

Southern Skies

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The deadline for the next issue of *Southern Skies* is October 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

I was very happy to see a large turnout at this year's SEPA conference in Baton Rouge, Louisiana. We had approximately 130 delegates at the event and I hope everyone who attended had a chance to learn something new and enjoyed themselves while doing so.



Personally the conference turned out to be much more than expected when one of our guest speakers, David Levy, presented me with an asteroid. Asteroid 18434 is now officially known as Mikesandras. I felt this was a great honor and part of this was the great response by SEPA delegates when it was announced.



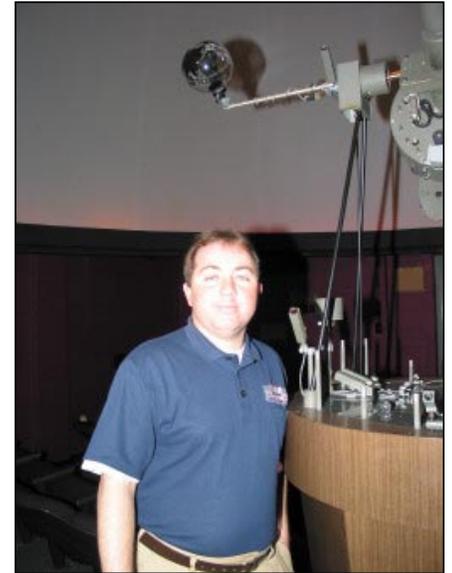
I want to thank Phil Groce and the entire Baton Rouge staff for hosting this conference. Anyone who has hosted one of these conferences before knows how much work is involved.

For those who were not in attendance, we voted that the 2005 conference will be held in Atlanta,

Georgia. Everyone should remember that next year's conference will be held in Richmond, Virginia. I would also greatly appreciate hearing any constructive criticism or your likes and dislikes on this year's conference. Please let me know so that I may pass it on to future SEPA conference hosts.

By the time you read this, Mars mania will have been in full swing. I hope all the facilities that did something in conjunction with this year's close opposition of Mars received a good deal of media attention. We all know our facilities can use it. Make sure that you let Duncan know of any special events held at your planetarium in the upcoming *Southern Skies* journal.

I want to thank everyone who contacted me in some way to wish me good luck on my hip replacement surgery. Many of you noticed that I was in a great deal of pain at this year's conference. I appreciate all the kind words received from various people.



Michael Sandras
President
Kenner Science Center
Planetarium
Kenner, Louisiana



Top left: Irene W. Pennington Planetarium

Bottom left: President Michael Sandras receives a certificate officially naming asteroid 18434 "Mikesandras."

Bottom right: President-Elect Duke Johnson adjusts the star projector on display in the lobby.

I want to let everyone know that the operation so far has been a success and I am currently undergoing rehabilitation. This is why this president's message is so short and I hope everyone can understand why. I have vowed to myself that at next year's conference I'll be able to walk around comfortably.

IPS Report

John Hare
ASH Enterprises
Bradenton, Florida

Right: The planetarium's unique design allows its exterior to function as an astronomical instrument. Nighttime visitors can use the building's chamfered roof to locate Polaris, the North Star, around which all other stars in the sky appear to rotate.

Conferences. Whether they be international, regional (*e.g.*, our yearly SEPA conference), statewide meetings, or informal get-togethers, conference attendance and participation are some of the most valuable means of strengthening our respective abilities in this profession.

With the accelerating role new technologies play in an evolving planetarium environment, many conferences have become showcases for vendors to exhibit, discuss, and demonstrate a whole host of technologies. They have also been magnets that have attracted professional delegates from far and wide regardless of whether it is a regional or international gathering.

If you've not attended a conference lately, you may be surprised to learn of the diversity of equipment, services, and ideas competing for your interest as well as potential threats to the viability of your present operation. If you have attended, you know of the dramatic developments that have manifested themselves.

Speaking of conferences, Valencia, Spain will host the next IPS Conference during the summer of 2004. For conference and other information visit the IPS Website at <www.ips-planetarium.org>. You must be an IPS member to participate in this conference.

Current members also receive a copy of the 2003 IPS Directory and Resource Guide. This valuable CD contains listings and information on over 3500 planetariums worldwide as well as a listing of hundreds of companies and individuals that offer services to the planetarium community. The CD itself is worth the \$50 annual dues.

Two regional conferences of note will take place this fall. The four western regions now meet as an alliance, and their conferences draw large numbers of participants. The Great Lakes region also draws large numbers of participants to their conference. Details on both of those conferences follow.

The next Western Alliance of Planetariums Conference will be in Salt Lake City at the newly opened Clark Planetarium from October 8 – 11. The conference will have participants from the Jet Propulsion Laboratory and the National Aeronautics and Space Administration including visualization resources. Workshops, panel discussions, a tour of the Morton Thiokol plant, and other surprises are planned. The Digistar User's Group meeting will take place immediately before the conference, from October 6 – 8.

The conference hotel is just three blocks from the Planetarium and one block from the Salt Palace Convention Center. Conference rates are \$99/night single or double; just let them know you're part of the Western Alliance Planetarium meeting. Following is contact information for the conference hotel:

Wyndham Hotel Salt Lake City
215 W South Temple
Salt Lake City, UT 84101
<www.wyndham.com/hotels/SLCWY/main.wnt>
801-531-7500; 866-833-9330

More information is available on the RMPA Website: <www.rmpadomes.org>

Another regional conference of note is the GLPA Conference from October 22 – 25 in Cleveland. The host facility is the brand new Nathan and Fanny Shafran Planetarium at the Cleveland Museum of Natural History. The planetarium houses the first Zeiss ZKP3/S planetarium under a 40-foot dome.



Conference highlights include the following:

- Dr. James Kaler: astronomy lecture update
- Dr. Lawrence Krauss: "Beyond Star Trek"
- Dr. Paul Hodge: "Higher than Everest"
- Guy Consolmagno, co-author of the book *Turn Left at Orion*
- The prestigious Armand N. Spitz Lecture

For registration materials contact:

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Editor's Message: Thanks (Again) for your Support

After a multi-year hiatus, *Southern Skies* finally has an associate editor for the Featured Planetarium Facility column. Long time SEPA member and Past President Mike Chesman adds another line to his résumé as he takes on the task of twisting the arms of his fellow SEPAn. Cooperate with Mike when he asks you to detail the history of your facility, tell about your staff, and outline your current and future plans.

This issue also features an excellent article written by Gary Senn and Darlene Smalley of the Dupont Planetarium in Aiken, South Carolina. How refreshing it is to see a contribution by an educator. Be sure not to miss the chart on the third page of the article. You may want to photocopy this page in the event that you try this activity with some of the middle school or high school age groups who visit your planetarium.

We also have a submission from Dr. Bill Gutsch, President of Great Ideas. Dr. Gutsch is formerly of the Hayden Planetarium in New York City where he had lots of exciting contacts and, if I recall correctly, created programs with the folks at the Children's Television Workshop. Do you remember visuals displayed at a previous SEPA conference in which we saw Cookie Monster taking a bite out a cookie to make it look like the crescent phase of the Moon?

Do you recall one of your first assignments at the beginning of a new academic year in elementary school being to write what you did over your all too brief summer vacation? Dennis Cowles has an exciting story to relate. He felt compelled to share with us what unusual activities he had with his friends from ASH Enterprises.

This past summer the Hares, John and Linda, and the Teagues, Judy and Duncan, were both expecting new additions to their families. The two sets of grandparents celebrated within the span of only a few days the births of new, beautiful baby granddaughters at the end of June and the beginning of July. Ah, the wonders of the Universe!

It pays to be parents as well as a grandparents. Judy and I are leaving soon to visit our other daughter, Christine, who is the Social Hostess/Assistant Cruise Director aboard one of the ships of Silversea Cruises, Ltd. We're flying to Paris to see the sights for a weekend before taking the TGV to Marseilles. We'll board the *Silver Shadow* to cruise the French Riviera, Spain, Monte Carlo, Italy, and Sicily for a couple of weeks. We've heard that European tourism is suffering, so we're going to do our part to bring it back to life.

Life is good.

Duncan Teague
Secretary-Treasurer
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: \$ _____

Small Talk

Elizabeth Wasiluk
Hedgesville High School
Planetarium
Hedgesville, West Virginia

Time to cue up “What a Long Strange Trip It Has Been” as I attempt to review the conference in Baton Rouge, Louisiana for those who weren’t there and for those who were there and only remember it as a blur. I am trying to put a “small dome” slant on it.

Now for those of you who have been to our SEPA “small dome” meetings in the past, you know that Jane Hastings says that “small” means many different things to different people. It could be small staff, small budget, small size, small amount of equipment—however you feel your facility is small.

We kicked off the conference by visiting Dave Hostteter at Lafayette, Louisiana’s planetarium. It was great to see Dave in a spanking new place with a unique design to his upgraded A4 star projector. Those of you who remember Dave’s having to go through Starlab while his building and dome were being renovated were probably extremely happy to see him finally in a terrific place.

There was nary a discouraging word when we viewed his Current Program about the European Astronomical Observatory in the Southern Hemisphere. He claimed that he bought it from a planetarium in France for \$1000.00. What I thought was really cool about it, is that it had a sound track in both French and English, and you could switch it midstream while it was going on and not even lose a beat of the music.

I was happy to see Carole Helper and learn that she is back in the dome in Fort Myers, Florida. She did a superb job kicking off the conference for new folks, with the help of Dennis Cowles from New Orleans.

This conference, especially one this jam packed full of events, could have been overwhelming to a first time SEPA conference attendee. We had new folks from Texas learning what was available to try to build a planetarium in their museum and a gentleman from Germany who showed us some superb all-skies. I especially liked the one of the Vatican which seemed to make the dome look rectangular.

Everybody loved the *via* tape, Jack Horkheimer, Star Gazer/Star Hustler spoof of himself. For those who missed it, I heard Mark Bennett, also of Miami’s Space Transit Planetarium, got permission to place it on a CD-ROM.

Adam Thanz, of the Bays Mountain Observatory and Planetarium brought along a video camera, and there are thousands of pictures he took to place on it as well. Adam, crazy guy that he is, volunteered to take on this project. Help him out by sending him any cool pictures you may have taken of the conference and encouraging e-mails and offers of help. This CD-ROM will take time to be finished, but it is just another reason to keep your membership dues paid.

Baton Rouge conference host Phil Groce offered an emotional tribute to Kathy Nix, formerly of the Sharpe Planetarium in Memphis. Phil had trouble getting his words out when talking about her recent passing.

I didn’t know Kathy as well as many of you did. I do remember having a lovely talk with her aboard a cruise. I can’t remember where. Nashville? Jacksonville? We both wondered why we hadn’t met before. I remember talking about Jon Serrie and his music and odd things he introduced her to. I also remember her joking with others from her planetarium during a Jeff Bowen, Joe Hopkins, Mark Petersen, jam/concert by holding aloft a lighter for the encore. She struck me as being so full of life and fun loving, that I can’t help but be saddened that I will never see her again at future conferences.

I guess there is no better tribute to Kathy, than to carry on as the wild crazy bunch the SEPA crowd is, and we certainly did that. We did our only free meal evening in New Orleans and either the city or SEPA will never be the same. I was fortunate to be able to be taken to Pat O’Brien’s for a hurricane by my local friend, Dave, who moderates a Web community to which I belong. I also got to see the legendary thimbleman, who keeps rhythm by drumming on a silver platter to the music.

We had a positively great time at the Rural Life Museum, associated with LSU, and got to dance to Cajun music. AVT’s Joanne Young can really dance!

Phil made us earn our recreation, however, with a positively no time to go to the bathroom conference schedule where we saw both Chronos and Media globe in action. Kenner, where our SEPA president, Mike Sandras resides, and LSU with “domes in progress.”

I found the panel discussions during lunch very informative and helpful, but it cut down chatter with people from domes which, we all can agree, is one of the most useful part of the conference.

This conference stirred up controversies between digital and tradition projection methods and truly showed the pros and cons of both. It was made very apparent with George Murphy’s banquet talk’s technology going awry. Digital’s glaring flaw is, when it doesn’t work, you have either uncontrolled crap or absolutely nothing. When you have a traditional star projector, you can still perform and show something when all breaks down.

Steve Savage of Sky Skan made an excellent point of conferences being too vendor driven and those of us in the dome need to take it back. As we move towards Richmond, Virginia in ’04, we need to rethink what benefits us more, without tiring us out or using up so much of our precious time. Sure, I would have

Astro Video Review:

The Universe: An Amazing Journey from the Sun to the Most Distant Galaxies

Solar Max meets *ViewSpace* in *The Universe—An Amazing Journey from the Sun to the Most Distant Galaxies*. Produced by Tim Tully and narrated by Timothy Enos, *The Universe* is packed full of spectacular celestial views from Hubble, TRACE, IRAS and SOHO. The set up takes you on a visual journey from the Sun to distant galaxies in a classic chapter format. That's the good news.

The Universe however, falls short on entertainment value for no other reason than pure information overload. There are indeed a lot of facts and tidbits in this presentation, but they are presented in such a rapid-fire manner that I began to feel these images were for sale at an auction.

By show's end, I felt exhausted more than awed by all the beautiful sights I had just seen. In addition, my ability to recall any of these facts the next morning was next to nil. I did, however, recall many of the images I had seen. They truly are breathtaking.

After my first pass, I tried the option of turning off the narration. The music is nicely done but unlike *ViewSpace*, this option left you with little more than an occasional tag to identify what you were looking at. The images were entrancing along with the music, but now I was left wanting to know more about what I was seeing. With *The Universe* however, it is an all or nothing kind of deal.

I then explored some of the extras. The producers included two live interviews on the disk. One is with Alex Filippenko and the other with Karel Schrijver. Professor Filippenko gave a nice presentation on the expansion rate of the universe. Unfortunately, the filming was awful. He appeared to have been filmed

on blue screen and then added to a very unattractive background. The lighting was so poor that half of his face was in dark shadow most of the time.

Astronomer Karel Schrijver fared no better. His presentation on TRACE and the future of solar exploration was good, but the fact that the top of his head was cropped off for the majority of the interview was annoying. I left this area of the DVD feeling disappointed. I had enjoyed the content of the interviews, but the poor production quality would make me think twice about using them for anything.

I can, however, see some uses for *The Universe*. Due to its convenient chapter style set up one could easily use it a segment at a time, which would help mitigate the overload factor. This would be useful for a classroom presentation to students who are high school age and above.

It could also be considered for a segment of a planetarium presentation to adult audiences. In its entirety though, I could only recommend *The Universe* to be used as a background presentation on queue monitors or in an observatory waiting area. Turn off the narration and you could use it for exhibit kiosks and planetarium shows (with permissions), as well as queue areas, but for \$24.95 (DVD) I can't recommend it.

Free *ViewSpace* is by far the better deal [except for the fact that the creators of *ViewSpace* arrogantly ignore the Macintosh platform. —Ed.] You get nothing but Hubble views, but the impact is just as spectacular, and the educational pacing is much more general audience friendly. If you really want SOHO images, *SolarMax* has been released for \$26.99 (DVD), and between the two you'll get more bang for your buck.

wanted more time for the constellation shootout and doing a small dome get-together, but I am not sorry for what I saw, and I agree with Patrick McQuillan from Jacksonville, that it would be hard pressed to cut something out from the conference. I wouldn't want to be in Ken Wilson's and Eric Mellenbrink's shoes for the next conference, because there are no simple answers to please everyone attending the '04 conference. Let's just leave it in their hands and trust that like Phil Groce and past conference hosts, they will put the best they can offer forward.

You knew that I would close out with something outrageous, didn't you? Well here it is. I came home to find out that my apartment building was flooded out, luckily no apartments were damaged, but we have had no power or phone for the last 5 days with no end in site as they continue to pump out a basement full of water. Meanwhile I join 11 other displaced families

with aid from the Red Cross (Make donations to your local chapter, please!) who put us up at the local Super 8 and Denny's restaurant for meals while we await a return to normal. Never a dull moment around here. Must be where the "wild" comes from in the "Wild and Wonderful West Virginia" tourism slogan. Ironically, my building was the only one affected in my complex. Lucky me. But I do feel fortunate for others in the state have lost everything. We await word from structural engineers to see if the place is to be rebuilt or we must move. Welcome home.

Disagree with my comments? Have something to share? Send your comments *via* snail mail, phone, or e-mail. I'd love to add them.

Finally, thanks to Jack Horkheimer and Mark Bennett for the "Keep Looking Up" pin which has taken on new meaning in light of the recent flood at my home.

Priscilla Bernardo
Orlando Science Center
Planetarium
Orlando, Florida

*The Universe: An Amazing
Journey from the Sun to
the Most Distant Galaxies*

Small Talk
continued

Featured Facility

Science Center of Pinellas County, Inc., St. Petersburg, Florida

Mike Chesman
Bays Mountain Park
Planetarium
Kingsport, Tennessee

Author: Theresa Klingel
Public Relations Director

The Science Center of Pinellas County is a 25,500 square foot facility that is located on seven acres in the northwest part of St. Petersburg, Florida. This teaching museum features some educational opportunities and equipment that is not readily available around this community.

Incorporated in 1959, the Science Center began when William Guild worked with some neighborhood children on science projects and experiments. The Science Center continues with Mr. Guild's goal of hands-on learning.

The mission of the Science Center is to encourage interest and study in science by exposing students of all ages, and from diverse cultural and economic

backgrounds, to the diversity in science and the potential for science related careers. The Center offers a hands-on educational approach to the study of science through science laboratories, educational workshops, field studies, research, exhibits, and cooperative programs.

The variety of resources available to the students is truly amazing. The Center currently houses a computer center, chemistry lab, microscope lab, laser auditorium, planetarium, physics/magnets lab, animal life room, marine life area, a 16th Century Indian Village, rain-forest classroom, archaeology lab, xeriscape gardens, a wetlands area, observatory, photography lab, gift shop, and more.

Top left: exterior view of the Planetarium



Top right: the lobby of the Planetarium



Bottom: interior of the star theater with its new Minolta MediaGlobe Projector



During the year over 22,000 students enjoy science activities with their classmates on field trips to the Science Center. Through our mobile outreach program, Science Center instructors deliver hands-on science education to schools, clubs, retirement centers, and for special events. During summer months and on school breaks, innovative workshops educate and entertain preschool through 12th grade students.

The Science Center's planetarium was added in 1971 as part of the Discovery Center, a second building connected to the original. The planetarium first became home to an Apollo Star Projector that fit comfortably into the 14-foot dome. The planetarium could seat 30 people and was used primarily for teaching the Science Center's astronomy classes.

As time and technology progressed, it became increasingly evident that the Science Center needed to update the planetarium. Susan S. Gordon, Executive Director of the Science Center, with the help of the Board of Directors, decided on the Minolta MediaGlobe Projector. Purchased with the support of a federal grant and donations from supporters, the new MediaGlobe replaced the older Apollo Star Projector.

In the time since, the Science Center has renovated the planetarium completely with the help of a generous donation by a Pinellas County foundation. Now, the planetarium can seat 30 people, with room for three people in wheelchairs.

In conjunction with the renovation came the dedication to the Space Shuttle Columbia. Now the Science Center's planetarium is known as "The Spirit of Columbia Theater and Planetarium." A 14-foot designer mural wraps around the planetarium and features the Columbia. It serves as a beautiful remembrance for all to honor the crew members of STS-107.

The MediaGlobe planetarium projector is the pride of the Science Center. Its flexibility provides almost limitless capabilities to illustrate and transport audiences through the vast realm of space. The staff has just begun to explore the many possibilities for developing unique programming with this amazing machine. Educational planetarium shows are given almost twice daily to Pinellas County school children on field trips, several times on Saturdays and many various other times throughout the year in conjunction with special events and viewing nights.

From an astronomy perspective, in addition to the planetarium, the Science Center also is home to the Carol Samuels Observatory. This observatory houses a 16-inch Meade telescope with a CCD camera. The members of the St. Petersburg Astronomy Club primarily operate the telescope during special events and viewing nights, which are free to the general public.

With 43 years of success under its belt, the Science Center of Pinellas County is looking into the future with big dreams and anticipation. There is hope that, down the road, the Science Center will have the funds to build a new, state-of-the-art planetarium theater with a 30-foot dome and the capabilities to hold over 70 people. This new theater would become home to the MediaGlobe projector. As always, the staff is constantly looking for new innovative ways to carry their message to the students and the local community.



Featured Facility continued

Top right: exterior view of the Observatory



Middle right: inside the dome of the Observatory



Bottom right: a classroom at the Science Center

Digital Cosmos:

ESA/ESO Astronomy Exercise Series, et al.

Paul Trembley
Orlando Science Center
Planetarium
Orlando, Florida



*ESA/ESO Astronomy
Exercise Series*

The Making of GSC II

Hubble Image Collection, 3.0

HST Interactive

Left: An imagemap graphic of Europe allows the user to select the language used within the exercises

Right: the front cover of the electronic version of the exercise entitled *Measuring the Distance to Supernova 1987A*

I am going to take a break from our normal fare and take a look at some of the interesting CDs that have been showing up in my mailbox recently. I think many of us received a collection of three disks from the European Space Agency early this year. Also, as part of an Astronomy Day shipment from the Space Telescope Science Institute, I received a CD entitled *Hubble Space Telescope Interactive*. All the CDs for this article will run on any Windows PC made in the last few years. Most of the interfaces are HTML, QuickTime, or Flash, so Mac users might also be able to access them. The Mac I normally use for testing has not been available to me do to some internal deadlines.



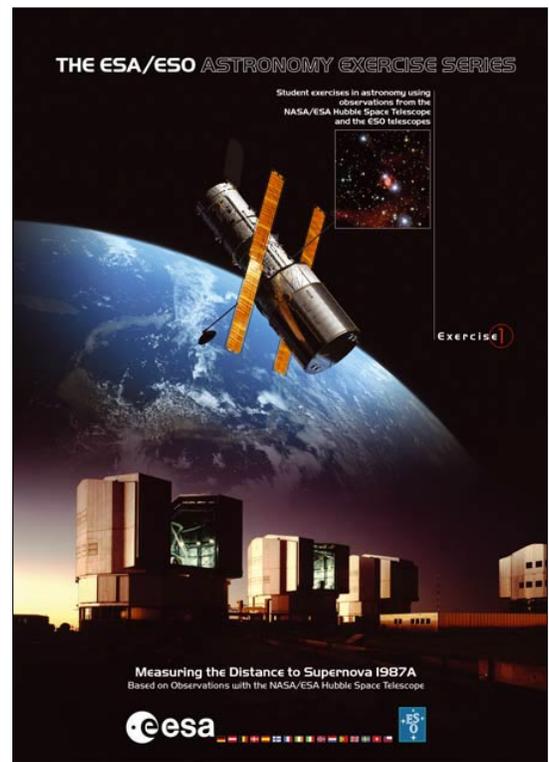
The set of CDs from the European Space Agency contains Version 3 of the *Hubble Image Collection*, *The Making of the Second Guide Star Catalog*, and *ESA/ESO Astronomy Exercise Series*. Now, one might wonder why, with the vast majority of images ever taken by the HST available on the Internet, would anyone take the time to send out to hundreds of astronomy educators and planetarians a CD of HST images? Well, one good reason is it saves me the trouble of having to assemble such a disk myself. But, seriously, it is a great time saver for the teacher who wants students to be able to study these images, without the need for an active Web connection. Also, if you are not blessed with a high-speed Internet connection, it makes getting high-resolution images very easy. Anyone want to download a high-res TIFF image at 28.8?

In the documentation that came with the CD, the ESA has given you permission to copy this disk, as well as the other two, as many times as you want. Can you think of something better at sparking curiosity about space then giving each of your students a copy of this CD that they can take home with them?

The 130 images are available in low-resolution and medium-resolution JPEGs as well as high-resolution TIFFs—perfect for wallpaper and PowerPoint presentations. There are also links to the Web for more information about each photo, but they consistently returned a 404 error. I assume the ESA may have reworked their Web site since this disk was created.

The Making of GSC II is an attempt to “explain at a non-professional level just what went into producing the Second Guide Star Catalog.” According to the paperwork with the CD, the target audience is the “Bright final-year high school student and the scientifically literate public.” This is not the most interesting CD in the collection, but it is a good example for students of the amount of work that goes into something that at first glance seems like a simple project.

By far the most useful is the *Astronomy Exercise Series*. This disk contains the first six booklets of the Exercise Series. Presented in PDF format, the exercises focus on the determination of the distance of astronomical objects such as SN 1987A, M100, and M12.



Each exercise is about 20 pages long and written for the high school level. All the exercises are designed to be completed with out the need for sophisticated astronomy or mathematical software. From an educational standpoint, it would be well worth getting the other booklets of this series for use in the classroom.

I worked through the first exercise: Measuring the Distance to SN1987A. It's challenging. Broken down into six tasks, the exercise steps you through the process of calculating astronomical distances.

The first task was calculating the angular diameter of the light ring. Each successive task builds on the previous to determine inclination of the ring, find the true diameter, and so on, until enough data has been calculated that an approximation of distance can be calculated.

A mathematical toolkit is provided that has the basic formulas and constants that are needed to complete the exercises. A very good teachers guide is included as well.

Back before Astronomy Day, John Stoke sent out an invitation on both Dome-L and the ASTC listserv saying that the STScI would send out packages of HST info to anyone who sent in a request. Tucked in with lots of photos, posters, and other great items (Thanks, John.) was a CD labeled *Hubble Space Telescope Interactive*. It is a nice little 3D exploration of the HST and its science instruments, as well as a look at various HST images. There is also a "Fact Book" full of information about the universe, cosmology,

and the HST. The most obvious use is as a kiosk on the exhibit floor.

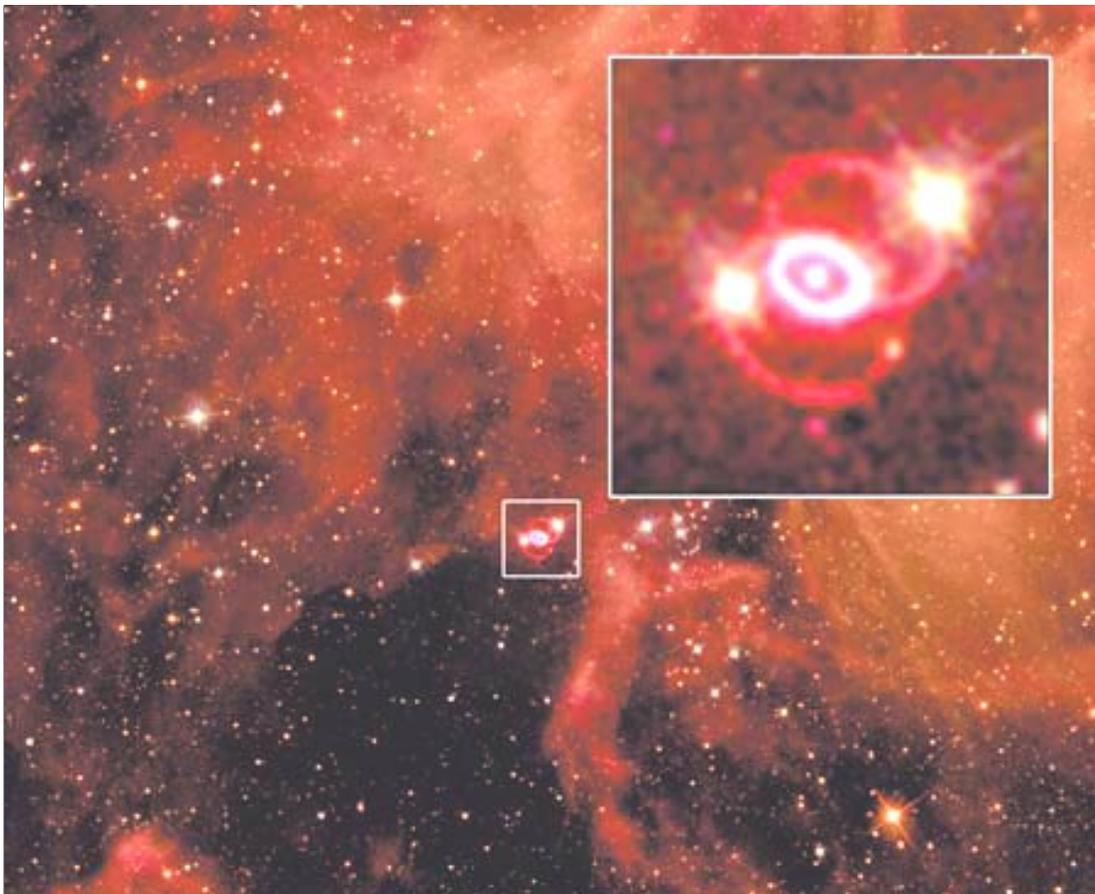
All in all these are useful freebies for the educator and those needing a kiosk exhibit. Most of the ESA material can be obtained through The Hubble European Space Agency Information Centre at <hubble@eso.org>, and of course our old friend John at STScI would no doubt like to hear from you regarding any other HST items you might be looking for. Point your browser of choice at this URL: <<http://hubblesource.stsci.edu/contactus/comment.php?http%3A/hubblesource.stsci.edu/>>

[Many Macintosh users were snubbed with this series of CDs. Anyone using OS 9 or earlier couldn't use the html interface. All the file names that had more than eight characters were garbled. Interestingly enough, Mac users running OS X had no problems. All the file names looked just like they did to Windows users.

One of the outreach scientists at ESA carried on a month long conversation with me via e-mail, and he maintained it was impossible to create a CD that had both Macintosh and Windows files and still had room for all the images. I sent him one that worked perfectly.

If you're a Macintosh user running OS 9 or earlier and you're interested in a revised and cleaned up copy of the ESA/ESO Astronomy Exercise Series CD, please contact me. The version I created works on all current versions of the Mac OS as well as Windows. I'll be happy to burn a copy of the revised CD in exchange for a blank recordable 700 MB CD and return postage. —Ed.]

**Digital Cosmos:
ESA/ESO Astronomy
Exercise Series, et al.
continued**



Right: One of the beautiful illustrations within the exercise Measuring the Distance to Supernova 1987A

Ecliptic Constellations Activity

Gary J. Senn and
Darlene C. Smalley
Dupont Planetarium
Aiken, South Carolina

Have you ever wanted students to understand the real meaning of the zodiac? The staff of the Dupont Planetarium had that desire, so we developed an “Ecliptic Constellations Activity” to help students understand what the zodiac constellations are and why we see different members of this group during each of the four seasons.

Our “Ecliptic Constellations Activity” was a twenty-minute segment of a one-hour program called, “Cruising through the Constellations,” but the activity could be expanded to fill a class period. The activity is valuable for a wide range of ages; we used it successfully with fourth graders through graduate students.

To prepare for the activity, our instructor asked students to form a circle above the thirteen constellation names taped to the floor in the gallery outside our planetarium. Excited students rushed to find a spot near a name they recognized but stood above Ophiuchus only when no other space remained.

The instructor stood in the center of the circle holding a large celestial sphere and engaged the students in a discussion of constellations. During the discussion, the instructor helped the students locate the circumpolar constellations, the ecliptic, and the zodiac constellations on the celestial sphere. Then, the instructor placed the sphere on a table outside the circle and focused the students’ attention on the circle of zodiac constellation names over which they were standing.

The instructor handed each of the thirteen students closest to the names of the constellations a piece of dark blue cardstock with the appropriate constellation picture. Then the instructor selected a student without a picture to stand in the center of the circle and hold a yellow ball to represent the Sun. Finally the instructor selected another student to stand just inside the circle and hold a small Earth globe that showed the Earth’s axis.

Showing the “axis” was important because we wanted to teach or review how the axis tilt effects the seasons on Earth while demonstrating why we see different members of the zodiac during each of the four seasons.

The most challenging part of the “Ecliptic Constellations Activity” was getting the “Earth” student to move counterclockwise around the inside of the circle while keeping the North Pole of the globe pointed in the correct direction. We started the student in front of Gemini and told the class that Earth is in this position at the

beginning of winter. We used the term *winter solstice* with older classes.

We asked if anyone could explain what causes seasons since we planned to simulate Earth’s orbit of the Sun and discuss seasonal changes in our sky.

When discussion led to the tilt of the axis, we asked the “Earth” student to turn the globe so that the axis was oriented correctly for the beginning of winter. Once this was accomplished, we told the class that Earth’s axis always points with the North Pole in the direction of the North Star. We mentioned that the Earth’s relationship to the Sun constantly changes as the Earth revolves around the Sun.

The “Earth” student then walked around the inside of the constellation circle while pointing the axis of the Earth globe in the original direction. We asked all of the students to help identify the seasons as the “Earth” student passed through them. Because students had trouble keeping the North Pole oriented correctly as they walked, we plan to place a symbol representing the North Star on the correct wall so that future students have a place to aim the axis as they walk.

After one circuit around the Sun, we asked the “Earth” student to do another “orbit” with the focus this time on the zodiac or ecliptic constellations visible during each season. The term “ecliptic constellations” was sometimes used instead of “zodiac constellations” to highlight our emphasis on the science of the ecliptic as opposed to the non-science (or nonsense) of astrology (Mosely, 1999).

As the “Earth” student made the second “orbit,” the class named the constellations visible at night during each season and looked past the student representing the Sun to identify the constellations hidden by the Sun during each season.

After all of the constellations were identified and the “Earth” student had completed the second “orbit,” students holding constellation pictures were asked to compare the ancient and current dates of the Sun’s transit listed on the table behind each picture. Some students were disappointed to learn that they were not born under the “sign” that they had thought they were.

Such comments led to brief discussions of astrology and the inappropriate use of the zodiac constellations in horoscopes. We discussed the differences in the transit dates and the addition of Ophiuchus to the zodiac, using the term

precession with older groups and the “wobble” of the Earth with younger students. When we completed this discussion, we directed the students to the planetarium to finish the “Cruising through the Constellations” show.

As we developed this show, we spent time researching a number of different approaches to presenting the concept of the ecliptic to students. The “Ecliptic Constellations Activity” segment of the show was based in part on an activity found in *Rainy Day Astronomy* (Tesmer, 1992). Six months after we began doing the “Ecliptic Constellations Activity” at the Dupont Planetarium, we discovered a similar activity in *The Universe at Your Fingertips* (Franknoi, 2000).

We constructed a few items in order to deliver the “Ecliptic Constellations Activity.” We laminated and taped to the floor a circle made from yellow paper. This yellow circle represented the Sun. We printed on paper the names of the 13 ecliptic constellations (including Ophiuchus), laminated them, and then taped them to the floor. We set the laminated names in a circle that measured twelve feet in diameter with the yellow Sun in the middle. We arranged the names in the same order as they are observed in space from the vantage point of Earth.

We placed each of thirteen pictures representing artistic interpretations of the ecliptic constellations on individual pieces of paper. We connected the major stars of each constellation to indicate the typical line drawings used to rep-

resent the constellations. We didn’t include the constellation names with the pictures so that the students could try to identify the constellations. We inserted each picture into a plastic sheet protector in order to lengthen its usability.

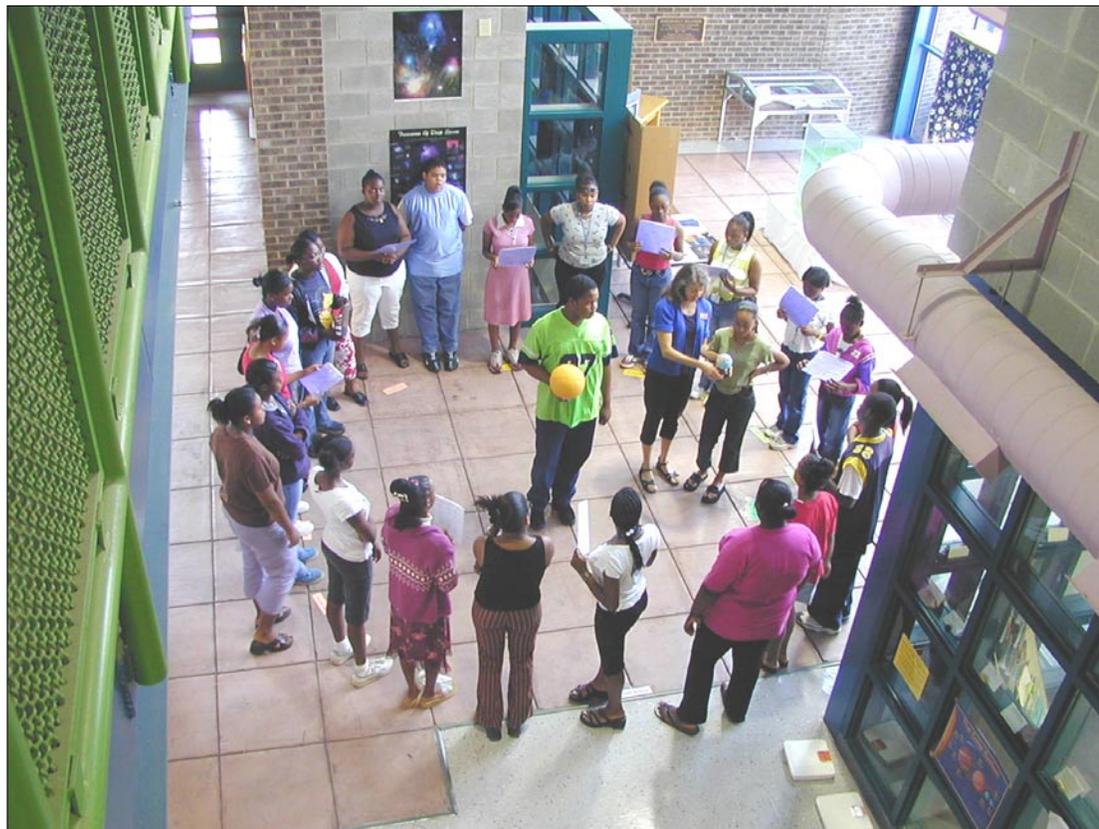
Behind each constellation picture, we inserted a table that included information for all thirteen ecliptic constellations. For each constellation, the table indicated the name, the shape it represented, current dates of the Sun’s transit, ancient dates of the Sun’s transit, and the season when the constellation is visible at night. We highlighted the name of each constellation pictured in the table behind that picture.

The “Ecliptic Constellations Activity” has been a great asset to helping students understand the origin of the zodiac constellations. Perhaps you can find a way to include a similar activity in your astronomy education program.

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Ecliptic Constellations Activity continued



Left: Students visiting the Dupont Planetarium participate in the staff’s “Ecliptic Constellations Activity” in the lobby of the Planetarium

The Thirteen Constellations of the Zodiac

Right: the table the staff
of the Dupont Planetarium
used in their Ecliptic
Constellations Activity

The zodiac is the circle of constellations that the Sun appears to pass through each year as the Earth orbits the Sun. There are actually 13 zodiac constellations because the Sun travels through Ophiuchus as well as the 12 constellations normally associated with the zodiac. The dates of the Sun's transit through these constellations change over time because the Earth's axis wobbles slightly (a motion called precession) over time.

ZODIAC CONSTELLATIONS	CURRENT DATES OF SUN'S TRANSIT	ASTROLOGICAL DATES	SEASON IN NIGHT SKY
Virgo the Virgin	Sept. 16 – Oct. 30	Aug. 23 - Sept. 22	Spring
Libra the Balance	Oct. 31 – Nov. 22	Sept. 23 - Oct. 23	Spring
Scorpius the Scorpion	Nov. 23 – Nov. 29	Oct. 24 - Nov. 21	Summer
Ophiuchus the Serpent Bearer	Nov. 30 - Dec. 17	none	Summer
Sagittarius the Archer	Dec. 18 - Jan. 18	Nov. 22 - Dec. 21	Summer
Capricornus the Goat	Jan. 19 - Feb. 15	Dec. 22 - Jan. 19	Summer
Aquarius the Water Bearer	Feb. 16 - Mar. 11	Jan. 20 - Feb.18	Fall
Pisces the Fishes	Mar. 12 - Apr. 18	Feb. 19 - Mar. 20	Fall
Aries the Ram	Apr. 19 - May 13	Mar. 21 - Apr. 19	Fall
Taurus the Bull	May 14 - June 19	Apr. 20 - May 20	Winter
Gemini the Twins	June 20 - July 20	May 21 - June 21	Winter
Cancer the Crab	July 21 - Aug. 9	June 22 - July 22	Winter
Leo the Lion	Aug. 10 - Sept. 15	July 23 - Aug. 22	Spring

What I Did on my Summer Vacation

Our Spitz A4 (“Joffrey”) decided to take a little vacation from shows this year when the elevator motor suddenly failed. Of course, this happened at the worst possible time—mid-April—and in the worst possible position—almost all of the way in the pit.

After a couple of frantic e-mails to ASH Enterprises’ John Hare and some wrangling with the higher-ups (they really do hate to spend money), we scheduled repairs for June immediately following the SEPA conference in Baton Rouge.

Here are some photos that Mark Trotter took of the repairs in progress.

Thanks to John Hare and Jon Marshall of ASH Enterprises. We’re back up and running again thanks to their efforts.

Top right: Everything you ever wanted to know about the insides of a star projector, but were afraid to ask.



Dennis Joseph Cowles
Audubon Louisiana
Nature Center Planetarium
New Orleans, Louisiana
<dcowles@auduboninstitute.org>

Below left: The consternation of the curator is mighty indeed.



Below right: Okay, what now?



News from SEPA States



George Fleenor
Geographics Imaging
Bradenton, Florida

Science Center of Pinellas County, St. Petersburg

Editor George Fleenor reports: The science center has been very busy with sold out summer camps and the recently added Saturday programs. Like many other facilities they geared up for the perihelic opposition of Mars. The Mars mania kicked off on the evening of July 25th with a lecture by St. Petersburg Community College and University of South Florida professor, Daryl Schrader. More than 250 people enjoyed the lively lecture that was packed with information and humor. The *Summer Sky Tonight* planetarium show was presented several times in the Spirit of Columbia Space Theater. Live observations of the red planet were scheduled to last until 1:00 a.m., however, cloudy skies dominated the night. The evening's events were held in conjunction with the St. Petersburg Astronomy Clubs' monthly meeting. The astronomy club provides invaluable volunteer help, assisting the science center staff with the observatory and special events.

One Saturday night a month the Carol Samuel Observatory is open, offering visitors a chance to view astronomical objects through a 16" Meade LX-200. Members of the astronomy club also bring out their telescopes, providing more artillery. Future Mars observing sessions were planned for August 22, 26, and 30 and September 6. The astronomy club also has four additional observing sessions scheduled at the Gulfport Casino. All observing sessions are scheduled to last until 1:00 a.m.

The Orlando Science Center, Orlando

Paul Trembly reports: We had good crowds for the May lunar eclipse even with cloud cover. The clouds broke just before totality started giving our visitors and news crews a grand sight. We welcomed the solstice by opening a new exhibit in the observatory. Faces of the Sun ran through the end of August. This program featured about two-dozen photographs of the Sun taken by a local amateur astronomer. Using white light, H-alpha, and Calcium-K filters, the photos showed the Sun in a whole new light. The public seems to be enjoying the display and it has increased interest in our monthly Sun Watch observing program.

We celebrated Space Day and Astronomy Day with solar observing, edible comets, and other activities. We had a human sundial on our outside deck. *Mars Quest* opened in August. We had a Mars-Mania Day on August 27 for the opposition. We're planning for the November lunar eclipse. We're currently running the films *Pulse: A Stomp Odyssey* and *Coral Reef Adventure*. In the fall and spring we'll run *The Magic of Flight* and *Jane Goodall's Wild Chimpanzees*.

Hallstrom Planetarium, Ft Pierce

Jon Bell reports: First, my thanks and congratulations to the participants of the 2003 SEPA Constellation Shootout. Thanks also to the staff of the Pennington Planetarium for staging the competition in their theater. And thanks to judges George Fleenor, Mike Chesman, April Whitt, and Carole Helper. Dave Maness took first place by correctly pointing out Crater the Cup. Dave Godman came in second, and Steve Smith took third.

Next year's contest will feature a change to the rules. On several occasions in past years there's been some confusion about pointing out an object someone else missed, then going on to a fresh one. Next year, if something gets missed, such as "Alphard" (a toughie for folks at the Baton Rouge Shootout), the judges will correctly point it out, and the next competitor will get a new object.

I'm on summer break now, a chance to get organized and ready for a new season of planetarium shows and college classes. My last public show was *Space Songs*, which was wildly successful, at least in terms of audience enthusiasm and enjoyment. Not too many people saw it because publicity for the show was almost non-existent. Still, it was a lot of fun to do a show that some said "couldn't be done," (or was that, "shouldn't be done?") It was a blend of traditional live planetarium show and karaoke singing, accompanied by lots of visuals (slides, panoramas, video, special effects).

I sang the entire show, pausing only to say a few explanatory words in between to set up the next song. Here's the song list:

Walkin:

- "Grazzie, Padre Piazzi,"
- "The Irish Leviathan,"
- "Universe Calling!" (on CD)

Introductory remarks, then

- "Oh Mr. Moon" (*a cappella*)
- "Gravity"
- "What is a Shooting Star?" (*a cappella*)
- "Tumbling Asteroids"
- "Why Does the Sun Shine?"
- "Volcano"

- "Ballad of the Hertzsprung-Russell Diagram"
- "Betelgeuse"
- "Little Brown Dwarf"
- "Ode to a Black Hole"
- "The Universe Song"
- "Bold Orion"

Encore:

- "Einstein, the Genius"

There were more songs I wanted to include, but I had to keep the program length to 45 minutes. Still, this show was so terrific that I'm going to bring it back again for one weekend in February, plus I'm going to adapt it for school groups. I won't do quite so much live singing there or I'll lose my voice!

Hallstrom Planetarium will be putting on more shows next year; I've amassed a large collection of programs since we opened in 1993, and many of them are still fairly intact, so installation won't take so long. I'm currently writing the fall show, *Eclipse!* to coincide with the lunar eclipse in November; then *Star of Wonder* in December. In January I'll do a show about Venus and Mars; February will be *Space Songs* again; in March we'll reprise the classic, *Bear Tales and Other Grizzly Stories*, and in April and May I'll run a Saturn-Cassini show, probably the *Ringworld* program that's due out shortly from NASA.

I am still trying to get a small gift shop built adjacent to the Planetarium vestibule. Wish me luck!

Alexander Brest Planetarium, Jacksonville

The Alexander Brest Planetarium has been astronomically busy this summer. From summer camps to laser shows to *What's Up?*, it has been a full tide of programming. The Summer public program was *The Mars Show*. Our live night sky program, *What's Up?*, gave visitors the current info on this summer's close approach of the fourth rock from the Sun, while Patrick Stewart gave then the rest of the story.

We offered four weeks of summer camp this year for grades K – 6. Topics included planets, rockets, robots, constellations, and more. Each week of camp was

geared towards the age of the children attending. The 4/5 grade camp had a field trip to the Kennedy Space Center Visitor Center. However, our most popular camp has been the 5/6 grade Space Robots camp. We talk about how NASA uses robots to conduct a large portion of their space exploration. The students then use the LEGO Robotic Invention System to build and program robots built out of LEGO parts. Computer programming, teamwork, and problem solving skills are introduced in the camp. Each of our camps had full capacity and a waiting list.

Laser shows continue to do well. Summer programming included *Prehistoric Rocks* (all dinosaur songs), *Laser Fun* (general audience top 40ish), and evening shows of *Elvis*, *Metallica*, and *Pink Floyd the Wall*. We ran the entire CD of *The Wall*. Tickets for this program were \$8 (Evening shows are \$6.), and not a single person complained. Of course the show is an hour and twenty minutes, and loud (so we might not have heard them).

Two telescope viewing events were planned for the close approach of Mars. The museum and planetarium was open on August 27 and August 30 from 8:30 – 11:00 for a planetarium night sky show focusing on Mars and views of the red planet through the museum's telescopes.

Fall programs include *The Sky Tonight* and *Explorers of the International Space Station*. *Explorers* will also enhance our 5/6 grade school program on the ISS. Also new for school children this year is *The Friendly Stars*. This program was produced at Bays Mountain and will enhance our K – 1 grade program which was formally titled *All About the Planetarium*.

Mark Smith Planetarium, Macon

Mark Smith Planetarium has had a busy schedule, with public programs every day. 2003 sees the debut of two all-new recorded shows at our planetarium: *Explorers of the ISS*, and *RingWorld*.

This summer we offered the *Superstar Summer Kids' Show*, a 10-week series of noontime programs for the younger set. Each week, we present a different kids' show Monday through Friday. One of my colleagues, who'll remain nameless, has asked me if I'm "on crack" for maintaining such a jumparound schedule, but I think the high attendance speaks for itself.

In the fall, we'll return to school show programming. I expect to debut my first original planetarium show, *New Explorations of the Solar System*. Based on a talk I gave on Astronomy Day, this live program gives up-to-date information on the armada of robotic spacecraft waiting in the wings (or already in flight) to study the Moon, planets, asteroids, comets, etc.

Starting in August, our live *Sky Over Macon* show will be presented at a new time, on Mondays at 7 p.m. Our public telescope viewing will continue on clear Friday evenings. Information about programming at the Planetarium and Observatory can be found online

at <http://www.masmacon.com/space/>.

Finally, I would like to offer congratulations to Fernbank Science Center for being selected as the site of the 2005 SEPA conference, and invite participants down to Macon to visit Mark Smith Planetarium while in the area.

Fernbank Science Center, Atlanta

Dave Dundee reports a busy summer at Fernbank: we are running two shows in the planetarium: *Flying Saucer Mystery* (all about the Mars close approach) for children and *Spaceflight* (in honor of the centennial of flight). We had strong attendance in June, (nothing like a little rain to bring folks in). This fall we open *Visions of Mars* and for children *Friendly Stars*. April Whitt, after attending SEPA this year, traveled to Washington D.C. for a NASA sponsored Messenger conference. Angela Sarrazine is off to Hawaii for observing time on the Keck. Ed Albin attended a Tektite conference at University of Georgia. We prepared for the big Mars encounter by adding 13 extra observing nights until 3 a.m. to share Mars with the public. And last but not least we are looking forward to SEPA coming to Fernbank in 2005.



George Fleenor
Geographics Imaging
Bradenton, Florida



David Dundee
Fernbank Science Center
Atlanta, Georgia



David Dundee
Fernbank Science Center
Atlanta, Georgia

Agnes Scott College

Christopher G. De Pree reports the lineup for the Astronomy 2003-2004 Open House Series

Women in Astronomy

An ancient Chinese proverb says that women hold up half the sky, but in the future, they may hold up more than half. The next generation of astronomers could be dominated by women, according to a recent study of the American Astronomical Society (AAS). Of astronomers and astronomy students aged 18 – 23, 57 percent are women. Talks this year focus on the contributions of women to the discipline, historically and in the present day.

All talks are free and open to the public. Doors open at 7:30 p.m. Lectures begin at 8 p.m.

Bradley Observatory

Sept. 20

William A. Calder Fall Equinox Concert and A Night Under the Stars; open house; planetarium shows: Amy Lovell & Chris De Pree (ASC)

Oct. 10

Chris DePree (ASC); Women at the Harvard College Observatory

Nov. 14

Amy Lovell (ASC); Comets

Dec. 12

Cecilia Birnbaum (Valdosta State University); Black Holes: A Dance with Gravity



Glenn Dantzer
Settlemyre Planetarium
Rock Hill, South Carolina

Dupont Planetarium, Aiken

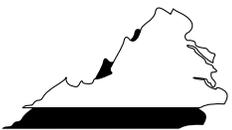
The Dupont Planetarium at the University of South Carolina Aiken enjoyed a successful Astronomy Day in May. The Augusta Astronomy Club, planetarium staff, and staff from the Ruth Patrick Science Education Center (RPSEC) worked together to provide visitors with a variety of activities to demonstrate exciting concepts in science. Activities centered on the theme of Earth and Sky Night. Members of the Augusta Astronomy Club set up their telescopes to allow visitors to explore the wonders of the heavens. The planetarium staff presented the show, *Dark Shadows*, which presented information about eclipses and phases of the Moon. The staff of the RPSEC provided a variety of hands-on activities related to earth and space science. The activities ranged from constellation bingo to soil stratification.

During June, the planetarium showed *Follow the Drinking Gourd*. In July, *Larry Cat in Space* was the feature show and during August the show was *More than Meets the Eye*. During the summer months, the planetarium presented a special DigiStar Effects show after the normally scheduled public shows. During June, the new DigiStar Effects show, *Laser Fantasy* debuted. In July the DigiStar Effects show, *Virtual Journey* made an encore appearance. In August, the *Laser Fantasy* show returned to finish the summer.

The Ruth Patrick Science Education Center Observatory houses the Bechtel Telescope, which is a 16", Meade LX-200. There have been a number of difficulties with the scope over the past year. The RA drive motor began to run continuously last fall. Meade recognized the dreaded run-away drive problem so we shipped the drive mechanism and the declination motor to Meade for repair. The items were returned and reinstalled. The run-away drive problem was fixed but the park feature failed to work. After consulting with Meade, we decided not to worry about the park feature since the telescope is mounted on a polar aligned pier. The only difficulty now is with those pesky clouds that interfere with the observing. We are very interested in a cloud filter that will allow us to do observing even when clouds are overhead. If anyone knows where we could purchase such a filter, please let us know.

Dooley Planetarium

John Mattox has left the Dooley Planetarium at Francis Marion University for a position at Fayetteville State University where he will be an associate professor of physics and astronomy and a consultant to the planetarium program there. He will be replaced at Francis Marion University by Jeanette Myers who received a PhD from Clemson University last spring.



Dave Maness
Virginia Living Museum
Planetarium
Newport News, Virginia

Falls Church High School, Falls Church

Gary Purinton's school is out for the summer.

Chesapeake Planetarium, Chesapeake

Dr. Robert Hitt's school is out for the summer.

Radford University Planetarium, Radford

Dr. Rhett Herman reports that "parts of my summer are set aside for course prep, research, and planetarium-related things. Summer seems to be the only time I have for anything planetarium-wise that takes longer than two hours at a time. He also said

that he'd be glad to help with a full article under the Featured Facility section.

He prefers email. His address won't change, and he'll be running the RU planetarium for years to come. You can see more about it on the planetarium Website at <<http://planetarium.radford.edu>>

Virginia Living Museum Planetarium, Newport News

We are well into our summer of amphibians and reptiles. These timeless classes of creatures (older than the dinosaurs) are excellent measures of the health of

the environment, and so we are featuring them in an exhibit called Swamp Predators.

To tie in with the exhibit, I wrote a program that features life in the Great Dismal Swamp, one of the most enigmatic regions of the country, which just happens to be nearby. In the center of the swamp is a nearly round lake (Lake Drummond), which many have thought had an astronomical origin. We examine this possibility as well as the rich history of the area.

Next we travel into space in search the origin of Earth's water and other water worlds. Then we travel back in time to watch Earth's formation through history including an asteroid or comet impact that happened nearby about 35 million years ago. I called this program *Swamp Planet*. It ran daily at 11 a.m., 1:30, and 3:30 p.m. through Labor Day. There is talk about holding over this program for the fall; we were closed for show installation the week of September 8 – 12. The new show opened September 13.

On June 27 we held another of our Evening Under the Stars events. This time we featured the planet Jupiter. Another event was scheduled for August 27. I'll give you one guess on which planet we featured that night. All that week we had special activities to celebrate National Astronomy Week.

Hopkins Planetarium, Science Museum of Western Virginia, Roanoke

Hopkins Planetarium & Mega Dome Theater

Mark Hodges and his two part time staff showed the summer sky show, *Starlit Nights* in the Planetarium. This program ran through September 6 at 1:45 on Sundays. Also *Worlds in Motion* was shown at 2:00 p.m. Tuesdays through Saturdays. *WSKY: Radio Station of the Stars* replaced this on August 2. The current Mega Dome film offering is *3D Mania: Encounters in the Third Dimension*. This is shown

Tuesdays through Saturdays at 1, 3, and 4 p.m. The museum is closed on Mondays. The current traveling exhibit is called Grossology. It deals with... well... gross subjects. Another exhibit sponsored by the Science Museum is Dinosaurs at the Mall. This includes at least 14 robotic dinosaurs. Mark says it is very popular. For more information contact Mark via email at <mhodges@smvw.org>.

Ethyl Imax Dome and Planetarium, Richmond

Eric Mellenbrink reports that his back is doing better but it may be a slow recovery. This summer we only ran our *Hubble!Night Sky* planetarium show (the first few minutes are recent Hubble views with slide descriptions, followed by a 10 minute current evening star show). We're in production for a fall show opening September 20 and running through January 11: *Follow That Star!: Celestial Navigation*, written by the Science Museum's Director of Astronomy Ken Wilson. Did you know that explorers through the ages have often found their way to new frontiers using the Sun and the stars? This clever exploration of celestial navigation complements the IMAX® film *Lewis and Clark: Great Journey West*.

This summer we ran the IMAX films: *Lewis & Clark*, which will continue through the fall, and *Extreme* (about extreme sport athletes). This fall we'll bring in a film called *Human Body* to complement a traveling exhibit we'll have called Grossology. We also continue to work at conference planning.

Portsmouth Children's Museum Planetarium

Planetarium Director Dan Borick: No news reported.

Virginia Beach City Public Schools Planetarium

Charles Dibbs, Director: School's out for summer.

Avampato Discovery Museum Planetarium, Charleston

The doors of Sunrise Museum closed for good on May 29 (No, really this time! We've taken apart the exhibits!). As of June 10, we officially changed our name to the Avampato Discovery Museum. On Thursday, June 12 it was announced that we would open to the public at the Clay Center for the Arts and Sciences on July 12 with two soft openings the 10th and 11th.

Our new Electric Sky Theater Manager comes to us from the local megaplex, with over a decade of conventional film experience. Casey Crouch joined the team in May, and we have just completed the hiring of the projectionist/ ushers who will be helping Casey and me knock the socks off the people of West Virginia!

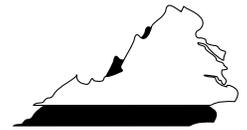
Spitz has just completed the final installation of major components, and the staff began four intense weeks of training on June 16. Kudos to Darrin, Chris,

and Mark of Spitz; Rick of Megasystems *nee* Ballyntine; and Luke of LFI International for all their hard work under difficult conditions to make this theater possible.

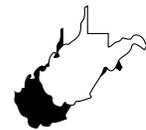
For those of you unfamiliar with our project, our Electric Sky Theater is a 61-foot dome with a 22° tilt that seats 175. We have the world's last Spitz StarScape projector, but the world's first Nomad controller! We are using the Electric Sky I automation package with all the bells and whistles. Our Large Format Film projector is the Megasystems 870, and Megasystems also provided our killer audio system.

Last but far from least is the LFI 2505 laser and Luke's user-friendly board design. Going from our 40 year old A3P to this is like going from a bike to a jet aircraft, but I am a kid in a candy store right now!

If you're in the neighborhood, drop by and say hi! I hope to convince the management to host SEPA in the not-too-distant future so you can all see what this bad boy can do.



Dave Maness
Virginia Living Museum
Planetarium
Newport News, Virginia



Curt Spivey
Avampato Discovery
Museum Planetarium
Charleston, West Virginia

A Plethora of Planetarium Programs for the 21st Century

Dr. William Gutsch
President
Great Ideas
Kinnelon, New Jersey
<BillGutsch@cs.com>

Previews of three exciting new programs will be presented. Each is designed to maximize the audiovisual capabilities of most planetariums while not requiring the use of full-dome video.

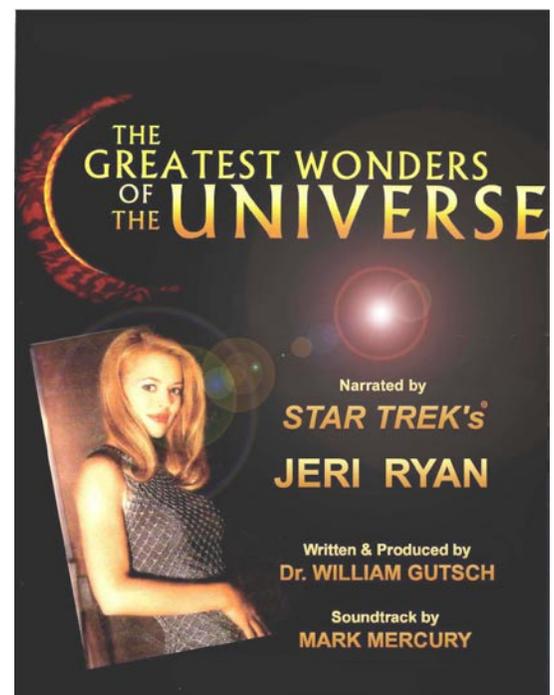
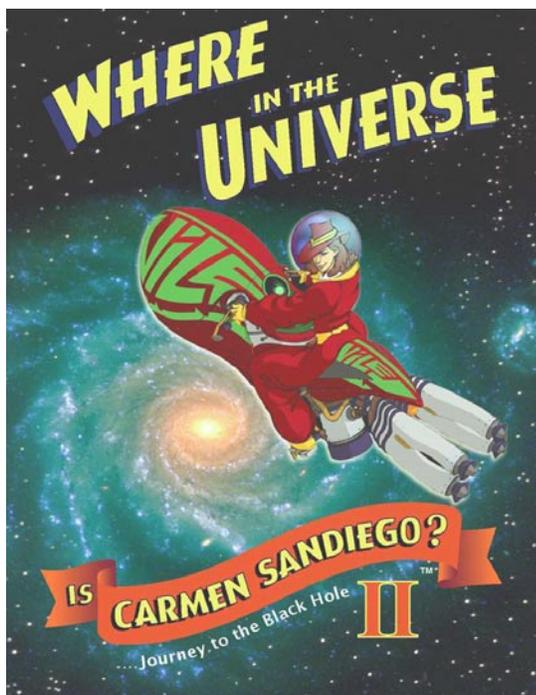
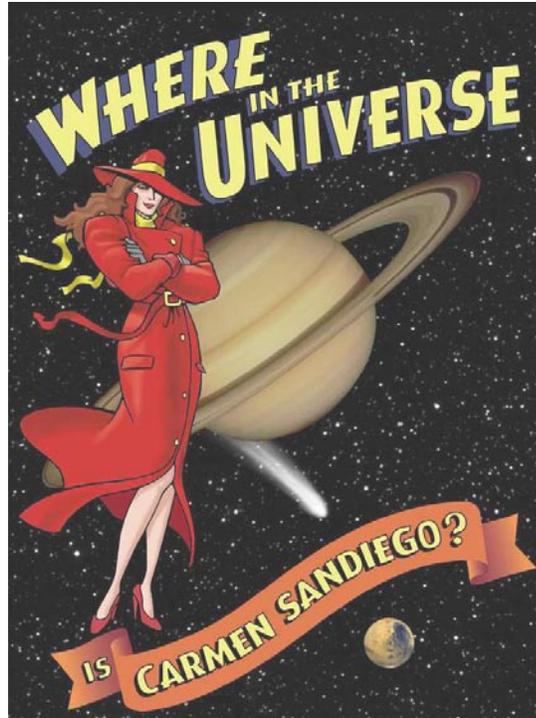
They are the following: *The Night of the Martians*, *Ring World: The Cassini-Huygens Mission to Saturn* with StarTrek's® John Billingsley created for NASA/JPL in

conjunction with Sullivan Presentations, and *Mysteries from the Depths of Space* with StarTrek Enterprise's™ Jolene Blalock.

Martians, a live stage play designed for the planetarium, will open this summer at the H. R. MacMillan Space Centre in Vancouver and the new Clark Planetarium in Salt Lake City. *Ring World* is currently being released to over 150 planetariums in the U. S. and will also appear overseas from Spain to Germany and Japan. *Mysteries*, being produced in conjunction with the Coca Cola Space Science Center, will be available fall 2003. All feature original soundtracks, copious 3-D color animation, show posters, and PSAs.

New programs have been developed based on a production model honed in the creation of several recent programs written and produced by the author including *Where in the Universe is Carmen Sandiego?*™, *Where in the Universe is Carmen Sandiego? - II*™, and *The Greatest Wonders of the Universe* with StarTrek's® Jeri Ryan.

This model incorporates name talent with dynamic, fast paced visualization that utilizes a large amount of single screen, original 3-D color computer animation against pure video black designed to be seamlessly integrated into scenes that also used panoramas, slide all-skies, and other standard planetarium projection hardware resulting in many sequential full-dome scenes without the need for a full-dome video system. In this way, high quality programs can be created that are a solid step above "slide shows" or full-dome



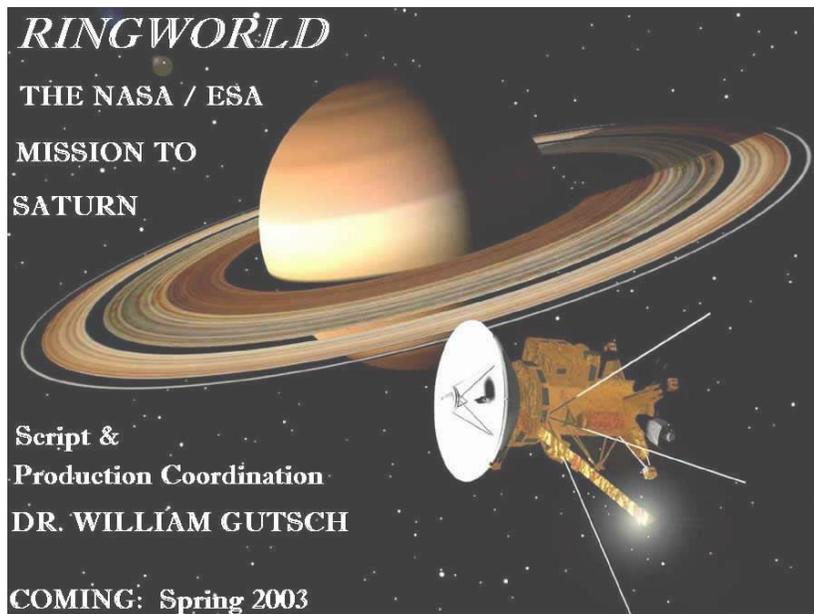
video programs utilizing 2-D imagery but are more economical to create and purchase than full-dome video programs and, at the same time, are within the technical capabilities of most planetariums today.

Produced for release in 2003, *Ring World: The Cassini-Huygens Mission to Saturn* with StarTrek's® John Billingsley, created for NASA/JPL in conjunction with Sullivan Presentations, and *Mysteries from the Depths of Space* with StarTrek Enterprise's™ Jolene Blalock, being produced in conjunction with the Coca Cola Space Science Center, are new productions which intentionally follow this same model.

As with another program created by the author, *Encounter: The Search for Life in Space*, additional applicability has been achieved for *Ring World* with the show as of this writing also being translated, recorded, and distributed in Spanish, French, and Japanese as well as German. In addition *Ring World*, like *Encounter*, *Greatest Wonders*, and the *Carmen Sandiego* programs, also gains strength by utilizing the combined talents of many of the best astronomical artists and animators from the planetarium field and beyond.

Finally, I describe a different type of production but one which also utilizes successful elements

A Plethora of Planetarium Programs for the 21st Century continued



from such productions as *Carmen Sandiego* and earlier creations of the author including *Wonderful Sky* with the Sesame Street Muppets© and *Robots in Space* with R2-D2 and C-3PO™©.

All of these very successful productions were essentially interactive live theater designed for a planetarium environment. But while these programs were purposely created for children and families, the basic production



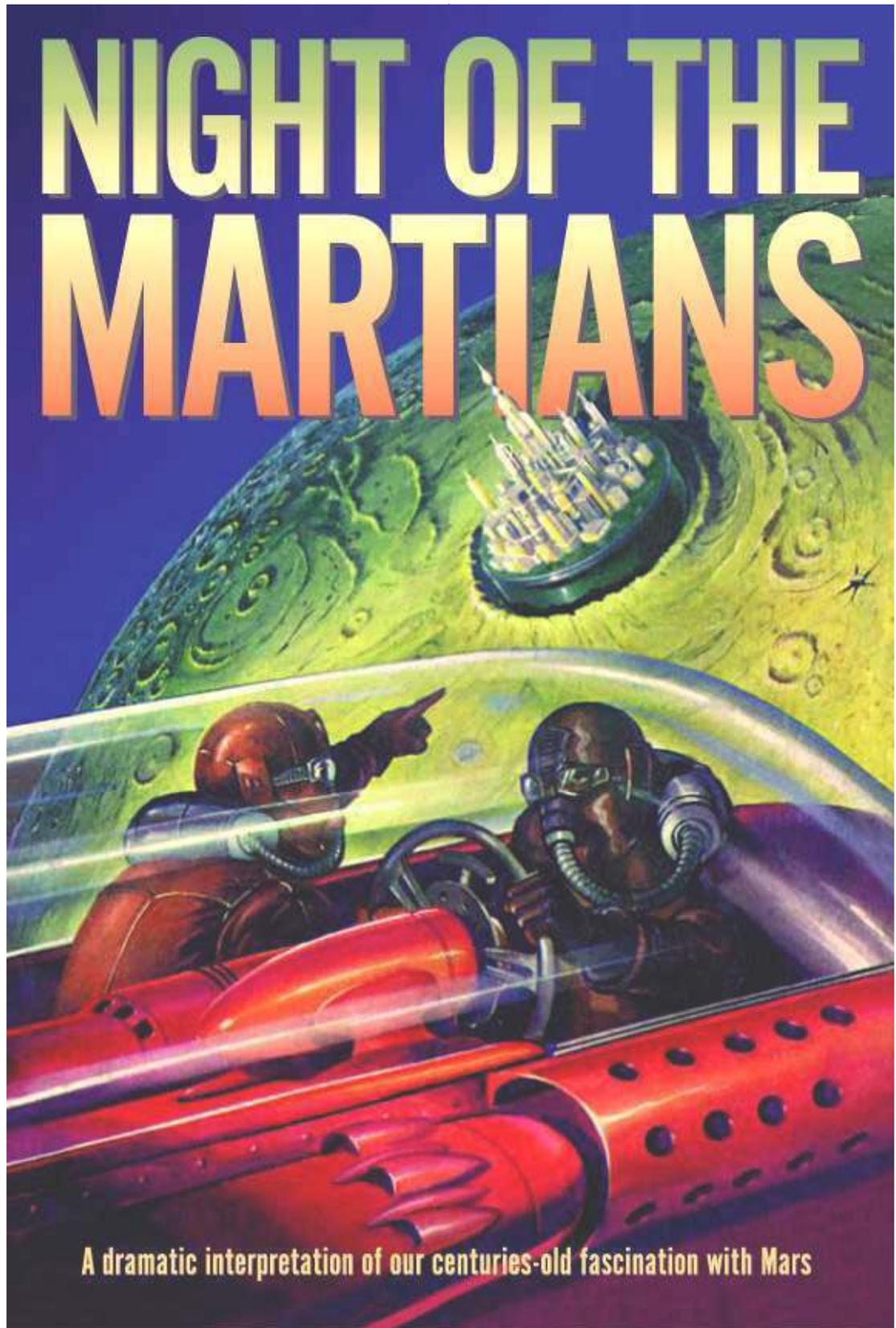
Like *Greatest Wonders* and *Carmen Sandiego*, both *Ring World* and *Mysteries* can be presented with as little as a single video projector yet benefit greatly from the careful use of a large amount of fully integrated 3-D computer animation. In addition, as with *Greatest Wonders*, these new programs have been recorded in both Imperial/Fahrenheit and Metric/Celsius versions and offer supplementary Digistar files for planetariums with either Digistar I or II projectors thus extending applicability to as many theaters as possible. And, as with *Greatest Wonders*, these new programs also come with 10 and 30 second PSAs recorded by the shows' narrators for improved marketing capabilities.



model easily had validity for general audiences as well.

And so, in conjunction with Vancouver, Canada's H. R. MacMillan Space Centre the author created *The Night of the Martians*, a stage play in six acts that traces our fascination with Mars, and more specifically, the notion of life on Mars, from the 19th through the 24th centuries.

Part history, part science fact, part science fiction, and part visionary science, the program intersperses live action scenes with prerecorded scenes to allow for costume and set changes.



Following this discussion is an outline of the program. The scenes which are marked as “Prerecorded” do not contain any on stage actors while scenes which are marked as “Live action” do involve on stage actors.

The Night of the Martians

by

Dr. William Gutsch
and The H.R. MacMillan Space Centre

Act 1, Scene 1 (Prerecorded)

As the play opens, we are near Milan. It is the summer of 1877 and we briefly hear the Italian astronomer Giovanni Schiaparelli recording with amazement his discovery of a mysterious system of fine lines, or “canali,” on the surface of Mars.

Act 1, Scene 2 (Live action)

In moments, we are transported inside the Lowell Observatory near Flagstaff, Arizona. It is 1896 and the institution's founder and benefactor, Percival Lowell, enters for his nightly observations. Excitedly, he describes the exotic, distant world called Mars which fascinates him almost to the point of obsession and tells of his sincere belief that the canali are nothing short of vegetation lined waterways constructed by an intelligent race of Martians. Via computer animation on the dome above, we see Lowell's visions come to life. As the scene ends, Lowell ponders the Martians as he wonders aloud, “What would it be like to meet them?”

Act 2, Scene 1 (Prerecorded)

As the lighting fades (and our actor exits to change costume), we see and hear of early fanciful schemes to contact would be Martians from setting large signal fires in the Sahara to using thousands of hand held mirrors to flash friendly greetings across the ocean of space.

Act 2, Scene 2 (Live action)

Suddenly, the theater is bathed in a thousand swirling reflections. Mirror balls spin slowly as the music of Ramon Raquello and his orchestra fills the air. Courtesy of Orson Welles, the Martians are about to call. It is Halloween Eve 1938 as we reenact selected scenes from the famous radio broadcast of H.G. Wells' *The War of the Worlds*. A change of setting—amid flashing police lights, smoke machines, and laser beams, the audience is transported to a farmer's field outside Grovers' Mill, New Jersey as the first Martian invader slithers from his spacecraft and sprays fire from a deadly “heat ray” in all directions. Another setting shift and we are perched atop the CBS Broadcast Building in New York. Martian war machines wade the Hudson River and poisonous black smoke begins to eclipse the lighted skyline as the theater fades to black.

Act 3 (Prerecorded)

The silence is broken by a countdown. A rocket's light splits the night and thunders skyward. The Space Age has begun. Fiction gives way to reality as Earth invades Mars with a host of spacecraft that reveal an awesome world of giant volcanoes, mighty canyons, sinuous runoff channels, and enormous deposits of subsurface ice ... but no apparent Martians.

Act 4 (Live action)

It is the present and our audience members have become visitors at the Jet Propulsion Laboratory in Pasadena as results from the latest Mars probes are received and analyzed. An actor, portraying a JPL Tour Guide, welcomes the audience and illustrates how news of the latest discoveries and even animated journeys across the Martian landscape are now at everyone's command via the Internet. But even as discoveries pour in, one tantalizing question still waits for a definitive answer. Could there be life on Mars today? A video link with Dr. Bob Anderson of JPL's Mars Global Surveyor, Mars Odyssey, and the Mars Exploration Rovers Missions (on location on the JPL Mars-scape with a twin of the Rovers actually on their way to Mars) gives rise to some lively conversation and speculation.

Act 5 (Prerecorded)

Future Mars missions come to life on the theater's dome culminating with the first manned mission to Mars. It is 2048. Through animation and special effects, we travel with the first humans to set foot on another planet.

Act 6 (Live action)

A final transition and our actor(s) return one last time. It is the year 2350 and we are within the “Holodeck” of a terraform monitoring station in orbit around a new Mars. Dressed in futuristic garb including data gloves that glow brilliantly, our engineer-host gestures toward the Holodeck's dome. As the engineer talks, random swirls and flashes of light transform, as if by magic, into scenes that illustrate the terraforming of Mars into a second Earth—a world with rivers, gardens and breathable air. Beaming with excitement, our host's spouse and children call out from a view screen above. They are just completing the long journey from Earth and are about to dock with the station. Soon, the family will be reunited and travel down to the surface of the planet together to become pioneers on this new world and begin their new lives... as the Martians.

(continued on page 28)

HST's Greatest Hits '96

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Memphis, Tennessee
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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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		

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Again, with *Martians*, significant amounts of original color computer animation on pure video black have been incorporated into some full-dome scenes that also utilize standard slide panoramas, slide all-skies, lasers, fog machines, and some other standard planetarium special effects.

The new Clark Planetarium in Salt Lake City, Utah will also perform the play this year, and they are expected to add some exciting full-dome video elements for their new Digistar 3 system.

Using a technique that was also introduced and developed from *Wonderful Sky* through *Robots in Space* and on through the two *Carmen* productions, some scenes in *Martians* will incorporate several real time interactions between the the program's live presenters (who are actors portraying the JPL Tour Guide and the engineer in the 24th century) and pretaped scientists or actors.

The illusion that is thus created for the program's audiences is that of live interactions between these persons while the prerecorded video elements allow for the inclusion of other characters at remote locations that would be impossible or cost prohibitive to present on a daily basis.

In one case, this involves a video link between the live actor in the planetarium theater and Dr. Bob Anderson, a JPL planetary scientist on

the indoors Mars-scape at NASA's Jet Propulsion Laboratory.

In the second instance, we see the spouse and children of the terraforming engineer calling him for a warm long distance exchange *via* "video/telephone" on the engineer's birthday.

In both cases, an additional human dimension is thus added to the program that could not be achieved by other means.

As with *Robots* and the *Carmen* programs, *Martians* does require some additional work and a moderate amount of expense to stage, but the program easily and quickly makes up for this through increased attendance and revenue. There is also an increase in audience appeal plus the additional opportunity for some extraordinary public relations creating a regularly scheduled program that is truly an "event" that is above and beyond the standard, prerecorded public sky show.

In conclusion, as full-dome video becomes more and more commonplace in planetariums around the world, more and more show production, including that of the author, will naturally move in this direction. For the present, however, the production style and the techniques explored above can still have a major impact on attendance, income, and public relations for the majority of the world's planetariums at a reasonable cost.

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: _____

