouge

Since opening its doors last year in May, the Irene W. Planetarium continues to work out a few remaining glitches associated with opening a new, complex planetarium, but we've been pleased with how everything has turned out. Our planetarium attendance figures have exceeded expectations – 120,000 in ten months, which has really kept the staff busy and has set standards for coming years. Our school show attendance has remained strong all year and that's surprising because we had no school shows to offer shortly before the last September. In all, our programming includes six to eight shows daily, except Mondays, and we offer school shows during the morning and alternate between a public sky show and large format film during the afternoon. In addition, family matinee shows on weekends and laser Pink Floyd on Saturday nights doesn't allow much down time. "RingWorld" and "Whales" are currently running for public shows, which will be followed by "Infinity Express" and "Forces of Nature" this summer. We converted much of RingWorld's original

slides and DVD to our SkyVision system, which gives the show a whole different visual perspective. Our sky shows will include a "what's up in the sky" segment. I might add that our attendance for the sky shows continues to outpace the attendance to the large format film and I hope this continues.

This past March we had Sky-Skan's DigitalSky installed and upgraded all six Barco projectors to HiDef, which was a nightmare at the time, because we didn't shut down for school shows. We intend to use DigitalSky a lot in both "live" and automated tours of the seasonal night skies. Having all these systems humming along in sync (at least that's the idea) will give us greater potential for having a greater impact on turning school kids and families on to astronomy.

The planetarium has been host to numerous special events, primarily business and corporate events, but Jonn Serrie performed here during the Christmas holidays and we've had three astronomy lectures. I'm hoping to initiate a series of chamber music, songs and theater under the stars in the near future. More work, but it's fun.



Patsy Wilson
Woodson Planetarium
Salisbury, North Carolina

Morehead Planetarium, Chapel Hill

The last weekend in March was an exciting time as *The Magic Tree House: Space Mission* debuted. This project was a collaboration with author, Mary Pope Osborne, a UNC alumna, and her husband, Will. During the weekend, hundreds of visitors participated in a book signing and other events due to the popularity of this best-selling children's book series.

In other news, a Spanish language planetarium program is being offered on the last Saturday of each month. Exciting summer camps are being planned for children from pre-K through 8th grade. A variety of spring Saturday classes which include: *Magical Nighttime*, *Time Tellers*, and *Survival Skills Using the Night Sky* are being offered to children of various ages.

As always, the Morehead Planetarium is a busy place with a wide range of events and activities.

Robeson Planetarium, Lumberton

Ken Brandt has taken the reins from Matthew Perkins. The public show, *Live From Mars* will be shown in early April and *Ring World* is in line to premier at this facility soon. A recent evening view of several planets called *Planet Patrol* was a great success. This event was held in cooperation with volunteers from the local university, UNC-Pembroke, and the Sandhills Astronomy Club

James H. Lynn Planetarium, Gastonia

Plans are underway for a summer camp called, *Things That Fly*. In addition, the following shows are being offered to the public in addition to the *Sky Over Gastonia: Bear Tales and Other Grizzly Stories* and an original production called *Night Watch: The Universe From Your Backyard* which deals with how to use binoculars and simple telescopes to explore the universe.

SciWorks, Winston-Salem

Many of you know that Duke Johnson has move out west—way out West—and is no longer part of the SEPA region. We will miss seeing him at our conferences. Ralph White is the planetarium manager and has been for the last 3 years. Kelly Johnson is now in Duke's former position, Director of Educational Programs and the Planetarium. She has been at SciWorks for about 12 years. Ralph is a native of West Virginia and has a background in computers and physics. He is a very busy person, doing all the programming and maintenance. Currently, he plans to begin showing *Ring World*, the Cassini show, by the end of April.

Edward R. Zane Planetarium, Greensboro

Currently running public shows are: *Larry Cat in Space*, *Starflight*, and *The Light-Hearted Astronomer*. In conjunction with the Centennial of the Wright

Brothers flight in Kitty Hawk, North Carolina, this facility is offering a special program called *The Wrong Brothers Airshow*. The program examines aviation through the antics of two brothers, the “Wrong Brothers,” who couldn’t fly if they had 100 years to try. Their ill-fated attempts demonstrate the real science of flight which helped Orville and Wilbur succeed.

Margaret C. Woodson Planetarium, Salisbury

Many changes, including two new facility directors in the past six months, have made this an interesting year. School programs are offered for K – 6th grade students with a new in-house production called *Solar System Journey* being shown to 6th graders with great reviews. First grade students and teachers have responded very favorably to the DVD version of *Friendly Stars*.

Special showings of GLPA’s *Transit of Venus* DVD are planned for late spring and the *Starry Summers at the Woodson Planetarium*, free Tuesday morning shows during the summer months, have been planned. *Space Explorers*, a day camp for rising 3rd – 5th graders will be held the week before the SEPA conference in Richmond.

Preliminary plans are in place for the next trek to Space Camp in Huntsville, Alabama. This trip, scheduled for next June, will be the sixth trip sponsored by our local school system over the past ten years. In June 2003, we took 180 students, 30 teachers and four buses to the U. S. Space and Rocket Center. This opportunity has become so popular that parents call months ahead to get their child on the list for the next trip. It is a mammoth organizational task and a great adventure.



Patsy Wilson
Woodson Planetarium
Salisbury, North Carolina

Avampato Discovery Museum ElectricSky Theater, Charleston

Legends of the Night Sky: Orion is a big hit with our family and younger tour audiences. For the older crowd, I’m punching up the live star talk with the latest images from Mars, news of Sedna, and soon, info on Comet Q4 NEAT.

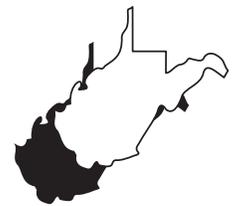
Oasis In Space is likely to make its public return in June. I’m also exploring ways to convert some of our old “slide show” style shows from the Sunrise Planetarium to look good in the eSky format to increase our repertoire.

Unfortunately, in a cost-saving move, the Friday laser shows are gone, and we are not open to the public on Tuesdays. Tuesday will return to the schedule over the summer. That meant that two of our full-timers went to part time, so our staff now consists of three fulltime and three parttime employees.

On the bright side, the Museum passed 100,000 visitors after only eight months. For those of you in large markets, that might not sound impressive, but keep in mind Charleston has a population of 55,000.

The capture rate for the ElectricSky Theater continues to be fantastic, up near 35%. We are also gearing up for an insane May. The biggest school tour year we ever had at Sunrise Museum was 24,000. We have already booked 11,000 in school tours just for May.

While we won’t have public visitors on Mondays and Tuesdays, the only day in May we won’t be performing shows is Memorial Day. If you’re heading west to the SEPA conference this June, be sure to stop by and check out our new digs. You can contact me in advance at <cspeivey@theclaycenter.org>, or call me at (304) 561-3509.



Curt Spivey
Avampato Discovery
Museum ElectricSky
Theater
Charleston, West Virginia



Immersavision™ (above) with its 200° x 60° video display and ElectricSky™ (right) featuring the Spitz StarScape™ planetarium projector are two of the technologies employed at the Avampato Discovery Museum ElectricSky™ Theater in Charleston, West Virginia



HST's Greatest Hits '96

Duncan Teague
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38134-8454

The Space Telescope Science Institute (STScI) provided slides of Hubble images to individuals within regional affiliates who arranged to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

Below you'll find a brief description of all 40 images distributed in 1996. Numbers next to the descriptions are shortened versions of STScI press release numbers, *e.g.*, 21a refers to PR 96-21a.

The entire set of 40 slides is \$50.00, including postage and handling. Send your check or purchase order to the address at the left.

- 01a___Hubble's deepest ever view of the universe, revealing 1,500+ extremely faint galaxies in various stages of their development
- 01b___Sample galaxies from the same Hubble deep field
- 02___The inner region of a warped dust disk around Beta Pictoris once hidden because of the star's glare
- 03___An image of the Egg Nebula taken by WFPC2; it shows the emergence of some mysterious searchlight beams emanating from behind a dying star
- 04___The first direct image of a star other than the Sun: Betelgeuse.
- 05___In more detail than has ever been seen before, the process a star like the Sun goes through when it dies
- 09a___In clear, detailed pictures the first ever images of Pluto's surface; four views
- 09b___Pluto surface map
- 10___Gravitational lens effect captures image of primeval galaxy
- 11___Images of the globular cluster Mayall II, consisting of 300,000 old stars, in orbit around the Andromeda galaxy
- 13a___The Helix Nebula, NGC 7293 showing the collision of gases near a dying star
- 13b___Helix Nebula detail with cometary knots surrounding the dying star
- 14___A view of Comet Hyakutake that focuses on the near-nucleus region of the comet
- 15___Three layers of Uranus's atmosphere taken with infrared filters; both clear and hazy layers created by a mixture of gases
- 16___Image taken of Saturn where its rings appear edge-on because of the position of the Earth in Saturn's orbital plane
- 17___A view of several star generations found in the central region of the Whirlpool Galaxy
- 18a___A rare view of Saturn's rings seen just after the Sun had set below the ring plane
- 18b___A series of 10 images of several small moons orbiting Saturn
- 21a___NGC 1365, a barred spiral galaxy located in the Fornax cluster
- 21b___NGC 4639, a spiral galaxy located in the Virgo cluster
- 22a___The Crab Nebula and a detail of the pulsar in its center
- 22b___Sequence of three images showing changes in the Crab Nebula pulsar
- 23a___Huge, billowing pair of gas and dust clouds in Eta Carinae
- 23b___Expansion of Eta Carinae debris
- 25___Hubble's 100,000th exposure captures an image of a distant quasar
- 27___A vast nebula, NGC 604, which is known for a great starbirth region
- 29a___18 gigantic star clusters which may be building blocks for a new galaxy
- 29b___Blue sub-galactic clumps which may be galaxies under construction
- 30___Jupiter's moon Io passing above turbulent clouds
- 31___Clusters of stars and a fishhook-shaped cloud of gases found in NGC2366, a giant star forming region
- 32___Changes in Jupiter's auroral emissions
- 33___Views of weather on opposite hemispheres of Neptune
- 34___A Martian dust storm around the edge of the north polar cap
- 35a___A survey of quasar host galaxies
- 35b___A quasar caught in the act of colliding with its companion galaxy
- 36a___Supersonic comet-like objects in the Cartwheel Galaxy
- 36b___Cartwheel Galaxy composite image
- 36c___Cartwheel Galaxy illustration
- 38a___M8, the Lagoon Nebula showing giant "twisters" and star wisps
- 38b___M8, the Lagoon Nebula detail showing eerie funnels and twisted-rope structures

HST's Greatest Hits '97

The Space Telescope Science Institute (STScI) provided slides of Hubble images to individuals within regional affiliates who arranged to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

Below you'll find a brief description of all 39 images distributed in 1997. Numbers next to the descriptions are shortened versions of STScI press release numbers, e.g., 09a refers to PR 97-09a.

The entire set of 39 slides is \$48.75, including postage and handling. Send a check or purchase order to the address at the right.

- 01___ Central supermassive black holes in galaxies NGC 3377, NGC 3379, and NGC 4486B:
- 03___ SN1987A Fireball: One tenth light year long dumbbell structure expanding at six million miles per hour in supernova 1987A
- 08___ Changes in the nucleus of Comet Hale-Bopp as it moved closer to the Sun beginning in the September of 1995
- 09a___ Transition from spring and summer in Mars's northern hemisphere; photo taken shortly before opposition
- 09b___ Three photos of Mars taken six hours apart with 90° difference between images; photos taken shortly before opposition
- 11___ The Egg nebula in which stars are born and die violently; the photo shows jets of gas being blasted into space
- 12___ A supermassive black hole located in galaxy M84
- 13___ NICMOS captures a region of the Orion nebula filled with action as a center for the birth of new stars
- 14___ Supernova 1987A: different colors represent different elements in the ring
- 15a___ A view of Mars's cloud cover
- 15b___ Seasonal changes in Mars's northern polar ice cap
- 15c___ Four views of Mars rotated 90° between images during summer in Mars's northern hemisphere
- 16___ The Cone Nebula: six baby sun-like stars surround their mother
- 17___ A collision between two spiral galaxies in the heart of galaxy Arp 220
- 18___ Fireworks near a black hole in the core of Seyfert galaxy NGC 4151
- 19___ STIS reveals an invisible high-speed collision around a supernova
- 20___ Hubble pinpoints the optical counterparts of a γ -ray burst in a distant galaxy
- 21___ Hubble captures a volcanic eruption plume from Jupiter's moon Io
- 22___ A gamma-ray burst blazes from a titanic explosion in deep space
- 23___ Hubble's look at Mars shows a canyon dust storm, cloudy conditions for Pathfinder's landing in July 1997
- 24a___ Dissipation of a large dust storm on Mars
- 24b___ Hubble shows dust and water ice clouds that exhibit substantial daily variations
- 25___ Powerful telescopes discover the largest galaxy in the universe
- 26___ Hubble separates components in the Mira binary star system
- 27___ Hubble reveals a huge crater on the surface of the asteroid Vesta
- 28___ Hubble finds a bare black hole pouring out light
- 29___ Hubble shows blobs of gas formed by some nova outbursts
- 30___ Hubble keeps track of a fading γ -ray burst
- 31___ Mars at the beginning of autumn in the Martian northern hemisphere
- 32___ Hubble sees a neutron star alone in space
- 33___ Hubble identifies what might be the most luminous star known
- 34a___ Hubble reveals some stellar fireworks accompanying galaxy collisions
- 34b___ Detailed images of colliding galaxies
- 35___ Hubble shows images of a blue straggler star
- 36a___ Hubble tracks clouds on Uranus
- 36b___ Hubble spots northern hemispheric clouds on Uranus
- 37___ Hubble shows infrared view of a moon, the ring, and the clouds of Jupiter
- 38a___ Hubble sees a supersonic exhaust from a nebula
- 38b___ Hubble's planetary nebula gallery

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HST's Greatest Hits '98

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The Space Telescope Science Institute (STScI) provided slides of Hubble images to individuals within regional affiliates who arranged to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

Below you'll find a brief description of all 40 images distributed in 1998. Numbers next to the descriptions are shortened versions of STScI press release numbers, *e.g.*, 26a refers to PR 98-26a.

The entire set of 40 slides is \$50.00, including postage and handling. Send your check or purchase order to the address at the left.

- 01___ COBE's infrared view of the Universe: three maps of the full sky seen in infrared light
- 02___ Distant supernovae: light sources determine the universe's expansion rate
- 03___ Beta Pictoris: disk indicates planets, and possible brown dwarf companion
- 04___ Jupiter aurorae: a "curtain" of light extends several hundred miles beyond Jupiter's limb
- 05___ Saturn's aurorae: "curtains" of light extend 1,000 miles above cloud tops
- 08___ Supernova 1987A: a collision between the expanding blast wave and its circumstellar ring
- 10___ Serendipitous asteroids: HST images show curved trails of asteroids
- 11a___ Planetary nebula NGC 7027: a brief stage in the evolution of a medium mass star
- 11b___ The Cotton Candy Nebula and The Silkworm Nebula: phases of stellar burnout
- 12___ Star birth in barred spiral galaxy NGC 1808 possibly due to interaction with NGC 1792
- 14a___ Centaurus A: nearest active galaxy to Earth shows the turbulent firestorm of starbirth
- 14b___ Centaurus A: tilted disk of gas at the galaxy's core surrounds suspected black hole
- 15___ Stingray Nebula: Henize 1357, the youngest known planetary nebula
- 16___ NGC 1818: globular cluster of over 20,000 stars in the Large Magellanic Cloud
- 17a___ GRB 971214: γ -ray burst; most energetic event in the universe
- 17b___ GRB 971214: γ -ray burst; comparison of Keck Telescope and HST views
- 18___ Saturn: details of the clouds and hazes in the atmosphere of the ringed planet
- 19___ Possibly the first extrasolar planet ever to be imaged orbiting about a newborn binary star
- 20___ Four of NASA's proposed designs for the Next Generation Space Telescope (NGST)
- 21___ Galaxy NGC 4314: bright ring of starbirth around the galaxy's core
- 22___ NGC7052: galaxy with 300 million solar mass black hole in its center
- 25___ N81 in the Small Magellanic Cloud: a celestial maternity ward
- 26a___ Galaxy Cluster MS1054-03321: thousands of galaxies eight billion light years from the Earth
- 26b___ Supernova 1996CL: a March 1996 exploding star in galaxy cluster MS1054-0321
- 27___ Distant galaxy clusters: left, in Virgo; upper right, in Andromeda; lower right, in Taurus
- 28___ NGC7742: a small Seyfert 2 active galaxy probably powered by a black hole in its core
- 29___ Saturn: pastel yellows, browns, and greys distinguish cloud differences
- 30___ Sagittarius Star Cloud: HST peers into the heart of the Milky Way
- 31___ NGC7635, the Bubble Nebula: shows an expanding shell of glowing gas surrounding a hot star
- 32a___ Infrared views: left: faintest galaxies ever seen; right: objects 12 billion light years away
- 32b___ Deep field galaxy: left: visible light areas of starbirth; right, infrared disk structure
- 34___ Neptune: a look at the eighth planet's stormy disposition
- 35___ Uranus, August 8, 1998: its four major rings and 10 of its 17 currently known satellites; false color image
- 36___ NGC6210 planetary nebula described as looking like a turtle swallowing a sea shell
- 37___ Quasar PG1115+080 and the gravitational lens effect:
- 38___ Nebula M1-67 around star WR124: gas ejected into space at 100,000 mph
- 39___ NGC3132: southern hemisphere's "Eight-Burst" or "Southern Ring" Nebula
- 41a___ HST deep field south: thousands of galaxies in Tucana, near the South Celestial Pole
- 41b___ HST deep field south: infrared, visible light, and ultraviolet views of distant galaxies
- 42___ NGC253 galaxy: edge-on spiral galaxy just beyond our Local Group

HST's Greatest Hits '99

The Space Telescope Science Institute (STScI) provided slides of Hubble images to individuals within regional affiliates who arranged to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

Below you'll find a brief description of all 42 images distributed in 1999. Numbers next to the descriptions are shortened versions of STScI press release numbers, e.g., 43a refers to PR 99-43a.

The entire set of 42 slides is \$52.50, including postage and handling. Send your check or purchase order to the address at right.

- 01___M57 Ring Nebula: the sharpest view yet of this planetary nebula
- 02___Combined deep view of infrared and visible light galaxies
- 03___HD141569: stellar dust rings of a star in the constellation Libra
- 04___SNH1987A: the self-destruction of a massive star in the Large Magellanic Cloud
- 05a___Six images of a young stellar disk found in the constellation Taurus
- 05b___Four images featuring disks around various young stars in Taurus
- 06___NGC1316: the silhouette of dark clouds against a glowing nucleus of an elliptical galaxy
- 07___Mars: visible, infrared light images; evidence of water bearing minerals
- 08___Proxima Centauri: a detailed image of the Sun's nearest stellar neighbor
- 09___GRB990123: fading visible light fire ball in a γ -ray burster
- 10___Six images showcasing different views of spiral galaxies
- 12___Tarantula Nebula: multiple generations of stars in the brilliant cluster of Hodge 301
- 13___Jupiter: images of the volatile moon Io sweeping across Jupiter's face
- 14___Copernicus: the 58 mile wide (93 km) impact crater on the Moon
- 16___NGC4650A: a polar ring galaxy
- 18___Rings, arcs, and crosses as seen in Hubble's top ten gravitational lens effect images
- 19___NGC4603: magnificent spiral galaxy associated with the Centaurus cluster
- 20___NGC3603: various stages of the life cycle of stars in a giant galactic nebula
- 21___AB Aurigae: a swirling disk of dust and gas surrounding a developing star
- 22___Mars: a colossal polar cyclone
- 23___N159: a turbulent cauldron of starbirth in the Large Magellanic Cloud
- 25___NGC4414: magnificent details in the dusty spiral galaxy
- 26___NGC6093: a stellar swarm in a dense globular cluster
- 27___Mars: the red planet at opposition during April – May, 1999
- 28___MS1054-03: galaxy collisions in distant clusters
- 29___Jupiter: an ancient storm in its atmosphere (The Great Red Spot)
- 30___Giant star clusters near the galactic center
- 31___HCG 87: a minuet of four galaxies
- 32___HE2-104: small, bright nebula embedded in the center of a larger nebula
- 33a___R136 in 30 Doradus: a grand view of the birth of stars
- 33b___R136 in 30 Doradus: two detailed views of a highly active region of star birth
- 34a___NGC1365: a barred spiral galaxy reveals a bulge in its center
- 34b___Eight different views of the central bulges of spiral galaxies
- 35___HH32: a magnificent example of a "Herbig-Haro object"
- 36___NGC2261: Hubble's variable nebula illuminated by R Monocerotis (R Mon)
- 37___NGC2346: a butterfly shaped nebula
- 38___NGC2440: planetary nebula ejected from a dying star
- 39___OH231.8+4.2: the "rotten egg" nebula
- 40___M32: hot blue stars deep inside a dwarf elliptical galaxy
- 41___NGC2207 and IC2163: two spiral galaxies passing by each other
- 42___M20: Trifid Nebula reveals stellar nursery torn apart
- 43a___M87: the jet near the galaxy's central black hole

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JPL's Best Images of '98

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NASA JPL has sent us the following slides for the Galileo Mission and others. Slides are \$1.25 each on both the current page and the following page.

P-35036B	Launch of Galileo on STS-34 Atlantis	P-48040	Natural and False Color Views of Europa
P-35213	Deployment of Galileo and IUS	P-48063	Thunderheads on Jupiter
P-37218	Venus Colorized Clouds	P-48112	Ganymede Uruk Sulcus High Resolution Mosaic Shown in Context
P-37327	Moon: Western Hemisphere	P-48113	Ganymede Galileo Regio High Resolution Mosaic Shown in Context
P-37539	Infrared Image of Low Clouds on Venus	P-48114	Jupiter's Great Red Spot
P-37593	Earth: Ross Ice Shelf, Antarctica	P-48122	Two views of Jupiter's Great Red Spot
P-37630	Global Images of Earth	P-48127	Ridges on Europa
P-40449	Gaspra: Highest Resolution Mosaic	P-48145	Io: Volcanically Active Regions
P-41383	Gaspra Approach Sequence	P-48188	The Main of Ring of Jupiter
P-41432	Moon: North Pole	P-48231	Callisto Crater Chain at High Resolution Shown in Context
P-41474	Earth: Northeast Africa and the Arabian Peninsula	P-48236	Europa: Ice Floes
P-41493	Earth: False Color Mosaic of the Andes Mountains	P-48293	Callisto: Scarp Mosaic
P-41508	Earth: Moon Conjunction	P-48294	False Color Mosaic of Jupiter's Belt-Zone Boundary
P-42501A	South Polar Projection of Earth	P-48299	Asgard Scarp Mosaic
P-42964	Asteroid Ida: Five Frames Mosaic	P-48445	True Color Mosaic of Jupiter's Belt-Zone Boundary
P-44130	Asteroid Ida: Limb at moment of Closest Approach	P-48496	Color Global Mosaic of Io
P-44131	Ida and Dactyl: Enhanced Color	P-48526	Europa Ice Rafts
P-44297	High Resolution View of Dactyl	P-48527	Closeup of Europa's Surface
P-44520	Asteroid Ida Rotation Sequence	P-48532	Mosaic of Europa's Ridges, Craters
P-44542	Comet Shoemaker-Levy 9 Fragment W Impact on Jupiter	P-48584	Io's Sodium Cloud
P-47058	Ganymede: Comparison of Voyager and Galileo Resolution	P-48698	E4 True and False Color Hot Spot Mosaic
P-47065	Ganymede: Mixture of Terrains and Large Impact Crater in Unuk Sulcus Region	P-48700	Jupiter Equatorial Region
P-47162	Full Disk Views of Io (Natural and Enhanced Color)	P-48952	Jupiter's White Ovals, True and False Color
P-47179	Three Views of Io	P-48954	Ancient Impact Basin on Europa
P-47182	Jupiter's Great Red Spot	P-48956	Active Volcanic Plumes On Io
P-47183	Dark Bands on Europa	P-49344	Arizona-sized Io Eruption
P-47194	Live volcano on Io	P-49434	Europa: Ice Rafting View
P-47196	False Color Great Red Spot	P-49435	High Resolution Mosaic of Ridges, Plains, and Mountains on Europa
P-47903	NIMS Ganymede Surface Map	P-49436	Regional Mosaic of Chaos and Gray Band on Europa
P-47905	Five Color Views of Io		
P-47906	Europa In Color	P-48439A	The Mars '98 Lander
P-47935	Io Glowing in the Dark	P-48440A	The Mars '98 Lander
P-47961	Ganymede's Nippur Sulcus	P-48494A	The Mars 98 Orbiter/Lander
P-47970	Ganymede Color Global	P-48495A	The Mars 98 Orbiter/Lander
P-47971	Io in front of Jupiter	P-48567	Dr. Peter Tsou holds Aerogel
P-47972	Changing Volcanoes on Io	P-48589	Stardust Spacecraft
P-48035	Stereo View of Ganymede's Galileo Region	P-48691	Deep Space 1 Spacecraft

JPL's Best Images of '99

JPL-19-12	NASA/JPL	P-48505AC	Huygens probe
JPL-25125	Model of Sojourner	P-48505BC	Huygens probe
JPL-27089AC	Cassini arrival and orbit	P-48565	Titan IV launch
JPL-27089BC	Cassini interplanetary trajectory	P-48597	Cassini ready for shipment
JPL-27748	Thermal vacuum testing	P-48630	Saturn tour trajectory
JPL-28046BC	High-gain antenna	P-48664	Cruise stage at KSC
JPL-28162AC	Cassini assembly	P-48702	Pathfinder on Mars
MGS-001	Scientists assemble MGS	P-48707	Cruise stage, spacecraft
MGS-002	Scientists assemble MGS	P-48753	E.D.L. sequence
MGS-003	MGS configuration	P-48824	Sojourner and Pathfinder
MGS-004	MGS orbit around Mars	P-48827	The airbags by Sojourner
MGS-005	Launch of MGS	P-48841	Sojourner touchdown
P-23062	Saturnian clouds	P-48842	APXS studies "Barnacle Bill"
P-23209	The Saturn System	P-48845	"Twin Peaks"
P-23925	Saturn ring spokes	P-48847	The rock "Yogi"
P-41101	Huygens descent profile	P-48866	"Barnacle Bill" mosaic
P-42810AAC	Huygens, exploded view	P-48871	Rover's APXS at work
P-42810AC	Huygens probe interior	P-48877	"Wedge" and "Flattop"
P-43538	Saturn: Rings and Moons	P-48878	Near "Barnacle Bill"
P-43560	Mars global view	P-48889	"Barnacle Bill" and "Yogi"
P-43836	Scientists' home countries	P-48891	360° b&w panorama
P-43862	Pathfinder landing	P-48893	"Yogi" and rover tracks
P-43966AC	Spacecraft, country flags	P-48894	Sagan Memorial Station
P-44233	Mars landing area	P-48901	Sojourner wheelie on "Yogi"
P-44293Ac	Cruise stage	P-48902	Rover's view of rocks, lander
P-45424	Huygens probe release	P-48908	The "Rock Garden"
P-45893AC	Saturn, Titan's landscape	P-48909	Martian terrain, "Wedge"
P-46225AC	Mapping Titan	P-48911	Sojourner, "Wedge"
P-46278	The Cassini mural	P-48912	Forward ramp Twin Peaks
P-46356	Cassini with Huygens	P-48913	The "Rock Garden"
P-46427	Petal deployment, Mars Yard	P-48914	A closer view
P-46428	Airbag inflation test	P-48915	The rover petal
P-46506AC	Saturn as seen from Rhea	P-48916	Twin Peaks
P-46507	Saturn orbit insertion	P-48917	Martian terrain
P-46507AC	Cassini enters Saturn orbit	P-48918	"Barnacle Bill," "Yogi," "Couch"
P-46586	Cassini orbital tour	P-48919	Sojourner, "Barnacle Bill"
P-46620	Pathfinder landing	P-48920	"Couch" on the horizon
P-46655	Science targets	P-48921	The rock "Yogi"
P-46656	Enceladus and Iapetus	P-48922	Airbags, petal, and "Yogi"
P-46898BC	Cassini's trajectory	P-48923	Martian landscape
P-47340AC	Propulsion module	P-48924	"Calvin" and "Hobbes"
P-47936CC	Huygens probe installation	P-48925	"Calvin" and "Hobbes"
P-47991	Pathfinder arrival at KSC	P-48926	Martian terrain
P-47992Ac	Cruise stack arrival at KSC	P-48927	Petal and terrain
P-47992Bc	Sojourner checking at KSC	P-48928	"Little Matterhorn"
P-48012DC	Transporting Cassini	P-48931	New 360° gallery panorama
P-48045BC	Cassini fully assembled	P-48970	North Twin Peak
P-48045CC	Ready for transport	P-48982	The forward ramp
P-48154Bc	Pathfinder mated to rocket	P-49025	Airbag bounce marks
P-48155Ac	Launch 12/4/96, 2:11 a.m.	P-49026	Airbag roll marks
P-48155Bc	Petal closing at KSC	P-49028	Classes of Martian rocks
P-48156	Full stack mated to booster	P-49029	Classes of Martian rocks
P-48313BC	Cassini in the space center		

Duncan Teague
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Memphis, Tennessee
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Dual-Arm Binocular Mount

Adam Thanz
Bays Mountain Park
Planetarium
Kingsport, Tennessee

The Dual-Arm Binocular Mount illustrated in this article came about in an interesting way. It was a result of my wife showing an interest in a binocular chair since seeing one at the 2003 Southern Star Convention at Wildacres, North Carolina. Therefore, I designed a mount for my wife, who is also an astronomer, for her upcoming 40th birthday. She believes in being comfortable while observing. So I kept that as top priority.

The mount breaks down into two parts: the tripod and the dual arms (which fold up). Each section is just two feet long, and both are lightweight. I purchased a lounge chair to go with it. It is from Lafuma and very comfy indeed. Being able to observe while sitting back and relaxing under the stars is quite a treat.

The creation process was not as easy as you may think. I did not want to copy the design we saw since it was large and cumbersome. I knew I could design something more unique and portable. I had been going through many iterations of the chair in my mind and making some small sketches. Unfortunately, the result would have been large and heavy. Even trying to reduce the weight greatly with a skeleton-type frame, it still would have been too hard to deal with.

Once I realized I had to separate the chair from the mount, the design fell into place and became much easier to deal with. A commercially-available folding chaise chair would be light, pre-made, and usable for any purpose.

The mount was based on a common

item found in most homes and offices. Yet, it is an original design for its purpose. Can you guess the common item? I'll reveal it at the end of the article.

The construction was based on the binocular mount I made for the workshop I led for the 2001 SEPA/GLPA conference in Winston-Salem, North Carolina.

The mount itself does not weigh much, but it can hold very large binoculars for astronomy and nature viewing. The mount also allows one to use it while sitting upright in a chair or reclining in a lounge chair. It also has full azimuth travel while it also allows the binoculars to be pointed to the horizon or zenith.

The best part is that there are no counterweights. The 20 x 80 binoculars we use are held still and will adjust and stay in any position. It took a full weekend to make. Drawing up the original Adobe® Illustrator® plans and adjusting necessary changes while making the mount took another two full days.

I feel that just about anyone should be able to build this mount, as all of the wood pieces include straight cuts and almost all the holes drilled are 1/4 inch.

The materials include red oak hardwood, nylon and metal nuts and bolts, and four springs. Everything was purchased at Lowes, Home Depot, or Tractor Supply (for the springs). I truly recommend the red oak hardwood. It is already cut and finished in the appropriate sizes. It is also incredibly strong.

The carriage bolts are important as the small square head under the round head acts as a lock to keep



the bolt from rotating once it is embedded in the wood. The two upper springs can be replaced with larger (same as the lower) springs if you use a heavy binocular. You can increase the tension of the springs, and thus the virtual counterweight, if they are stretched more.

As a side note, keep the nylon wing nuts snug, as they will loosen when the mount is moved about. By the way, the common item the mount was based on is a folding work lamp.

You may want to order all of the nylon parts from Small Parts, Inc., 13980 NW 58th Ct., P.O. Box 4650, Miami Lakes, Florida 33014-0650. Their telephone number is 800-220-4242, and their Web addresses are <www.smallparts.com> and <[\[engineeringfindings.com\]\(http://engineeringfindings.com\)>.](http://www.</p></div><div data-bbox=)

Their prices are much lower than local hardware stores, especially since you'll need a number of each part. Seek out a local bolt & screw supply place. You'll pay $\frac{1}{3}$ as much for the same part and you'll get a greater choice of lengths, sizes, and options.

If you make this mount, I hope you enjoy using it while comfortably viewing the night sky. Large binoculars are really stereo richest-field telescopes and the views are stunning in a dark sky. If you have any questions, you can contact me at the following e-mail address: <mtstella@preferred.com>.

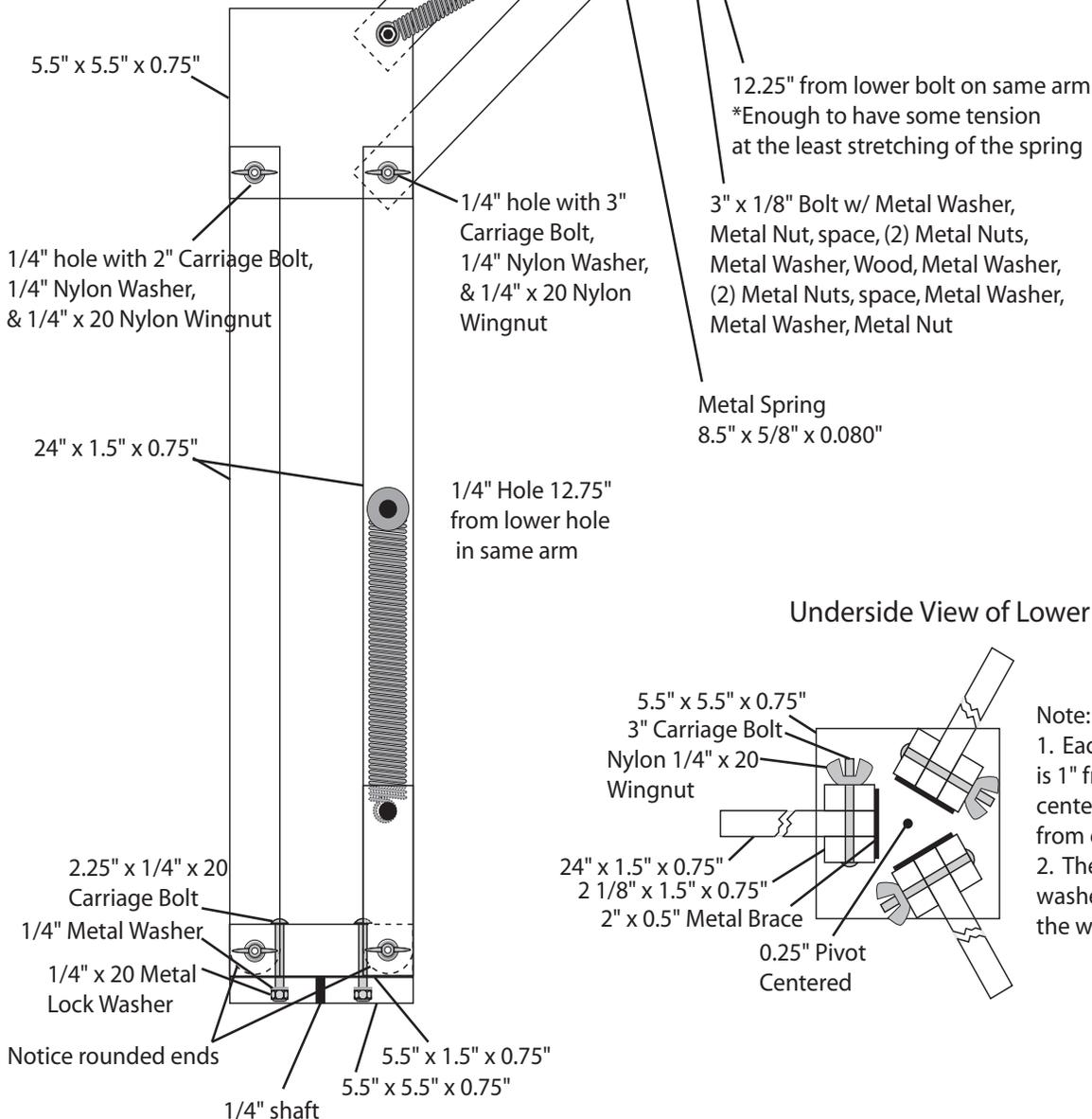
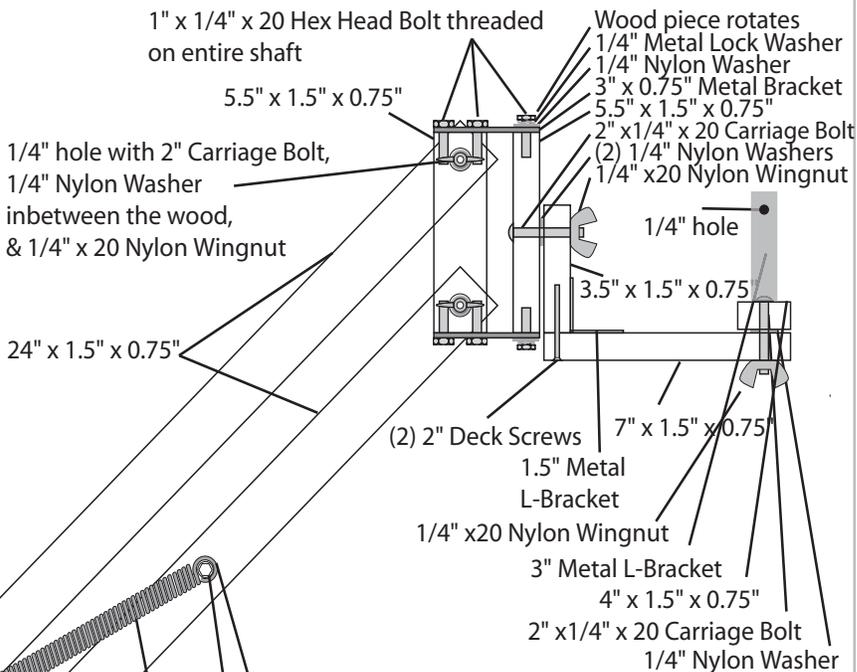
You can find detailed drawings of Adam's Dual-Arm Binocular Mount on the next three pages along with a photo showing the completed project.

**Dual-Arm
Binocular Mount
continued**

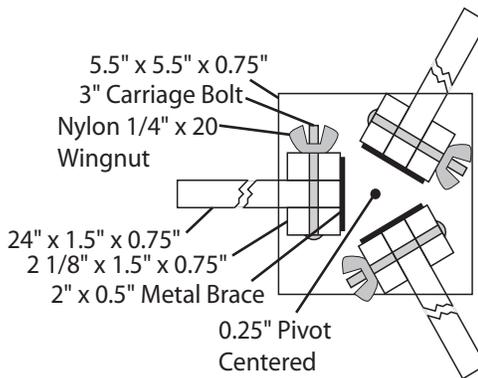
Dual Arm Binocular Mount
 by Adam Thanz
 MonteStella
 Erwin, TN
 8/24/03

Page 1/3

Note:
 All wood is red oak hardwood
 Front View



Underside View of Lower Base



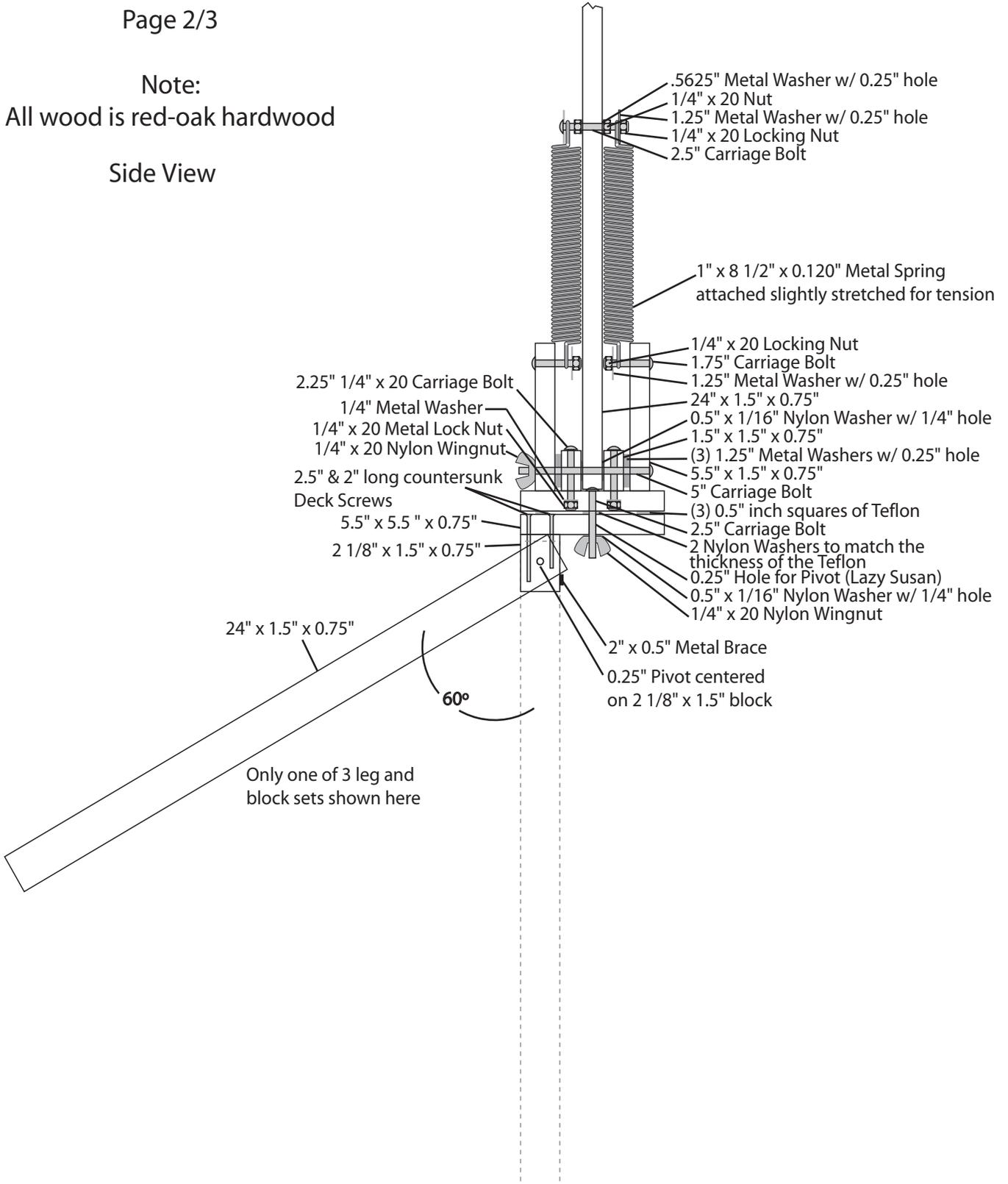
Note:
 1. Each leg bracket is 1" from the center pivot & 120° from each other.
 2. There are no nylon washers inbetween the wood leg clamps.

Dual Arm Binocular Mount
 by Adam Thanz
 MonteStella
 Erwin, TN
 8/24/03

Page 2/3

Note:
 All wood is red-oak hardwood

Side View

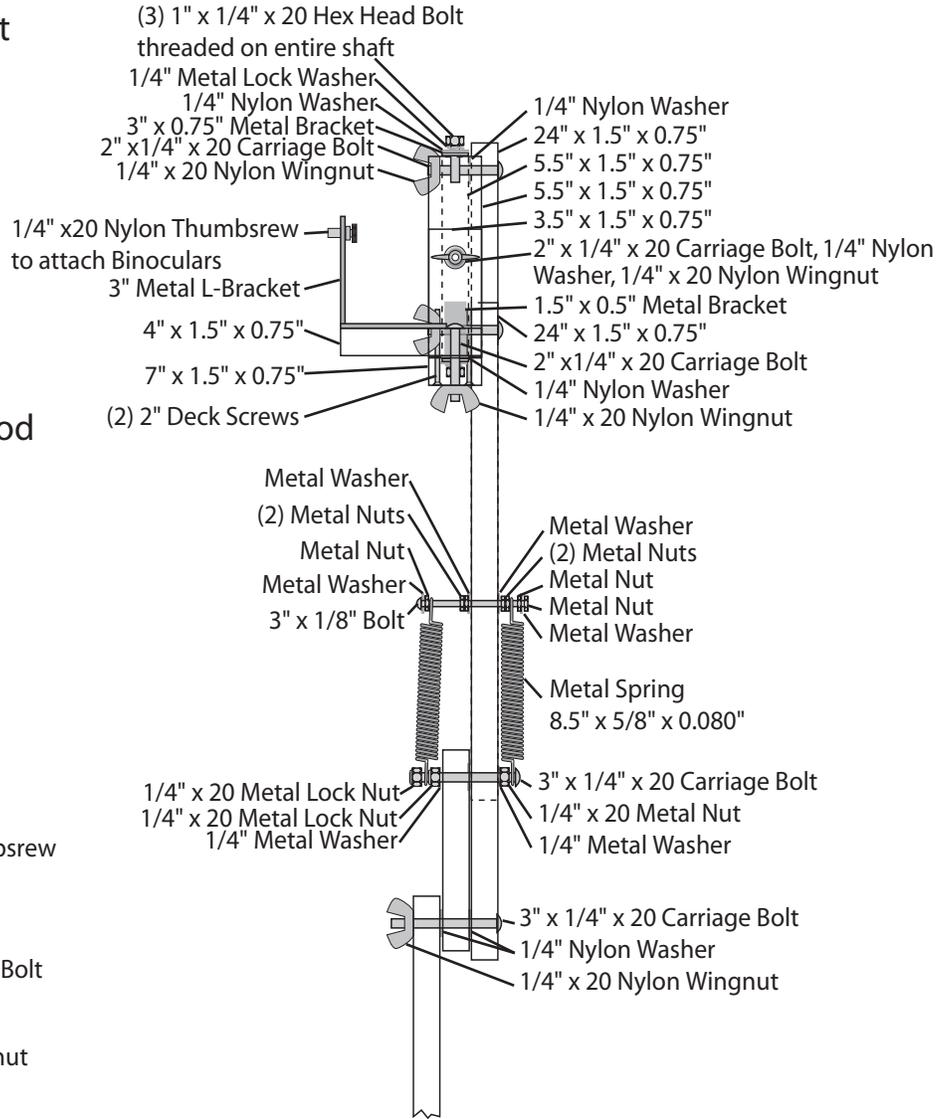


Dual Arm Binocular Mount
 by Adam Thanz
 MonteStella
 Erwin, TN
 8/24/03

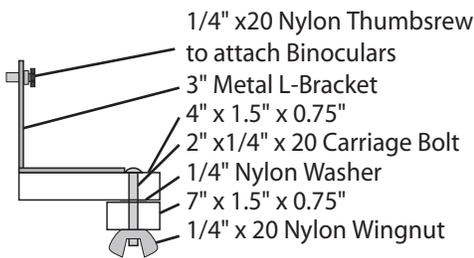
Page 3 / 3

Note:
 All wood is red-oak hardwood

Side View

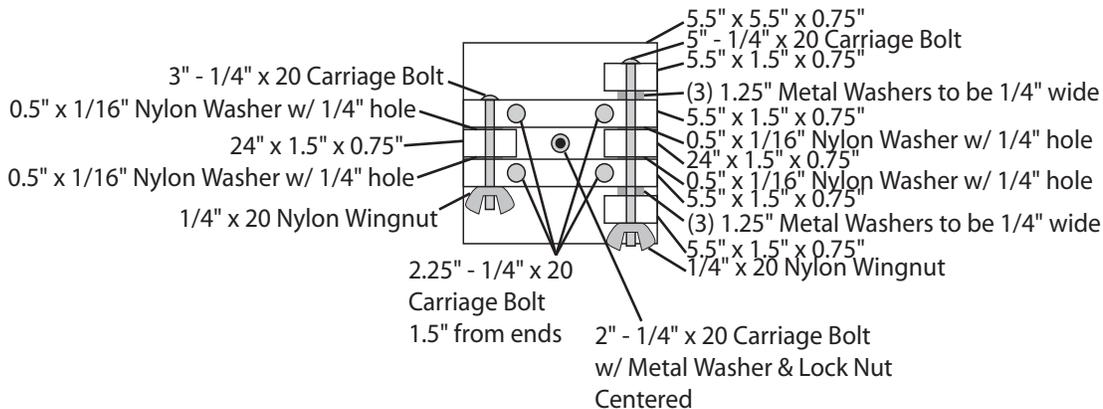


Side View of Head



Top View of Upper Base

Note:
 1. Carriage Bolts are 2" from ends and 2.5" from each other.
 2. The 5.5" base has (4) 3/4" wide holes drilled 1/4" deep into the underside.
 This will allow a lock washer and 1/4" x 20 nut to fit recessed.





Duam-Arm
Binocular Mount
continued

Candidate for President-Elect Gary Meibaum

Gary Meibaum
St. Charles Parish Library
Planetarium
Luling, Louisiana

For the Record

A native of New Orleans, Louisiana, I grew up with a keen interest in astronomy since my childhood. I got my first telescope at age eight. It was a three inch Newtonian with a “ball and socket” mount. My fascination with the heavens has never ceased.

I graduated from University of New Orleans in 1972 with a degree in engineering and served the public as an electronic consultant in the television field. During this time, I joined the Pontchartrain Astronomy Society and served a few terms as president and vice president. I then took a job with Heath Co. of Benton Harbor, Michigan—a producer of electronic kits for the public owned by Zenith Corp. Here, I was regional service and technical manager for the South Central Region.

My first exposure to the operation of a planetarium began at this time. I volunteered my assistance at the St. Mary’s Dominican College Planetarium in New Orleans for a number of years. This led to a three year term of Planetarium Director at that thirty foot domed facility. This was done concurrent with the work at Heath Co. Upon the closing of the Dominican College, I was instrumental in the Louisiana Nature and Science Center’s acquisition of the planetarium. While waiting for their planetarium to be built, I began volunteering at the St. Charles Parish Library’s Planetarium in Luling. When an opening came for Directorship at St. Charles in 1984, I made a major career change, leaving my electronic endeavors for the stars. I assisted in the opening of the Louisiana Nature and Science Center Planetarium but have remained at the St. Charles Parish Library Planetarium. After 17 years of nursing an aging Viewlex Apollo, I had the opportunity to remake the planetarium into a digital star theater using the new MediaGlobe from Minolta. I was able to redesign the seating area and console to match our new electronic equipment. It has been quite a learning experience dealing with this new technology in an area where the old and familiar is more the norm. I am very proud to be able to bring something new to our patrons.

Just for Fun

Growing up in the suburbs of New Orleans, I did have the opportunity to see the sky before urban sprawl took it away. Besides astronomy, I do enjoy electronic gadgets, both old and new. From the fastest computer I can afford to the 1912 vintage wind-up Victrola, I seem to have collected a bit of everything. Some of my prized possessions include console radios from the 1920s, an extensive collection of recordings, both 78s and LPs, a larger collection of Beta tapes than I care to imagine, and too numerous to mention photographs. Living in New Orleans, it is not hard to imagine my fascination with fine dining.

I enjoy traveling and have had the good fortune to visit Australia, Mexico, Switzerland and Germany. My most pleasurable activity is watching the beautifully colored leaves fall under a “Kodachrome Blue” sky. We do not get to see fall colors here in the Deep South. To keep myself active, I operate a digital recording studio at my home. Here, I record groups and also do my major audio production for my planetarium shows. I have produced over fifteen albums for local artists.

My Thoughts

My experience has been solely with the smaller planetarium. I like the attention you can give to a small audience. Although I am working with new digital technology, I strive to continue the personal touch of the small operation. Over the years, I have seen the rise of the large space theater, which seems to be presenting astronomy as a secondary venue. I understand this is necessary for some institutions to survive, but pure entertainment should not overwhelm the instructional value of our facilities. Our patrons need to not only be awed by the universe around them but also understand its structure and how it works.

I hope to be able to lead SEPA into a new digital era by keeping our techniques well rooted in tried and true traditions but not to be afraid using our facilities to teach in new ways.



Candidate for President-Elect Adam Thanz

I first discovered my passion for astronomy back in 1976, when I was only twelve years old. My brother, Ed, gave me a copy of Peterson's *A Field Guide to the Stars and Planets* by Donald H. Menzel for my birthday. It was the edition that had the Harvard College Observatory plates. That book, combined with a beat-up pair of binoculars used on our sailboat, set a course for me to far away places.

Growing up in Ft. Lauderdale, Florida, I eventually joined the South Florida Amateur Astronomer's Association. It was a moderate-sized astronomy club that met at the Broward Community College Planetarium and had an observatory in, then undeveloped, Markham Park. I learned a lot of what I know about observing from that club. This gave me the impetus to get my high school's astronomy club back together. I was then elected President of the Nova High School Astronomy Club for my senior year in 1981 – 82. The school also had a small planetarium. I put together and showed *Cosmos*, the planetarium show, to the club. What fun!

In 1982 I began attending the University of Florida in Gainesville to major in astronomy. I was lucky; I knew which field to go in from the start. A highlight was being allowed to use the astronomy department's 30 inch Cassegrain/Newtonian to photograph Comet Halley in 1985. The comet was about 15th magnitude back then, but I used hypered film that was baked in hydrogen.

After graduating in 1986, I went into graduate school at U of F and eventually received my Master of Science in Astronomy in 1990. In 1992 I received my Master of Education in Secondary Science Education.

In 1986, I met my wife, Robin Byrne. She, too, is an astronomer and is currently an associate professor of astronomy and physics at Northeast State Community College.

In October 1992, I became employed at Bays Mountain Park & Planetarium as their Educational Interpreter. My job includes just about everything: writing and producing new public and school planetarium programs, providing those shows, holding public observing events, liaison to the Park's astronomy club, and much more. In 2000, I started to teach an astronomy class at Northeast State Community College. I teach one class per semester in addition to working at Bays Mountain full time.

Robin and I have a dog and cat named Laika and Quasar. (What else?) We live on 34 acres near the Cherokee National Forest which is south of Erwin, Tennessee. Our main hobby is astronomy. That's why we moved to a dark site.

I enjoy collecting. One of my many collections is arcade equipment. I currently have five pachinko machines and one pinball machine. More shall come later! Books overtake our house, as do tons of knickknacks. Cameras, optical toys, and metal wind-ups are also prominent in our displays.



Adam Thanz
Bays Mountain Park
Planetarium
Kingsport, Tennessee

continues on page 28

Candidate for IPS Representative

John Hare

John Hare
Ash Enterprises
International
Bradenton, Florida

I have been involved in the planetarium profession since 1963 having begun as a technician with Spitz. I earned a degree at Michigan State University and spent 15 years on staff at Abrams Planetarium. I was on the committee that organized and hosted the founding meeting of IPS-CAPE. My career continued at Bradenton's Bishop Planetarium where I served as Director until resigning to become President of Ash Enterprises International in 1996. I continue to be an active participant in the profession and regularly contribute articles, present talks, conduct workshops, and give papers that deal with a variety of topics of interest.

I have always advocated that planetarium organizations and conferences are very important elements in the business that we have chosen. I have been a tireless participant of all SEPA Conferences since 1979 and all IPS Conferences, period. I frequently attend meetings of other regions and have communication ties with planetarians worldwide. I believe I can bring comprehensive and cogent representation of SEPA's interests and concerns to IPS and vice versa.

Professional affiliation:

- International Planetarium Society (IPS), member since 1971
 - Historian 1990 – present
- Southeastern Planetarium Association (SEPA), member since 1979
 - President 1985 – 6
 - IPS Council Representative 1984 – 86, 1993 – present
 - Conference host 1984, 1993
- Middle Atlantic Planetarium Society (MAPS), member since 1996
- Great Lakes Planetarium Association (GLPA), member since 1996
- Great Plains Planetarium Association (GPPA), member since 1996
- Rocky Mountain Planetarium Association (RMPA), member since 1997
- Pacific Planetarium Association (PPA), member since 1998
- Southwestern Planetarium Association (SWAP), member since 2002

Professional recognition:

- IPS: Fellow, 1986 – present
- IPS: Service Award, 2000
- SEPA: Paul Campbell Fellowship Award, 2001
- GLPA: Fellow, 2003 – present
- Armand Spitz Lecturer, GLPA 1996

I would be honored to have the opportunity to continue as IPS Council Representative for SEPA. Thanks for your vote.



Candidate for Secretary-Treasurer Duncan Teague

I have been married for 36 years to the former Judy Bousson, a speech/language pathologist. We have two daughters. Katherine, a software engineer and mom, married Dr. Andrew Sullivan in 1999. Christine is the Cruise Director and performs her own cabaret show aboard Silversea Cruises' ship The Silver Shadow.

I graduated from the Massachusetts Institute of Technology where I earned a Bachelor of Science degree in Chemical Engineering and Humanities in 1968. I earned a Master's degree in Elementary Education from the University of Memphis in 1970.

After teaching physical science and physics for four years for the Memphis City School System, I became Director of the Craigmont Planetarium, which opened in 1974. I have been a member of SEPA since 1975, serving as President-Elect from 1981 – 82, President from 1983 – 84, Past President from 1985 – 1986, and Secretary-Treasurer and *Southern Skies* Editor since 1995. In 1981 I received a SEPA Special Achievement Award for co-hosting the SEPA Conference in Memphis, and in 2001 I was honored to receive SEPA's Paul Campbell Fellowship Award.

On three separate occasions the NASA Ames Research Center in California has awarded me grants to produce and distribute star shows to select nationwide planetariums. I wrote and produced *On the Shoulders of Giants*, the story of the Pioneer-Venus spacecraft mission to Venus, in 1978 and *Saturn: Gateway to the Stars*, the story of the journey of the Pioneer 11 spacecraft, in 1979. In 1983 I wrote and distributed *The Age of Space*, a program that celebrated the 100th anniversary of the birth of Robert Goddard.

I have been involved with three PBS elementary science series for television. I wrote scripts for and appeared in one episode of *The Scientific Bureau of Investigation* and four episodes of *The Science Corner*. In 1981 I served as writer/host for an internationally distributed PBS series called *Vantage Point*.

In 1987 my student produced newsletter *Skylights* was recognized by *Compute!* magazine as the outstanding business publication produced with the desktop publishing software Newsroom. In 1996, two of my students placed fifth in the national Thinkquest competition for their Web site *The Online Planetarium Show*, and in 1997 two new students won the Thinkquest international first place award for their Web site *Mission to Mars*.

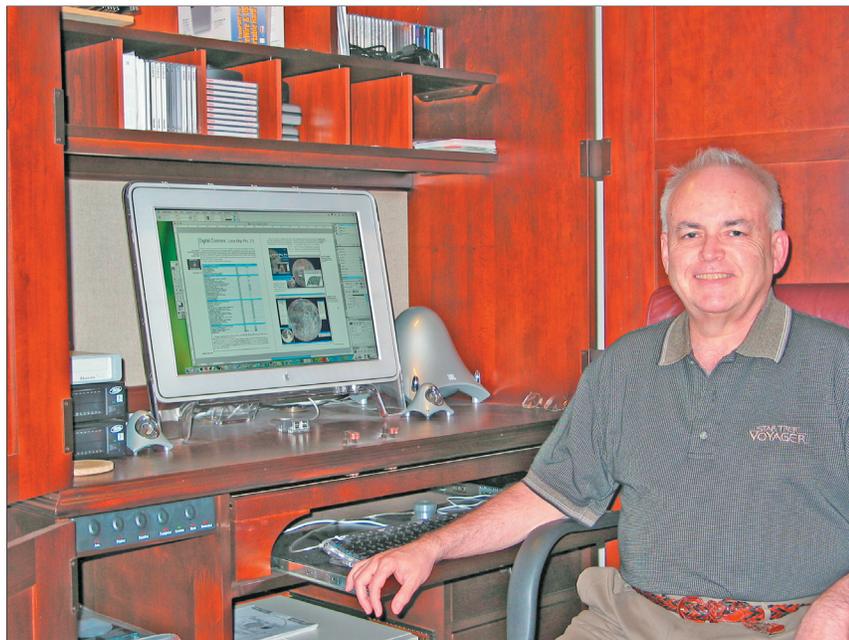
I started an electronic publishing and computer consulting business in 1993. D T Publishing specializes in newsletters and educational journals. I have also been teaching Macintosh applications and Web publishing/HTML computer classes at the college level since 1995.

In my appointed role as *Southern Skies* Editor, I try to make our journal as professional in appearance as possible, taking a perfectionist approach to the publication's typography and layout. Since I took on the job of editing *Southern Skies*, I have offered workshops on desktop publishing and typography at two SEPA conferences.

As Secretary-Treasurer I tend to SEPA's financial resources as carefully as if they were my own. SEPA now

has an interest-bearing checking account and a special savings account set up for our Scholarship Fund which was created to help deserving SEPA members who might need funds to attend a conference or accomplish some other worthy endeavor.

I appreciate your confidence in electing me to the office of Secretary-Treasurer on five occasions in the past, and I will continue to serve if you are willing to vote for me again.



Duncan Teague
Craigmont Planetarium
Memphis, Tennessee

**Candidate
for President-Elect
Adam Thanz
Bays Mountain Park
Planetarium
Kingsport, Tennessee
continued**

I also like to do origami, the Japanese art of paper folding. My father taught me when I was seven. Some models I do are very complex. An eight inch square sheet will fold down to about two inches long and may take two hours to accurately do the many hundreds of folds.

This October will be my 12th year in the field of planetaria (and member of SEPA) and my 28th as one who lives astronomy. Over the years, I have attended the conference and always thought that it was the best thing any planetarian can do for themselves and their facility. Seeking out the opinions of others, seeing how others give presentations, and learning new techniques are just a few of the benefits. To reciprocate, I have been active within the SEPA organization. I have given many talks, led a workshop on making a binocular mount, been part of the 2000 president selection committee, been door prize chair for the 1998, 2000, & 2001 conferences, and started an archive of SEPA with the 2003 conference. I will continue the archive with the 2004 conference.

I see the next 10 years being of great change for the planetarium field. Anyone who has been following the discussions on the Dome-L list-serve (or attending planetarium conferences) will agree. We are all witnessing the phasing out of “analog” visuals and audio with those of a “digital” origin and display. Whether it is good or bad, being a member of an organization like SEPA is vital. It lets us know that we are capable of dealing with the changes. It reaffirms our commitment to educate and excite children of all ages about the wonders of astronomy and the space sciences. Isn't it a thrill to all of us when we turn on our star projectors and hear our audience go “wow.”

Serving the six-year term of president is not a small task. It requires responsibility and organizational skills. It would allow me to help guide our organization to continue that human connection that we all need when we meet with each other or read our wonderful journal, “Southern Skies.” If we do not feel that “wow” when we are in our theaters, then our audience won't. As president, I hope to continue our effort (started by Dave Maness) in attracting young blood into the field and to encourage them to attend the SEPA conferences. I would also like to see even more sharing and cooperative projects between SEPA facilities. We all benefit when the best of us is brought forth. SEPA is bursting with talent and skill. We can pool that talent to produce a program that would be made available to all SEPA facilities. There are so many of us with diverse backgrounds and degrees. Why not apply the best that each of us can offer? This combined effort would create a CD that includes a complete soundtrack, script and visuals. It is no wonder that I feel so strongly about SEPA. Who wouldn't want to be a part of it? If elected, I will be following many great examples of leadership of past presidents. I hope I can live up to those standards. I will do my best.

Paul Campbell Fellowship Award Nomination Form

Nominees must have been a member of SEPA for at least ten years, and they must display qualities in each of five areas, as represented by the five-pointed star shaped award: integrity, friendship, service, knowledge, and vision. Please submit this form to any SEPA Council member.

Nominee's name: _____

Qualifications: _____
