

Southern Skies

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Summer 2013

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NC Statewide Star Party - see News from SEPA REGION Credit: Joe Pedit

Officers of the Southeastern Planetarium Association



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President
David A. Dundee
Tellus Planetarium
Tellus Science Museum
P.O. Box 3663
Cartersville, GA 30120
(770) 606-5720
Email: DavidD@tellusmuseum.org

President-Elect
Ken Brandt
Robeson Planetarium
410 Caton Road
Lumberton, NC 28360
kenneth.brandt@robeson.k12.nc.us

Past-President
April Whitt
Jim Cherry Mem. Planetarium
Fernbank Science Center
156 Heaton Park Drive, N.E.
Atlanta, GA 30307
(678) 874-7102, Fax: (678) 874-7110
Email: april.whitt@fernbank.edu

Secretary/Treasurer
Patsy Wilson
140 Lyn Road
Salisbury, NC 28147
(704) 639-3004 x112
Email: wilsonpatsyk@gmail.com

IPS Council Representative
John Hare
3602 23rd Avenue West
Bradenton, FL 34205
(941) 746-3522, Fax: (941) 750-9497
Email: johnhare@earthlink.net

Editorial Staff of *Southern Skies*

Southern Skies Editor
James Sullivan
Buehler Planetarium & Observatory
Broward College
3501 Davie Road
Davie, FL 33314
(954) 201-6681, Fax: (954) 201-6316
Email: jsulliva@broward.edu

Associate Editors

Archeoastronomy Column
Woodrow W. Grizzle III
Elizabeth City State University Planetarium
1704 Weeksville Road
Elizabeth City, NC 27909
Email: wwgrizzle@mail.ecsu.edu

Small Talk
Elizabeth Wasiluk
Berkeley County Planetarium
109 Ridge Road North
Hedgesville, WV 25427
(304) 754-3354, Fax: (304) 754-7445
Email: isbeth4@hotmail.com

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David Dundee
Tellus Science Museum
Cartersville, GA

With the coming of warmer weather, I am always reminded of my early roots in astronomy. Nostalgia is heavy remembering those days early in high school with my 8-inch Dynascope learning to find my first deep-sky objects or just combing the skies

Rates and submission formats for advertising space in SEPA's quarterly journal *Southern Skies* are:

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\$100.	Full-page 7" wide x 10" high
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for unusual patterns of stars. Each August the Perseid Meteor Shower was a must. My friends and I would journey to a dark spot out of New York City into the wilds of New Jersey. We would stretch out in sleeping bags on the grass that would be wet by morning. With star charts in hand to mark each meteor and our cameras on tripods by our sides, the night loomed ahead of us. Fogging of camera lenses were always a challenge in the predawn hours, so my friend and I built a small blower that blew air across a high intensity light bulb and then went through a series of light baffles to blow out across two fisheye lenses pointed skyward. This kept our lenses dry during long exposures needed to catch a meteor. We called the device the S.A.M.E. which stood for the Semi-Automatic Moisture Eradicator.

I still enjoy relaxing and looking upward each August waiting for the next interplanetary visitor to flash by. Meteor photography has become rather routine for me now, thanks to NASA and their fireball camera mounted atop Tellus Science Museum. Pictures and



(Continued on page 18)

IPS REPORT

John Hare
ASH Enterprises
Bradenton, FL

I was surprised at the recent SEPA conference Business Meeting when a new member asked me what IPS stood for. In retrospect I shouldn't have been surprised. Those of us who have been active in SEPA or other planetarium organizations take certain things for granted and the above example points out the consequences of such thinking.

The answer was readily furnished but the ramifications go much deeper. I suspect that there are others in SEPA who likewise are not familiar with IPS, the International Planetarium Society. I'll attempt to remedy that situation.

IPS is an international organization of planetarium

professionals, institutions, and vendors. Membership currently exceeds 600 from over 50 countries worldwide. Members receive the quarterly journal, *The Planetarian*, along with the IPS Resource Guide and Directory, discounted or free full-dome shows, conference proceedings, and occasional other special publications. Conferences are held every other year in even numbered years. Dues are \$65 for a 1-year membership and \$100 for 2-years. You can obtain membership forms from IPS Treasurer, Shawn Laatsch at slaatsch@imiloahawaii.org, myself at johnhare@earthlink.net, or on-line at www.ips-planetarium.org.

Visit the IPS Website for membership forms and other information. Note that there is a "members only" section that contains additional information of value.

The site of the 2014 IPS conference is Beijing, (Continued on page 18)

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: _____

Rebirth in Okayama

Fifty years after the original Okayama, Japan planetarium opened in the prefectural Children's Hall, it has now been totally reborn with a new CHRONOS II HYBRID system, under the administration of the Okayama Prefectural Lifelong Learning Center Sci-pia. Located on Japan's Seto Inland Sea, the planetarium lies within the city's educational district, amid high schools, universities, and parks.

The newly renovated 15 meter dome is called the "Future Science Dome," and it certainly is the future of planetarium technology, made real today... by GOTO INC. It utilizes the new LED-illuminated CHRONOS II star projector and a synchronized 4K-resolution video system featuring two centrally-mounted video projectors.

The Okayama staff enjoys presenting live sky programs, so the CHRONOS II is a natural choice. Its sky, it's spectacular 10,000,000 star Milky Way, and the live manual control via the GOTO HYBRID console all make live programming easy, accurate, and very, very realistic.

When combined with new seating, new surface panels for the projection dome, and an overall new outlook on astronomy education, the Okayama planetarium truly has been reborn for a new life serving the next generation of Okayama citizens.



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Editor's Message

(Spring), July 1 (Summer), October 1 (Fall).

James Sullivan
Buehler Planetarium & Observatory
Davie, FL

Thanks to Broward College and its wonderful printing department for assistance.

I am deeply honored and very grateful to have received the Paul Campbell Fellowship Award from SEPA. It was totally unexpected. Thank you to everyone who made this possible.

I also would like to thank all our contributors this issue. It is great when we receive so many articles and pictures.

We can receive electronic files in most any format. Also, graphics can be received electronically or in hardcopy, including slides or photos, and will be converted to digital with sufficient resolution.

Submission deadlines: January 1 (Winter), April 1



SEPA Membership Form

Please send your check to SEPA, c/o Patsy Wilson, 140 Lyn Road, Salisbury, NC 28147

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Small Talk

Elizabeth Wasiluk
Berkeley County Planetarium
Hedgesville, WV

I remember a long time ago, back when Jane Hastings rather than April Whitt did the humorous column on the last page of *The Planetarian*, the journal of the International Planetarium Journal, she had said that if you can't afford or find time to go to a planetarium conference and you feel you could need to have a mini planetarium conference, you can just go visit a colleague and hold a mini conference yourself. So that is what I did back in April 2013. Last year at the International Planetarium Conference in Baton Rouge, LA, I roomed with Francine Jackson as well as Jeanne Bishop and Jeanne kept asking me to come visit her in Cleveland and visit my father, since he would be turning ninety years old in December 2013 and she reminded me that I could never tell how much longer he would be around.

I had never known my father very well. My parents were only together for three weeks, three months or something like that and got divorced before I was born. My father remarried a woman from Warsaw, Poland, about a year or so later and together they had two other children and lived in Cleveland, OH. I had never gone to visit him. I had been raised by my mother's parents. So this Easter vacation from school I travelled over to visit her and stayed at her beautiful home. In addition to visiting my father and stepmother, Jeanne also took me to her astronomy club meeting dinner. The speaker there talked about black holes and anti-matter and the experiment to look for anti-matter on the International Space Station. We also learned about



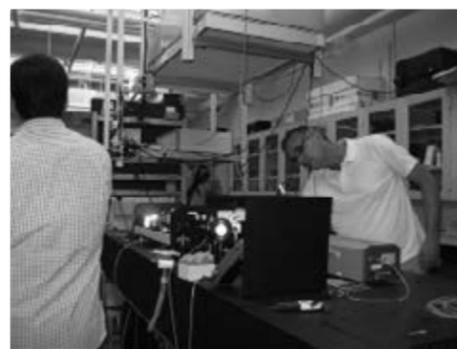
my father and stepmother

Women Astronauts at the International Museum of Women Aviators and Astronauts. I learned that I share a birthday with Judy Resnik, who died in the Challenger disaster. In addition to visiting my father as well as these fun talks, Jeanne and I got to share some fun female planetarian quality time together. All in all a great time.

The end of the school year was rather hectic, what with planetarium programs, getting my senior homeroom out and graduated in time. (They had been wearing t-shirts saying "Keep Calm and Graduate".) My pulsar search team had been trying to get a poster paper of their research done so they could go to the end of the school year activity at West Virginia University where they could meet students from around the country also presenting their research.

The problem this year was that the event was scheduled during the time when our students would be taking final exams, so even though it was free to attend the two day mini conference, called Capstone. Most students opted to not go so they could take exams. Not so team member Saira Blair. Even though she was in chorus and could not meet with the team during the school year, very often, she worked hard to complete her poster paper as well as take all three of her exams on the same day so she could attend.

We had a great deal of fun during the event. Saira had said that she was planning to attend West Virginia University and this trip helped reinforce her decision. We toured the science labs and saw the observatory and new planetarium where we saw the planetarium program on "Stars" from the Sutekum Planetarium in Nashville, TN written by our own Kris McCall. The tours were



We observe an experiment involving plasma and lasers at WVU

all lead by students who graduated from the pulsar search program, including my own first team leader who helped me organize a team five years ago, April Liska, who is majoring in physics at West Virginia University and is working this summer with pulsar astronomer, Duncan Lorimer originally from Manchester, England, now a professor at West Virginia University. Can't believe April will be a junior in August.



The new planetarium at WVU



Former pulsar team leader for Hedgesville High Pulsar Search Team, April Liska led a tour of WVU

Saira bonded with a pulsar search student from Broadway High School in Virginia who is planning on being an education major in August at West Virginia University. After a briefing on the pulsars discovered by the students who participate in pulsar search and how they will be used to participate in the search for gravitational waves, we toured laser and plasma labs and the engineering department and the kids launched paper rockets they created on a cool wooden contraption that used a bicycle tube to launch.



Launching rockets at the Capstone event at WVU

Saira loved the Capstone event, and decided to go with me in July to the National Radio Astronomy Observatory, in Green Bank, West Virginia. Speak-

ing of which, there is a neat one page article about NRAO in the June issue of *Discover* magazine as one of the "Hot Science Destinations."

Finally, I was conspicuously absent at SEPA's meeting in Jacksonville, FL. I am really sorry that I missed all of you, but I had a great excuse. I was at Space Camp in Huntsville, AL.

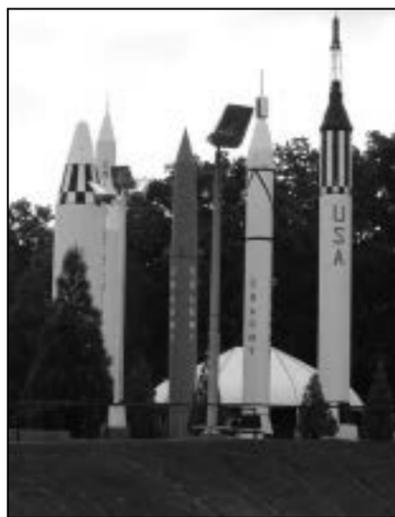
I had been participating in a Trivia Tuesday contest held at a pizza place located near by my home, since August 2012. Our team is made up of science, math, and a couple of english, special education as well as technology teachers. I participated in the annual "Brain Games" held in April to benefit Berkeley County Literacy with my trivia team and we came in third and I got my first ever trivia expert trophy. Our team beat out another team of people who run the local trivia contests in bars and resaurants around town.



One day, my friend, Marianne who teaches English in Hagerstown, MD, came to trivia and said she wanted to go to space camp and asked me if there was some way teachers could go for free. I told her there must be some way we could do this, so I told her I would look on the internet and I came up with this program sponsored by the Honeywell Corporation where they send teachers to Space Camp in Huntsville, AL for a week and pay for all expenses except for luggage fees and parking at the airport.

Marrienne has taught English as a second language in Japan, Dubai, China and Prague. Together we attended a workshop called "Teaching Science Literacy Using Science Fiction Literature" at the Wright Center For Science Education at Tufts University in Medford, MA several years back. I couldn't think of anyone I would rather go to space camp with, so I said I would apply as well. And as luck would have it, after 900 teachers the world over applied to attend space camp in this program, only 200 were selected and I was one of them, Marianne was not. I felt terrible and almost did not want to go without Marianne. But in the end, I did go. How could I refuse? Dates interfered with my going to SEPA, since it was June 21 to June 27.

Honeywell paid outright as to how to get to Huntsville, AL, so we did not have to lay out money in advance. I found a direct flight out of Ronald Reagon National Airport in Washington, DC. No one ever flies out of National. It is difficult to get into and out of, and parking is expensive. But I found a place to park in an underground lot at the Crystal City Sheraton. (This is a good time to cue up Jorma Kaukonen's "Killing Time in the Crystal City" as background music to reading this...) Anyhow, got some great views of the Washington Monument (still with scaffolding up, due to earthquake repair), the Pentagon, the Jefferson Monument and the Potomac in my drive to locate the hotel which was more challenging than I had hoped. Luckily, I had left with lots of time to get to the airport.



Huntsville's fabled rocket garden

When I arrived in Huntsville, there was a man named Chris from Space Camp who met me at the airport and called back the bus to take me to the University of Alabama's "Charger Village" where we stayed in the dorm rooms. Now, I have stayed in lots of dorm rooms for teacher workshops around the country and these were far superior to any I had stayed in before. There were four of us staying there: Theresa from Louisiana, Vickie from New Jersey, Fallon from Louisiana and me. Poor Fallon had come in after midnight and had to change rooms as she was originally scheduled to stay in a room with a bunch of guys and she was saying that she was ok with that but the people running the camp made her move.

We were raring to go the next day at breakfast. I met a woman from Australia who was putting vegimite on her toast. We got a great t-shirt from Honey-

well that said, "41 states, 27 counties, one mission, Class of 2013" plus another one from the University of Alabama. We also got a flash drive that looks like a business card, a very cool, tiny computer mouse, a clipboard, a little foam astronaut, an autographed photograph of astronaut Don Thomas who also spoke to us, books, a water bottle and a neat knapsack to carry it all in.

One of the head educators at Space Camp was a guy from the West Virginia School for the Deaf and Blind in Romney, WV. We were broken into groups named after modules in the International Space Station, ours was Kibo, and assigned a team leader. Our team leader was Jennifer Kennedy, who nine years ago attended space camp and ended up marrying her team leader. Ironically, their team name was Destiny. Jennifer won an Einstein grant and next year will be working for NASA in Washington, DC. Anyway, after icebreakers, we went to Area 51 where we participated in team building



Kibo is a module of the International Space Station. This mock-up is at Space Camp.



A lifesized fully loaded shuttle used for size and experiments graced Astrotech, the building in the distance where we ate our meals

activities. We also toured the museum where we saw Werner Von Braun's desk, a memorial to the long lived space monkey, Ms. Baker, where kids attending space camp were leaving bananas for her, two, count em' two Saturn V's, the Apollo 16 space capsule, gloves belonging to Neil Armstrong and Ken Mattingly, space suits belonging to Ken Mattingly and John Young and space simulators galore.



Me with space suits belonging to astronauts Ken Mattingly and John Young. I am wearing a glove sleeve belonging to Neil Armstrong.

We participated in two simulated missions while there. A Lunar Mission set in the year 2052. I was in the Shackleton Operations Control Room on the Moon and acted as CapCom, the only one who communicated with the capsule, relaying all anomaly solutions to the crew. There was a change in crew on the lunar surface and the capsule was exchanging the crew from Earth with the crew from the moon and taking the lunar crew back home to Earth. It was fun and very realistic and we got a great view of what it was like to be an astronaut. We also did a shuttle mission where I was a Payload Specialist with a team member from Haiti who spoke little English, but we got a chance to take pictures with a solar telescope from space.

One of the most fun activities was a simulated helicopter crash taking on water and having to go to safety, along with a simulated parachute landing via a zip line and a helicopter rescue with a cage that looked like the one lifting Apollo, Gemini and Mercury astronauts to safety after splashdown.

We also built landers and shields and rovers to protect our eggstronaut from smashing down and launched rockets. We worked with robots to program as well as build a lunar colony, extracted DNA and learned about water filtration on-board the International Space Station and tried our own hand at it.



Me with crewmates Rachel from AL and Vicki from NJ

Honeywell and Space Camp treated us well with great food and a fabulous graduation party under the hanging Saturn V with a live band. The only thing I missed was Dave Hostetter sharing his vast space exploration knowledge.

I had never dreamed I would ever go to space camp, let alone try everything there and graduate and learn to work a mission with a team like a real astronaut. If you would like to attend space camp yourself, check out <http://www.spacecamp.com>.

Know of someone who wishes to go to space camp but can not afford it? Try going to <http://www.spacecamp.com/scholarships>. If you would like to see more pictures of me participating at Space Camp, head out to http://www.flickr.com/photos/space_academy_for_educators/

Now since you folks were at SEPA and I was not, I will be looking for lots of photos and discussion of what went on at the conference in Jacksonville, FL. If you came across something that would be of use to someone in a small planetarium, make sure you share it in this space.



BOOKENDS

Robin Byrne
Bays Mountain Planetarium
Kingsport, TN

Moonrush: Improving Life on Earth with the Moon's Resources **by Dennis Wingo**

I'm not sure how I came to have a copy of "Moonrush: Improving Life on Earth with the Moon's Resources" by Dennis Wingo, except that I know I didn't buy it, which is a good thing. Not that it is a horrible book, but it certainly has its flaws.

Wingo begins by describing how Earth's resources are in short supply, especially for energy production. While dismissing efforts to reduce energy consumption, and completely ignoring some alternative energy supplies such as solar and wind power, Wingo bases his entire argument for returning to the Moon on the need for hydrogen fuel cells. Why do we need to go to the Moon for hydrogen fuel cells? Platinum. Platinum is used in fuel cell production and is scarce on Earth, making fuel cells expensive to mass market. Instead of suggesting research to find a way to make efficient fuel cells with materials that are more abundant, or pursuing advances in solar and wind power, Wingo is convinced that vast stores of platinum are on the Moon just waiting to be mined, and that this, and this alone, is what will save our planet. It is interesting that while Wingo criticizes environmentalists for their single-minded approach to solving Earth's problems, he is equally single-minded in his approach. Although, he does have one other energy source in mind: fusion of Helium 3. But where to get Helium 3? While the Moon has some from interactions with the solar wind, the logical choice would be to mine the atmosphere of Uranus, of course! Never mind the small problem of not having the technology to create a fusion reaction.

Next, Wingo takes us on a history of the U.S. space program, in particular, the politics of it. Wingo's assessment of how NASA is at the mercy of the whims of each administration and congress is correct. Funding comes and goes without any true vision. Once we beat Russia to the Moon, there were no big goals to keep the program on track. While manned spaceflight has floundered, unmanned exploration has flourished. However, Wingo is not impressed. All those space probes were only pursuing science, when they could have been assessing where resources were that could be exploited.

Lastly, Wingo lays out a variety of ways we can set up permanent travel to and from the Moon and how to establish a Moon base. It is interesting to note that, while he criticized government involvement in the space program, and praised private industry, one of the key components of his plan includes using the International Space Station as a location



(Continued on page 19)

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Photo courtesy of Loughlin Planetarium.

Archeo- astronomy

Tears of the Nemean Lion

Woodrow W. Grizzle III
Elizabeth City State University Planetarium
Elizabeth City, NC

The Leonid meteors are coming up in November, and, in preparation for addressing the public concerning this well-known astronomical event, I wanted to share a few tidbits handed down from the ancients about the sky lion.



Leonid Meteor Storm, as seen over North America on the night of November 12-13, 1833. Illustration from *Bilderatlas der Sternwelt*. E. Weiß. 1888.

The first is to recall that Leo's very name means "lion" in Latin, the ancient Roman tongue. Though the Romans certainly recognized the star pattern as being reminiscent of a lion, such recognition goes back further, to the Mesopotamians of around 4,000 B.C. The later Persians called Leo *Ser* or *Shir*, depending upon the dialect and translation methods used. Further east, in India, he was known as *Simha*, which shares similarity to the Swahili word *simba*, which means "lion," and is a name shared with Disney's eponymous Lion King. Speaking of kings, the Babylonians knew the sky lion as UR.GU.LA, the Great Lion, which marked the summer solstice. They also called the bright star we know as Regulus, LUGAL, which means "the star that stands in the breast of the Lion: the King."

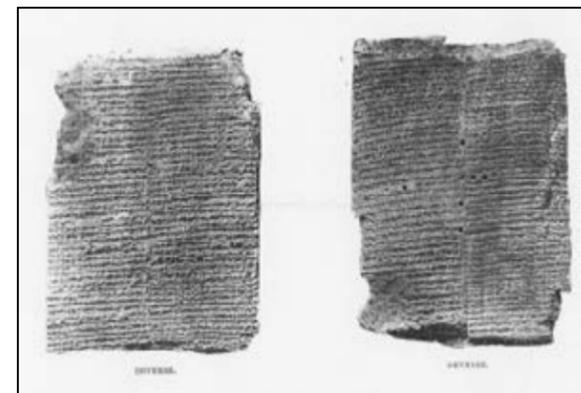


Brick panel featuring lion. Glazed brick. From processional way that ran from the Marduk temple to the Ishtar Gate, Babylon. ca. 575 B.C. Pergamonmuseum, Berlin.

The story that I wish to tell is a childhood favorite of mine. It is that of Herakles and the Lion of Nemea. The Romans called him *Leo Nemaeus*, and to the Greeks he was known as Λέων τῆς Νεμέας (Léōn tēs Neméas). Nemea is an ancient place on the northeastern corner of the Peloponnese, in Hellas. It was formerly part of the territory of Cleonae in Argolis, but in our time it is part of Corinthia. It was here that the Nemean Games were once held in the third year of the Panhellenic Olympiad, from around 573 until about 235 B.C. It was here also that great Herakles conducted the first of his twelve labors on his path to redemption: he confronted the ferocious Nemean Lion. It was said that the Lion had claws and teeth that could pierce any armor and that mortal weapons were of no avail against his golden coat. He was set loose on Nemea by Hera,

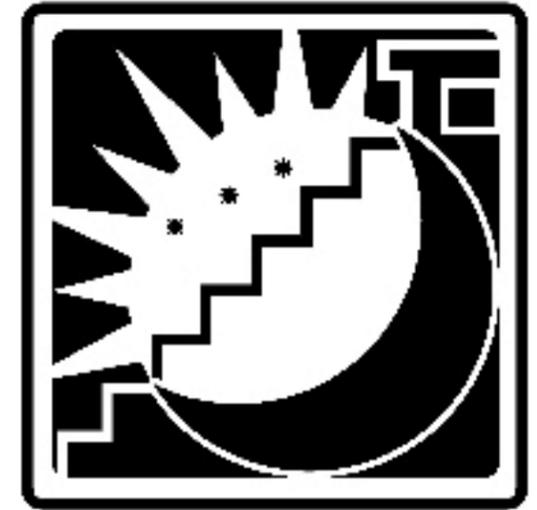
wife of Zeus, King of the Olympians. The Lion himself was said to be the offspring of the father and mother of all monsters, Typhon and Echidna. The beast took hostage women from town in order to lure would-be heroes to his lair, which lay in a mountainous cave overlooking the city. Soon upon entering the cave, these intrepid young men would find a wounded young maiden, but she would invariably be a mirage: a trap! In an unworldly twist, the young girl would shape-shift into a lion that would, before the lad had chance to fly, devour him expeditiously, and cast his blood-drip'd bones into the fires of Hades.

Herakles came to the region of Cleonae town, in the vicinity of Nemea, and there he wandered until he came upon the house of a workman-for-hire named Μολορχος (Molorchos). Molorchos had lost his own son to the Lion, and he offered shelter to Herakles. He also offered to sacrifice a lamb to obtain a blessing for a safe lion hunt, but Herakles asked him to wait 30 days. If Herakles returned with the Lion's skin, they would together offer the sacrifice to Zeus. If Herakles died trying to kill the Lion, Molorchos agreed to sacrifice instead to Herakles as a hero.



MUL.APIN tablet. Incised cuneiform clay tablet. copy ca. 500 B.C. of ca. 650 B.C. original. British Museum, London.

Herakles then continued on to Nemea. On the journey, he came across some arrows and a bow, which he thought might become useful. When he reached Nemea, he climbed the steep, rocky mountains until he reached the cave where dwelled the vicious Lion. Herakles perched himself upon a rock perch across from the Lion's lair and he waited. The sun



set and the western sky turned orange and then red as day died and night began. The long shadows of the cliff face stretched and turned until all was dark, except the burning red fire of the Lion's eyes. Herakles silently rose, knocked an arrow in his bow, and let fly a shot that singed the very air. But, alas! The arrows fell, chipped to the ground, upon impacting the Lion's golden coat. The beast's pelt had within it a charm that rendered mortal weapons useless. He was now aware of Herakles' presence, and, knowing this, he drew himself into the cave to wait out the night and coming day and to ponder his retort. Herakles did not waste this opportunity. For, in this time, he noticed that the cave had not one, but two entrances. He set upon blocking one up, so as to corner the Lion when he roused. He finished blocking the entrance, and then Herakles waited. Apollo's chariot drew the dawning sun, bringing fiery light from the east. In this long day, Herakles waited. The sun's heat beat down upon him, and his sweat dripped upon the brown stone, but still he waited for the Lion to stir. The day began to grow old as Apollo neared the west. Again, the shadows stretched, turning, and the world grew dark. Once more, the Lion's eyes glowed in the darkness. This time Herakles paused, the Lion roared, and Herakles let fly an arrow straight into the Lion's mouth - his un-armored mouth! The Lion recoiled, and Herakles grabbed him, wrapping his arms about the Lion's throat. The Lion thrashed, muscles clenched, the earth quaked and all the rocks and dust of Hellas moved as those two wrestled! Great roars and cries pierced the air and such energy as has never been felt pulsed the air. Thrashing, pulsing! At length, the furor slowed until all became still. The dust cleared,

and Herakles stood up, holding the Lion's limp carcass by the throat. He had throttled the beast! The Lion's reign of terror was at its end.



Herakles wrestling the Nemean Lion. Philadelphia L-64-185, Attic red figure stamnos, ca. 490 B.C. Photograph by Maria Daniels, courtesy of the University of Pennsylvania Museum.

Noting the remarkable armoring qualities of the Lion's coat, Herakles set about trying to skin it. He tried using his knife, but that failed. He sharpened his knife on a stone, and then used the stone itself, all to no avail. The goddess Athena, noticing Herakles' trouble, suggested he use one of the



Herakles wearing the lion skin. Boston 99.538, Attic bilingual amphora, ca. 525-500 B.C. Photograph courtesy, Museum of Fine Arts, Boston. H. L. Pierce Fund.

beast's own claws to clean the pelt. He did just that, and upon cleaning the skin, he threw it about his shoulders and from then onward he wore it. The Nemean Lion's impenetrable skin protected Herakles throughout the rest of his labors. He made it back to Cleonae on the 30th day, just in time to sacrifice together with Molorchos to the honor of Zeus.

Herakles had many adventures after slaying the Nemean Lion. The beast's skin protected him throughout all of them. When the Lion was slain, his spirit left this world and traveled to the sky realm, where he found a home among the eternal stars. Each year, his spirit returns and we are reminded of the first of Herakles' twelve labors.

In gray November, meteors fall. The fiery tears of the defeated Lion of Nemea rain down from heaven upon the world as the sun retreats and darkness grows. We now know these tears to be the result of Earth passing through the debris field left by a comet known as Tempel-Tuttle. The tiny, dusty ice-bits left behind by the comet from its close approach to the Sun burn up by friction as they pass into our planet's atmosphere. It is called the Leonid meteor shower because it appears to originate from the direction of the sky lion. It is, perhaps, appropriate that the Leonids are the most prolific of meteor showers, given their regal feline association - the King Star, the King of Beasts, the King of all meteor showers.

References:

Herodotus. *The Histories*. trans. by Aubrey De Sélincourt. 6.53-55 and 7.61-62. Penguin Books, Ltd. London, 1954.

Hesiod. *Theogony*. 327

MUL.APIN, (). trans. by Gary D. Thompson. Tablet 1. 2001.

Pseudo-Apollodorus. *Bibliotheca*. 2.5.1

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President's Column (Continued from page 4)

movies just appear each morning on my computer. It takes a little of the romance out of it.

I am sure many of us who run "indoor universes" started their astronomy adventures in a similar way by first simply looking up and being amazed at what was seen. One of the reasons our annual SEPA gathering is so special is because we all share a love of the stars. At this writing, we are only a few weeks from our gathering in Jacksonville, which I am sure will be an excellent conference. With shows to see, new gadgets to play with, old friends to greet and a trip down to the Space Center, it will be a great week!

IPS (Continued from page 5)

China. Information on the 2014 conference will be furnished in this column in the next issue of *Southern Skies*.

Three sites submitted bids for the 2016 IPS conference...

Edmonton, Canada
Toulouse, France
Warsaw, Poland

The site choice is determined by a vote of the IPS Council and the results for the 2016 site should be available on-line soon.

Book Review (Continued from page 11)

to manufacture the various spacecraft needed to go to and stay on the Moon. I wonder who would be doing the actual assembly? Continuing in the realm of Wingo's reality, setting up the Moon base would include Segway driving robots, obviously. Once established, let the mining begin! Without any actual data concerning the resources on the Moon, Wingo extrapolates that huge amounts of platinum and other resources are just waiting for easy extraction from the lunar soil. Granted, several tons of lunar soil will be needed to produce relatively small amounts of materials, but there's the entire Moon to make use of. Plus, Wingo is certain that impact sites will have even higher concentrations, so don't you worry.

Most of the information in this book, Wingo readily admits, came from other books and sources, with very few original ideas. So as I read "Moonrush," I kept thinking, "This sounds like some guy with a blog who decided to write a book." I waited until I had finished to find out more, and, behold, he's a guy with a blog! Wingo has written a few books, all of them geared toward returning to the Moon. His profession is software engineer, and his scientific knowledge is sketchy at best (he wrote that fusion involves overcoming the electrical repulsion of the electrons, rather than the protons). I seriously doubt the book had an editor, because there were several typos, and some word choices that made this grammar Nazi cringe. As you might have already deduced, I was not impressed by "Moonrush." However, if you're interested in this topic and want to learn more, save your money and read his blog.

Moonrush: Improving Life on Earth with the Moon's Resources by Dennis Wingo, Apogee Books, 2004

REMEMBER YOUR STATE COORDINATOR!

ALABAMA: Mitzi Adams
mitzi.adams@nasa.gov

FLORIDA: George Fleenor
Jetson1959@aol.com

GEORGIA: David Dundee
DavidD@tellusmuseum.org

KENTUCKY: Steve Russo
srusso0002@kctcs.edu

LOUISIANA: Jon Elvert
jelvert@lasm.org

MISSISSIPPI: James Hill
jhill@rainwaterobservatory.org

NORTH CAROLINA: Woodrow Grizzle
woodrow.grizzle@gmail.com

PUERTO RICO: James Sullivan
jsulliva@broward.edu

SOUTH CAROLINA: Gary Senn
SennG@sc.edu

TENNESSEE: Kris McCall
krismccall@adventuresci.com

VIRGIN ISLANDS: James Sullivan
jsulliva@broward.edu

VIRGINIA: Kelly Herbst
Kelly.Herbst@thevlm.org

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Comet Tales With A Comet Nucleus

Adam Thanz
Bays Mountain Planetarium
Kingsport, TN

It all started in June of 2012. It became clear that in order to be prepared for Comet ISON (C/2012 S1), a planetarium show along with an interactive activity would be needed to best educate the general public about comets. Comet ISON will become easily visible to experienced observers in the Fall of 2013, but be at its best in December of 2013. After six months of production, a high-quality, but low-cost planetarium show entitled “Comets & Discovery” was created for world-wide distribution in full-dome, classic, and flat-screened theater formats. Physical working models of a comet nucleus and the sun were also complete.

The general design of the models, along with the educational methods to be applied with them, were created by the author. The physical creation of the models was by Cassandra Rose, a newly-hired part-time exhibits artist at Bays Mountain. The result was a balance of complexity needed to do the activity properly (as well as being [hopefully] child-proof) and simplicity in creation by us and by you, the reader.

General Background of Comets:

Comets are ancient denizens of the Solar System, forming with the sun and planets 4.5 billion years ago. They reside in a loose, hollow sphere 50,000 Astronomical Units away from the sun called the Oort Cloud. This was proposed by the Dutch astronomer Jan Oort in 1950. Due to this great distance, it is very cold, about 10 Kelvin.

Comet nuclei have been best described by astronomer Fred Whipple as “dirty snowballs.” They are made of mostly water and other ices along with dust and minor amounts of rock. Since so much time has passed since their formation, they experience impacts by other comet nuclei and so they are not pristine.

When one of these impacts causes a comet to come inwards towards the sun, it then embarks on a long journey to the inner Solar System that takes many thousands of years. As a comet nucleus travels within the region of the planets, its coma develops. This is caused by the icy nucleus heating up slowly and causing the ices to melt and evaporate. But, the crust of the nucleus is like a hard shell. So, the interior ice creates small cavities and starts to bubble and boil. When the pressure inside these small cavities becomes too great, these newly-formed gasses burst out through the shell and into space. This creates a geyser on the surface of the nucleus.

If we pull away from the comet, we see these gasses form a giant cloud held on by the nucleus’ weak gravitational pull. This is called the coma. When the nucleus and its coma get to the inner Solar System, the coma will get large enough to leave a trail of debris. This effect stretches the coma back away from the nucleus and creates a dust tail. Meteor showers are caused by the earth traveling through these debris trails.

When the comet gets even closer to the sun, another tail becomes apparent, the ion or gas tail. This is a result of the nucleus reacting to the solar wind of charged particles emanating from the sun. As the comet progresses on its orbit (either elliptical,

parabolic, or hyperbolic depending on the angle of approach to the sun), the nucleus will move faster and curve around the sun. The two tails then start to separate at an angle from each other. The dust tail always follows the nucleus in its path like bread crumbs left on a trail. The ion tail always points away from the sun as it is directly affected by the solar wind. What we see from earth is dependent on the path of the comet, the direction the tails are pointing, and earth’s path around the sun. Remember, comets come from a huge, hollow sphere centered on the sun, so they can come in from any direction.

As the nucleus zips about the sun and then leaves the inner Solar System, the tails can be seen pointing in very different directions, even opposite each other. A very strange sight. This activity is designed to help illustrate the above description three-dimensionally.

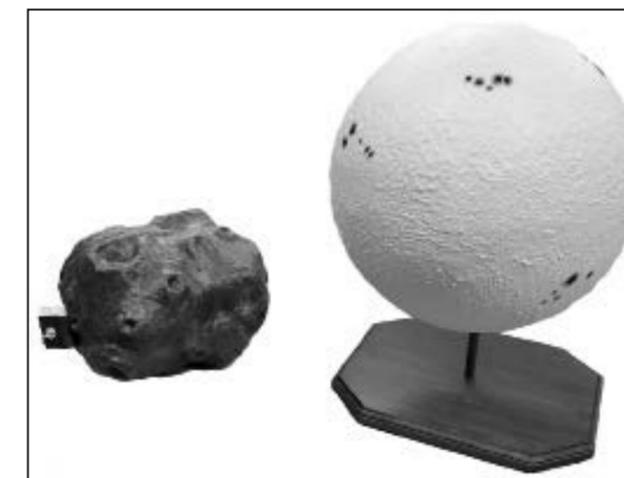
Educational Efficacy:

The comet nucleus model is designed to illustrate the path and orientation of a comet nucleus and its two tails as it orbits the sun. This model was designed to be used with our planetarium show, though its usefulness is unbound. Educators in any classroom could easily use this model. Allowing students to make the models would incorporate cross-curricular skills and interests as well. The cost to make the models can be next to none if you can find or salvage the materials from other sources.



The completed models in our planetarium theater with Bays Mountain artist Cassandra Rose

In a planetarium theater, place the sun model in the center of the room under or near the star projector. To maximize the educational and entertainment value of the activity with a group, ask for and select three volunteers. This activity will work well with most any age.



The completed comet and sun models

The instructor will start by describing the nucleus, its composition, and that its coma will grow and stretch away from the sun as the comet approaches the sun. When the nucleus gets close to the sun, the tails will start to form and stretch away from the sun. One volunteer will hold the nucleus model, the other two will hold the rods that are attached to the ends of the two ribbons. The instructor will then inform the one holding the nucleus to slowly go around the sun model. The person holding the white ribbon will represent the dust tail and will be told to always follow the nucleus. The person holding the blue ribbon will represent the ion (gas) tail and will be told that the end of the tail always points away from the sun. This is done loudly enough so the audience hears the instructions. Both of the tail volunteers will be asked to slowly pull the tails out as the nucleus first approaches the sun. If all works well, each person will do their job correctly and the length and orientation of the tails will be seen to stretch and splay out. If not, ask the audience what went wrong and what should be done to make it correct. With the audience’s suggestions, redo the “orbiting” of the nucleus with the two tails and see if it goes well.

(Continued on page 22)

Comet Tales (Continued from page 21)

There are a number of educational methods applied in this activity. Since many children and adults have difficulty understanding and thinking in three dimensions (spatial reasoning), they can now see how the tails follow their own orientation in relation to the comet and sun as the comet orbits the sun.

The instructor is used only to introduce the activity, but not to be the participant. This makes for an active learning environment instead of a passive one. Even if a person is still sitting in the audience, they see one of their peers (another audience member) be involved. Those that are literally part of the activity (one of the three volunteers) receive not only hands-on instruction, but are also part of making science fun, which helps alleviate science phobia. If the audience is asked to state what may have gone wrong in the first try, then they are being active participants. They are using reasoning skills to evaluate the situation.

We think that you'll have lots of fun with this activity. Your school groups and public program attendees will both enjoy and learn.

Basic Construction Method:

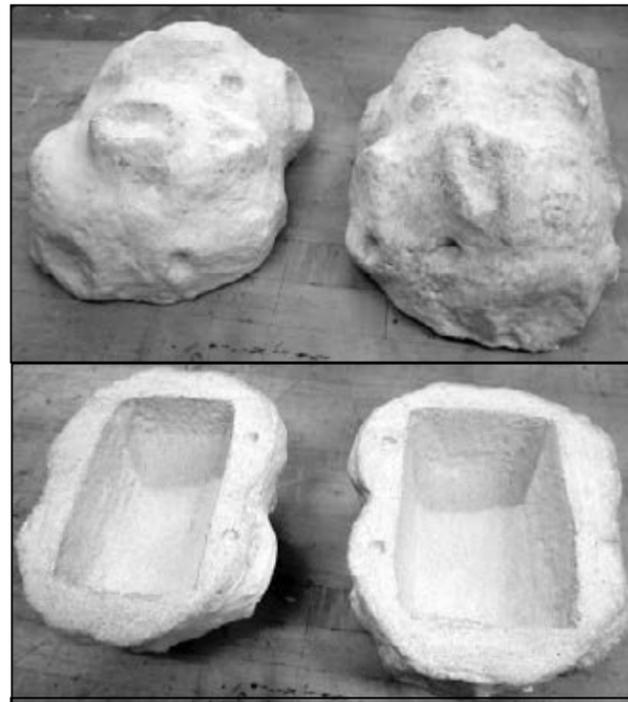
The comet nucleus model is designed to be constructed easily and using common materials. The basic construct is that the model is made of a stiff



A selection of carving tools and rasps to create the comet nucleus outside and the interior chambers

foam and that it has two chambers to hold the two ribbons. The sun model mentioned is very simple. A foam ball that is painted to look like the sun.

For the comet model itself, find or purchase a stiff styrofoam. The model is made in two halves, so depending on how large you want the nucleus, you might be able to find two large enough pieces from the packaging of something large like a TV or computer. Try visiting a store and see if something is laying about in the back. Carve the foam with sculpting tools and rasps to make the nucleus lumpy and add craters. Carve out two chambers for the ribbon, small holes to hold very strong magnets, and places for two hinges. This will allow you to open the model up and retract the ribbon. The magnets hold the two halves together. They should be strong enough to keep a child from opening up the model, but not so strong that you cannot open it. A Dremel tool is very useful in the small carving.



The outside of the comet model showing the craters and general sculpting. The inside of the comet model showing the chambers and holes to hold the magnets. The halves have been coated with the mix.

This next step is the only part that is special. We used a 1:1 mix of Bounce and Foam Coat. This pro-

(Continued on page 24)

TWO MODULAR PROGRAMS DESIGNED FOR LIVE INTERACTION

THE MOON

OBSERVE THE MOON'S SURFACE AND HOW ITS APPEARANCE CHANGES IN THE SKY.

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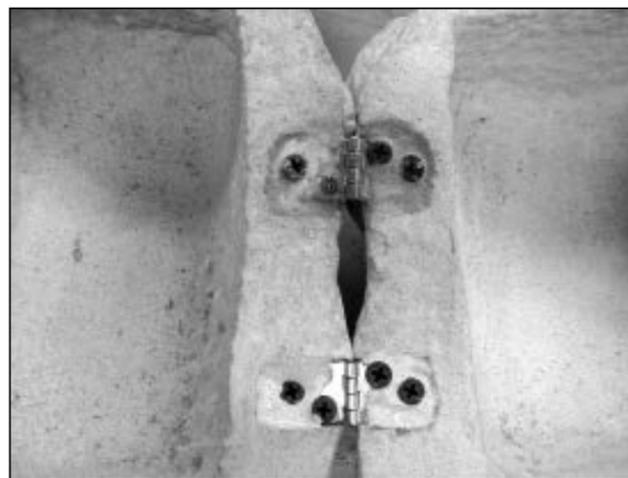
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Mix these to strengthen the surface of the models.

fects, hardens, and provides a resilient and sandable surface. You can purchase this from www.hotwire-foamfactory.com. The more coats, the stronger the surface. Remember, you're probably going to be using this many, many times with lots of kids and the public. It will be dropped and banged about. Add the magnets and screw in the hinges, then coat both the inside and out with the mix. You may need to add a second coat on top of the hinge for structural stiffness. I would recommend using some scrap foam to experiment with the mix before applying to the final model.



The hinges that hold the two halves together. Notice the upper hinge has the mix already dry and holding in the hinge. The lower hinge has fresh, liquid mix just applied.

The simplest design would be one that used no mechanism and the ribbons were just packed into their own chamber. There would be a small opening for the ribbon to pull out. The opening can be finely Dremeled out after the coating is dry. You want some tension on the ribbon so it doesn't flow out easily. We used a small piece of rubber base board with a thin slit in it. You also want two separate chambers so the ribbons can come out at different rates and don't get tangled up with each other. The best material for the ribbon would be a thin, ripstop nylon material. Kites and sails are made from this. They don't fray and are resistant to knotting up. At the start of the ribbon, we have rings and a small clamp to attach a 2.5' (0.75m) rod. This lets us hold the end of the ribbon out over the audience since our walkway is not wide enough for us to be at the end of the 6' (1.8m) ribbons.

If you want to go to the next step of complexity, you could make a mechanism that holds a ribbon on a spool. There would be two of these mechanisms, one for each ribbon. This requires a small wooden frame that holds two pieces of dowel. One dowel is non-rotating and provides a way to stiffen the frame. The other dowel spins and the ribbon is attached to it. When we're done with the activity, we open the model and hand-spin the dowels to wind each ribbon back on. If you want to be fancy, you could use a retracting mechanism that would wind up on its own. Or, you could design a rig that would allow a key (Allen wrench) to be inserted to



The interior mechanism is revealed showing the two dowels, the ribbon wound on the rotating dowel, and the rubber base board adding tension to the ribbon.



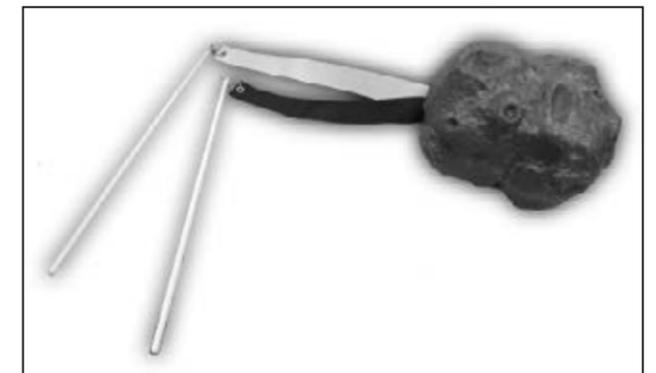
Front and Side views of completed comet model showing the ribbons emanating through the slits and showing the seam between the two halves.

wind the spool after use.

Once the physical model is done and working well, paint the nucleus to be as it should, very dark and mottled. Comet nuclei have a low albedo (reflectivity). A charcoal base coat was used with a black wash to darken the craters and a slightly lighter gray for highlights.

The complete plans with detailed steps and accompanying photographs are available for free for both the comet nucleus and sun at the link below. Just click on the tab for "Activity Documents.":

<http://www.baysmountain.com/planetarium-productions/comets-discovery-full-dome/>



The completed comet model with the two ribbons representing the dust and gas tails. Notice the two rods attached to the ends of the ribbons to hold them out over the audience.

I do hope that you find these plans useful. It may seem a bit of work, but the end result is worth it. No matter how great your planetarium theater is and the visuals you show, a hands-on model that makes a direct link to understanding the three dimensionality of a comet's path and its two tails is paramount.

The comet model and its activity was first demonstrated at the 2013 SEPA conference in June 2013. At the time of this writing, this article is to be published in the SEPA journal "Southern Skies" and the IPS journal "The Planetarian."

Welcome to SEPA 2014!

Michael McConville
Buehler Planetarium at Seminole State College
Sanford, FL

“Wish Upon A Star” – July 15-19, 2014

More than forty years ago, the opening of Walt Disney World transformed Central Florida from a land of swamps, alligators, citrus groves, and mosquitoes to the most “magical place on Earth.” Today, the Orlando area is a thriving metropolis on the cutting edge of tourism and technology alike. Just a short drive north of Orlando is Seminole State College, the home of the newly-dedicated Buehler Perpetual Trust Planetarium, and your host for the SEPA 2014 annual conference. We intend to create a conference experience unlike any you’ve previously experienced in the SEPA region – someplace where all of your planetarium dreams can come true! This is a conference built from the ground up to serve all of the varied needs of the SEPA planetariums, and planetariums from around the world.

In keeping with that theme, the SEPA 2014 theme is “Wish Upon A Star.” Our conference logo is dominated by the familiar star pattern of Lyra, the harp, and the piercing brilliance of Vega, its brightest star and one of the brightest in the entire night sky. At just 25 light-years away, the photons reaching our eyes in 2014 will have begun their journey all the way back in 1989, which coincides with the first year that our planetarium opened its doors to public audiences for the first time. Those public shows have come to define our facility, as we present all of our shows live and produce all of them in-house. Our commitment to live and interactive planetarium presentations has completely influenced the culture and personality of our facility, and we hope that the aspects that make our planetarium so successful can



be showcased during the conference.

Located on the border of the cities of Lake Mary and Sanford, Seminole State College is a public institution that serves more than 32,000 students in the Central Florida area. We are just a 20-minute drive from downtown Orlando, 45 minutes from Daytona Beach, and just about an hour north of Disney World. Seminole County stands in the center of the Florida High-Tech Corridor, which has brought countless science and technology jobs to the region. As is typical for Florida in the summer months, July temperatures top out in the mid-90s, with lows in the 70s.

Our Facility

Our planetarium was built back in 1987 and is located on the main campus of Seminole State College. The centerpiece of our facility is our beloved Minolta MS-8 opto-mechanical star projector, which has been lovingly cared for over the past quarter-century and produces one of the most impressive star fields we’ve ever seen. Even with the numerous upgrades made to the planetarium over that time period, the MS-8 remains our showpiece. In December 2012, we were privileged to install an Elumenati GeoDome Evolver 500-series fisheye projection system, powered by Uniview. Our presentation projector is a simple Epson home theater unit that has been modified to give us “true

black” capabilities for a fraction of the cost.



We also have a 30-foot Astro-Tec dome with 55 newly-installed Greystone seats, as well as a wonderful NanoCove LED lighting system from ChromaCove. Our audio system was completely designed and installed by Derek Demeter and myself, and is a powerful 4.1 system with incredible flexibility for all sorts of uses, from planetarium shows to live concerts, and everything in-between. Although we are one of the smallest domes to host a SEPA conference, the intimate nature of our dome, combined with our unique architecture, will provide a truly unforgettable experience for every conference visitor.



Our Staff

The daily operations of our planetarium are the work of just two staff members: planetarium director Derek Demeter and myself serving as planetarium coordinator. We’ve worked alongside one another for most of the past decade, and our deep friendship and special professional relationship have driven our planetarium to new heights. If you’ve ever had the opportunity to meet both of us at a SEPA con-

ference or elsewhere, you’ve likely gotten a taste for what SEPA 2014 is all about. Although we’re often as different from one another as can be, the dynamic that permeates everything we do at Seminole State has led to a facility that exudes personality – a planetarium defined by its staff, not the other way around.

Our Conference

Although we’re still months away from the SEPA 2014 annual conference, we can already give a pretty clear picture of what our attendees should expect. Our conference hotel is the Orlando Marriott Lake Mary, located about 15 minutes away from the Seminole State campus in north Lake Mary <www.marriott.com/mcoml>. The Marriott is a beautiful hotel, with every feature necessary for putting on an exemplary conference. The 304 rooms are well-appointed, and we will be utilizing more than 11,000 square feet of conference space for



Marriott's hotel room and
hospitality suite

the vendor hall and presentation sessions. The Marriott has locked in a rate of \$130/night for SEPA attendees, which includes two free buffet breakfasts every morning in their Bistro 1501 restaurant. With such a competitive rate and a perfect location, this is the conference where bringing along your family is a great idea – why not stay a couple

of extra days and enjoy all the Central Florida has to offer?

We have not yet set a firm registration rate, but all indications show that the registration cost will not exceed \$250, and will likely be considerably lower. We are also pleased to announce that we will offer a 50 percent discount for college undergraduates to attend the conference. If you have a number of

interns or part-time staff at your facility and would like them to take part in the SEPA experience, the discounted rate should help to make that a reality.

Tuesday, July 15, is chock-full of opportunities for getting to know one another, reconnect with old friends, and get familiar with our planetarium. We'll be spending the evening moving between our dome and our Fine Arts theatre, which will allow for a considerably larger number of visitors to attend SEPA this year, even with the constraint of a smaller dome. We'll be showcasing the technology and shows that make our planetarium so different from the norm, so this is one night you do not want to miss.

Wednesday, July 16, is our presentation and vendor day. We'll turn over the reins to all of you, as we explore every aspect of what makes a planetarium work in the modern day. There will be dozens of available slots for papers, roundtable discussions, and workshops – so if you're interested in presenting on any topic relevant to the planetarium field, we encourage you to contact us once registration opens and get your session proposed! That night, we'll take to the planetarium and Fine Arts Theatre yet again for sessions that center on "Pride and Presentation," as we explore the different aspects that make presenting shows in our planetariums so fun – and important.

On Thursday, July 17, we'll be taking a short trip north to Daytona Beach, Fla., and the Museum of Arts and Sciences and their planetarium. Seth Mayo, the curator of astronomy at MOAS, will be our co-host for the day as they showcase their facility, which includes a 40-foot dome, more than 100 seats, and plenty of space for vendor demonstrations and presentations. We'll tour the museum, hear from a keynote speaker at lunch, and for dinner that night, stop at the regionally-famous Jolly Gator Fish Camp in Geneva, Fla. On the banks of the St. Johns River, Jolly Gator Fish Camp is known for their gator tail and gator burgers – from alligators caught from the rivers and lakes of Central Florida! This "Old Florida Dinner" should be a real unique experience, as we explore the rich and vibrant history of Central Florida while enjoying cuisine unique to this area of the country. We'll end the

night with Jon Bell's famous Constellation Shoot-out and some storytelling time in our dome under the MS-8 projector star field.

Our final full day, Friday, July 18, is turned over to the vendors, as we spend several hours in the vendor hall and participating in presentation sessions. We wanted to make sure that we gave our vendors plenty of time where attendees can focus on seeing their products and services and not have to compete with other, equally important tasks. But the real highlight of Friday is our trip to the planned development of Harmony, Fla., for our banquet, done Florida-style: barbecue! The town of Harmony is one of the most environmentally-conscious developments in the United States, and because of light pollution abatement efforts, it is possible to see the summer Milky Way from the town square! We'll have several telescopes available for stargazing, weather permitting, before heading back to the hotel.

As always, we'll have hospitality suites, plenty of Woodchuck (it's the 20th anniversary!), fun activities throughout the conference – including several that will likely be some of the most entertaining things you've ever seen at a SEPA conference – plenty of time for networking and connecting, door prizes on Saturday, and all the camaraderie that comes from a SEPA event. As we get closer to the conference, we'll provide updates and more details about the conference in future issues of *Southern Skies*.

Making wishes come true is a tough job, but someone's got to do it. It's our sincere hope that this SEPA conference exceeds every expectation you have, and that each and every person that attends leaves our conference better prepared to run and operate planetariums around our region and around the world. One of the lines from the theme song from "The Mickey Mouse Club" works best as we gear up for July 2014: see you real soon!



SEPA Business Meeting

Jacksonville, FL - June 28, 2013

Patsy Wilson
SEPA Secretary

President David Dundee called the meeting to order at 11:25 am with a quorum present.

Minutes of the 2012 business meeting were distributed and approved. (Bell/McColman).

The treasurer's report for January – June 2013 was distributed and approved. (Workman/Groce). Patsy Wilson, Treasurer, reported the current balances in all accounts as follows: Savings, \$26,625.13; Checking, \$26,617.55 and Professional Development Fund, \$7,126.19. Dundee reported that the council is looking for proposals and projects for SEPA to fund. Members were encouraged to submit ideas.

Website: Drew Gilmore indicated that the website has had few changes over the past year. He asked members to suggest any enhancements they would like to see added. The idea of a discussion board was mentioned. George Fleenor shared that this had been done in the past. Any suggestions can be emailed to Gilmore.

IPS Report: John Hare reported that the 2014 IPS

Conference would be in Beijing, China on June 23-27th. SEPA conference will be changed to July. Final details & reports will be given at IPS council meeting in Italy in early August. John will pass this along to SEPA members at that time. A straw vote was taken to determine membership preference for the 2016 IPS site between Edmonton, Canada; Toulouse, France; or Warsaw, Poland. He will carry the SEPA vote for that decision. Hare asked for information regarding anyone formerly working in the field that is deceased. This is for a database record being done in his position as IPS Historian.

SEPA 2014: Derek Demeter and Michael McConville gave a detailed update of the next conference to be held at the Buehler Planetarium at Seminole State College in Sanford, FL beginning July 15, 2014. They will partner with Seth Mayo at the Museum of Arts and Science in Daytona to accommodate vendor requirements for demonstrating various types of equipment. Registration will be no more than \$250 with a possible discount offered to undergraduate students who want to attend. Arrangements have been made with the Marriott for rooms at \$130 per night including a free full breakfast

Conference Bid for 2015: Dundee presented a bid from Tellus in Cartersville, GA. Dates will be June 23-27, 2015. The museum has adequate meeting and banquet facilities that can be used at no charge. Food and expenses for a possible day trip to Huntsville, Alabama would be the major costs. Holiday Inn next to the museum would serve as conference hotel at a cost of \$70 per night. Registration would be between \$130-\$150. A straw vote indicated majority support for this site.

Conference Bid for 2017: Ross Workman presented a bid from Golden Pond Planetarium at Land Between the Lakes National Recreation Area in Golden Pond, KY for August 22-26. The pre-conference activity, and main impetus for meeting there, would be viewing the total solar eclipse. Discussion centered around the difficulty of members doing eclipse programming at their own facilities having enough time to arrive for the conference. There was also some concern about the date since many members work in educational venues and are

(Continued on page 30)

2013 Mid-Year Financial Report – SEPA

**Submitted by Patsy Wilson –
June 27, 2013**

All funds are held at Branch Banking and Trust
Company

Balances: (as of 6/24/13)	
Operating	26,617.55
Savings	25,625.13
Scholarship	7,126.19
Total	59,368.87

Operating Account (as of 12/31/12) **24,753.68**

Income:	
Full Membership	1,135.00
Associate Membership	150.00
Journal Ads	2,458.00
PD Fund Donations	30.00
Total Income	<u>3,773.00</u>
Total credits	28,526.68

Disbursements:	
Journal (three issues)	1,593.98
Awards & Plaques	127.30
USPS-Shipping Cost	5.85
Service Charge-Wire Transfer	22.00
Transfer 2012 donations to PD Fund	160.00
Total Debits	<u>(1,909.13)</u>
Balance (as of 6/24/13)	26,617.55

Savings Account (as of 12/31/12) **25,609.24**
Interest earned 15.89
Balance (as of 06/24/13) **25,625.13**

Professional Development Scholarship Account
(as of 12/31/11) **6,966.19**
Income:
2012 Individual Donations 160.00
Balance (as of 06/24/13) **7,126.19**

Business Meeting (Continued from page 29)

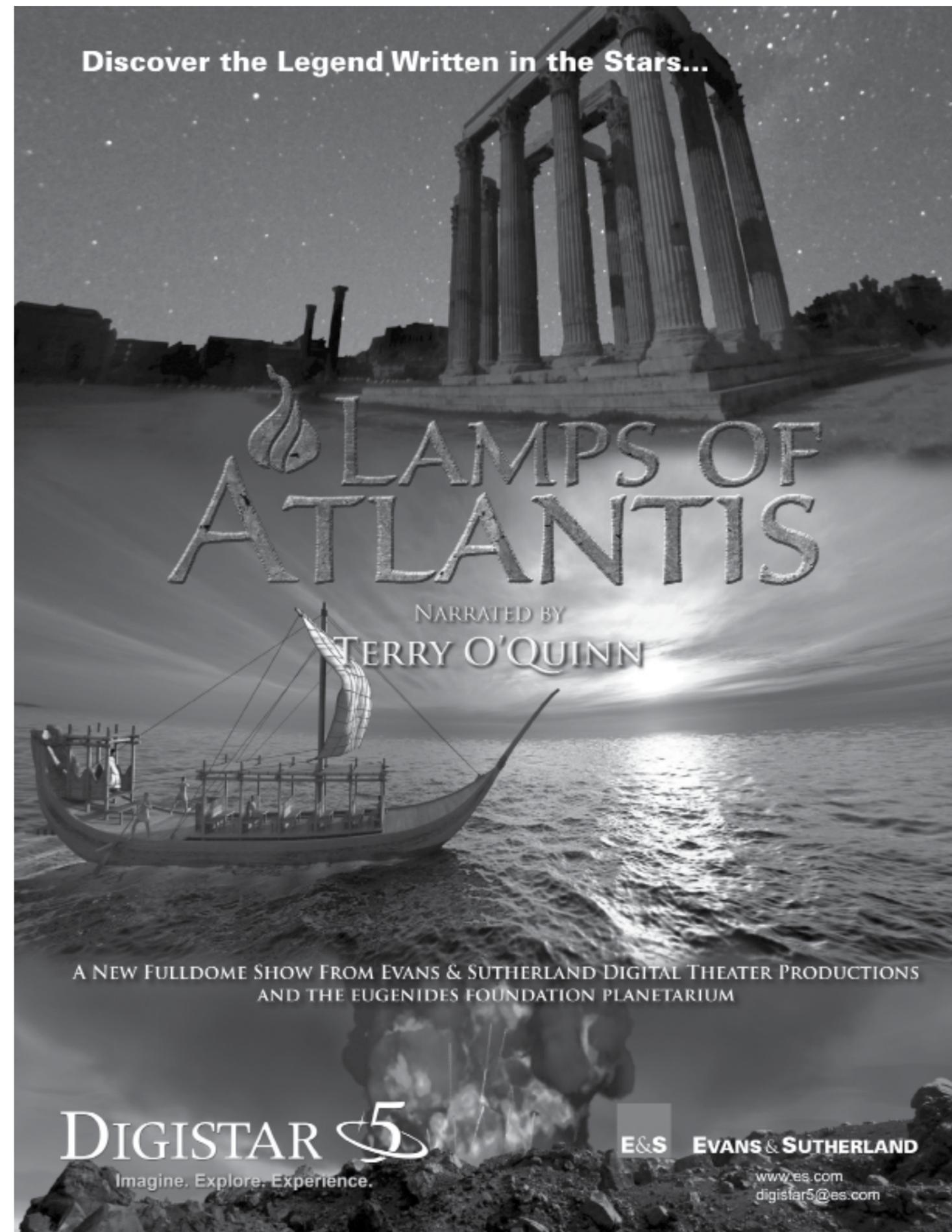
not available during that time. Several members spoke to the importance of this event and this opportunity. A straw vote indicated that 13 members present voted to accept the bid and 14 voted no. If the conference were to be held at this site, six people voted to have conference before the eclipse and 23 voted to have it after. If the decision is not to accept the bid, members will be notified so that they can make individual plans and room reservations in the area.

New Business: April Whitt, Past President, announced that a committee is forming to review and update the by-laws. She will serve as chair. Volunteers are needed to assist in this effort.

Ken Brandt, President-Elect, asked for volunteers to serve with him on the Nominating Committee.

Announcements were made regarding the hospitality suite location and silent auction. Dundee also asked members to consider hosting conference in 2016 and to notify council if interested.

Dundee adjourned the meeting at 12:53 pm (Bell/Hostetter)



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in association with GOTO Inc.
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NARRATED BY BRENT SPINER



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News From SEPA Region

FLORIDA

contact: George Fleenor
GeoGraphics Imaging and
Consulting, Bradenton, FL
Jetson1959@aol.com



Florida Planetarium Association (FLORPLAN)

Contact George Fleenor for details.

Buehler Planetarium Broward College Davie, FL

Susan J. Barnett reports: The Buehler Planetarium & Observatory is running public shows four days a week. The weekend shows and monthly specials include *Cosmic Colors*, *Amazing Stargazing*, *Exploring the Moon*, and *The Great Comet?*.

It has been a busy summer. In addition to our new Space Camp, we held a Moon Fest on July 20 and did a limited engagement of laser shows. Now, on to the new school year.

The Buehler Observatory has viewing four times a week. It has free public observing Wednesday, Friday, and Saturday evenings. In addition, we observe the Sun on Wednesday afternoons. We usually have one telescope set up to view sunspots, and watch flares through a Hydrogen-Alpha filter on another.

Buehler Perpetual Trust Planetarium Seminole State College of Florida Sanford, Fla.

Michael McConville reports: The past year has been absolutely astounding for the Planetarium at Seminole State College. In December 2012, we closed our doors for a series of major renovations made possible by a sizable grant from the Buehler Perpetual Trust of Hackensack, N.J. Our planetarium now boasts the first installation of the Elumenati's GeoDome Evolver OmniFocus 500-series fisheye projection system, powered by Uniview.

Additionally, the planetarium had 55 new Greystone seats put in place; new carpet, wood finishes, and acoustic panels were installed; upgrades were made to audio and visual systems throughout the facility; and the impressive NanoCove lighting system from ChromaCove rounded out a nearly complete overhaul of our dome.

The installation of the new equipment has corresponded to a large increase in attendance for planetarium shows across the board. For the first six months of 2013, the planetarium posted higher attendance numbers and brought in more revenue than during any six-month period in our history. Audience members of all ages have commented to us about how great everything looks, sounds, and feels – and have been even more impressed by the improvements to all of our shows.

During the school year, our *Seminole Space Science* curriculum has attracted dozens of schools from around the Central Florida area, and with the addition of full-dome components to the shows, we'll be releasing a completely updated school curriculum in fall 2013. Alongside a new, three-year Science, Technology, Engineering, and Mathematics (STEM) initiative announced in June, we intend to become the premier science gateway for students in Central Florida.

Because of the completely live aspect of our presentations, our public shows run only on Friday and Saturday evenings. However, new shows and the new technology have combined for a potent mix that has driven massive crowds through our doors nearly non-stop since January. As of summer 2013,

the planetarium has more than three dozen active shows at our disposal – all of them live, and all of them produced in-house. In fact, one of the main points brought up during our grant process was that our planetarium has not presented a canned show since August 2004.

For fall 2013, we have four new or updated shows in the pipeline. *Final Frontier: The Age of Space Exploration*, *Fire of Creation: The Maya*, and *The Star of Bethlehem* will all premiere new full-dome imagery, and a brand-new Native American astronomy show will premiere in November on Saturday nights. We'll keep everyone posted as the production moves forward on these shows.

The planetarium will also have the privilege of hosting two major planetarium conferences in the next year. The Live Interactive Planetarium Symposium (LIPS) will be held August 13 to 16 and will welcome more than fifty planetarians from around the world. Our bigger event, however, will be the 2014 annual conference of SEPA! You can read more about SEPA 2014 elsewhere in this edition of *Southern Skies*.

GEORGIA
contact: David Dundee
Tellus Museum
Cartersville, GA
DavidD@tellusmuseum.org



Planetarium
Tellus NW GA Science Museum
Cartersville, GA

David Dundee reports: It has been a very busy spring for us at Tellus; school programming totally booked March, April & May. We added an extra week of school programming just to accommodate the demand. National Astronomy Day went very well over 1200 visitors that day and night. We hosted Geoffry Notkin & Steve Arnold, co-hosts of the television series "Meteorite Men." They were with us all day doing presentations and having fun. They had pieces of "the" Russian meteorite

that fell a few months ago. A group of us went for the second year in a row to the State Science Fair, and gave out Tellus Museum awards. The winning students get a cash award and they get the opportunity to exhibit their project at the museum for a weekend. We got students from all over the state exhibiting at Tellus. In the planetarium we opened "Undiscovered Worlds" and the latest rides from Space Park 360 with "Planetary Thrill Rides III." We have begun Observatory nights with the rest of the museum being closed and we had over 200 our first night.

Smith Planetarium
Walker County Science and Technology Center
Chickamauga, GA

Jim & Shirley Smith report: The Smith Planetarium has enjoyed a great year with students coming from four school systems. Programs of 55-60 minutes in length are focused on curriculum standards, and include a mix of live presentations and full-dome programs. Six of the full-dome programs that we use most often are:

- "One World, One Sky: Big Bird's Adventure"
- "This is Our Sky" by Amyjo & Ron Proctor at Weber State University
- "Two Pieces of Glass"
- One of several Loch Ness "Seasonal Stargazing"
- "Kaluoka'hina: the Enchanted Reef"
- and in December the "Season of Light"

We are now preparing for the 2013 - 2014 school year and plan to purchase more full-dome programs.

We are considering a planetarium program that includes the Civil War. It could be an opportunity to bring more students and general public into the planetarium. We anticipate 15,000 tourist and reenactors during September. Our county and neighboring counties will be celebrating the 150th year since the Battle of Chickamauga which occurred on September 19th & 20th, 1863. Except for Gettysburg, the Battle of Chickamauga had the highest number of casualties of the war. Total number of casualties (killed, wounded & missing) including both sides was 33,983: Killed: 4,045 - Wounded: 23,161 - Captured / Missing: 6,777 Total number of belligerents were 128,516. Location: Catoosa County

and Walker County, Georgia. The result was a Confederate victory.

Planetarium
Oatland Island Wildlife Center
Savannah, GA

Max McKelvey reports: Oatland Island Wildlife Center recently upgraded its Digitalium system by adding a Universal Console. This upgrade was paid for by doing special events off site such as "Reading Under the Stars," Math and Science Nights at local schools and birthday parties. OIWC will host a one week "Day Camp" with a focus on astronomy this summer for rising 3rd, 4th and 5th graders. Activities will include solar observations, planetarium time, themed craft projects and the installation of an Ana lemma sundial/post (6 foot) for future activities and events.

Georgia Southern Planetarium
Georgia Southern University
Statesboro, GA

Becky Lowder reports: Summer is here and our planetarium is busy daily with teaching the university ASTR 1000 students, giving free full-dome and live star shows for summer camps and other groups in our region. The end of May we hosted a full day of shows for the public and their children to enjoy. We're planning for public evening events each month, with hopefully clear skies for telescopic viewing of Saturn and later in the year, Comet ISON. We're looking forward to the fall semester with new university students taking the planetarium directed study class, astronomy lecture classes, and labs. I can't wait to see the new ideas these brilliant young minds will develop to immerse our visitors into the night sky, astronomy concepts, our solar system, and beyond!

KENTUCKY
contact: Steve Russo
East Kentucky Planetarium
Prestonsburg, KY
srusso0002@kctcs.edu



Golden Pond Planetarium
Land Between the Lakes Nat'l Recreation Area
Golden Pond, KY

Ross Workman reports: Summertime is here at Golden Pond! This means hot and humid days, visitors and campers looking for a cool place to hang out during the day, and a great - and very busy - time at the Planetarium!

Summer season brings shows every hour beginning at 10am, with the last show at 4pm. It also means Laser Shows on Tuesday, Friday, and Saturday evenings at 5:30 and 7:00 pm. At 8:00 pm on Saturdays, we either do a Laser Show every other weekend; with the other weekend times consisting of a planetarium show and star party at the Golden Pond Observatory with the West Kentucky Amateur Astronomers. We began our summer season with a new show; Wildest Weather in the Solar System. This has been a well-received program. Earth, Moon, and Sun is still a favorite, as is IBEX.

So, as I said earlier, it's a busy time for us...but you won't hear any complaints from my staff or me!! As I write this, I'm getting excited about heading out in a couple of days for SEPA '13 in Jacksonville. It's always nice to spend time with those who share a common interest and passion.

East Kentucky Science Center & Planetarium
Big Sandy Community and Technical College
Prestonsburg, KY

Steve Russo reports: Over 125 people showed up at the East Kentucky Science Center and Planetarium for National Astronomy Day activities on April 20, 2013.

Along with Planetarium shows throughout the day,

there were activities and demonstrations relating to Heliophysics.

In the planetarium before each show, the audience had a chance to view current images of the Sun from the Solar Dynamics Observatory and SOHO. People also had a chance to view the Sun through the Science Center's Coronado Solar telescopes and through eclipse glasses.



Astronomy Day

In the classroom and exhibit hall, adults and children made models of the Sun out of cookies, Twizzler sticks, chocolate chips and frosting, and also got to make Sundials from the NASA SDO website, and "construct" UV Solar Bead Bracelets.

Funding for these activities came from a NASA workshop that Science Center Director, Steve Russo attended in the Fall at the NASA Goddard Spaceflight Center. Door prizes and other Astronomical handouts were supplied by Astronomy Magazine, and the NASA Space Place.

On June 1st, the planetarium premiered the new Sky-Skan full dome show, "To Space and Back." This program which takes a look at how space technology is used on Earth has received rave reviews from the public. The graphics are excellent and the information is important to show people that space exploration is not a waste of money.

As I write this at the end of June, our Summer is busy with ten camps with a wide range of topics from Astronomy, physics, color, Earth Science, and space exploration.

And please don't forget, that I am the contact for the state of Kentucky for the News From SEPA Region. I want to hear from all of the Bluegrass State planetariums. E-mail me srusso0002@kctcs.edu or srltts@suddenlink.net.

Until next time, "Look To The Skies!!!!"

LOUISIANA 

contact: Jon Elvert
 Pennington Planetarium
 Baton Rouge, LA
jelvert@lasm.org

Irene W. Pennington Planetarium
La. Art & Science Museum
Baton Rouge, LA

Jon Elvert reports: We began the summer with astronomy camp, community outreach programs

and a line-up of new shows featuring *Dynamic Earth*, as well as two in-house full dome productions of seasonal night and daytime skies. Our summer-time focus, however, has been the redesigning and remaking our school shows with updated content and new visualizations. We'll have much more to share about our revamped school shows in the next issue of *Southern Skies*.

Our staff has also launched a planetarium blog with overwhelming success. Topics include theater technical tips, questions and answers to everyday astronomy phenomenon, including June's "super-moon" and updates on the upcoming comet ISON.

Lafayette Planetarium
Lafayette Science Museum
Lafayette, LA

Dave Hostetter reports: The staff members at the Lafayette Science Museum Planetarium are looking forward to fairly normal operations this summer, something we haven't had for a couple years as we made the change to full dome! We'll offer the public 10 different titles during the course of the summer, more than we could do with our previous system, with 15 public presentations per week in addition to programs for day care centers and youth groups.

We've begun experimenting with *Interact* programs, the Sky-Skan version of live PASS programs from the Lawrence Hall of Science. We had a successful run for *Red Planet Mars* during the spring and will present *Strange Planets* during August and September. We're using them as public programs.

From June through August, we also do lunchtime sidewalk solar viewing every clear Wednesday. Between Museum visitors and downtown workers out for lunch, we usually get a good number of people looking through the telescope.

For the rest of the year, the Museum itself is featuring an in-house space exhibit called *Leaving Earth: The Story of Space Flight*.

Finally, as many SEPA members know, our longtime technician Dexter LeDoux passed away back in January. We hired a provisional technician by

the name of Paul McCasland, and he has now been hired as the official full-time Exhibit and Planetarium technician. Paul was a part-time technician for us in the early '80s when he was in high school and now comes back to us after a very successful career in telecommunications and private business. He has the astronomy, AV, and computer background that are just what we need as the planetarium moves into the full dome era and our Museum begins a new five year plan to become a more dynamic place. We look forward to working with him.

NORTH CAROLINA 

contact: Woodrow Grizzle
 ECSU Planetarium, Elizabeth City, NC
woodrow.grizzle@gmail.com

Morehead Planetarium
Morehead Planetarium and Science Center
Chapel Hill, NC

Amy Sayle reports: Lots of things have been going on at UNC Morehead Planetarium & Science Center in Chapel Hill. A few are listed below:

We've had another round of our annual, week-long Morehead summer camps, between June 10 and August 16, with well over 2,000 campers in attendance. Camp programs included titles such as *Astronomical Adventures*, *Black Holes and Beyond*, *Sky Tales*, and *Sounds of Science*. Many of the campers visit the planetarium theater for program components under the dome multiple times per week, in addition to engaging in fun and educational classroom and outdoor activities.

By the time of publication, Morehead will have played host to an annual meeting of CAPE, the Carolina Association of Planetarium Educators (planetariums primarily from North and South Carolina), on August 26-27. CAPE meetings provide participants with the opportunity to exchange ideas for programs and other activities both inside and outside the dome environment. Think of it as a sort of mini-conference, with emphasis on sharing astron-

omy education techniques.

This past May, we opened the full-dome show *Dynamic Earth*, produced by Spitz Creative Media and several other institutions, and featuring a number of visualizations derived from NASA climate science data. The show explores the intricacies and delicacy within Earth's climate. This is an important show, as most members of the public have no fundamental understanding of what climate actually is. (Most people equate climate with weather, and don't know there's a substantive difference between the two.) To date, Morehead audiences have responded very positively to *Dynamic Earth*.

Work progresses well on Morehead's most recent full-dome production, *Grossology and You*, based upon the popular book series for kids by Sylvia Branzei, and illustrated by Jack Keely, about the human body and how it functions. The show includes 3D animations of select human anatomy/physiology elements, interspersed with a running storyline that includes humorous animated cartoon characters. The production concentrates on the digestive, immune and respiratory systems, and it is designed to appeal to kids in grades 3-8. Production is scheduled to wrap up in 2014, at which point it will begin running at Morehead, as well as being available for distribution to other full-dome theaters.

In addition to *Grossology and You*, Morehead is moving forward with another full-dome production – a NASA-supported project entitled *Wild Blue*, which is an exploration of aeronautical principles. Like *Grossology and You*, this show will be made available for distribution to other facilities. Both shows are designed to correlate with the revised science education standards.

We are also completing a new alternate front-center console, for use during live shows. The traditional control console is located behind most of the audience at the rear of the theater, and therefore is not optimally positioned to allow show presenters to interact in close proximity with the audience. Unfortunately, because of rigid security regulations imposed by the university's IT department, we cannot use a wireless device like an iPad to control our system without it also being tied into the campus network – a configuration that would

leave the theater system vulnerable to outside computer virus attacks. Because of this restriction, we decided to come up with a "Plan B" and create a second, hard-wired console that is immersed within the audience. In the end, we think we will be happier with this solution overall, as the alternate console will give us better instant control access to the multiple windows of our Sky-Skan Definiti system's master computer desktop. Features incorporated in the Morehead-designed/built console include (a) the ability of the presenter to maintain the twin computer monitors while they remain invisible to the audience, (b) a rotating physical desktop that allows the presenter to face any direction while maintaining continuous control, and (c) a raise-lower feature that allows presenters to operate the console at optimum ergonomic position. This last feature also enables us to place the console in a low-profile position when not in use (during pre-rendered shows).



A star party at Jordan Lake State Recreation Area, one of 43 events at the North Carolina Statewide Star Party, April 5, 2013. (Credit: Joe Pedit)

This spring, Morehead coordinated North Carolina's first Statewide Star Party, as a kickoff event to the 2013 North Carolina Science Festival. Public skywatching sessions were planned for Friday, April 5, 2013, at 45 locations in 31 counties spanning the state from the Appalachians to the Outer Banks. Star party hosts included universities, state and local parks, planetaria, and science and nature centers. Many hosts partnered with local amateur astronomers, who provided their telescopes and expertise. Almost all star party events offered tele-

scope viewing, and many events offered additional activities such as constellation tours, storytelling, crafts, light pollution demonstrations, and data collection for the GLOBE at Night citizen science project about light pollution. Our anti-rain dance apparently worked, as only two sites canceled because of weather. The remaining 43 star party events attracted 4,926 participants. Morehead is now planning North Carolina's 2nd annual Statewide Star Party, to take place during the 2014 NC Science Festival (March 28-April 13, 2014).

Planetarium Elizabeth City State University Elizabeth City, NC

Woodrow Grizzle reports: This summer has been busy at ECSU. I am continuing to develop lesson, activity and assessment materials for our K-4 planetarium programming. These materials are based upon the North Carolina Essential Standards and the Common Core, and they are designed to facilitate a higher level of student learning than what has been historically possible with our planetarium programming. Our new lessons cover not only science standards, but also mathematics, reading comprehension and writing proficiency. We felt like since the planetarium field relies on strengths in these areas, that it would be appropriate to focus on these areas with our students. The pre- and post-assessments will provide us with data about our impact upon students' academic performance, which we can then use as evidence with which to go out to funders.

We have spruced up some older shows from our catalog, produced a new one, and we will soon purchase another from Audio Visual Imagineering (AVI). The new K-4 catalog is thus:

- Kindergarten - *In My Backyard* (Calgary Science Centre)
- Grade 01 - *The Moon* (AVI)
- Grade 02 - *The Little Star That Could* (AVI remake)
- Grade 03 - *Worlds of Wonder* (ECSU)
- Grade 04 - *Mystery of the Missing Seasons* (Bowen Productions)

The older shows have been converted to 100%

digital video, thereby eliminating the need for slide projectors and, largely, the automation system. This new catalog will be available to area schools starting this August.

June 20 marked the kickoff of our *Second Annual Summer Sunset Stargaze* program. The series is the continuation from last year's *Stargaze*, which was a three-night program that took place on the third Thursdays of the months of June, July and August. At sunset, audiences gather in the planetarium theater for an hour-long introduction to the night sky that serves as a primer for the second half of the show: a tour of the real night sky with naked eyes, binoculars and telescopes (weather permitting). All together, the shows are about two hours. They are open to all ages, and admission is free. Tickets sold out in two weeks for all three shows last year, and response has been similarly strong this year.

Speaking of tickets, online ticketing has been wonderfully helpful since we introduced it last year. We use Eventbrite <ecsuplanetarium.eventbrite.com> for the service. There is no fee for using Eventbrite if you do not charge admission. If you do charge admission, Eventbrite charges a reasonable fee per ticket. It also includes a wide range of analytic and communications tools, including the ability to send invitations to and communicate with past and present attendees. It also offers Facebook integration, which further simplifies promotion and the registration process. There are charts and graphs, including those that show when and how attendees registered. The system prepares us before an event by sending a check-in list and some pointers for hosting successfully. Eventbrite functions on mobile, too. Guests may register and check-in with their smartphones using the free Eventbrite app for iOS and Android. If you are interested, I will be glad to speak with you about Eventbrite and how you can get the most out of it at your facility.

Jams H. Lynn Planetarium Schiele Museum of Natural History Gastonia, NC

Jim Craig reports: The James H. Lynn Planetarium at the Schiele Museum of Natural History in Gastonia has opened its new program, *Red Starr's Solar*

System Roundup, to play throughout the summer. Red Starr and his sidekick Solar Max take visitors on a tour of the Solar System starting at the Sun and working their way outward to the Oort cloud. The show features original computer animation produced by our planetarium director, Jim Craig. Lively music and an array of special effects keep this program moving at a pace that has kept audiences of all ages entertained and informed.

Robeson Planetarium and Science Center Lumberton, NC

Ken Brandt reports: At the time of this writing, we have all just returned from a fantastic SEPA conference in Jacksonville, FL. Thanks to Tom Webber and his staff for making it an unforgettable experience! It was great to see all of my 'planetarium peeps' again, and to make new friends. The Atlantis experience at Kennedy Space Center was an artful and dramatic representation of the Shuttle Atlantis, and the Hubble Space Telescope (spoiler alert). Standing at the base of launchpad 34 in Cape Canaveral (site of the Apollo I fire) was a moving and deeply meaningful moment for many of us who went on the Canaveral AFB tour.

Meanwhile, back in Lumberton, Cleveland is busy doing the floors of the science center, which is to be refurbished and re-fitted with hands-on interactive experiences for my fifth and sixth grade visitors. Joy is hammering out the details of our master calendar, in which we serve some 400 groups from 45 schools across Robeson County, and some 30 schools beyond (at least). All of that has to happen in the 175 school days beginning August 15. I have new programs to preview and purchase, and new exhibits to design and get ship-shape. And finally, we all prepare for the students, teachers, and public we serve to have a transformative and rigorous science experience that inspires and motivates them.

PARI (Pisgah Astronomical Research Institute) Rosman, NC

Christi Whitworth reports: Duke TIP's *Field Study in Astronomy, Astrophysics and Astrobiology* completed ten outstanding projects in radio and optical

astronomy this June. Each team produced a poster to be published in PARI's Summer Proceedings in August. PARI's four interns are working hard and we will also include the results of their endeavors in the PARI Summer Proceedings. North Carolina Museum of Natural Science's *Junior Curators* program will use PARI as a home base for exploring astronomy and science topics in the western region of the state in July. The 26m radio telescopes are currently being calibrated for interferometry for the DIRV project. Visitors regularly see the two dishes move along with the signs to shut down any wireless or cellular devices. PARI's docent led tours are held every Wednesday at 2 PM. Monthly Evening at PARI programs are held on the second Friday of each month. Plans are underway for the 50th anniversary of the Rosman Tracking Station to occur October 25-27, 2013. The celebration will include a star party. Please help us celebrate this historic event in space exploratio

Margaret C. Woodson Planetarium Horizons Unlimited, Rowan-Salisbury Schools Salisbury, NC

Jennifer Barbee reports: Summer events for the planetarium include programming for educational value as well as entertainment. We will serve summer day camp groups, special needs organizations, private and homeschool groups, along with contributing enrichment for local college groups, such as the Environmental Summit held at Catawba College.

Horizons Unlimited will also host multiple summer camps. The planetarium plans to enhance these camps by providing an overview of the solar system and a live sky experience, along with a brief laser program. Examples of these camps include an Engineering Camp for rising 1st and 2nd graders, as well as an Environmental Art Camp for rising 2nd and 3rd grade students.

The Woodson Planetarium is open to the public every third Saturday evening between the months of August and May. Plans are currently underway for a full listing of public shows for the upcoming year. *Laser Family*, our most recent laser production, showcased a variety of genres and full-color light images. This beautiful, fast-paced laser light

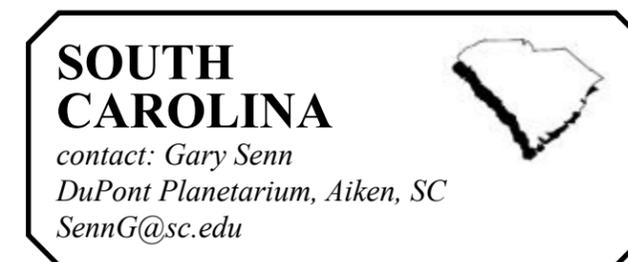
experience was held on Saturday, May 18th. Artists included Rascal Flatts, Kansas, and the Beach Boys.

We continue to support the efforts of our teachers and students as we prepare programming for the upcoming school year. Our aim is to enrich the North Carolina Essential Standards for science by offering classes that include unique planetarium images, special effects, interactive experiences, and live sky opportunities.

Programs in the fall include *Sun Up! Sun Down!* for first grade students. This class offers young learners an opportunity to encounter the apparent movement of objects across the sky as observed from Earth. They will interact with one another using kinesthetic activities, which aid in the recognition of observable changes in the Moon's appearance.

Fourth grade students will participate in a *Whirling and Twirling* experience as they are engaged in hands-on inquiry; learning to associate images of planet Earth, the Sun, and Moon with the idea that everything in the universe moves in predictable patterns. Students will learn that it is Earth's rotation on its axis that affects day and night, and our view of the Moon.

Recent upgrades to the planetarium include the replacement of our red laser diode in the AVI Sky-lase system, along with replacing our sub-woofer of sixteen years for optimum audio experience. We look forward to providing our audiences with the best that the Woodson has to offer.



DuPont Planetarium Ruth Patrick Science Ed. Ctr., USC Aiken Aiken, SC

Gary J. Senn reports: The DuPont Planetarium at the Ruth Patrick Science Education Center (RPSEC)

on the campus of the University of South Carolina Aiken (USCA) had a very successful National Astronomy Day on April 20 when it hosted what is called, "Earth & Sky Night" for 314 people. Since National Astronomy Day is usually close to Earth Day, we combined the two into one celebration, although the astronomy side is certainly the highlight and the driving force behind the event. A main attraction for the evening was a speaker hosted by the Astronomy Club of Augusta (ACA); Russell Romanella, Director for Safety and Mission Assurance at NASA's Kennedy Space Center. A variety of hands-on activities were available from 7:00 - 9:30 to help people understand the wonders of Earth and space science. The ACA also set up stations with questions that could be answered by speaking to a club member, reading through posted materials or looking through telescopes in the night sky. Our visitors very much enjoyed the activities.

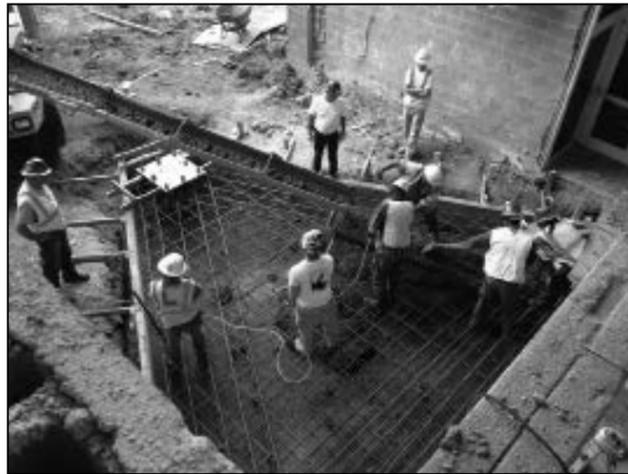
In May, we began our summer hours in the planetarium by opening an hour later at 8:00 and 9:00 p.m. to accommodate the use of the observatory after sunset. The planetarium presented *In My Backyard* from the Calgary Science Centre and *More Than Meets the Eye* from Lochness Productions. In June, we showed, the *Solar System Adventure Tour* from the Great Lakes Planetarium Association and *Blown Away: The Wild World Of Weather* from The New Detroit Science Center. In July, we featured *Digistar "Laser" Fantasy*, which is a local production; and *The Explorers of Mauna Kea* produced by the Bishop Planetarium in Hawaii.

On August 26-27, we are looking forward to attending the annual Carolina Association of Planetarium Educators (CAPE) at Morehead Planetarium and Science Center, on the campus of the University of North Carolina at Chapel Hill. This will be a wonderful time for all CAPErs and anyone else who might be interested. Please plan to attend.

South Carolina State Museum Columbia, SC

Tom Falvey reports: Construction on the South Carolina State Museum's Windows to New Worlds expansion is heating up with the summer months. Though most of the progress is in the ground and

behind the scenes, changes are significant. Grade beams are being poured on South Carolina State Museum's planetarium site and pilings are in for the telescope support structure. The crews are engaged in the demolition work that will set the stage for the building of a very different State Museum interior and exterior. The 70,000 ft² of new and changed space includes floorings, exhibits, a new museum store, new meeting rooms, and a renovated lunch room and café. We're excited about a projected opening in the first half of 2014. In the meantime, expect to see big changes as the observatory piers are installed and steel glass rise from the foundation.



Crews pour telescope pier foundation for State Museum observatory

**Hooper Planetarium
Roper Mountain Science Center
Greenville, SC**

Charles St. Lucas reports: We have successfully converted our Clark 23" refractor to interface with a new computer tracking system. Working with Lee Ott, an engineer from Michelin, we have largely completed the conversion to indicate where the telescope is looking in "The Sky" software. This facilitates easier location of deep sky objects, and daytime tracking of Venus, amongst other things. We can also use an iPad to move the telescope without being attached by cables. Cool!

This upgrade facilitates Astronomy students at Furman University to use our facility to perform undergraduate research. Previously, it was very

difficult for students to pinpoint the variable stars that they were tracking on a day-to-day basis.

As a teaching facility, this upgrade allows the Roper Mountain Science Center to expand our outreach to university students. Previously, our facility primarily served K through 12th grade students, as well as the General Public.

We are pleased with the results, but are not finished with our upgrade. Plans include a state of the art imaging camera and software, and a research grade photometer. It seems one CAN teach an old telescope from the 19th century new tricks! We extend a special thanks to Lee Ott for volunteering his time and talents, as well as Furman University's Department of Astronomy for funding of interface equipment to make this upgrade possible.

**The Settlemyre Planetarium
Museum of York County
Rock Hill, SC**

Jim Greenhouse reports: The museum had its biggest event of the year, Earth Day Birthday, on April 27. The planetarium presented a series of 15-minute programs that showed what could be seen in the current sky with and without light pollution. Then we ran LNP's Losing the Dark program. We had nearly 600 people come through the planetarium in one day, which is pretty good for a 55-seat facility.

Through August 10, the planetarium is showing Perfect Little Planet at 11 a.m. and Ice Words at 3:30 p.m. Tuesday – Saturday. The 8 p.m. showing of Carolina Skies on the second Tuesday of each month is going to be joined by several activities, including nature trail tours, solar observing, and activities about Saturn. This is all in association with the museum's new exhibit Way Back When: Ice Age Beasts of Carolina.

For the museum's summer camp, the planetarium will let campers produce their own planetarium shows and then present them to their parents. Kids will have to request images from the Harvard-Smithsonian Mico Observatory, they will process their images, then insert them into a show about a particular constellation or region of the sky.

TENNESSEE

contact: Kris McCall
Sudekum Planetarium
Nashville, TN
krismccall@adventuresci.com



**Bays Mountain Planetarium
Kingsport, TN**

Adam Thanz reports: Summer brings warm weather, various day camp groups, and school shows? Yes, with the changing formats of the school year for some institutions, along with extended time due to lost days from many snow days, we have been very busy doing school programs during which used to be only public shows. It is common for us now to have two special programs scheduled in addition to our three public shows each day. The Times. They are a changin'.

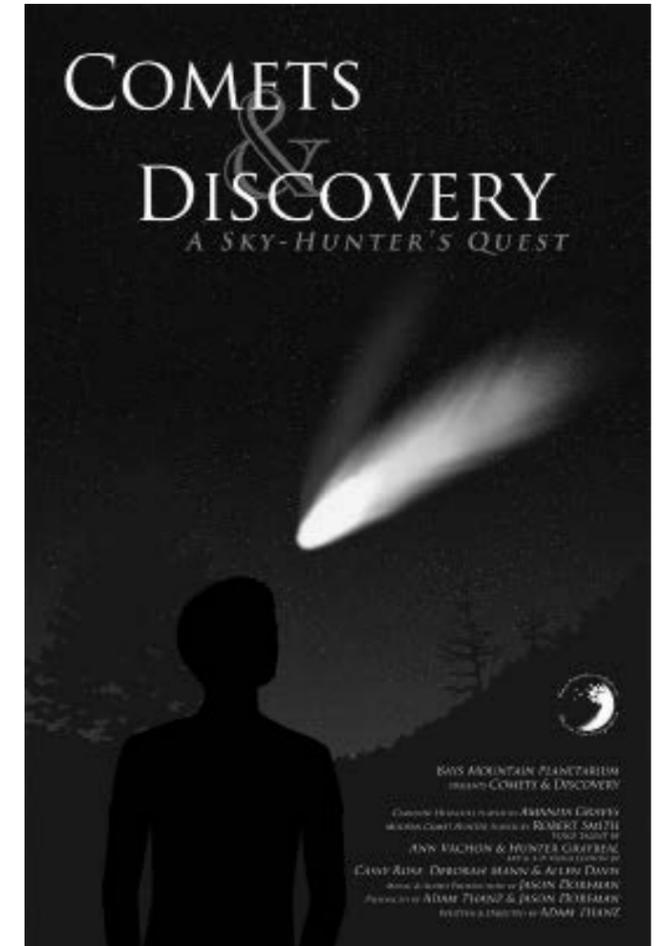
We're also gearing up for our annual astronomical convention, StarFest, held on Oct. 11-13, 2013. This year marks our 30th anniversary and we have lots of surprises and special speakers. Please contact me if you want to be on our mailing list. Registration opens in August. Please visit <http://www.baysmountain.com/astronomy/astronomy-club/> for more details.

We're also in the midst of distributing our latest show creation, "Comets & Discovery." It's available in full-dome, classic with either DVD or HD resolution, and for flat-screened theaters. Please visit <http://www.baysmountain.com/planetarium-productions/> for all the details.

To be used with our comet show, we created a unique activity model that you can make for your theater or classroom. It's designed to help your audience (students) understand the 3-D orbit of a comet and the length and orientation of its two tails. Please go to <http://www.baysmountain.com/planetarium-productions/comets-discovery-full-dome/> for the free PDF document that fully explains each step to make the model.

We'll be showing our "Comets & Discovery" program starting in August and have it run through the

end of the year. We're showing "Two Small Pieces of Glass" along with our own creation, "Galileo's Skies" for the months of July & August.



**Sharpe Planetarium
Memphis, TN**

Dave Maness reports: I don't know about you but this (summer) and the January (winter) SEPA Journal deadlines are the hardest ones for me to meet. January comes on the heels of the Christmas/New Year Holidays while the summer installment is due days after the traditional dates of the annual SEPA conference. I hope James will cut me a little slack.

If you were not there, Jacksonville put on a great conference. First, I want to thank my roommate Bobby Thompson for sharing his car for the ride down from Chattanooga. It gave me the opportunity to play in my team's final hockey game of the season. We finished the season having lost only two games, unfortunately one of them was the playoff final.



I was holding flat “Burghy” the mascot for my college. I have a reunion coming up in a few days and they asked for photos with it. As you can see, the bench was fairly empty for that game. We were missing several players: one with a broken leg, another who had minor heart surgery (is any heart procedure minor?) and at least a couple more who could not be there. One of my team mates is actually a Pediatric Neurosurgeon. My job (much of which consists of sitting at a computer desk or planetarium console) can lure me into a sedentary rut so I got back into Hockey after 20 years. I hope my friends and colleagues also think about their health so you can be around for many years to come. It is important for us to find something physical that we enjoy doing and do it!

After the game, I drove home, hung up my gear, threw my luggage in the car, and drove all night to Chattanooga. I pulled into their driveway at about 4:30 in the morning. After a couple hours sleep on a spare bed in Bobby’s girlfriend’s house, we hit the road for Jacksonville.



On Thursday, we hopped a conference bus to the NASA Visitor Center. There I was met by my college roommate George and his wife Denise. Since they are both graduates of my college, there was another perfect opportunity for another photo with “Flat Burghy.”



Above: Approaching Atlantis. Below: Atlantis.



We were treated with a soft opening of the new exhibit of the Space Shuttle Atlantis. It was awesome and awe inspiring!

On Friday night before the banquet, we held the silent auction to benefit the SEPA Professional Development Fund.

Thanks go to all who donated items. Duke Johnson sent some gorgeous photos among many other fine items that were donated. Thanks also to all who bid on items, and helped out with the set up and clean up. Special thanks to Kris McCall who handled the



Above: Apollo 1 site. Below: Silent Auction.



money. A special “thank you” too goes to Bobby Thompson’s girlfriend Jean who gave me a spare room in her house to catch up on sleep before and after the conference.

For the summer, I am running the poetic **Light Years from Andromeda** and the Sharpe planetarium’s own seasonal sky production called **Starlit Nights**.

Lastly, the big news is that the City of Memphis passed a budget that apparently included our CIP project for renovating the planetarium. I have not heard anyone officially mention a start date. This is exciting! I will let you know more as I get the news.

VIRGINIA
contact: Kelly Herbst
Virginia Living Museum
Newport News, VA
Kelly.Herbst@thevlm.org

**Abbitt Planetarium
 Virginia Living Museum
 Newport News, VA**

Kelly Herbst reports: As I write this, I am still recovering from a full morning of setting things on fire using the power of the Sun. Ah, I love summer camp weeks here at the museum. We’ve got a great group of rising 5th and 6th graders spending the week with us testing all kinds of myths and scientific principles.

Summer is ramping up slowly here at the museum. We are not yet seeing the kinds of summer crowds we are used to...hopefully things will begin to pick up shortly. We’re depending on a solid summer to see us through the rest of the fiscal year...although we are pleased that the City of Newport News has chosen to support the museum with additional funding as we recover from our massive dual floods of last summer.

By the time you’re reading this, however, summer will be over and we’ll be into our annual month of maintenance. September will see the planetarium close for all kinds of updating, not the least of which

will be the installation of an awesome new mural in our lobby thanks to the wonderful guys at NASA Langley. Our giant Spitzer print of the Snowflake cluster will be coming down to make room for a fabulous Io surface scene featuring Jupiter hanging majestically in space in the background. It's sure to be a big hit with the kiddos.

October will see us reopen with the return of the happy fish show! *Kaluoka'hina* will once again be back on the dome to the delight of the preschool crowd. We'll also be continuing the run of our wonderful new show *Abraham Lincoln: The Case of the Missing Moon* as we celebrate the 150th anniversary of the Gettysburg address in November. And as always, *Virginia Skies* will round out the offerings. We keep the schedule light, as the museum generally has its lowest attendance between Labor Day and Thanksgiving Day.

The holidays will be upon us quicker than we would like, however, and before we know it the theater will once again resound with the sounds of *Star of Wonder: Mystery of the Christmas Star* and *Laser Holidays*.

Hope everyone had an awesome summer!

**Planetarium
Children's Museum of Virginia
Portsmouth, VA**

Dan Borick reports: We did in fact get the funding for our DomeQuest summer internship at the museum. Sixteen Portsmouth high school students were selected for the internship. We will be building two 12 foot planetariums on the second floor of the museum. The student teams will be doing the build, writing their scripts, making their story boards, and programming the shows using Microsoft Research's World Wide Telescope. The teams will get some content instruction in astronomy topics, learn digital audio recording and editing, and programming. They will also serve as Astronomy Ambassadors in dealing with the Children's Museum of Virginia guests this summer where they will introduce shows in the Beazley Planetarium, as docents in the My Backyard Sky exhibit, and interpreters during the build process on the museum's second floor. The

internship will be held July 15 - 18 and July 22 - 25. The 5 minute shows produced by the teams will be open to the public on Thursday July 25.

We are also in the process of purchasing two new shows: Stars (from Sudekum) and Sky Skan's new offering To Space and Back. We hope to have them by July.

Other than that, we are keeping busy with our guests. We are hitting our goals for attendance and are doing about 2400 per month for about 4 shows per day (only two on Sunday).

I have been busy with NASA funded PD in our district. Just got back from a weeklong workshop we put together in Syria, VA (Grave's Mt. Lodge) studying African and Asian Dust and its role in climate change.

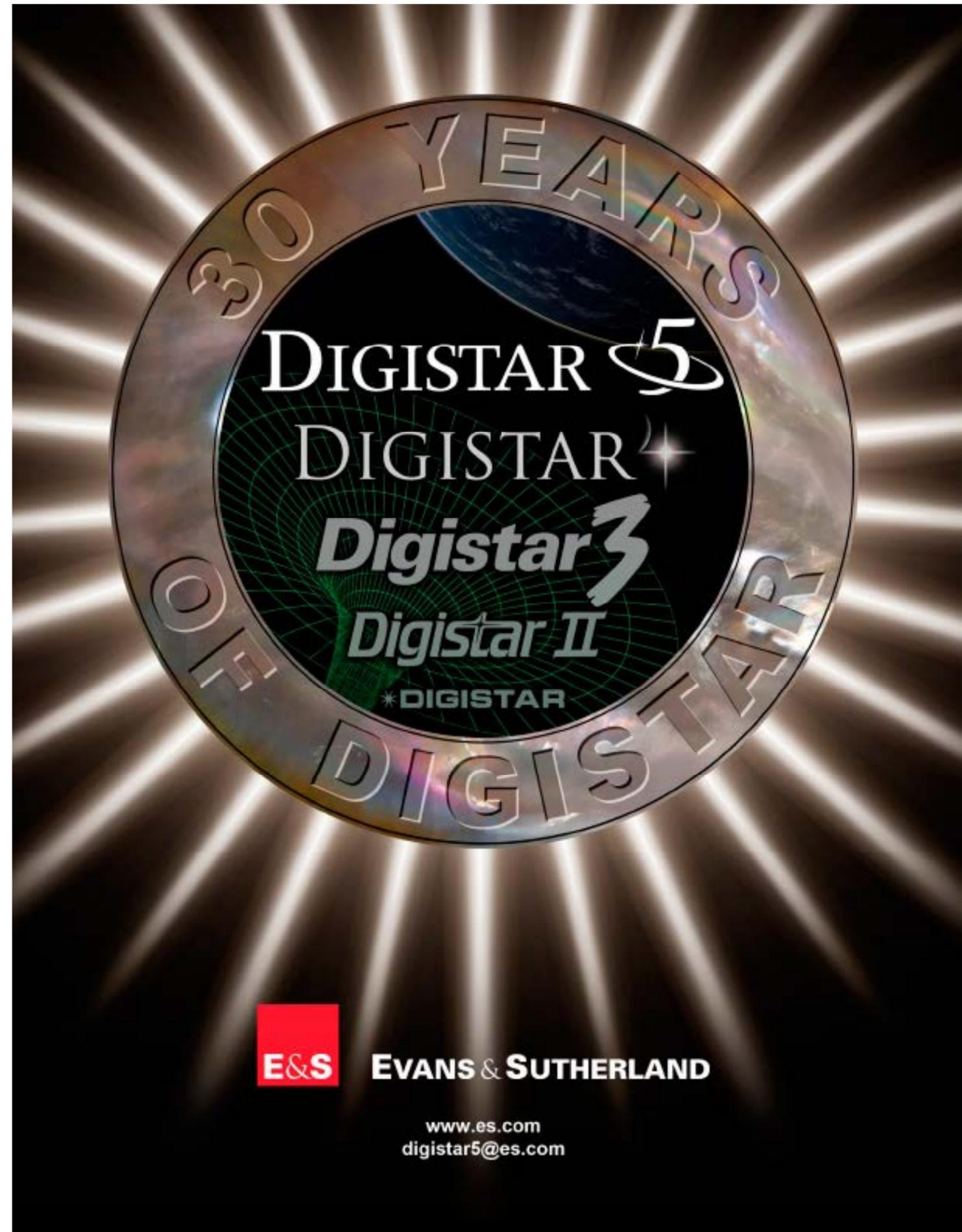
**Planetarium
Thomas Jefferson HS
Richmond, VA**

Leslie Bochenski reports: I closed out the year with the highest total attendance in my 10 years here; over 2000 students came to exactly 200 programs this year, accompanied by more than 300 teachers and chaperons. The majority of these were early elementary students, and about 20% visited from middle and high schools.

I had the opportunity to work with Col. Lesa Juday, the Air Force JROTC program coordinator at Thomas Jefferson HS, to develop a series of planetarium classes that corresponded to the Cadets' astronomy lessons.

Another pleasant surprise this year was our new Principal, Candace Veney-Chaplan, who is very supportive of the Planetarium. She took an interest in my programs, and frequently inquired about how things were going up there. She is the first Principal to climb that long staircase to the stars and actually visit the Planetarium in 10 years. I invited the others, but they all just couldn't find the time. It's nice to finally have the support of the administration.

Have a great Summer, everybody.



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