

President's Message

It is hard to believe that this is my last President's Message. Where does time go? Hey, that was just a figure of speech. I don't want to open up another can of worms such as those recently on Dome L. Can of worms is also a figure of speech and not related to worm holes... but I digress.

I hope that in the last two years that I have served as your President, I have been able to help carry our organization in a direction that better serves you. It has been an honor and I look forward to continuing my efforts as Past President for the next two years. I would also like to take this opportunity to thank Mike Chesman for his outstanding service and leadership as he rotates off of council. Mike will continue to stay busy with the Membership Guidebook so please send in your information upon his request. This guidebook is a valuable tool and documents the history and foundation of our organization.

As Mike Chesman exits, Michael Sandras enters as our new President Elect, while Dave Maness takes the helm. I would also like to take this opportunity to thank John Hare and Duncan Teague for all their help on council. We are very fortunate to have two hard working professionals that continue to anchor our organization. It is amazing how much work Duncan has to do on a yearly basis as our Secretary/Treasurer, as well as our Editor for Southern Skies. We can never thank Duncan enough for all of his efforts. Remember how difficult it is to submit columns for publication and imagine if you were in Duncan's place trying to put together a quality journal with a lack of submitted material. I would also like to thank Ken Moore for his service as WebMaster. Please submit any new or interesting material to council for Ken to post. Like the journal, the Web site can only be as good as the support we give it.

Our organization has been very lucky to have members and facilities that like to support our regional efforts by hosting our annual conference. Seldom do we have to go out and twist arms for a place to meet. I would like to extend an appeal to you now for considering hosting the 2003

conference. Next year Jack Fletcher has insanely agreed to host the joint SEPA/GLPA conference in Richmond, Kentucky. Thank you Jack and I hope you don't turn

George Fleenor
President
Bishop Planetarium
Bradenton, Florida



prematurely gray from this endeavor!
<Grin>

I would also like to thank Phil Groce and the folks in Baton Rouge for their offer and acceptance as the host site for 2002. I hope that during the 2001 business meeting we will be able to select a site for this date. Take it from me and anyone else who has ever hosted or helped to host a conference, you need at least the two years to prepare. Time has a way of slipping up on you! (That's just another saying!)

Support of the membership is very important in all of the projects and goals set forth both by council and the membership at large. I would like to thank all of those who continue to support our mission, serving on various committees. There is only so much time we can devote to various projects on a personal level, and strength in numbers allows us to accomplish our set goals. Please continue to offer your

(continued on page 38)

IPS Report

John Hare
IPS Representative

IPS President, Dale Smith has been promoting a once in a lifetime opportunity for planetarians. See details below for a special conference announcement:

SRI LANKAN SKIES AND SIR ARTHUR: A 2001 ODYSSEY

We invite you to celebrate the year 2001 by attending a special planetarium conference Sri Lankan Skies and Sir Arthur: a 2001 Odyssey. This unique international conference will meet in the island nation of Sri Lanka from Monday Saturday, March 19 24, 2001. The conference will feature a keynote address by Sir Arthur C. Clarke, professional sessions on the theme Teaching the Universe in the 21st Century, night sky observing, visits with school classes, and an introduction to the culture and landscape of Sri Lanka.

The conference will open with two days in Colombo. They'll include the keynote address, paper sessions, panel discussions, and planetarium shows and lessons. The conference will then move to the scenic interior of Sri Lanka. We'll go to local schools, visit historic and cultural sites, observe the night sky near the equator, enjoy breathtaking scenery, and have time to continue many discussions of the conference theme as we travel together.

The 23 meter, 570 seat Sri Lanka Planetarium serves 250,000 visitors annually. Its goal in hosting this conference is to provide a unique opportunity for planetarians from developed and developing countries to meet, share, and plan for the future together. The inclusive registration fee of US\$540 covers all expenses within Sri Lanka during the conference, including accommodations, meals, travel, and conference costs. Sri Lankan Airlines has agreed to offer a 10% rebate on individual economy class fares on most international routes.

Find complete information on the conference at <www.slnews.net/slplanet>. The Web site includes a detailed schedule, travel information, photos, and forms to register and to submit papers. The conference language is English. The registration deadline is January 1, 2001. Due to limited

accommodation at some sites on the itinerary, the conference will be limited to the first 100 registrants, so you are encouraged to register as early as possible. If you have questions, please contact either of us. We and Sir Arthur look forward to greeting you in 2001!

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Sri Lanka Planetarium
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phone/ fax +94 1 586 499

Dale W. Smith, President
International Planetarium Society
<dsmith@newton.bgsu.edu>

SEPA's April Whitt of Fernbank in Atlanta is already on the conference agenda to present a program. I'm also planning to attend cashing in tons of frequent flier miles in order to make it possible. Any other takers from SEPA? If we each carried a 6 pack of Woodchuck...

IPS membership runs on a calendar year basis, so now is the perfect time to join. Membership dues are \$50 for one year and \$90 for two years. For membership contact IPS Treasurer Shawn Laatsch, <102424.1032@pen.k12.va.us>. For your IPS dues, you receive many benefits:

- 4 issues a year of the IPS journal, Planetarian
- the IPS Directory of the World's Planetariums
- the IPS Resource Directory
- occasional special publications
- low subscription rates to the new IPS slide service
- low prices on IPS video disks and shows
- access to Astronomy Link
- notices of the biennial IPS conference
- access to all resources on the IPS Web site, including members only pages soon to be created
- best of all, being part of a global community of dedicated planetarians like yourself!

Further information on IPS is available

Apologies, a Marvelous Vacation, and a Blessed Event

I apologize profusely for the lateness of this issue of Southern Skies. My personal and my professional lives both became unexpectedly busy this fall. I'll try my best not to distribute an issue this late again.

As some of you may know, my younger daughter is a singer with the Walter Painter Company, the producers of entertainment for Silversea Cruises. Due to the hostilities in Israel, two of the cruise itineraries to the Middle East were not completely booked, and my wife and I got to join our daughter Christy in the middle of her six month contract on board the Silver Cloud.

We sat on pins and needles for about a month. If paying customers booked the vacant rooms, we wouldn't be able to go. As luck would have it, the problems in that area of the world worsened, and there were plenty of cancellations for the cruises. With three days to go before departure, however, the cruise itinerary changed. We learned that we'd have to fly home from Cairo, Egypt instead of Tel Aviv, Israel. We had to make our own travel arrangements, and the replacement tickets didn't arrive

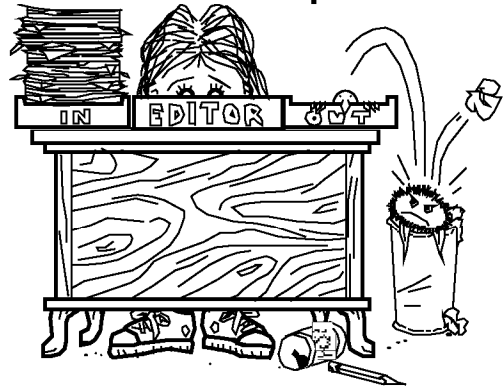
until three hours before we were supposed to leave for the airport. Whew!

My wife and I had one of the most marvelous vacations we've ever experienced. We flew into Istanbul, Turkey, and we got to visit some other beautiful ports on the Turkish Riviera and the islands of Rhodes and Cyprus.

Other than being able to watch Christy perform in her shows, the highlight of the trip was going to see the Pyramids and the Sphinx just outside Cairo. The fingers that are typing this message actually touched the Great Pyramid. I'm still daydreaming.

My daughter Kathy is in Cincinnati. She's expecting our first grandchild in mid February, so please get any material for

Duncan R. Teague
Secretary/Treasurer
Southern Skies Editor
Craigmont Planetarium
Memphis, Tennessee

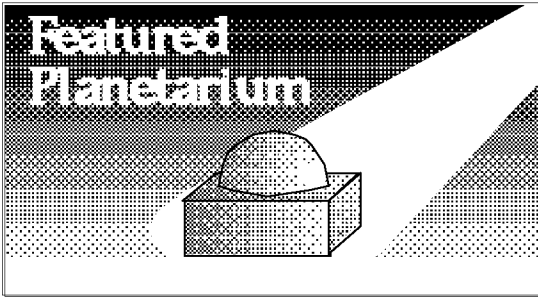


Mike Cutrera

Send your \$25.00 check made payable to SEPA to the following address:
Craigmont Planetarium, 3333 Covington Pike, Memphis, TN 38128 3902

Name		
Planetarium		
Organization		
Address		
City		
State	Zip	
Area	Voice	
Area	Fax	
Position		
E-mail address		

Featured Planetarium: Morehead Planetarium, Chapel Hill, North Caro-



Kelly Quinn
Featured Planetarium Ed.
Bishop Planetarium
Bradenton, Florida

Author
Kelly Quinn
Hallstrom Planetarium
Fort Pierce, Florida

Morehead Planetarium began in the 1940s as a dream of engineer and diplomat John Motley Morehead (1870-1965) to do something special for his native state North Carolina. Astronomy was among

his principle interests, and accordingly, Morehead decided to build an observatory at his alma mater, the University of North Carolina at Chapel Hill, to benefit the children of the state.

Things took a slightly different direction, however, when Morehead consulted with famed astronomer Harlow Shapley. Shapley explained that an observatory is a technical tool for researchers, and would provide only limited benefit to a state whose people were, as he put it, astro-

nomically ignorant. Shapley related that, during a bright cometary apparition only a few years before, letters of inquiry about the celestial event poured into his Harvard College Observatory from every state in the Union—every state, that is, except North Carolina. Your state needs cosmic awakening, asserted Shapley. While offended by Shapley's characterization of his fellow North Carolinians, Morehead nonetheless took his advice and proceeded to build the sixth planetarium in the United States.

Unfortunately for the project, the Carl Zeiss factory lay in ruins in post-World War II Germany. At least nine of the world's 27 planetaria had also been bombed out of existence. To top things off, no other planetarium manufacturer existed at that time. Where could Morehead find a machine?

Early in the previous decade, Morehead had served as US envoy to Sweden and had seen the wonders of the Zeiss Mark II planetarium in Stockholm. He learned that



this instrument had miraculously survived the war, so he quickly made arrangements to purchase it for \$67,000.

After architectural designs were drawn up by Eggers and Higgins (the same firm that designed the Jefferson Memorial), ground was broken in 1947, and the Morehead Planetarium opened its doors two years later on May 10, 1949. The new \$3 million Morehead Planetarium Building was unique in that it housed not only the 68 foot planetarium and limited exhibit area, but also a large, majestic, domed rotunda and art galleries; a faculty reception room and lounge; and a stately, domed dining room. In addition to the planetarium operation, the building also became the home for the Morehead Foundation, administrator of scholarship programs designed to attract superior students to the UNC Chapel Hill campus.

As an additional gift from Mr. Morehead, a large rose garden was built on the north side of the planetarium in 1956, with a 35 foot diameter sundial as its centerpiece. Ringing the terrazzo dais of the sundial are the words, It is always morning somewhere in the world, and Today is yesterday's tomorrow. In September 1956, the sundial was established as an official triangulation station by the U.S. Coast and Geodetic Survey.

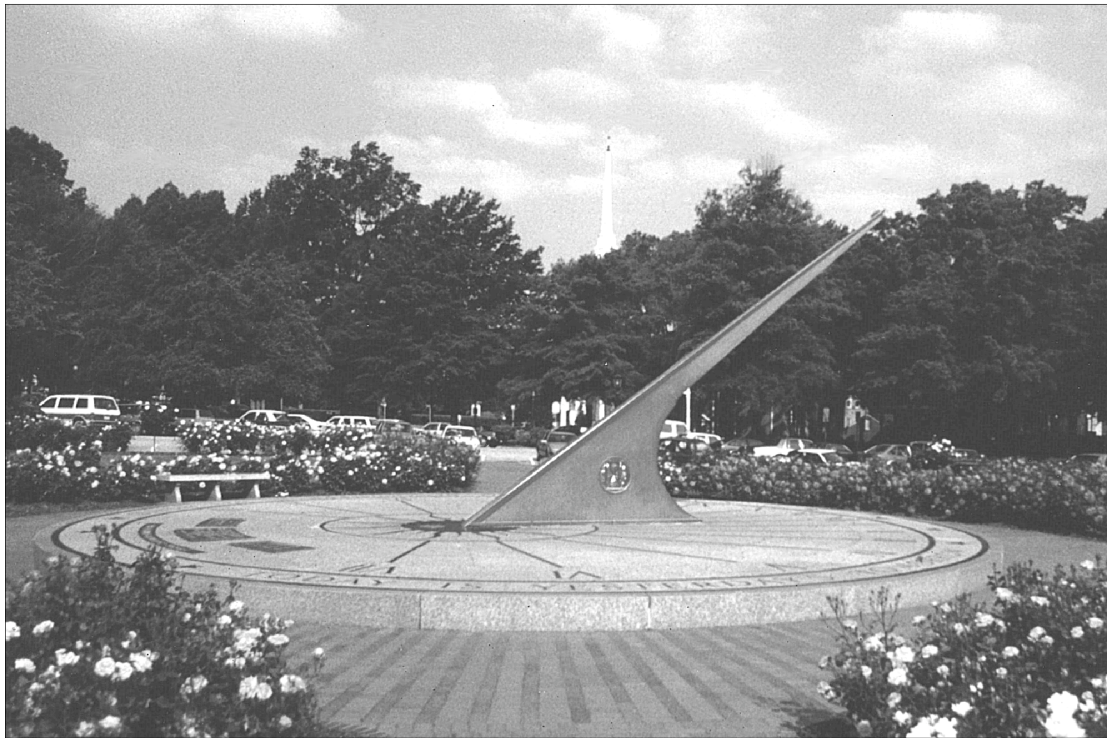
In 1973 an east wing was added to the building to house new administrative and social headquarters for the Morehead

Foundation, a 500 seat banquet hall, and an observatory supervised by UNC's Department of Physics and Astronomy. The new wing provided the building with the symmetrical footprint it has today.

Morehead Planetarium has had an interesting history. It has been helmed by only three directors since it opened its doors 51 years ago. The first director was Roy K. Marshall, previously the head of the Fels Planetarium in Philadelphia. Assisting him in the role of planetarium technician during those early days was fellow Fels veteran Anthony F. Tony Jenzano. Marshall, however, left Morehead on March 1, 1951 less than two years after opening the planetarium. At that point Jenzano was appointed planetarium head and continued in that role for the following three decades. Under Marshall and Jenzano, Morehead quickly became a prime educational and cultural center for the area. It attracted a total attendance of nearly 900,000 during its first decade of operation an impressive figure for a predominantly rural area in the south.

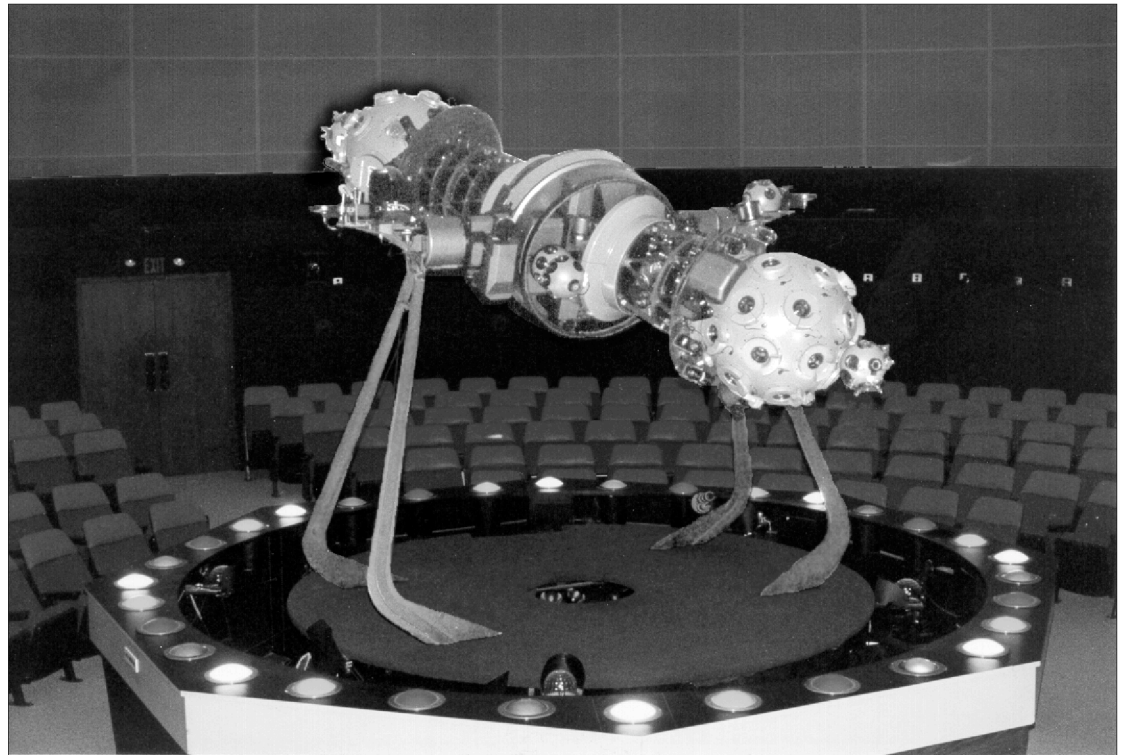
Tony Jenzano distinguished himself as a strong, innovative, and dynamic leader, in creasing Morehead's visibility both locally and internationally during his tenure. In addition, with his strong technical background, he recognized the need to upgrade the planetarium's technology, and strove to keep Morehead on the cutting edge. Under Jenzano's direction, the Zeiss star

Morehead Planetarium
continued



machine was upgraded to a Mark III version in 1959. With financial help from the Morehead Foundation, the star projector was replaced with a Zeiss Mark VI in 1969. Computer automation was integrated into

manually opening and closing maneuvering thruster valves. The procedure culminated in the most accurate splashdown of the entire Mercury program! In November 1969, the Apollo 12 crew used the stars



the facility in the early 1980s.

Perhaps Jenzano's most notable contribution was establishing Morehead Planetarium as part of America's pioneering manned space program. Under his leadership in 1959, Morehead became the official celestial navigation training center for NASA's space flight crews. Throughout the years that followed, Jenzano, and other planetarium veterans such as Don Hall and Dick Knapp spent numerous hours in the planetarium theater preparing Mercury, Gemini, and Apollo crews for critical aspects of their history-making space missions. From 1959 through 1975, all but one astronaut (Apollo 17's Harrison Schmitt) who flew Mercury, Gemini, Apollo, and Skylab missions, trained for their historic space flights at Morehead Planetarium.

Morehead's training paid off for the early space pioneers. In fact, it proved critical to mission success and astronaut safety on at least three occasions. In May 1963, Gordon Cooper guided his navigation-crippled Faith 7 Mercury spacecraft back to Earth by sighting key stars and constellations through his spacecraft window, while

to realign their guidance platform in Earth orbit after lightning temporarily knocked out power in their command module during launch. And the crew of the near-disastrous Apollo 13, in April 1970, used their stellar navigation training just before atmospheric re-entry to verify Sun-based navigation settings they had made earlier in the flight.

At the end of a long and distinguished career at Morehead, Tony Jenzano retired in September 1981, with Dr. Lee T. Shapiro formerly of the Abrams Planetarium taking over the following year. Under the direction of Shapiro and implementation by Facilities Manager Jim Horn, the planetarium has expanded its revenue production avenues through a major gift shop expansion, increased room rental operations, and the introduction of a 35mm film system.

As mentioned earlier, Morehead Planetarium features a Zeiss Mark VI star projector, centered under a 68-foot diameter dome, along with 300 concentrically patterned seats. In addition, the theater features 53 Kodak SAV slide projectors including two zoom slews and dissolvable all-skies and

panoramas and over 100 special effects projectors. Although the theater is controlled with essentially the same R.A. Gray automation system installed in the early 1980s, the original MC 10A computer was replaced in 1994 with a new, user friendly front end custom designed by East Coast Control Systems. The theater also includes a custom integrated video system, as well as an in house designed sound system. The vast majority of technical support and systems development has been performed by the Morehead technical staff over the years. Staff work areas include several office spaces, a technical shop, an art and photography shop, a sound studio, and a small video editing and offline automation programming area.

Although part of a state university, roughly two thirds of Morehead's program, show production and associated staff salaries are paid for through its theater admissions and gift shop sales. Aside from the planetarium theater, however, there is an entire group of other building operations currently managed by planetarium staff including room rentals to university organizations, and building related support for three other UNC departments.

Approximately 1,800 star theater shows are presented yearly at Morehead. Annual attendance averages around 110,000, which is about evenly split between school groups and general public admissions. School programs are available by reservation on weekdays during the September - May school calendar from 9:30 a.m. - 2:30 p.m., including shows for preschoolers through high school and beyond. Most of these live and taped programs including subjects ranging from stars and constellations, to the solar system and planetary weather, to stellar evolution and cosmology are specifically aligned with the North Carolina state science curriculum objectives.

Typically Morehead presents 17 public shows each week. They are shown in the evenings on Wednesdays through Saturdays, as well as on Saturday mornings, and Saturday and Sunday afternoons. The public schedule is further expanded during school breaks and holidays. In addition the planetarium conducts scheduled classes on a variety of astronomy related topics, and schedules observing sessions for the public.

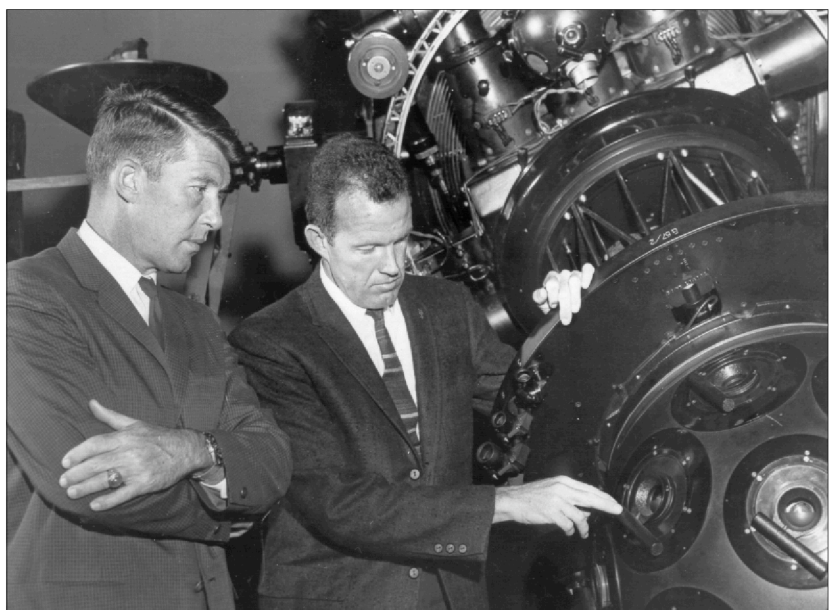
Morehead's program philosophy is to provide audiences with educational, en-



tertaining, and scientifically accurate presentations that have as high an aesthetic and technical quality as possible, within the limitations of its current technologies. To that end, the staff spends long hours writing and producing programs, as well as keeping the planetarium equipment running as smoothly as possible, despite the fact that most of the production and presentation technologies are at least two decades old. No technology and program style can, however, remain viable forever, and Morehead is currently evaluating new dynamic programming philosophies and technologies to renew its mission of astronomy education well into the future.

Perhaps with a bit of luck and a lot of hard work and planning, this grand old planetarium theatre will soon launch itself into new and energetic educational approaches for North Carolinians that would

Morehead Planetarium
continued



Small Talk

Elizabeth Wasiluk
Small Talk Editor
Berkeley County Plan-
etarium



Below: Peter Chin of NASA Goddard shows us a prototype mirror that is very light weight—a boon to amateur astronomy and future space telescopes. This was at the Mason-Dixon star party in York, Pennsylvania.

I'm sorry I didn't see you at the SEPA meeting in North Carolina. I feel like the kid who missed coming home for Christmas. Glad to know that you all had a wonderful time and that Duke and Karen loved you well and at least some of you raised one or more Woodchucks in absence.

Each year I try to attend the Mason Dixon star party in York, Pennsylvania. This year it conflicted with the date for SEPA. Conrad Jung from the newly revamped Chabot Observatory and Science Center was coming. If his facility gets the IPS conference in 2004, he'll have more than his share of planetarium conferences. He wanted to go to Mason Dixon to win first prize in all the astrophoto competitions he entered. Mason Dixon gives me a chance to hobnob with buddies in the Tri State Astronomy Club and others throughout the region. Caroline Collins Petersen from Sky and Telescope was there. Larry Marshall from



I might never get selected again, I decided to grab this opportunity, although I had to miss going to the IPS meeting in Montreal. The planetarium in Montreal was the first one I was ever in as a high school French student. This was where I said, 'Wow, I'd like to do this for the rest of my life.' And shazzam, here I still am.

I arrived the Sunday before July 4th. There were 28 other educators who came from all parts of the east coast and mid west. Our first night together everyone brought something characteristic of the region from which we came. I got all sorts of neat stuff from chip clips to fresbees from Fermi Lab, Cape May diamonds, candles from Bedford Village in Pennsylvania, Hermitite, water from the Hudson River, sand from Florida, Lebanon bologna, Tastic Cakes, and some mango wine and bourbon cherries from the Kentucky Derby.

My roommate brought box loads of Massachusetts memorabilia, most of it edible. I brought a do it yourself planetarium plan to build one for your classroom with a projector made



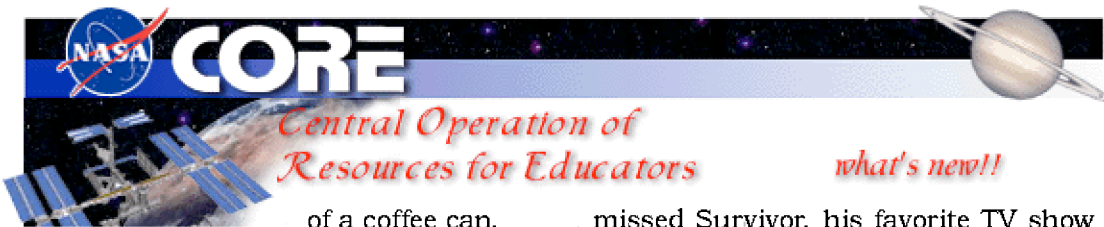
Top right: Dr. James Garvin does the Martian presidential brief for us at NASA Goddard.

Bottom right: Fireworks in Washington, D.C.

Gettysburg College Observatory told us his students have discovered asteroids.

Each year I apply for NASA's NASA Educator Workshop (NEW). It's co-sponsored by the National Education Association. The workshop is for math and science educators in grades 5-12. I've been applying for seven years, and this year I was selected.

NASA and NSTA pay your way for two weeks of fun at the Goddard Space Flight Center and Wallops Island. Since I thought



*Central Operation of
Resources for Educators* *what's new!!*

of a coffee can.
On July fourth many traveled to D.C. and got squished into the subway after the grand fireworks display.

My partner was an Indiana private school teacher named Pat, who has a NASA flight suit and makes even less money than I do, was my companion. We negotiated a table in the Museum of Natural History and squeezed our way through crowds to see the Hope diamond.

At the Greenbelt Holiday Inn, I discovered a terrible smell. Some guy had keeled over dead in his car and cooked for a few days in the parking lot. Some other teacher participants gave me the play by play of the investigation team descending on the hotel.

If people weren't dying in our hotel, they were getting married. It wasn't uncommon to step off the elevator into a wedding party. At Goddard we had dinner with D.C. native astronaut Frederick Gregory who told us without slides or notes what it's like to pilot the Space Shuttle. He

missed Survivor, his favorite TV show to speak to us.

We had a teleconference with astronaut Steve Smith. He worked on a Space Telescope repair mission in 1999. He was turned down as an astronaut the first try and tried again after getting more training and education.

We toured Wallops during our second week and launched rockets, kites, and balloons with cameras to do remote sensing. We watched a weather balloon launch, simulated a Pegasus rocket launch, and learned about getting a student payload on a rocket or the space shuttle. Payloads are packed and unpacked at Wallops. Wallops is near Assateague Island, so we scheduled some beach time and seafood for dinner.

Wallops Aerospace Education Specialist Tony Goodyear was a real Mr. Wizzard with a whole array of hands on activities. He had a terrific package of material to supplement Follow the Drinking Gourd. It included a nice NASA video starring astronaut Frederick Gregory. If you'd like to get it you can from:



NASA CORE
Lorain County JVS
15181 Route 58 South
Oberlin, Oh 44074
440 775 1400 (phone)
440 775 1460 (fax)
<nasaco@leeca.esu.k12.oh.us>
<[http:// core.nasa.gov/](http://core.nasa.gov/)>

NASA CORE will give you a catalog of wonderful videos that you can obtain at very little or no cost.

We saw a prototype plane that may fly on Mars after being released by a spacecraft. It was fun to see the enthusiasm of the scientist in charge of this project. I learned of the Virginia Space Grant Consortium, which is helping build a launch pad where larger payload rockets will be launched next year from Wallops.

After NASA we had a short time to get to the Space Science XV: Chandra and the X ray Universe workshop at the Wright Center

Left: A Shuttle/Space Telescope mockup at NASA Goddard.



for Innovative Science Education at Tufts University in Medford, Massachusetts.

Many of you remember seeing the Space Shuttle Columbia with Chandra as the payload. The control room and clean room

where the detectors were built is at MIT. This is the first spacecraft control center located outside a NASA center.

We met several people who helped design x ray detectors for the telescope. Wright Center folks treat you nice, and their workshops are popular. Check out their Website for information on summer workshops: <<http://www.tufts.edu/as/>

<wright_center/index.html>. The Chandra Web site is <<http://chandra.harvard.edu>>. Their respective e mail addresses are as follows: <Wright_center@emerald.tufts.edu> and <cxpub@cfa.harvard.edu> From the Chandra Web site you can send e mail postcards with Chandra images to friends.

At Wright Center, we met Dr. Didier Raboud from the University of Geneva (Switzerland) which boasts a 60 cm reflecting telescope with a CCD camera, a 20 cm refracting telescope, and a coelostat. He does many innovative science plays which combine mime, music, and images. They remind me a lot of Cirque du Soleil.

Three presentations done so far include Impossible Manipulation, The Comet Makers, and The Oracle of Delphi which takes place way below the ground in the Cern Switzerland Particle Accelerator. The

Science of Food is next. (I sent Didier a copy of The Curious Cook.) Productions may be staged on a tour to San Francisco, London, and Paris.

They also did a special on eclipse day 1999 called A Trick Of The Moon. Scale models of the Sun, Earth, and Moon were arranged so people could understand what's going on during an eclipse. The Sun model was at the lake's center, and you could take an eight minute (light speed) boat ride to get there from the Earth model.

Check out their Web site which includes some of the original sound tracks created for this presentation at <<http://www.icare.ch/OFXB/>>. They have also done two summer schools for teachers and interested folks. The



Above: The perfect activity after seeing the shuttle at Kennedy Space Center was attending the Tufts University Wright Center Workshop on the Chandra X-Ray Center.

Center: The new GBT is up and fully functional. Betty Wasilik was there for the dedication on August 27, 2000.

Bottom: Carole Helper and crew visited the new GBT site on a trip from SEPA in Roanoke.

Taking Back the Night

How many stars have you seen lately? If the present trend continues, that number may start to grow slightly rather than decline.

On October 17, 2000, SciWorks Planetarium hosted a meeting of the Greater Triad Illuminating Engineering Society lead by Jim Edmonds from Duke Energy. The meeting featured astronomer Dr. Dan Caton, the North Carolina IDA president, David Hatcher, product manager for outdoor lighting with General Electric, and an introduction provided by SEPA's very own Saving the Night planetarium show. Local planning boards from a dozen nearby towns were also invited as well as Forsyth Astronomical Society.

After addressing issues such as light trespass, pollution, and other light pollution issues, some IDA friendly light fixtures were demonstrated.

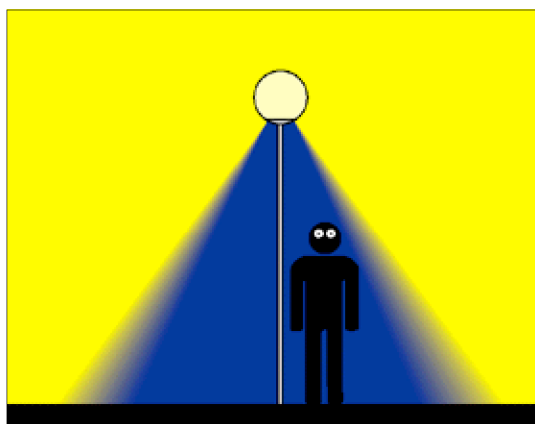
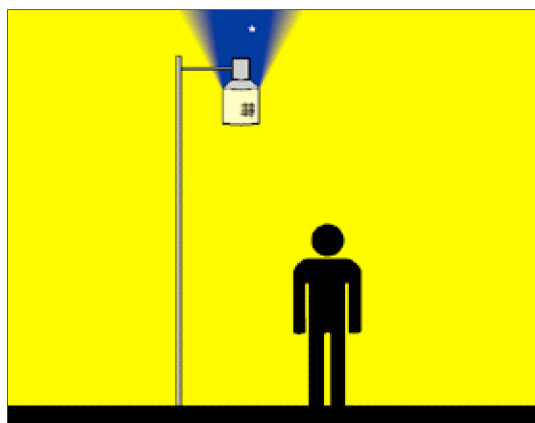
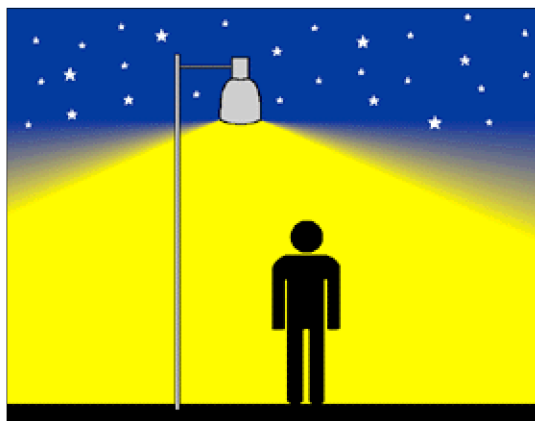
The result... a positive beginning in two steps.

Step 1: Duke Energy will set up free day workshops for municipalities on a regional level across the state of North Carolina during the first quarter of calendar year 2001. The 20-30 largest cities in each region will be invited to send representatives of their planning boards to learn more about sky friendly lighting and discuss the importance of planning for lighting ordinances.

Step 2: Duke Energy will help towns draft ordinances incorporating a variety of sky friendly lighting techniques with an emphasis on using full cutoff lighting fixtures.

At last report, spinoffs from this meeting may be coming to a community near you. Check with your local power provider. The Forsyth Astronomical Society also video taped the presentation with three cameras and plans to produce a program for local cable access.

Saving the Night provided a perfect access point into the light pollution conversation. All agreed that the thorough and concise show greatly helped get the meeting off on the right foot.



Above: The Good: cost efficient; directs light down and to the sides as needed; provides light control; reduces glare; provides more even illumination; reduces light trespass onto neighboring properties; helps preserve dark night sky.

Center: The Bad: wastes energy into the sky; glare, light trespass, and harsh illumination.

Bottom: The Ugly: illuminates little but

Duke Johnson, Director
SciWorks Planetarium
Winston-Salem,
North Carolina

These outdoor lighting graphics courtesy of University of Texas' McDonald Observatory. Web site located at vc.as.utexas.edu/lighting/lighting_graphic.html

Digital Cosmos

Geomorphology From Space



Erich Landstrom
Digital Cosmos Editor
South Florida
Science Museum
West Palm Beach, Florida

Geomorphology From Space: A Global Overview of Regional Landforms
Edited by Dr. Nicholas M. Short, Sr. and Dr. Robert W. Blair, Jr.
Published in 1986 as NASA Special Publication 486 (currently out of print)
Available on CD ROM and viewed with Adobe Acrobat Reader 3.0 or later

Windows System Requirements:
(Windows 3.1/3.11, 95, or NT)
- 80386 processor or greater
- 8 MB of RAM (16 MB for Windows NT) for Acrobat Reader
- 10 MB (5 MB for Windows 3.1 and 3.11) of available hard disk space

Macintosh System Requirements
- 68020 processor or greater
- Mac OS 7.1 or later
- 3.5 MB of RAM (5 MB for Power Macintosh) for Acrobat Reader

Unix System Requirements
(Sun SPARCstation®)
- SunOS 4.1.3 or 4.1.4 or
- Solaris 2.3, 2.4, or 2.5

Internet
<http://daac.gsfc.nasa.gov/DAAC_DOCS/daac_ed.html>

To Order:
Contact Goddard Space Flight Center
DAAC help desk at (301) 614 5224 or
<daacuso@daac.gsfc.nasa.gov>

(Les Gold from NASA's KSC Aerospace Educator Service Program kindly gave me a review copy of Geomorphology. You may want to contact your local NASA center AESP for a copy.)

With no ill intent to the poetic truth of a picture being worth a thousand words, without a caption to explain, sometimes I'd just as soon not bother. After all, I get very different information out of an atlas, a census report, a surveyor's map, and a nighttime aerial photograph, even if they are all of the exact same location. Geomorphology From Space: A Global Overview of Regional Landforms discusses various Earth and planetary landforms and landscapes, including their description, classification, origin, and development, illustrated with a rich collection of space images. It was originally published in 1986 as NASA Special Publication 486 but is currently out of print and only available on CD ROM. The contents of the CD ROM can be viewed with Acrobat Reader 3.0 with the search, form, and autoindex plug ins. Installation procedures follow the aforementioned system requirements. I suppose doing a software review on what was initially a book but now a CD ROM is cheating somehow, so let me go all the way, and let the words of the authors and editors describe what this software gem is all about. But take my personal advise on this: do not not let Geomorphology slip away again without getting a copy of it! In an earlier review I praised 3 D Tour of the Solar System by the Lunar and Planetary Institute for the attention paid to geomorphology to make it useful in science education. Likewise, Geomorphology from Space serves more than the research community. Teachers of earth science at all levels should find it an exciting adjunct to their customary texts. The lay person, too, can share the wonderment and beauty of the Earth as seen by our space eyes. In the words of Noel W. Hinners, then director of NASA GSFC, To do so can but enhance one's sensitivity to the need to nurture our one and only Planet Earth.

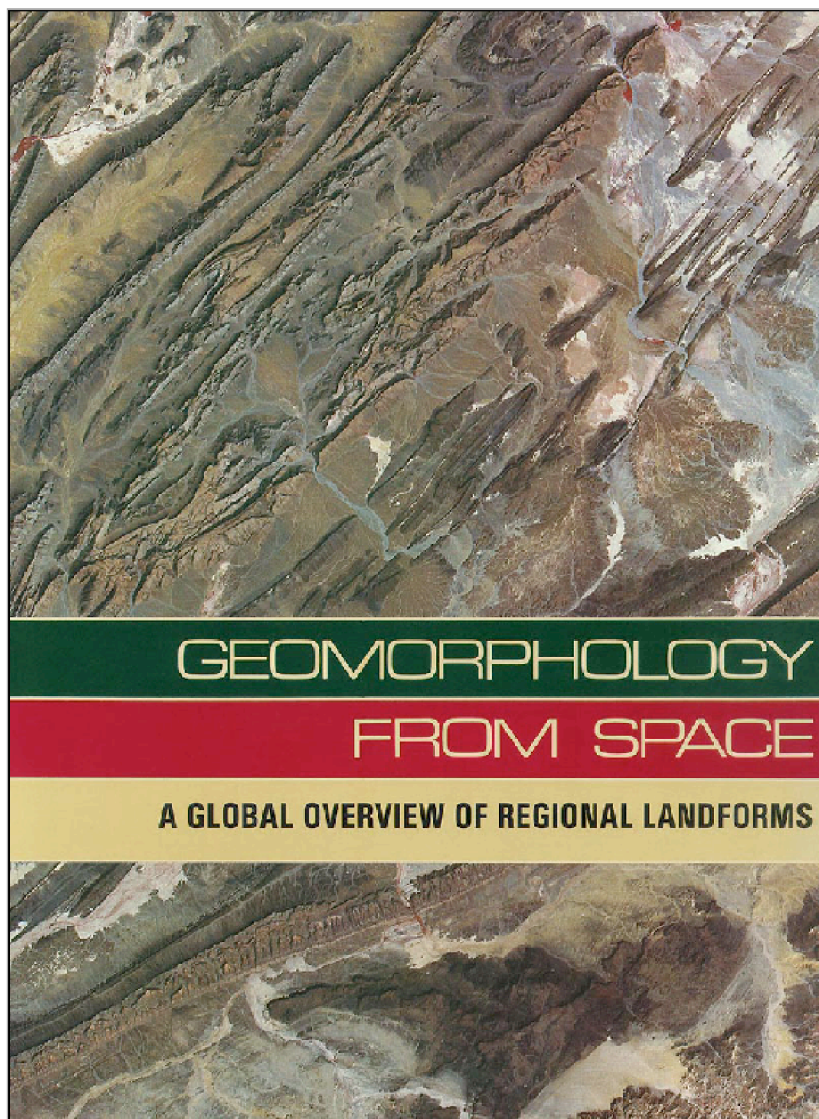
Geomorphology is the study of landforms and landscapes, including the description,

classification, origin, development, and history of planetary surfaces. The 21st anniversary meeting of the British Geomorphology Research Group in March 1981 introduced the term mega geomorphology. The proceedings of that meeting (Gardner and Scoging, 1983) reveal that the concept was not well defined. It clearly involves a return by geomorphologists to the study of phenomena on large spatial scales, ranging from regions to continents to planets. It also involves large time scales. Nevertheless, mega geomorphology is merely a convenient term, unencumbered by past philosophical trappings, that emphasizes planetary surface studies at large scales.

The purpose of the book is threefold: first, to serve as a stimulant in rekindling interest in descriptive geomorphology and landforms analysis at the regional scale; second, to introduce the community of geologists, geographers, and others who analyze the Earth's surficial forms to the practical value of space acquired remotely sensed data in carrying out their research and applications; and third, to foster more scientific collaboration between geomorphologists who are studying the Earth's landforms and astrogeologists who analyze landforms on other planets and moons in the solar system, thereby strengthening the growing field of comparative planetology.

The core of the book is a gallery of space imagery consisting of 237 plates, each treating some geographic region where a particular landform theme is exemplified. A plate usually consists of a two page spread with the image on the right side, a commentary (an extended caption)

on the left, and ancillary (supporting) photographs, index (locator) maps, and sometimes a geologic map at the bottom of both pages. A few four or six page spreads are allotted to mosaics or oversized images, or to topics requiring extended text and more photographs. In one sense, this gallery stamps Geomorphology from Space as mainly an atlas like collection of images, except that the emphasis in the commentaries is centered on the scientific information content of the primary image. The arrangement of the gallery is by geomorphic theme: (1) Tectonic (Structural), (2) Volcanic, (3) Fluvial, (4) Delta, (5) Coastal, (6) Karst and Lakes, (7) Eolian, (8) Glacial, and (9) Planetary Landforms. This last topic is in keeping with the current awareness of the importance of (comparative) planetary geomorphology to the NASA space exploration program in general and with the growing realization that understanding of formative processes



of surface features on other planets has obvious feedback effects on recognizing many terrestrial counterparts.

The number of plates allotted to each gallery chapter varies from 15 to 27 for all but the Tectonic chapter, which is deliberately longer for two reasons. The natural diversity of tectonic landforms warrants more, and it serves as a synoptic overview and summary of the general geology of the entire globe. The sequence of plates within each chapter was determined by the author(s) of that section. Two choices were available: arrangement either by geographical distribution or according to a thematic classification (e.g., types of deltas). That classification, if devised, appears in an introductory section that opens each gallery chapter. This section also reviews the current state of knowledge about the landforms in the chapter theme, aspects of their origin and development, and their appearance at regional scales.

Nearly all plates are accompanied by three to four ancillary photographs. Most ancillary photographs depict a location somewhere in the image area and show pertinent geomorphic, structural, or other geologic features discussed in the commentary. When ancillaries located within the scene were not available, the editors or authors substituted either representative photographs from outside the image or appropriate maps. Nearly all plates are accompanied by an index map that identifies major geographic and geologic features, either by name or by a letter, called out in the commentary. All spellings of geographic terms and locations used on these maps and in the text are taken from the 1982 edition of the National Geographic Society Atlas of the World. Images contained on this CD ROM have been obtained from various sources. The Jet Propulsion Laboratory has been granted permission to display some copyrighted images for educational purposes only, on a non profit basis. If you wish to use an image, refer to Appendix B in the main directory of this CD ROM, and contact the owner directly. The bulk of the images in this book are those taken by the Multi spectral Scanner (MSS) on Landsats 1, 2, and 3, the Return Beam Vidicon (RBV) on Landsat 3, and the Thematic Mapper (TM) on Landsats 4 and 5. In general, Landsat images predominate in this book because they have proved to be the most informative, often the most photogenic, and the

most readily obtainable. The remaining space images include early photographs from Gemini and Apollo and later ones taken from the Shuttle by astronauts using the Large Format Camera or hand held cameras, as well as radar images obtained by the Seasat SAR and SIR A and B (on the Shuttle) and thermal and visible images acquired by HCMM.

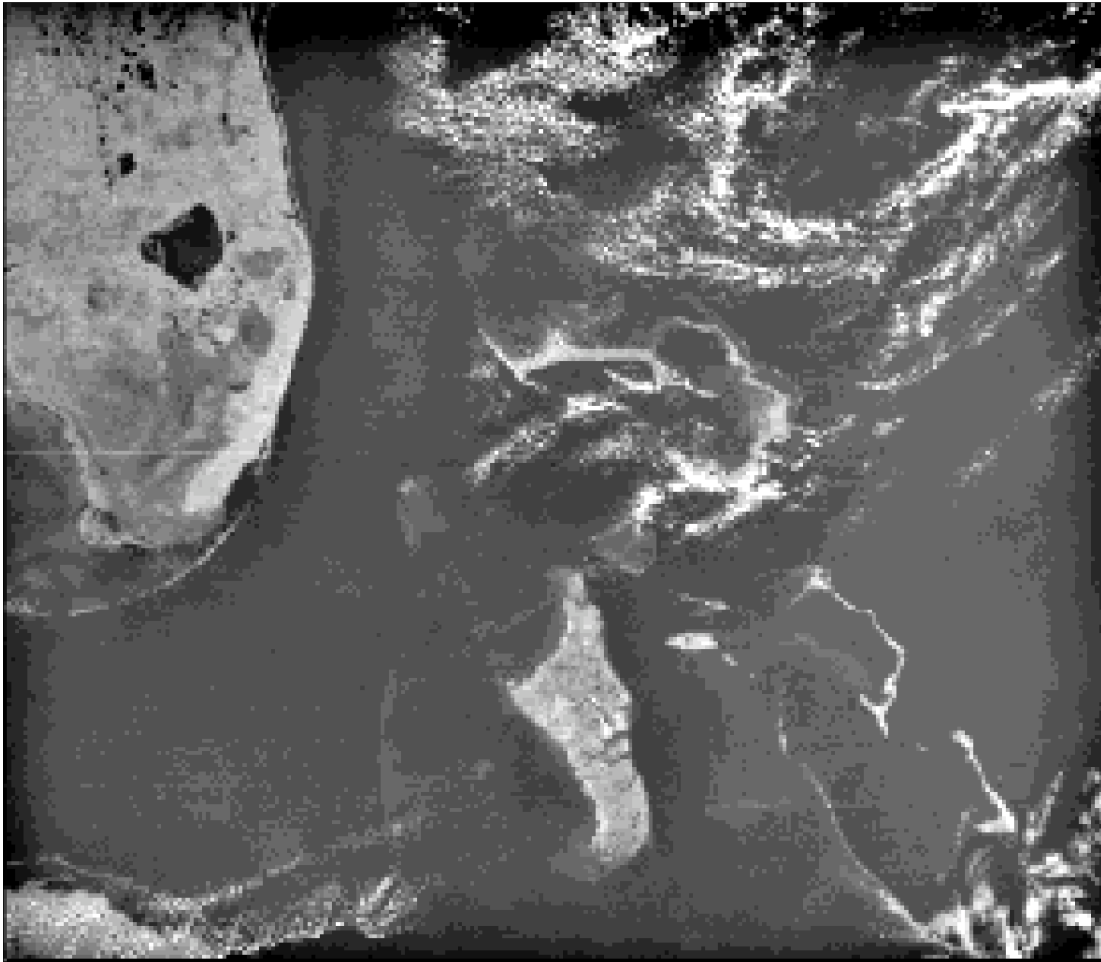
Some geomorphologists hold that their science is properly restricted either to the dynamic geology or to the physical geography of the Earth's surface. Indeed, more argument would probably be expended on the relative geologic or geographic content of geomorphology than whether any consideration should be given to bizarre alien landscapes. Such a view ignores two fundamentals. First, any science of the Earth must recognize that Earth is a planet. We learn more about that planet by studying analogs to its mysteries on other planets. Second, science derives its greatest excitement and its most important advancement through discovery.

There will be a natural tendency for geomorphologists to look for terrestrial analogs in the photographs of extraterrestrial landscapes presented here. There are of course many obvious analogs: the huge volcanoes of Mars are outsize replicas of those in Hawaii, landslides of the Valles Marineris can be matched by those in poorly engineered road cuts, and small lunar craters resemble craters formed by falling rockets. But it is almost certain that some, perhaps many, of the landforms found on other planets are unique to those planets, or at least have no terrestrial counterparts. Geomorphologists will do well to remember J. D. Bernal's aphorism:

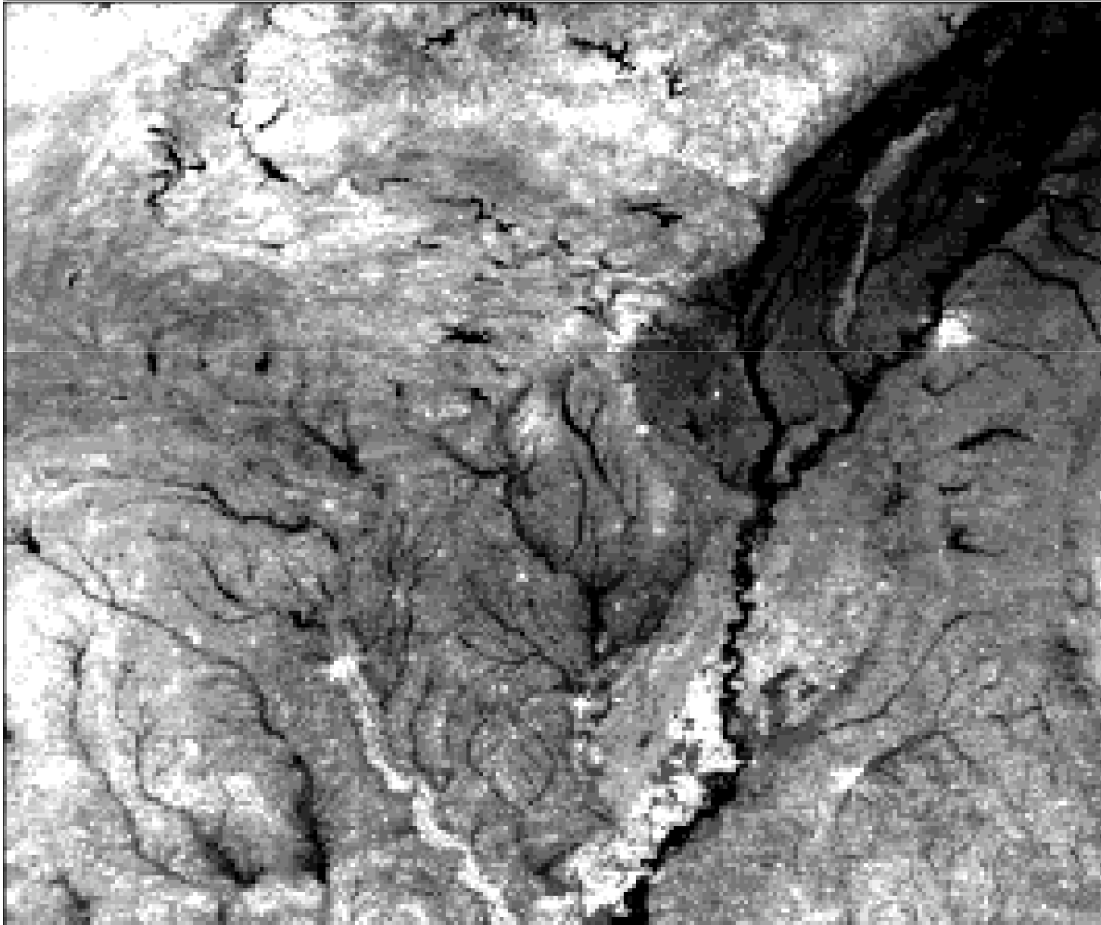
The universe is not only stranger than we imagine, it is stranger than we can imagine.

Plate C 15: South Florida

The southern tip of Florida is a limestone platform only a few feet above or below sea level. Its relation to the karstic sinkhole terrain of central Florida and to the shallow Bahamas carbonate platform beyond the deeper straits of Florida is clearly depicted in the HCMM scene shown as Figure C 15.1. For the last 100 million years, the continental crust here has slowly subsided, allowing new limestone to vertically accumulate at a net rate of about 2–5 cm per 1000 years.



Top: Plate C-15:
South Florida



Bottom: Plate F-10.1:
Mississippi River Valley

Book Review

Failure is Not an Option

Patrick McQuillan
Book Review Editor
Alexander Brest
Planetarium
Jacksonville, Florida



While most books about the early space program focus on the experiences of the astronauts, this book concentrates on the role of Mission Control and the people who worked there. Anyone who has seen the movie *Apollo 13* as many times as I have are already familiar with Gene Kranz's role during that emergency. If you are like me, however, you are probably unaware of any of his other contributions.

The book begins in 1960 with Gene arriving at the Cape to begin working in the fledgling space program. Like most of the people there, he was almost im-

mediately thrown into the midst of a process which they had to invent as they went along. Having never launched a person into space before, they had no procedures to go by. One of Gene's first assignments was to help work out the operating procedures for Mission Control and establish the Go/No Go criteria for a launch.

Once we were capable of orbiting a spacecraft around the globe, we immediately saw the difficulties of tracking and communicating during the entire flight. Tracking stations around the Earth, at times in the midst of local revolutions or on ships at sea, had to be manned by Mission Control personnel. Those stations had to communicate with the Cape. Gene's first job during the Mercury missions was to man the Teletype[™] machine that was used for communications.

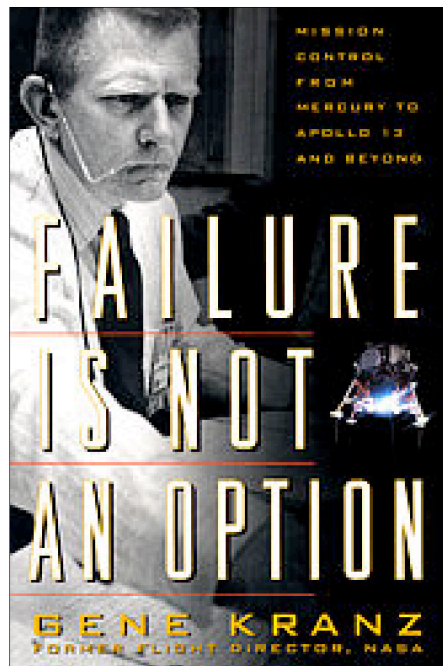
As Gene rises through the ranks, we follow the missions as they become more complex and dangerous. What we also get to see is how personally the people in Mission Control take the safety of the crew and the success of a mission. We tend to forget how much the success of a mission depends on the people on the ground. During almost every mission, something went wrong. Sometimes the problem was trivial, but other times it required a tremendous effort on the part of the ground crew to solve it. Gene describes each mission with which he was involved, and takes us through the steps taken to overcome every glitch.

We also see some events that I'm sure NASA wanted to keep private: a serious argument between one of the flight directors and Alan Shepard about the status of astronauts as the CAPCOM during all flights, Kranz's use of girly pictures as the cover of his flight books, differences of opinion between the Flight Controllers and the NASA brass, a surly Wally Schirra during the Apollo 7 flight, and the after flight tradition of the astronauts putting together a parody of the flight that had a reputation of being merciless.

Failure Is Not an Option is a book that needed to be written, not just to celebrate the contributions of Gene Kranz, but to highlight all of the people at Mission Control who do everything in their power to make sure that every mission is a success. We are Go for read!

Failure is Not an Option: Mission Control from Mercury to Apollo 13 and Beyond
by Gene Kranz
Simon and Schuster
©2000
416 pages; \$26.00
ISBN: 0-743-20079-9

Reviewed by
Robin Byrne



Book Review

The Minnie and Moo Series

What is it about cows? We already know they can't spell the word chikin, but at least one of these bovine heroines uses her brain, even if it is only a small think.

Minnie and Moo are the stars of these short story books for young beginning readers. The books are labeled for ages 6-8, grades 1-3, and they're perfect for that range. The stories are fast paced, the type is large, and the sentences are short. They're divided into chapters for those youngsters desirous of a chapter book like the big kids read.

The illustrations are nothing short of brilliant watercolors with lots of detail and funny faces on the animals that engage the reader and have brought snorts of laughter from adults.

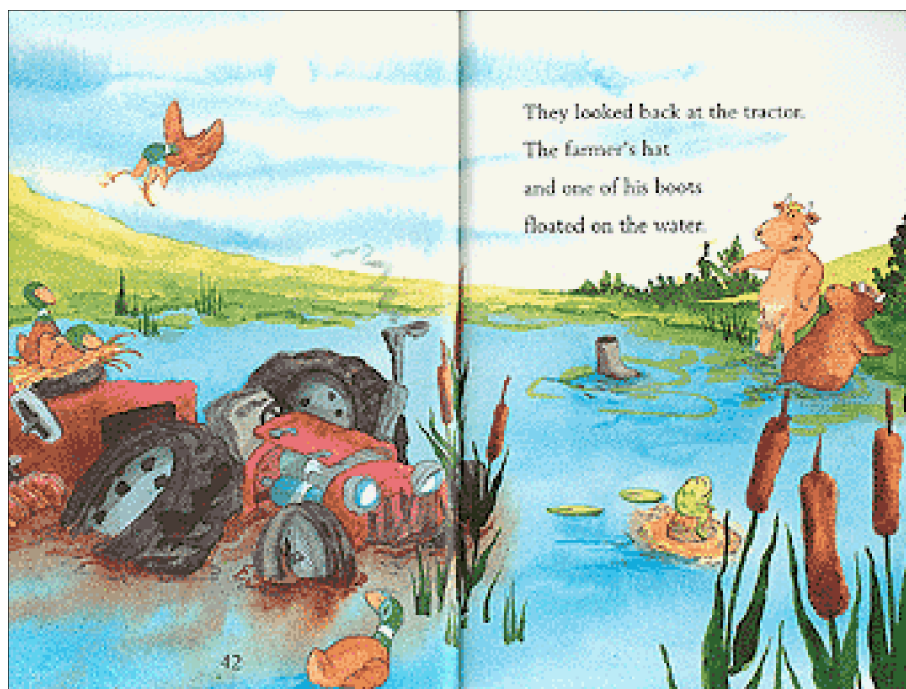
Minnie's and Moo's trip to the Moon is somewhat reminiscent of Little Bear's visit to that satellite (Else Homelund Minarik authored that series for beginning readers). The airborne tractor lands them in a big hole, but Crater! said Minnie. On the Moon, a hole is a crater. This is entertaining reading, but there's also a bit of science reinforcement thrown in.

The science isn't quite as accurate when the two save the Earth. A comet streaks across the sky. There are stars inside the

horns of the Moon in two of the illustrations. The story opens with the two cows enjoying the farmer's hot tub late one night, and Moo is thinking a small think about the Moon and stars. Their actions, and the invaders' interpretations of those actions, make for a fun story with lots of excitement for the reader.

If you offer programs for young children or give teachers bibliographies of books for the early grades, if you have a gift shop, if you need a gift for a budding astronomer or a science fiction fan, buy these books. They are a delightful bit of whimsy.

Patrick McQuillan
Book Review Editor
Alexander Brest
Planetarium
Jacksonville, Florida



Minnie and Moo
Go to the Moon
©1998; 48 pages;
\$3.95
ISBN:
0-7894-2537-8
and
Minnie and Moo
Save the Earth
©1999; 48 pages;
\$3.95
ISBN:
0-7894-3929-8
both by Denys Cazet
DK Publishing

Reviewed by
April Whitt,
Fernbank Science

News from SEPA States

George Fleenor
Bishop Planetarium
Bradenton, Florida

Alexander Brest Planetarium, Jacksonville

Patrick McQuillen reports that the Alexander Brest Planetarium is hip deep in new shows, new staff, and new ways of using our equipment. In the area of new shows, we just got through our rush of reinstalling yearly school programs and installing new school programs. We are currently running as our public program Ancient Horizons. This is the free program that was made available by the Science Museum of Virginia in Richmond. It has been well received (and you can't beat the price).

Our current evening laser show run ended, and we got a few weeks off before starting up again in November. You remember the old Donnie and Marie Osmond TV program? (If you do, don't admit it! Put those hands down!) On that show they sang a medley type song called I'm a Little Bit Country; I'm a Little Bit Rock and Roll. Well, our evening laser shows are taking a cue from the famous siblings. No, we're not running Laser Osmonds. But our Friday evening shows are going to be all country, and the Saturday evening shows are going to be all rock and roll. Friday's lineup will include a variety country show followed by Garth Brooks Greatest Hits; Saturday's lineup is Best of the Beatles and Led Zepelin's Greatest Hits. It should be fun.

In order to present all these fine programs, I've added a few new Planetarium Educators in the past months to replace staff who left. The first new addition is Sarah McDonald. Sarah is a graduate of Lycoming College in Pennsylvania. She helped with the college planetarium while getting degrees in Physics and Astronomy. She has been a big help. She jumped right in teaching a week long summer camp her second week on the job and running the entire place her fourth week, so I was able to attend the SEPA meeting. She has been a great asset. The second staff addition may be familiar to some of you, especially if you are members of IPS (which you all should be). The newest educator is Stephen Tidey. He may be familiar to you as the editor of the Forum column for the IPS journal. Steve comes to us from England

via Buffalo, New York. He too has been a great asset and has jumped headfirst into all our projects. His biggest pleasure has been telling everyone who asks about his accent that he is from the Bronx.

Finally we have rearranged our current allsky system so we could actually have an all sky system. Our current system covered the front half of the dome and allowed us to project crossfading wide angle pictures over the left/ right/ center slide stacks. This was great for titles, giant planets, etc. but did not allow us to use a standard six slide allsky image. We moved our six crossfading projectors around so that we now have an allsky that covers the entire dome. We can't crossfade images yet, but I think it will be a better (more impressive for audience members) use of the current projectors.

Astronaut Memorial Planetarium, Cocoa

Mark Howard reports they are currently showing Planet of the Dinosaurs, an in house production written and illustrated by staff artist Joe Tucciarone with musical score by Robert Resetar. Planet of the Dinosaurs features a laser animated Archaeopteryx named Archie plus lots of laser animated dinosaurs and fully rendered dino images. We created new visuals for The Little Star That Could this year and reopened it as our September feature show. This show now includes laser animated versions of all the familiar star characters and new video animation for special effects. Soon, we hope to make these new visuals available (in laser and video format) to other interested planetarians.

Currently, we're working on an all new show Planet Safari written and illustrated by Joe Tucciarone with musical score by Mark Mercury. This show also features lots of laser animation including a quirky alien tour guide. Jonn Serrie performed a live concert in our theater earlier this year complete with lasers and special effects. He returned for a Christmas concert December 8.

Our Starlab portable planetarium has been very active, representing our facility at SpaceFest 2000 in September. This

event was hosted by the city of Titusville to raise awareness of space exploration and astronomy. NASA's upcoming ambitious shuttle manifest means lots of astronaut receptions for us in the next few months. For the 100th shuttle launch on Oct 11, we hosted approximately 350 astronaut family members for planetarium shows, Iwerks movies, and a reception.

In August we hosted the International Laser Display Association (ILDA) awards judging for the fourth time. Our entry *Purple People Eater* a module from our Halloween laser show won third place in this international competition!

Two new staff have joined us recently: Chuck Greenwood, Engineer comes to us from Parkland College in Champaign, Illinois where for many years he was the Technician/ Production Designer and Ken Larson, Equipment Tech/ Iwerks Projectionist comes to us from an extensive background in theater and lighting. Mark Howard has been named the new Planetarium Director and Suzanne Leslie has been promoted from Office Manager to Associate Director. We'll host FlorPlan, an informal group of Florida Planetarians, in spring 2001. Anyone is welcome to attend, even if you're not a Florida planetarian.

Bishop Planetarium, Bradenton

George Fleenor reports that autumn of each year generally marks a slow period for us at the South Florida Museum Bishop Planetarium. School groups slowly trickle in and don't really get into full swing until November. The first two weeks in September we generally shutdown for annual maintenance. This year was our time to re-tube the laser and try to get general cleaning and maintenance done. We also purchased DigiDome from SkyScan and a Polaroid Pro Pallet 7000 film recorder.

We had two new shows to produce in two weeks using the newly acquired software and hardware. Kelly, Brett, and I spent a lot of time trying to get everything to match in our dome under the crunch time scenario. To make matters worse, we had a lot of programming that had to occur in conjunction with the laser system. There was a shipping problem with the laser, however, and we didn't have it back until the last minute. Kelly and Brett did a great job dealing with all of the obstacles, meeting the scheduled opening of the shows.

Currently we're running *Saving the Night* and *A Brief Mystery of Time*, a Laser

Fantasy International/ Charles Hayden (Boston) Planetarium Production, at 1:00 p.m. daily and *The Search for Life in the Universe* from Buhl Planetarium at 4 p.m. daily through November. Our museum opened a small exhibit on clocks, and we were urged to produce a program on time. We had four weeks to come up with something. *A Brief Mystery of Time* was one of the shows we frantically produced during shutdown. The second production was *Trip thru Space*, from John Bell and Patrick McQuillen. Kelly produced this program as one of our new featured third grade school shows. *The Starry Night Sky*, produced by us, combined with Bowen Production's *Moon Witch* was our featured family Saturday morning star show in October. *Rusty Rocket's Last Blast* was featured in November, and December will feature *The Alien Who Stole Christmas* from Brevard Community College's Astronaut Memorial Planetarium. We are currently working on another educational show *Sol and Company* from the Morehead Planetarium. This was one of the delightful shows we saw at this past summer's SEPA conference in Chapel Hill. Brett is currently producing some really neat laser graphics for the program that we expect will be a big hit. We are targeting a January opening date.

Our nighttime *Skies Over South Florida* continues to feature *Saving the Night* followed by a live tour of the evening sky. The *Tonite Show*, the observatory/ telescope program, follows at 8:30 p.m., weather permitting.

The matinee laser show for autumn features *Laser Swing*. This show features some classic swing music of yesteryear, as well as its modern day counterparts. We continue to open or update our nighttime *Laser Fantasies* laser shows and have sold several shows to other facilities. Yes, we even broke down and produced an *☆NSync/ Back Street Boys* show that did pretty well in attendance. It looks like we will be producing a *Dixie Chicks* show next. YeeHaw!

On the light pollution front: the state DOT finally replaced the street light fixtures on the Green Bridge adjacent to the planetarium and observatory. It is amazing how much darker the sky is. The reduction in glare was unbelievable! I am sure you will see photos at next year's SEPA/ GLPA conference.

The \$5 million remodeling project in

News from SEPA States
continued

George Fleenor
Bishop Planetarium
Bradenton, Florida

George Fleenor
Bishop Planetarium
Bradenton, Florida

the museum continues to stir up a lot of dust. Our front lawn looks like a war zone with all of the equipment and construction materials. Our new entrance should be done by late spring we hope! Plans are to finish and open the first floor and then start the process over on the second floor. The whole project is expected to last at least two years.

As if we had nothing else to do, we were involved with the reopening of Bradenton s Historic Old Main Street. Downtown has been going through some major renovations, and the street had been closed to driving traffic for several months. Since the planetarium staff is known for our knowledge in special effects and lasers, we were asked to serve on the Main Street Celebration Committee. The event was a huge festival celebrating the street s completion. Approximately 10,000 people jammed the street on Thursday night, October 26, for the grand reopening and indulged in food, music, and beer. The planetarium oversaw the mounting and control of seven confetti cannons that dropped more than \$400 worth of confetti on the crowd, six TechnoBeams used for audience scanning and building highlighting, and two micro Yag lasers. Peach Tree Lasers in Atlanta furnished the lasers. Former Bishop Planetarium Technician Greg Hughes, a current employee of Peach Tree, flew in to do the show. The lasers were mounted on the stage, just above the drummer of the Atlanta Rhythm Section. We literally trashed the street with confetti and the city loved us for it! They still congratulate us on a splendid job.

The Planetarium Department spent a couple of days climbing around on the roofline of downtown preparing for and breaking down after the event. The event was such a success that it is scheduled to become a yearly event. The city normally promotes smaller, monthly Get Down, Down Town events. The popularity of the larger festival, however, has inspired organizers to make this an annual event. Here we go again! More work for free! I guess it will give them a little more incentive to shield more lights at our next request. To keep a closer eye on what we might be up to, check out our web site at <www.sfbmp.org> for the latest information.

Buehler Planetarium & Science Center,
Davie

Susan J. Barnett reports that their weekend public shows are Rusty Rocket s

Last Blast and The Cowboy Astronomer. Wednesday matinees rotate through shows selected to support astronomy and humanities classes. We continue to show Worlds of Wonder, The Mars Show, and the Secret of the Cardboard Rocket. We have added another time slot with The Voyager Encounters, The Explorers, Astrology: Fact or Fiction, and The People. On Wednesday evening, we continue to run our sky tour show, Stories for a Starry Night. We showed MoonWitch in October and Voyager Encounters in November. During December, we will run Tis the Season, Season of Light, and The Alien Who Stole Christmas along with A Star for Santa s Tree.

Construction continues on the new observatory. It is one of several construction projects on campus and will probably be the first one finished. We are finishing some construction within the planetarium building. Our fire alarm system has been upgraded and now works, even though they still need to patch the wall.

Buzz Aldrin Planetarium, West Palm Beach

Erich Landstrom announces an almost free Cassini show. JPL s Sue Kientz (Susan.J.Kientz@jpl.nasa.gov) has received the okay from the Cassini Mission management for the Spacecraft Cassini is Going to Saturn stories to be used as a children s planetarium program. The script and visuals are available online at <<http://www.jpl.nasa.gov/cassini/Kids/stories/menu.html>>. You may download the images and convert them into a PowerPoint presentation, or digitally convert them into slides. Other Public Outreach people at JPL are interested in hearing how this works, so please drop her a line.

The Aldrin Planetarium took One Giant Leap from September 11 November 30, 2000, every day at 1:00 P.M., to answer questions about gravity. Visitors star hopped around the constellations of the autumn sky and learned from Pegasus, Perseus, and Piscis Austrinus about the Milky Way, then they leap frogged around the galaxy to learn from toads, tides, and toddlers why gravity is such an attractive force. In December 2000, we ll join Sandy and Pepper, two dogs spending a day in the house. Not just any day, though: the day of a solar eclipse (just like December s Christmas eclipse). Visitors will discover the scale and motion of Moon, Earth, and

Sun to create all types of eclipses and learn safe methods for viewing the actual solar eclipse which comes December 25 from 10 A.M. - 2 P.M. with Sandy, Pepper and the Eclipse from Bowen Productions. Aldrin Planetarium will distribute Avon's Skin So Soft to visitors, thanks to a generous donation of 250 samples from local sales rep Mrs. Susan Toner. For those planning to view the December partial solar eclipse, the Skin So Soft SPF30 sun block should be deeply appreciated.

In January 2001, the South Florida Science Museum in association with the Texas Museum of Natural History and the International Museum Institute of Texas present *The Secrets of Egypt*, featuring Tutankhamun: Wonderful Things from the Pharaoh's Tomb. An ancient civilization, a modern mystery, and only science can help solve *The Secrets of Egypt*. Visitors explore the process of pyramid building, hieroglyphic art, lever principals, and more in visual and interactive displays, to journey back 4000 years to discover the surprisingly modern principals of science used to create this awe inspiring civilization. In the Aldrin Planetarium we present *Astronomy of the Great Pyramid* from Cape Town's South African Museum.

The South Florida Science Museum welcomed Backstreet Boys and ☆NSync to our new concert series, beginning September 1. Every Friday night at 5:00, 6:00, and 7:00 P.M., dancing laser lights had everybody rocking in their seats. The following laser show schedule went Bye, Bye, Bye on December 1, when we began to run *Holiday Wonderland* and *Mainheim Steamroller: A Fresh Aire Christmas*; but until then it included matinees of *Laser Fun for the Whole Family*, *Laser Fun for the Whole Family 2: The Next Generation*, and *Laser Gater: 98.7 FM Classic Rock*. Evening shows included *Laser Pink Floyd: Think Pink!*, and *Laser Dave Matthews Band*. All programs were from FirstLight Laser Productions.

Erich Landstrom, the Science Museum's Director of Astronomy Education, was selected from a nationwide search as one of 20 educators to attend the NASA Solar System Educators Institute in Los Angeles, California from August 2 - 6, 2000. The Solar System Educators Program is a collaborative effort between the Jet Propulsion Laboratory, Space Explorers Inc., and the Virginia Space Grant Consortium. The goal of the Solar System Educators

Program is to inspire America's students, create learning opportunities, and enlighten inquisitive minds by engaging them in solar system exploration efforts conducted by the Jet Propulsion Laboratory (JPL). JPL's missions and programs involved in the Solar System Educator Project include: the Cassini Mission to Saturn, the Galileo Mission to Jupiter, the Stardust Comet Sample Return Mission, the Mars Exploration Program, Outer Planets/ Solar Probe Program, the Deep Space Network, JPL Space and Earth Science Directorate, and the NASA Office of Space Science Solar System Exploration Education and Public Outreach Forum.

Solar System Educators bring the excitement of solar system exploration to a diverse national audience of K - 12 educators by leading a series of workshops. The workshops emphasize the purpose and goals of NASA's solar system exploration efforts and their relationship to current JPL missions and programs. Participants are immersed in SSEP activities and curriculum supplements and learn how they can be used to engage students in science, math, and technology. These workshops include the following:

- Free lessons and activities
- Free mission related materials
- Hands on activities
- Background information on NASA missions
- Examples of how to use the materials to motivate students to learn
- Booking a Science Museum Star Reach and utilizing the Starlab

Teacher training workshops were planned at the Science Museum for the following six Saturdays and one Sunday:

- Saturday, September 23, 2000 (Exploring the Extreme)
- Saturday, November 4, 2000 (One Earth, Many Moons)
- Sunday, November 5, 2000 (Invisible Rainbow)
- Saturday, December 9, 2000 (Eclipses & Ellipses)
- Saturday, January 20, 2001 (Rockets & Rovers)
- Saturday, March 10, 2001 (Martian Math)
- Saturday, May 19, 2001 (Small Bodies, Deep Impact!)

George Fleenor
Bishop Planetarium
Bradenton, Florida

The South Florida Science Museum was pleased to co host the meeting of Florida planetariums (FLORPLAN) on Saturday, September 30, 2000 with the Poinciana Elementary Magnet School Planetarium. FLORPLAN is an unofficial gathering of planetarium personnel in the state of Florida. We meet twice a year to tour various facilities around the state and to discuss hot topics and other concerns to planetariums. The autumn meeting had an especially interesting special speaker for lunch: Dr. Francisco J. Reyes discussed the University of Florida Radio Observatory (UFRO) and Radio JOVE. More conference details and photographs were available at the Science Museum's Website at <<http://www.sfsm.org.florplan.htm>>.

On Saturday, January 27, 2001, at Lakeside Challenger Park, the South Florida Science Museum and the city of Royal Palm Beach, Florida observe the 15th anniversary of the explosion of the space shuttle orbiter Challenger while in flight. With the resulting loss of life of seven astronauts, including the Teacher in Space Christa McAuliffe, the remembrance includes an outdoor assembly to rededicate the park. I truly hope we can, in some small way, recognize and rededicate ourselves to the Challenger's dreams, and inspire the next generation of science explorers.

In February 2001, the South Florida Science Museum will celebrate Edgar Mitchell Day and honor our hometown hero Lunar Module Pilot Commander Edgar Mitchell, USN. As an astronaut, Dr. Mitchell landed on the Moon with Alan Shepard during the Apollo 14 mission. With the 30th anniversary of Apollo 14 (January 31, 2001 through February 09, 2001), we would like to pay tribute to our neighborhood Moon walker.

The annual Drop It, Build It, Fly It competition will be held in Dreher Park on Saturday, March 31, 2001. The South Florida Science Museum and the Florida Engineering Society of Palm Beach County will test the engineering skills of students in the creative ways: an egg drop from four stories without scrambling it (reminiscent of the Mars 2003 rovers), constructing a wooden bridge that is lightweight but can support up to 100 pounds, and sending paper airplanes aloft to see how far they travel in linear flight. As an extra incentive, we offer cash prizes and certificates to the top three winners in each category.

The 2001 Mars Odyssey Orbiter is scheduled for launch on Saturday, April 7, 2001. It will arrive at Mars on October 20, 2001, if launched on schedule. As a Mars launch is certain to generate public and media interest, Aldrin Planetarium will host Mars Millennium Weekend at the Science Museum Saturday and Sunday, April 7-8 from 12:00 P.M. - 6:00 P.M. We'll run The Mars Show from Loch Ness Productions, Destination: Mars from Spitz, and The Explorers from Bishop (South).

Calusa Nature Center and Planetarium,
Fort Myers

Jill Evans reports that the Planetarium is well on its way to being updated. Jon Frantz came to work and replaced our entire system core. The theater is now about 50% ECCS. We're all very excited about the change. Unfortunately we lost all our shows, so reprogramming is in our immediate future. It's well worth the time to program to have the new system. Jon will be back soon to install new goodies and repair many of our special effect projectors. Through cleaning house, we've raised enough money to buy a new telescope for viewing programs and I think the Nexstar 8 is our first choice. We'll have a concert in the Planetarium - the first in years. We're hoping it will be a big success and a good time for everyone. There's lots to keep us busy in dome for quite some time!

Poinciana Planetarium, Boynton Beach

David Menke reports that the Poinciana Planetarium in Boynton Beach co hosted the semi annual FLORPLAN conference on September 30.

The staff of the Poinciana Planetarium includes Assistant Director for Engineering, Bill Cellich, and Assistant Director for Education, Lisa Schmidt. Bill is a computer expert, who worked for Pratt & Whitney for 18 years. Lisa has a B.A. in Elementary Education.

We're never open for public shows, or nights or weekends, except for special events, which include: open house for parents, observatory nights for students and parents, etc. The currently show is Whatever Dr. Dave wants to show at the time. There are only two automated shows, but all shows now and in future are educationally oriented for grades K-5.

We have 59 very comfy seats, 15 student computers, an ECCS automation system, a Barco video system, and a 30 foot dome.

Jim Cherry Memorial Planetarium, Atlanta

The Georgia Association of Planetariums (GAP) met at Fernbank October 23. Attending were 14 planetarians from Columbus, Macon, Chattanooga, Statesboro, and Atlanta. Hosts April Whitt and David Dundee provided attendees with lots of food, handouts, and activities. We learned about Star Station One™ activities, including Robonautics Day Camp, and played a bit of the board game Journey To The Station of Nations. We toured the new NASA Aerospace Education Lab with Dr. Debi Huffmann. After viewing the current family star show, Cosmic Birthday Present, we carpoled over to the other Fernbank, the Museum of Natural History, for lunch and to see their Star Room and brand new Giganotosaurus dinosaur skeleton. We returned to the planetarium for more food, idea swapping, and a tour of their newly refurbished telescope. The telescope and dome can both be operated remotely and we were able to see them in action by observing Venus.

Fernbank's current adult public show is From Spyglass to Space Telescope. The holiday season offerings are Winter Star for families (a look at the lights of the season) and Christmas Around the World for adults. Skies of 2001 starts January 3. Explorers of Mauna Kea, the new program from Bishop (South), opens the second semester, and the popular Solar System Adventure runs for fourth and fifth grade. There are other school programs for pre K through high school students.

Anyone who wants their names added to the Star Station One™ materials distribution list, contact April Whitt at <april.whitt@fernbank.edu>.

Bradley Observatory, Atlanta

GAP moved a few blocks to Georgia's newest planetarium at Agnes Scott College. Dr. Chris DePree showed us around the facility and took us on a tour of Bradley Observatory, which is in the same building. Outside the building, there's a Moon Garden and a plaza that's beautiful and educational. Granite circles and lines are laid out on the sidewalk to indicate not only each of the planets' diameters and orbits in relation to each other and to the Sun, but also the shape of the Milky Way Galaxy and the Sun's position in it. The design even identifies the cardinal points. The entire structure just happens to be

365.25 inches long.

The new planetarium's grand opening was November 3. Timothy Ferris gave a talk as part of the events of the day.

Walker County Planetarium, Chickamauga

Bobby Thompson says the new planetarium hasn't opened yet due to budget cuts. The dome is still lying in pieces in the school cafeteria. Bobby and Wayne Robinson hope to receive the necessary funding to complete the project next fiscal year.

Mark Smith Planetarium, Macon

Jim and Carole are currently showing The X-tra Terrestrial Files, and started The Little Star that Could in December. The traditional Christmas show, The Story of The Star, will be shown once again, but on a limited schedule.

In September, shuttle astronaut Guy Bluford gave a talk at the museum during our Day of Exploration. A Leonid Meteor shower watch was planned November 17. The Museum Store will be selling special candycane striped eclipse shades and eclipse viewer Christmas cards for the December 25 eclipse. The Observatory will be open from 11:00-1:00 for anyone bored of eating and playing with gifts.

Georgia Southern University Planetarium, Statesboro

Becky Lowder reports that the Georgia Southern Planetarium was featured on the front page of the October 20 edition of The George Ann, Georgia Southern's newspaper. Monthly public evenings at the planetarium continue. Dr. Ben Zellner spoke about The Hubble Space Telescope: Ten Years of Discovery! on October 6. On November 3, Dr. Clay Heller presented a talk called Structure of the Universe followed by telescopic observing. On December 2, Gifts From the Christmas Sky will show the current night sky, emphasizing objects visible during the holiday season and including how to view safely the partial solar eclipse on Christmas Day.

Rollins Planetarium, Young Harris

In October Kent Montgomery presented Cosmic Concert 44. From October 27-30, the planetarium and surrounding rooms were transformed into an exciting and scary spook house—the Rollins Planetarium Chamber of Horrors. In November and December, the planetarium is showing

News from SEPA States
continued

Jim Greenhouse
and Carole Helper
Mark Smith Planetarium
Macon, Georgia

Michael Sandras
Freeport-McMoran Plan-
etarium
Kenner, Louisiana

Freeport McMoRan Planetarium, Kenner
We're trying to finalize architectural plans for our new 50 foot planetarium. It looks like our facility will house a Zeiss Starmaster Fiber Optic projector with an AVI Omniscan, Sky Scan Auxiliaries, and a Mega Systems large format film projector. I'm very excited about this project and as many SEPA members know, I have been working and discussing this project for many years.

A couple of years ago George Fleenor offered me a crying towel over this project. I hope by the next SEPA conference, I can finally say that construction is underway. City of Kenner officials would like this project completed in early to mid 2002.

We're currently showing *Our Sky Tonight* and *Quest for Space* along with Bowen Productions *Moonwitch*. It's interesting to note that current plans allow for our 24 foot planetarium to remain in operation even after the larger facility is completed.

Space Station Kenner has been keeping us busy and currently we are attempting to work more closely with NASA's Stennis Space Center and the Lunar and Planetary Institute in Houston, Texas. Our Young Astronaut Program remains as popular as ever with many school aged children involved.

St. Charles Parish Library Planetarium, Luling

Ah, fall is here I hope since I am writing this in 90 heat. Fall brings us cool fronts, clear skies, visions of Christmas and programs about the Christmas Star, along with the possible closure of the planetarium well, for a little while anyway. Here at the St. Charles Parish Library & Planetarium there will be some construction done which will improve the area where our library's technical services staff work. This means that tech services will have to vacate their usual work area. Some will move into the garage, and some will move to you guessed it the Planetarium. As a result, we will be unable to operate as a planetarium for an estimated six weeks. The latest estimate from our architect is that this will happen during the middle of the Christmas season. I wonder if any other planetariums have ever been taken over by an office? There's never a dull moment here in southeastern Louisiana!

Lafayette Natural History Museum Plan-

etarium, Lafayette

It's been a busy summer in Lafayette, the last summer we'll be open at the museum's original site. We had a very successful run of *The Cowboy Astronomer*, and now are running a live in house program called *The Night Sky Game*. The overall winner in November won a pair of binoculars suitable for astronomy, donated by a local camera store). Each presentation of *The Night Sky Game* was followed by our production of *Saving the Night*.

We did our usual workshops and field trips for Space Frontier Week in July and National Aviation Week in August. Our July comet party for Comet LINEAR was fairly successful, especially considering how visually poor the comet was. In September we did H α and visual solar viewing for almost 500 people at a festival on the museum grounds. For October we are celebrating World Space Week and La Semaine de la Science (the French national festival of science) with displays of space models and patches, and a bilingual French/English photo display about the Sun derived from images from the French space agency CNES.

In November we ran a program called *Last Eclipse of the Millennium* to help our audience learn how to watch the Christmas Day partial solar eclipse.

We ran that only in November because the planetarium closed at its present site on December 1. Not long after that, JHE will remove the star projector, and the planetarium staff will begin packing and making final preparations for our move downtown in about a year. We should open the new site in spring 2002. Meanwhile, interior destruction has stopped at the building we will move to, and construction of the interior has begun.

Architectural plans are also now being made for a rooftop observatory at the new site. The observatory will have two SCTs in twin domes and will allow remote operation to obtain live images for video projection in the planetarium. One telescope will be equipped with a Hydrogen α filter, and the other will have a visual filter. The visual filter will be removed for observation of other solar system objects.

Once we close in December we'll spend about a year and a quarter doing monthly star parties and sidewalk astronomy at various sites in the area.

Hooper Planetarium, Greenville

We have just put together the Saving the Night program narrated by David Levy and SEPA produced as you know. It will run occasionally on an ongoing basis. We're also in the midst of producing a major program on the history of Greenville to meet a social studies need here in the school district. Plans also continue for groundbreaking of our new Observatory Annex building to include a clean shop and classroom area in support of nighttime activities. Explorers of Mauna Kea is also on the way, and will be set up sometime after the first of the year.

Settlemyre Planetarium, Rock Hill

We have just finished our new program for the winter season, Search for Life in the Universe. Our next projects include a new school program targeted for 2nd 3rd grade and of course Explorers of Mauna Kea. We here at the Settlemyre have also installed several new one shot slide projectors for title slides, etc. We are still in the loop to receive a grant to install our first zoom lens! Can you believe it? I am installing a three gun video system and sound system in our auditorium as well and hope to have it up and running after the beginning of the year.

News from SEPA States
continued

Glenn Dantzler
Settlemyre Planetarium
Rock Hill, South Carolina

Craigmont Planetarium, Memphis

As we approach Christmas break, Craigmont Planetarium is packed with school groups viewing our annual holiday season programs The Star of Bethlehem, a popular inhouse production, and Bays Mountain's venerable Torten, the Elf Who Cared. The latter show is the perfect way to end a live presentation of the winter sky for kindergarten and first grade groups.

For the new year Donna and Duncan will consider several free programs we have recently received, and decide which one we want to produce. Duncan is leaning toward a program on Egyptian astronomy, since he recently visited the Pyramids.

Sharpe Planetarium, Memphis

Here in the western end of Tennessee we've been busy getting ready for the normal rush of school groups that are about to arrive in the fall. We also added a new part time laserist to the staff, Michael Tucker, who will be responsible for producing several laser shows here in the planetarium as well as assisting in the operation of a conventional theater in the Pink Palace Museum.

A new live school show has been developed by Alex Eilers our Education Coordinator. How Fast, How Far, How Long: The Astronomy Quiz Show is a new program that answers a lot of those questions we get about, how far away is Jupiter? and other such queries from school kids. It includes great props such as a six foot tall Jupiter model (and other scaled planets) painted by Edwin Faughn, our planetarium artist with construction help from Roy Foppiano. New public programs for fall include Autumn Nights, Under African Skies, and continuing from summer is The Search

for Life in the Universe.

Also this fall the planetarium staff held a Solar Observing and Solar System Walk at the Museum's Arts and Crafts Festival. Over 1,600 people got to observe the Sun through a six inch refractor (properly shielded) and walk a scale model of the solar system.

Future projects include revamping our winter constellation show, Wonders of a Winter Night. Planetarium Manager Todd Slisher is working on a new show called, How's the Weather Up There? opening in January. This show involves the local NBC affiliates weather team with some video sequences shown in their studios. A new holiday laser show, Holiday Laser Spectacular, is also in the works for this year. The video version of the SEPA light pollution show Saving the Night will also be featured to audiences waiting for public programs on a video monitor we are working on installing in the planetarium lobby area.

Bays Mountain Planetarium, Kingsport

Fall in East Tennessee brings clear skies and great opportunities for observing. At Bays Mountain Park, telescopes are used each clear Saturday evening in October and November for public stargazing. A new feature this year is the use of a Santa Barbara STV camera. The device allows visitors to see on a TV monitor exactly what they can expect to see through the eyepiece. It has made it easier to provide information to observers before they step up to the eyepiece. The unit is attached to a six inch refractor that is piggybacked onto our eight inch superb Mrozek Refractor.

In the planetarium, our fall show is a brand new inhouse production Splendor

Todd Slisher
Sharpe Planetarium
Memphis, Tennessee

Todd Slisher
Sharpe Planetarium
Memphis, Tennessee

In The Sky. The program is all about the Milky Way, from ancient myths of its origin, to our changing understanding of our galaxy through the development of the telescope, modern electronic imaging, and space based observation.

For the holiday season we plan to break with tradition and run Larry, Cat In Space. Even though this program has been around for years, it is a first time run for our facility. With this year's partial eclipse falling on one of the few days the planetarium is closed, we are making an extra effort to get solar viewing glasses into everyone's Christmas stocking through gift shop sales.

Last, but certainly not least, our facility welcomes a new staff member, John Hay. John is busy assisting Adam Thanz, learning our school shows, and filling in on our weekend staff rotations. He's also looking forward to his first SEPA conference. His presence allows me to split my time between tasks for our merged planetarium and exhibits department. As administrator of this new creative services entity, I find it fun to balance the needs of planetarium production and exhibits development.

Cybersphere, Dickson

We've grown. Wei Herng Lee joined our CyberSphere staff as a full time animator.

Lee is developing video and stills for our educational and entertainment programs. He also works with our real time animation system that lets visiting school groups interact with a live animated character on the dome. With the addition of Lee we now have three staff members working in the CyberSphere.

Assistant Producer Terry Johnson now has four full length program adaptations under his belt and will be working on his first original show in the coming year. Terry also handles all of our astronomy outreach programs and star parties.

Kevin Scott is trying to maintain some semblance of his sanity. He is currently developing our first original program for grades 3-4. The Adventures of Captain Comet will be available for visiting school groups early in 2001. It will feature live costumed characters, interactive animations, and a great deal of audience participation.

Starting in November, the Renaissance Center's Kids College will be hosting children in grades 1-8 for some weekend day long activities which will include model rocketry, astronomy, computer literacy, music, drama, and art. We're busy developing activities and training volunteers. If you've got any ideas that might help us out, give us a shout.

Chesapeake Planetarium, Chesapeake

Dr. Robert Hitt writes, "Time goes by so quickly, and I have not had time to do much writing for anyone. I have just finished defending my dissertation on public school planetaria. Some very interesting facts have surfaced on public school owned and operated planetarium facilities and I will try to write a summary of my findings for a future issue of Southern Skies."

The planetarium was closed for the month of August to install new equipment. A new Barco video projector was added to complement the Sony video projector currently in use. Another addition will be an expansion of the Spice automation system to control the additional video projector along with several other slide projectors and special effects projectors. The planetarium building, which is now 38 years old, will also be upgraded with additional wiring and lighting. Plans for an addition to the building are still under review but no additional funding has yet been found. We're working hard to align with

Virginia SOLs. We plan to do a program on winter stars in November and about the Christmas Star in December. We're interested in a new audio editing system. Some upcoming programs include a tour of solar system, The Mystery of Stonehenge, and Astronomy for Beginners.

Virginia Living Museum Planetarium, Newport News

In a break from recent summertime tradition of death of the dinosaurs types of programs, we ran a show called Honey, I Shrank the Universe. This was a fun look at the solar system and beyond on an easy to relate to scale. This one came from the Minneapolis Planetarium.

Our summer live guided tour through the current night skies was called Summer Sky Safari. In addition, the Meridith Webb Abbitt Observatory was open for solar viewing through a hydrogen α filter on most clear days and for stars, clusters, and nebulae on clear Thursday nights. Recent budgetary constraints forced an

David Maness
Peninsula Planetarium
Newport News, Virginia

unfortunate closing of our Thursday night operations. Instead we are planning quarterly special evening events to give the public another chance to view the night sky through our 14 inch Celestron.

Plans for building a new theater and museum are still being formulated. While fund raising continues, work on the additional trails and animal habitats has already begun. I can now see the new boardwalk through the trees. Soon it will travel across our small lake and connect up with the existing boardwalk on the near side.

I am still very much interested in talking with anyone who feels that something about your theater works especially well. On the other hand, if there is some aspect about your theater that you think could have been done better, please let me know that too. We should all benefit from each others mistakes.

Work is now complete on our new and improved entrance road. Fully shielded lighting has been installed. A new turning lane and traffic control light should be installed over the next half year.

For the last several years, Dinamation Dinosaurs have been a mainstay here during the summer. This year we chose to create a new exhibit/ activity. The result was a 27 hole miniature golf course. Each hole has something to learn about Virginia wildlife or the universe. It has been well received and we expect to keep it running on weekends at least through the end of October.

After that we may pack and ship it to another museum. Contact us if you think your facility might be interested in renting this fun activity. Safari Golf is scheduled to close by the time you read this. Our newly installed butterfly house exhibit was also a big hit this summer.

We are currently showing Millennium Mysteries, but by the time you read this Star of Wonder should be making another appearance on our dome.

For the Christmas Day solar eclipse we decided to put together a winter sky guide with information on the eclipse. This is for sale in our gift shop and includes a pair of safe eclipse viewing glasses from American Paper Optics, Inc.

Lastly, we will play host to a regional meeting of the International Dark Sky Association from 9:00 a.m. 5 p.m. on November 14.

Visit our Website at <[\[ingmuseum.org\]\(http://ingmuseum.org\)>](http://www.valiv</p></div><div data-bbox=)

Planetarium at the Edge of the Universe and Starlab Mathematics & Science Center, Richmond

George and Jane Hastings enjoyed looking at stars in the southern hemisphere from a three masted schooner on the equator, sailing among the Galapagos Islands, the first week in July. It was weird seeing the northern constellations upside down!

You know the trick to finding directions, using the hour hand of the clock? Point the hour hand at the horizon directly below the observed position of the Sun, and halfway between the hour hand and the 12 is south. Not thinking ahead of time, I tried it aboard the sailing ship Alta, and the results didn't look right. It took a bit of thought before I realized that from zero degrees latitude at this time of year, half way between the hour hand and 12 will indicate north!

Hopkins Planetarium, Roanoke

Leslie Bochenski has one big change to report: after many delays, Jon Frantz of East Coast Control was finally able to install our new Planetarium console. This completes a renovation and automation project that began about two years ago by my predecessor, Gary Close. Thanks to the new console, we can now see the sky and control the motions at the same time! Previously, if operators were looking at the sky, they couldn't reach the controls a very difficult situation indeed.

Ethyl Universe Planetarium, Richmond

Eric Mellenbrink says they are currently running an original production of the Buhl Planetarium called Journey Into a Living Cell. This program uses three main characters from a popular TV show as hosts for a trip of discovery about the Moon. This was a joint production with WGBH Boston.

The extremely popular Imax Dome film Fantasia 2000 has returned for what should prove to be another successful run. Another film titled Amazing Journeys, a natural history program about animals of the world and their migratory habits, is also showing. These will run through January 1. After that, the film T REX brings the terrible lizard to life threatening audiences at nearly full size in this spectacular film.

After Labor Day The Night Sky returned

HST's Greatest Hits of '96

Duncan Teague
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The Space Telescope Science Institute (STScI) provides slides of Hubble images to individuals within regional affiliates who arrange 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, including postage and handling. Send your check or purchase order to the address at left.

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| <p>01.a Hubble's deepest ever view of the universe, revealing 1,500+ extremely faint galaxies in various stages of their development</p> <p>01.b Sample galaxies from the same Hubble deep field</p> <p>02 The inner region of a warped dust disk around Beta Pictoris once hidden because of the star's glare</p> <p>03 An image of the Egg Nebula taken by WFPC2; it shows the emergence of mysterious searchlight beams from behind a dying star</p> <p>04 The first direct image of a star other than the Sun: Betelgeuse.</p> <p>05 In more detail than has ever been seen before, the process a star like the Sun goes through when it dies</p> <p>09.a In clear, detailed pictures the first ever images of Pluto's surface; four views</p> <p>09.b Pluto surface map</p> <p>10 Gravitational lens effect captures image of primeval galaxy</p> <p>11 Images of globular cluster Mayall II, consisting of 300,000 old stars, in orbit around the Andromeda galaxy</p> <p>13.a The Helix Nebula, NGC 7293 showing collision of gases near a dying star</p> <p>13.b Helix Nebula detail with cometary knots surrounding the dying star</p> <p>14 A view of Comet Hyakutake that focuses on the near nucleus region of the comet</p> <p>15 Three layers of Uranus's atmosphere</p> | <p>taken with infrared filters; both clear and hazy layers created by a mixture of gases</p> <p>16 Image taken of Saturn where its rings appear edge on because of the position of the Earth in Saturn's orbital plane</p> <p>17 A view of several star generations found in the central region of the Whirlpool Galaxy</p> <p>18.a A rare view of Saturn's rings seen just after the Sun had set below the ring plane</p> <p>18.b A series of 10 images of several small moons orbiting Saturn</p> <p>21.a NGC 1365, a barred spiral galaxy located in the Fornax cluster</p> <p>21.b NGC 4639, a spiral galaxy located in the Virgo cluster</p> <p>22.a The Crab Nebula and a detail of the pulsar in its center</p> <p>22.b Sequence of three images showing changes in the Crab Nebula pulsar</p> <p>23.a Huge, billowing pair of gas and dust clouds in Eta Carinae</p> <p>23.b Expansion of Eta Carinae debris</p> <p>25 Hubble's 100,000th exposure captures an image of a distant quasar</p> <p>27 A vast nebula, NGC 604, which is known for a great starbirth region</p> <p>29.a 18 gigantic star clusters which may be building blocks for a new galaxy</p> <p>29.b Blue sub galactic clumps which may be galaxies under construction</p> <p>30 Jupiter's moon Io passing above turbulent clouds</p> <p>31 Clusters of stars and a fishhook shaped cloud of gases found in NGC 2366, a giant star forming region</p> <p>32 Changes in Jupiter's auroral emissions</p> <p>33 Views of weather on opposite hemispheres of Neptune</p> <p>34 A Martian dust storm around the edge of the north polar cap</p> <p>35.a A survey of quasar host galaxies</p> <p>35.b A quasar caught in the act of colliding with its companion galaxy</p> <p>36.a Supersonic comet like objects in the Cartwheel Galaxy</p> <p>36.b Cartwheel Galaxy composite image</p> <p>36.c Cartwheel Galaxy illustration</p> |
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HST's Greatest Hits of '97

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

<p>01 Central supermassive black holes in galaxies NGC 3377, NGC 3379, and NGC 4486B:</p> <p>03 SN1987A Fireball: One tenth light year long dumbbell structure expanding at six million miles per hour in supernova 1987A</p> <p>08 Changes in the nucleus of Comet Hale Bopp as it moves closer to the sun beginning in September 1995</p> <p>09.a Transition from spring and summer in Mars's northern hemisphere; photo taken shortly before opposition</p> <p>09.b Three photos of Mars taken six hours apart with 90° difference between images; photos taken shortly before opposition</p> <p>11 The Egg nebula in which stars are born and die violently; photo shows jets of gas being blasted into space</p> <p>12 A supermassive black hole located in galaxy M84</p> <p>13 NICMOS captures region of the Orion nebula filled with action as a center for the birth of new stars</p> <p>14 Supernova 1987A: different colors represent different elements in the ring</p> <p>15.a A view of Mars's cloud cover</p> <p>15.b Seasonal changes in Mars's north polar ice cap</p> <p>15.c Four views of Mars rotated 90° between images during summer in Mars's northern hemisphere</p> <p>16 The Cone Nebula: six baby sun like</p>	<p>stars surround their mother</p> <p>17 A collision between two spiral galaxies in the heart of galaxy Arp 220</p> <p>18 Fireworks near a black hole in the core of Seyfert galaxy NGC 4151</p> <p>19 STIS reveals an invisible high speed collision around a supernova</p> <p>20 Hubble pinpoints the optical counterparts of a gamma ray burst in a distant galaxy</p> <p>21 Hubble captures a volcanic eruption plume from Jupiter's moon Io</p> <p>22 A gamma ray burst blazes from a titanic explosion in deep space</p> <p>23 Hubble's look at Mars shows a canyon dust storm, cloudy conditions for Pathfinder's landing in July 1997</p> <p>24.a Dissipation of a large dust storm on Mars</p> <p>24.b Hubble shows dust and water ice clouds exhibit substantial daily variations</p> <p>25 Powerful telescopes discover the largest galaxy in the universe</p> <p>26 Hubble separates components in the Mira binary star system</p> <p>27 Hubble reveals huge crater on the surface of the asteroid Vesta.</p> <p>28 Hubble finds a bare black hole pouring out light.</p> <p>29 Hubble shows blobs of gas formed by some nova outbursts.</p> <p>30 Hubble keeps track of a fading gamma ray burst.</p> <p>31 Mars at the beginning of autumn in the Martian northern hemisphere.</p> <p>32 Hubble sees a neutron star alone in space.</p> <p>33 Hubble identifies what might be the most luminous star known.</p> <p>34.a Hubble reveals stellar fireworks accompanying galaxy collisions.</p> <p>34.b Detailed images of colliding galaxies.</p> <p>35 Hubble shows images of a blue straggler star.</p> <p>36.a Hubble tracks clouds on Uranus.</p> <p>36.b Hubble spots northern hemispheric clouds on Uranus.</p> <p>37 Hubble shows infrared view of moon, ring, and clouds of Jupiter.</p> <p>38.a Hubble sees supersonic exhaust</p>
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01	COBE's infrared view of the Universe: three maps of the full sky seen in infrared light	20	Four of NASA's proposed designs for the Next Generation Space Telescope (NGST)
02	Distant supernovae: light sources determine universe's expansion rate	21	Galaxy NGC 4314: bright ring of starbirth around the galaxy's core
03	Beta Pictoris: disk indicates planets, possible brown dwarf companion	22	NGC7052: galaxy with 300 million solar mass black hole in its center
04	Jupiter aurorae: a curtain of light extends several hundred miles beyond Jupiter's limb	25	N81 in the Small Magellanic Cloud: a celestial maternity ward
05	Saturn's aurorae: curtains of light extend 1,000 miles above cloud tops	26.a	Galaxy Cluster MS1054-03321: thousands of galaxies 8 billion light years from Earth
08	Supernova 1987A: a collision between the expanding blast wave and circumstellar ring	26.b	Supernova 1996CL: a March 1996 exploding star in galaxy cluster MS1054-0321
10	Serendipitous asteroids: HST images show curved trails of asteroids	27	Distant galaxy clusters: left, in Virgo; upper right, in Andromeda; lower right, in Taurus
11.a	Planetary nebula NGC 7027: a brief stage in the evolution of a medium mass star	28	NGC7742: a small Seyfert 2 active galaxy probably powered by a black hole in its core
11.b	Cotton Candy Nebula and Silkworm Nebula: phases of stellar burnout	29	Saturn: pastel yellows, browns, and greys distinguish cloud differences
12	Star birth in barred spiral galaxy NGC 1808 possibly due to interaction with NGC 1792	30	Sagittarius Star Cloud: HST peers into the heart of the Milky Way
14.a	Centaurus A: nearest active galaxy to Earth shows turbulent firestorm of starbirth	31	NGC7635, the Bubble Nebula: an expanding shell of glowing gas surrounding a hot star
14.b	Centaurus A: tilted disk of gas at galaxy's core surrounds suspected black hole	32.a	Infrared views: left: faintest galaxies ever seen; right: objects 12 billion light years away
15	Stingray Nebula: Henize 1357, the youngest known planetary nebula	32.b	Deep field galaxy: left: visible light areas of starbirth; right, infrared disk structure
16	NGC 1818: globular cluster of over 20,000 stars in the Large Magellanic Cloud	34	Neptune: a look at the eighth planet's stormy disposition
17.a	GRB 971214: gamma ray burst is most energetic event in the universe	35	Uranus, August 8, 1998: its four major rings and 10 of its 17 known satellites; false color
17.b	GRB 971214: gamma ray burst; comparison of Keck Telescope and HST views	36	NGC6210 planetary nebula described as looking like a turtle swallowing a sea shell
18	Saturn: details of the clouds and hazes in atmosphere of ringed planet	37	Quasar PG1115+080 and gravitational lens effect
19	Possible first extrasolar planet ever	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
		41.a	HST deep field south: thousands of

JPL '98 Slides

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

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

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HST's Greatest Hits of '99

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The Space Telescope Science Institute (STScI) provides slides of Hubble images to individuals within regional affiliates who arrange 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 set of 42 slides is \$52.50, including postage and handling. Send your check or purchase order to the address at left.

- 01 M57 Ring Nebula: the sharpest view yet of this planetary nebula
- 02 Combined deep view of infrared and visible light galaxies
- 03 HD 141569: stellar dust rings of a star in the constellation Libra
- 04 SNH1987A: self destruction of a massive star in Large Magellanic Cloud
- 05.a Six images of a young stellar disk found in the constellation Taurus
- 05.b Four images featuring disks around various young stars in Taurus
- 06 NGC 1316: 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 fireball in a gamma 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 NGC 4650A: a polar ring galaxy
- 18 Rings, arcs, and crosses as seen in

- Hubble's top ten gravitational lens effect images
- 19 NGC 4603: magnificent spiral galaxy associated with Centaurus cluster
- 20 NGC 3603: 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 Large Magellanic Cloud
- 25 NGC 4414: magnificent details in the dusty spiral galaxy
- 26 NGC 6093: a stellar swarm in a dense globular cluster
- 27 Mars: the red planet at opposition during April-May, 1999
- 28 MS 1054-03: 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 HE 2-104: small, bright nebula embedded in the center of a larger nebula
- 33.a R136 in 30 Doradus: a grand view of the birth of stars
- 33.b R136 in 30 Doradus: two detailed views of a highly active region of star birth
- 34.a NGC 1365: a barred spiral galaxy reveals a bulge in its center
- 34.b Eight different views of the central bulges of spiral galaxies
- 35 HH 32: a magnificent example of a Herbig Haro object
- 36 NGC 2261: Hubble's variable nebula illuminated by R Monocerotis (R Mon)
- 37 NGC 2346: a butterfly shaped nebula
- 38 NGC 2440: planetary nebula ejected from a dying star
- 39 OH 231.8+4.2: the rotten egg nebula
- 40 M32: hot blue stars deep inside a dwarf elliptical galaxy

JPL '99 Slides

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

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NASA JPL has sent us the following slides for the Mars Pathfinder and Cassini/Huygens missions. Slides are \$1.25 each

Designing a Planetarium for the 21st Century

Philip Groce,
Helping Planetariums Succeed

Planetariums are wonderful and often unpredictable institutions. They have such a short history that simply defining the nature of planetariums can be controversial. Even riskier is trying to predict what a planetarium will be or should be in the next millennium.



um at a Florida tourist attraction in St. Augustine, Florida. This planetarium features a thirty foot dome and the same Spitz A2 projector that was installed in 1959. The audience sits in the round on hardwood benches and there are no slides or video projections. A large scale three dimensional replica of a 16th century Spanish Ship with a large mast that nearly touches the dome dramatically demonstrates the science of sailing by the stars to the New World. By today's or probably any future standard, this is an unlikely candidate for a successful planetarium design. However, in the context of its mission or use, it is one of the most successful planetariums in the US averaging between 150,000 and 200,000 visitors a year over the last 40 years.

What design criteria should we use to day to build a planetarium for the next 40 years or for the next millennium? What is the mission of such a planetarium?

The Louisiana Arts and Science Center

Judgments on the merits of previous designs must also be tempered by the context in which these planetariums are used and their mission. For instance there is a privately owned planetarium

(LASC) in Baton Rouge, Louisiana is faced with such a challenge. Their proposed mission is one that could describe almost any modern planetarium. To be an educational, inspirational and entertaining multi disciplinary theater that celebrates humankind's artistic and scientific investigation of the universe... to present programs which will make audiences feel young enough to see the wonders of the universe through a child's eyes.

The mission states that the planetarium is first and foremost a theater. And a theater is often defined as a place where people go to sit in the dark, to watch other people perform in the light, all to learn what it is to be human. So with this mission and definition in mind, I put together a survey showing current directions or trends in planetarium design:

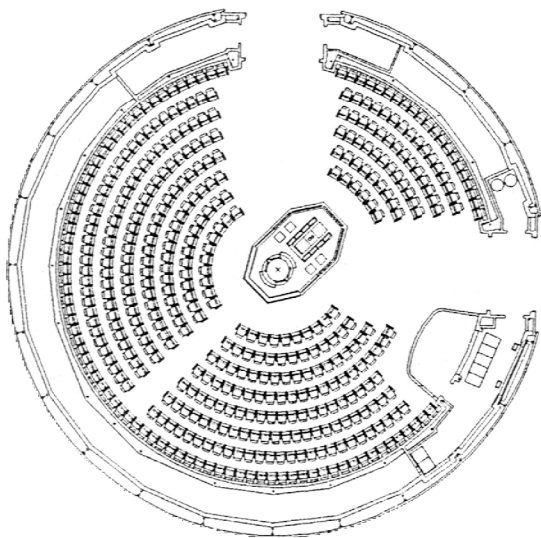
- Larger dome sizes, > 15 meters
- Unidirectional or Epicentric seating/ stadium seating on tilted domes
- Fewer seats/ more comfortable seating/ better sight lines
- Near seamless domes Tilted 12 30
- Partial dome sections 160 170 degrees instead of the traditional 180 hemisphere.
- Darker Domes (30% 48% reflectivity) for reduced cross reflections and greater contrast/ color saturation
- Optical mechanical star projectors combined with full dome laser graphics or full dome monochromatic CRT projection (Digistar).
- Full dome and partial dome, full color video matrix CRT systems
- Rise of 870 motion picture systems
- Brighter optical mechanical star projections with smaller and more realistic stars
- Six channel sound systems conforming to motion picture and large format film standards
- Hard drive storage of both audio and video (computer) sources
- Theatre design/ technology encourages audience participation and a return to the human presence in planetariums.

A primary design goal for the new Baton Rouge Planetarium is a realistic presentation of the night sky. My 32 years of comparing planetarium skies to the real sky have always left me disappointed in our artificial skies. In recent years, the new star machines are far brighter and the stars far smaller and more realistic. Regrettably, current planetarium designs fail to take advantage of the great advances made by such companies as Goto, Minolta and Zeiss.

Unfortunately, there is only one view point where a planetarium sky has positional and size accuracy and realism, and that is at the optical center of the dome or the center of the star ball. Anyone who has ever climbed a ladder to install or align a new star lamp knows the thrill of seeing star patterns as large as they are in the real sky. Orion is a big and impressive star grouping in the real sky, but in planetariums, as seen from far below in the crater of the seating area, it appears small and unimpressive. The ideal planetarium would place the dome viewing area as close to the dome radius (R) distance as possible.

If we look at the new incarnation of the Hayden Planetarium in New York, we discover a facility which flies in the face of current design trends. The seating is circular instead of unidirectional. The dome is not tilted. The seating is, however, raked and resembles an amphitheatre.

The dome is not 180°. It's a 165.58 degree dome section of a 70 foot hemisphere.

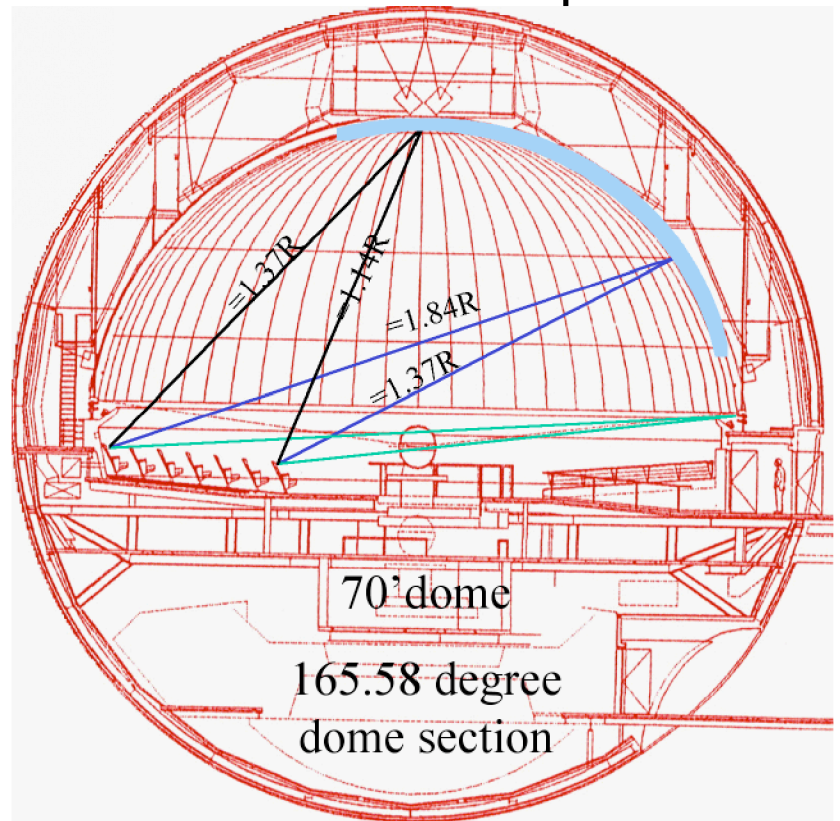


Audiences looking across the theatre at a constellation 30° above the horizon see it greatly diminished at a seat to dome dis-

tance varying from 1.37 to 1.87 times the dome radius (R). Unfortunately, because of the circular seating that constellation is nearly invisible or highly distorted for nearly half of the audience. The full dome video production had nearly all of the images rising up into the center of the dome, the only area easily visible from all seats.

Other than the full dome video matrix system, there is little in the new Hayden planetarium that speaks to a planetarium

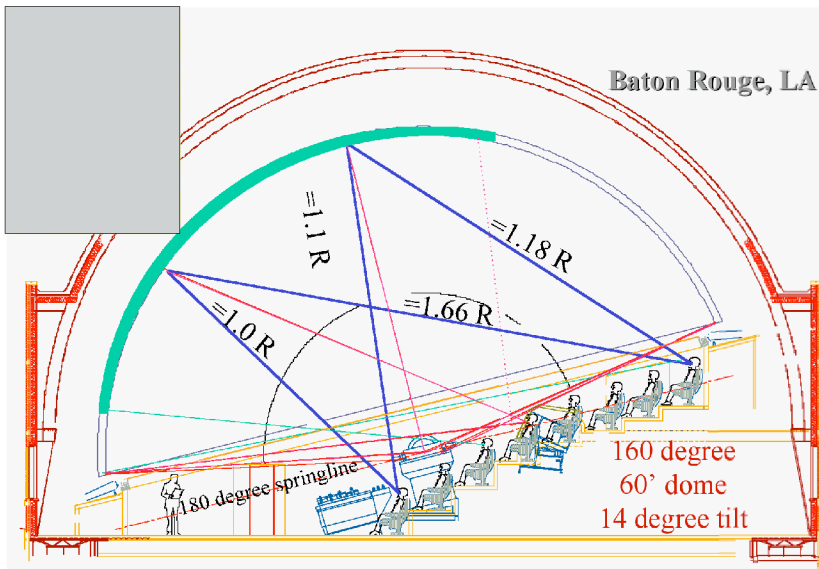
Designing a Planetarium for the 21st Century continued



design for the next millennium. Like the St. Augustine planetarium, however, this theatre must be placed in the context of its mission. It is obvious that seating number requirements and other projection criteria determined the design. The day I visited the new Hayden all of its programs were sold out and, if this trend continues, the Hayden will easily boast of an attendance of more than one million visitors in its opening year, a record for this industry. And no matter how critical one may be of this design, it is difficult to argue with such a success.

So what will be Baton Rouge's answer to these design issues?

- The dome will be a 160° section of a 60 foot hemisphere. The dome is tilted 14°, but the seating rises sharply to take the audience above



Designing a Planetarium
for the 21st Century
continued

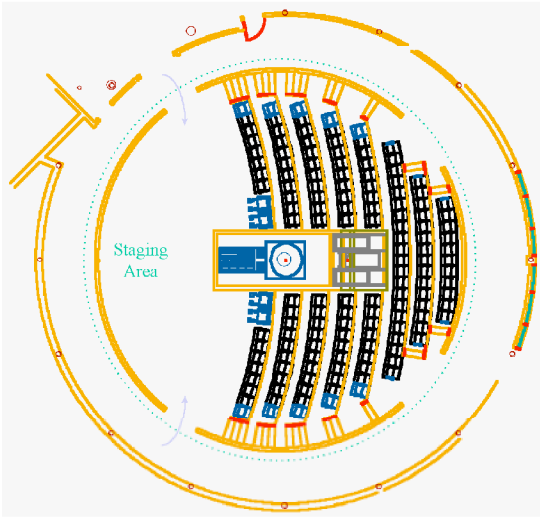
the springline and closer to the dome. Audiences looking at a constellation 30° above the dome horizon will view it at a far more impressive distance of just 1.0 – 1.66 times the dome radius. Stars and other projections near the Zenith are slightly over 1.1 R from nearly every seat. This more immersive view will take advantage of the high resolution 15,000 stars produced by the Minolta Infinium II star projector.

- The seating will be unidirectional so that everyone in the audience will have the same view at the same time. The seating will be spacious, 48 inches from back to back for greater access, comfort and better sight lines. There are very few seats in front of the star machine. Because seating numbers are not an issue, we can afford to eliminate the poor sight line seating which plagues many planetariums. We can achieve this user friendly seating, in part, because we eliminated the need for a control console inside the theatre.
- The 160° dome allows the star machine and other projectors always to be in the theatre without blocking the audience's view of the sky. This eliminated the need and associated costs for equipment elevators.
- The dome will have a 45% reflectivity for greater color saturation of its 870 projections, its SkyVision video matrix system imagery, its Omniscan laser and its all sky and panorama systems.
- The sound will be a 15,000 watt six

channel system which exceeds the SMPTE standard for motion picture sound systems.

- For all of this wonderful leading edge technology, LASC believes that the planetarium of the future will be participatory and have greater human presence but not in the form of push buttons in seats. To this end, LASC commissioned Minolta Planetariums to create a hand held infrared control system which will allow the presenter or any designated member of the audience to control from any point in the theatre almost every aspect of the planetarium including projector motions. This infrared hand held controller can also select up to 36 macro functions. These functions can be preprogrammed events of any complexity or length and control not only the star machine but also the video, slide, lighting, film, and laser systems. The primary purpose of this remote control system is to free the presenter from the console and encourage his or her interaction with the planetarium audience.
- Finally, the most important design element is one that cannot be seen. Executive Director Carol Gikas, led by a forward thinking Board of Directors, has recognized that the most important element of the planetarium of the future is people. To this end, she included a \$5 million endowment in LASC's funding campaign. The earnings from this endowment will only be used to pay staff, defray operating expenses, and insure the economic well being of the planetarium. The planetarium of the next millennium will continue its evolution and face new challenges, issues and questions.
- Will projection television manufacturers discontinue CRT technology in the near future? What does this mean for integrated video matrix systems? What will replace it? Will laser projectors have a high enough contrast level and will they become affordable?
- What is the desired brightness/ size of stars for greatest realism?
- Will we see a pitless planetarium in the near future? The Denver Museum of Nature and Science is planning just such a theatre. Is this new type of presentation theatre a planetarium?

At the MAPS 2000 Conference, I was fortunate enough to witness John Stoke give a historical perspective to this issue when he presented his Margaret Noble Address.



In that speech, John told the early history of the Hayden in New York.

Within a few years after its 1935 opening, the then new Hayden Planetarium was considered a failure with low attendance and a huge debt service. In a report, Robert Moses, Commissioner of Parks for New York City, outlined a number of solutions to trustees. Among the solutions seriously considered was closing the Hayden Planetarium forever.

The Hayden suffered in comparison to other forms of learning and entertainment showcased in the World's Fair of 1939. Among these wonderful exhibits at the fair was the General Motors Pavillion: Futurama, created by the great American industrial designer Norman Bel Geddes. In Futurama we see the future of the American landscape with superhighways and urban sprawl. We also see the future of themed entertainment a future adopted by Disney and Epcot today. The Hayden's cut out skyline could not compete with the thousands of intricate lighted model buildings, trees and moving cars of Futurama.

To help reinvent the Hayden, Moses appointed Bel Geddes' design firm to study the planetarium and to make some recommendations. Some of the observations and recommendations are as relevant today as they were in 1939.

On reaching the auditorium, the spec

tator is... confronted by a mysterious machine... its constant mechanical presence links the spectator to the room and prevents his imagination from carrying him millions of miles into space. It is as wrong to have this machine remain visible during its operation as it would be for an audience to watch a play from backstage.

Bel Geddes apparently despised the circular seating and offered unidirectional stadium seating.

Obviously from a quarter to half of the entertainment which the audience is watching takes place directly over their heads or behind them. The cumulative effect of constant neck craning is in conflict with a basic element of theatrical technique; the audience must be in a state of relaxation in order to give sway to their imaginations and emotions... .

As the audience enters the main auditorium, the lighting should be twilight with the sun setting. The music should be specially recorded to enhance the mystery. The audience faces a single focal point away from which each row of chairs is elevated.

The audience must experience the illusion of being transported into space, where they view the celestial actors from startling points of view.

It is vital, in presenting educational entertainment, that the museum atmosphere be replaced by a mystic and dramatic quality. This atmosphere should... envelop the spectator without interruption.

Unfortunately, WWII and other world events placed this new planetarium vision on hold. Over time it was forgotten, and the Hayden managed to find an audience finally.

Bel Geddes' prophetic words of the past, however, perfectly describe the planetarium of the future. They describe an inspiring and immersive planetarium... a planetarium with a powerful human connection... a planetarium just like the one proposed for Baton Rouge.

services and time. We truly appreciate your efforts.

Don't forget to send in your nominations for the Fellowship Award. Duncan is printing a nomination form in each journal. You can either mail in your nomination or e-mail any council member with your nomination. Council e-mail addresses can be found in the front of each Southern Skies. Remember this is SEPA's highest recognition, and we encourage all of the membership to participate in its bestowal. You have a few months to think about it, so there should not be any excuse for not participating in the selection process.

Our mini star show/infomercial, Saving the Night, is currently in distribution through the International Planetarium Society (IPS). IPS is also looking into different language versions of the show for their international colleagues. It was my goal to try to put this show in the hands of as many planetariums as possible. I hope you see the value of the program and of using it to help educate the public on this very important issue. The Quick Time movie version of the program is also seeing wider distribution through the International Dark Sky Association (IDA) and others. I continually get request for the program in that format. I am sure I

will continue to be a dark sky pusher for some time to come.

After the last conference some progress was made towards SEPA producing a full length program on an astronomical/spacecraft subject we are all familiar with. However, producing a 30 minute program will require a whole lot more money and commitment and we are still in the organizing stages of the project. Once all the logistics are worked out we will announce whether or not it will fly. Stay tuned and don't forget to pay your dues!

It's hard to believe that January 1st marks the beginning of 2001 and the next millennium. Technology has advanced considerably my last 20 years in the profession. HAL is no longer just a piece of equipment in a science fiction novel or movie. Regardless of dome capabilities, we all strive for the same goal. To educate, enlighten and excite our visitors of the wonders of the Universe. Keep up the good work.

Thanks for all of your support. I raise a bottle of Woodchuck to all of you! Clear DARK Skies Your last President of the millennium, George (Jetson)

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: _____

Southern Skies

VOLUME 20, NUMBER 4

JOURNAL OF THE SOUTHEASTERN PLANETARIUM ASSOCIATION

FALL 2000

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