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Journal of the International Planetarium Society



IPS 2012 President's Message, Page 10



A new sky over Wyoming

Gillette Wyoming is in the heart of America's new energy future. Surrounded by coal, natural gas, and oil reserves, as well as plentiful wind power, it sends out energy resources to the rest of the country. And it will soon be sending out astronomy



education resources as well. The Campbell County School District Planetarium in Gillette is the first American CHRONOS II HYBRID installation. Its director, Paul Zeleski not only has an ambitious goal of creating HYBRID planetarium programs for others' use, but also of producing students who are proficient in the production skills which will be used in tomorrow's world.

This project to put students in the planetarium driver's seat began with a total renovation to the district's 30-year old planetarium equipment. In addition to the CHRONOS II HYBRID with SP2-HD video projection, full audio, lighting, and even laser light show equipment was put under a brand new dome. 68 new custom-made seats now fit under the 9 meter diameter dome.

The next step in the equipment upgrades will add 68 touchscreen devices at each armrest, where students may be quizzed by the instructor, scan and search for more information about topics on the dome, and with specially-created software even enable them to control the sky from their own seats. GOTO CHRONOS II HYBRID and the rest of the technology and integrated software programs at Gillette have set a new standard for modern educational planetariums. This planetarium will both inspire and educate. At Gillette, not even the sky is the limit!





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See GOTO's PANDIA HYBRID at IPS 2012!

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Calendar	Education	Last Light
Loris Ramponi	Jack Northrup	April S. Whitt
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Planetariums throughout history and from around the world formed the theme for the "Welcome to IPS 2012" fulldome video produced by Robin Sip of Mirage3D. Image courtesy Mirage3D.

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In Front of the Console

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There are a couple of new things for *Plane*-

tarian readers in this issue, both experiments. The first are QR Codes that you'll find at the end of several articles. In case you've missed seeing these strange box things popping up in ads and on products, QR Codes (Quick Response Code) is a two-dimensional code that was originally designed for the automotive industry that might take over the job of UPC (Universal Product Code) barcodes one day.

Another way to think of them is they're the <u>links</u> in print media.

All you need is a QR Code reader (there's an app for that; I have one on my Android-based phone) and you're taken somewhere for more information. There's also a website that will produce QR Codes for free (www.qrstuff.com).

Here's the QR Code for the IPS website:



I thought I'd see if the codes are really the next best thing in today's media, like some websites are touting them to be, and took a trip to my local Barnes & Noble (always a mistake because I spend too much there) for some research.

I checked the magazine first. I spotted a couple in ads, but none in the text. Not a one in *The Android Book* or *Android App Reviews*. None in *Social Media* or the *iPad App Directory*. None in *Discover* or *Scientific American*.

It became the quest for the missing QR Codes, and the more I looked for them, the stranger the looks I was getting from other browsers. (There were none in *GQ* or *Men's Journal*, *GolfTips*, *O*, or *Basic Wallpapering*. *Playboy* was wrapped.)

I suspect that the non-book print media hasn't adopted them because (1) they're on the edge of tedious to insert and (2) they ruin the aesthetics of the page or advertisement. My solution was to put them in a table at the end of the article.

I decided to try the codes, truthfully, because of the way I like to read. I tend to take my magazines and journals with me to lunch,

and with today's multi-purpose cell phones and other electronic gadgets I can get more information or connect to a website while I'm reading (and while I'm thinking about it, which is more important) by starting my nifty QR app.

So, this is an experiment. If you like the QR Codes, let me know and I will continue to insert them. If you don't like them, then let me know that, too. You can email me at sharon. shanks@gmail.com. Here's the code:



Brain break included

Jack Northrup, in his Educational Horizons column this issue (page 24), suggests that readers take a "brain break" and move to the galaxy hustle. Adam Thanz from Bays Mountain Planetarium (Tennessee) came up with a brain break for *Planetarian* readers. He calls it Triad Categories and we're hoping it becomes a regular feature.

IPS 2012 thoughts

This year's IPS Conference was such a treat (well, then there was the Awards Banquet, but I'll get to that in a moment).

Any planetarium conference is like a big family reunion. Conversations continue as if we had just left the room for a moment, not a year or two years ago.

I do more hugging at a planetarium conference than I do the rest of the year (sorry, Ed).

I'll echo words already said by so many others, including Dave Weinrich in his President's Message (page 8): the event was beautifully organized and presented, and Baton Rouge should be proud of itself for its hospitality and attention to detail.

Some thoughts:

- Blue shirts were a great idea; seeing that particular shade of blue was a relief because it meant help was available.
- The keynote speakers—Dr. Rolf Landua from CERN, Dr. Michael Turner from the University of Chicago, and Dr. Natalie Bat-

- alha from NASA's Kepler Mission—were perfect.
- I would love to see Dr. Batalha become more of a public face for astronomy popularization. She has a charisma and speaking style that needs to be out there and in front, inspiring everyone—especially young girls—to know that science is for them.
- This conference was missing some faces that should have been there. We noticed, friends, and we mourned for those of you who have lost your domes.

Back to that Awards Banquet. Most of you already know that I received a Service Award (along with April Whitt, who was one of those missing faces and who also eminently deserved it!). I remember making my way to the stage and then mumbling something incoherent because I was in such a state of shock. The surprise was total and authentic.

I also was made a Fellow of IPS, an honor that I was so pleased to receive that the Service Award following on its heels was made all the more a surprise.

Many years ago, as a new reporter, my dreams were of writing that great story and one day winning a Pulitzer Prize. That dream didn't last long, especially for a reporter working at small dailies in a mostly rural county in Ohio.

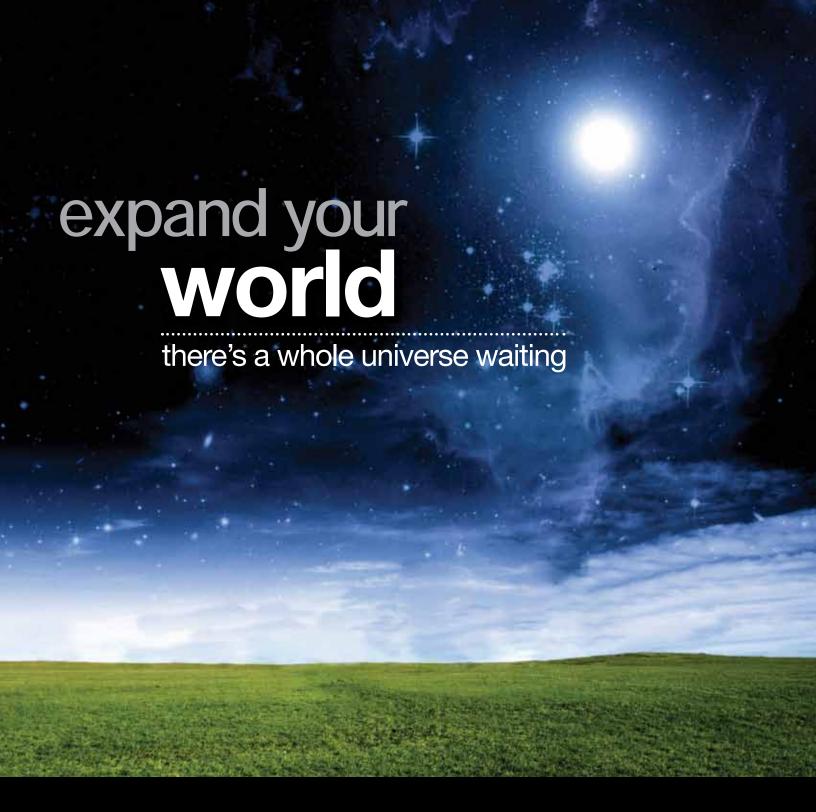
But I have received an even great honor in the IPS Service Award because it is from a community of people that I have come to love and respect, those people I can't wait to see every one or two years and give hugs to. It's from friends from around the world.

So, thank you fellow planetarians, for recognizing me and for allowing me to be your editor, and for doing a job that I truly enjoy.

There will be more about the new Fellows in the December *Planetarian*. \updownarrow



I was threatened with some vague harm from a person or persons who will not be named if I did not run a picture, so here it is, on the stage at the IPS 2012 Conference receiving the Service Award from President Dave Weinrich. Photo by Dale Smith.





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Letters to the Editor

Dear Editor:

Sam Storch's guest editorial in the March *Planetarian* about a "Textbook for Planetarians" was well written, as we would expect from this honored veteran in our field. And I must agree with his final assessment that it does not bode well for the sales of a "textbook" for learning how to run a planetarium theater

Now don't get me wrong here. I think the idea is a good one, but not in the times that we currently live in. Whether you agree or not, the planetarium field has changed a lot since Sam and I started in this business decades ago. In reality, we no longer have a "planetarium field." We have become a movie industry that uses domes to show movies, and because of that, we don't need trained people to run our facilities. Let's look at how things have changed.

From the time I was 5 years old, I wanted a career in planetariums. I was fortunate enough to live in New York, and had the great staff of the old Hayden to assist and guide me on my way. In the very first issue of the *Planetarian*, I read about a college that offered planetarium training. So in 1973 I applied, and spent the next four years at Wagner College learning the trade.

That learning process consisted of writing and producing shows, learning how to operate and maintain all the equipment in the planetarium, such as the Spitz A3P, the Kodak slide projectors, and the special effects projectors. That was just the start.

Over the next several years, in various planetariums, under the direction of incredibly knowledgeable folks like Sam, Tom Carey, John Hare, and Steve Lieb, I learned about sound recording and editing, photography and developing, Kodalith and slide developing, and technical stuff like building special effects projectors and laser systems.

Each planetarium I worked in took special training. Even in Schenectady where I last worked, when the A3P gave way to an East Coast Control Systems setup and a GOTO Chronos, myself and my assistant planetarium manager Megan Dominguez, had to start from scratch and learn the whole thing all over again.

So there I was, more than 30 years into my career, and I was still learning how to operate a planetarium. Programming, maintenance, etc., took a good year or so before we were used to the system. It was after all, an optical-mechanical star machine, over two dozen slide projectors, about a dozen special effects projectors, and a new sound system. We

had to learn how to program and maintain all of it.

And then, not only was there all the "planetarium" stuff to learn over the years, there was also astronomy stuff to learn. Since in the "old days," many shows were live, or contained live parts, we also had to know astronomy, geology, meteorology, and lots of other things to lecture to the public. And we had to keep up with current events in astronomy and space flight because the public had questions about it. And let's not forget, if you did any kind of observing sessions, then you had to know about telescopes.

Now let's jump to today. With the advent of fulldome video, all of the processes of learning about show production are gone. No one needs to learn about slides, photography, sound recording, building special effects projectors, etc. All of the shows come pre-packaged on nerd sticks (thumb drives) and all the "technician" has to do is download it into the system. And that takes a whopping five minutes. No more six months of show production.

And how about the live astronomy parts? I have gone to literally dozens of planetarium web sites, and I am very disturbed to find a good amount of planetariums that don't do any live astronomy programs any more. I even found one major facility that does only one astronomy program a month! The rest are programs about topics that are not even astronomy related.

So do we really need any kind of handbook to become a planetarian? I am doubtful. Case in point. Last week I had a planetarium program and a laser program that was scheduled at the same time that I had an important meeting to go to. Currently being short staffed, I needed someone to run the two shows. How in the world do you get someone on a two day notice to run a Spitz SciDome and a Sky Lase system? Well, it's easy, sort of. You "draft" your wife to do it!

Now for those of you who know my wife Jan, she has been hanging around planetariums with me for 30 years, but she has no "formal" training to run a planetarium. Yes, she has helped me with show production in the old days, and knows more than most "nonplanetarium" folks, but she has never run the SciDome or the Sky Lase system. So now the training session!

In literally 15 minutes, I showed both her and my administrative assistant how to start up the SciDome, run the program, turn off the SciDome, set up the Sky Lase and run the laser show. Fifteen Minutes! Now the only thing I got rid of that day was the live star talk after

the SciDome show because our live segments use the Chronos, and being that the Chronos is a real planetarium projector, it would take a lot more than 15 minutes to train someone on that piece of equipment. Plus, Jan was not about to grab the microphone and walk into the audience for a live star talk. I am the "ham" in the family; not her!

So I went to my meeting, and came back shortly after the laser show started. All was in order. She ran the SciDome, turned it off, started up the Sky Lase, and ran that show. Again, all with no more than 15 minutes of training. Quite a difference from decades ago when one needed months of training to learn how to run a planetarium projector.

Remember, that all of the new fulldome systems are nothing more than computers and projectors, and since anyone can run a computer today, anyone can run a full dome system. Now granted, there are some things to learn about the systems when technical problems arise or when programming home made shows. But most folks just run the programs that you load into it, and many of the technical issues can be solved by shutting down the systems and re-booting. And if not, you can always call the company for phone support and usually things get running pretty soon. Of course, technical problems can be diagnosed and solved much easier by a person with years of experience in the field, and then that phone support would not be needed.

This brings to mind another question. Are those of us who have actual training in this field in jeopardy of losing our job to anyone who can walk in off the street and run a computer? Maybe a topic for another discussion. Remember in the old days how angry us professionals in the field were when a portable planetarium company implied that "now anyone can become a planetarium director"? Well; if your facility has only a fulldome system, that slogan is pretty much true!

So in regard to Sam's question: do we need a textbook for becoming a Planetarian? In this day and age where planetariums are becoming domed movie theaters, I don't think so. How unfortunate!

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We have been bringing the stars down to earth since 1923. Millions of people have discovered the magic and fascination of the night sky in planetariums from Carl Zeiss. With solid technology and simple operation, we aim to play our part in ensuring that science and wonderment continue to merge in the future.





President's Message

Dave Weinrich Planetarium, Minnesota State University-Moorhead 1104 7th Avenue South Moorhead, Minnesota 56563 USA

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Dear Friends and Fellow Planetarians,

Wow! The accolades are still pouring in for the fantastic IPS 2012 conference in Baton Rouge, Louisiana. Conference host Jon Elvert and his marvelous team put on an amazing conference! One hallmark of an expert is to do something so well that it looks easy. That's what we observed at this year's conference.

Planning a large conferences is never easy. An incredible amount of advance planning and preparation takes place. During the conference people were still registering. By the last day, 701 people had registered, but due to various factors, 689 people attended one or more days of the conference. That is the largest number, by far, for an IPS conference.

Even though it was our largest conference ever, the atmosphere was extremely warm and friendly. Much of that tone was set by the tradition of "southern hospitality" of the city. During the opening ceremony, the mayor of Baton Rouge told us that we were now part of the Baton Rouge family and were welcome in the city during the conference and any subsequent visits.

The words "hospitality," "friendship," and "networking" were prominent in the welcome messages that Jon and I wrote for the conference program that was distributed to each delegate. It was my desire that the meeting be like a big family reunion. With that in mind, I wrote the following paragraph, which I believe applies to all of our planetarium meetings, whether they be IPS or regional affiliate conferences:

The need for fellowship

A very important part of each conference is the fellowship and networking that takes place informally. Reach outside of your comfort zone. Meet new people. For veteran conference goers, remember what it was like at your first conference and make a special effort to meet delegates attending their first conference. For those of you at your first IPS meeting, take the plunge. We are a friendly group. Please get to know us and make your contribution.

On behalf of our society, I want to convey a heartfelt "thank you" to all of the conference team, keynote speakers, delegates, hotel and catering staff, the large group of volunteers and to all the people of Baton Rouge who worked together to make this year's conference so memorable.

Council meeting decisions

The IPS Council, consisting of 22 regional affiliate representatives and 5 IPS officers, along with some IPS committee chairs and other special guests, met for two days prior to the official start of the conference. The business of the IPS could not go on without the work of these dedicated volunteers.

I must give special kudos to the fine set of

officers that I am privileged to work with. We communicate often by email, Skype and phone calls. They are an immense help to the president during the Council meeting, the IPS General Assembly meeting, and indeed throughout the entire presidential term. It is a great pleasure to work with such a dedicated team of officers.

The minutes from the Council meeting and the General Assembly meeting will be published in a subsequent issue of the *Planetarian*, but here are some highlights. At each IPS conference we must start planning the conference that occurs four years in the future. The bidders make presentations during the Council and General Assembly meetings. For 2016, the bidders are the TELUS World of Science in Edmonton, Alberta, Canada; Citè de l'espace, Tou-

louse, France; and Copernicus Science Centre, Warsaw, Poland.

Your local affiliate rep will be sharing additional information about each site with you; there will be articles about each of the three sites published in the March 2013 *Planetarian*; and information will be posted on the IPS website. The Council will choose the 2016 conference site at next year's IPS Council meeting. Please consider the merits of the sites and inform your affiliate rep of your preference.

The Council voted on some changes to

the by-laws and standing rules. You can read the details in the Council minutes, but one change I would like to note involves the election procedures. In the past, only the names of the successful candidates were announced after elections. No vote counts were published.

There are good arguments on both sides of the issue of whether or to publish the numerical results. On one hand, a candidate might feel badly if he or she ran for office and only received a few votes, and an individual with few votes might be reluctant to run again in the future. On the other hand, it is more open and democratic for the results to be published. The Council discussed the issue and made the decision that vote counts will be published after each election.

Every two years we have elections for president elect, secretary and treasurer/membership chair. At the conference, each candidate gives a short presentation. Statements by all candidates, including the secreatary and treasure/membership chair, will be posted on the IPS website. at www.ips-planetarium. org/?page=statements.

Most of you will be able to vote online during the election process in October and No-



Friends from around the world: myself with Jane and Jacob Ashong from Ghana. Jacob presented the paper "Ghana Planetarium—Turning Our Dream into Reality" at the IPS Conference in Baton Rouge. Photo by Adam Thanz

vember, but paper ballots will be available for those who need them. Please vote. Historically we haven't had a high percentage of members voting. This is your society. Please help determine where you would like to see it go in the future.

Awards luncheon highlight

So much else goes on during our conferences, but I would be remiss to not mention the awards luncheon. Many volunteers have served our profession and our society over a

(Continues on Page 21)





Potter, Pop Culture, and the Planetarium

Kristine Larsen
Copernican Observatory and Planetarium
Central Connecticut State University
New Britain, Connecticut 06050
and
Jason T. Archer
New England Air Museum
Windsor Locks, Connecticut 06096

Submitted July 19, 2012 Accepted July 30, 2012



Abstract: Planetariums have embraced a number of popular culture icons in order to excite audiences and bring them to our facilities. A recent example is the Harry Potter series of books and films. Staff from various planetariums responded to an informal survey asking for information about such shows, giving us insight into how we might successfully exploit the next "big thing" in popular culture.

As readers of this journal are well aware, planetarium professionals are a highly creative bunch. In our dual mission to educate and entertain, straight laced decorum is frequently tossed out the window and popular culture is often embraced in its stead.

In our effort to share the excitement of astronomy with the general public, we dress up, act out, and even occasionally sing and dance. We connect the night sky to hobbits, time lords, and wizards alongside references to NASA, Hubble, and Kepler. As we seamlessly integrate the audiovisual arts with science, history, philosophy, and even literature, we highlight one of our profession's greatest strengths, namely its interdisciplinary nature.

Unless one has spent the past decade under a rock, the unprecedented success of J.K. Rowling's Harry Potter series of books and films needs no introduction. What might be less well known is that Rowling embedded far more astronomy into her works than just the character names Draco Malfoy, Sirius Black, and Bellatrix LeStrange. Many other characters have celestial monikers, including Luna Lovegood, Aurora Sinistra, and Merope Gaunt (Lord Voldemort's mother).¹

In addition, Harry and his pals study lunar phases, planetary alignments, constellations, and even the Galilean moons of Jupiter as part of the O.W.L.—Ordinary Wizardry Levels—curriculum.² Certainly these are all concepts

that we have integrated into our planetarium shows on more than one occasion. Giving them a twist of Potter turns them from ordinary (or muggle-worthy, in the series vernacular) to fresh and relevant in the eyes of a young (and even not-so-young) audience.

More than one planetarium performer have used their technology to demonstrate how Rowling got it wrong in *Harry Potter and the Order of the Phoenix* when she had the Hogwarts students observing Orion around midnight near the summer solstice, and that it is surprisingly possible (under certain conditions) to see Venus from England at this same date and time.³

Creating the Potterverse

But a number of adventurous individuals and institutions have taken it a bold step forward, creating entire planetarium shows around the so-called "Potterverse," and we recount here the details of several of these examples, as well as other examples of the use of popular culture under the dome.⁴

Patty Seaton, planetarium director at the H.B. Owens Science Center (Prince George's County Public Schools, Maryland) recounts that she only had a dozen attendees for her first Harry Potter-themed planetarium event on Halloween 2003. However, when they ran

astronomy.html).

the program a second time three weeks later, "Lessons from the Great Hall of Hogwarts" attracted nearly 90 attendees.

Patty admits to ad-libbing the show—a series of astronomy lessons—playing the role of Hogwarts astronomy teacher Aurora Sinistra, with other staff members portraying other Hogwarts faculty (such as Hagrid and Dumbledore). The building was decorated in a Hogwarts theme, and the girls' bathroom featured a "Moaning Myrtle," complete with sound effects.

The program was expanded when it was offered again in February 2005 to include more characters (Seaton playing both Sinistra and Trelawney) and featuring a debunking of astrology. Again, the program was ad-libbed, with the staff member portraying Snape occasionally jeering Seaton.

In October 2005 the "Hogwarts Triwizard Championship Sky Competition" was held at the planetarium. Four of the nearly 50 attendees were selected to compete after the planetarium show, with the staff member portraying Snape acting as examiner.

The final Hogwarts-based show, "The Stars Over Hogwarts," played in November 2007. Nearly 75 attendees enjoyed the ad-libbed give and take between Sinistra and Snape and learned astronomy along the way.

In describing her shows, Seaton stressed that the entire package—ad-libbed dialogue, costumed characters, and decorated facilities—were integral to making the events enjoyable, both for the audience and the staff.

Some of Seaton's ideas were integrated by Amie Gallagher and the other staff at the planetarium at Raritan Valley Community College (New Jersey Astronomy Center for Education

¹ For more information on astronomical names in the series, see C. Renee James, "The Real Stars of Harry Potter," *Mercury* 36 no. 4 (2007): 19-27.

² Mike Weinstein gives numerous examples of astronomical references (both correct and incorrect) in the Potter series in his essay "Astronomy in the Harry Potter Series" (www.hp-lexicon.org/essays/essay-

³ Astronomer Kevin Krisciunas discusses this surprising result in a letter to the editors of *Sky & Telescope* 106 no.6 (2003): 12.

⁴ Unless otherwise noted, the details related here are taken from a series of personal emails exchanged between the authors and the planetarium staff cited in the article. The authors thank these individuals for their detailed responses to the questions we posed to various planetarium email lists.

in Somerville, New Jersey) into their show "The Skies Over Hogwarts." As in Seaton's programs, attendees were divided into four Hogwarts Houses and staff dressed in appropriate costumes (black graduation robes).

The show was a combination of live incharacter performances (such as Trelawney making predictions with tea leaves) and a recorded tour of the sky over the course of the year, highlighting the stars and constellations related to Harry Potter characters. New Potter-based constellations were invented, such as turning Orion into Hagrid the giant (in Gallagher's words, "which makes sense since he teaches Care of Magical Animals and there's a unicorn next to him [Monoceros]"). The show concluded with a Harry Potter trivia contest.

Riding the movie coattails

The show repeated about 20 times over several years to nearly sell-out audiences (in a theater that holds 100). Gallagher explained that the show was initially created "because several of us on staff were quite fond of the books and movies" and, like Seaton, noted that the planetarium show itself was just part of the overall experience.

The presentations ended when one of the staff members graduated college and moved on. According to Gallagher, "around that time, the movies were coming to a close. We liked riding the Warner Brothers advertising coattails."

In 2008, one of the authors of this paper also developed a series of hands-on Potter-based astronomy activities and a live Potter-based planetarium show, "The Stars of Hogwarts," as part of an ongoing series of Saturday morning science enrichment programs for 7th graders at Central Connecticut State University's Copernican Planetarium (New Britain, Connecticut).5

The show surveyed astronomical examples from the series, including the dreaded essay on the Galilean moons of Jupiter assigned to Harry and his pals, and the fact that

5 For examples of hands-on activities featuring Harry Potter and other fantasy series, see Kristine Larsen and Marsha Bednarski, "Muggles, Meteoritic Armor, and Menelmacar: Using Fantasy Series in Astronomy Education and Outreach," in *Preparing for the 2009 International Year of Astronomy*, eds. M.G. Gibbs, J. Barnes, J.G. Manning, and B. Partridge (San Francisco: Astronomical Society of the Pacific, 2008), 82-90, and Kristine Larsen, "Stargazing Centaurs: The Astronomy of Harry Potter," *Astronomy Beat* no. 66 (2011): 1-4. Examples of how the Potter series can be integrated into public observing sessions are given in Kristine Larsen, "Harry Potter and the Upcoming Venus-Jupiter Conjunction: a Unique Outreach Opportunity," *CAP Journal* no. 4 (2008): 16-7.

Orion cannot be seen at midnight in late June, and used references to Centaurs and the galaxy to explore Sagittarius and the structure of the Milky Way.

As with similar programs already discussed, much of the show focused on the astronomical names in the series by identifying stars and constellations tied to various characters. Both the hands-on activities and the planetarium show (as well as Potter-based observing sessions of Venus and Jupiter) were offered for free to the general public a number of times during the 2009 International Year of Astronomy, especially in October-November in concert with the campus library's hosting of the U.S. National Library of Medicine's "Medicine and Magic in Harry Potter" traveling exhibit.⁶

The planetarium show has evolved over time, and most recently featured the author dressing up as Hogwarts astronomy professor Aurora Sinistra and performing in character for the first half of the show. As a group of normally iad-

ed high school Ernie Hemphill presented a talk on potions at the museum's apothecary shop.

The show put the attendees into the role of Hogwarts students and highlighted some of the astronomy taught at Hogwarts. The sky as seen from England on Harry's birthdate was projected, and his horoscope was discussed, although it was stressed that "astrology is make believe."

The mother later wrote to Angell thanking him and Hemphill for "the special time you put into the research and preparation for this," noting that "having an opportunity to visit the planetarium and apothecary was a remarkable experience for these children. They will carry this memory with them forever."

After the initial presentation, the planetarium show was put into rotation as one of the available presentations for groups, and a special October 2011 public viewing to coincide with the initial viewing of *Harry Potter and the Deathly Hallows Part 2* in the museum's IMAX theater.

The use of horoscopes in Harry Potter (and clarifying the differences between astrology and astronomy) also played an important role in Potter-based shows offered at the planetarium at Brigham Young University in Provo, Utah. Jeannette Lawler explained that she developed the show because she "liked the books, noticed the use of star names and constellations to provide 'hints' to kids, and wanted to take full advantage of this to get kids interested in science."

Lawler noted that it has been one of the more popular shows at her facility. The BYU Astronomical Society has also offered star parties in conjunction with some of the showings.⁷

Despite the success of these events, we all

are painfully aware that the attention of the public is fleeting at best, and what is hot one

season is passé the next. Eventually Harry

Potter will become "something my parents

read," and already planetarium staff (the au-

thors included) report that fewer attendees

are responding positively when asked if there

are any Harry Potter fans in the house. This

is why the take-home lesson from this essay

should not be specifically how to create Har-

ry Potter-based planetarium shows, but rather

how to incorporate popular culture in general

This made it so much cooler."

I'm so glad this had a harry Potter theme.

students was leaving the show, one young lady was overheard telling her teacher "I'm so glad this had a Harry Potter theme. That made it so much cooler." The show performer found it pretty cool as well.

Making a birthday impression

In 2009, The Museum of Science and Technology (MOST) in Syracuse, New York, hosted a Harry Potter-based 9th birthday party at the museum. Since the party was to include a planetarium show, staff member Dustin Angell developed a Potter-based planetarium show called "Astronomy 101 34" and volunteer

into our performances.

An example of waxing and waning trends

6 See www.nlm.nih.gov/exhibition/harrypottersworld for information on the NLM exhibit.

⁷ See nightsky.jpl.nasa.gov/event-view.cfm?Event_ID=5303



in popular culture is J.R.R. Tolkien's *The Lord of the Rings*. While the books were a mainstay in the reading libraries of persons of a certain generation (elder author enthusiastically raises hand), the popularity of the series waned somewhat until the release of Peter Jackson's trilogy of films in the early 2000s.

Responding to the renewed popularity of Tolkien's works, one of the authors created a planetarium show titled "The Astronomy of Middle-Earth" that highlighted the myriad astronomical references in all of Tolkien's works.⁸ The show will be revised for the upcoming release of Peter Jackson's two-part film treatment of *The Hobbit* (in December 2012 and 2013).

Jeannette Lawler of the Brigham Young University planetarium reported doing past shows centered on *Star Wars* and *Doctor Who,* while a number of planetariums have done shows based on the recent 2012 apocalypse hysteria.

Disney cannot be overlooked in our discussion of popular culture and planetariums. For one author, the adventures of Captain Jack Sparrow and resultant pirate craze led to the creation of a short planetarium show aptly named "Pirates of the Night Sky."

No media of any kind from the Disney franchise was used in the show, nor was anything

8 For more information on the astronomical references in Tolkien's works, see www.physics.ccsu.edu/larsen/astronomy_of_middle.htm

from the franchise referenced. It was a simple show, presented live (in costume, of course) and in all pirate-speak (a difficult task). The show took audiences on a celestial treasure hunt for some southerly constellations such Argo and other gems like the Large and Small Magellanic Clouds.

The audience was enlisted as part of the planetarium "ship" helping to navigate via the stars. To move the sky in latitude and azimuth, audience members acted as the "crew" and were directed to "row" as if aboard ship. If the need was to move south, both the left and right sides of planetarium audience would mock rowing. However, if the need was to turn the ship left or right then only one side of the planetarium would row.

"Percy" brings myths to life

Of course if we listen, our audiences can let us know what is relevant. During a recent Starlab class one of the authors was thrilled, but not surprised, to hear students mention Percy Jackson, while telling the Greek story of Perseus.

Perseus "Percy" Jackson is the main character in the Rick Riordain series *Percy Jackson & The Olympians*. The books and soon-to-be-released second movie are based on Greek mythology but set in the United States. Turning an ancient Greek warrior into an American teenager with ADHD and dyslexia makes the subject of Greek mythology relevant and approachable. Is this perhaps the next big thing?

Reaching back in time, one author, like many planetarians, ran Star Trek-themed shows. Of course, timing is everything when using popular culture to bring visitors to our domes. Star Trek Voyager was continuing the popularity of the franchise, and Len Specht, then director of the Gengras Planetarium (West Hartford, Connecticut) knew how to capitalize on this, bringing in Loch Ness Production's The Voyager Encounters narrated by Patrick Stewart. Len states, "We ran TV commercials during Voyager, and we had a special premier night at the planetarium where the first episode was projected on the dome for a private audience. We partnered with the local UPN station and combined it with a local radio giveaway to win tickets to the exclusive screening at the Gengras Planetarium. Our timing was impeccable; we promoted Voyager Encounters as it coincided with the launch of Star Trek Voyager on UPN." It resulted in lines out the door of the planetarium, re-introducing the facility to the community. Timing is everything.

Finally, we should not forget laser shows. Many of us have run our fair share of laser rock and matinee shows. For example, the younger author ran (and unabashedly even enjoyed performing) a show called Kid Power (and even Kid Power II) featuring the pop music icons Britney Spears, In Sync and the like. While far from educational (or even astronomical), this show brought a whole new audience to the planetarium due to its pop cul-

ture hook. Perhaps some stayed or returned another day to see an actual planetarium show.

But the joy of Harry Potter (and similar popular culture icons) is that it is not an allor-nothing proposition. Bits and pieces can be threaded throughout a show as the planetarium staff feel is appropriate, such as making reference to Draco Malfoy, Sirius Black, and Bellatrix LeStrange while pointing out constellations, or calling various groups of stars by their Middle-earth names (such as Menelmacar for Orion, Wilwarin for Cassiopeia, and the Valacirca for the Big Dipper).

Amy Sayle of the Morehead Planetarium reported weaving references to star and constellation names in Harry Potter and Dan Brown's blatant astronomical blunders in *The Da Vinci Code* into regular planetarium shows, as well as integrating astronomical errors in the *Twilight* series.⁹

Dustin Angell of MOST noted that since all their presentations are live, popular culture references are often interjected into their shows. For example, he likes to connect the Mars rovers to the film *WALL-E* and has used *The Fantastic Four* as a hook when discussing cosmic rays. One could also use *The Hulk* in connection to discussing gamma rays.¹⁰

Embracing cultural refrences

While *The Lord of the Rings* Trilogy is, to date, the highest grossing motion picture trilogy worldwide of all time, the real lord of the rings is Saturn. One author finds it hard to discuss the dwarf planet Pluto without referring to Mickey Mouse's dog and now that Pluto has been reassigned to dwarf planet status, there is always some mention of the Seven Dwarfs. Yes, the audience always groans.

Of course, it doesn't stop there. When pointing out the Milky Way Galaxy, it is suggested that our great galaxy of 100 billion stars was named after the candy bar (insert more groans from the audience). The reader can certainly add his or her ideas about Mars and a candy bar of the same name. Most of us have connected the Pleiades to the symbol for the automotive brand Subaru. Car manufactures have provided much to reference, such as the Chevy Nova and Vega, Mitsubishi Eclipse, and the now defunct Saturn line. And who doesn't refer to the Great Square of Pegasus as a baseball diamond during baseball season?

We would be remiss if we did not discuss the elephant in the room, namely securing

9 Amy Sayle has a number of blog posts on astro-

permission for the use of copyrighted material. The planetarium at Raritan Valley Community College prominently displayed a disclaimer on both their website and in press releases noting that while Warner Brothers and J.K. Rowling were not responsible for the show, they had given permission for the use of the Harry Potter trademark and content.

Patty Seaton of the H.B. Owen Science Center decided that their Potter-based programming would deal with the books alone (in order to tie it in with literacy) and received permission from both the publisher and her school system to run the shows.

In addition, Seaton was not only given permission to use the images and text from the children's book Fancy Nancy Sees Stars, but the publisher suggested another book in the series, *Fancy Nancy, Stellar Astronomer*, would be a better fit. The sole stipulation was that the text had to be read live and not recorded.

Seaton reported that the show "received such wide acclaim from the reading department in the county that we decided to run the program twice" and arranged for a third showing.

On the other hand, Seaton reported that she was denied permission to do a *Stargate SG-1* themed show, as well as denied to do programming based on the *Chronicles of Narnia*.

In *Harry Potter and the Sorcerer's Stone*, exasperated Hogwarts instructor Hagrid noted that one should never "try an' get a straight answer out of a centaur. Ruddy stargazers. Not interested in anythin' closer'n the moon."¹¹

While planetarium professionals certainly do appreciate the moon, we also look beyond, to the planets, stars, and galaxies. Part of the reason why we love our jobs so much is that we get to share our passion for astronomy with the general public in creative ways, and popular culture is one of the most powerful "hooks" at our disposal.

While the popularity of the boy wizard may have begun to wane, we should always keep our eyes open for the next big thing that we can translate from page or film to our respective domes.

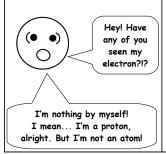
11 Rowling, J.K. *Harry Potter and the Sorcerer's Stone* (New York: Scholastic Press), 254.



7	www.hp-lexicon.org/essays/essay-as- tronomy.html)
	www.nlm.nih.gov/exhibition/harry- pottersworld
	nightsky.jpl.nasa.gov/event-view. cfm?Event_ID=5303
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Alex Cherman



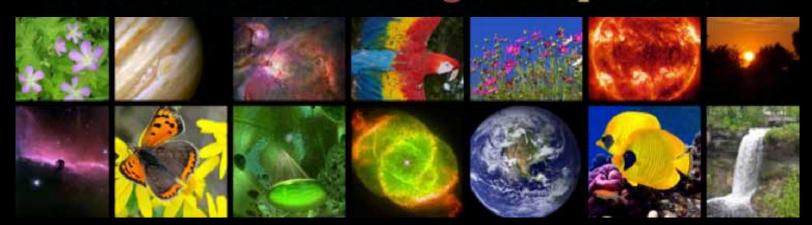




nomical errors in popular culture, including *Harry Potter* (moreheadplanetarium.org/blog/?p=1387), *The Da Vinci Code* (moreheadplanetarium.org/blog/?author=31), and the *Twilight* series (moreheadplanetarium.org/blog/?p=682 and www.wral.com/weather/blogpost/6466578).

¹⁰ For more on the physics of superheroes, see physics of superheroes.com.

Cosmic Colors An Adventure Along the Spectrum



Cosmic Colors: An Adventure Along the Spectrum is a dynamic new planetarium show from the Great Lakes Planetarium Association (GLPA). It premiered on October 20, 2011 at the GLPA Conference in Champaign, Illinois.

Cosmic Colors will take you on a wondrous journey across the entire electromagnetic spectrum. Discover the many reasons for color — like why the sky is blue and why Mars is red. Take a tour within a plant leaf and journey inside the human eye. Investigate x-rays by voyaging to a monstrous black hole and then back at your doctor's office. You will even see the actual color of a dinosaur, based on recent evidence. Get ready for an amazing adventure under a rainbow of cosmic light! 31 minutes in length.

Target audience: 5th grade and up

Ordering information:

FULLDOME VERSION: \$330 for a full dome masters at 4K x 4K (need 1 TB hard drive)

\$275 for full dome masters at 2K x 2K (need 500 GB hard drive) \$220 for full dome masters at 1K x 1K (need 100 GB hard drive)

GLPA member prices are \$300, \$250 and \$200, respectively. All prices include shipping within the United States. The cost of shipping to customers outside the U.S. will be added to the order. For FullDome versions, each planetarium must ship an appropriate hard drive to GLPA. Show encoding is the responsibility of each planetarium.

<u>TRADITIONAL VERSION:</u> \$110 for traditional version with two discs -- a playable *Cosmic Colors* show DVD and a DVD data disc containing all-sky images, digital JPEG images, audio tracks, flattened video scenes, teacher guides, and documentation.

GLPA member price is \$100. All prices include shipping within the United States. The cost of shipping to customers outside the U.S. will be added to the order.

For more information on *Cosmic Colors*, please contact Dave DeRemer at deremer@waukesha.k12.wi.us or Bob Bonadurer@mpm.edu. To order *Cosmic Colors*, contact Dave Leake at dleake@parkland.edu.

Credit card purchases should go through the GLPA Online Store at www.glpaweb.org/online-store.

Pirst Performance Sanuary 2011 at UWM My fred Olson Planstarium Scene Dischiption The State of the State o UW-Milwaukees Planetarium usic would untry sky. Και τ' αδερφού της τα φιλιά. Μην είδατε την αγάπη μου, performance to match the sky over the The dome darkens completely. We HOMER: "Bring Odysseus home to low-lying adjust to the darkness as the cardinal Ithaca, farthest out to sea, towards the sunset, points appear at the rim of the dome. and the other islands are apart, towards dusk Actress playing NURSE/HOMER speaks. and the sinking sun. Ithaca, It is rough, but it raises good men.' ATHENA: Look! Here is the night sky as it is ton The audience is getting dark-adapted. Actress playing ATHENA walks in front over the Aegean. Behold, the stars-planetsof console. Actress playing the cosmos. NURSE/HOMER stands under "W" at NURSE: Where? I can't see? Where? My door. They speak to each other. eyes see nothing but darkness. ATHENA: (a bit frustrated) Ah yes! I forget that mortal's eyes take time to adjust to the night's darkness! Dr. Jean Creighton, Director Manfred Olson Planetarium NURSE: (laughing a bit at her own weakness) And mine are not as young as they once and Dr. Robin Mello Associate Professor, Theatre Education ATHENA: Have patience you will soon be able to see the stars University of Wisconsin-Milwaukee Milwaukee, Wisconsin 53201-0413 NURSE: The stars that Odysseus sees? ATHENA: Just as Odysseus sees them. Let me help you-look and find my red arrow among the stars 00:04:00 ATHENA uses laser pointer and moves NURSE: Athena's red arrow! (She points it, pointing out the directions as she overhead) describes them. Top: Robin Mello (left) NURSE/HOMER follows with her hand. ATHENA: Point north! and Jean Creighton. Below: She encourages the audience to do so NURSE: We will. Everyone, point North Jean visiting her homeas well. Audience members see the town Athens. Images proarrow move across the dome and are (pointing) toward Macedonia, oriented toward the planetarium's vided by authors. ATHENA: South NURSE: toward Egypt, ATHENA: East...

Homer's Odyssey inspired both of us for different reasons: Robin is an associate professor in the Department of Theatre at the University of Wisconsin-Milwaukee (UWM) and a professional storyteller. Jean is the director of the UWM Manfred Olson Planetarium and an astronomer who grew up in Greece. Both of us were eager to bring the Homeric epic in the planetarium.

When we reread this epic, we realized that there were several astronomical references that could be incorporated into a script that might engage audiences in both the classic story and the factual astronomical information.

Robin could ensure that the script captured the drama of the story and the beauty of the language. Jean could flesh out the astronomical connections and could suggest Greek myths that would complement the constellations that were mentioned in the Odyssey. The program was so exciting and successful that we produced the show in the winter of both 2011 and 2012.

We are happy to share the script with others for them to produce no matter what planetarium they have. Our A3P Spitz provided the stars, and we projected images with simple LCD projectors to set the Greek ambience and to help visualize the various characters in the story. If you are interested in using the script, please contact us at rmello@uwm.edu or jcreight@uwm.edu. We will provide the script for free.

NURSE: home of the Turks ATHENA: West toward Rome. Behold the night sky.

NURSE: (wondering) These are the stars that Wandering Odysseus sees tonight, in the sky,

ATHENA: Of course. But he can't enjoy the bea the night sky because he knows that Poseidon carries hatred, in his heart, for the unfortunate

NURSE: Poseidon is god of the Ocean. Some call him Neptune. (Pause) Tell me, why does Poseidon have so much hatred for a man that the rest of the gods love?

ATHENA: Perhaps this will wake your memory? Here is the Ram.



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Sally Lowenstein, Intern, Science Communication Jorge Rivero González, ESO, Education and Public Outreach Department Garching, Germany jrivero@eso.org

The year 2012 marks the 50th anniversary of the founding of the European Southern Observatory (ESO), a milestone that began as just a dream for European astronomers to build an observatory allowing access to the magnificent wonders of the southern sky.

In order to celebrate 50 years of achievements, ESO is running a number of exciting public outreach events, and also is looking ahead to the next 50 years with the help of next generation telescopes such as The Atacama Large Millimeter/submillimeter array (ALMA) and The European Extremely Large Telescope (E-ELT) that could revolutionise our perception of the Universe as much as Galileo's telescope did 400 years ago.

It's hard to believe that the European Southern Observatory (ESO), now the most advanced ground-based optical observatory in the world, began as just a dream for European astronomers 50 years ago.

This dream became a reality when leading astronomers from Belgium, France, Germany, the Netherlands and Sweden decided to join forces to build an observatory that would give them access to the magnificent and rich southern sky. On the 5th of October 1962, representatives from these five European countries signed the ESO convention, marking the official birth of ESO.

The chosen site for this observatory was a mountainous region in the Chilean Atacama Desert called La Silla (the saddle in Spanish). Located at an altitude of 2400m, La Silla was dry, flat and far away from artificial light sources, perfect conditions for astronomical observations.

After purchasing the land from the Chilean government in 1963, construction on ESO's first telescopes began. However, it was the completion of the ESO 3.6-m telescope in 1976, one of the largest of its day, that finally realised the dream of the founding astronomers. Today, the iconic 3.6-m telescope houses HARPS, the High Accuracy Radial velocity Planet Searcher, one of the most successful planet finders to date.

In 1987, ESO's Very Large Telescope (VLT) was approved. Cerro Paranal, an isolated 2600m mountain in the Atacama Desert, was selected as its home. This telescope was designed to be the world's most advanced optical and infrared telescope. It took ESO almost 10 years to construct the VLT, which saw its first light in May 1998. Nowadays, the VLT, composed of four 8.2-m telescopes, has revolutionised modern astronomy.

Today, ESO includes 15 member states and carries out an ambitious program focused on the design, construction and operation of powerful ground-based observing facilities, which enable astronomers to continue making important scientific discoveries.

In order to celebrate 50 years of coordinating and promoting astronomical research, ESO will be running a number of exciting public outreach events.

ESO Events for 2012

The anniversary date itself—Friday 5 October 2012—will be marked by public events at venues in many of ESO's member states and beyond, with a live connection to the VLT at ESO's Paranal Observatory. A never-beforeseen stunning astronomical image from ESO will also be unveiled, and visitors will hear from an ESO representative about the state-of-the-art observatories and the latest scientific and technological results.

Please visit the ESO website at www.eso.org for information regarding your nearest venue.

Awesome Universe

Awesome Universe is a public exhibition of images that celebrate 50 years of Europe's quest to explore the southern sky. Visitors will discover 50 visually stunning images, showcasing celestial objects such as galaxies, nebulae, and star clusters as seen by ESO's observatories as well as beautiful images of the observatories themselves, which are located in some of the most unusual places on Earth.

The exhibition will be on display at selected locations in the member states.

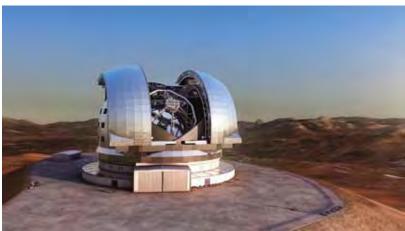


A shared European Observatory is discussed for the first time by a group of astronomers at Leiden, the Netherlands in 1953. From left to right: V. Kourganoff, J.H. Oort and H. Spencer. ESO/A.Blaauw



Above: The ESO 3.6-metre telescope at the La Silla Observatory in Chile. ESO/José Francisco Salgado (josefrancisco.org) At right, top: Nineteen ALMA antennas on the Chajnantor Plateau, Chile. ALMA (ESO/NAOJ/NRAO)/W. Garnier (ALMA) and bottom, Artist's impression of the European Extremely Large Telescope. ESO/L. Calçada





Europe to the Stars: ESO's First 50 Years of Exploring the Southern Sky

A documentary movie, together with a book illustrating ESO's first 50 years of exploring the southern sky, are available for purchase via the website. The movie is also available to watch on ESO's popular ESOcast video podcast series.

A second book, *The Jewel on the Mountaintop: The European Southern Observatory through Fifty Years*, written by Claus Madsen, gives a detailed and engaging account of the first 50 years of ESO's history.

ESO@50—the first 50 years of ESO

In recognition of ESO's 50th anniversary, a special science workshop will be held at ESO Headquarters in Garching bei München, Germany. The workshop will focus on scientific topics in which ESO has made important contributions over the last 50 years, from solar system astronomy to fundamental physics.

Then and Now Pictures

Visit the ESO website, where, once a month during 2012, a special "then and now" comparison picture of the peek shows how dramatically things have changed over the decades at the La Silla and Paranal Observatory sites, the ESO offices in Santiago de Chile, and

the headquarters in Garching bei München, Germany.

Your ESO Pictures Flickr Group

For those who have witnessed ESO's historical journey from the inside and have captured those moments, there is the possibility to contribute to ESO's memories by uploading these historical images into Your ESO Pictures Flickr Group at www.flickr.com/groups/youresopictures.

You can also send anniversary messages to ESO on ESO's Facebook Page or on Twitter @ ESO using the hashtag#ESO50 years.

The next 50 years

By far one of the most productive ground-based astronomical observatories, ESO has helped astronomers unveil the mysteries of the universe. By using ESO's telescopes, most notably the VLT, astronomers have achieved many breakthrough results, such as the first direct observation of an exoplanet and the most detailed view ever of the surroundings of the monster lurking at the heart of our galaxy—a supermassive black hole.

However, astronomers are also now looking to the next generation of advanced telescopes, which will help us learn even more

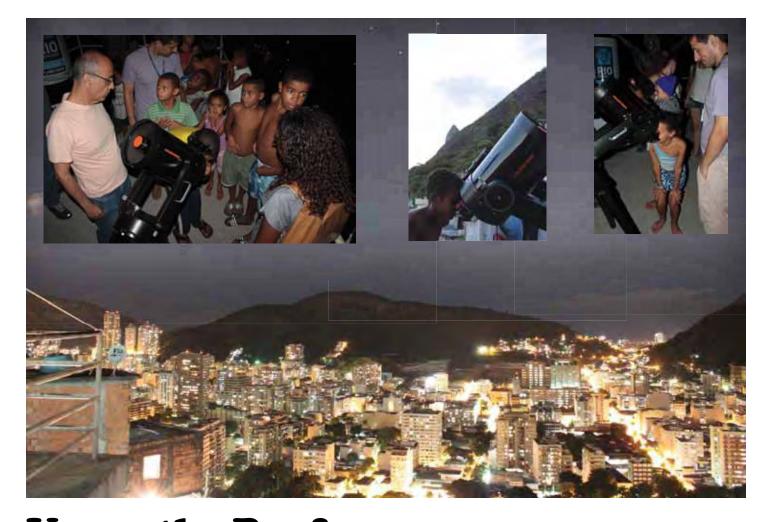
about the universe over the coming decades.

ESO is the European partner in the Atacama Large Millimeter/submillimeter array (ALMA), a partnership of Europe, North America and East Asia in cooperation with the Republic of Chile. ALMA is under construction and is already operating on the Chajnantor plateau, at 5000m above sea level, high in the Chilean Andes.

In 2013, all of ALMA's 66 high-precision antennas will be completed and operational. At the moment, over half of the antennas are already installed, allowing scientists to make observations during a period known as early science. Using ALMA to reveal the finest details of the cold and distant universe, astronomers will be able to spot the birth of the earliest galaxies, peek inside the cold and dusty clouds where new stars are born, and directly image the formation of planets.

While ALMA is nearly completed and already producing results, ESO's next jewel is still a few years away. The European Extremely Large Telescope (E-ELT) will be the world's biggest eye on the sky when it starts operation early in the next decade. Cerro Armazones, a mountain near Cerro Paranal with an altitude

(Continues on Page 25)



Up on the RoofRio Planetarium takes telescopes to the people

Paulo Pereira and Alexandre Cherman Planetário do Rio de Janeiro Rio de Janeiro, Brazil

From Wikipedia, the Free Encyclopedia (accessed in July 3, 2012): "commonly referred to simply as Rio, (Rio de Janeiro) is the capital city of the State of Rio de Janeiro, the second largest city of Brazil, and the third largest metropolitan area and agglomeration in South America, boasting approximately 6.3 million people within the city proper, making it the 6th largest in the Americas, and 26th in the world... The city was the capital of Brazil for nearly two centuries (and is the) home of many universities and institutes, (being) the second largest center of research and development in Brazil, accounting for 17% of national scientific production."

Rio is also the home of the Rio de Janeiro Planetarium Foundation, commonly referred to simply as the Rio Planetarium. With its three domes (two fully digital), it is the largest and busiest planetarium in South America and possibly in the Southern Hemisphere.

Very recently (July 2012), parts of Rio have been named a World Heritage Site, as granted by UNESCO in the category Cultural Landscape. Officially, it is called "Rio de Janeiro: Carioca Landscapes between the Mountain and the Sea." This very same mountain, which is actually a group of hills, played a key role in the history of the city.

In the early 20th Century, a city ordinance was passed to forbid constructions on the hills in order to preserve their environment. Due to social and economical difficulties, a significant part of the population did not respect the law. These illegal residences accumulated as time passed and eventually became what is now known worldwide as the "Favelas."

Born in illegality, the "Favelas" would later become the perfect place for organized crime and drug cartels to set their bases, bringing to the city a great level of distress. Like the rest of the city, people living in the Favelas became hostages of this situation, victims of a violent cycle they could no longer control. It all took a turn to the best some 20 years ago.

It started with the understanding that most people living in these areas were not into crime themselves. They lived in a crime-dominated area and, like everybody else, they wanted an end to it. Different segments of society started what we now call a "social invasion," bringing basic services (health and education, mostly) to these areas. But it would all be irrelevant if crime lords continued to rule.

In 2008, the State Government started a process dubbed "pacification," in order to regain these areas and incorporate them back to the city. The UPPs (Portuguese abbreviation for "Pacifying Police Unit") were created to promote a new kind of relationship between the police and the citizens of the Favelas. Their trust had to be won so they could help the police against the crime lords.

Before this process started, the police were seen as another kind of enemy, just as bad as the crime lords, because they would promote violence that deeply affected the civil population while trying to fight crime.

The Santa Marta Favela was the first one to

host a UPP. Since 2008, another 19 UPPs have been created. In some of these areas, basic services have already been reestablished (or, in some cases, established for the first time ever!) and the Rio Planetarium saw this as a perfect opportunity to bring science to a very underprivileged population. There are around 280,000 people living in these reclaimed areas and nearly none of them have been to a museum, a theater or a planetarium.

On March 31, 2012, we started our "Luneta na Laje" project, roughly translated to "Telescope on the Roof," at the Santa Marta Favela. This project consists of taking some of our observing equipment to a pacified areas on a Saturday with a crescent moon.

A group of two or three astronomers from the planetarium's permanent staff were there to work as mediators. Adding to the skywatching activities, we took some short videos and our own Solar System Game with its 3m by 5m board.

Such an event would not have been possible without proper planning and local assistance. Roughly two weeks before the event, a team from the planetarium (including one astronomer and one promoter, at least) got in touch with the local players and made a visit to the area, in order to decide on the best spot to install the telescope (usually on somebody's roof, hence the name of the project). This process of choosing the observation spot might sound simple, but one must be remind-



ed that these areas were not legally built on, so the streets (if any) are narrow, crooked and confusing. One of the greatest challenges of the project is finding these spots where we can safely get the telescope to, where the local population will have easy access, and where we will be able to watch the sky. mainly the crescent moon.

A very important aspect of this project is that, through the partnerships established locally, we empower the residents and support some already ongoing projects of social inclusion. Astronomy is used as a bridge as we invite our local partners to share their knowledge and expertise. We end up with a unique situation in every different location we visit, giving the project a local flavor and making it "their own," for every single community.

As a side effect to this project, we have been experiencing some very rewarding effects in our attendance at the planetarium. People from the visited areas are showing up at our main facilities, looking for our dome shows and our interactive museum. This new demographics is not statistically relevant yet, but it does give us the feeling that we were able to directly affect some lives with this project.

And to think: just four years ago these families were outcasts, stranded within their own city!

So far, the "Luneta na Laje" project has promoted four nights of skywatching, in three different favelas: Santa Marta, Vidigal and Alemão. We had more than 500 people coming to our telescopes or, as we like to think, 500 lives we touched, 500 new perspectives to the world.

(President's Message, continued from Page 8)

long period of time. We have no paid positions. Every two years, we recognize people who have served and made exceptional contributions.

This year we presented a number of Fellow awards and two IPS Service Awards. Awards chairperson Lars Broman will report more fully on the awards, but I want to name the two recipients of the Service Award, the highest award that IPS gives. This year we presented it to Sharon Shanks and April Whitt. Congratulations to both!

New Fellows of IPS are: Bart Benjamin, Gail Chaid, Alexandre Cherman, Alex Delivorias, Björn Hedén, Tom Mason, Christopher S. Reed, John Schroer, Sharon Shanks, and David Weinrich.

Learning at LIPS

I am finishing this column during the Live Interactive Planetarium Symposium (LIPS) at the University of Notre Dame in South Bend, Indiana. Over the years our planetarium presentations have changed. When planetariums first started, most of the shows were mainly lectures. Next came the era of prerecorded multimedia programs, followed by fulldome video. This evolution has occurred as our audiences, our technology and we ourselves have changed. Therefore, it is only natural that our programming has evolved as well.

Last year a group of vendors and planetarians decided to organize a conference devoted entirely to interactive programs. They wanted to explore methods that can be used to engage audiences so they are not just passively watching a presentation. Various planetariums have been using this approach for years, but there is still more that can be learned.

LIPS is a way of sharing what has worked in participants' planetariums and learning from each other. This year there were presentations on keeping audiences engaged, astronomical misconceptions, using LED cove lights to teach lessons on color, encouraging repeat attendance at planetariums, cosmology, guest speakers and funding.

There has been lots of excitement over the recent landing of the Curiosity rover on Mars. I was not able to watch the event live, but it

was marvelous to wake up in the middle of the night and find dozens of messages from my Facebook friends commenting on the successful landing with not a single post any other subject for the past 4 hours!

As I was driving down to LIPS, a reporter from my local newspaper called to ask what I thought about the landing. I answered that my hope is that it will excite our audiences as people of my generation were moved by the Apollo missions to the moon, that young people will be motivated to study science and technology and to pursue careers in those areas, and that somewhere there were large numbers of young girls and boys looking at that "red dot" in the sky, marveling at the fact that humanity had landed another rover on Mars and knowing that they, too, could share in humanity's ongoing quest to answer fundamental questions about our existence and explore the wonderful universe in which we live.



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Easy Pans: Using a slide image to project a panorama

Keith Johnson, Director Edelman Planetarium Rowan University Glassboro, New Jersey johnsonk@rowan.edu

Editor's Note: Keith Johnson shared this method of making panoramas through the Spitz SciDome discussion group, and I've been using it ever since, not only for SciDome but also for transforming some of my legacy programs into fulldome videos. Although written for SciDome users, the Photoshop steps and result can be used in a variety of applications. Keith kindly agreed to share it with everyone.

The old way

The usual way of adding a horizon panorama to a show is by installing it in Starry Night^{\mathbb{M}} directly. That way, it's always available for any show, and you know it's going to work properly.

But Starry Night (SN)pans do have some disadvantages.

- Producing and installing the images can be laborious
- There's some trial-and-error involved, and each trial needs a reboot of SN. In particular, getting the correct relative height of the pan is difficult (or maybe I just haven't figured out how to do it right).
- When SN projects a pan, it does so in sections, and has to warp each section slightly to fit it all together. The result is a pan that may have many small irregularities in it.
- Fading from one pan to another requires that you match the skies between the two favorites involved. (Compare favorites to small images saved to call up as needed later.)

There is an alternative: create your pan image as a slide, then project it in full-screen mode to fill the dome. Warning: there are some tricky bits to this, and Photoshop is necessary.

Here's how it works for me. Suggestions and corrections are welcome!

The New Way

1. Create your pan as a normal, wide strip (see image 1). Many traditional format shows have such images available. If your pan comes in 6 or 12 separate images, assemble them properly in Photoshop. Use the full resolution that the original comes in, as you'll be processing it quite a bit; I often wind up working with a master 4096 pixels or more wide.

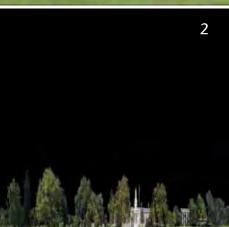
Do all your serious image production and editing now, at highest resolution, before you start resizing and warping the image. If you want a transparency mask, do it now (see discussion below; I generally add this).

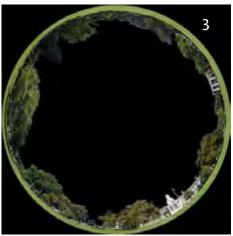
- 2. Here's the strange bit. In Photoshop, go to Image > Image Size, uncheck the "Constrain Proportions" box, change the units on "Height" to "percent," enter "314" (guess where that comes from!), and click "OK." The result looks weird, but bear with me.
- 3. An optional step follows. Add a row of black pixels along the bottom. Do this by going to "Canvas Size," increasing the "Height" by one pixel, clicking on the top central direction box, then clicking "OK." You'll see why in a moment.
- 4. Add enough black to the top edge to make the image square, using "Canvas Size" as above (click the bottom center direction box for this, so the expansion will be upwards) Your picture will look like image 2.
- 5. Here's the magic. Go to Filter > Distort > Polar Coordinates. Make sure the "Rectangular..." option is selected. Click "OK." Admire the result, as in image 3.

The factor "314%" comes from wrapping a linear image around a circle (I think). The top of the slide will be in the back (if you have a "back" on your dome), though you can adjust this orientation.

If you don't add the row of black pixels in

(Continues on Page 25)







Top: Traditional panorama of Bunce Hall on the campus of Rowan University. I constructed this from a number of shots I took about a year ago, and assembled in Photoshop, but there are applications that can do the stitching for you. Above, Top: The image has been stretched vertically 314%. The canvas was then expanded to make a square. Center: The Photoshop "Polar Coordinates" filter made this into the required circular format. Bottom: what happens when you don't add the row of black pixels. All photos by the author.

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Educational Horizons

Jack L. Northrup Dr. Martin Luther King, Jr. Planetarium King Science and Technology Magnet Center 3720 Florence Blvd., Omaha, Nebraska 68110 USA +1 402-557-4494 jlnorthrup@fbx.com

The start of school year, fresh start and new ideas...

Summer production time, IPS conference, teacher workshops, and start of school ran back to back for me this year. It has meant that I could carry the energy from IPS2012 right into my start of school year meetings. The first meeting of the full staff at King was opened with this statement:

"We aren't going to fill the shoes of the old guard, we will be making new shoes together." - Stephen Eubanks, Principal of King Science Center

To a person who has become so comfortable with what they do that any possible change is met with hostility, this statement is terrifying. Because most of the staff is certified in multiple disciplines, this year 85% of the staff is teaching either new courses or grade levels and this has caused a change of the energy of the building. A little more stress, a little more anxiety, and sometimes a little more drama.

An advantage of the shake up is there are now fresh ideas in all grades and departments. Changes like this are not always bad; they provides people insight into their coworkers' positions.

The last few years we have done an activity on April Fools Day where we swap courses. Secondary teachers have their names put in a hat and elementary another. Each teacher draws a name and for that one school day, you are that teacher whose name you drew.

The teacher leaves lesson plans and seating charts for the day to assist the guest teacher. It gives a feeling of "walking a mile in my shoes" to all the teachers involved.

I know that some of you are asking, "Jack, what about your shows or groups?" I avoid scheduling groups on April Fools Day so that

whoever draws my name just has to teach my classes.

The last few years I have been art instructor, seventh grade social studies, and eighth grade reading and must say that going to teach in rooms other than the planetarium has given me a new perspective on classroom management, instructional style, and student independence.

I suggest that if your planetarium has a staff that could use a little perspective, give a try to an April Fools swap.

Changing what can be changed

Are you still feeling the energy of collaboration? This year I was given the opportunity to work on a summer writing project where we focused on creating/modifying lessons to use gradual release of instruction. My group was eight people from several different grade levels and disciplines and we would write the lesson individually and then peer review. After reading the lesson we had to answer three questions. No, they were not "Who are you? What do you want? and Why are you here?" al la *Babylon5*¹.

We used "What did you like? What was a problem? and What would you change?" This focused the review on items that could be changed and prevented the conversation from deteriorating into attacks on each other. How often do you send an activity or presentation to another planetarium (or even across the hall) for review? Attach those questions to it and see the responses you get.

Give them a brain break

Brain Break! Remember your audience's at-

1 American science fiction television series from 1994-99. Check en.wikipedia.org/wiki/Babylon_5 for details enough for any rabid B5 fan.

tention span is, on average, their age +3 minutes up to 24 minutes (so that is were the "half-hour" television shows get their length?). A brain break is change of stimulation to allow the audience/student time to process information and refocus attention.

During a normal planetarium show we are using spatial, auditory, and visual methods of instruction, so during a brain break focus on intrapersonal (personal reflection on what they learned), interpersonal (tell your neighbor what you learned or a question you have), artistic (draw a picture/diagram to explain a concept) and kinesthetic (provide a physical action associated with the topic they have learned about).

During the Education Panel at IPS, I demonstrated the "Moon Phase Hustle" that I teach to my students as a brain break after we learn the definitions of the moon phases. It is a kinesthetic activity that attaches a physical action to remember the moon phases.

So, as a brain break for those of you reading this article, get up and use just your body to model irregular, elliptical, spiral, and barred spiral galaxies. An ideal brain break is about 4-5 minutes long before transitioning back into your topic.

Energy's needed all year

Holding on to the energy of the conference is one thing, but one of the big ideas that we need to understand from it is that there are opportunities throughout the year to re-energize ourselves. Ask yourself, "When have I talked to my neighboring planetarian?" Have you gone to a regional meeting lately? Can you visit with or participate in any user groups, like DUG, MUG, or FUG?

Don't let yourself become so insolated within your bubble that you loose your objectivity, drive and energy. I admit that I live in the land of middle school, and tell my students to change lunch tables and mix up their study buddies because each connection provides the opportunity for you to seek deeper understanding.

Lesson: understanding ellipses

Ellipses are difficult for students to comprehend because often the definitions provided by the textbook are difficult to understand.

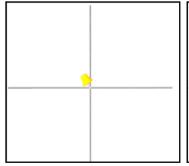


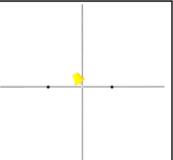


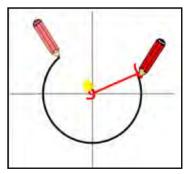


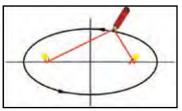


The galaxy brain break: barred spiral, elliptical, irregular and spiral. Try doing it to Mony Python's *Galaxy Song.* One version: www.youtube.com/watch?v=buqtdpuZxvk









Images modeled from an activity at www.asc-csa.gc.ca. Lots of good ideas there; check it out.

- An ellipse is an imperfect circle.
- Ellipses are defined by two foci.
- Eccentricity is the measurement of how elliptical the orbit is.

I have a quick activity that is useful for showing that ellipses are not shaped like eggs or tears. By folding a paper diagonally twice, find the center and mark with a dot. Then, using a ruler, measure and mark dots 3 cm on the left and the right.

Using a surface that allows you to use push-

pin, put a pin in the center dot and tie a piece of yarn or string about 30 cm long to it. Make a loop on the free end and have the students put a crayon (or colored pencil; markers did not work as well because the yarn picked up some of the pigment) in the loop. Have the students trace the shape.

We now have a circle with a radius of nearly 15 cm.

Leaving the yarn attached to the push pin, move it either to the left or right focus (one of the two additional spots you made earlier). Take the crayon out of the loop on the free end and use this loop on a second pushpin; push it into the other focus.

Use the yarn as the guide to draw the ellipse. You can add additional foci on the vertical or horizontal axis to draw additional ellipses. I have the students use different colors for each successive pair so they can see the major/minor axis relationship.

(How we do it, continued from Page 22)

step 3, you'll get something that looks like image 4 (don't ask me why...)

This will still work fine—you won't see all the junk in the corners on the dome—but it sure looks ugly when it's on your desktop screen! The extra black pixel or two at the bottom of the projected image won't make a noticeable difference on the dome, of course, and it eliminates the stretching.

6. Resize the slide (Image > Image Size...) to conform to your projection size. Use at least 1024x1024 pixels for 1K SciDomes, 2048x2048 for HDs. This is where you'll probably discover that you've forgotten to re-check the "Constrain Proportions" box, as I usually do. Be sure that box is checked before you "OK" the operation! Save as a TIFF, although PSDs will probably work, too.

7. Display on the dome in ATM-4 in "full-screen" mode. Viola! And sax!

You can rotate the pan to any orientation you want, independent of your star field. You can quickly adjust the coloring to some extent by playing with the color controls in your "slide" cue. You can let the pan slowly fade, and turn redder as the sun sets, under your control.

You can have a second Starry Night pan hidden behind the slide pan, ready to spring into existence as the slide pan fades (yes, I've used that to good effect).

It's possible to create a transparency mask for your pan, if you're into that habit. That way, you can control where things will rise and set behind the hills, and peek between the branches of trees, etc.

Create the mask in the first step, where you're working at full resolution and haven't

warped anything yet. However, when you do the magic warping in step 5, the mask will not be warped along with the image—but you can do it separately, as follows.

- 1. Create the transparency mask as a channel in Photoshop as part of step 1 above. Suppose you label the channel "x."
- 2. After doing the warping in step 5, go to the Channels palette. Check the "x" channel on, and the RGB channel(s) off. You'll see the white pan mask, straight across the bottom,

unchanged. You want to warp this. Click on this channel to select it!

Do the warping the same way as you did for the image, by distorting using the Polar Coordinates filter. The mask now fits the image properly. Continue on with step 6. When you save the slide, be sure the "Alpha Channels" box is checked on.

There may be a way to do the warping on the image and mask simultaneously, but I haven't figured that out yet.

☆

(ESO, continued from Page 19)

of 3060m in the central part of Chile's Atacama Desert, has been chosen to house the E-ELT.

Sporting a mirror almost 40m across, the E-ELT will dwarf every optical telescope that has preceded it. The E-ELT's dome will be about the size of a football stadium, with a diameter of over 100m and a height of over 80m.

Instead of using a single mirror, the E-ELT's will be composed of approximately 800 hexagonal segments, about 1.4m wide and just 5 cm thick. This is to prevent the mirror twisting or breaking under its own weight as well as making it significantly easier to transport.

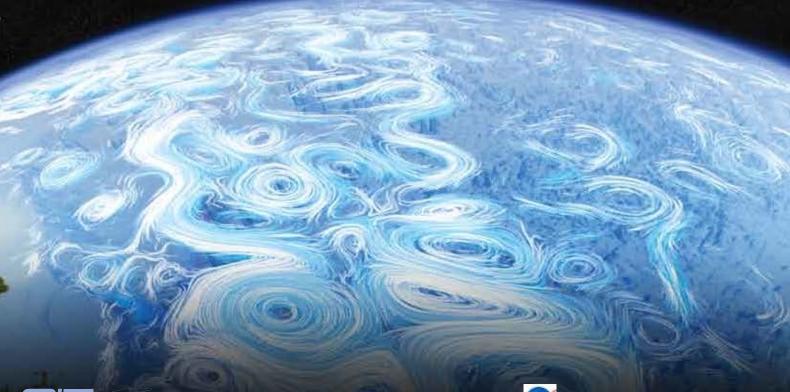
The E-ELT will assist with the search for life in the universe by looking for biosignatures on the atmospheres of Earth-like planets. Working like a time machine, it will also be able to see some of the very first stars and galaxies. The E-ELT will address many of the most pressing unsolved questions in astronomy, and may, eventually, revolutionise our perception of the universe.

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NARRATED BY LIAM NEESON

Exploring Earth's Climate Engine











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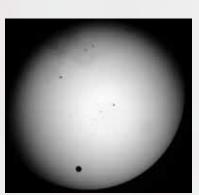
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Instead of focusing on one planetarium and one dome, this issue celebrates the Transit of Venus on June 5/6, 2012 from the aspect of many domes. Planetarians around the world drew crowds and wows, and coped with lines, clouds and disappointments. The pictures that follow throughout this issue show how we shared astronomy under one sky.





From Adam Thanz; viewing was held at East Tennessee State University with about 2,000 in attendance.



From Dave Maness (photo by Roy Foppiano); patient lines from the Pink Palace Museum in Memphis, Tennessee.









From Chuck Bueter; major events in the Michiana region of Michigan and Indiana. Chuck, who has devoted much of his time promoting the 2004 and 2012 transits, was deservedly blessed with clear skies. The panorama at the topic of the page is also from one of the Michiana events. Well done, Chuck. Well done.



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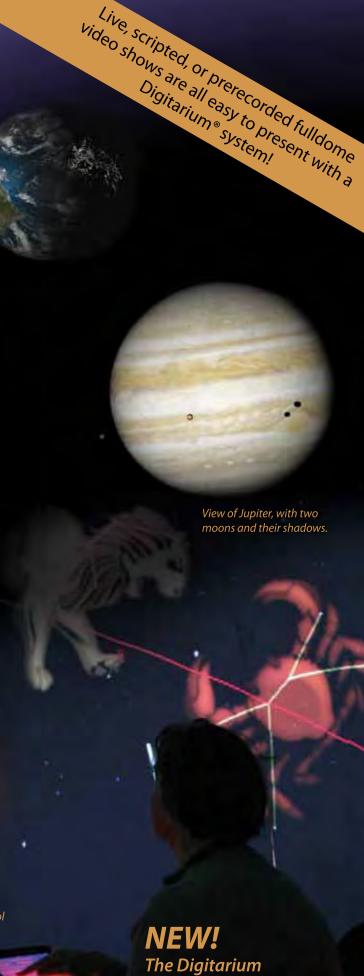
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From Stephan Fichtner, Planetarium Hamburg, Germany; an image (above) from their public observation by Christian Lübbe and (left) a 3D image from astrophotographer Stefan Seip, shot from Hawaii. Seip suggests checking out www.stereoeye.jp/howto/cross_e.html for information on the cross eye stereo image.





Suhas Naik-satam, Nehru Planetarium, Mumbai, India, reports that more than 600 people waiting at his planetarium were thwarted by clouds but that other sites in the country were more fortunate and observed the sunrise transit. In India, transit workshops were organized on a national level at nine sites to prepare. Above right illustrates the keen interest at one of the workshops.



Left: Steve Russo from Eastern Kentucky Science Center and Planetarium, Prestonburg, streamed video into his dome because of clouds, but ran outside the few times they parted.



Right: Marty Sisam, senior animator with Evans & Sutherland, was transit observing with former IPS President and now E&S colleague Terence Murtagh through the clouds. These are their best shots.







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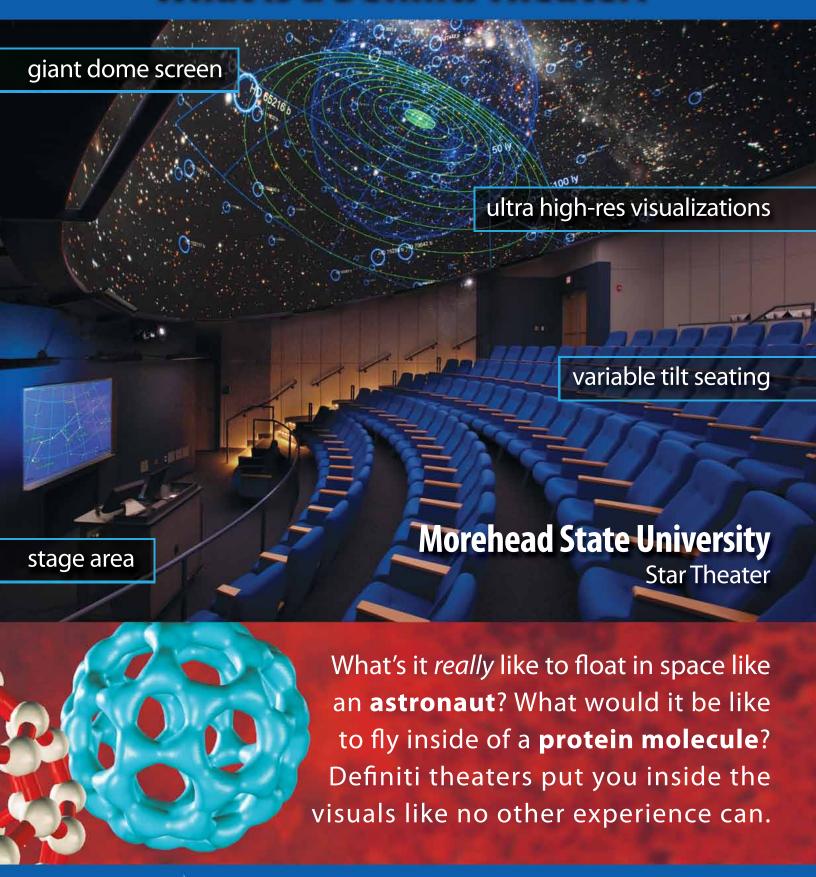
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-Darryl Davis, Museum of Science, Boston





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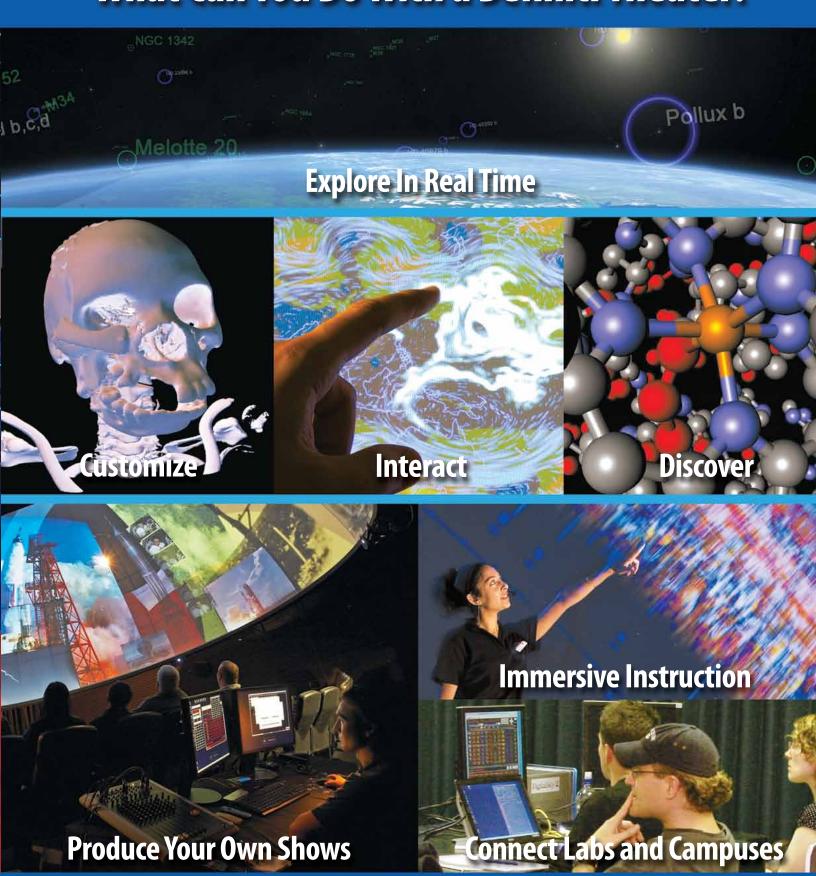




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Running time: 3 minutes.



IMERSA News

Judith Rubin Communications Director, IMERSA.org rubin.judith@gmail.com

IPS 2012 vignettes

Spotlighting some people, companies and institutions taking creative risks and succeeding in the fulldome business, encountered at IPS 2012.

Lean, mean and greenscreen: Robin Sip's Mirage3D is a successful business model for the industry

Founded by Robin Sip in 1999, Mirage3D, based in the Hague, Netherlands, stands to-day as an example of how a small, independent business can achieve success in the full-dome field.

The company now has 8 employees, a custom-built fulldome production studio that includes the 100-square-meter Chromakey greenscreen studio, and 15ft testing dome. At IPS 2012, Mark "State of the Dome" Petersen of Loch Ness Productions noted that Mirage3D was the second most popular fulldome distributor despite the fact that it offered only three of its own titles.¹

Sip entered the field in 1988, gaining experience in the Omniversum Space Theatre in the Hague, at Evans & Sutherland, and at the London Planetarium. He's made 13 fulldome shows over the past decade, three of them self-financed Mirage3D titles and the others for third parties. The titles including a number of popular favorites and financial successes, including Two Small Pieces of Glass, Dawn of the Space Age, Origins of Life, Natural Selection, Power of the Telescope, and Supervolcanoes. The recent title Cleopatra's Universe, produced for the Daniel M. Soref Planetarium at the Milwaukee Public Museum to accompany the eponymous traveling exhibit, earned back its investment in three months, according to Sip.

Sip is as creative as he is a business leader: a pioneer in the application of 3D production processes for the dome as well as a risk-taker when it comes to subject matter.

He reports that *Natural Selection* is now in 50 theaters worldwide since its release two years ago. And, contrary to expectations, it is doing very well in the southern U.S., with distribution in Texas, Tennessee, Kentucky, Arkansas and Florida. "It's almost doing better in the South than in the North," says Sip. "So it's

1 See the full 2011 State of the Dome report at www. lochnessproductions.com/reference/2011state/2011 stateofthedome.html

not true what people said to me—that a show about evolution won't sell in the U.S."

He's recently embarked on a new venture to expand the distribution of Mirage3D content by reformatting it for the giant screen cinema exhibition platform: *Natural Selection* will show in flatscreen 2D and 3D, at DCI-compliant² 24 frames per second, at the next

camera movement. "At this stage it's visual eye candy, emotion, and feeling. Music starts to come in there, too."

The story grows while the backgrounds are being created. "Right now I have animators making trees full-time for *Dinosaurs at Dusk*. I didn't know anything about trees before." The incubation period is part of the creative process. "I start to see a thread. There's a lot of intuition in it. I love to take 3 years; to keep researching, being exposed to music and reference material. I'm really happy when it clicks."

Sip originally trained as an electrical engineer, then became an animator. He has no formal art background. "When I started working in a planetarium, I knew my future was there. I like to push the limits of technology. I don't feel like an engineer; I am a firstor, but only

of fulldome shows. I



Robin Sip in the greenscreen studio (left) and in London (below).
Photos courtesy Robin Sip

Giant Screen Cinema Association conference.

Mirage3D is following up *Natural Selection* with *Dinosaurs at Dusk*, which is receiving some funding from GOTO and will be released in about 6 months. His signature approach, both economical and effective, composites live-action filmed characters into computer-generated environments.

Everything except the sound is done inhouse. While Sip can and often does turn out a show in 3-6 months, for in-house productions he often takes 18 months to 3 years because "I like to give them time to evolve."

He starts with storyboards rather than a script. "I choose subjects that fascinate me and that I feel confident about from my background with planetariums. I don't shoehorn in astronomy if it isn't a real fit with the story."

He gathers imagery and then creates a simple 3D storyboard, which becomes the basis of an animatic that helps determine speed and

2 DCI is Digital Cinema Initiatives. See more at dcimovies.com.

just try to recreate reality in as much detail as possible, and to convey emotion in graphics."

Sip plans to create future Mirage3D shows to maximize the cross-platform distribution potential. "We're going to 24/48 frames per second instead of 30/60 fps in order to be DCI compliant. It was time consuming to make a good (flatscreen) conversion of *Natural Selection*. We ran into artifacts and had to make a new, shot-by-shot edit. At the lower frame rate, we can skip that step next time."

Because of its size and amount of information, the fulldome frame is an ideal master



for extraction to other formats, he points out. "Everyone should start there."

Music as a learning tool: Mark Slater

With 20-40 minute run-times and an educational mandate, it isn't surprising that full-dome shows are sometimes considered a bit "talky." Composer Mark Slater suggests that more music and less narration could achieve the goal more powerfully.

The classically-trained Slater, a native of the UK now based in Los Angeles, writes scores for movies and documentaries as well as background music for visitor attractions. He has scored several fulldome shows, including Two Small Pieces of Glass, Solar System Odyssey, Natural Selection and Planet Earth-Expedition Green.

He wants fulldome producers to see music as more of a learning tool. "It engages the mind on different levels. It can improve memory of the material and focus the attention. Music can be used to change the pace of the narrative, clarify and intensify the significance of visuals and words, and provide a link between screen and audience, reaching out and enveloping all into one single experience."

Slater wants more producers to trust the power of music. "Music helps you say what can't be said in words. What scientists work to convey, music can telegraph," he says. "Music accomplishes the scientific goal—it doesn't get in the way of it." The right music, that is.

He adds, "It is a challenge to find the appropriate music for a show - something that suits the voice over and provides the right transitions without calling attention to itself."

Slater's musical pedigree includes a father who is a professor of music and conductor, a

degree from the London College of Music and a background as a cathedral chorister at Oxford. He no longer sings, but plays piano and cello. He is fond of many styles of music, in-

cluding rock, jazz and opera. "Wagner and his peers would be writing music for film today," says Slater, who named Hans Zimmer, John Williams, and Ennio Morricone as some of his favorite film composers.

Currently, Slater is working with E&S on the music for some visitor attractions in China, and with Mirage3D on the music for *Dinosaurs at Dusk.* "A dome, like a cathedral, is a very special space, a place to feel connected, to sense the wonder of the natural world."

He feels that museums and institutions can harness music for good results in more ways than they currently do. It can help drive repeat visitation, making people want to see a show more than once: "The emotional resonance of music creates a positive association." It can create a sense of arrival in the facility: "Start the experience sooner in museums

and planetariums, and make it more immersive. Help visitors feel they are on an adventure. That creates active engagement and excitement."

Turning on the kitchen light at night: The creatives behind *Jeepers Creepers*

DomeFest 2012, held immediately following IPS 2012, bestowed the Domie Award for Design on Jay Heinz, Peter Althoff, and Jim Kachelries for the University of North Caro-

lina's Morehead Planetarium's 2011 short subject, *Jeepers Creepers*. It is distributed by Sky-Skan.

Jeepers Creepers also had an enthusiastic reception when screened at the 2012 IMERSA Summit in Denver. The animated, 2.5-minute show lightheartedly depicts what we all hope not to see when in the kitchen in the middle of the night: an ever-more-numerous assortment of insects and spiders, silhouetted on a light globe.

Jim Kachelries (digital artist, Morehead), who has a degree in media arts and animation and has been with Morehead about four years, confirmed that the lumpy critter is a caterpillar. "There's a single fly, cockroaches, spiders, caterpillars and pillbugs. They were all rendered in 3D except the fly, which is 2D." He animated the cage and its texture along with the lights, the fly and the spiders (all the same spider) and their movement cycles.

Research included consulting an entomologist about leg movements. There was also close observation. "We videotaped bugs on a translucent surface," says Heinz.

Kachelries described how Peter Althoff (digital artist for Morehead) animated the pillbugs using crowd simulation. "They start at the ground, migrate toward the center, and climb on top of one another." At one point



The Creepers Crew, from left, Jim Kachelries, Jay Heinz, Peter Althoff

they were progressing too quickly. "We sent them along an invisible 3D plane to give them something to do."

Heinz (digital production manager at Morehead) and Kachelries report that *Jeepers Creepers* is a popular show at film festivals, although ironically hasn't been shown many times at Morehead. According to Heinz, the idea for

the show originates with Morehead Fulldome Theater Director Richard McColman. As Heinz related, McColman told a story about a past IPS meeting where someone turned a glass bowl upside down on a table over some cockroaches, shone a bright light through it and projected it onto the dome.

The output of Morehead's creative production trio includes *Earth, Moon & Sun* (2009), *Magic Tree House Space Mission* (2010), and *Solar System Odyssey* (2011). The goal, says Heinz—who has been with Morehead five years, and whose background includes a master's in documentary journalism and work at Lucasfilm and the Washington Post—is to "keep pushing boundaries and making shows, each one different from the last one."

Currently in production are a giant puppet show for the winter holidays, and a special "grossology" show supported by a grant from the National Institute of Health.

Call for participation

The Denver Museum of Nature & Science will again be the main venue for the IMER-SA Summit and Fulldome workshops in February 2013. The event will include three days of professional development workshops for producers (all levels of experience), 13-15 February (Wednesday-Friday), which will transition to the 3-day Summit, 15-17 February (Friday-Sunday).

The Summit promises to be a valuable conference, continuing the conversation between converging business sectors and taking the temperature of the industry with full-dome film showcases, technology sessions, the next phase of fulldome standards, abundant opportunities for networking and much more. Some student scholarships will be available.

As the event takes place not long after the 'Imiloa Fulldome Film Festival (7-9 February 2013) and its content will complement the 'Imiloa gathering, we encourage you to plan to attend both. (There's just enough time in between to make a quick visit to California or Las Vegas.)

Please watch IMERSA.org for details on registration, schedule and program. If you would like to be a sponsor, suggest a session or other program component, volunteer to assist with organizing or implementing the event or share other suggestions or inquiries, please email info@imersa.org.

Science media awards finalists

Jackson Hole Symposium 2012, 5-7 September at the Denver Museum of Nature & Science, includes the first Jackson Hole Science Media Awards. The three finalists in the "Best Immersive Cinema-Fulldome" category (sponsored by Global Immersion) are *Cell! Cell! Cell! Cell!* (NSC Creative and INTECH Science

Centre and Planetarium); Dynamic Earth: Exploring Earth's Climate Engine (Spitz Creative Media, the Advanced Visualization Lab at the National Center for Supercomputing Applications (University of Illinois), NASA's Scientific Visualization Studio, Thomas Lucas Productions and Denver Museum of Nature & Science); and Undiscovered Worlds: The Search Beyond our Sun (Charles Hayden Planetarium at the Museum of Science, Boston). Congratulations to all finalists! To learn the winning title, visit www.jhfestival.org/jhsymposium/index.htm.

Upcoming events

- ISEA2012: Machine Wilderness Conference 19-24 September 2012. This 18th International Symposium on Electronic Art conference, exhibition and public program series explores the intersection of art, science and technology. Several fulldome works and exhibitions will be featured, including *There Was No End* by Cree Métis artist Jason Baerg, *Fulldome Projects* by Hue Walker, *CARBON* by Charles Lindsay in collaboration with xRez Studio's Eric Hansen, and *Cosmix Dome* presentations by Claudia Cumbie-Jones and Lance Ford Jones. www. isea2012.org
- STATE OF THE ARTS 2012: AMPLIFY! 22 September in Los Angeles. Symposium and dialog taking place in The Vortex Dome at LA Center Studios. Exploring human creativity and digital innovation, with a focus on education and the convergence of traditionentertainment with immersive content and formats. Will include a fulldome showcase sponsored by IMERSA and c3: CreateLAB. www.c3so.com
- Dome Festa, 22-26 September at Sofia Sakai in Osaka. Part of the 3rd International Festival of Scientific Visualization. image.sci-fest. net/en/index.html
- ASTC 2012: Association of Science-Technology Centers annual conference 13-16 October, Columbus, Ohio. Includes fulldomerelated exhibitors, screenings and events. http:// www.astc.org
- FULLDOME UK 2012, 16-17 November at the National Space Centre, Leicester UK. FULLDOME UK is a not-for-profit association

- supporting artists and researchers working within fulldome immersive environments. www.fulldome.org.uk
- SIGGRAPH Asia 2012, 28 November-1 December in Singapore. Theme: Embracing the Digital Convergence. Karlheinz Brandenburg, director, Fraunhofer Institute for Digital Media Technology IDMT, is a featured speaker. www.siggraph.org/asia2012
- 'Imiloa Fulldome Film Festival, 7-9 February 2013, 'Imiloa Astronomy Center, Hilo, Hawaii. An international line up of 25 new digital planetarium films will be showcased. All entries to the festival will be new planetarium fulldome content since October of 2012. www.imiloahawaii.org/168/IFFF2013
- IMERSA Fulldome Summit & Workshops, 13-17 February 2013 at the Denver Museum of Nature & Science. (See detailed description above)
- Immersive Film Festival, IFF '13, 3-5 May 2013 at Centro Multimeios Espinho, Portugal. Navegar Foundation invites producers, animators, filmmakers, artists, students, teachers and planetarium professionals to participate. The competitive section will award the best in fulldome productions by juried selection. iff.multimeios.pt

Use each three letter group once per blank to spell the name of a category and some of its members.

Triad Categories 1

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EBE	EID	ELA	ENC	EUR	HYS
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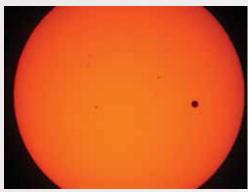
by Adam Thanz

(Answers on page 61.)





Kris McCall and crew from the Sudekum Planetarium, Nashville, Tennessee, submitted so many great pictures that it was hard to select just a few. At left, read the lips for the "wows" after the clouds parted. Above and below left: kids enjoying astronomy; below right, making a human sundial. At bottom: an example of safe observing; this photo is by Frederick C. Mertz, who holds the copyright.



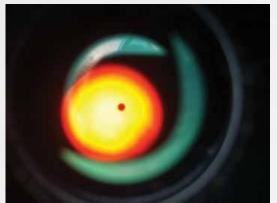














Greg Andrews, planetarium manager at SciPort: Louisiana's Science Center, shared two images he received: the first is the transit captured via iPhone by David Wilson; the second is an acrylic painting by Jody Raney inspired by the photo.

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Tanya Hill, curator of astronomy at the Scienceworks' Melbourne Planetarium, Australia, with sons Dylan and Nathan.



Charles St. Lucas from Hooper Planetrium, Roper Mountain Science Center, Greenville, South Carolina, sent along this intriguing "happy accident" image taken by someone who didn't know how to take pictures of the sun.



Jillian Bornak from New Mexico State University in Las Cruces shares a prettilyframed transit and a time lapse image.



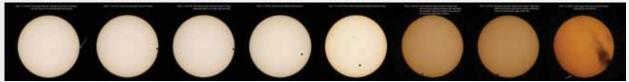
Shefali Mehta from The Children's Museum, West Hartford, Connecticut, managed to see the transit through clouds and capture this eerie picture.



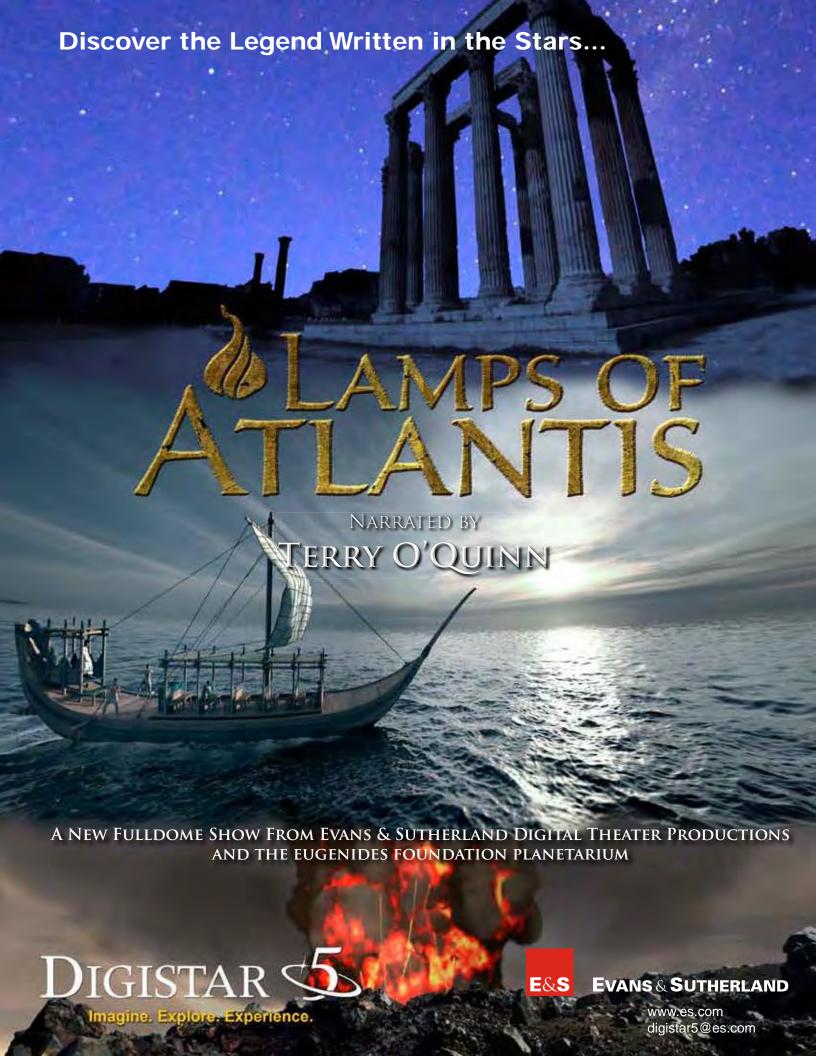
Clear skies and many participants enjoyed the transit event arranged by the St. Louis (Missouri) Science Center's McDonnell Planetarium. Image submitted by Michael Malolepszy.



Kyle Doane from the Museum of Nature and Science, Dallas, Texas, shared this picture of Beau Hartweg (in blue shirt) and his funnel viewer from the Museum's event.

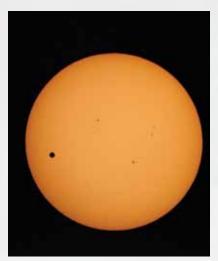


Nearly "all of the above" transit photos from Nick Strobel from Bakersfield (California) College Planetarium, who observed from Hawaii on a tour arranged by Sky & Tel.





Jim Hendrickson from Newfangled Web Developers, Providence, Rhode Island, took this beautiful image at the Mount Wilson Observatory near Pasadena, California. Jim traveled with Francine Jackson from the University of Rhode Island Planetarium and the Antique Telescope Society.



From Ron Kaitchuck, Ball State University, Muncie, Indiana



Clear skies (above) in the North Georgia mountains, enjoyed by participants at the viewing event arranged by Rollins Planetarium at Young Harris College. Below, a clear shot with a sun funnel. Sent by Steve Morgan, planetarium director.



It was cloudy in Macon, George, for Phil Groce (Helping Planetariums Succeed), but at sunset the clouds parted and he managed some beautiful images, one of which was used on the Weather Channel the next morning.



Although the Ward Beecher Planetarium's (Youngstown, Ohio) transit event was clouded out, people were able to see glimpses through the clouds in other areas. This image is from Nick Leon, a planetarium friend, projecting the sun through his binoculars onto a pizza box held by his son, Marcel. Nick also passed along a tidbit that I thought was worth sharing:

"I forgot to mention that while we were in the parking lot a woman driving by saw us and pulled in to see if we needed to share the pair of eclipse shades she got at one of your shows. She was excited to have them and the chance to use them. It's always nice to see someone who is clearly not your average science geek really excited about both the planetarium and events like this." — Sharon Shanks



The transit from Marietta, Georgia, submitted by Bob Gardner

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Filters and projection methods result in the transit of many colors. Images by (clockwise, starting with upper left: Blue: Jon Slaton, from Sirius Observatory, Springfield, Missouri; Pink: Isaac and Heidi Kikawada, Mountain View, California, viewing from Hawaii; Pale Yellow: John French, Abrams Planetarium, Michigan State University, East Lansing; Blue: Astronaut Don Pettit onboard the International Space Station, through Rob Landis; Cloudy Yellow: Bill Huston, Lafayette Jerrson High School, Indiana; Light Lavender: Tom Campbell, Allen Community College, Iola, Kansas; Orange/Red: Dan Neafus, Gates Planetarium at the Denver Museum of Nature & Science, Colorado; and Purple/Pink, Noreen Grice, Danbury, Connecticut;





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International News

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Unfortunately, this time I didn't manage to observe the June 6 early morning Venus transit. When the sun was about to climb over the trees around 4 in the morning, clouds came. Luckily, I have the 2004 successful transit in fresh and good memory!

The International News column is built on contributions from IPS Affiliate Associations. If you have news that you want colleagues worldwide to read, please send it to your IPS representative (see p. 3). Their deadlines are 1 October 2012 for *Planetarian* 4/2012 and 1 January 2013 for 1/2013, so they need your news ahead of those dates. You who want to contribute news from parts of the world where IPS has no Affiliate Association are welcome to send it to Martin George, martingeorge3@ hotmail.com.

For contributions to this International News column, I sincerely thank Agnès Acker, Vadim Belov, Bart Benjamin, Ignacio Castro, Gail Chaid, Alex Delivorias, Sandro Gomes, John Hare, Loris Ramponi, Aase Roland Jacobsen, Alexander Serber, Christian Theis, and Michele Wistisen. I wish you and other representatives back with news for upcoming *Planetarian* issues.

Association of Brazilian Planetariums

This year, the XVII Meeting of the ABP will be conducted at the Polo Astronômico Casimiro Montenegro Filho Planetarium, in Foz do Iguaçu, from 20 to 24 November. More information is available at www.planetarios.org. br or by email from contato@planetarios.org. br

In September, the Rio de Janeiro Planetarium is hosting its second edition of the Workshop of Fulldome Production. The first edition, which happened in November 2011, was a huge success and had Shawn Laatsch and Antonio Pedrosa as guest speakers. This year, Robin Sip and Steve Savage will go to Rio to share their expertise with colleagues from various Brazilian planetariums.

The Brazilian Planetarium community is proud to announce that Fernando Vieira, from Rio de Janeiro's Planetarium, is completing 30 years of outstanding contributions and unending dedication in spread astronomy to kids and adults.

Fernando Vieira was the president of ABP for the 2005-2006 period and now is the astronomy director at the biggest planetarium in Brazil and a great inspiration for planetarians all over the country. In grateful appreciation of his hard work and dedication in the planetarium field, ABP Members congratulate him for this great professional achievement.

Association of French-Speaking Planetariums

About 90 planetarium directors and mediators participate at the 28th APLF Conference organized at the Bretagne Planetarium in Pleumeur-Bodou 17-20 May. The local team

with Vincent Daniou and Maxime Piquel prepared a superb program, under the wonderful digital starry sky installed in 2011. There were vendor demonstrations (Sky-Skan, RSAcosmos, Zeiss, Quim Guixa, Digistar4, Skypoint), films projections, and tasty evening dinners along the sea, sponsored by the vendors.

Jerome Galard, Observatory of Laval, in collaboration with Loris Ramponi, presented the use of Skype as tool for interactions and collaborations between planetariums, and students of different ages, from French and Italian schools. These activities started just last year, and other planetariums are also invited to join the experience.

An interview of a lady from Baton Rouge, speaking French, has been recorded and will be presented on www. aplf-planetariums.org before the IPS Conference in Louisiana.

On 22-23 June, the Strasbourg planetarium celebrated its 30th anniversary. Since 1980, the Spitz 512 projector is still working accurately! About 5000 visitors were happy to discover planetarium animations from 1980 (with Pluto as a planet) and 2012, exhibition panels, sun observations with a corona, and flower-like stars in the Observatory Garden.

The Association Peiresc, founded by Philippe Malburet, president, is developing the great project of a planetarium in Aix-en-Provence. The building is ready, and the Planetarium Peiresc is hoped to be the second hybrid system in France.

The show *Water, A Cosmic Adventure* will be distributed in August 2012 to be presented in the planetarium domes on 5 October, the date of the 50th anniversary of ESO. In July the camera team and astrophysicist Evelyne Alecian, playing the role of Eva Luna, were shooting the ESO observatories on the Paranal.

IPS members are invited to a subscription: 27 €/seat for the 4K digital show, 18 €/seat for the opto-mecanical kit, and 370 € for the 1K portable device. Contact aplf-planetariums@ orange.fr.





AFP: (Top) The 28th APLF Conference in the Bretagne Planetarium, Pleumeur-Bodou. Courtesy of CAMARA LANNION. (Below) Philippe Malburet, President of the Association PEIRESC, happy inside the new planetarium of Aix-en-Provence, in construction. Courtesy of Serge Mercier/La Provence.





AFP: Working on the show *Water, A Cosmic Adventure*, infografists surround Didier GrosJean, director of the delegate production, MasterFilms (second from the left). Courtesy of Maxime Rey. Tournage for the APLF/ESO Show on the Paranal in Chile, with the Camera RED-EPIC 3D-360°. Courtesy of Didier GrosJean.

Association of Mexican Planetariums

June was a busy month for planetarium activities, thanks to the more than publicized Venus Transit, which drew the attention of the general public and participant planetariums in Mexico. This was the case of the Torreon Planetarium, which offered lectures and live telescope observation via web transmission of the astronomical event. The local TV station broadcasted live Venus-sun images in its reports.

The Cajeme Planetarium in the State of Sonora also offered telescope observation to many school groups under clear skies, this not being the case of the southern-located Planetariums. Nevertheless, the Luis E. Erro Planetarium also offered live telescope observation and celebrated its 45th anniversary with the opening of a hands-on astronomy exhibit hall dealing with achievements in reaching space and the moon and, through scale models, with the construction of the space station; the importance of the Space Shuttle missions; and replicas of the National Astronomical Observatory and the Great Millimetre Radio Telescope in México.

European/Mediterranean Planetarium Association

In July and August the digital planetarium of the Astronomical Centre Rijeka in Croatia complemented its regular program, which included *Kaluoka'hina: The Enchanted Reef, Touching the Edge of the Universe,* and *Planets in Sight,* with additional events, such as the live presentation *A Guide to the Dark Sky-Summer.* Rijeka is a famous tourist destination, which is why *Touching the Edge of the Universe* is featured every for foreign visitors

in the English language. The Rijeka Planetarium's program also included a presentation on the landing on the Moon, which was shown between 17 and 21 July.

Due to its excellent location on an elevated part of Rijeka, the planetarium's guests had the opportunity to enjoy during the summer months an extraordinary sight over the Bay of Kvarner, the live presentation of the Perseid Meteor Shower, known as Tears of St. Lawrence, which could be observed through mobile telescopes.

In August, the special event "Opera Among the Stars" was performed on the premises of the Astronomical Centre by the vocal group Diamante Classics from Rijeka, during which great arias, mostly written by Italian composers, were performed outdoors under the real stars and indoors under the planetarium sky.

September brought along new activities due to the start of the new school year. The regular program for September once again included *Kaluoka'hina*, which received support from the Croatian Ministry of Science, Education and Sports in 2012. A new live presentation for schools and kindergartens was introduced and featured every Saturday morning, explaining the importance of energy from the sun to life on Earth, and at the end of the month, visitors had the opportunity to observe the night sky above Rijeka during the live presentation "A Guide to the Night Sky," as summer slowly drifted toward autumn.

The Eugenides Planetarium in Athens, Greece, celebrated the Summer Solstice and the European Music Day with three live performances under the dome of the planetarium, headed by famous Greek composer and pianist Mimis Plessas. During the summer months the planetarium's staff contin-

ued working on its latest production with the provisional title *Sky of the Ancients*, which is scheduled to premiere on 30 October.

Before that, however, the planetarium has scheduled the premiere of its newest IMAX film *Space Junk* and its Autumnal Equinox Special Show of *Music Under the Stars*, while on 1 October, the younger visitors of the Planetarium are scheduled to enjoy Kagaya's show *Starry Tale*.

Finally, it is worth mentioning that the Eugenides Planetarium is currently preparing to participate in the worldwide festivities to commemorate the 50th anniversary of the European Southern Observatory, by hosting part of the *Awesome Universe* exhibition, which will premiere on 15 October. More details about this exciting event, which will also include a public lecture by an ESO astronomer, will follow on the next issue of *Planetarian*.

Great Lakes Planetarium Association

Illinois. The William M. Staerkel Planetarium at Parkland College in Champaign took three weeks off from public programming in June to upgrade their heating and cooling system. When they reopened, they premiered *Cosmic Colors* and their own *Summer Prairie Skies*.

On 16 July, the planetarium at Lakeview Museum of Arts and Sciences closed to begin the relocation of its Zeiss Powerdome Planetarium System to the new Peoria Riverfront Museum. They expect to have the planetarium operational by the end of August and conduct their public grand opening on 20 October 2012

The staff of the Cernan Earth & Space Cen-



ECSITE links communicators

Ecsite is the European Network of Science Centres and Museums, linking science communication professionals in more than 400 institutions in 50 countries (www.ecsite.eu).

Founded 20 years ago, Ecsite connects member institutions through projects and activities and facilitates the exchange of ideas and best practice on current issues.

Members include science centres and museums (and, therefore, planetariums), science festivals, natural history museums, zoos, aquariums, universities, research organizations and companies communicating and engaging the public in science through accessible, interactive exhibits and programmes.

Ecsite takes part in a number of collaborative projects, including many projects funded by the European Commission.

It has created thematic groups (or "T groups), which are learning communities made up of experts from Ecsite institutions, driven by their will to share experience and knowledge.

Ecsite publishes a quarterly printed newsletter that reaches all its members, with each issue addressing a specific theme related to the field, and also distributes a monthly e-newsletter.

Every year, the Ecsite Annual Conference is the most prominent meeting of science communication professionals in Europe, bringing together 1000 professionals in the field.

Ecsite 2012 conference in Toulouse

This year la Cité de l'espace hosted in Toulouse the ECSITE conference on the theme "Space and Time Unlimited."

Some 995 attendees enjoyed two days of preconference, three days of conference, 75 sessions involving 330 speakers, two keynote lectures, one astronaut, 117 helpers, and 56 exhibitors at the business bistro and a dense social program.

Planetarian culture had to be represented especially this year, since la Cité de l'espace has two planetariums and is active in the planetarium society.

A dedicated session, therefore, was organized on "Planetariums, Theatre of Space and Time" convened by Milene Wendling, head of the Planetarium at the University of Strasbourg, and with speakers from Cosmocaixa (Barcelona, Spain), National Space Centre (Leicester, United Kingdom), Citta della Scienza (Napoli, Italy).

During the preconference, a workshop was organized on "Communicating European Achievement in Space," focusing on future collaborations between the European Space Agency and museums and science centers across Europe.

As a consequence of the strong interest it generated, an Ecsite T group on space is being created. \Leftrightarrow

ter at Triton College hosted a very successful Transit of Venus observing session. Attendees were able to observe the event in the full range of telescoping offerings. Video from one telescope was displayed on a TV monitor and video clips were recorded onto a laptop computer.

Indiana. At the Koch Planetarium of the Evansville Museum, Ann Kaiser Wallis has recently joined three other members of the museum's Docent Association. Ann and her colleagues present the planetarium's school programs.

Deb Teuscher, planetarium director at Pike High School in Indianapolis, presented a paper "K-8 Standards-based Astronomy Lessons" during an April meeting at Carmel High School.

Dayle Brown from Pegasus Productions organized a TROVE Art Exhibit at The Livery in Benton Harbor, Michigan. The Livery created the Venusian Beer that was on tap during the celebration there after sunset on 5 June.

The Edwin Clark Schouweiler Memorial Planetarium at the University of Saint Francis in Fort Wayne joined with the Fort Wayne Astronomical Society to offer public viewing of the 5 June Transit of Venus at two public observing sites. Public internet viewing sites were also provided, which remained open until the transit ended after midnight.

On Transit Day at the Digital Visualization Theater at the University of Notre Dame, volunteers from the Department of Physics were at Jordan Hall of Science with telescopes available for viewing. In the week leading up to the event, the DVT offered planetarium shows that explained the transit. In May, the DVT brought Axiom Brass back to the Notre Dame for an encore performance. Axiom Brass is a brass quintet based in Chicago dedicated to enhancing the musical life of communities and educating the next generation of musicians.

Michigan. This summer, the Kalamazoo Valley Museum Planetarium presented *Ice Worlds*, which explores the role of ice in the universe, *Dawn of the Space Age*, which traces the origins of space exploration starting with the launch of Sputnik, *Treasures of the Great Lakes*, which describes how navigators on the lakes used the night sky and a network of lighthouses to guide them to their destinations, and *Seasonal Stargazing*.

The University of Michigan's Museum of Natural History Planetarium recently introduced WorldViewer, a software program from The Elumenati that creates a virtual "Science on a Sphere" in the dome. The initial use of the WorldViewer will be for geological and climatological programming.

At the end of June, Dan Tell left the Roger B. Chaffee Planetarium in Grand Rapids after almost nine years to join the staff of the Morrison Planetarium at the California Academy of Sciences in San Francisco.

Ohio. Gene Zajac has been doing outreach with star parties and presentations on the Lake Erie Islands and at the Perry's Monument Visitor Center at Put-In-Bay. During April, there were four evenings of public shows about spacemen, real and fictional, centering on the 24 Ohio astronauts.

Back at the Shaker Heights High School Planetarium, Bryan Child presented programs for elementary classes, and Bryan and Gene Zajac performed evening programs for elementary schools and scouts. Bryan and Joe Marencik will be using the space bus and the planetarium for a week of space camp in August.

The Ward Beecher Planetarium at Youngstown State University premiered their new show, *Cosmic Castaways*, in May. The YSU crew will be making some minor changes over the summer and hope to have a 1K and a flat screen version available free to planetariums sometime in early 2013.

Fran Ratka is the new planetarian at the Lake Erie Nature and Science Center's Schuele Planetarium, replacing Wayne Kriynovich, who has moved to Geauga Park District's Observatory Park. Katy Accetta, a recent graduate of Youngstown State University (and the Ward Beecher Planetarium) was recently hired as a planetarium specialist.

The Cleveland Regional Association of Planetariums met jointly with the Cleveland Astronomical Society on 5 April as the CAS celebrated its 90th anniversary. Featured speaker Trudy Bell described the life and work of CAS founder J. I. Nassau.

Wisconsin/Minnesota. GLPA's own *Cosmic Colors* filled the 22-m (73-ft) dome at the Daniel M. Soref Planetarium in Milwaukee. Their staff is working on a show about gravity and Newton's Laws of Motion, which should be completed by the end of 2012.

Due to falling field trip numbers, Todd DeZeeuw's planetarium position at the Gary Sampson Planetarium in Wauwatosa has been reduced from 40% to 20% of his teaching load next year. In exchange, he will be teaching an aerospace engineering class at Wauwatosa East High School.

During the month of June, the Charles Horwitz Planetarium in Waukesha presented *Space Dreams* for the general public and *Nine Planets and Counting* for their children's public program. In September, they will present *3-2-1 Blastoff* for their Apple Harvest Festival.

In June, the UW-LaCrosse Planetarium presented a hands-on workshop as part of a Science Exploration Camp. Topics included Night and Day, Seasons, Moon Phases, and Time. The planetarium will also be hosting groups from the YMCA, local parks, and day care camps.

This summer, the UW-Milwaukee Planetarium hosted two special events: the Transit of Venus in early June and the landing of the Curiosity Rover on Mars in early August. Director Jean Creighton got to show off her knowledge of Greek myths in a Friday Night series titled *Summer Stars and Their Myth*.



Italian Association of Planetaria

In May the Ignazio Danti Planetarium organized a special projection in collaboration with the Autism Center of Perugia for children who seemed interested in a "close-up" of the sky.

First of all, staff from the center came to the planetarium before the visit to take some photos of the place and the people who the children would meet. In this preliminary meeting they also decided upon the most suitable content and the approach to be used.

After an introductory lesson at the center, the children came to the planetarium in two small groups. The project for the first group, made up of nine children, lasted 45 minutes. After a short guided introduction, the session continued in the form of answers to the children's questions, as they seemed to be recep-

tive and willing to interact; however, the coherent, logical format of the project was not put aside.

The five children who made up the second group participated in a shorter project of about 30 minutes focused on how the sky changes color during the day and on myths connected with the zodiacal constellation figures. At the end of each projection we spent a little time getting the children to recall what they had seen and each of them talked about what had impressed them most.

Of course, on 6 June the Ignazio Danti Planetarium organized an event to follow the transit of Venus. They saw the beginning by webcast, activated by the Surveying and Spatial

Sciences industry in collaboration with the Astronomical Association of Queensland (AAQ). Then they saw the end at a suitable place near Perugia. Their instruments were simple, but the effect was anyhow stupendous.

The Italian Association of Planetaria (PlanIt) organized the first issue of the prize devoted to a video, PowerPoint projection or something else devoted to an astronomical and/or astrophysical subject. The target of this audiovisual product will be students ages 11-13. The author of the most interesting product, selected by a special commission, will win a prize of 500 €

The audiovisual product will be available free for PlanIt members. People interested in participating in the prize need to send their proposals, in digital format, to PlanIt, planitnews@libero.it, before the end of 2012. Each audiovisual product presented to the contest needs to contain the following:

"Associazione dei Planetari Italiani (PlanIt)," name of the author; title of the product, and "Premio PlanIt anno 2012." The name of the winner will be presented next March. The awarding of the prize will be given in Cagliari, on 13-14 April 2013, during the XXVIII National Conference of Italian Planetaria.

During the conference, with the permission of the authors, all the products presented to the contest will be projected. The winner product will be used by PlanIt members for projections in every site or for exhibitions.

Duplicates of the winner's product will be



Pacific Planetarium Association

John Young from Reuben H. Fleet Science Museum and Planetarium in San Diego, California, had his picture taken at the San Diego County Fair by the Fleet Team. Young and the Fleet Team built this exhibit for the County Fair, called *Explore the Solar System*. The exhibit reached thousands of people, who set record-breaking attendance at the annual fair. Image courtesy Reuben H. Fleet Planetarium

available only for PlanIt members up to April 2015. After this date the winner's product will be made available by PlanIt to everyone.

During the last conference of PlanIt, in Brembate di Sopra (Bergamo), the new committee that will manage PlanIt for the next three years was established. Members of the new committee are the following: Gianluca Ranzini (Milano, president), Vittorio Mascellani (Modena, vice-president), Loris Ramponi (Brescia, secretary), Walter Riva (Genova, treasurer), Gian Nicola Cabizza (Cagliari, member), Simonetta Ercoli (Perugia, member), and Gabriele Umbriaco (Crespano del Grappa, member and webmaster).

A decision to be made by the new committee will be to select a new PlanIt logo among a list a different suggestions. For information, www.astrofilibresciani.it/Planetari/AAP_big. ipg/

The old logo of Italian Planetaria Friends Association has been used in activities of Italian planetaria between 1986 to 2008.

The most important upcoming dates for IAP will be 13 October 2012, national day against light pollution, and 17 March 2013, International day of Planetaria.

During 13 October, a common project will be to present a collection of images of the planetariums engaged in this special day, made to promote the dark of the night, the "star parks" and the waste of energy used to diffuse light towards the sky.

Nordic Planetarium Association

The year 2011 was a success for Heureka, the Finnish Science Center. Their attendance clearly exceeded expectations. Many factors attributed to the increase in attendance. The main factors were the attractive exhibitions, high-quality and versatile planetarium programs and efficient marketing.

Heureka is run by an independent foundation, the Finnish Science Centre Foundation, which receives half of its funding from the City of Helsinki and the Ministry of Education and Culture. The other half they are obliged to acquire themselves through income from sponsors, entrance tickets and corporate customers. Heureka is a non-profit making institution.

They are so far this year unable to exploit the success they had in 2011.Naturally, they hope that visitors continue to show interest in the new exhibitions and planetarium shows.

The planetarium's attendance increased by approximately 15% from the previous year, whereas the overall number of visitors at Heureka increased by 37%.

The planetarium's most popular shows during the day being usually sold out has become a problem. This means that they can only increase the planetarium's attendance by trying to attract customers to shows taking place between in the afternoon and early evening. That again is difficult due to Heureka's slightly remote location. Heureka is located at about a 15-minute train ride from the center of Helsinki, whereas the same journey by car can easily take 30 minutes.

In January 2012, they replaced the 16 planetarium computers with new SuperMicro computers, serviced the Sony 4K projectors and installed a new operating system. As a result, the picture quality improved and the equipment became easier to use. They also began making two self-produced shows: *Cosmic Windows*, a planetarium show aimed at schoolchildren, and another show about the northern lights, or aurora borealis.

Heureka's Planetarium program 2011 included Black Holes: Journey into the Unknown, Journey to the Stars, The Zula Patrol: Under the Weather, Kaluoka'hina: The Enchanted Reef, Two Small Pieces of Glass: The Amazing Telescope, and Heureka's Science Lecture.

Rocky Mountain Planetarium Association

Ron Proctor began working at the Ott Planetarium in Ogden, Utah as a student-employee in the summer of 2003. He was the last hire under Dr. John Sohl and aside from the current director, Dr. Stacy Palen, was the last remaining staff member with experience on the 1969 Spitz A4. With the installation of a Mediaglobe-I in December 2004, the Ott Planetar-

ium went dig-

After a single 3D Studio Max class from the Ogden-We-Applied Technical College, Ron startmaking planetarium shows. While he wasn't always thrilled with the early results, his work received enough praise to keep him motivated.



NPA: The Planetarium at Heureka, the Finnish Science Center. Courtesy of Kai Santavouri.

A feisty redheaded pre-

med student was hired at the planetarium around that time and she and Ron soon took a liking to each other. One of Proctor's next full-dome shorts turned out to be a planetarium-based marriage proposal to AmyJo.

In 2006, the Ott got exciting news: the planetarium was to receive a NASA earmark to the tune of one million dollars to buy a sizable computer lab and a render server. This, however, raised an important question: how would the planetarium maintain commercial software installations for production on this great new equipment? A license fee charged for each CPU-core could be a major financial challenge.

Enter Blender, a free open source 3D software. Ron Proctor spent months learning his way around the alien landscapes of Blender and OS X. Finally, he got the hang of it and developed a fisheye rendering solution. Now with several years of experience using Blender for production, Ron and AmyJo Proctor offer workshops in 3D modeling and animation with Blender. And this summer, they began something new: the intro workshop is offered online and the advanced workshop is planned to focus on a different skill set each year.

Since the Ott planetarium is part of a college, Proctors wanted students to have the opportunity to have a part in planetarium productions. Most of their student employees come from the College of Science, with a majority of those coming from the Department of Physics.

While a small percentage of the students might continue in planetarium work, it is expected that most of them will go on to whatever jobs fit the degrees they are seeking. The main objectives for these students are to learn the importance of communicating science to the public and become skilled in doing so. By asking each student to write, record, edit, an-

imate and produce their own featurettes, the planetarium would be promoting creativity, self-motivation, and providing an opportunity to boost the students' résumés with projects that show off their skills.

Astro Otters and Astro Otters Jr., a K-8 astronomy module-based education program, was one of the first opportunities for students to be part of a show's production. However, as the Proctors' visual style evolved and developed, they were concerned that the students could not produce polished, professional-level work without constant supervision and coaching.

The solution came in 2011, as the baseball season came to a close: the Ott Planetarium would divide production into two leagues. The students who were seasoned producers and animators would work in the major league, known as Feature Productions; while greener students would work in the minor league, known as Student Productions.

The goal of Feature Productions would be to deliver high quality research-driven science education products. The primary goal of the student productions would be to develop production and storytelling skills in the students, while providing scientifically accurate content. In this way, they would be able to focus on major and minor productions at the same time.

Productions from both "leagues" would be made available for licensing, with the proceeds allowing the planetarium to continue hiring (and paying) students for their work.

Over the years Ron and AmyJo Proctor have produced several full dome programs which include: *Cosmic Journey, The Nature of Science, Expanded View,* and *This is Our Sky.* For information about an Ott planetarium production or Blender workshops, visit the Ott planetarium web site at ottplanetarium.org.

Russian Planetarium Association

Weather conditions favored observing the Venus transit over the solar disk at about half of Russian planetariums.

The international conference Planetarium of the 21st Century was held 6-7 April at the Tereshkova Center for Culture and Education in Yaroslavl. The conference was dedicated to the first year of operation of the center, which includes a planetarium, museum, and observatory.

More than 100 conference attendees represented planetarians from Russia, Ukraine, Kazakhstan, and Germany, as well as honored guests such as Academician Anatoly M. Cherepashchuk, director of the Sternberg Astronomical Institute of the Moscow State University and RPA president; Sigmund Jahn, German pilot-cosmonaut; Thomas Kraupe, IPS president-elect; and Wilfried Lang, vice president of Carl Zeiss.

The major part of the conference schedule was devoted to the concept of the modern planetarium, including overviews of Russian and worldwide activities and the architecture and technological features of planetarium design and construction. Zeiss demonstrated the capabilities of modern projection equipment and some fulldome media.

The conference adopted a resolution on the development of the planetarium network in Russia in order to support educating a new intellectual generation capable of promoting progress of the country and mankind.

President Vladimir Putin visited the Big Moscow Planetarium on 12 April, the Day of Cosmonautics, together with Sergey Sobyanin, Mayor of Moscow; Dmitry Rogozin, the deputy prime minister of the Russian Federation; and Vladimir Popovkin, the head of ROSKOSMOS. They saw showpieces of the exhibition and the show *Under the Planetarium Stellar Heaven*.

President Putin presented awards to a few veteran cosmonauts. D. Rogozin emphasized the construction of planetariums in other large Russian cities. For details, visit mosplanetarium.livejournal.com/192312.html#cutid1.

The new digital fulldome equipment of the Planetarium of Cultural Center of the Russian Army was presented to public on 9 June before the official opening (20 June) of the Year of Germany in Russia 2012/2013, held under the motto "Germany and Russia: Building the Future Together." Hence, Carl Zeiss, in cooperation with Svensons-Design Company in Moscow, made the technological upgrade of this planetarium, where annual schools of planetarium lecturers are traditionally organized.

The presentation was attended by a number of Moscow scientists participating in the traditional Science Tribune lecture cycle, regular visitors, and pupils of the Nakhimov Ma-



RPA: Russian President Vladimir Putin (center) took part in a guided tour of the Big Moscow Planetarium with (from left) Moscow Mayor Sergei Sobyanin, Deputy Prime Minister Dmitry Rogozin, head of the Russian Federal Space Agency Vladimir Popovkin and Andrew Bordun, general director of JSC "MC" Development, the managing entity of the planetarium. Photo courtesy Moscow Planetarium.

rine School in St. Petersburg. Now the techniques for efficient use of the new capabilities will be developed.

The final run of Znatoki competition was held at Nizhny Novgorod Planetarium 3-4 April. Winners among the best fifth- and ninth/tenth-form schoolchildren teams from regional and city districts were determined. In total, over 124 such teams (over 1200 children and 167 teachers) from Nizhny Novgorod and nearby towns Bor, Dzerzhinsk, and Kstovo have participated in different stages of the contest since November, 2011.

Knowledge of natural sciences such as physics, astronomy, chemistry, and biology demonstrated by team members was monitored and evaluated by a strict and competent jury comprising of school teachers in physics and supervisors from local-district administrations for education, and educators from the Chair for Natural Sciences of the Nizhny Novgorod Institute For the Development of Education.

An extended program was offered to the public at Nizhny Novgorod Planetarium on 12 April, the International Day of Human Space Flight. Victor D. Blagov, head of Flight Control Department of the S.P. Korolev Rocket and Space Corporation Energia in Moscow, delivered a talk on the current status of the field and prospects of space exploration for veterans of the Baikonur launch site.

The guests participated in the jury of a blitz quiz delivered in the Big Dome and participate by teams from Nizny Novgorod lyceum No. 87 and school No. 70, Nizhny Novgorod Medical College, School No. 8 of Bor town, and retired people from the Friendship Club. Team members were to quickly answer quite difficult questions having only 1 minute to find each answer. As a result, the Friendship Club team proved to be the best.

A conference devoted to the International Day of Human Space Flight was held at the Novokuznetsk Planetarium on 12 April. A contest for secondary school children was organized within the framework of the conference.

The Pyatigorsk Planetarium at this Northern Caucasus city has been closed for 22 years. Mrs. Anna Platonova, a venturer, purchased the building for a café and decided to reopen the planetarium. She has got a 5-projector fulldome facility by the Planeta company in St. Petersburg as well as a few fulldome shows.

You are welcome to the new RPA website, www.apr.planetariums.ru.

Society of the German-Speaking Planetariums

The recently founded Society of German Speaking planetariums ("Gesellschaft Deutschsprachiger Planetarien," or GDP) held its first meeting 5-7 May in Wolfsburg. More





RPA: Left: One of teams in the blitz-quis in Nizhny Novgorod. Photo by Vadim V. Belov. Right: The Planetarium of the 21st century Conference in Yaroslavl. Photo by Alexandr A.Popov.

than 130 participants discussed planetarium affairs under the slogan "Sehen, Staunen, Lernen in 360 Grad" (View, Wonder, Learn in 360 degrees). Many vendors used the occasion to present their newest products or to contact the German planetarium community. In a series of invited and contributed talks actual developments have been presented.

To mention just some of the highlights: Markus Pössel explained the goals of the recently-opened House of Astronomy in Heidelberg, which works at the interface between science and the public, with a special focus on kindergarten and schools.

The two honorary members of the GDP, Prof. Dieter B. Herrmann and Prof. Hans-Ulrich Keller, gave their honorary lectures on Galileo Galilei and on Dark Energy, respectively. Prof. Matthias Steinmetz (AIP Potsdam) explained recent results of Milky Way research. This was an ideal prelude for a planned new cooperative project between European planetariums and the European Space Agency, ESA, highlighting the upcoming GAIA mission.

Prof. Agnès Acker (APLF) presented a show on water and its cosmic origin. This show is developed in collaboration with the European Southern Observatory, ESO, initiated on the occasion of ESO's 50th anniversary in

Additionally, many projects ranging from new shows to new educational and public relations ideas were presented. Thus, the whole community looks forward to the next annual meeting of GDP, to be held in spring 2013 in Klagenfurt, Austria.

From a formal point of view, the "Council of German Planetariums" (RDP), which was previously the official affiliate of the German speaking planetariums within IPS, decided to become a working group of GDP. The speaker of this working group is Eduard Thomas, Me-

diendom Kiel.

Immediately after the GDP meeting in Wolfsburg, the 6th FullDome Festival 2012 started in Jena. Details can be found in the article by Volkmar Schorcht, Planetarian 41 No. 2 (June 2012), p. 20.

Southeastern Planetarium Association

Plans are well underway for the 2013 SEPA conference. The dates are 25-29 June at the Bryan-Goodling Planetarium at the Museum of Science and History in Jacksonville, Florida. The conference will include a side trip to the Space Center at Cape Canaveral. Vendor set-

up will be available beginning on Sunday or Monday, 23 or 24 June.

The conference hotel is the Crowne Plaza within a short walk of the museum and planetarium. All conference activities, as well as a variety of downtown restaurants, parks, and shopping, are within walking distance or a short ferry ride from the hotel. Shuttle service from Jacksonville International airport (JAX) will be furnished, so forget about an expensive rental car.

More details will be furnished in a future edition of Planetarian. Further information regarding SEPA is available at sepadomes.org. ☆

Planetariums in the headlines

PANAJI, India: The National Council of Science Museums plans to set up three planetariums in the North East region, including Nagaland, Manipur and at Jorhat in Assam. The three will joint the six facilities already in the country and are expected to be completed next year.

KELSEYVILLE, California: The Lake County Office of Education has received a \$10,000 grant to install solar panels at the Taylor Observatory-Norton Planetarium in an effort to turn the facility into a science center for students across the county. The observatory and planetarium recently got a new \$25,000 state-of-the-art projector, with the Friends of the Taylor Observatory paying for the project's software.

BOZEMAN, Montana: The Museum of the Rockies has launched a "Building Better Skies"

\$1.5 million fundraising campaign to upgrade the Taylor Planetarium. Work is set to begin in September and the facility is set to reopen in the spring of 2013. The renovation will include a state-of-the-art digital star-show system, new seats and new planetarium shows.

LAFAYETTE, Louisiana: The stars shine a bit brighter at the Lafayette Science Museum's Planetarium thanks to recent renovations including new \$500,000 digital technology. The renovated planetarium reopened to visitors in May.

One change replaced the planetarium's 42-year-old equipment, including the "star machine" that projected constellations onto the overhead viewing dome. Gone, too, are the 35 to 60 projectors that created the night sky and other celestial programs. They have been replaced with a six-projector Sky-Skan system.



Mobile News

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Quarks to Clusters
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News from India:

I recently wrote to Arvind Paranjpye to gather some information about the use of mobile planetariums in India, and he gave me an interesting glimpse into his life experiences and the early use of STARLAB in India.

He shared, "I started as an amateur astronomer and joined the Indian Institute of Astrophysics in Bangalore, India and worked in the photographic laboratory (from 1981).

"I also worked on a site survey for a high altitude observatory in Himalayas, and later on searching for minor bodies in the solar system.

"In 1991 I joined Inter-University Centre for Astronomy and Astrophysics, (IUCAA) Pune, where I initially worked on developing low-cost instruments (astronomical photometers). In 2001 I was full time officer for the Outreach Programme of IUCAA.

"When I was in Bangalore, Alan Friedman had brought a portable planetarium to India (in 1980), which was then duplicated here (with permission from Learning Technologies, Inc.). We, as student volunteers, used it extensively.

"After I took charge of the Public Outreach Programme, we purchased one portable planetarium. I was the lone user of the planetarium and this is where we devised a novel use.

"We trained a group of amateur astronomers, NGOs and school teachers to use the planetarium and allowed them to use it on their own. This saw immediate success as the planetarium was in regular use. One NGO even took the planetarium to different cities.

"Not only we did not charge for the usage, but also carried out repair work for free. I think this has been a very successful venture.

"The committee that oversees the outreach allowed me to buy one more and it was agreed to overlook the normal wear and tear as long as the planetarium was being used. Subsequently, we bought two more inflatable domes. The projectors are working fine.

"And in December 2011, I moved to Mumbai to take charge of the Nehru Planetarium. As I am rather new to the planetarium I decided not to attend IPS Conference. This is a short story of my association with the planetarium. With regards, Arvind"

Contact information: Arvind Paranjpye

(paranjpye.arvind@gmail.com)

Audio files as science experiences

Loris Ramponi, from the city of Brescia in Italy, reports that he has a way of collecting student responses in a more effective way. Many times when teachers are asked to have students write their impressions of experiences they are too busy to make sure it happens.

Loris explained, "To record student voices is very easy and fast. Using a digital microphone, it is possible to record student impressions at the end of a projection or a workshop or other experiences with schools.

"Usually we ask to the students to prepare a final report or a drawing about the experience under the planetarium dome or at the end of a workshop, but only in a few cases we receive these materials. Therefore we started another way to collect the final impressions of the students.

"We invite students to write at the end of the projection, or during a workshop, a sentence that describes one of the topics of the projection or one of the activities of the workshop. When students are ready we check the texts with the collaborations of their teachers.

"Then students form a line and each one, at his turn, reads the sentence. All the sentences are recorded using the digital microphone. That activity requires just few minutes and we obtain an audio file usually in 3-5 minutes. This is a perfect way to collect the first impressions of the students!

"It is very fast to share this file and to send it by mail to the teacher. Then the teacher can send the file to parents or the students. Some-

times we propose the listening of these files during activities for families in the science museum; they like to follow a public initiative where the experience in the classroom will be described.

"In this case the public can listen to the sound (student voices) and see an exhibition of photos, instruments or drawings devoted to the contents of the workshop.

"We imagine that we can also organize similar experiences in schools of different countries and share these audio files between students that learn a foreign language.

"We also use these audio files in our web pages. Students and parents are invited to visit our web pages and to listen or copy the file; go to www.astrofilibresciani.it/Attivita/Bambini raccontano.htm."

Contact Information: Loris Ramponi (megrez58@gmail.com or zani@serafinozani.it).

An American Planetarium Operator in Italy, 2012

This year's winner of the contest for a trip to Italy was Stephen R. McNeil from Brigham Young University in Idaho. His final report certainly makes it clear that he had a excellent experience (see following article).

If you would like to have an Italian experience of your own, start planning now and pay attention to the yearly deadlines. This opportunity has been offered since 1995 and we are grateful to all the planetarians in Italy who enable us to continue to provide such a life altering experience to some very gifted educators.

Deadlines

31 August. Deadline for the applicants of "An Experience in Italy for a French-Speaking Planetarium Operator," in collaboration with APLF.

15 September. Deadline for the applicants of "An Experience in Italy for an American Planetarium Operator," in collaboration with IPS Portable Planetarium Committee.

30 September. Deadline for the applicants of "An Experience in Italy for a British Planetarium Operator," in collaboration with BAP.

Planetarians are encouraged to apply many times...if at first you don't succeed, try, and try again! You can always ask for comments from us about how to make your application stronger.

Send your application to: Loris Ramponi, Osservatorio Serafino Zani, Via Bosca 24, 25066 Lumezzane, Italy; info@serafinozani. it or megrez58@gmail.com. ☆



"A must-read for anyone involved in astronomy outreach..." - Glenn Chaple, Astronomy Magazine

Everyone's Universe (Second Edition) by Noreen Grice

www.YouCanDoAstronomy.com

54 Planetarian September 2012



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American Planetarian in Italy:

Sharing Navaho skies and iClickers

Stephen R. McNeil Planetarium Director Brigham Young University-Idaho Rexburg, Idaho 83460

Anticipation and Preparation

When selected as the American Planetarium Operator in Italy for 2012, I was both immediately excited and slightly overwhelmed with the prospects of getting ready for this wonderful opportunity. Susan Button was the first to call me and congratulate me. Susan suggested I contact Loris Ramponi, Simonetta Ercoli, and Luciano Bittesini for instructions and itineraries, and also contact the previous winners, Michele Wistisen and Joseph Ciotti, to get details on what to expect on this journey. Both Michelle and Joseph expressed what a great experience they had and assured me I would be well taken care of in Italy, and they were right!

I soon started to buy Italian language software and looked at Google Earth to see exactly where I would be going. I knew what four cities my wife, Rosemary, and I would be traveling to: Perugia, Brembate, Brescia, and Gorizia. This allowed us to plan our arrival and departure cities. For us it was better to arrive in Rome and leave from Venice, a total of 16 days of travel.

Although I knew my hosts could speak English and all my lessons would be in English, it is a good idea to learn "travel" language since there are times when riding trains, shopping, or just trying to get around, it is nice to know enough to at least attempt some local communication. We found that with enough hand gestures and pointing to tickets, maps, or money that we could get our point across.

Lesson Design

I had learned from my hosts that the lessons would be an hour long, with a short introductory PowerPoint presentation on myself, and then the main lesson with an activity. I chose to teach about the Navajo's view of the universe and their main constellations. My lesson drew mostly from the book *Sharing the Skies, Navajo Astronomy* by Nancy C. Maryboy and David Begay.

I created a presentation that first introduced the Navajo nation, history, and cultural information. I then went into more detail about the Navajo vision of our universe, the story of the coyote and the stars, their eight main constellations, and how they used the constellations as a calendar. We also compared the Navajo constellations to their Greek mythological counterparts.

After the lesson, I introduced the students to "iClickers" as my activity. Most had not seen this type of classroom response system, and I found the students to be very excited to use the clickers once they understood the idea.

As with many students, I initially found that if I vocally asked them if there were any questions, they would stare at me and maybe one brave person would ask a simple question. So, I was hoping with clickers I could get the students more engaged with not just me but with each other, and it worked!

I asked about six questions, using PowerPoint, and explained how I use clickers in the classroom, why I like to use them, and why they can be such a great assessment tool. The students became very engaged with the activity and each other, with lots of talking and laughing. If



The author at Torre De Sole in Brembate, Italy. Photo courtesy of Rosemary McNeil

a strong majority did not get the question correct, I would have them engage in peer-to-peer instruction to help teach one another the correct response.

Most of the teachers became very interested in how this type of technology works and were very happy see their students using peerto-peer instruction.

After the activity, we would go inside the planetarium and look at the Navajo constellations and their Greek counterparts. As we moved from a winter sky to a summer sky, I would also point out some of the zodiac constellations. I found this took almost an hour, so there was no time to do any kinesthetic astronomy, which was a backup activity I had prepared.

Learning the country

Given the itinerary, we had some flexibility and arrived early to do a little afternoon site-seeing in Rome before leaving the next day to Perugia. We met Simonetta at the train station in Perugia and our real journey began. Simonetta, who is very energetically involved with the Ignazio Danti Planetarium, introduced us to some of her planetarium team at a local restaurant that evening; Luca di Bitonto, Abdelhalim



Some of the Ignazio Danti Planetarium Team: From left to right, Abdelhalim El Hilali, Stephen McNeil, Luca di Bitonto, Silvia Mazzoni, Simonetta Ercoli, Marco Bagaglia, and Heather Smith. Photo by Rosemary McNeil

El Hilali, Silvia Mazzoni, and Walter Risolo.

The next morning another team member, Heather Smith, picked us up early in the morning to go to the planetarium, which is part of the Alessandro Volta Technical School. It is important to arrive early the first day to address any technical issues. In this case, the projector connection did not work, but Marco Bagaglia got us up and running in no time.

The students were very patient and courteous, and were very attentive as I talked about Navajo astronomy. They became very excited and involved when using the clickers, which was a nice preparatory activity before starting the planetarium portion of the lesson. With Simonetta controlling the Gambato projector, I went over the constellations covered in my lesson.

After my three lessons and lunch at the school, Simonetta drove us to Assisi, where we visited the Basilica of San Francesco d'Assisi. We returned later that evening to the planetarium for a small conference on the supernova discovered by an Italian team a few months earlier at Porziano d'Assisi, located on a nearby mountain.

The next day went very smoothly, and after the three lessons we started a walking tour of Perugia with Giuseppe Bambini, a local guide who spent a lot of time explaining the Etruscan, Roman, Medieval, and Renaissance history of Perugia. Perugia is a fascinating city with ancient aqueducts, the Fontana Maggiore, Etruscan Arches, Rocca Paolina, Cathedral of San Lorenzo, and the Basilica of San Domenico. We even stopped by a chocolate shop to buy the famous Baci of Perugia. That night we had a marvelous dinner at Silvia's house, where her husband and family treated us to a traditional Italian dinner.

We left early Saturday morning for a long drive to Brembate di Sopra, Bergamo, with Simonetta and Walter. We were traveling to the annual meeting of the Association of Italian Planetaria (Associazione dei Planetari Italiani).

The meeting was held at La Torre del Sole, which has a nice solar telescope located at the top of a high tower. In the evening we were treated to several shows as part of their fulldome festival, and in the morning

I gave a lesson on the use of clickers in the classroom and peer-to-peer instruction.

Simonetta gave a presentation on her project, PlanItalia, an idea to connect Italian planetarium in a giant geographic model of the solar system, and Loris talked on using Skype as a way to connect planetariums world-wide. After a wonderful lunch provided by Glenn Smith of Sky-Skan, we left Simonetta and Walter, and traveled with Loris to Brescia and started our next adventure.

Lessons move to Brescia

The next day in Brescia, Loris drove us to the Serafino Zani Astronomical Observatory located on a picturesque mountainside near Lu-

Section of the state of the sta





Top: Explaining how clickers work and the idea of peer-topeer instruction to the United World College of the Adriatic. Photo by Rosemary McNeil. Center: Portable dome inside the school library in Brescia. Photo courtesy of Loris Ramponi. Bottom: Students from the Liceo Scientifico Annibale Calini High School, Brescia, using clickers for the first time. Photo courtesy of Stephen McNeil

mezzane. It is a wonderful observatory which hosts public events and is graciously supported by the Zani family. Afterwards we traveled to the castle of Brescia, Piazza della Loggia, and Duomo Nuovo for the rest of the day.

The next morning Loris took the inflatable STARLAB dome and me to Liceo Scientifico Annibale Calini High School, and we set up for three lessons that day. Loris recorded the student impressions about the lessons, and strongly encouraged the students to get involved in astronomy. Loris is a highly motivated person and is strongly involved in collaboration efforts with other planetariums.

After the lessons, Andrea Soffiantini drove my wife and me to Lumezzane to met with the vice mayor, Facchinetti Lucio, and the director of the Zani Observatory, Tarcisio Zani, as part of a press conference. There we exchanged gifts with the vice mayor. I gave a book on the history of Rexburg and BYU-Idaho chocolate and in return I received a book on the history of Lumezzane and a lovely hand-crafted magnifying glass.

The vice mayor gave a speech, I then gave a short presentation, and afterwards I was asked questions about my visit by both the local newspaper and TV station. The next morning provided the opportunity to teach four lessons and then an afternoon trip to Milan to see the aweinspiring Milan Cathedral with its Gothic façade at the Piazza del Duomo. After four more lessons the next day, we purchased our tickets for Gorizia and started on the last leg of our journey.

Exploring Gorizia

After a scenic four-hour train ride, we arrived in Gorizia with Luciano waiting patiently for us. He warmly greeted us and then drove us with his wife, Emanuela, to stay

at his mother's house, who had recently passed away. In the morning Luciano gave us a tour of his wonderful facilities, the Circolo Culturale Astronomico di Farra d'Isonzo (CCAF), which houses some nice telescopes, a meeting room and control room, and a planetarium next to the main complex.

Luciano and his team are involved in scientific research, including astrometry of minor planets, along with running the planetarium. After a morning lesson to a high school class of future boat captains, we drove to the country of Slovenia and climbed a lookout tower, which gave a stunning view of the countryside. We stopped by a Franciscan Monastery in Nova Gorica, which is the final resting place of the last members of the Bourbons, the French royal family. At night I taught





Left: CCAF Planetarium and members Franco Bressan, Luca Degano, and Luciano Bittesini with a class of visiting students from Liceo Scientifico Michelangelo Buonarroti High School. Photo courtesy of Enrico Pettarin. Rosemary McNeil, Andrea Soffiantini, Stephen McNeil, and the vice-mayor of Lumezzane, Facchinetti Lucio. Photo courtesy of Wladimiro Marinello

a lesson to students from the United World College with students from all over the world. The day was highlighted by wonderful meals cooked by Emanuela at her house.

The next day was Saturday, so we spent the whole day traveling to interesting sites. Our tour guide was a good friend of Luciano named Franco Bressan. The first place he took us was to Aiello del Friuli, or the City of Sundials.

He mentioned that he and a friend started the sundials many years ago when someone asked him to build a nice sundial. Many homes have the sundials on the side of their house and are artistically decorated. There is even a museum that has models on how sundials work, including the relationship between the sun, latitude, and inclination of the sundial.

Our next stop was the renaissance fortress city of Palmanova, whose high walls are shaped like a nine-pointed star. It is a beautiful city with the streets radiating outward from the central Piazza Grande. Then onto Grado, a charming city by the sea, which has delicious seafood cafes, and lastly Aquileia, the ancient Roman port city. After a nice tour of the Aquileia museum, we climbed to the top of the tower next to the Basilica Di Aquileia, which overlooks the whole city.

The next day was more relaxed, in which we traveled for a leisurely walk through the city of Trieste and saw the Piazza Unità d'Italia, a Roman amphitheatre, and some World War II gun placements carved into the side of a cliff.

On Monday, after a little shopping and a late afternoon lesson, we visited the World War I battlefield and bunkers at Monte San Michele, where thousands of soldiers perished. We finished off the day having dinner with the staff of the observatory at a local pizzeria. After two morning lessons and a last lunch with Luciano and Emanuela, we said our goodbyes and headed on a two-hour train

trip to Venice for a morning flight back home. **Reflections on an experience**

I can only say what a fantastic experience it was to be able to travel around Italy and met so many great people. I felt renewed, not only from teaching some great students in Italy, but also being able to sit down and talk and eat with our caring hosts and their friends. Italians are a lot like Brazilians (I lived in Brazil for two years), in that they are a very warm

and friendly people and in this case, they definitely went out of their way to make our short stay a very memorable one.

My wife and I are now motivated to learn the lovely Italian language and return to Italy once again to visit our new friends. I strongly encourage anyone interested in this program to apply and be a part of this opportunity for international collaboration.

Reaching for the stars in Afghanistan

Astronomers Without Borders, working with the Astronomical Association of Afghanistant, has launched "Reach for the Stars," an educational, humanitarian project that will establish Afghanistan's first astronomy curriculum for young children set in the context of Afghan culture, Islamic astronomical heritage and modern science.

The project is being managed by Christopher Phillips, with additional education advice and documentary support from Imperative Space in the UK. Reach for the Stars-Afghanistan's team includes science communicators, planetarium professionals, humanitarian activists, Afghan government officials, Afghan nationals and international media professionals.

Once established in Kabul, the program will expand to the rest of the country, and then beyond across Asia, the Middle East and Africa. A documentary film will be produced to tell the story of this project to a broader audience..

Reach for the Stars-Afghanistan has several components, including the free distribution of the Pashto language *Little Book of Stars*, the distribution of basic educational supplies (pencils, pens, paper and astronomy educational material), and the development of a basic astronomy curriculum within the cultural context of Islam.



Schoolgirls using eclipse shades. Image courtesy Astronomers Without Borders

Cultural Exchange Program:

Kite flying is an important part of Afghan culture and was also one of the first things banned by the Taliban when they came to power. Kite flying is also an important part of native Hawaiian culture. Reach for the Stars-Afghanistan will deliver hand made kites constructed by Hawaiian schoolchildren on the Big Island of Hawai'i to their counterparts in schools in Kabul and beyond. The shared cultural values and ideals will connect the children of these two very different cultures, creating a sense of freedom for the Afghan children in their otherwise isolated environment.

For more information, go to www.astronomerswithoutborders.org/projects/reach-forthe-stars-afghanistan.html.



Book Reviews

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Cosmic Numbers: The Numbers That Define Our Universe

James D. Stein, Basic Books, New York; 2011, available in hardback and e-book

Reviewed by Bruce L. Dietrich, Wyomissing, Pennsylvania, USA

Successful academics cultivate an authoritative yet conversational voice that bridges the gap between themselves and their readers. That task is difficult when the subject matter is mathematics. For the aware, numbers are as utilitarian as they are ubiquitous. We love them all, despite that many are negative and others certifiably irrational. While the notion that numbers define our universe is not nov-

el, it is indeed grand. This little tome provides the history of some very useful numbers and their derivations.

Dr. James D. Stein received his BA from Yale University and PhD from the University of California at Berkeley. He is a professor of mathematics at California State University at Long Beach. He has chosen 13 numbers of cosmic utility; some obvious choices and others not so.

The Gravitational Constant, the Speed of Light, the Plank Constant, the Chandrasekhar Limit, Absolute Zero, the Schwarzschild Radius and the Hubble Constant are in the first group. The remaining half dozen

may be of greater interest to closet chemists, philosophers and meta-physicians. However, all are important, have interesting histories, and their discoveries have had profound influence on our scientific understanding.

After all, Pythagoras coined the word kosmos to encapsulate everything in the universe and to denote order and beauty of the whole.

There is a profound sense of humor and humility throughout the 13 individual essays which also extends through the 11 pages of end notes. Dr. Stein's autobiographical warp supports his historical weft; although, every mathematician should recognize that the word "data" is plural. For those of us whose careers spanned the days of the Hubble "variable," the knowledge of the URL and

date when each web link was accessed is great. Perhaps, if there is a second edition of *Cosmic Numbers*, even those with a 137 tee shirt can learn what 42 really means.

Pluto: Sentinel of the Outer Solar System

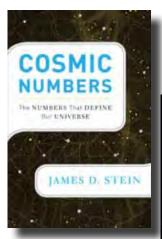
Barrie W. Jones, Cambridge University Press, New York, 2010 (reprinted 2011)

Reviewed by Tom Callen, eyemmersive ab, Vaxholm, Sweden

Provided that nothing tremendously radical is discovered about Pluto prior to the New Horizons spacecraft arriving there on 14 July 2015, this book should cover just about all

one needs to know concerning this diminutive dwarf of the sun's family. My personal interest in reading this was

EABRIE W. JONES



as a sort of "postplanet /dwarf planet hubbub" overview of everything Pluto in anticipation of

the results we expect to get in less than three years.

Author Barrie W. Jones' chatty and personable—even breezy—writing style reflects his background as a highly regarded university lecturer as well as astronomy popularizer in the United Kingdom. Quite thorough in his coverage, there were more than a few times when I found myself wondering, "What about...," only to have it turn up in an almost prescient fashion.

Rather than dive directly into the sub-

ject, Jones provides a background perspective about the solar system as well as the discovery of the modern planets—Uranus, Neptune and Pluto—spread over two entire chapters. Even though you may already know enough about both of these areas, these chapters are still worth reading as there are little "nuggets" scattered throughout. Particularly nice was the section on how the physical properties of the planets, such as density, are determined, as well as their size and composition.

Following the discovery of Neptune in 1846 and after its orbit had been worked out, it was noted that the planet didn't exactly move as predicted. There was a search on for yet another undiscovered planet—or planets!—and Jones covers these searches by a variety of international astronomers as well.

Another chapter is devoted to trans-Neptunian objects other than Pluto, and Jones prefers to refer to the belt where they are found by the less popular Edgeworth-Kuiper Belt, since the Anglo-Irish polymath, Kenneth Edgeworth, had also suggested that there were many small bodies beyond Neptune that had not formed into planets and may be a source of comets. One of my college professors was a student of Gerard P. Kuiper's, so I have always favored his pronunciation—"coy-PURR" not "KAI-per"—since he personally knew the man.

Other chapters include what we currently know about the physical attributes of Pluto and its three moons, Charon, Nix and Hydra. While still at the then Albert Einstein Spacearium (later Sky Theater then Planetarium) at

the Smithsonian's National Air and Space Museum I produced a show about our then understanding of the post-Voyager solar system, which included a scene with Pluto and its then only known moon, Charon.

The late Bob Harrington of the U.S. Naval Observatory, the person who had worked out Charon's orbit after it was discovered by fellow U.S.N.O. astronomer James Christy, provided me with some information about the planet and its satellite so that I could accurately create the scene in the show.

Astronomy artist Ron Miller, formerly of the Spacearium staff, provided the 360° panorama of Pluto's surface and a view of Charon with a thin crescent to hang against the starfield. A bright GOW (i.e.

grain-of-wheat) light bulb provided the sun, with Charon positioned so that its phase was correct. Wisps of Pluto's tenuous perihelion atmosphere were provided by several baby food jar projectors.

The night that *Probe: The Planetary Odyssey* premiered, I was sitting two rows behind Bob. When the Pluto scene faded up I saw him raise up one closed fist as he eyeballed the angular size of Charon.

During the reception afterward I had the



chance to ask him what he thought about the scene he had helped with. "Yeah, it looked pretty good," he replied in his Virginia drawl, which to me was as good a validation as I could hope for.

As one might expect, a whole chapter is devoted to the question of whether or not Pluto is a full-fledged planet or a dwarf and it is couched as an example of changing classification schemes in science as we better understand things.

Info boxes on the pages provide additional material and the author cues the reader at the start of each as to whether they are relevant and who might be interested in reading them. They range from "optional" to "suggested for everyone" to "those who have a deeper interest" to "those who are more comfortable with math," such as algebra.

The book includes a 5-page glossary specific to the book so that it is nicely focused, rather than including topics that are too far off the subject.

If you are looking to follow up your reading on Pluto, there is an extensive bibliography broken up into "Key Papers in the Scientific Literature," "Books," "Magazines," and "Internet Links." The key papers section is particularly interesting as it that includes historical references of primary source material; for example, "Account of a Comet," By Mr. Herschel, FRS; Communicated by Dr. Watson, Jun. of Bath, FRS (1781) W Herschel, Philosophical Transactions of the Royal Society of London 71 492-501," which is, of course, the account of the discovery of Uranus. Herschel initially thought that he had discovered a comet, but his subsequent observations proved it to be otherwise and overnight the physical dimensions of the solar system doubled.

If you are looking for a good general reference about Pluto, as either a personal reference or to keep handy for answering public queries about this denizen of the outer solar system, you can't go wrong with this book (and I'm hoping that there will be a post-New Horizon follow-up).

The Power of Stars: How Celestial Observations Have Shaped Civilization

Bryan E. Penprase, Springer Science+Business Media, New York, 2011

Reviewed by Woodrow W. Grizzle III, Elizabeth City State University Planetarium, Elizabeth City, North Carolina, USA.

The Power of Stars is an enjoyable, if not perfectly smooth, jaunt through humankind's history and its relationship to the heavens. Penprase leaves few stones unturned as he examines the progression of our understanding

of all things astronomical.

The Power of Stars is a textbook. This is not a book for those without pre-existing interest in astronomy. It does not, however, require extensive pre-existing astronomical knowledge. This is not light beach reading. I think of this book as being much like a pickle. Those who love astronomy will be quite enthusiastic about it, while those who do not will find it repugnant and boring.

The book is well laid-out and can be easily referenced, a fact that makes it perfect research material when writing a script. Not surprisingly for a textbook, I found the book best read in small pieces, and I skipped around while reading it, choosing to peruse its chapters in order non-sequential.

Penprase covers much ground. General sky knowledge, planets, constellations, creation stories and cosmologies, calendars, and much more appear between the cover. Where the book shines is in how it presents everything with a global perspective,



casting off the Western blinders worn by many prior works. This is a refreshing and agreeable trend found in many works these days, as is the growing prolificacy of the term humankind.

A Question

and Answer •

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Here, you will discover knowledge from Hellas and Rome alongside that of Norse, Chinese, African, Mayan, Incan, and American Indian peoples. As a script writer, I was continually excited by each section of the book, and ideas popped relentlessly into my mind while reading it.

The book is relatively short (for a textbook) at less than 350 pages, but it is nonetheless a weighty tome, as its pages contain vast knowledge densely packed. It is one of those books that every planetarian should have because it references so much information in a well-organized and easily accessible fashion.

The book's one shortcoming in its current form is that it should have been more carefully edited. Typos are rife. Hopefully that will be rectified in a future edition. Still, *The Power of Stars* is more than worthy of a place in my library, and I know I will be going back to it

again and again.

A Question and Answer Guide to Astronomy

Pierre-Yves Bely, Carol Christian and Jean-Rene Roy, Cambridge University Press, 2010

Reviewed by Warren Hart, Mayborn Planetarium & Space Theater, Central Texas College, Killeen, Texas, USA

It was a pleasant serendipitous moment when this book came to our planetarium office for a *Planetarian* book review. The staff at our planetarium is on a constant lookout for resources that will provide answers to questions our patrons ask during our presentations.

We also look for those fun, but factual, "wow" and "gee whiz" trivia facts and statements. Let me be clear before we get into more detail in this review: if you are looking for a handy resource book that will answer the overwhelming majority of your patrons' questions and if you want lots and lots and lots more so-called 'trivia stuff,' then this is one book you want at hand.

Now let me back up my effusive assertion.

The book is organized into 10 sections that include a total of 250 questions and answers. It's all here:

stars, solar system, the Earth and moon, celestial phenomena, everything from "Life in the Universe" to "History of Astronomy" and "Telescopes."

The last section is followed by a helpful page titled "Unit conversion and basic physical and astronomical measurements" that lists unit conversions, physical constants and astronomical parameters. A reference list and bibliography that includes books and Internet web sites follow, as does the index.

In the preface, the authors state their intent and planned design for the book. Let me close with this quote: "Our intent in writing this book has been to offer to the general reader a summary of current astronomical knowledge, generously illustrated and provided with rigorous but simple explanations, while avoiding mystifying professional jargon.

"The 250 'windows' on astronomy in this book do not exhaust the topic, but we hope that they will pique the curiosity of our readers and stimulate them to explore further, by navigating on the World Wide Web or by consulting some of the many fine publications on astronomy, such as those suggested at the end of this book. Most important of all, we hope that they will find renewed wonder in the night sky!"

This book is well worth having in your planetarium and/or personal library. ☆

Sig Wieser, early IPS President Sig Wieser of Calgary, Alberta, Canada, president of the International Planetarium Society from 1973-74, passed away at home recently after suf-

fering several illnesses. He was 79 years old.



Sig Wieser early in IPS career



Sig Wieser, recent photo

Sig became president of the still fledgling IPS when he was director of the Calgary Centennial Planetarium (later rebranded as the Alberta Science Centre).

Born in Linz, Austria, Sig studied electrical engineering there before emigrating to Canada in the late 1950s, where he picked up studies and graduated from the University of Calgary.

He joined the City of Calgary as a senior manager and, in 1966, was appointed the cultural executive in charge of the new planetarium project. During his 25-year tenure as the project director, he attended many planetarium and science centre conferences throughout North America and overseas. In 1986, he was elected a Fellow of the IPS, and was granted the title of executive director emeritus of the Alberta Science Centre.

Sig had a lifelong interest in the performing arts (both managing and performing!) and was founding director of a major theatre company. He served on the boards of a wide variety of artistic and cultural agencies.

His other lifelong passion was aviation (he founded the Aerospace Museum of Calgary) and the following partial list of affiliations will give some idea of the breadth and depth of his interests:

Calgary Flying Club, Calgary Philharmonic Society Chorus, Calgary Region Arts Foundation, Calgary Zoological Society, Canadian Museums Association, International Brotherhood of Magicians, International Congress of Major Planetarium Executives, International Planetarium Society, Linzer Schwimm Club, Modell Eisenbahn Club, Royal Canadian Life Saving Society and the Southern Alberta Opera Association.

Sig leaves his wife Joan Xauen Quick and two sons. A celebration of his life and work will be held at a future date.

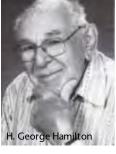
Contributed by Ian C. McLennan

George Hamilton, former Fels director

H. George Hamilton, former director of the Fels Planetariums at the Franklin Institute in Philadelphia, Pennsylvania, passed away on July 11, 2012 at the age of 87.

George graduated from Bordentown High School in 1943 and Trenton State College in 1948. He proudly served in the Merchant Marines during World Ward II.

He was director of the Fels Planetarium from 1970-90, writing and producing 40 planetarium shows. He also served as vice president and was instrumental in bringing an OMNIMAX theater to



Philadelphia. He retired in 1990 as director emeritus. He was also a teacher for 34 years, including at the William MacFarland High School in Bordentown, Cherry Hill High School, Trenton State College, and Community College of Philadelphia, teaching astronomy and physics. While at Trenton State College, he installed and operated the college's first planetarium. He was active in and received Fellow honors from both the Middle Atlantic Planetarium Society and the International Planetarium Society.

Beloved husband for 38 years of Carleen and predeceased by his first wife, Marie, he also is survived by six children, 12 grandchildren, and three greatgrandchildren.

Waxing New

Taking off on a journey

Filled with 600 images and analysis of the latest discoveries in space science is A Journey: Science Essays on the Leading

Edge of Discovery, written by Linda Morabito Meyer, David Meyer, and Lynda Viken.

The book, available among other places at Amazon.com, has already been reviewed favorably by Neil deGrasse Tyson and Bill Hartmann.

Linda Morabito Meyer is the astronomer who discovered the active volcanism on Jupiter's moon Io on March 9, 1979 at NASA's Jet Propulsion Laboratory, while working as a senior



engineer on the Voyager mission to Jupiter.

David Meyer, after a 21-year career in the US Air Force, runs the Luz Observatory in Apple Valley, California, as well as the planetarium at Victor Valley College, where he is an associate professor of astronomy.

Hight-flying planetarian

Dan Ruby of Fleischmann Planetarium and Science Center in Reno, Nevada, was mong 26 educators from the United States selected for research flights aboard SOFIA, NASA's Stratospheric Observatory for Infrared Astronomy.

As participants in the Airborne Astronomy Ambassadors program, the educators partner with profession-

al astronomers using SOFIA for scientific observations in 2012 and 2013. SOFIA is a modified Boeing 747SP jetliner equipped with a 100-inch (2.5-meter) telescope.

Answer to Triad

New Dark Sky Reserves

The International Dark-Sky Association has announced the designation of two new Dark Sky Reserves. They are:

Namibia's NamibRand Nature Reserve, one of Africa's largest private nature reserves, has expanded its conservation role to include preserving the star-filled nighttime skies that shine above its dunes and mountains.

The Aoraki Mackenzie International Dark Sky Reserve is comprised of the Aoraki/Mt. Cook National Park and the Mackenzie Basin, is the fourth such dark sky reserve in the world. Its more than 1,600 square miles makes it the largest in the world.

The International Dark-Sky Association's night sky conservation efforts include working with groups to form International Dark Sky Reserves (IDSR) and other dark sky places.

Other Dark Sky Reserves are Exmoor National Park in Devon and Somerset Counties. England, and The Reserve at Mont-Mégantic, Quebec, Canada.

Categories 1

NAMES

MOON

CHARON

DEIMOS

DESDEMONA ENCELADUS

EUROPA

JULIET

NEREID

OBERON

PHOBOS PHOEBE

TETHYS

TRITON



Planetarians' Calendar of Events

2012

- 12-15 September. Digistar Users Group Conference, Evans & Sutherland, Salt Lake City, Utah, USA. www.digistardomes. org/2012 Conference.html
- 13-16 September. Mae Jemison, astronaut, invites everyone to attend the 100 Year Starship 2012 Public Symposium, Houston, Texas, USA. 100yss.org
- 15 September. Deadline for the applicants of "A Week in Italy for an American Planetarium Operator", in collaboration with IPS Portable Planetarium Committee. http://www.astrofilibresciani.it/Planetari/Week in Italy/Week Italy.htm



18-20 September. Giant Screen Cinema Association (GSCA), International Conference and Trade Show, Esquire IMAX Theatre, Sacramento, California, USA. September 21. Dome Day, The Tech Museum, San Jose, California, USA. www.giantscreencinema.com

- 21 September. Dome Day, The Tech Museum, San Jose, California, USA. www.giantscreencinema.com
- 2-5 October. Workshop in Immersive Cinema (WIC), Espinho, Portugal. Organization Navegar Foundation. Contact: Lina Canas, lina@multimeios.pt
- 5-7 October. Immersive Film Festival (IFF), Espinho, Portugal. Organization Navegar Foundation. Contact: Lina Canas, lina@multimeios.pt
- 3-16 October. Association of Science-Technology Centers (ASTC) Annual Conference, COSI (Center of Science and Industry), Columbus, Ohio. www.astc.org
- 24-27 October. Great Lakes Planetarium Association (GLPA), annual conference, North Hills High School Planetarium, Pittsburgh, Pennsylvania, USA. Contact: Susan Batson. www.gl-paweb.org



16-17 November. FULLDOME UK, The National Space Centre, Leicester, United Kingdom. Contact: info@fulldome.org.uk, www.fulldome.org.uk

2013



7-9 February. Imiloa Fulldome Film Festival (IFFF2013), Imiloa Astronomy Center, Hilo, Hawaii, USA. The festival will feature 25-30 full-length fulldome programs in 2D and stereoscopic 3D. www.imiloahawaii. org/168/IFFF2013

13-17 February. IMERSA Summit 2013. Denver Museum of Nature & Science, Colorado, USA. www.imersa.org

- 17 March. International Day of Planetaria. www.dayofplanetaria.org
- 13-14 April. Italian Association of Planetaria (PLANIT), XXVIII National Conference, Italy, and 3rd FullDome Italian Festival. During the conference Skype session for planetarians from other countries. www.planetaritaliani.it. Contact: osservatorio@serafinozani.it
- May. Council of German Planetariums 2013, Annual meeting of German speaking planetaria.
- 3-5 May. IFF'13, Immersive Film Festival, Third edition, Centro

- Multimeios, Espinho, Portugal. Navegar Foundation. iff.multimeios.pt
- 9-12 May. Association of French Speaking Planetariums (APLF), Yearly Meeting, St. Michel l'Observatoire, France. www.aplfplanetariums.org
- 25-29 June. Southeastern Planetarium Association (SEPA), Annual conference, Jacksonville, Florida, USA. www.sepadomes.org
- 17-20 July. Middle Atlantic Planetarium Society (MAPS), Annual Conference. Ausherman Planetarium, Earth and Space Science Laboratory, Frederick County Public Schools in Frederick, Maryland, USA.



- 6-8 September. Nordic Planetarium Association Biennial Conference, AHHAA Science Center, Tartu, Estonia. Conference language English. Contact: Margus Aru, margus.aru@ahhaa.ee
- 16-19 October. Great Lakes Planetarium Association (GLPA), Annual conference, Peoria Riverfront Museum, Peoria, Illinois, USA. Contact: sschafer@lakeview-museum.org www.glpaweb.org
- 19-22 October. Association of Science-Technology Centers (ASTC) Annual Conference, Explora, NM Museum of Natural History & Science, National Museum of Nuclear Science & History, Albuquerque, New Mexico, USA. www.astc.org

2014

- 16-20 March. Science Center World Summit, Technopolis, Mechelen and Brussels, Belgium. Partners: Technopolis, Flemish science center, Mechelen, Royal Belgian Institute of Natural Sciences, Brussels. www.technopolis.be
- 31 March. Deadline for application for scholarship funds (IPS support, Beijing Conference attendance by individuals). www.ips-planetarium.org
- 1st 5 May. Three languages-the same sky, Symposium of Planetariums 2014 Lucerne, Switzerland (in planning).
- June. International Planetarium Society Council Meeting, Beijing, China.
- 23-27 June. 22nd International Planetarium Society Conference, Beijing Planetarium, China. www.ips2014.org, contact Dr. Zhu Jin, jinzhu@bjp.org.cn
- 18-21 October. Association of Science-Technology Centers (ASTC) Annual Conference, North Carolina Museum of Natural Sciences, Raleigh, North Carolina, USA. www.astc.org

For corrections and new information for the Calendar of Events, please send a message to Loris Ramponi at osservatorio@ serafinozani.it.

More details about several of these upcoming events are included in the International News column and elsewhere in the *Planetarian*.

The most up-to-date information also is available online at the International Planetarian's Calendar of Events at www.ips-planetarium.org/events/conferences.html



A COSMIC STORY

How did life on Earth begin? This tantalizing question forms the basis of the Morrison Planetarium's most recent production, *Life: A Cosmic Story.* Narrated by Academy Award winner Jodie Foster, the show launches the audience on a journey through time, witnessing key events since the Big Bang that set the stage for life. Visualizations drive the narrative—from turbulent, star- and planet-forming giant molecular clouds to the microscopic activity of photosynthesis—in what the New York Times calls "a visually spectacular demonstration." Named the 2011 Jackson Hole Wildlife Film Festival's Best Fulldome Program.



IMMERSE + ENGAGE

Fulldome science storytelling from the CALIFORNIA ACADEMY OF SCIENCES



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For more information contact: Maral Papakhian 415 379 5127 domeshows@calacademy.org

For full-length previews of both shows visit: www.calacademy.org/domeshows username "dOmeshOws"* password "mOrrisOn"*

*use number "0" instead of letter "O."

CALIFORNIA ACADEMY OF SCIENCES

Golden Gate Park San Francisco



Last Light

April S. Whitt Fernbank Science Center 156 Heaton Park Drive NE Atlanta, Georgia 30307 USA april.whitt@fernbank.edu

It seems that the American television comedy program *The Big Bang Theory* is quite popular in the U.S. and something of a cult phenomenon among planetarians.

Among his other statements, award-winning actor Jim Parson's character Dr. Sheldon Cooper proclaims that, "The best number is 73. Why? Seventy-three is the 21st prime number. Its mirror (37) is the 12th and its mirror (21) is the product of multiplying 7 and 3. In binary, 73 is a palindrome, 1001001, which backwards is 1001001."

Alert reader Bruce Dietrich found another "best number" and shared a section of Leon Lederman's 1993 book *The God Particle,* in which the author says that

It was Richard Feynman, in fact, who suggested that all physicists put sign up in their offices or homes to remind them of how much we don't know. The sign could say simply this: 137. One hundred thirty-seven is the inverse of something called the fine-structure constant. This number is related to the probability that an electron will emit or absorb a photon.

The fine-structure constant also answers to the name alpha, and it can be arrived at by taking the square of the charge of the electron divided by the speed of light times Planck's constant. What all that verbiage means is that this one number, 137, contains the crux of electromagnetism (the electron), relativity (the speed of light) and quantum theory (Planck's constant). It would be less unsettling if the relationship between all these important concepts turned out to be one or three or maybe a multiple of pi. But 137?

The most remarkable thing about this remarkable number is that it is dimension-free. The speed of light is about 300,000 kilometers per second. Abraham Lincoln was 6 feet 6 inches tall. Most numbers come with dimensions. But it turns out that when you combine the quantities that make up alpha, all the units cancel! One hundred thirty-seven comes by itself; it shows up naked all over the place. This means that scientists on Mars, or on the fourteenth planet of the star Sirius, using whatever god-awful units they have for charge, speed and their version of Planck's constant, will also get 137. It is a pure number.

Physicists have agonized over 137 for the past fifty years. Werner Heisenberg once pro-

claimed that all the quandaries of quantum mechanics would shrivel up when 137 was fully explained. I tell my undergraduate students that if they are ever in trouble in a major city anywhere in the world they should write "137" on a sign and hold it up at a busy street corner. Eventually a physicist will see that they're distressed and come to their assistance. (No one to my knowledge has every tried this, but it should work.)

MAPS nuggets

At the May 2012 annual meeting of the Middle Atlantic Planetarium Society, the door prizes were abundant. Tom Hamilton had donated two copies of his recent books: *Useful Star Names and Our Neighbor Stars*. Before a name could be pulled from the hat, conference participants had some possible winners:

"Is Carl Sagan in the room?"

"Von del Chamberlain!"

"Don Hall!"

"Sam Storch!"

The full-color poster of George Reed's "Cosmic Artoons" was awarded to Bill Luzader, who was described as "a constellation cartoon in his own right."

The Transit of Venus book winner ex-

claimed, "Oh! Just in time!" to which some called out, "Read fast!"

John Scala gave an excellent talk about astronomy in graphic novels, with examples from the 1940s. The Tintin books were popular, and the character of Captain Haddock was depicted attempting to pour some "medicinal beverage" while in zero-gee.

"Which just goes to show," Scala pointed out," that long before MAPS, alcohol and astronomy seemed to be connected to each other!"

Dating by DNA

At that same meeting, Pete Connors described his adventures in retirement. Spending part of the winter season in Florida, he was asked to teach an astronomy class for Jon Bell at Indian River Community College.

He was assured it would not be difficult. "Here, I have the book, the PowerPoints, the class list—all I need you to do is teach the course." There was the formality of university paperwork, of course.

And the college told Pete he could not teach the astronomy course because he didn't have enough credits in astronomy on his transcript. This to a man who has been teaching in planetariums since the last millennium.

When he asked what they thought he was qualified to teach, he was told, "biology." Biology? No, it has been a long time since he'd taken a graduate level biology course, he said.

"Biology," said the college.

"No," Pete told them. "You don't understand. The last time I took a graduate biology course, Watson and Crick had just discovered the double-helix structure of DNA."

The college found the required astronomy courses under the "physics" part of his resume.
Bazinga! ☆



Multiple "images" of the June 5 transit of Venus, also known as cupcakes for our loyal volunteers at the Fernbank Science Center. Photo and baking by April Whitt

Point and Click Production with Show Builder



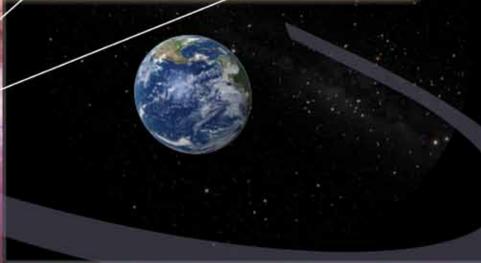
Change the scene

Adjust Transitions

Take Snapshot

Repeat for each scene

Press PLAY!



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