

Southern Skies

Volume 39, Number 3 Journal of the Southeastern Planetarium Association Summer 2019




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Mel Blake
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University of North Alabama
Florence, Alabama



So here's the latest issue of Southern Skies! I am really proud of this issue because of the papers and reports from our members. The highlights are the reports from the SEPA/MAPS meeting that was held in South Carolina. It was a very good meeting, and I for one learned a lot - as I always do at the meetings. It had been a couple years since I made it to one, and so I was really looking forward to catching up with everyone and attending the workshops and talks. We had a very good discussion about the Journal at the business meeting, and I appealed to those present for news and articles. The response has been great so far and I hope we can build on this. Looking at older issues from the 1990's, there were a lot of articles and how-to advice in Southern Skies, and I am hoping we can return to that.

In this issue we have the book review, and photos from the meeting. We also have three articles, two by Carole Holmberg, and one by Brian Baker. Carole's first paper is about programming for special needs autistic children, the second is an interesting article about bird migration and magnetic fields. A thanks

goes to my my old boss and collaborator Peter Bergusch of Regina, Saskatchewan for his photo of geese migration. Next is Brian Baker's article about light pollution. We advocate for that cause a lot at UNA planetarium, given we struggle to run our observatory in light polluted skies. One highlight of the SEPA/MAPS meeting for me was the telescope group meeting and seeing the Clark refractor they have. We are hoping to have some news about a donation to our observatory for next month's issue.

We also have the reports from our planetariums and Woddrow Grizzle's article about Herakles. I hope you all enjoy this issue. Note that we still need a state representative for Virginia.

Finally, I wanted to thank the hosts of SEPA/MAPS for what I think was an excellent conference. Things went smoothly and everything was very well done. I am sure behind the scenes things were not nearly so calm, but from the point of view an attendee it was excellent! Well done everyone.

So, thanks to our contributors and keep the papers and reports coming!

Mel Blake

Submit your Articles!

Do you have a great activity to engage your audiences? Have you devised a cool gadget or do-it-yourself upgrade that you would like to share? SEPA would love to hear about it and share your knowledge.

We can receive electronic files in most any format. Graphics can be received electronically or in hard-copy, including slides or photos, and will be converted to digital with sufficient resolution.

Submission deadlines: Jan 1 (Winter), April 1 (Spring), July 1 (Summer), Oct 1 (Fall).

IPS REPORT

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Vision 2020, other News, and Structural Changes to IPS:

The Vision 2020 initiative, chaired by Jon Elvert, labored over the past 4 years researching major changes to IPS with the purpose of increasing growth, and increasing benefits and services to members. The previous governing structure is in the process of being replaced with a new and significantly different model. Most notably, Kristen Lepine Dos Santos of Managing Matters of Toronto, is the newly established, Director of IPS Operations. Kristen is a Certified Association Executive and is experienced in working with member-based organizations. Kristen now sends out a monthly IPS Newsletter, and is a liaison between the IPS Committees. She reports to the IPS Officers.

All components of Vision 2020 are planned to be 100% integrated by the time of the next IPS Board meeting, June 22 and 23, 2020. This is a big step for IPS, moving from an all-volunteer organization to having some paid staff.

IPS will encompass eight geographical regions, or "zones." Candidates are nominated and elected by the members within their zone. The U.S. and Canada make up the North American zone and are represented by two Board members. Any IPS member can nominate a candidate from their zone. The Election Committee has posted a detailed job description and process of electing Board members.

Conferences:

IPS 2020

The Tellus World of Science in Edmonton, Canada will host the 25th IPS Conference, June 18 to June 25, 2020. For current conference details, sign up for the IPS 2020 e-newsletter at <IPS.twose.ca>

IPS 2022

Two sites submitted bids for the 2022 IPS conference. After much discussion and deliberation, Saint Petersburg, Russia was selected in a close race. Exact vote totals are confidential. More information regarding IPS 2020 will be published in future editions of The Planetarian.

Future IPS conferences

Invitations for the 2024 IPS conference and all future conferences must be received by the IPS President by July 1 or one calendar month prior to the IPS Board meeting, whichever comes first, no later than four years before the proposed conference.

100th anniversary of the planetarium

A year-long Centennial celebration of the world's first modern planetarium projector will take place in 2023. Contact Bjorn Voss, director of the LWL-Planetarium in Munster, Germany bjoern.voss@lwl.org. A comprehensive plan for Celebration activities was presented by Bjorn at the recent Council meeting in Reyjavik.

The new governing structure of IPS will become effective on the advent of the 2020 Council meeting to be held in Edmonton, Canada on 20-21 June 2020.

A year-long Centennial celebration of the world's first modern planetarium projector will take place in 2023. Bjorn Voss, director of the LWL-Planetarium in Munster, Germany, has gathered a committee of planetarians worldwide to help plan and implement events that will highlight the original Zeiss projector as well as others that followed.

I encourage you to visit the IPS Website for more information about IPS and its many initiatives; www.ips-planetarium.org. You can obtain IPS membership forms from IPS Treasurer Ann Bragg at ann.bragg@marietta.edu, myself at johnhare@earthlink.net, or at the IPS Website, www.ips-planetarium.org

BOOKENDS

Robin Byrne
Northeast State Community College
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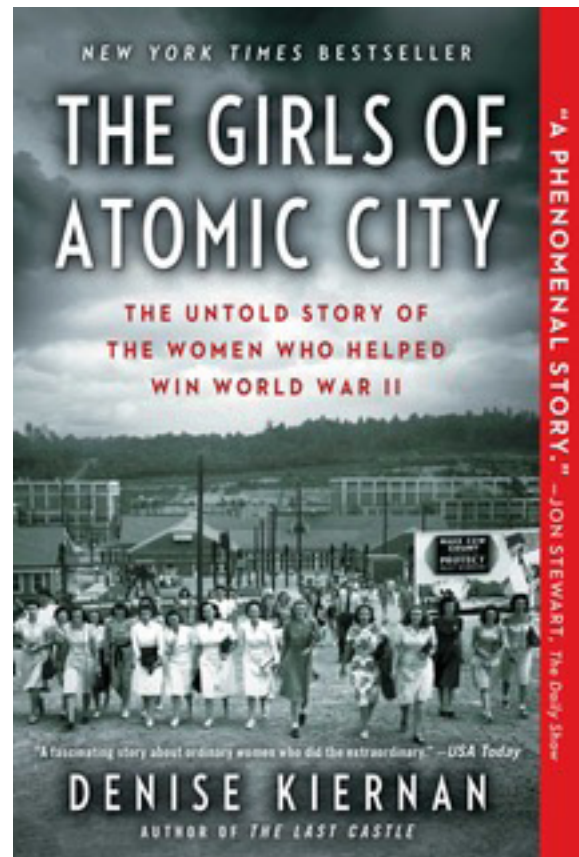
Book Review: *The Girls of Atomic City* reviewed
by Robin Byrne

A little over a year ago, Adam and I went on a tour of the Oak Ridge National Laboratory in Oak Ridge, Tennessee. When looking around the gift shop, I saw the title, *The Girls of Atomic City: The Untold Story of the Women Who Helped Win World War II* by Denise Kiernan, and knew it was a book I should read.

The Girls of Atomic City follows the story of the Manhattan Project and the development of the first atomic bomb, but focuses on the lives of several women who would work at Oak Ridge during this time. The women chosen covered a wide range of roles for women at the facility: janitorial service, secretary, nurse, wife, leak pipe maintenance, calutron cubical operator, statistician, and chemist. We also get a glimpse at the differences between how white and black employees were housed and treated.

The story begins in Germany with Lise Meitner, an Austrian physicist who was one member of the team that first discovered fission. Because she fled Germany for her safety after the rise of Nazis, she missed out on being recognized for her contributions to the discovery. The story then moves to the United States, the beginning of the Manhattan Project, and the choosing of sites to develop the bomb.

It was obvious from the start that a lot of manpower was going to be needed. Initial estimates suggested needing 10 - 20 thousand employees. By the end of the war, that was closer to 40,000 people working at Oak Ridge. The majority of people recruited to work there, male and female, had no idea what they were working on, with each job being highly compartmentalized. All they knew was that it was part of the war effort, and it was a paying job. The isolation of each component would continue until the bomb was dropped on



Hiroshima.

As the new employees arrived by train in Knoxville from all over the country, they were usually met at the train station and driven to the new site. Their first jolt of reality involved the excessive security measures, with multiple warnings about not talking to others about anything they were doing or saw, and to never engage in idle speculation about what was really being done at the site. Some employees were recruited to spy on their coworkers and report anything suspicious. Anyone accused of discussing a taboo topic quickly disappeared from the facility.

The next strong impression made on the new arrivals was the ever-present mud and the primitive housing conditions. Roads were not paved, and most people either accepted mud covered shoes, or walked barefoot, carrying their shoes to and from work. Housing ranged from literal huts with holes in the wall for windows (for the black employees only), to separate dormitories for single white men and women, to houses

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We may already be friends, if not let me introduce myself, I'm Mark Webb. I'm still using Chicago as my home base in my new role representing GOTO in North America. Please feel free to contact me or say hello the next time we meet at a conference. If you are visiting Chicago let me know and we can try to meet up, maybe even visit the Adler together. If you are thinking about renovating your planetarium, or building a new one, let me know about that too because I would like nothing more than to listen to your plans.



For details, please see my self introduction on Goto's website.

Mark Webb

*Sincerely,
Mark Webb*



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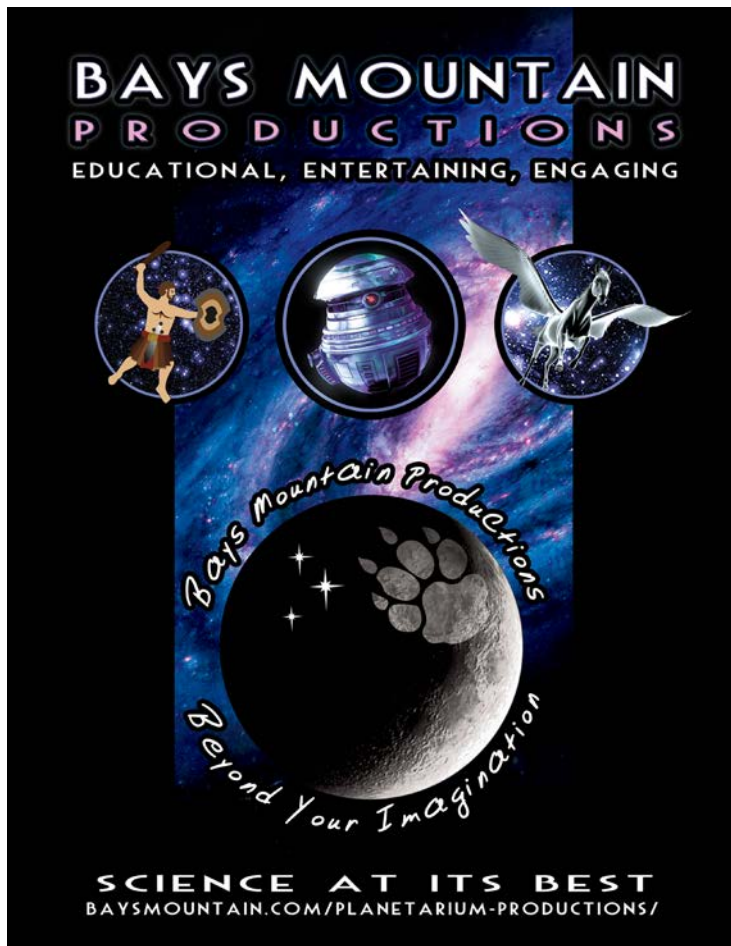
for white married couples and their children. Black husbands and wives could not live together. No housing had been constructed for black employees beyond the huts, which were designed to be single-sex, multiple occupancy residences, with the men and women residing in separate areas of the facility. Because of the housing situation, black employees couldn't bring their children, so they sent money home to family members caring for the kids. A very elite few found housing in Knoxville and commuted each day.

Because so many people worked and lived on site, it quickly became a town, despite its isolation. Grocery stores, churches, movies, dances, and a variety of clubs for different interests, such as hiking, cropped up to help the residents feel at home and fill their leisure time. What began as a facility geared toward only one purpose, quickly turned into a community. Love also blossomed for many of the women working there. Since the vast majority of people at Oak Ridge were single, romance was inevitable. More than half of the single women highlighted in the book ended up marrying someone they met while at Oak Ridge.

I found the stories interesting and entertaining. My one complaint would be that because the stories were told chronologically, and intertwined with milestones in the development of the bomb, the author would present snippets from the lives of each of the women, but I would lose track of who's who. It made it difficult to follow the complete story arch of any one individual, so they would blend together. If you are better at following multiple story lines than I am, it shouldn't present as much of a challenge. Overall, I recommend *The Girls of Atomic City* as a glimpse into the story of the atomic bomb told from a very different point-of-view.

References:

The Girls of Atomic City: The Untold Story of the Women Who Helped Win World War II by Denise Kiernen;



SEPA/MAPS 2019

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SEPA Business Meeting
Embassy Suites-Greystone, Columbia, SC – June 7, 2019
Patsy Wilson, SEPA Secretary

President James Albury called the meeting to order at 9:34 am with a quorum present.

Minutes of the 2018 business meeting were distributed and approved. (Brandt/Dunn)

The treasurer's report for mid-year 2019 was distributed and approved. (Fleenor/Thompson). The current balances are as follows: Interest bearing checking, \$24,246.13; Operating, \$72,317.88**, Professional Development Fund, \$12,304.36 and PayPal \$811.32. **The inflated operating account reflects conference income and will be spent down soon.

IPS Report: John Hare reported that changes in the IPS board will take effect in 2020. SEPA will no longer have a guaranteed representative. There will be two individuals on the board representing all of North America. Mechanics for nomination and election have not yet been determined, but will be discussed in the IPS Council meeting soon in Iceland. Mike Smail explained the process for determining the number of representatives each continent received. This was done to reduce the number on the board to a more manageable number and to save money on costs for representatives traveling to meetings. The 2022 IPS conference site will also be discussed. Invitations include St. Petersburg, Russia and Houston, TX. A straw poll of members indicated a preference for Houston.

2019 Conference Update: Liz Klimek reported 145 registered attendees. She will send a contact list of participants to everyone. Liz reminded everyone to pick up a color card for the banquet entrée. She asked to be a part of the development of a post-conference survey. Liz expressed thanks to all the volunteers who've helped and she indicated that she has been taking specific notes to add to the current conference guidelines to provide more comprehensive assistance to future

hosts. Phil Groce suggested sending papers (not PowerPoints) to Mel Blake for inclusion in the journal. Jack Dunn announced that the banquet speaker would have books for sale and will sign purchased copies.

Professional Development Award: Liz Klimek reported that six persons applied and all were funded. Two of the winners did not attend. All are required to submit their papers to the journal for publication. Dave Maness reminded members of the Silent Auction. Persons with donated items should bring them with a completed bid form to the banquet.

Dropbox: Derek Demeter reported that a Dropbox account has been established and a private folder is being created for each active member to add documents. Documents can be shared with others by contacting him. If a membership lapses, the folder will be moved to inactive and then later removed if the membership isn't renewed. Adam Thanz will prepare conference photos and presentations in the SEPA account. Jon Bell asked if there was a way to know how many members have downloaded The Planets. He encouraged everyone to take advantage of this free show. Jack Dunn will share the PowerPoints he has from members who presented at conference and will contact MAPS officers to determine how to include their presentations. Rick Evans suggested Dropbox would be a good place to put a folder with information and personal experiences from conference hosts.

Publicity Committee: Derek Demeter, chair, Phil Groce, David Weigel and Jack Dunn served on this committee. They've provided informational emails more frequently this year. Groce proposed contacting everyone in the region who is not a member and offering them one year's free membership as a way to increase membership and participation at conferences. He indicated that it would not affect the bottom line financially. Brian Baker suggested that membership costs are not prohibitive, but travel and lodging costs for conference are the issue. Demeter said that SEPA has a Zoom subscription for webinars which may encourage more to join in order to participate. No action was taken on the proposal for free membership.



MARS

ONE THOUSAND ONE



"From the day that we were born we were destined to be together in this room today..."



Continued from page 10

2020 Conference in Fort Pierce, FL: Jon Bell will host next year's conference at the Hallstrom Planetarium at Indian River State College on June 2nd – 6th. All activities will be held in building on campus with a possible field trip to Kennedy Space Center and a day at the beach with a luau. Bell will try to get a group rate at the Hampton Inn and/or the Fairfield Inn that are close, but there will not be an official conference hotel. John Hare raised the question of where the hospitality suite would be located. Dave Maness suggested SEPA designate a hotel as the conference hotel to eliminate responsibility from the college. No official contract will be made by SEPA with the hotel. Further details will be determined.

2021 SEPA Conference: Adam Thanz submitted a bid for conference in Kingsport, TN. The theme is "It Takes A Universe" and will be held June 22-26, 2021. Several surprise events are being planned. Bays Mountain Park, one of the largest city-owned parks in the world, will be the site as well as the Marriott Meadowview hotel. Tri-Cities Regional airport is about 30 minutes away. The hotel will cost about \$119 per night with registration cost at about \$200 (all-inclusive).

George Fleenor suggested that SEPA consider a one day meeting in conjunction with IPS in 2022 if Houston is selected as the host site.

By-Laws Amendments: James Albury presented the proposed changes to the by-laws that were reviewed at the pre-business meeting on Thursday. Jon Bell moved to accept the changes; Jim Smith seconded. Adam Thanz questioned the change allowing Emeritus members to hold office since they are not always active in the organization. Jack Dunn pointed out that they typically have more time to devote since they are retired. Phil Groce said that if they live in the region and can vote, being emeritus should not disqualify them. Bell called the question to end discussion of all amendments. All changes were approved. Albury will submit a copy of the by-laws as revised to Janet Stearns for inclusion on the website.

Southern Skies SEPA Journal: Mel Blake, editor, asked that members consider submitting articles for publication. All submissions should be sent in March, June, September and December.

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Sensory Saturdays

Carole Holmberg

This paper is about our Sensory Saturdays, a museum-wide program designed for those on the autism spectrum, their families, and their caregivers.

Autism, or autism spectrum disorder (ASD), refers to a broad range of conditions characterized by challenges with social skills, repetitive behaviors, speech and nonverbal communication. According to the Center for Disease Control, autism affects an estimated 1 in 59 children in the United States today.

There is not one autism but many. Because autism is a spectrum disorder, each person with autism has a distinct set of strengths and challenges. The ways in which people with autism learn, think, and problem-solve can range from highly skilled to severely challenged.

The genesis of Sensory Saturday came from Angela Purcell, one of our interpreters. She works with groups and families in our Naturalist Center. One of her "regulars" is a young girl with autism. Angela was looking for ways to interact with our collection that the young lady enjoyed. It was the Museum Manager who mentioned the idea of opening early once each month. Both Angela and I work on Saturdays. It is usually just us, and two visitor service's staff. The idea was to open the museum before regular hours, so families with members on the spectrum can enjoy the exhibits without the crowds or bright lights. We aimed to provide a comfortable and judgment-free space that is welcoming to everyone.

Enter the Universe of Learning: part of NASA's Astrophysics Directorate. Our Museum is a Smithsonian Affiliate, and they were offering some mini-grants of \$2500 to Smithsonian Affiliates for accepted program proposals. I attended a webinar, and one of the things they were looking for was reaching underserved populations. The Astrophysics Directorate looks to answer "big" questions with missions that look at objects beyond our solar system. There are a lot of missions with images to choose from, especially from Hubble and Chandra.

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So, I wrote a proposal for the \$2500, listing staff training, supplies, marketing, and even conference fees to disseminate what we had learned. However, we ran into a big obstacle, and were not able to accept the money before the SEPA-MAPS 2019 conference. We could not sign the contract unless the indemnity clause was removed. I found out while I was at the conference that the Smithsonian agreed to remove the offending clause.

Our first Sensory Saturday morning was Saturday June 1.

Although we had no outside money in time for our first Sensory Saturday, we still went ahead with our program, although on the cheap. We felt training was essential. We received a free two-hour training for staff from two people from the York County Board of Disabilities and Special Needs, staff visited museums that already have programs for people with ASD and asked questions, Angela and I searched the web for information on ASD and for programs that other museums had done, we talked to visitors and a staff member that have children on the spectrum, and we read a book by Lisa Jo Rudy entitled "Get Out, Explore, and Have Fun!," who had worked at the Franklin Institute and whose son has autism.

We looked throughout the Museum for areas that were bright, had flickering lights, or were loud. There are several different apps for decibel meters, and some are free. Our worst offenders were the newly-remodeled bathrooms with the loud air dryers turned on whenever anyone was in range and the toilets were automatically self-flushing. We turned the dryers off for the hour.

In the planetarium, I kept the outside doors open, the audio soft and tranquil, and the lights on but dim. I raised the light levels when my one family felt it was still too dark. The child loved astronomy and they spent over 30 minutes inside. I made a show out of a few full-dome clips from www.spacetelescope.org. Clips without audio were grouped together and relaxing royalty-free music played.

We lack a 3-D printer, so Universe of Learning sent some 3-D printed models to us. Printed models can break easily, and therefore these were sturdier, although less detailed. The models included a supernova and the Chandra spacecraft and were placed in the Naturalist Center.

The entire museum was open. Lisa Jo Rudy's book said that museum dioramas are perfect for people with ASD, as they can study the animals up-close without being overwhelmed. In the Naturalist Center, which has touchable natural history objects, tables were chosen to engage the senses.

We designated our classroom as the Quiet Room. In case anyone became overwhelmed, they could retreat there. We brought beanbag chairs from our Tot Town and tried to remove distractions and anything that might be thrown.

In the original grant, I had written in the purchase of "Sensory Backpacks," which a family could borrow from the front desk if they needed to and would contain headphones, sunglasses, and comfort items such as a stuffed animal and a fidget spinner. However, it was felt that families would bring these items if they were needed and we wouldn't have to provide. In the future, Angela hopes to have a program for groups of students with disabilities and we plan to have a trunk of such items, in case they are needed.

We were asked several times if we had a social story. That is something with words and pictures, so that families can prepare. We are still working on this.

What's next? We wish to expand this program to other disabilities and to have a program for groups with ASD. We need to finish our social story and put it on the web and we still desire to have training for staff. I want to insure that we are indeed "judgment-free" and welcoming.

Advertise in Southern Skies!

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

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10% discount for 4 issues

Ads accepted on a space available basis. Ads must be camera ready and conform to dimensions listed. Payment must accompany advertisement order, made payable to the Southeastern Planetarium Association (send payment to Secretary/Treasurer Patsy Wilson). The underlying mission of our advertisements is to promote resources, products, and services related to the planetarium profession. SEPA reserves the right to refuse advertisements.

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.

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Qualifications: _____

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How Birds Navigate When They Migrate

Carole Holmberg

My museum, the Museum of York County, is a natural history museum located in the Carolina Piedmont. Part of our mission is to communicate regional themes and their broader global connections, so the migration of local (and national) bird species fits well within our mission.

The Piedmont region of the US runs from southern New York down to Alabama. At least 160 species of birds are found in the Carolina Piedmont, but not all of them are permanent residents.

Over 40 species of birds live in the Carolina Piedmont during the spring and summer, while about 36 species are winter residents. A third type of migratory bird is just passing through, moving through the Carolinas between summering in the north and wintering in the south.

Of the bird species that migrate, they can be split up into three groups. Short-distance migrants move only a short distance, usually within a state and sometimes just to another neighborhood. Medium-distance migrants cover distances that span from one to several states. Long-distance migrants typically move from breeding ranges in the US and Canada to wintering grounds in Central and South America. Some 350 species of North American birds migrate long distances.

Scientific studies have been done on a number of bird species and several different techniques of bird navigation have been discovered. Birds may use multiple methods and calibrate them against each other. The complexity of migration and the skill with which it is accomplished is still a mystery.

Some bird species learn migration routes from adult birds in the flock. Once learned, younger birds can travel the route successfully themselves. However, first-year birds often make their first migration on their own. Somehow they can find their winter home despite never having seen it before. Young birds that migrate alone have an innate knowledge of the direction and distance they should travel, but lack a spe-



Photo Credit: Dr. Peter Bergbusch, Regina, Sask.

-cific goal. After it arrives at its wintering grounds, the young bird will select an area to which it imprints.

Because birds follow the same migration routes from year to year, their keen eyesight allows them to map their journey. For birds that migrate during the day, different landforms and geographic features such as rivers, lakes, coastlines, canyons and mountain ranges can help keep birds heading in the right direction.

Strong scent clues for different habitats, ambient sounds along their routes or even taking clues from other species with similar needs can all help birds migrate successfully. One theory suggests that homing pigeons use an olfactory map and there is evidence that olfactory navigation may extend to a distance of over 300 miles.

Many birds have special chemicals or compounds in their brains, eyes, or bills that help them sense Earth's magnetic field. This helps the birds orient themselves in the right direction. Tiny amounts of iron within the inner ear help some warblers sense Earth's magnetic field and determine which way is north.

Migratory restlessness is the tendency for migratory birds that are in the "mood" to migrate face the direction that they plan on migrating. Migratory restlessness is used to study in which direction a bird will migrate.

It has been shown that European Starlings (a species found throughout North America) migrate by the direction of the Sun. Captive birds were placed in cages and

The Twelve Labors: Part I

Woodrow Grizzle

mirrors were used to shift the apparent location of the Sun. In response, the birds shifted their migratory restlessness to match the compass direction indicated by the apparent new position of the Sun.

Patterns of polarized light also appear to play a key role in navigation. Many nocturnal migrants start their flights at sunset or a little after. Birds use the polarized light patterns to provide information on initial flight directions. Savannah Sparrows (a medium-distance migrator found throughout the US and Mexico) use both polarized light and Earth's magnetic field.

Indigo buntings, like many songbirds, migrate at night. In 1967, Cornell scientist Stephen Emlen used Indigo Buntings to prove that they navigate by the stars. And he used the Longway Planetarium in Flint, Michigan to prove it.

First, young birds were collected and hand-raised. One group of birds was raised in a windowless room and was never exposed to a point source of light. A second group was exposed on to a simulated night sky in the planetarium, with normal rotation around Polaris. A third group was exposed to a simulated night sky in the planetarium, but in this case the sky was manipulated to rotate about Betelgeuse, rather than Polaris.

When the fall migration period started, the birds were released into special cages inside the planetarium. A white paper funnel was in each cage (now known as an Emlen Funnel). On the bottom of the funnel, an ink pad was placed. The birds inked feet made marks in the direction of migration. The birds in the first group oriented themselves in random directions, showing no ability to recognize a migration direction. The birds in the second group oriented themselves away from Polaris, in the appropriate southern direction for migration. The third group had been raised with Betelgeuse as the central point of rotation. When exposed to a normal sky in the planetarium, these birds oriented themselves away from Betelgeuse. This research indicates that young birds learn a north-south orientation from a rotational star pattern.

The Twelve Labors of Herakles, in Greek οἱ Ἡρακλέους ἄθλοι (hoi Hērakleous athloi), also known as the δωδέκαθλος (dōdékathlos, “twelve labors”), are traditional ancient mythic tales centered around the Hellenic hero Herakles and his Roman alter-ego Hercules. The primary written source for these stories is Βιβλιοθήκη (Bibliothēkē, “Library”), also known as the Bibliotheca of Pseudo-Apollodorus, or simply The Library. Who is this false Apollodorus, and why not use his actual name? It turns out that this false Apollodorus was indeed an actual person called Apollodorus—it just wasn't the Athenian. For centuries, it was simply assumed to be, but you know what they say about assuming. Apollodorus of Athens lived from about 180 BC to sometime after 120 BC. However, historians now think The Library dates to the somewhat more recent AD first or early second century. The accounts in The Library are unadorned, even to the point of being somewhat laconic. For this reason, some historians think that The Library could be an epitome of earlier works that are now lost. Another interpretation is that The Library is a relic from a time when myths and histories were predominantly passed down orally. Inside such a tradition, it is not difficult to imagine written works serving more as outlines than canonical versions of the stories themselves.

In an effort to make The Library's account of the Twelve Labors more enjoyable to modern audiences, I have embellished them. What follows now, and in quarters to come, are versions of the Herakles myths that I hope you will not only find entertaining, but also useful in your own storytelling. Herakles himself is present in the night sky, as are many of the characters you are about to read about. Enjoy!

— An Introduction to Legend —

The story that I wish to tell is an ancient one. It is a story of the struggle between gods and men, of inconsolable grief, and of penance for atrocious sins. Herakles, son of Zeus and Alcmene was the greatest hero Hellas has ever known. Zeus' wife, Hera, ever jealous of her husband's infidelity, often wrought her vengeance on Zeus' illegitimate children. This story begins with Hera's trickery and ends with Herakles' ascent to divinity. It is a long and difficult road, fraught with peril and unforgettable

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characters and deeds. These are the Twelve Labors of Herakles.

— It Begins —

So it came to pass that after the battle with the Minyans that Hera's jealousy caused Herakles to go mad. Her flung his own children and the two children of Iphicles into the fire. He condemned himself to exile. Upon making his way to Delphi, Herakles inquired of the god where he should dwell. The Pythian priestess called out to him, "Alcides, I now call you Herakles. Go now to Tiryns. Serve the king Eurystheus there for twelve years. Eurystheus will impose upon you ten labors. Complete these, and you shall have immortality."

Herakles took the priestess' words to heart. He traveled directly to Tiryns to call upon Eurystheus. The king took Herakles into his palace and set about immediately consulting with the gods on what to do with him. Hera spoke to Eurystheus, and commanded him to send Herakles out on seemingly impossible labors. "Surely, this will be his death," Hera told Eurystheus, "he must begin in Nemea



PETER PAUL RUBENS, *Hercules Strangling the Nemean Lion*, an oil sketch possibly related to work commissioned in 1639, from Flanders, ca. 1639. Oil on cradled panel, with traces of red chalk, 9 1/16" x 15 7/16". Harvard Art Museums/Busch-Reisinger Museum, Cambridge. Digital image courtesy Harvard Art Museums, 2017.

where dwells a lion of unparalleled power." The Lion of Nemea. The Romans called him *Leo Nemeaus*, and to the Greeks he was known as. οἱ Λέων τῆς Νεμέας (*Léōn tēs Neméas*). Nemea is an ancient place on the northeastern corner of the Peloponnese, in Hellas (the Greek name for Greece). It was formerly part of the territory of Cleonae in Argolis,

but in our time it is part of Corinthia. 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.



EUPHILETOS PAINTER, *Herakles Wrestles the Nemean Lion*, c 530 BC. Attic black figure amphora (Side A). Chazen Museum of Art, University of Wisconsin-Madison, Madison, Wisconsin. Public domain image.

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 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.

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Herakles then continued onward 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—dark, save the burning red fire of the Lion's eyes. Herakles silently rose, knocked an arrow in his bow, aimed between those two ghastly eyes, and let fly a shot that singed the very air. 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. 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.

Herakles paused, the Lion roared, and Herakles let fly an arrow straight into the Lion's mouth – his unarmored 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.

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 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, the Lion's spirit returns as the constellation of Leo, the Lion, and we are reminded of the first of Herakles' twelve labors.

Next Time: Heady Happenings of a Horrible Hydra

SEPA Minutes continued from page 12

A plaque was presented to Derek Demeter, Past President in recognition and appreciation for his term of service to SEPA during 2016-2018.

Announcements:

1. Phil Groce announced a fulldome festival in Macon, GA on August 15-19. Demeter asked if creators would be willing to submit their work if a Dropbox folder is created.
2. Ken Brandt asked for Letters of Support from attendees for the rebuilding of the Robeson Planetarium. A template, created by Alan Gould, has been placed on the IPS website.

There being no further business, the meeting adjourned at 11:17 am. (Brandt/Dunn)

Patsy Wilson
Secretary

Researching the Night Sky and Nocturnal Environment of the Outer Albemarle Peninsula

Brian Baker

Abstract

Eastern North Carolina boasts some of the darkest skies along the Atlantic Coast of the United States. A qualitative survey of the vast public lands of the Outer Albemarle Peninsula (OAP) was performed to gain insight towards the night-scape resources and the nocturnal environment of the region. Ground level night sky quality readings ranged between 21.3 – 21.81 magnitudes per square arc-second. Public star party events featuring a mobile planetarium and local amateur astronomers reached 1000 people gaining support and awareness for the project.

Background

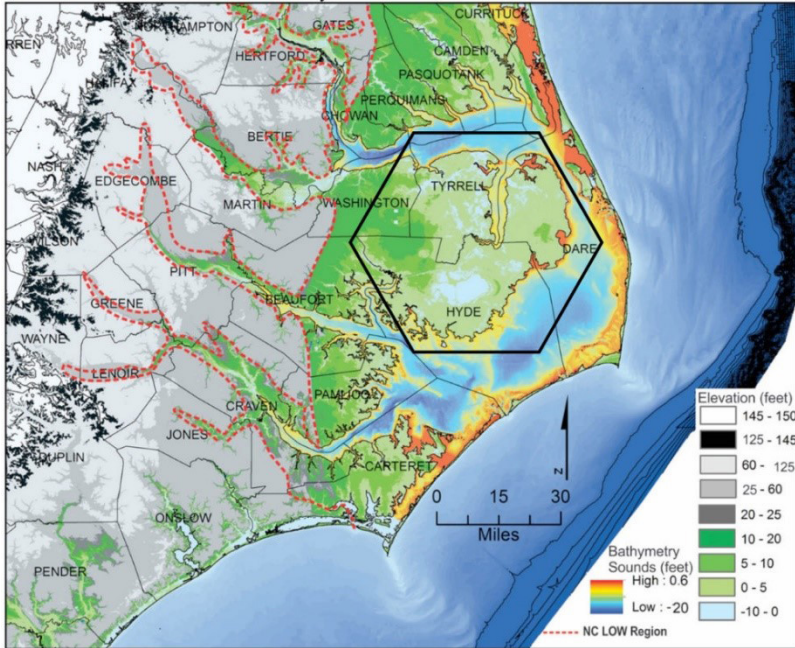


Figure 1

The night skies within most of the Outer Albemarle Peninsula are among the darkest in the entire US Atlantic coastal system. The Peninsula is surrounded by four large estuarine water bodies: Albemarle Sound on the north, Croatan and Pamlico sounds on the east, and Pamlico River Estuary on the south. The OAP region consists of Tyrrell, Washington, and mainland Dare-Hyde counties (Figure 1) with Columbia, Creswell, Manns Harbor, and Swan Quarter being the largest towns with a total population of about 6,190 in 2010 (-19% of total population) and declining. All of these towns are located around the outer perimeter of the Peninsula. Most of the population lives in very small, rural crossroads communities (e.g., Goat Neck, Cherry, Killkenny, East Lake, Stumpy Point, Engelhard, Fairfield, Alligator, Gum Neck, New

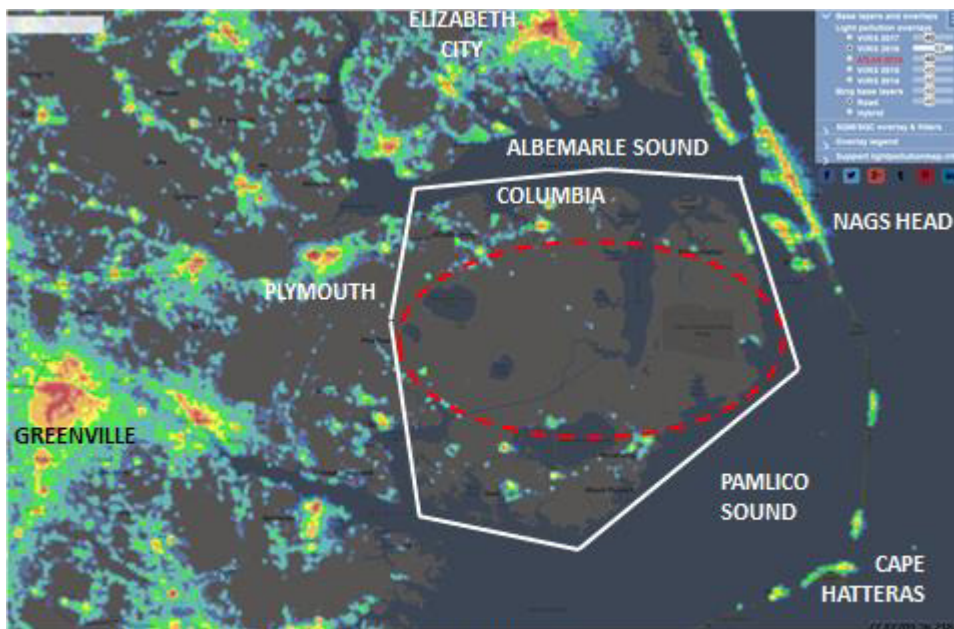
Holland, etc.). The largest industry is agriculture with vast farm and timber lands along with a small, but growing tourist industry. Four large National Wildlife Refuges occur within the region (Alligator, Pocosin Lakes, Mattamuskeet, and Swan Quarter), vast acreages of NC Wildlife Resources Commission game lands; a state park, historic site, and coastal preserve; and private conservation lands. Thus, over 485,134 acres (758 mi²) of public ecosystems occur within the OAP and contain a unique, complex system of nocturnal environments and associated night skies.

The nocturnal environment and their night skies rotate from the brilliant, big sky of the full moons to the inky black skies of the new moons that open the sky to a dazzling universe. A really big seasonal variation is superimposed upon the skies vastness that ranges between two extremes. The cold, crisp winter nights are dominated by the overwhelming sounds of flocks of winter waterfowl (e.g., tundra swans and snow geese by the tens of thousands) moving from refuge lakes to farm fields, lonesome hoots of owls on evening hunts, howls of roaming coyote packs, and occasionally the rare red wolf. Summer nights are hot, humid, and dominated with a cacophony of insects and frogs and massive light and sound displays derived from the outlines of perfect thunderheads as they move across the Peninsula. And the never-ending parade of morning sunrises and evening sunsets that daily provide new mosaics of sky magic.

Anticipated Outcomes

The dark-sky survey will generate detailed maps of the current level of night sky glow within the dark sky regions of the OAP for possible designation as an International Dark Sky Reserve. These maps will form a baseline to be used for tracking changes in light pollution in the region going forward, provide the basis for selecting the most ideal sites for promoting dark sky and nocturnal environment components of a sustainable eco-tourism trail program, and public and K-12 educational programs. Educational workshops will provide teachers with new ideas to incorporate into their lesson plans, having impacts on a vast number of K-12 students in the OAP region. The over-arching goal of the present proposal is to delineate the nocturnal environment and night sky resources and expand the night-scape capabilities into the existing plan for developing educational and sustainable eco-tourism programs for the underserved counties of the OAP. If successful, it would bring national and international attention to the natural resources and eco-tourism potential of NC's Inner Banks.

Methods



To understand the nocturnal environment and dark skies of the OAP the night sky conditions of the region (Figure 2) were surveyed twice a month during the full moon and the new moon. The night-scape survey consisted of four teams, one each from Tyrrell, Washington, mainland Hyde, and mainland Dare counties. Each team was equipped with a GPS, SQM-L sky quality meter, as well as sound and weather meters to collect night-scape data for each site throughout the seasons. In addition, the teams provided a general description of the surrounding eco-system environment, soundscape, weather conditions, and visitation capabilities (access, parking, light pollution, etc.) for each site visited.

LIGHT POLLUTION MAP: RADIANCE @ 10° W/cm² sr
RED = >40; LIGHT RED = 20-40; ORANGE = 6-20; YELLOW = 3-6; LIGHT GREEN = 1-3;
DARK GREEN = 1-0.4; BLUE = 0.4-0.25; BLACK = <0.25 (NO DATA OVER WATER BODIES)

Figure 2

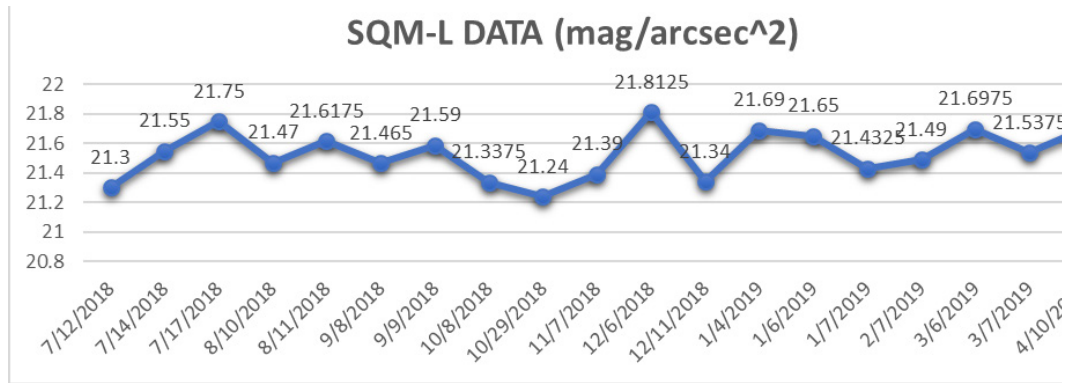
The SQM-L sky quality meter is used to measure the sky brightness to obtain ground level data on the prevalence of light pollution in the OAP region. Measurements are made in units of magnitudes per square arcsecond (mag/arcsec²). Being a logarithmic scale, large changes in sky brightness correspond to relatively small numerical changes. Four measurements were made for each site visit, then averaged together. Temperature, humidity, seeing, and transparency were recorded as well to determine how these variables affect viewing conditions.

Results

New moon SQM-L readings indicate night sky glow ranging between 2.24 – 2.81 mag/arcsec² in the survey area.

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Under the International Dark Sky Association (IDA) guidelines for Dark Sky Parks the majority of the OAP falls comfortably within a silver rating (21 - 21.75 mag/arcsec²), with the potential for a gold rated dark sky core (>21.75 mag/arcsec²). Night sky quality seemed to be consistent over the duration of the survey, with location being the primary factor determining SQM-L readings. Humidity, temperature, and date did not show a significant impact on SQM-L results. Several sites we identified as being suitable or showing great potential for public access to view the night sky. The most prominent sites are found within Pettigrew State Park, Lake Mattamuskeet Wildlife Reserve. Boating ramps throughout the area, were also found to be great places for public access to night sky.



The public and K-12 outreach component of the project has reached 1000 people to date. Two public star parties were held within the survey area. The events consisted of a mobile planetarium, several hands on activities, and telescope viewing hosted by local amateur astronomers. The mobile planetarium featured a live night sky tour highlighting the morning planets, the Orion nebula, and the uniqueness of the dark sky conditions in the area. Following the night sky tour the full dome short film “Losing the Dark” was shown to the audience. “Losing the Dark” was produced in part by IDA. The film introduces and illustrates some of the issues regarding light pollution and suggests three simple actions people can take to help mitigate it.

A third star party was planned to participate in the North Carolina Science Festival’s Statewide Star Party, but this event had to be canceled due to severe weather and the lack of indoor space. One final outreach event is planned to serve Tyrrell County Public Schools. Each grade level from K-8 will have their opportunity to go through the mobile planetarium to learn about the exceptional night sky they have about them.

Conclusion

The OAP offers an exceptional dark sky resource, relative to the communities and cities that surround it. The SQM-L readings in the core of the survey region were greater than 21.75 mag/arcsec², which shows potential for the OPA to qualify for the highest tier designation of the IDA Dark Sky Parks Program. Further surveying of night sky quality may be needed. With over 485,134 acres of public land many points of interests were not surveyed. The findings of this report will be used in future studies to focus on the key areas that define a dark sky core and to confirm whether the OAP satisfies the other gold tier designation indicators.

The public outreach garnered a strong response towards astronomy education in the survey region. Star party hosts were overwhelmed by the hundreds of people that participated in the events. Attendance exceeded any reasonable expectation for such a rural area. The response may be the result of a lack of family oriented educational opportunities in the region. The mobile planetarium was a big draw for each event and offered a new experience for many of the local residences. The nearest planetariums to this region are on the order of two hours away in Grifton, Rocky Mount, and Elizabeth City. The OAP has shown itself to be a rich and intriguing area for astronomy and astronomy outreach.

SEPA 2019 in Photos



Retired Astronaut Clayton C. Anderson speaks at banquet - photo by Katherine Hunt.



The Conference Program. Photo by Jack Dunn



Kat Hunt and Clay Anderson at banquet. Photo by Jack Dunn



Hospitality - the important information. Photo by Jack Dunn



Fun at the banquet from Kat and others. Photo by Jack Dunn



More at the banquet. Photo by Jack Dunn



A scene visiting Mars on the dome. Photo by Jack Dunn.



Liz opens the conference at the Columbia Embassy Suites. Photo by Jack Dunn.



Robin Sip visits 1001 Gervais (an ice cream shop) - his show "Mars 1001" was shown at the conference. Photo by Jack Dunn.



Derek Demeter receives the SEPA President's award. Photo by Adam Thanz.



Liz and her staff receive the SEPA conference award.. Photo by Adam Thanz.



Astronaut Clayton Anderson receives a gift from MAPS. Photo by Adam Thanz.



Planetary astronomer Patricia gave a lunch time keynote talk that updated everyone on the current state of Mars research and NASA's future plans. Photo by Jack Dunn.



Feast time! Photo by Mel Blake



There's something special about being under the dome. Photo by Mel Blake



The Clark refractor seen at the telescope group meeting. Photo by Mel Blake



The vendor hall. Always a fun place to hang out. Photo by Mel Blake



Sharing ideas and enthusiasm is what the SEPA meetings are all about. Some new MAPS friends. Photo by Mel Blake

News From the SEPA Region Summer 2019



East Kentucky Science Center and Varia Planetarium.
Prestonsburg, KY.

Steven LJ Russo reports: First of all, a big thanks and congrats to all involved putting together the SEPA/MAPS conference in Columbia, SC. It was a great week with colleagues that I haven't seen in a while.

On May 7th the EKSC hosted the Prestonsburg Songwriter's Scene. When the planetarium was built in 2004, it was built so that it could have live music events in the dome under the stars. This has never happened until now. With the use of our GOTO Chronos Star Machine, our manual laser controller from AVI, and our new lighting system from Chroma Cove, several musicians and singers played and sang for two hours under the dome, accompanied by the stars, lasers, and lighting effects. Since the musicians and singers were plugged into our sound system, their music and voices were coming down from among the stars!

The EKSC celebrated Astronomy Day on May 11 with planetarium shows, hands on activities, and The Hubble Space Telescope Traveling Exhibit. Guest speaker was Maurice Henderson who has worked extensively with NASA on public outreach and science education. He is currently serving as the project engineer for NASA's support of the Science on a Sphere visualization platform, and the Hubble Space Telescope traveling exhibits based at NASA Goddard in Maryland. He works with developers at NOAA (National Oceanic and Atmospheric Administration), and researchers in NASA's science missions. The Hubble exhibit closed after Astronomy Day, after a ten-week showing which was attended by 3400 people during that time.

As of this writing in June, we are in the middle of Summer Camps and drop in activities, while at the same time in preparation for the 50th Anniversary of Apollo 11. That anniversary will include special planetarium shows, Lunar rocks and soil samples, and the Many Inspired Steps exhibit.

Morehead State Star Theater, Morehead, Kentucky. Alanna

Sacra Cavins Undergraduate Research Scientist NorthWest Research Associates, Boulder, CO. reports: Here at MSU we offer a wide variety of shows that range in age from pre-school up to adults. We have been involved heavily with the new chapter of S.W.I.S.E. (Society of Women in Space Exploration) at the university. This society takes a great deal of its values from working with educational outreach. This means that we at the star theater have worked one on one with an after-school program in Morehead to let children be hands on involved with S.T.E.A.M. here at the planetarium by looking through telescopes, doing projects, and watching educational shows. In addition to that we have been doing several interdepartmental projects. The most common is we collaborate with students from the music department (choir, percussion, etc) in order to do fully customized concert shows that match with the live music. Those shows are made by hand by the student operators. At the moment we are currently in between planetarium directors, however thanks to the hard-work and dedication from those same students and other staff members we are doing well. We also do tours here at the Space Science Center where visitors get to see a glimpse of the extensive effort it takes to develop, create, and test satellites. We show visitors the facilities we support, including our very own "mission control" that we use to communicate with our 21-meter dish, that is now part of the deep space network (The first non-NASA probe!). Please feel free to ask questions about our facility or just visit us by scheduling or contacting us by email at star.theater@moreheadstate.edu.

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Berea College Planetarium, Berea, KY.

Tracy Hodge reports: Berea College is pleased to announce the opening of our new fully digital 4k planetarium, part of the Margaret A. Cargill Natural Sciences and Health building. Our facility seats 120 under a 35' dome and is equipped with a Sptiz 4k SciDome system. We are particularly excited about opportunities for outreach and curriculum development with local schools. Public fulldome shows are held on Sunday afternoons during the academic year. In our first year of operation we hosted over 500 K-12 students, three film premiers, and multiple colloquia for the campus community.

Remember Kentucky Planetariums, please send me your stories about all the things you are doing, so that I can put them in this column. Send to srusso0002@kctcs.edu



**BlueCross BlueShield of South Carolina Planetarium
South Carolina State Museum
Columbia, SC**

Liz Klimek reports: I can't say thank you enough to everyone who helped behind the scenes and made SEPA-MAPS 2019 a success. A super special shout out goes to Patsy Wilson, April Whitt, and Jack Dunn for all that they did before, during and after the conference. As SEPA's Secretary-Treasurer, Patsy did a ton of heavy lifting, pulling all the info from the registrations, managing the finances and paying the bills. As President-Elect (and now President) of MAPS, April was an invaluable liaison with the MAPS Board, handled every aspect of the door prizes, and spent a significant amount of time tending to the registration desk. Jack took care of show dome submissions, paper and workshop submissions, secured our invited speakers, and served as the onsite AV person at the hotel.

On the museum side of things, I'm grateful to my peers in the Education Department, who took time away from

their primary duties to help with a host of miscellaneous, and often unpredictable, tasks both at the hotel and back at the planetarium, which never stopped running its normal schedule of public shows. Many references have been made to "my" staff, but the planetarium technically only consists of myself, one part-time educator, and a fraction of Diana's time as Science Education Manager. The fact that it seemed like the planetarium had a larger staff is a testament to what a great and supportive team I work with at the museum.

Keep the stories and pictures coming, as I want to hear how it all went!

Our planetarium is fast approaching its 5-year anniversary. What a whirlwind it's been! In mid-August of 2014 we hit the ground running, and we've never stopped since then. Besides the conference, this summer is jam-packed with the usual astronomy-themed summer camps, Friday Night Laser Lights summer series, and a special Space Week to celebrate the 50th anniversary of Apollo. The planetarium will offer a special live sky program focused on the Moon several times during this week.

In other news we've started experimenting with using Google's Live Transcribe app to make both live and pre-recorded shows more accessible to the deaf and hard-of-hearing. Many thanks to Zach Thompson at Mueller Planetarium in Lincoln, NE for making us aware of this app! We very recently did a quick field test with a visiting group of deaf and hard-of-hearing students called Camp Wonder Hands, simply letting them borrow a couple of Android tablets (put in dark mode) during a canned show. We received a lot of positive feedback and would like to try it again with a live show. We hope to incorporate its usage into the museum's special needs nights, which now happen regularly once a month throughout the year. The planetarium already offers a special show for these nights with lower volume and ambient light.

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Domes up to 60 feet



MED

XL



4K XL

Two Projector
Laser Illumination
54,000 Lumens
4096 x 4096 Pixels
Domes up to 80 feet



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DuPont Planetarium
Ruth Patrick Science Education Center
University of South Carolina 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) is focused on Moon Day. We are among those who have an interest in making July 20 a national holiday called, Moon Day. We hope that others in the planetarium field will begin to refer to Moon Day as an annual date to be remembered. After all, this was a significant event for our country and the planet. It is hard to predict whether or not July 20 will become an official holiday, but we will certainly be celebrating the 50th anniversary of the Apollo 11 Moon landing.

To highlight this event, we have upgraded our slide-based program, *To the Moon and Beyond*, to take advantage of our Digistar 6. We were very happy with how much better the show looks with the upgrade, and our audiences have responded well.

In June, we presented 1. *In My Backyard* by CocalCola Space Science Center and Calgary Science Centre 2. *Two Small Pieces of Glass* by the European Southern Observatory and Supernova Planetarium, and 3. *Digistar Special Effects Extravaganza*, a local production.

In July, we presented 1. *To the Moon and Beyond*, 2. *Ancient Sky Lore*, a local production, and 3. *Digistar Special Effects Extravaganza*,

For the summer, we began a new activity called Family Fun Fridays. We have two public planetarium shows focused on families with children scheduled at 10 and 11 AM. Normally, we do not permit children under 4 in the planetarium, but for these special programs, we are allowing 2.5-year-old children to attend.

T.C. Hooper Planetarium
Roper Mountain Science Center
Greenville, SC

Greg Cornwell reports: It has been my privilege to serve as an educator at Roper Mountain for more than 34 years. However, the time has come for me to end my full-time career and transition into new activities I would like to pursue. So, my last day will be Friday, August 9, 2019.

I do hope to continue in a part-time capacity at the center and maybe even volunteer.

Settlemyre Planetarium
Museum of York County
Rock Hill, SC

Carole Holmberg reports: I had a productive time at the recent SEPA/MAPS conference in Columbia. Thank you to Liz Klimek and her staff! July brings the Apollo 11 50th anniversary in a big way to Rock Hill. We are one of five sites statewide where SC-ETV is bringing a screener of the American Experience documentary “Chasing the Moon.” The Rock Hill screening will be on July 16. Following the screening will be remarks and Q and A from an expert panel. The expert panel in Rock Hill includes USC professor Dr. Varsha Kulkarni and retired astronaut and former head of NASA (and SC native) Major General Charles Bolden. We will also have a moon rock on display and the Central Carolina Rocketry Club will be firing their model rockets that afternoon. Other special events are planned for July 20 and July 24. Thanks to a very generous sponsor, we will be showing NSC Creative’s “CAPCOM GO! The Apollo Story” all summer long. We also are showing “The Secret World of Moths” each day as a companion to the *In the Dark* exhibit.



GEORGIA

*contact: David Dundee
Tellus Museum
Cartersville, GA*



**Bentley Planetarium - Tellus Science Museum,
Cartersville, GA**

David Dundee reports: We had another busy spring at Tellus. We hosted the Western Hemisphere Premier of the show from Spitz “Birth of Planet Earth”, Tellus helped develop the show and also helped develop the education materials that accompany the program. We also opened “Faster than Light” and “Accidental Astronauts”.

On May 11 Tellus hosted National Astronomy Day. Weather was rainy all day and night, which held our attendance down to only about 1,000. We used our Earth and Space kits we received from the National Informal STEM Education Network. We had guests building pocket solar systems, Playing Space Guess Quest, experimenting with filtered light and more. The local Meteorite club was on hand giving away small meteorites and our indoor universe (planetarium) had clear starry skies.

Georgia Southern Planetarium, Statesboro, Ga.

Dillon Marcy Reports: The summer is in full swing at our planetarium, and ever since the conference we have had our hands busy. Same as last year after the conference the two weeks after was trial and error with the resources we learned from the conference and their application in our dome and presentations. So far we have been interacting more with our audience to get them involved with the program. It has been successful with the younger kids though the older kids tend to be more stubborn. Time will tell in how well we are able to improve our shows with what we learned, but we are being hopeful that it will work out in the long run.

Typically, over the summer with only a few summer classes being held in our building and the morning groups being the same our activities in the afternoon would dry up. During this summer we decided to try

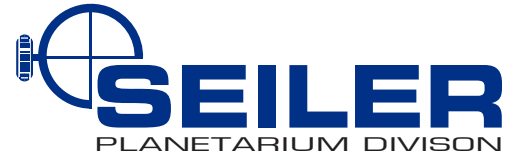
some experimenting with our afternoons this summer by offering scheduled shows. For the other planetariums having scheduled shows tends to be the norm, but unfortunately for our campus parking is rather limited near us. The typical process of getting a visitor pass has been difficult in the past making scheduled shows hard to set up small groups. For these shows we were needing to streamline the process of letting people park on our campus and having shows presented that will draw a crowd. We chose to present one show a week on Tuesday and Thursday at 3 pm with one of our under played or fan favorite shows. This drew attention, and luckily for us parking made changes in streamlining visitor parking before we even had to query with them. Our parking office now only scans license plates to see if someone can park on our campus instead of having to go to the office to fill out paperwork and hang the pass in their car. They with that they also allowed departments to send out parking permits through email to be filled out on line. Because of all this coming together our shows have been quite popular now that people do not have to do multiple steps in setting up parking passes and can now do it before they even reach our campus.

Our Physics and Astronomy Department is currently working to get their own small observatory on the roof of our building. They are in the planning phase with only a few parts currently purchased. They intend to add it to the department’s curriculum hopefully for this fall. Luckily for us the roof of our building was set up to pipe what the observatory sees directly to us in the planetarium. Unfortunately, Statesboro is not the optimal place for star gazing so only the brightest stars will be observed, but it will give us a little more to offer. When more of the observatory come in and we start setting up the telescope we’ll be sure to share our progress as it is set up.

With fall right around the corner we have begun preparing our public monthly shows. This fall we will have three brand new shows and of course the ever so popular Let It Snow show. In August we plan to present Saturn: Jewel of the Heavens, in October we plan to show Rock the Dome: Classic, and in November we intend to play Cosmic Recipe along with an intern presentation. We are expecting big turn out with new shows and with a new rock show added to our library of shows we will probably in for a few encore presentations.

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Western North Carolina News for Southern Skies

Gary Lazich reports: Asheville Museum of Science (AMOS) in Asheville offers three “Star Stories” shows in its Star Dome every Sunday afternoon. This summer, AMOS is offering a wide range of on-site Summer Science Camps. It is also providing off-site library programs featuring the Star Dome in connection with the theme “A Universe of Stories” and the 50th Anniversary of the first piloted lunar landing. Once each month, AMOS participates in Science Pubs with the Collider to promote “Sustainable Communities through Healthy Building Design, Clean Living, and Land Stewardship.”

Pisgah Astronomical Research Institute (PARI) has suspended public programming until autumn in order to concentrate on its resident summer camps. Camps include Camp Above and Beyond (2-week camps) and Astro Explorer Camp (1-week camps featuring 3-D printing) as well as research opportunities for selected Duke University TIP (Talent Identification Program) students. Meanwhile, PARI’s AdventureDome has gone on the road to provide planetarium programming for such summer camps as Camp High Rocks in Brevard.

Mayland Community College’s Earth to Sky Park in Burnsville participated in the statewide SciENCe Festival Star Party on April 13 with tours of the Park and of the Park’s Bare Dark Sky Observatory, featuring the largest public telescope (34”) in North Carolina. Unfortunately, inclement weather forced the postponement of groundbreaking for the Park’s new planetarium until a later date to be determined. Phil Groce of Helping Planetariums succeed has been consulting with College and College Foundation officials to advise them on design considerations.

Ingram Planetarium, Sunset Beach, NC

Katherine Hunt reports: This year, Planetarium Manager, Kat Hunt attended her very first SEPA conference as well as the additional Mini-LIPS conference preceding it. LIPS was an amazing experience as her planetarium does a great deal of live and interactive programs; academically she also does research in increasing engagement in science education and LIPS has helped inspire her in future academic work. It was also very exciting to meet a local scientist for Ingram, Dr Patricia Craig, who studies Mars and had a lot of great insight on Mars initiatives in 2020 that can fuel programs for domes across the SEPA MAPS regions.

While at SEPA MAPS, Kat was also invited to showcase some of the ways she and her team use their Spitz SciDome for live programming during one of the Spitz demos. She connected with several school planetarium’s as well, one which is also a SciDome, in the Carolinas and hopes Ingram can be a source of support for them as they start their dome journeys.



Pictured: MiniLIPS Activity by Mark Webb Freefall Trajectory–Planetarium Improv Without a Net



Kat with Keynote Speaker, Astronaut, Clay Anderson.

Ingram Planetarium is the 2019 site for the Carolina Association of Planetarium Educators conference this year on September 9th and 10th. This year's CAPE conference will focus a great deal on live and hands-on activities under the dome as well as how to be a community resource for other educators such as K-12 teachers and camp groups. Further, Ingram is excited to showcase the result of two years of upgrades, including the SciDome IQ 2400 projection system featured at SEPA MAPS. Please visit <https://rpsec.usca.edu/planetarium/CAPE/> to register and learn more.

Robeson Planetarium

Ken Barndt reports: Astronaut William (Bill) McArthur, born in Laurinburg, North Carolina, graduated from Red Springs High School, Class of '69. McArthur returns to Robeson County to celebrate the 50th Anniversary of the Robeson Planetarium. Astronaut McArthur will speak about the first walk on the moon.



Enjoy an evening observing the celebration of the educationally-enhanced years the planetarium has provided for our community and the spectacular experiences that Astronaut McArthur will have shared. Admission is free, and donations will be accepted for the rebuild of the original Robeson Planetarium.

Thus began the celebration of the Planetarium's 50th anniversary. Included in the ceremonies were proclamations from SEPA's and IPS' councils commemorating Jim Hooks pioneering vision in founding the planetarium itself, along with helping SEPA and IPS get their starts as planetarium professional communities. A packed audience heard Bill McArthur regale them with stories about the planetarium, along with the 50th anniversary of Apollo XI. McArthur also highlighted his 25 year career as a NASA astronaut. He flew four missions, to include the command of ISS expedition XII. (Pictured is Bill McArthur, Ken Brandt, and the full size MER model "Marvin", then on loan from JPL in the science center).

Margaret C. Woodson Planetarium Horizons Unlimited

Neil Pifer reports: As we all are, the Woodson is celebrating the 50th anniversary of the Apollo 11 moon landing with a huge celebration on July 20th. We will be running show all day, and we are partnering with the Rowan Public Library and our local astronomy club to have NISE activities and great programs for all ages. Looking towards the fall, we are celebrating our 50th anniversary in the planetarium and am going to unveil many exciting upgrades to our programming and our equipment. Thanks to ASH enterprises for their help and support in making these upgrades possible.





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Passport to the Universe was developed by the American Museum of Natural History, New York (amnh.org) in collaboration with the National Aeronautics and Space Administration (NASA). Major support for new version provided by California Academy of Sciences, San Francisco.



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

Planetarium
Lafayette Science Museum
Lafayette, LA

Dave Hostetter reports: As is probably true of everyone in SEPA, as this is written the staff of the Lafayette Science Museum planetarium is gearing up for the celebration of the Apollo 11 landing on July 20. That day will feature the normal schedule of planetarium programs plus special afternoon events followed by an evening star party at a local park. The week prior to July 20 will include our annual three day planetarium program marathon and an evening screening of the movie Apollo 11.

Other than that, we are busy with the usual public programs and morning presentations for local day cares. So far this year's attendance is a bit behind last year's, but last year was the busiest year in the planetarium's 50 year history, and this year we are on track for the second busiest.

We have some interesting partnerships coming up, too. The Museum is partnering with the Acadiana Symphony for 4 week-long summer kid's camps featuring music and science. June camps were Zookelele (learning about biology and ukuleles) and Conducting Chemistry (symphonies and chemistry). Coming up in July will be Xylo-bones (percussion and fossils) and Rockin' Rockets (pop/rock and model rockets). These may seem like odd combinations, but somehow it all works, and the kids are having a great time! Then in October, we will combine International Observe the Moon Night with a family Play Day at the Hilliard Art Museum of the University of Louisiana-Lafayette, with both institutions perhaps seeing audiences they don't normally draw.

Jay Lamm reports: On May 11th we celebrated National Astronomy Day, welcoming over 330 guests to view a series of special planetarium shows and participate in hands-on activities. We had a Galileoscope giveaway and saw the return of not only Laser Beatles but also LASM's own Pink Floyd eXperience show. But it was our Dino Day on June 8th that really stole the show. We had over 1000 guests visit our facility to enjoy hands-on art and science activities, investigations of fossils and minerals, and a special line-up of dino-themed planetarium shows. Guests were able to meet Jason, the authentic Triceratops skull generously on loan from Raising Cane's Chicken Fingers & The Graves Family.

Dino Day also marked the premiere of our newest planetarium show, Dinosaurs: Giants of Patagonia. However, that's not the only new show we have in our theater. We also debuted our newest large-format film, America's Musical Journey. This film will be a huge part of our upcoming Woodstock 50th anniversary event which will bring back many popular visual music shows in the planetarium. Of course, that's not the only 50th anniversary we'll be celebrating this summer. Apollo 11: First Steps Edition will mark its premiere in our theater on July 6th.


Our newest Summer Sky Tonight live and automated sky shows will address this historic event as well. It all comes together on July 20th when we have our special event One Giant Leap for Mankind. We'll have a display on the moon landing in our Science Station, authentic lunar samples and related hands-on activities in our atrium, and a visit from Solar System Ambassador, Linda Gauthier.

Astral Visions: Photographs by Conner Matherne is our newest exhibit on view in the Universe Gallery. This is an interactive exhibit; our OmniGlobe links to each of Matherne's deep sky photos. Guests can interact with the OmniGlobe's kiosk station and explore details about each photo. The OmniGlobe will show guests where in our night sky and

continued from page 36

and in which constellation these deep sky objects reside. Then, each photo virtually comes to life as the OmniGlobe zooms in to the location and flies through many of the areas of interest. On July 11th, as part of our Art After Hours event, Matherne will not only answer questions about his photos by the OmniGlobe, but will also give special presentation in the planetarium with more of his astral photos accompanied by special full-dome animations.

TENNESSEE
contact: Adam Thanz
Bays Mountain Planetarium
Kingsport, TN
thanz@kingsporttn.gov



Bays Mountain Planetarium, Kingsport, TN

by Adam Thanz

Astronomy & Space Sciences Program Coordinator -
Planetarium Director

Greetings Fellow Planetarians!

Planetarium Shows

Our main program is currently “First & Farthest” to celebrate the 50th anniversary of the Apollo 11 Moon landing. It is a very good program that was produced by the Ott Planetarium by Ron & Amy Proctor. The show runs from May through August. Our alternate program is currently our live tour of the night sky called “Appalachian Skies - Spring.” That will run until the end of June. July and August will be “Cosmic Colors.”

SEPA - MAPS 2019

As I write this, it is just past the SEPA - MAPS 2019 Conference held in Columbia, SC. It was a great event packed with presentations and demos. Liz Klimek and related staff and volunteers to the planetarium should be proud of their hard work!

As a side note, I took a number of photos during the event, including most of the signing after the banquet.

Look for the photos in the SEPA archive in DropBox. [Editor’s note: look for some of Adams’s photos in the special SEPA 2019 photos section in this issue.]


“Celestial Wonders” Report

I last wrote about our renewed efforts in production for our “Celestial Wonders” program. A production that started nine years ago! At this writing, we just received motion capture equipment to help with our animations. The show does have some characters and they will be fully animated. Yes, this is a lot of work, but once you see the finished product, you’ll see that it was worth it.

Bays Mountain to Host SEPA 2021

As you can guess from the title, we were awarded with hosting the 2021 conference after a bid during the SEPA business meeting. The theme is “It Takes a Universe.” Our field is interesting and full of different kinds of people and skills. As such, I wanted to highlight this wonderful diversity. More details will be revealed next year. But, I will say that we already have a number of very cool activities planned and, of course, lots of great food!

ALABAMA
contact: Mitzi Adams
Wernher von Braun Planetarium
Huntsville, AL
mitzi.adams@nasa.gov



Von Braun Astronomical Society, Huntsville Alabama

Mitzi Adams reports: The Wernher von Braun Planetarium of the Von Braun Astronomical Society continues to present programs each Saturday night. The theme for this year’s presentations is the 50th anniversary of the Apollo Moon landing, so the focus early in the year was on the history of exploration that led to the historic event. January featured ancient astronomy, from which modern astronomy has its roots. February programs were all about the Giants of Astronomy. March topics featured the Moon and lunar lava tubes. Beginning in April, discussions of the

continued from page 37

Space Race started the countdown to celebrating the Apollo 11 landing on the Moon in July.

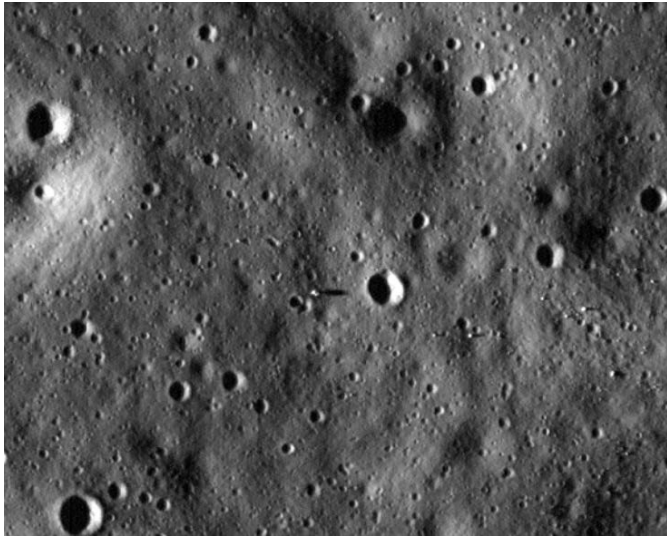


Illustration 1: The Apollo 11 landing site, image taken by the Lunar Reconnaissance Orbiter Camera, reference number MI02014464R.

Monday July 8 will be a special lunar-observing party at the observatory, with mini programs in the planetarium and snacks of RC Cola and mini-Moon Pies. After the month long lunar-landing celebration, planetarium programs will look at Skylab and the Space Shuttle.

University of North Alabama Planetarium, University of North Alabama, Florence, Alabama

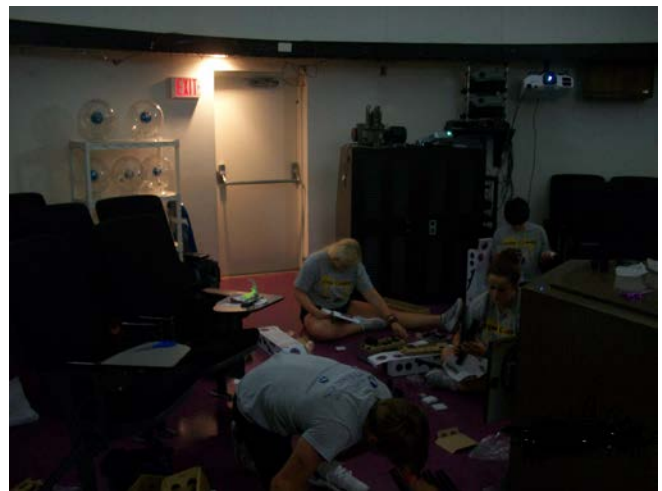
Mel Blake reports: The end of school year is often a busy one for us for field trips. This year was a little slower than normal for us, but it was still a good time. The First Friday of April we partnered with the Shoals Astronomy Club to do Sidewalk Astronomy where we showed people objects through a portable telescope. The next day we took part in the Earth Day Festival, bringing out our information about light pollution and trying to get people to use better lighting. This was followed that Monday by a Spanish language program, where I pointed out constellations and our Spanish professors translated. This was followed by a Spanish language video "Ringworld" from NASA. It was attended by about 45 people. We hope to more programs like this in the future, and it was fun to collaborate with colleagues in the humanities.

We broke out our light pollution display for our annual Sustainability Conference on April 17th. The remainder of April and May was spent doing our weekly public nights and school visits and the First Fridays Sidewalk astronomy in May.



Our Light pollution display at the UNA Sustainability Conference. Photo by Mel Blake.

June was a busy month. We started out on June 4th with an evening program for a STEM camp conducted by our Mathematics and Computer Science departments. This was followed immediately by the SEPA conference, which was a lot of fun and hugely successful. My hats off to the folks who put it off so successfully. See some of my photos in the SEPA Photos.



Students build Galileoscopes at the summer STEM camp. Photo by Mel Blake.



I got to meet an astronaut! Photo by Mel Blake.

A rather big event happened unexpectedly. We were contacted in late June about the donation of a Razdow Optical Solar telescope. These were used as part of the NASA network of telescopes that monitored the Sun during the Apollo and Gemini missions. The donor's husband got it at a NASA surplus sale, and she has donated it to us. It will take a lot of work to get the telescope operating again, and I am hoping that our engineering technology students might want to have a go at it. We have all the manuals and documents on it. It will be a big project, but the hope is to eventually have it putting images of the Sun on the web. Photos and more information in the next *Southern Skies*.

Other projects are progressing. We are hoping to partner with VBAS to conduct a research program using their telescopes and I am working on a podcast with Mitzi Adams for 365 Days of astronomy. Lots of fun!



REMEMBER
YOUR STATE
COORDINATOR!

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2019 Mid-Year Financial Report – SEPA

Submitted by Patsy Wilson – June 1, 2019

All funds are held at Branch Banking and Trust Company

Balances: (as of 5-31-19)

Operating	72,317.88
Savings	24,246.13
Professional Development Fund	12,304.36
PayPal Account	<u>811.32</u>

Total: 109,679.69

Operating Account (as of 1-1-19) 16,332.88

Income:

Memberships	380.00
Journal Ads	900.00
Transfer from PD Account	1,150.00
Transfer from PayPal	13,600.00
Transfer from Business Checking	1,000.00
Donation to PD	30.00
Conference	42,125.00
Voided Checks	90.00

Total Income 59,275.00

Total Credits 75,607.88

Disbursements:

Website Maintenance/Hosting	2,000.00
Transfer to PD Fund	230.00
Conference 19	1,000.00
Re-issue of 2016 check for SWAP dues	60.00

Total Debits (3,290.00)

Balance (5/31/19) 72,317.88

Savings Account (as of 1-1-19)	25,244.13
Income:	
Interest earned	<u>2.00</u>
Total Credits	25,246.13
Disbursements:	
Transfer to Checking	1,000.00
Balance (as of 5-31-19)	24,246.13

Professional Development Fund (as of 1-1-19)	13,224.36
Income:	
Individual donation	30.00
PD Award Refund from Checking	<u>200.00</u>
Total Credits	13,454.36
Disbursements:	
PD Awards for Registration & Banquet	1,150.00
Balance (as of 5-31-19)	12,304.36

PayPal Account (as of 1-1-19)	593.15
Income	
Memberships	1,055.00
Fee Reversal	10.15
Registration	10,010.00
Mini-LIPS	1,000.00
Banquet	2,350.00
Show Dome Time	200.00
Total Income:	<u>14,625.15</u>
Total Credits	15,218.30
Disbursement:	
Fees	456.98
Transfer to Operating Account	13,600.00
Refund	350.00
Total Debits:	<u>(14,406.98)</u>
Balance (as of 5-31-19)	811.32