



CONSTELLATION

Summer 2017, No. 2

Get Ready for the Pleiades National Planetarium Conference!



For the first time in 47 years, seven regional planetarium organizations (GLPA, GPPA, MAPS, PPA, RMPA, SEPA, and SWAP) are coming together for a U.S. national planetarium conference! The conference runs Tuesday, October 10 through Saturday, October 14 and is being hosted by the Saint Louis Science Center and the James S. McDonnell Planetarium and is shaping up to be an exciting, not-to-miss event. Sessions will take place at the Saint Louis Science Center and the historic Renaissance St. Louis Airport Hotel, which is also the conference hotel. In recognition of the coming together of the seven U.S. regional organizations, the conference is named for the Pleiades star cluster, and the conference web site is www.Pleiades2017.com.

In addition to a pre-conference mini-LIPS workshop, attendees will be able to pick from six conference workshops, two master courses, and four panel discussions. Descriptions of these can be found on the conference web site. Conference sponsors will be on hand to answer questions and show off (in some cases brand new) equipment and programs, and there will be several invited speakers/panels. The Margaret Noble/Armand Spitz/Banquet Keynote address will be given by Dr. David Hurd, planetarium director at Edinboro University in Pennsylvania.

Proposals are now being accepted through August 1st for paper and poster presentations. A tentative schedule along with hotel information is available on the web site and will be updated as plans are finalized further. An optional post-conference field trip will travel to the Cahokia Mounds State Historic Site with a talk about Native American Astronomy by anthropologist and site assistant manager Bill Iseminger.

I encourage all MAPS members to attend this national planetarium conference if you can. It will be a very exciting few days packed full of useful information and fun networking activities. I hope to see you in Saint Louis!

Kevin Williams
MAPS President-Elect

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President's Message

Hello fellow Planetarians. I hope your summer is going well. As I write this I do not yet have reports from our mini-conference experiment. I hope you had a chance to attend at least part of one of them. It's always good when we share ideas on how to effectively use our facilities.

It's the end of June and it seems that everywhere I look I hear talk about the upcoming solar eclipse. All we need to do now is hope for clear skies.

This fall the Pleiades Planetarium Conference will take place in St Louis, Missouri. There have been other conferences in the past that have combined regional groups, but nothing like this has ever been done before. All seven regionals are meeting together! The hosts are expecting over 500 attendees from the U.S. as well as dozens of other nations. It will be a very energetic and exciting week. If you haven't already done so, register and book a room today. This meeting will be our official MAPS Meeting for the year. That's when we transition officers, go over our financials and make any needed changes to our constitution. So, see you there.

This summer might be a good time to catch up on your leisure reading as well as all those articles about NASA missions to Jupiter, the Sun and Gravity Waves. If you find a good book or article, please share it on Maps-L so we can discuss it as a group.

That's all for now. Have a great summer and see you in October!

Jerry Vinski, President
Middle Atlantic Planetarium Society

MAPS EDUCATION COMMITTEE

We hope everyone is ready for the Great Eclipse! For those MAPSers in the path of totality, we would like you to share your experiences with the MAPS community by sending us the following:

- A photograph
- A few thoughts on the event experience
- Comments on public events in which you were involved
- Did you participate in the Citizen Science endeavor to report on the Eclipse - comment on your experience



名古屋太郎, 1997

In this issue of the Constellation, Susan Button shares an important educational principle in "Those Who Get to Talk Get to Learn." See her article below.

Francine Jackson's review of Dava Sobel's new book, "The Glass Universe" is in this issue on page 13. We inadvertently had a different review in the March issue.

Patty Seaton has an update on the Lanham edition of the Armand Spitz Regional Conference this past May. See page 5.

We're hoping for clear skies wherever you are for the Eclipse!

Those Who Get to Talk Get to Learn

Susan Reynolds Button
Sbutton2c@gmail.com

I recently read an important article, from Edutopia, which was delivered to my Facebook page. The points made in this article merit reviewing as we continue to hone our skills of using inquiry during live interactive planetarium presentations.

The article is called "5 Powerful Questions Teachers Can Ask Students" By Rebecca Alber. It was originally published on October 31, 2013. To read the entire article go to:
<http://tinyurl.com/y8dwkdw9>

Basically, the ideas we can use are to present some information and demonstrations and then ask students to really think about what they have seen/experienced. Keep the questions simple, clear, direct and provide enough time for students to think and formulate an answer. You can include time for students to share their ideas with each other before presenting them to you.

The 5 important questions presented in the article are:

1. What do you think?
2. Why do you think that?
3. How do you know this?
4. Can you tell me more?
5. What questions do you still have?

(Continued on page 4)

Those Who Get to Talk Get to Learn

(Continued from page 3)

We can revise the questions slightly to take advantage of the planetarium experience.

1. What did you see?

Having several students respond to this question helps all students focus and deepen their skills of observation.

2. What will happen next?

Making predictions gives you feedback about the students' thought processes and additional strategies you may need to try.

3. How do you know this?

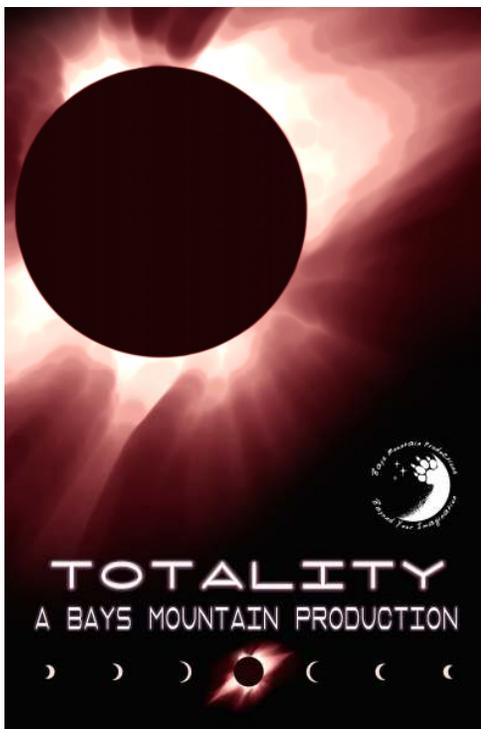
They need to give evidence, from the lesson, for their conclusions

4. Can you tell me more?

As well as promoting deeper analysis of the information gained during the lesson, students can relate and draw on their life experiences.

5. What questions do you still have? Or we could ask , “What would happen if...?”

In conclusion, asking good questions is a skill that can be developed and will deepen learning during planetarium experiences.



CONSTELLATION DEADLINES

The Constellation is published quarterly near the equinoxes and solstices. Please keep in mind the following deadlines:

Cover Date	Deadline
March 2017	Friday, Mar. 3
June 2017	Friday, Jun. 2
Sep. 2017	Friday, Sep. 8
Dec. 2017	Friday, Dec. 8

Submissions should be sent to the editor:

Kevin Conod
(973) 596-6609
kdconod@yahoo.com

Armand Spitz Regional Meeting, Lanham, MD

The Howard B. Owens Science Center hosted a two day Armand Spitz Regional Meeting on May 19-20, 2017. Our theme was “Teaching and Learning Under the Stars”, with a focus on best teaching practices in our dome. Friday was set up for planetarium educators. We began the day exploring gravitational waves in a classroom icebreaker activity. Next we spent a little more than two hours on tour at the Robert Goddard Space Flight Center with a fantastic docent many may remember from the 2003 conference, DJ Emmanuel. We got a unique walk on the floor behind the clean room as well as a visit to various buildings which have the control centers for satellites such as Terra and LANDSAT.



Back at Owens, Robert Nicholson of Alexandria City Public Schools shared a wonderful online application for students to build their own exoplanet by selecting various parameters (distance, star type, eccentricity, and planet size) and allowing the computer to determine likelihood of habitability. Newcomer Brian Christy, Assistant Professor of Physics at Notre Dame of Maryland University presented his work with neutrinos. Shira Moskowitz of the Davis Planetarium at the Maryland Science Center demonstrated how she works with younger audiences to “forget everything” and re-imagine the sky, encouraging her audience to actively participate in creating their own constellations in the sky.



On Saturday, we were joined by 15 teachers from Prince George’s County Public Schools to collaborate and share ideas. We began in the planetarium using a powerful “AEIOU” model to explore the Hubble Top 100 image app on iPads, working as teams to describe the images. This is an introductory activity we use in our fifth grade program, “More than Meets the Eye”, where we take students on a tour of objects in the night sky, comparing how they look to the naked eye, in a small telescope, and a large telescope. We demonstrated how students use binoculars to actually view, compare, and sketch a couple deep sky objects we have built into our optical-mechanical starfield, the Pleiades and the Orion Nebula.

(Continued on page 6)

Armand Spitz Regional Meeting

(Continued from page 5)

Following this presentations, we moved to the classroom to build a simple telescope, and then built a Galileoscope. Teachers and planetarium educators worked collaboratively to share ideas on how to use the materials with their specific audiences. Finally, the Owens staff demonstrated how we use the Carneige Science Center full dome production of SolarQuest to introduce the topic of space weather to third graders, then trace the solar paths for the first day of each season to compare/contrast the sun paths to the actual temperature data for our region. This is done in support of the NGSS 3-ESS2-1: Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

This small gathering was a great way to connect local planetarium educators with formal educators of our county. We had three new MAPS members join us for the activities, and this was a positive experience for them to meet their local colleagues and return with new ideas to use in their facilities. PGCPs educators were encouraged by the planetarium educators and were excited to take back new ideas (and telescopes!) back to their classrooms. This was a nice way to prepare for the upcoming Pleiades National Conference in October ... I hope to see you there!

— Patty Seaton

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Decades Later – Bringing New Life

GOTO INC has always loved the excitement of building a brand new planetarium – of bringing the sky to a community in a whole new way. But we also love pumping new excitement into older, existing planetariums through dynamic renovation projects. In 2016, GOTO was proud to have been chosen to revitalize two decades-old planetariums which re-opened to the public in April of 2017.

The 23-meter diameter Saitama City Space Theater originally opened in 1987. The 18-meter Osaki Lifelong Educational Center was built in 1997. One of these planetariums originally chose a GOTO HELIOS star projector, and the other chose a competitor's machine. Unlike today's video equipment which has lifetimes of only a handful of years, opto-mechanical projectors such as GOTO's can be maintained and operated for 30 years or more. And true to form, both Saitama's and Osaki's opto-mechanical planetarium projectors gave decades of solid service, teaching children and families all about the sky.

But finally, it becomes time to retire all old machines and to look for new opportunities with new equipment in total renovations of all domes. This time, both Saitama and Osaki chose the GOTO CHIRON III opto-mechanical planetarium projector to last for their next 30 years. A truly superb sky, the ability to project in tilted or horizontal domes, LED illumination, and intense and accurate sun, moon and planet projectors make the CHIRON III today's choice to be the dependable, solid core of any planetarium.

As part of their renovations, both planetariums chose to synchronize their CHIRON III with GOTO VIRTUARIUM full-dome-video systems. The resulting GOTO HYBRID planetarium systems, with their versatile manual control consoles allow both stimulating and educational live programming as well as dynamic and spectacular automated programs.

So whether it's a new planetarium just being born, or an older planetarium that needs a new breath of life, GOTO INC stands ready to provide the equipment and know-how to make your planetarium and its programs come alive!



Saitama City Space theater



Osaki Lifelong Educational Center

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Shown above, a ZKP4 and powerdome VELVET system controlled remotely by a web-enabled tablet.

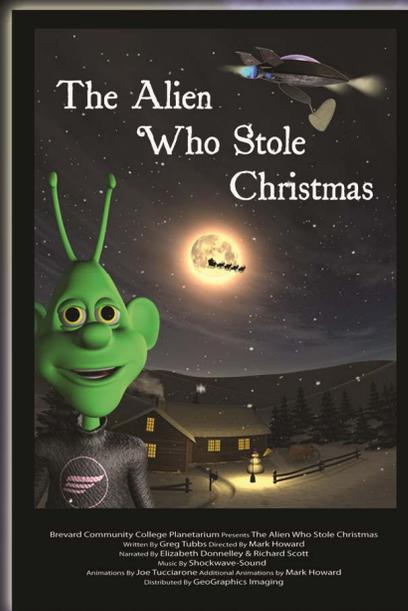
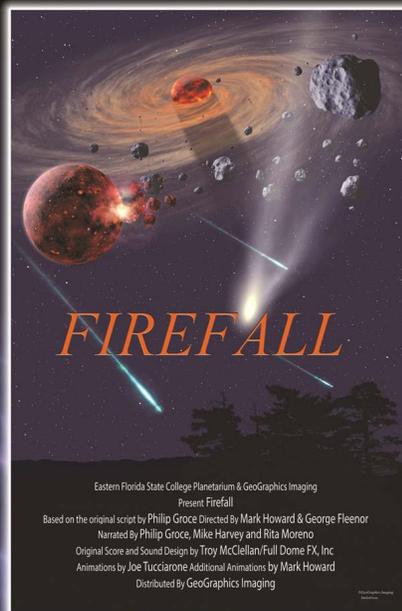


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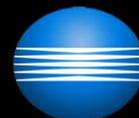


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Book Review

By Francine Jackson

The Glass Universe: How the Ladies of the Harvard Observatory took the Measure of the Stars, by Dava Sobel, Viking, New York, 2016, ISBN #978-0-067001-695-2, hardbound, \$30.00 U.S.

Many of you are familiar with Dava Sobel's previous books, especially **Longitude** and **Galileo's Daughter**, both of which required extensive historical research. This one introduces a part of history that many astronomers use every day, but perhaps aren't aware from where it came: Spectral classification.

It is amazing that this book came out just about the same time as **Hidden Figures**, the story of women of color who were very important to the space program; however, in this case, the "computers" were women who opened the universe to the size, brightness, and composition of the stars. Funded mainly by Anna Palmer Draper, and led by Edward Charles Pickering, this incredible team of women, including Williamina Fleming, Annie Jump Cannon, Antonia Maury, Henrietta Leavitt, and many others, were able to dissect an unbelievable amount of information from such tiny glass plates. Open **The Glass Universe** and you will immediately go back in time with these women, learning their incredible patience, and noting how much they learned from these plates. Their dogged work resulted in much of the structure of the stars, and, in the case of Miss Leavitt, the distances to objects previously believed to be nebulous bodies in our galaxy, changing the concept of the universe itself.

But, this book, in addition to noting the incredible work these women performed, also goes into their lives, showing that their lives weren't just in the "stacks"; Mrs. Fleming began her life in Harvard as a maid, who, fortunately, E. C. Pickering recognized she had more to offer. In the course of her work, she discovered many variable stars and nova; Annie Jump Cannon spent much of her time caring for her older relative, and enjoyed entertaining; Henrietta Leavitt was not in the best of health, but worked as much as she could.

While painstakingly studying these slides, the women of Harvard changed the way astronomers look at, and study, the stars. In **The Glass Universe**, Sobel gives us a glimpse into the amazing work of just a few dedicated women who, although they believed they were just doing their job, opened the sky to the tremendous discoveries we are still making today.

As an aside, I was recently speaking to an educator who reminded me that students today are not learning cursive writing in classes, as it is believed to be too ancient a way of communication. As this was the main way of writing for so long, and especially in the time of **The Glass Universe**, it is possible that, had someone years from now thought of putting together a book on this period, a potential author would be unable to decipher the beautiful, delicate writing of these women. Thank you, Dava Sobel, for the work you've done in preserving this very important part of astronomical history. Everyone reading this will be glad you did.



"Pickering's Harem," so-called, for the group of women computers at Harvard, who worked for the astronomer Edward Charles Pickering. Circa 1890.

Harvard College Observatory

East Kentucky Science Center

Prestonsburg, KY

By Steven LJ Russo, Director.

Spring was very busy here at the Science Center, with school groups visiting for lessons and the general public coming in to see the NASA Hubble Exhibit. The exhibit will be here through September 9th. The big event this Spring was our Astronomy Day open house on April 29th, which attracted around 250 people for Planetarium shows, hands on activities, and presentations about the August Solar Eclipse. Although here in Prestonsburg, the Sun will be around 94 % covered, there is still great interest among the locals to see this eclipse.

In April, we also premiered our new Planetarium show, Rusty Rocket's Last Blast, produced by the Sudokum Planetarium in Nashville. The program has now become one of the most requested for school groups coming to the Science Center.



As I write this at the beginning of June, our Summer camps have just started. We have eight camps running in June, with a wide variety of topics: colors, machines, elements, water, the Sun, Astronomy and space, engineering technology, and robotics. All camps do have a planetarium program associated with the topics. We are also co-hosting four energy camps with our college's Biology department.

If you notice, we do a wide variety of science topics in our camps, and our school lessons too. Although the main draw for the science center is the planetarium, we have over forty classroom and outreach programs dealing with a wide variety of science topics; Astronomy, optics, light, sound, physics, meteorology, Earth Science, electricity, nano-technology, alternative energy, biology, and animals.

The Prestonsburg Tourism Office continues to bring quite a few out of state tour buses into the region, and we have over a dozen tours scheduled for the Science Center between June and October. These tour groups come from a variety of places, such as Indiana, Illinois, Michigan, Pennsylvania, Florida, and New York. The last two tour groups that visited from NY had people from the Capital District (Albany, NY) and the Syracuse New York area, and some of the people in that group remembered me from when I ran planetariums in Schenectady and Southern Cayuga. I think my Mom is right when she says I could never be put in a witness protection program, as someone will always recognize me!

Enjoy the Summer!

MAPS Conference Hosts Sought for 2018 and Beyond

Want to show off your planetarium to your colleagues? Want some brownie points from your higher-ups? Want to provide an essential service to the MAPS planetarium community? Then host a MAPS conference!

We are looking for MAPS conference hosts for 2018 and beyond. You will receive planning and logistics help from the MAPS conference committee, so it might not be as difficult as you expect.

Contact me today to start the conversation!

Kevin Williams
MAPS president-elect
planetarium@buffalostate.edu



Astro Sunday Course

Astronomy for Planetarium Educators at Spitz Inc. Chadds Ford, PA

Dr. Kelly Herbst of the Virginia Living Museum/ Abbitt Planetarium will lead this short course covering fundamentals of astronomy as they relate to planetarium teaching. Info for registration is here – www.spitzinc.com/Institute (you need not attend Summer Institute to attend this one-day course). Astro Sunday course fee (\$75) includes lunch, and letter (upon request) certifying 5 hours of professional development.



Covered: terminology and astronomy fundamentals for the most frequently-taught planetarium subjects .

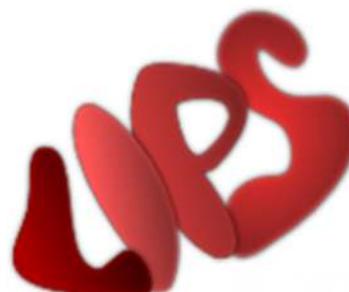
Astro Sunday will be held July 30, 2017 in the 30-foot planetarium dome at Spitz with digital simulations presented on the SciDome system by Kelly Herbst, who has taught astronomy for 25 years to learners of all ages.

Register by July 7: www.spitzinc.com/planetarium/educate/spitz-institute/

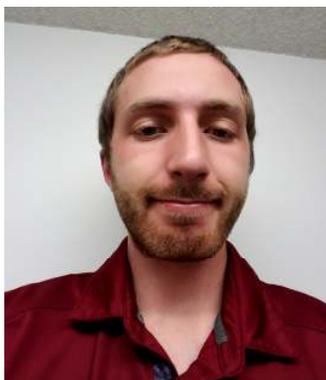
Live, Interactive Planetarium Symposium (LIPS 2017)

Host: Ball State University, Muncie, Indiana
Dates: Tuesday - Thursday, July 18-20, with an optional add-on workshop for Friday, July 21 (workshop details on the LIPS website, link below)

Who should attend: Anyone who does live programs, in any type of dome--portable or fixed, digital or pinhole. More information/to register: LIPSymposium.org or email karrie@digitaliseducation.com.



Hamilton Planetarium Scholarship Fund



In the year's second award by the Hamilton Planetarium Scholarship Fund, Bryan M. DeMarcy of Pennsylvania State University is a winner. Bryan started giving shows on Starlabs while at the University of South Carolina, and at the State Museum near the university campus. Since transferring to Penn State, he has stepped up to a Digitstar 5 while pursuing a degree he hopes will lead to a permanent career in our field.

Bryan is the third scholarship winner in the MAPS region since the scholarships were established in 2011. Scholarships come with a one year membership in IPS and the regional of one's choice, as well as six books providing information useful in writing planetarium shows.



NASA'S JUNO SPACECRAFT TO FLY OVER JUPITER'S GREAT RED SPOT

Just days after celebrating its first anniversary in Jupiter orbit, NASA's Juno spacecraft will fly directly over Jupiter's Great Red Spot, the gas giant's iconic, 10,000-mile-wide (16,000-kilometer-wide) storm. This will be humanity's first up-close and personal view of the gigantic feature -- a storm monitored since 1830 and possibly existing for more than 350 years.

The data collection of the Great Red Spot is part of Juno's sixth science flyby over Jupiter's mysterious cloud tops. Perijove (the point at which an orbit comes closest to Jupiter's center) will be on Monday, July 10, at 6:55 p.m. PDT (9:55 p.m. EDT). At the time of perijove, Juno will be about 2,200 miles above the planet's cloud tops. Eleven minutes and 33 seconds later, Juno will have covered another 24,713 miles and will be directly above the coiling crimson cloud tops of Jupiter's Great Red Spot. The spacecraft will pass about 5,600 miles above the Giant Red Spot clouds. All eight of the spacecraft's instruments as well as its imager, JunoCam, will be on during the flyby.

On July 4 at 7:30 p.m. PDT (10:30 p.m. EDT), Juno will have logged exactly one year in Jupiter orbit. At the time, the spacecraft will have chalked up about 71 million miles (114.5 million kilometers) in orbit around the giant planet.

Juno launched on Aug. 5, 2011, from Cape Canaveral, Florida. During its mission of exploration, Juno soars low over the planet's cloud tops -- as close as about 2,100 miles (3,400 kilometers). During these flybys, Juno is probing beneath the obscuring cloud cover of Jupiter and studying its auroras to learn more about the planet's origins, structure, atmosphere and magnetosphere.

JPL manages the Juno mission as part of the New Frontiers Program managed by NASA's Marshall Space Flight Center in Huntsville, Alabama, for the Science Mission Directorate. More information on the Juno mission is available at: <https://www.nasa.gov/juno>

NASA/JPL-Caltech