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Cover: This alsky was taken at a small waterfall surrounded by tropical moist forest in the Costa Rican mountains by Hannes and Simone Petrischak. It is a element of the new planetarium show "Fascination Rainforest" which is being presented in the Mediadome of the University for Applied Sciences in Kiel, Germany. The production of allskies for this show was supported by Kenan Broman and Tim Florian Horn. See the article which begins on page 19.

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Editor’s Keyboard

The April 23, 2004, issue of Science magazine (vol. 304, pages 521–2) contains an article on “Scientific Teaching” by Jo Handelsman and ten other authors. Scientific teaching “involves active learning strategies to engage students in the process of science and teaching methods that have been systematically tested and shown to reach diverse students.” In scientific teaching, students do not listen passively (or just take notes) while the teacher talks, but actively participate in the process of discovery. The authors ask why so many teachers continue to use “transmission-of-information” lecturing methods that are known to be ineffective in fostering conceptual understanding.

The eleven authors don’t mention planetariums, but that is what I was thinking of as I read the article. I thought of our own school shows, where—until this fall—our staff talked and the students listened quietly and absorbed wisdom, and where the students participated only by answering questions designed to see if they are keeping up and for review. Are we reaching them the best way we can? Are we really changing the way they think about the sky? Or are we just giving them factual information that they forget by the time the bus arrives back at school?

The Winter 1979 issue (which appeared in May 1980— but that’s another story) packed quite a bit in its 26 numbered pages.

George Reed reported on his success in establishing the third week of October as the official International Planetarium Week, and he encouraged planetarians to celebrate it. I wonder if Planetarium Week is still on the books; I don’t recall hearing anything about it.

Adler promoted the upcoming IPS Conference, to be held in Chicago. The Planetarian used to be a vehicle for getting people excited about future conferences, and I wonder if it will be again one day.

By far the longest article (and with by far the longest name) was Walter Bisard’s “An Experimental Study of the Relative Effects of Four Introductory Formats to a Public Planetarium Program.” He compared four ways to describe a planetarium show to the audience: written handout, personal introduction, slide show, and no introduction. After much ado, several tables and diagrams, and multivariate analysis, he concluded that a personal introduction is most effective.

David Alexander previewed “A Public Observatory for the Wichita Kansas, Area” to complement the new Omnisphere, to be known as the Lake Afton Public Observatory. I believe it’s been a success (see http://web.wichita.edu/lapo).

Jeanne Bishop “Focus on Education” column outlined “NASA’s Spectrum of Educational Services” long before the world wide web made NASA’s job easy. I remember well Ben Casados of JPL; he was a great guy. Jeanne also mentions Curtis Graves of NASA headquarters.

Charles Gronauer reported on “A Study of Distortion Resulting from Viewing Angles in the Planetarium Theater” with four graphs. This study was included as an appendix to his Master of Arts in Architecture thesis on planetarium design. We all have an intuitive feeling the distortion of the starfield that visitors experience from different seats in the theater, but Charles graphed it.

In his short “What’s New” column, James Brown listed additional sources for slides and slide panoramas. Donald Hall of the Strasenburgh Planetarium in New York appealed to “Know Your Audience.” His article was adapted from a speech he presented to the Great Lakes Planetarium Association. Don shared what he’d learned in his 18 years in the planetarium business about what audiences want, react to, and are motivated by. And how to get more people to attend his shows. He revealed Hall’s Law of Familiar Situations and Hall’s Law of Peaks and Valleys in a thoroughly enjoyable and thoughtful article that remains valid today. Some things don’t change.

Herb Schwartz described how to build a 3D globular cluster projector out of mirrors and scrap plastic for about $30.

In his “Sky Notes” column, Jack Dunn described direct-to-disc records with their low noise and high fidelity, and previewed plans for digital sound (on vinyl records).

Jane’s Corner ended the issue. Reproduced below is her youthful photo which appeared at the end of the Planetarian for quite a few years. I hope Jane is having fun in retirement!
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There are few areas of law that cause as much public confusion as that of copyright. As widespread changes in technology make it easier and cheaper to create, manipulate, and transfer content, and as our economy moves from one of the industrial age to one of the information age, copyright is quickly becoming a centerpiece of our modern vernacular.

Despite increased public interest in copyright, few truly comprehend how copyright law works or what, exactly, it protects. Particularly in the context of education, misconceptions about copyright law abound. Terms like “fair use” are often thrown around with little understanding of what they actually mean or how they actually apply to a particular situation. This article endeavors to demystify the major principles of copyright law by providing a conceptual framework within which planetarians can attempt to answer copyright related questions.

It is important to realize, however, that this article is not designed to substitute for professional legal advice. This article aims only to provide a general background of some key concepts of copyright law which many planetarians are likely to encounter. Because virtually every copyright-related question must be considered within the context of the unique scenario in which it arises, you should consult a qualified attorney for guidance in specific situations.

What’s a Copyright?

A copyright is a government grant of limited rights to an author to use or authorize others to use his or her “original works of authorship” (17 U.S.C. § 102(a)) during a finite period of time. Copyright protection is based on the theory that creators will be more likely to generate new works of authorship if they are guaranteed the right to exclusively use their works. This exclusive-use period creates an economic advantage in creators, which allows them to recoup their investment in innovation and enjoy the fruits of their labor.

After the limited period of exclusive use, the work falls into the public domain, allowing anyone to use the material without first obtaining permission. Copyright law then, at least in theory, is designed to promote creation of new expression as well as establish and grow a rich public domain.

The notion of copyright law finds its origins in the late fifteenth century with the introduction of the printing press. Since that time it has been refined and developed into the relatively complex body of law we have today. In the United States, copyright law dates back to the birth of the nation. Article I, Section 8, Clause 8 of the Constitution gives Congress the authority to create patent and copyright law.

Over the years, Congress has exercised its constitutional authority to develop comprehensive schemes of copyright protection. The most recent incarnation was established by the Copyright Act of 1976. Today, the Act and its various amendments are codified in Title 17 of the United States Code.

Copyright protects several categories of “works of authorship” including literary works, musical works, dramatic works, pantomimes and choreographic works, pictorial, graphic, and sculptural works, motion pictures and other audiovisual works, sound recordings, and architectural works.

For an average planetarium, that means that virtually everything used in a typical show is copyrightable – slides and other images fall into the pictorial, graphic and sculptural works category, the soundtrack is a sound recording, while the printed script and any accompanying production notes would fall under the literary works category.

For works created on or after January 1, 1978, copyright protection is automatic for any works that are fixed in a tangible medium of expression. Thus from the moment you finish a particular piece of work, it is protected by copyright. Even your notes, doodles, and indiscriminate markings are technically protected by a copyright. Note, though, that if something is not in a tangible form, it may not be copyrighted. The words spoken during a live planetarium show, for example, are not copyrightable unless they are written down somewhere or are being transcribed, videotaped, or otherwise fixed in some tangible medium of expression.

Currently, copyright protection lasts for the life of the author plus an additional 70 years. In cases where there are multiple authors, the copyright lasts for 70 years beyond the life of the longest lived author. Where the work was prepared anonymously or pseudonymously, or when the copyright is owned by an employer (when works are created within the scope of an individual’s employment), the copyright extends for 95 years after the year of first publication or 120 years after creation, whichever is shorter.

In short, for all intents and purposes, everything is copyrighted by someone, somewhere, and it lasts for an extremely long time.

Christopher S. Reed is the president of CSR Media, LLC, a broadcast and multimedia consulting firm. He is currently pursuing Juris Doctor and Master of Intellectual Property degrees at the Franklin Pierce Law Center in Concord, New Hampshire.
Government Works

There is one exception to the above statement that “everything” is copyrighted. Works created by the federal government are not subject to copyright protection and may be used freely. The government is not precluded from owning copyrights that are transferred to it, however. Also, this provision does not apply to state or local governments.

Many planetarians are already familiar with this rule, as it is the reason why most NASA imagery, for example, is in the public domain. The one caveat that exists, however, is work prepared by government contractors or partners - they are permitted to obtain copyright protection, even if the work was created using government funds or support.

The Classroom Exemption

Recall that copyright is a grant of limited rights to authors. To ensure that copyright law remains true to its underlying policy goals, Congress included a number of exceptions to the rights of authors. Of particular importance to planetarians is the so-called “classroom exemption” found in Section 110(1) of the Copyright Act.

This exception essentially permits instructors and students to publicly perform copyrighted works, without consent of the copyright owner, “in the course of face-to-face teaching activities of a nonprofit educational institution, in a classroom or similar place devoted to instruction.” Like virtually all legal doctrines, however, this seemingly simple phrase leaves ample room for interpretation.

A review of the legislative history behind this section reveals that Congress did not intend to suggest that the instructor and students must actually see each other, but they must be “in the same building or general area.” The “face-to-face” language is merely designed to specifically exclude electronic transmissions. Planetarium use of copyrighted materials would therefore probably meet the face-to-face requirement.

Congress further noted that “teaching activities” specifically excludes performances or displays “that are given for the recreation or entertainment of any part of their audience.” The copyrighted work must actually be used in the process of delivering instruction, not merely to accent a lecture or presentation. In a planetarium setting, live shows that take the form of an interactive lecture or discussion-based presentation are more likely to lean towards meeting the teaching activities requirement whereas a pre-recorded show falls further away from the intent of the “teaching activities” language.

Similarly, audience composition may also be a consideration. Audiences comprised substantially of students would tend towards a teaching activity, whereas public shows may be deemed recreational in nature. Using copyrighted materials merely to improve the aesthetic quality of a program, irrespective of audience or type of show, would almost certainly be considered “recreation or entertainment” and therefore not fall within the scope of the classroom exemption.

Finally, the “classroom or similar place devoted to instruction” phrase is essentially designed to confine the display or performance “to the members of a particular class.” This requirement is also tricky in a planetarium setting. In circumstances where the planetarium is effectively being used as a classroom, this requirement would probably be satisfied. But most planetarium facilities also present a variety of public shows during which time the planetarium is not functioning as a classroom, leading one to reasonably conclude that the classroom exemption may not apply.

Considering the requirements of the classroom exemption, some uses will fall squarely within the bounds of the provision, whereas others will fall into the proverbial “gray area.” For those cases where you are uncertain about or uncomfortable with your review of the relevant facts and their application under the exception, it is important to consult with an attorney.

### Rights conferred by § 106 of the Copyright Act

**What’s In a Name?**

The singular word “copyright” is actually a misnomer, as a copyright actually confers upon its owner several different rights. These include the right to reproduce, to prepare derivative works (e.g. a foreign language translation of a book, a movie based on a novel, etc.), to distribute copies, to publicly perform, and to publicly display.

During the period of copyright protection, only the copyright owner or those authorized by the copyright owner may exercise these rights. Exercise of one or more of these rights without permission is an infringement of the copyright which can subject the infringer to substantial financial detriment. In certain narrowly defined situations, copyright infringement can carry criminal penalties including imprisonment.

The rights may be subdivided, meaning for any particular work, one party may, for example, own or have the right to reproduce while another party has the right to publicly perform a particular work.

### Fair Use Factors

1. The purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
2. The nature of the copyrighted work;
3. The amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
4. The effect of the use upon the potential market for or value of the copyrighted work.

### Fair Use

The classroom exemption applies only to the public performance and display rights and applies only in a small number of circumstances. In cases where your intended use of content does not fall within the classroom exemption, the doctrine of fair use may be helpful.

The phrase “fair use” has become widely known in the education community but unfortunately, it is frequently used incorrectly to mean any permissive use of copyrighted material without authorization of the copyright owner. Fair use is actually a specific and statutory defined exception found in Section 107 of the Copyright Act.

Contrary to popular belief, fair use does not grant educational users carte blanche to use copyrighted materials without compensation or permission. Instead, the statute articulates the following test, which requires a user to consider and balance four factors:

1. The purpose and character of the use, including whether such use is of a com-

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**The Copyright Clause of the Constitution. Courtesy: U.S. National Archives and Records Administration.**
2. The nature of the copyrighted work;
3. The amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
4. The effect of the use upon the potential market for or value of the copyrighted work.

The first factor is relatively straightforward. While one may consider the educational or nonprofit nature of a particular use, it does not have any determinative value alone. Educational use weighs towards a finding of fair use whereas commercial uses lean towards finding against fair use.

When considering the first factor, courts have also looked to the transformative nature of the use. Uses that employ copyrighted material to change or adapt (e.g. to create a parody) weigh more in favor of fair use than those which simply take the copyrighted work and exploit it in total.

Note that just because a planetarium is a nonprofit organization does not immediately turn the first factor towards a finding of fair use. The test calls for one to consider the nature of the use of the copyrighted work. Use of a work in a show for which admission is charged could be viewed as a commercial activity even though it is being conducted by a nonprofit entity.

The second factor is designed to recognize that “some works are closer to the core of intended copyright protection than others.” (Campbell v. Acuff-Rose Music, 510 U.S. 569, 586 (1994).)

Works that are based substantially on factual material are afforded less protection, and use thereof is more likely to be fair. Works that are more creative or artistic in nature are afforded greater protection, which weighs against a finding of fair use.

The third factor simply looks to the amount of the work taken relative to the work as a whole. To photocopy a poem from an anthology, for example, would probably weigh in favor of fair use, whereas to duplicate the entire anthology would likely weigh against fair use. This is one area that gives rise to many of the fair use misconceptions. Traditional wisdom found on many web sites suggests that there are solid rules about how much of a copyrighted work may be taken - the “8 bar” rule for music, or the “10% rule” for books, for example. Unfortunately, no such rules exist. The quantity of material taken must be considered along with the other three fair use factors.

Finally, the fourth factor considers the effect on the market for the copyrighted work. Because the very essence of copyright is to protect authors' economic incentive to create, if the use is likely to result in an adverse effect on the sales of the copyrighted work, the fourth factor would weigh against fair use. Duplicating a particular poem from the anthology in the above example is not likely to harm the market for the anthology as a whole. The fourth factor would therefore weigh in favor of fair use. If a teacher were duplicating pages from a consumable workbook that would otherwise be purchased by the school, however, the fourth factor would weigh against fair use.

Just like the classroom exemption analysis, some proposed uses of copyrighted material will fall directly within the fair use guidelines, but many are close calls. If ever in doubt, as always, it is important to seek the advice of an attorney skilled in copyright issues for guidance relevant to your specific situation.

Getting Permission

This article has focused largely on exemptions to copyright protection and cases where you may lawfully use material without express permission of the copyright owner. It is important to always remember, however, that the safest way to use the copyrighted content of another is to obtain permission to use it.

Obtaining permission for many materials can be as simple as asking for it. Because planetariums are generally noncommercial in nature, you may be able to obtain the permission you need for free or for a nominal charge.

Even if you request permission on the phone or by e-mail, be sure to get the copyright owner's permission in writing. A signed letter or fax is best, but e-mail will typically suffice. Written permission is essential even if you request permission and discuss your proposed use by telephone. As movie magazine Sam Goldwyn once quipped: “An oral contract isn’t worth the paper it’s printed on.”

A similar way to avoid potential copyright problems is to use royalty-free content. As the name implies, royalty-free products involve the user paying a one-time fee for unlimited use in a particular context. Examples of royalty-free materials in public stock imagery and many production music libraries.

An Important Word of Caution

Many copyrighted materials that are “sold” for particular purposes are not actually owned outright by the purchaser. Rather, the purchaser is simply licensed to use the materials. A common example is computer software, where the end user does not actually own the purchased program, but instead owns the right to install and use the program on a particular computer. Because the license term is usually a lengthy period, it seems as though the product was purchased and is now “owned.”

Note, though, that when a license agreement is present, the terms of the license generally override the exemptions in the copyright law. In other words, it is possible to “contract around” the various productions discussed here.

This has critical ramifications for many planetarium productions – it means that show packages, music libraries, video clip libraries, and anything else that requires a license, even a royalty-free license, is bound by the terms of that particular license agreement.

For example, suppose a show package license agreement includes a provision that prohibits use of the show's visuals outside of the actual performance of the show itself. While ordinarily, independent use of those images may be justifiable under the classroom exemption or the fair use doctrine, because the license expressly prohibits it, such use would be unlawful. It is therefore of paramount importance to read and understand license agreements associated with shows or other planetarium content.

Conclusion

It bears mentioning again that this article is not a substitute for legal advice; it is intended to provide a working knowledge of the general principles of copyright and an analytical framework to help determine when certain copyright exemptions apply. Every legal situation is different and concepts like classroom exemption and fair use can become technical and the results uncertain. Unfortunately, there are no bright line tests and no hard and fast rules.

To date, no United States court has ever adjudicated a copyright infringement claim against a planetarium. Moreover, the author was unable to identify any planetarian that had been threatened with litigation over a copyright issue. Still, understanding copyright law is quickly becoming essential for anyone involved with using or creating content.

Although copyright infringement claims against planetariums are rare or even presently nonexistent, such is not a license to ignore the rights of copyright owners. Ongoing or widespread copyright infringement within the planetarium community could potentially lead to increased enforcement vigilance, particularly as the “copyright industries” become more and more reliant on licensing revenue as a source of income. Planetarians and related professionals must therefore be familiar with their rights and responsibilities when using copyrighted content to ensure compliance with applicable laws.

(Please see Copyright on page 41)
Sky Shows Now Available from the Adler Planetarium

Skywatchers of Africa
Leading visitors on an exciting exploration of Africa and its peoples’ captivating cultural uses of the sky over thousands of years, Skywatchers highlights the diversity of African cultural astronomy and celebrates our shared human experience.

30 minutes / 300 slides / $795 for show kit
$695 for show kit with artwork on CDs instead of slides

Images of the Infinite
The Hubble Space Telescope (HST) has provided us with spectacular awe-inspiring images and has enriched our understanding of the Universe. This sky show highlights the history and top science findings of the telescope, and takes audiences on an unforgettable tour through the Solar System, Milky Way Galaxy, and to the limits of the visible Universe!

35 minutes / 306 slides / $895 for show kit with video laser disc
$795 for show kit without laser disc

Spirits from the Sky: Thunder on the Land
This sky show provides a never-before-seen journey into the culture of the Skidi Pawnee Native American Nation. Produced in cooperation with the Tribal Elders, Spirits from the Sky explores the Skidi Band’s cultural philosophy of patterning their lives from the observations they made of the Earth and celestial phenomena. Funded in part by a grant from the National Science Foundation.

37 minutes / 386 slides / $475 for show kit

Clouds of Fire: The Origin of Stars
Exploring the interconnection of all matter in the Universe, Clouds of Fire presents an overview of star formation and the modern instruments which help us gain a clearer picture of stellar life cycles.

32 minutes / 217 slides / $595 for show kit with video laser disc
$495 without laser disc

Order two or more shows and take 10% off the purchase price!

Each kit includes:
Show script
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Soundtrack on compact disc
Video on laser disc (if applicable)

Please address all show kit inquiries to:
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A Ticket to Heaven: Live Music in a Planetarium

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The vision

In 1992, I traveled to the “Granite Rose,” the legendary coast of Brittany in western France, which is full of myths and fables. Under these circumstances, it didn’t surprise me to suddenly see a huge, white ball appear during an excursion through this countryside. Was it the Celtic fairies who wanted to abduct me to their “other” world? I was magically attracted and steered toward it – and landed in the planetarium of Cosmopolis/Pleumeur-Bodou.

It was my first visit to a planetarium. I was deeply moved when I looked at the starry sky - simultaneously, I heard music within myself and the desire to play the harp. A vision grew, “Harp Music under the Starry Sky.” Back in Germany, I started this project with great fascination but without any idea of how to transform it into reality. The first invitation came from the planetarium in Berlin (Wilhe Im-Foerster-Sternwarte), and appeared to me to be like “a ticket to heaven.”

In actual practice

The success of a live concert depends on commitment by the musician(s) as well as the planetarium. Musicians are attracted to the special ambience and the technical possibilities of a planetarium, but they usually have no real knowledge of the technical aspects. My experience shows that it is advisable for musicians to become acquainted with the differences in the expense and technical effort required for a show. A basic knowledge of the projectors enables the musician to co-create the show, and this also prevents false expectations right from the start.

For my harp music, the projection of the starry sky was (and still is today) an important design element, combined with special projectors and selected allskies. With the aid of creative improvisation from both sides, the creation of a harmonious program has always resulted (in spite of the great variety of planetariums). The audience has always been enthusiastic. This is a fundamental experience for me and it’s a relief to know that not everything shown on the dome has to be 100% perfect for a live concert. Often, “less” may even be “more.”

Concerts with the music and “almost nothing but the starry sky” were impressively beautiful. In the final analysis, it is the music which should be in the foreground. In all the years I’ve toured, I’ve always received many positive suggestions in the German planetariums – many thanks to all concerned.

Tips

I’d like to list a couple of items which have proven to be of help in organizing my live concerts during the past ten years in the hope they are useful to others:

- Just as looking at the stars is a gateway to a person’s soul, so is music. Stars and music have cast their spell over people since primeval times. Both awaken feelings. The starry canopy of the dome also speaks to our feelings. This is certainly one of the pillars on which the worldwide success of planetariums is built.
- When it’s possible to meld music and the stars together harmoniously, it opens up a new world within us. We often live in an everyday world full of hectic rushing and distractions, overstimulated by the flood of images and noise of the modern world. The experience of music beneath the planetarium dome offers a counterpoint. It opens an internal side of our existence. The harp is specially suitable for accomplishing this – even in the legends of ancient peoples, this is the instrument which has enchanted man and animal.
- The modern world of the planetarium is currently undergoing conversion to a dome video projection with its spectacular effects. Among them are those which can intensify the power of music and the stars even further: when they are employed with the eyes of a composer, the composition and visual dramaturgy are blended with each other with sensitivity. It is challenging and fulfilling to follow this path. Together with Christine Högl and the Digistar III from Evans & Sutherland, we reach a audience in Kiel which is often more appreciative than the audiences of the spectacular shows.

– Eduard Thomas, Director of Mediadome/
University of Applied Sciences in Kiel, Germany
I provide the technician with a remote-controlled visual signal (light) for his actions.

**Audio/Sounds**

The acoustics in the dome are usually dampened. To obtain a bright sound, the harp music and any sound effects are amplified by the planetarium’s loudspeaker system. Additionally, I work with sound effects such as singing birds, ocean waves, and wind. In the special atmosphere of the dome, some well-chosen effects give an additional spacial sound, which is nice. My husband, Bernhard Schmidt, a company project right from the start; he takes care of harp-related sound with his own equipment: Mackie mixer, Lexicon echo, direct sound-pick-up and wiring with suitable connectors.

**Rehearsal and Concert**

In preparation for the concert, I recommend a compact rehearsal on the day of the concert; our experience has shown that two to three hours are enough for setting up, sound checks, transfer of the allskies into your trays, and the final program checks. This period for preparations should be made available by the planetarium before the concert starts - without any interruptions caused by the planetarium’s normal program.

A specially prepared lamp provides the minimum amount of light on the harp during the concert; it will not impair viewing what is projected on the dome.

**Advertising and Public Relations**

The planetarium should announce the concert in its program of events as well as provide information and hang posters within the planetarium. Flyers sometimes are useful. The expense of extensive posters outside the planetarium is often too high to be practical. In some cases, towns have a free contingent for posters at suitable locations.

The successful ticket sales in Germany result in a large extent from active press work for all mon-thly/weekly/daily periodicals and newspapers, up to radio and TV interviews. A phone call with a personal invitation often works wonders with editors. The events are then featured as a highlight and appear with a photo on the title page, or announced as “tip of the day” in the event calendar. This usually ensures a full house.

**Finances**

Financing and the conditions are subject to negotiation and are treated in various ways by artists. The possibilities include a fixed-fee remuneration or a certain percentage of the ticket sales. The ticket prices are to be set correspondingly.

The question is, how can several (sold-out) concerts best be achieved so that the total revenue can be increased with only little additional effort. When selecting engagement dates, it should be considered what season of the year or what special occasion would allow one to expect a full house. Additionally, it is practical to plan a concert tour together with other planetariums in the region, in order to reduce the travel expenses. Since the travel, hotel and related expenses are not insignifi cant, meeting the costs must be clarified in all cases. It must also be borne in mind that GEMA / ASCAP / SACEM - or similar organizations’ in territorial-property-right fees - may be due.

**Philosophy**

You may ask, “Why have live music in the planetarium?” So that the heavens can bloom in our hearts!

Playing live in the “heavenly” atmosphere of the dome touches the emotions of the audience as well as the musician(s). As a harpist, I have the advantage that the heavens supplement harp music perfectly (and vice versa) - but of course there are many different kinds of “heavenly music.” As musicians in planetariums, we have the luckiest job: “to let the stars sing” for us, reaching very close to our hearts.

**Music in Planetarium Shows**

I have noticed that, in planetarium shows, visual stimuli are often accorded more attention than the musical selections - according to the maxim, “We’ve already invested a lot in the visual show, now we need some sort of music to accompany it.” I think the effort and expense of good music is worth it because through the music we experience the visual aspects in another dimension. With the multitude of media, it is increasingly important to create space for one’s own experiences - and not to simply “fill the audience up to the brim.” This can be accomplished with good music selections, including occasional silence and a certain “emptiness.” One should provide the audience with time to experience the visual and auditory stimuli, provide space for one’s own fantasy.

**Conclusion**

A vision of music under the starry sky is something beautiful; the implementation, on the other hand, means work; one doubts, one sometimes even despair, there’s always not enough of something (time and/or money) ... but somehow everything coalesces at the end, and

(To see Live Music on page 5)
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Good things come in small packages. SkyLase, affectionately called “Omniscan Jr.”, features a small projector with laser diodes for an incredibly small price for small domes 30’ and under. SkyLase carries the same benefits of excellent service and spectacular laser entertainment shows.

SPECIAL RENTAL PRICE NOW AVAILABLE!
The Whale's Tale (and Other Fishy Folklore)

Jon Bell
Hallstrom Planetarium
Indian River Community College
3209 Virginia Avenue
Fort Pierce, Florida 34981-5596, USA

Here's the script that was awarded Second Place in the latest IPS/Eugenides scriptwriting competition. It's filled with Jon Bell's characteristic and not overly-folksy humor, and it's an easy read. So if you find yourself wishing to use Jon's show you are free to do so at no charge, as long as you realize that you have to provide your own visuals and the IPS wishes you to credit them as being the copyright holder.

We're on course for launching the next IPS/Eugenides scriptwriting competition in the March 2005 Planetarian, with a completely revised set of attractive rules. And so, given the strength of Jon's script and Gary Lazich's First Place winning script, which was published in the June issue of the Planetarian, I hope you will find enough inspiration to submit a script of your own. Watch this space for more information.

Steve Tidey, Co-ordinator
IPS/Eugenides Scriptwriting Competition

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Planetarium setting: mid-northern latitude, 20 hours side-real time.

CAST: Carmen, about 6 years old, Dan, about 15, Mom, Dad and Grandma

CARMEN: Hey, you missed a spot. Rake over here!
DAN (somewhat annoyed): Oh, all right.

FADE TO BLUE with TITLE and CREDITS.

MOM: I already did that spot! Mom! Carmen'sbugging me!

Dan (muttering): I don't see why I gotta listen to my Dad and Grandma

CARMEN: Your grandmother's a very unusual person.

DAD: And let's not forget the dolphins!

MOM: What's that, grandma?

Grandma: Au contraire, grandson. Dolphins are in the delphinidae family but they are also ceteceans, which is the same order of animals to which whales belong.

DAD: So a dolphin is a little whale?

Grandma: Yes, that's one way of looking at it. The largest dolphin is no more than about fifteen feet in length.

DOLPHINS VS. PORPOISES

Dolphin: No, not exactly. Dolphins are typically larger and more streamlined than porpoises. Porpoises have wedge-shaped dorsal fins - that's the fin that sticks up out of the back - while a dolphin's dorsal fin is a sickle shape. Also, dolphins have long, sharp snouts while those of porpoises are blunt.

CETACEANS VS. FISH

CETACEANS: But porpoises, dolphins and whales are mammals, not fish. Their tails are horizontal, not vertical like those of fish. They lack a fish's gills, so most surface every so often to take in more air through blowholes. And their young are born live, and the mothers will nurse them for a year or more.

MOTHER WHALE AND BABY WHALE/TALKING WHALES

Whale song

GRANDMA: And let's not forget their ability to communicate. Whales and dolphins make a variety of sounds - clicks, whistles, squeaks and groans. We know they use these sounds to locate
Moonrise
Sunset

Sun low in the west

Carmen: Moonrise, I'm cold.
Mom: Here, honey, put on this jacket.
Dad: Yes sir, the frost is on the pumpkin, now.
Dan: Does he always have to talk like that?
Mom: Ever since I've known him, dear.
Dad: We've turned the corner, season-wise.

Autumn began in late September, and the Sun is definitely headed south for the winter. Nights are coming earlier as the daytime grows shorter.
Dan: Pretty soon it will be dark by the time I'm home from school.
Carmen: Daddy, why does it have to get cold and dark now?
Dad: Honey, you know the Earth is moving.

Rotating Earth video
Carmen: Uh-huh. It spins around itself.
Dad: Rotates.

Revolving Earth video
Carmen: Uh-huh. And that makes day and night.
Dad: Right. And how else does the Earth move?
Carmen: It goes around the Sun every year. Oh, I forget what the word is ...
Dad: Starts with R, honey.
Carmen: Oh yeah! It revolves! Hee, hee, you said it.
Dad: Pretty close, dear. It revolves.
Carmen: So when we're close to the Sun that's summer, and when we're far away that's winter?
Dad: Uh, no, honey, it's not that simple. Remember what we've talked about before?
Are we straight up and down when we go round the Sun?
Carmen: Oh no, that's right – we're tipped over!
Dad: Yes, our Earth is tilted about 23 and a half degrees over from straight up and down as we orbit the Sun.

Tilting earth video
Dan: It's like a gyroscope right, Dad? Our planet's axis is lined up so that its north pole is always pointing towards the North Star. That means that sometimes the top half of Earth leans toward the Sun, and that's summer for us; and then half a year later the Earth's northern hemisphere leans kind of away from the Sun, and that's when we have winter.

Tilting Earth and Sun video
Dad: Couldn't have said it better myself. This tilt of the Earth causes the daily path of the Sun across our sky to change just a little bit from one day to the next. So when we lean in toward the Sun its path takes it high into the sky. And when we lean away from the Sun it stays low in the sky, even at noon.
Dan: Oh, so the higher the Sun the hotter we get because the sunlight is more direct, more intense. The lower the Sun, the cooler it gets, kind of like when you stand off to one side of a fireplace - in this case, a fireplace in the sky. You make a good teacher, Dad.
Grandma: Well, there's something my father taught me when I was little. "Whether the weather be cold, or whether the weather be hot, we'll weather the weather, whatever the weather, whether we like it or not!"

Strobe
Camera strobe flash sound
Dan: What? Hey, who took the picture?
Dad: Hey, try it.
Dad: Oh, all right. Like this?
Dad: Perfect.

Sunset
Mom: Look, the Sun's going down.

Moonrise
Dad: And the full Moon's coming up on the other side of the sky. Sunset in the west, moonrise in the east. The world's turning beneath our feet.

Moonlight and atmosphere diagram
Mom: Two good questions. Let's see ... The Moon looks orange because it's near the horizon, that line where the land meets the sky. You know why the sunset is red, right?
Dad: Yeah, right.
Mom: Later on when the Moon is higher in the sky its color will turn yellow, then silver white.
When we look up overhead we're looking through less air, and the Moon loses its pumpkin-orange color.

Moon turns yellow, then silvery
Mom: Is that why the Moon looks smaller, because it's higher up and farther away from us?
Dad: Well, actually, the Moon is a little bit closer to us when it's higher in the sky, and probably ought to look bigger, except the change in distance is so tiny we can't see it. The Moon looks larger when it's near the horizon because of something called the Moon illusion.

Moon illusion
Dad: The Moon illusion. OK, I give up, what's that?

Moon with horizon in foreground
Dad: Apparently, when we see the Moon near the horizon with trees and buildings in between us and it, our depth perception gives us a feel for how far away the Moon really is. Later, when the Moon is higher in the sky and we see it all by itself in that great big open sky, it looks smaller because we lose our depth perception. Now, to defeat the Moon illusion you need to disorient your depth perception. A good way to do that is to turn around so you're facing away from the Moon, then bend over and look at the Moon upside down through your legs.

Dan: For real?
Dad: Hey, try it.
Dad: Oh, all right. Like this?

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Camera strobe flash sound
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Sunset
Moon: Oh, Mr Moon, Moon, bright and silvery Moon, Won't you please shine down to me?
Sun: Oh Mr Moon, Moon, bright and silvery Moon,

Moon: Hiding behind that tree.
Sun: I want to see you shining down on Earth below,
Moon: See you shine way up above us so,
Sun: Oh Mr Moon, Moon, bright and silvery Moon,
Moon: Won't you please shine down on,
Sun: Please shine down on,
Moon: Please shine down on me, shine down on me!
Sun: The Moon looks so big!

Dan: Carmen: And orange, like a pumpkin! What makes it orange?
Dad: What makes it so big?

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Camera strobe flash sound
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December 2004

**Full moon**: Don’t you? The eyes, the mouth, the nose...

**Mom**: No, dear, the Lady in the Moon. She’s turned sideways to us, in profile. Here is her throat...her chin...her mouth...her nose...her eye and eyebrow...her hair...her ear...and the back of her neck.

**Dad**: It’s not very bright.

**Mom**: It’s not a good time of the year.

**Dad**: Let’s just wait another hour.

**Mom**: Yes, the Great Square of Pegasus, the Sea of Tranquility...the Sea of Serenity...the Sea of Rains. Then there are three lava basins that kind of run into each other on the right.

**Dad**: The Great Square of Pegasus.

**Mom**: Well, it’s called Cassiopeia. Now look low in the northeast, and there’s one more bright spot – that’s Capella.

**Dad**: Capella is a yellow star like our Sun, but a lot larger.

**Mom**: Where’s the Big Dipper?

**Dad**: Yes, they call that “the Great Square”.

**Mom (sighing)**: Yes, the Great Square of Pegasus, the Flying Horse. Now over in the northeast you can find a few more stars that look like the outline of the letter “W”. Astronomers call this...

**Dad**: The Great W. Ouch!

**Mom**: No, it’s called Cassiopeia. Now look low in the northeast, and there’s one more bright spot – that’s Capella.

**Dad**: Capella is a yellow star like our Sun, but a lot larger.

**Mom**: But how can I find the North Star?

**Dad**: Oh, honey, this isn’t a good time of the year to use the pointer stars in the Dipper to get it. Pumpkin, that’s true. But in the Fall of the year we use another star group instead. Look back to Cassiopeia. Now, take the outside arms of the W, and stretch them out until they wrap around each other. That star you pass by halfway out is the North Star.

**Mom**: Hmmmph. You mean Man in the Moon, don’t you? The eyes, the mouth, the nose...

**Dad**: It’s not famous for being bright.

**Mom**: What is it?

**Dad**: The North Star. It’s not famous for being bright.

**Mom**: Just for being in the north.

**Mom**: Use video projector aimed at NE, 20 d. for eclipse effect, slow play for eclipse effect.

**Dad**: Hey, speaking of the Moon, check it out - there’s something wrong with it!

**Mom**: Yeap, right on schedule. I’d almost forgotten.

**Dad**: Oh, you know it had slipped my mind, too. And this is why we wanted to come outside tonight, remember?

**Mom**: Oh yeah, the eclipse!

**Carmen**: Oh yeah!

**Mom**: You can already see the Earth’s shadow beginning to take a bite out of the left side of the Moon. That bite is going to get bigger and bigger, until...

**Dad**: Yes, the eclipse!

**Mom**: Yes, and astronomers call this triangle – the triangle!

**Dad**: Of course!"

**Mom**: Actually, kids, your father’s right. It’s called the summer triangle, so named because it’s easiest to see in the summertime, but even now in the Fall we can see it in the early evening. By mid-night, though, the summer triangle will have set below the horizon thanks to the Earth’s rotation. Now, almost overhead are four stars that make a large square.

**Dad**: Oh, Dad!

**Mom**: Later, dear. Right now the stars are coming out. See those three stars high up in the west? They make a large triangle.

**Dad**: Yes, and they call that “the Great Square”.

**Mom (sighing)**: Yes, the Great Square of Pegasus, the Flying Horse. Now over in the northeast you can find a few more stars that look like the outline of the letter “W”. Astronomers call this...

**Dad**: The Great W. Ouch!

**Mom**: No, it’s called Cassiopeia. Now look low in the northeast, and there’s one more bright spot – that’s Capella.

**Dad**: Capella is a yellow star like our Sun, but a lot larger.

**Carmen**: Where’s the Big Dipper?

**Mom**: Oh, honey, this isn’t a good time of the year to find it. The Big Dipper is very low in the north now, and hard to see.

**Dad**: But how can I find the North Star?

**Mom**: But you use the pointer stars in the Dipper to get it.
| Mom: And just like our red sunset and orange moonrise, the color of the light that reaches the Moon is mainly red. | Angry Poseidon beauty to that of his mermaid’s? He decided to punish Cassiopeia. |
| Dad: And that’s why the Moon looks red during totality. | Dad: Poseidon sent a great sea monster, named Cetus the whale. Cetus, to Joppa. Cetus was a great whale. |
| Grandma: Aren’t you children glad your parents are so smart? | Dan: Hey, I thought you said it was a sea monster. |
| Dan: Hey, it’s really dark now! | Dad: Well, to folks long ago whales did seem like sea monsters, although, oddly enough, we think the people who first told this story had never seen a real whale before. |
| Grandma: And look at those stars! You can even see the Milky Way stretching across the sky – our home galaxy on view tonight. | Whale turns into a monster |
| Dad: Well, looks like we’ve got about an hour of dark skies before the Moon can get out of our shadow. Let’s make the most of it. The Moon’s over in the constellation Aries the Ram, just off to the east of Pegasus. | Dan: Hmmm, so you’re saying that it wasn’t supposed to be a whale at all, but a sea monster. |
| Dan: Wow, there are lots more stars around Pegasus. But I still can’t imagine a flying horse. | Dad: Yeah, that’s about the size of it. |
| Dad: Well, maybe you can see something I call the baseball diamond in the sky. | Dan: So it was kind of a fluke, huh? |
| Dan: How’s that? | Dad: Ooh, good one, son. I’ve trained you well. Anyway, Cetus caused a lot of trouble when he got to Joppa. He caused tidal waves that knocked down buildings, towns and cities, and generally got everybody all wet. |
| Dad: Take the four stars in the corners of the Square. Now this one here is First Base, over here is Second base, then Third, and of course this star is … | Cetus’ tail making tidal waves |
| Dan: Home Plate. Yeah, I see it! (Baseball stadium sound effects.) | Grandma: This really got Cassiopeia’s attention. She realized that Poseidon was upset with her, and asked him to forgive her for her boast. |
| Carmen: Daddy, can you show me the flying horse? | Poseidon |
| Dad: I think so, Carmen. First of all, I have to tell you that this horse is upside down. The square is the body of the horse, this is the horse’s back, here is his neck and head, there’s the tip of his nose, here’s his chest and front legs, and the north side of the square is his stomach. | Mom: Poseidon agreed, but only if Cassiopeia made a sacrifice. |
| Carmen: Where are his back legs and tail? | Dan: That sounds pretty cool. |
| Dad: Umm, he doesn’t have any of those things. | Andromeda |
| Carmen: You mean he’s just half a horse? | Dan: The sacrifice was her daughter, Andromeda. |
| Dan: Oh-oh, this is getting weird. | Mom: Whoa – that’s definitely uncool. |
| Dan: Well, there is a reason for it, but it’s a long story. | Andromeda |
| Dan: Uh, Dad, I think we’ve got the time. Still another 42 minutes ‘til the end of totality. | Dan: Meanwhile, across the oceans, another monster was causing more trouble. This was a gorgon, named Medusa. Gorgons were hideous creatures who had living snakes for hair. |
| Dad: Right you are, son. Here goes. This story comes from ancient Greece, and it starts with Cassiopeia and ends with Pegasus. | Medusa the gorgon |
| Cassiopeia was a beautiful woman, and the ruler of a land named Joppa. | Grandma: Who had worked up quite an appetite after eating Medusa. Medusa was so gruesome that she could turn you to stone just by looking at her. |
| Grandma: But she was also a very vain and boastful person, and took great pleasure in telling everyone just how beautiful she was. | Statues |
| Dan: One day she went too far. She told everyone that she was more lovely than the mermaids who waited on King Poseidon, who ruled the oceans. | Mom: Well, that doesn’t sound very gneiss. |
| Mom: When his fishy friends had told him about Cassiopeia’s boast, Poseidon was very angry. Who was this mere mortal to compare her beauty to that of his mermaid’s? He decided to punish Cassiopeia. | Grandma: My sediments exactly. (Everybody groans appropriately throughout this particular dialogue.) |
| Dad: Poseidon agreed, but only if Cassiopeia made a sacrifice. | Dan: Oh, so that must be why there are so many statues in Greece, huh? |
| Dan: Certainly, you can take that for granite. | Dad: The situation with Medusa was getting grim. Something had to be done to stop her. |
| Carmen: Perseus | Grandma: Well, the situation with Medusa was getting grim. Something had to be done to stop her. |
| Dad: What a hero was found who would fight the gorgon. His name was Perseus, and he was very brave. He also had some magical help – the winged sandals of Hermes, messenger of the gods. These enabled him to fly. | Dan: Luckily a hero was found who would fight the gorgon. His name was Perseus, and he was very brave. |
| Carmen: Where are his back legs and tail? | Winged sandals |
| Dan: Umm, he doesn’t have any of those things. | Mom: Well, the sacrifice was her daughter, Andromeda. |
| Carmen: You mean he’s just half a horse? | Grandma: Whoa – that’s definitely uncool. |
| Dan: Oh-oh, this is getting weird. | Dad: The monster nearly got him, too. |
| Dan: Well, there is a reason for it, but it’s a long story. | Dan: So it was kind of a fluke, huh? |
| Dan: Uh, Dad, I think we’ve got the time. Still another 42 minutes ‘til the end of totality. | Grandma: Oh, simply marbelous. |
| Dad: Right you are, son. Here goes. This story comes from ancient Greece, and it starts with Cassiopeia and ends with Pegasus. | Dan: Well, the situation with Medusa was getting grim. Something had to be done to stop her. |
| Cassiopeia on throne | Plato’s helmet |
| Grandma: But she was also a very vain and boastful person, and took great pleasure in telling everyone just how beautiful she was. | Mom: The helmet of Pluto, which made him invisible to his enemies. |
| Cassiopeia and mirror with attendants | Zeus’ shining shield |
| Dad: One day she went too far. She told everyone that she was more lovely than the mermaids who waited on King Poseidon, who ruled the oceans. | Grandma: And the shield of Zeus, a shield so shiny that it was like a mirror. |
| Mermaids and Poseidon | Perseus over island |
| Mom: When his fishy friends had told him about Cassiopeia’s boast, Poseidon was very angry. Who was this mere mortal to compare her beauty to that of his mermaid’s? He decided to punish Cassiopeia. | Dad: Perseus flew to the island of the gorgons. There he found Medusa, who was fixing for a fight. The monster nearly got him, too. |
| Dad: Poseidon sent a great sea monster, named Cetus the whale. Cetus, to Joppa. Cetus was a great whale. | Perseus, Medusa, sword and shield |
| Grandma: But she was also a very vain and boastful person, and took great pleasure in telling everyone just how beautiful she was. | Grandma: But Perseus used the shield of Zeus to look at Medusa. Her reflection was awful, but at least he didn’t turn to stone! With one stroke of his sword, Medusa was vanquished. |
| Flying Perseus, bag and blood in ocean | Mom: Perseus put Medusa’s head into a bag, and flew back to Greece. As he traveled over the ocean, a little blood from the gorgon fell into the sea. From the mixture of blood and seawater came the birth of Pegasus. |
| Pegasus emerging from sea | Dan: Uh, Mom, that’s not possible. Our biology teacher told us that the spontaneous generation of species is a discredited theory. |
Hay, we're talking about a flying horse here.

Arion came up out of the sea, which is why he's only half a horse in our sky. His lower half is still in the ocean.

Perseus saw a chance to hitch a free ride back to the mainland, so he hopped on to the flying horse's back.

Perseus spying Cetus and Andromeda

It took only a moment for Perseus to see what was happening and come to rescue the man. Then he took Andromeda to cover her eyes. Then he took Medusa's head out of the bag and showed it to the sea monster.

Cassiopeia, Pisces and Cetus outline

Cetus took one look at the gorgon, turned to stone and sank to the bottom of the ocean. Then Perseus released Andromeda from her chains, put her on the back of Pegasus and they flew off and lived happily ever after.

Pegasus, Andromeda and Perseus on X/Y

Andromeda is here, dangerously close to the hungry sea monster. She shares a star with the Square of Pegasus, and looks like a big letter A. A for Andromeda.

And finally we find the hero, Perseus, nearby Cassiopeia and Andromeda. He kind of looks like a bunch of fishhooks bound together. This is his head, his body and his legs, his arm holding a sword, and in his other hand is Medusa's head. This star here, Algol, is the eye of the gorgon.

Slow play on lunar eclipse video

So those are the star players in this old, old fish tale from long ago.

Delphinus outline

That's Delphinus, the Dolphin. According to the myth, this dolphin rescued a man who had been thrown off a boat. The man's name was Arion, and he was a musician.

Who? Never mind. Let's just say that he was so good, that thousands of years after his last performance we can still find a picture of his musical harp up there in the heavens, represented by the constellation of Lyra, the Harp.

Lyra outline

Arion overboard

So why did somebody try to drown him?

Arion and sailors

The sailors threw him overboard because they wanted to steal all the money he'd made playing at a concert. Arion wasn't happy about this, and he asked if he could sing one last song before being tossed into the sea. It was a beautiful song and the sailors nearly changed their minds, but they really wanted his gold and so over he went.

Arrested sailors

And the dolphin saved him?

Dad: Yes. The dolphin had heard his song and was moved to rescue him. It carried him to shore. In fact, he got back before the sailors. When they got off the boat, they were arrested and "voted off the island"!

Piscis A outline

Dad: Well, let's see ... there's also another fish down below Pegasus and Cetus. This is the Southern Fish, marked by the bright star Fomalhaut, which means, "fish mouth". And then there's Capricornus, the Goat. Half goat, half fish, this constellation represents the goat god Pan, who once turned his lower half into a fish so that he could swim away from a large and hungry dragon. Finally, between Capricornus and Pisces is the constellation Aquarius, the Water Carrier. Some say that this whole region of the sky is known as the Sea, because of the water that spills from the water jug of Aquarius, the little Y shape up there.

Capricornus outline

Dad: Anything else up there we should know about?

Capuccin outline

Algol eclipsing binary video

Dad: Oh yeah, Medusa's eye.

Dad: When you watch it over several nights you discover that its brightness changes. One night it's fairly bright, a couple of nights later it's dim. Ancients thought this was the monster's eye, winking at them.

Aquarius outline

Dad: Why does it do that? Is the star unstable?

Dad: No, but we've discovered that Algol is really two stars that orbit each other - an eclipsing binary. When we see these distant stars side by side, they look like one bright star to our eyes. But when one star passes in front of or eclipses the other, it blocks the light from the star behind and we see Algol go dim.

Pointer

There are quite a few pretty sights that can be found through binoculars or telescopes. For instance, that star Algol I told you about.

Dad: Why does it do that? Is the star unstable?

Dad: No, but we've discovered that Algol is really two stars that orbit each other - an eclipsing binary. When we see these distant stars side by side, they look like one bright star to our eyes. But when one star passes in front of or eclipses the other, it blocks the light from the star behind and we see Algol go dim.

Pleiades

Mom: Oh, honey, don't forget about Andromeda. Go ahead and show him.

Dad: Thanks, dear. Up above Andromeda there's a little faint fuzzy spot in the sky.

Dad: Hmm. It looks like a piece of the Milky way that broke off.

Small telescopic view of Andromeda galaxy

Grandma: This is the one thing you can see that doesn't belong to our Milky Way. It's a whole other galaxy, the Andromeda Galaxy, way, way out in space.

Dad: And this is the most distant thing you can see without a telescope. The Andromeda Galaxy
is over two million light years away, almost fifteen million, trillion miles.

Dan: Far out!

Dad: My, it's gotten late. The Moon is higher in the sky, thanks to the Earth's rotation. And now I see an old friend rising in the east.

Kodalith: 'Song of the Whales'

Kodalith: 'In this windy old weather, stormy old weather... etc.'

Kodaliths of each whale type

Dan: Who's that, Daddy?

Dad: Oh, did we wake you, pumpkin? Well, it's almost time to go in. But not before I tell you about my old friend over there. And not just my friend. About a hundred years ago a man named Robert Frost wrote about him in a poem called, The Star Splitter. And it begins with, 'You know Orion always comes up side ways... And rising on his hands he looks in on me. Busy outdoors by lantern light with something I should have done by daylight, and, indeed, After the ground is frozen I should have done Before it froze, and a gust flings a handful Of waste leaves at my smoky lantern chimney To make fun of my way of doing things, Or else fun of Orion's having caught me.'

Dad: So you and Robert Frost talk to constellations, Dad?

Dad: Certainly we do. Do you think we named Orion? No. That picture has been up there for a long time. I remember seeing him when I was a kid.

Grandma: And I saw him when I was a little girl. And my grandparents saw him, too.

Mom: Orion is an old friend. People have been seeing him for thousands of years.

Dad: To know the stars and call them by name is to recognize them as old friends, who will be with you all your lives. And knowing them and naming them is a first big step to understanding the sky and the Universe beyond.

Grandma: Well, who'd like some ginger snaps and some hot apple cider?

Chorus of, "I would", "Me, too", etc.

Mom: I think we've got time for a song or two before we head in. Let's do a whale song.

Chorus of "Yeah", "All right", etc.

Kodalith: 'In this windy old weather, stormy old weather... etc.'

Kodalith: 'Song of the Whales'

Mom: Come all of you people and listen to me, I'll sing you a song of the whales in the sea...

In this windy old weather, stormy old weather, the wind blows we'll all sail together.

Well, first come the humpback, a singin' a song, Jumpin' and laughin' and splashin' along...

CHORUS: And then come the blue whale if I do recall, Of all the big ones he's biggest of all...

CHORUS: And then come the right whale, you've left such a few, I've sailed the world over and only saw two...

CHORUS: And then come the finback, a swimming right in, Chasin' a school of a thousand herin'... 

CHORUS: And then come the sperm whale, and guess what she did? She came to the top with a fifty foot squid...

CHORUS: Then up jumped a dolphin with her bottlenose, She's a good friend that everyone knows...

CHORUS: And then come the orca, the killer they claim, But it is the whalers that merit that name...

CHORUS 2X

Exit music

COMPARISON TABLE

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Fascination Rainforest: Butterflies, Snakes and Monkeys Take Over the Planetarium

Dr. Hannes Petrischak
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D-24106 Kiel
Germany
hpe@multimedia.fh-kiel.de

During the evening of December 2004, a show about Costa Rica’s rainforest was produced and premiered at Mediadome’s Mediaroom. In January 2004, a show about Costa Rica’s rainforest was produced and premiered at the digital theatre. This presentation of the variety of life on our planet gives “close encounters” with frogs, snakes, monkeys and a lot of other interesting animals.

The Mediadome at the Center for Multimedia of the University of Applied Sciences in Kiel (northern Germany) is one of the first planetariums in Europe which doesn’t just take visitors to the stars. In 2004, a show about Costa Rica’s rainforest was produced and premiered at this digital theatre. This presentation of the variety of life on our planet gives “close encounters” with frogs, snakes, monkeys and a lot of other interesting animals.

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Show Contents

“Fascination Rainforest” takes the audience from outer space back to our blue home planet. We plunge through the clouds directly into the heart of Costa Rica’s forest.

We are quickly surrounded by a band of inquisitive white-faced capuchin monkeys. We soon notice many interesting phenomena and associations: Red blossoms (e.g. heliconias and passion flowers) attract hummingbirds, offering them nectar in exchange for being pollinated. Butterflies are multi-colored, brilliant blue, transparent, or show the gray-brown color of the dry foliage lying all around. These colorations can serve as camouflage, can warn or trick potential enemies, or help to attract a mate. We discover similar patterns in snakes: The harmless vine snakes are almost invisible among the branches, but open their mouth threateningly wide when alarmed. Other non-poisonous snakes display bands of black, yellow and red - the warning colors of the deadly coral snakes. This phenomenon, called mimicry, can be observed in abundance in tropical regions. Also impressive are the warning colors of poison-dart frogs, the thorny front legs of the predatory praying mantis, the penetrating calls of the howler monkeys, and the amusing courtship dances of the manakins (amazing birds). The incredible abundance of species found in tropical rainforests and their endangerment by man is commented at the end of the show.

Reactions and Perspectives

The presentation in the Mediadome of Kiel is enjoying great success. The dome is an excellent surface onto which the natural “dome” of the forest can be presented. The audience feels particularly close to the animals, which are often presented in giant format allskies, and they get a sense...
For use in small portable and fixed planetaria, this groundbreaking projector uses a state-of-the-art miniature arc lamp and fiber optic technology that produces intense pinpoint star images never before seen in small projectors. It features bright, crisp, projections of constellations, the earth and other images with full-color saturation. Packaged with the new MultiLens Starfield Cylinder, the set features:

- a short-arc lamp with three times the efficiency of halogen lamps, nearly twice the color temperature of tungsten lamps, and an output of four times that of small-filament tungsten-halogen lamps producing a light that is pure, safe, UV-screened, and cold to the touch.

- 4 quartz-halogen, fully-adjustable gooseneck side lamps for reading and drawing ease inside the dome.

- azimuth and meridian reference projections.

- the MultiLens Starfield Cylinder includes new custom-designed lenses imaging the 70 brightest stars eliminating chromatic and coma aberration and resulting in the most accurate starfield of any small planetarium projector.

- and an extraordinarily precise depiction of the Milky Way that includes features like the Coal Sack and the Milky Way center, as well as the Large and Small Magellanic Clouds and Andromeda Galaxy.

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— Jim Manning, Taylor Planetarium, Museum of the Rockies, and Associate Editor, The Planetarian

"I imagine that it's one of the few tabletop experiments about which, 100 years from now, they will say 'that's back when they made clever, quality instruments.'"

— Dr. Neil de Grasse Tyson, Astrophysicist and Director.
President’s Message

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Although our IPS2004 Conference took place nearly five months ago, I continue to receive an occasional message or phone call from attending delegates expressing how much they enjoyed the conference in Valencia; the re-acquaintance of colleagues, the cultural ambiance, the invaluable time sharing of ideas during paper sessions and workshops, and being awed by new technologies. Not all the messages I received, however, were laudable – there were organizational glitches and a common complaint that there was simply too much content offered in four days. Our biennial conferences are becoming increasingly complex, more challenging for the host in institution to meet expectations, and more profit oriented. These are issues that our IPS2006 conference hosts will need to consider, either by reorganizing the way past hosts have scheduled vendor and delegate sessions or perhaps by extending the conference an extra day. Despite these challenges, our Valencia conference was the third best-attended conference ever and we did get a bounce in attracting new memberships. The conference attracted 330 delegates from 41 countries and 23 new memberships for a net increase in our membership to 720.

I look forward to reading the Conference Proceeding, which will appear on a CD format with a future issue of the Planetarian.

Presiding over this year’s IPS Council meeting and conference was a personally exhausting experience, but also a tremendously rewarding one. The more memorable moments for me during the conference were the conversations I had with new IPS members, with members I have never seen before, or with those attending their first IPS conference. These conversations usually centered around why the IPS was important to them professionally and the answer I heard most often was that they wanted to be part of an international community of planetariums, to share day-to-day work experiences with colleagues worldwide, and to participate at international conferences. Although no one I spoke to had mentioned that they joined because of membership benefits, I doubt few would join without the professional benefits the IPS does offer, especially our primary benefit – the quarterly Planetarian.

Other benefits include the numerous educational resources that are stuffed inside almost every journal – DVDs, CD-ROMs, The Planetary Report, posters, and more recently a NASA sponsored planetarium program “Ring World.” Of course, the feedback from delegates I just mentioned are very important benefits as well.

The Valencia conference was also a reflection of just how well our organization is doing overall. Because of the continued hard work of the Officers, our Executive Editor, and the committees and regional representatives, our society remains sound, very relevant, very fiscally stable, and poised for membership growth. Although there have been numerous changes within the IPS over the past several years, the one organizational trait that has not really changed is how little the overall membership volunteers, either for committee work or to run for an elected office. I realize, however, that getting non-English native speaking members more involved in our society has been and continues to be a challenge, but the strength of our society depends upon international involvement, volunteers from around the globe willing to share resources, their creativity and vision, or just helping to get some project completed. Many of you who wish not to become involved in committee work can contribute by submitting an article to the Planetarian, a script to our IPS script bank, send in any regional updates to the appropriate people, or just express your ideas and suggestions to the officers on how you think the IPS could become a better organization.

Remember, without the current worldwide, voluntary group of dedicated planetarians, certainly the IPS would not be the society it is today, so think about how you can contribute in some way.

The current and future challenges we face as a society were apparent in the Strategic Planning Committee’s presentation at this summer’s Council and IPS business meetings. John Dickenson, Chair of the Strategic Planning Committee, and Robert BallanTyne summarized the results of the committee’s survey. Due to the importance of the survey, Council continues to provide feedback to the Strategic Planning Committee on the Council’s list serve. The outcome of this online discussion will be presented to the general membership hopefully in the next issue of the Planetarian. Remember that the process of change within our society - how our society evolves, improves and expands will eventually rely on your participation. The pending results of the Strategic Planning Committee will allow you to be a part of the decision-making process. In fact, the outcome of all the work completed by our committees is the direct result of the amount of work from individuals on the committees. Committee work is the substance of our society and without committees there would be very few benefits or reasons of becoming an IPS member.

According to our By-Laws, our society is made up of several committees - Standing and Ad-Hoc committees. Unlike the Standing Committees, which are predicated by our By-Laws, the Ad-Hoc Committees can be created or dissolved by the IPS President depending upon the committee’s usefulness or relevancy to our membership. Of the current 21 committees, 12 are Ad-Hoc. Upon becoming your president, I decided that during my tenure I would include reports from each committee chair to be included in my quarterly message rather than having me summarize committee actions, which had been the practice of previous presidents. By having the committee chairs report directly, my intention was to hold the chairs more accountable for their committee’s relevancy, their purpose, function and current status. The idea was to give the committee chair an opportunity to express their committee’s vision, current projects, future goals, as well as listing those participating on the committee. During the past two years and eight president’s messages later, all but one committee chair responded to my request – our History Committee’s Chair did not submit a report. The last committee to report (the Media Distribution Committee) is included at the end of this message. I thank all the committee chairs for their contributions during my tenure.

Over the past several years, some Ad-Hoc Committees have become stagnant and ineffective, or irrelevant and have lived out their usefulness to the membership. I have taken the initiative to realign or merge three of the 12 Ad-Hoc Committees in order that they combine their resources and become more...
effective in serving our membership. The actions I have taken include the merger of the Laser Committee with the Technology Committee, the Consumer Affairs/Astrology Committee with the Education Committee and the Media Distribution Committee with the Outreach Committee. All three committee chairs were first consulted and each approved of their committee merger. They will also remain a member of the merged committee. A revised description of these merged committees will be written to reflect the changes. Last year I proposed dissolving the Ethics Committee. Since this committee has been a Standing Committee, the By-Laws need to be amended to reflect the dissolution of this committee, which can only be achieved through voter approval. As of this writing, the outcome of this fall’s election and vote on this proposal are unknown.

In this issue of our journal, you will find the minutes of this year’s Council meeting held in Valencia. Please take the time to review them carefully and notify your regional representative or the officers if you have questions. Next year’s IPS Council meeting will be held in Beijing, China, at the Beijing Planetarium on September 24-25, 2005. President-elect Martin George visited the Beijing facility in August where the new planetarium will soon be open. Martin thanks Council again for patiently waiting for his decision and apologizes for the delay in announcing the site. The Beijing planetarium is in the northwestern part of the city, directly opposite the famous Beijing Zoo. Tentative disc out hotel rates close to the planetarium have already been negotiated.

At the Beijing meeting, Council will vote on selecting the IPS conference site for 2008, so please begin thinking of where you would like our conference to be held and then contact your regional representative to voice your choice. Once again, the conference site candidates are: Morelia, Mexico; Glasgow, Scotland; Oakland, California; and Chicago, Illinois. Throughout the coming year, we will be receiving more details and information on our IPS 2006 Conference in Melbourne, Australia.

Speaking of future dates to keep in mind, Loris Ramponi, Brescia, Italy, has put together the following calendar of regional planetarium conferences and related events. Please refer to this list in planning your next conference, or notify Loris (loris@colibrinione.it) if there are any corrections or updates.

**2005**

March 1: Deadline for application for the program that starts August 22, 2005, about Master of Science communication at Dalarna University, Sweden. www.ScienceCommunication.se

March 20: International “Day of Planetaria”. http://www.planetaritaliani.it

April 10-11: Conference of German Speaking Planetaria (ADP), Europlanetarium, Genk, Belgium.

April 15: Yearly deadline for the applicants of “A week in Italy for an American Planetarium Operator.” http://www.bresciascientia.it/cityline/cult/photog.htm

Late April or early May 2005, Middle Atlanttic Planetarium Society Conference (MAPS), Fels Planetarium, Philadeiphia (USA).

May 6-8: BAP Annual Conference, Museum of Science and Industry, Manchester. It will be a joint meeting with the AAE (Association for Astronomy Education).

May 6-8: III European Meeting of Itinerant Planetaria, Nantes (France) in conjunction with the yearly meeting of Association of French-Speaking Planetariums (APL F). http://www.aplf-planetariums.org http://www.colibrinione.it/ISG/international_collaboration.htm

June 10-12: European collaborative for science, industry and technology exhibitions (ECSITE) Annual Conference, Heuréka, Vantaa (Helsinki), Finland. http://www.ecsite.net

June 14-18: Southeastern Planetarium Association Conference (SEPA), Fernbank Science Center, Atlanta, Georgia, USA. http://www.sepadomes.org

July 12-14: Japan Planetarium Society Conference (IPS), Osaka Science Museum, Japan.

September 16-18: Nordic Planetarium Association Conference (NPA), Orion Planetarium, Jels, Denmark.

September 24-25: International Planetarium Society Council Meeting, Beijing Planetarium, Beijing, China.

September 30: Yearly deadline for the applicants of “A week in Italy for a Spanish and a French Planetarium Operator.” http://www.colibrinione.it/ISG/international_collaboration.htm

October 9: XX National Meeting of Italian Planetaria, Brescia, Italy http://www.colibrinione.it/ISG/planetari_news.htm

October 17-23: A week in Italy for an American Planetarium Operator (each year since 1995). http://www.bresciascientia.it/cityline/cult/photog.htm

December 31: Deadline of Eugenides Foundation Scriptwriting Contest (contestants can submit scripts from July 1, 2005). For more information: stidey@sabreshockey.com

**2006**

June 8-10: European collaborative for science, industry and technology exhibitions (ECSITE) Annual Conference, Technopolis, Mechelen, Belgium.http://www.ecsite.net


Since this is the last of my presidential messages to appear, I want to express gratitude for the opportunity of serving in this office and wish to thank so many colleagues worldwide who make the IPS possible. It has been the greatest honor of my career to serve as your president and to work with such a wonderful group of caring members. Your officers and other council members care deeply about how they represent you and what the IPS does for you. I have enjoyed representing planetarians worldwide and value the contacts of colleagues I have made. I will miss the honor of holding this office, but at the stroke of midnight on 31 December Martin George becomes our President, I become Past-President, and either Anthony Fairall or Susan Reynolds Button (depending again upon this November’s election) become our New President-Elect. Martin Ratcliffe revokes off the list of officers. Our new president, Martin George, brings his own unique talents for the challenges ahead and I wish him well. I look forward to working with him, as well as continuing to serve, as Past-President, along side fellow council members.

**Committee Chair Report**

As part of my promise to provide a way for IPS Committees to be more visible in the context of the membership, the following report on current updates and highlights of the Media Distribution Committee is the entry in this series. Again, I wish to thank all the committee chairs that participated in providing reports.

**IPS Media Distribution Committee**

Thomas W. Krause, Chair

Planetarium Hamburg

Hamburg, Germany

I. Function of the Committee

The IPS Media Distribution Committee will in late, coordinate and oversee in cooperation with the appropriate partners and institutions - the cost-effective and non-commercial adaptation, duplication, distribution and documentation of media, i.e. visuals and other AV-materials, towards free of charge use in planetarium shows around the world and in exhibit areas. This will include in particular educational, public domain material from Space Agencies - such as NASA, ESA, CNES and JAXA - with the IPS Slide Service and the IPS Video Service as an integral part of the initiatives. Appropriate storage media, formats, distribution methods, etc. will be chosen by the Committee in cooperation with the IPS Technology Committee and vendors with close atten-
tion to the following:
* Quality achieved when used in planetariums
* User base - i.e. the current number of IPS members, both overall and internationally, who will be able to make use of it
* Trends for the user base and new technologies

IPS Media Committee will make accessible documentation and appropriate information about the respective media for IPS members in the form of a web-based media library.

II. Accomplishments of the Committee

The IPS slide distribution service continues to supply all members who subscribe to this service with the latest Hubble Images (thanks to the support from John Stoke/NASA/STScI) and select images of NASA’s planetary missions (thanks to the support from Anita Sohus at NASA/JPL). Even though the trend in planetarium technology is tipping over towards becoming fully digital, the number of subscriptions currently is at 76.

Mith Luman, after many years of excellent service, stepped down and David Leake took over along with Mary J. Schindewolf (taking over for David de Remer) to continue to provide IPS members with this service. Many thanks to all of them for their excellent work and dedication.

The Committee has also produced the first “products” of IPS:
1. The IPS-ESA Video Compilation: A NTSC-laserdisc featuring a compilation of a variety of videos about ESA missions including launch and deployment of a variety of spacecrafts.
2. The IPS-NASA/JPL Mars Video Compilation: A NTSC-laserdisc with highlights of NASA’s exploration of the planet Mars. It includes a variety of images and video clips of spacecrafts and the planets surface.
3. The “Exploring the Sun with SOHO and CLUSTER” DVD: this first DVD produced by IPS is a double sided DVD to meet all requirements of planetarium users Side 1: PAL, Side 2: NTSC. Both sides include more than an hour of video clips from NASAs SOLAR missions. It explores the Sun’s internal structure, its extensive outer atmosphere and the origin of the solar wind with dramatic original footage of our sun.

Copies still available of each of these three compilations for $95.00 each from the IPS treasurer.
In addition, several DVDs and CD-ROMs were distributed as freeware with our IPS Planetarian journal. This was quite often possible by joining forces with Christine Shupla, Chair of the IPS Outreach Committee, who has been very active in acquiring new material for IPS.

III. Future Goals of the Committee

1. Continue the slide service as long as the number of subscriptions is high enough (currently at 76).
2. Promote the DVDs and LDs in order to achieve more sales. The rather low numbers reflect the fast-paced change in image storage technologies and the sharp drop in prices of DVD productions until now.
3. Reconsider future digital media compilations. We recommend not producing large numbers of any further compilations at this time. Instead, we recommend to “press/produce copies on demand” of any such compilations in the format of a DVD. In case there is a high-bandwidth connection upgrade to our website, we could offer single sequences via ftp-download as mpeg-files. The decision of the next most useful compilation will be up to IPS members and the committee. A decision will depend also on communications with respective media offices of the space agencies and observatories, since we prefer to initiate such compilations and their distribution through those partners (saving costs and building partnerships) as “freebees” mailed along with the IPS Planetarian.
4. All dome sequences: The committee will explore ways to make all dome scenes/movies available to members, as well as foster creation of such scenes by research institutes and agencies (along what John Stoke at STScI has pioneered to create). An online database/documentation of what is available for use in planetariums would be a goal for the next term.
5. Debating the future of the committee. Since there is a lot of beneficial crossover (we both have to talk with many of the same people at agencies and research institution) and the need for an even closer cooperation between the two committees, the Media Distribution Chair is suggesting to streamline the work of both by considering even to merge the MDC with the Outreach Committee, while keeping the different services thru dedicated persons, especially the IPS Slide Distribution Service: David C. Leake and Mary J. Schindewolf. The function of MDC chair could be altered to something like a “Media Distribution Coordinator or Officer.”

IV. Budget Requirements

There are no urgent requirements of a budget, since future projects shall mainly be “freebees” for IPS and IPS members. Depending on the future (possible merger) of the committee, projects will be proposed only after the IPS president decides on this matter.

V. Committee Members

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Treasurer Shawn Laatsch
Secretary Lee Ann Hennig

Affiliate Representatives:
Association of Dutch Speaking Planetariums (ADSP) - Chris Jansen
Association of French Speaking Planetariums (APLF) - Agnès Acker

Minutes of the IPS Council Meeting
Sala de Prensa, Museo de las Ciencias
L’Hemispheric, Valencia, Spain

July 3-4, 2004

* indicates action items

In attendance:
President Jon Elvert
President-Elect Martin George
Past President Martin Ratcliffe

Treasurer Shawn Laatsch
Secretary Lee Ann Hennig

Affiliate Representatives:
Association of Dutch Speaking Planetariums (ADSP) - Chris Jansen
Association of French Speaking Planetariums (APLF) - Agnès Acker
Association of Mexican Planetariums (AMPA) - Gabriel R. Muñoz for Ignacio Castro Pinal
Association of Spanish Planetariums (APEL) - Javier Armentia
Australasian Planetarium Society (APS) - Martin George for Glen Moore
British Association of Planetaria (BAP) - Teresa Graffon
Canadian Association of Science Centres (CASC) - John Dickenson
Council of German Planetariums (RDP) - Dr. Andreas Haenel
European/Mediterranean Planetarium Association (EMPA) - Dionysios Simopoulos
Great Lakes Planetarium Association (GLPA) - Chuck Bueter
Great Plains Planetarium Association (GPPA) - John Hare for Jack Dunn
Italian Planetaria's Friends Association (IFPA) - Loris Ramponi
Japan Planetarium Society (JPS) - Shoichi Itoh
Middle Atlantic Planetarium Society (MAPS) - Lee Ann Hennig for Paul Krupinski
Nordic Planetarium Association (NPA) - Lars Bromann
Pacific Planetarium Association (PPA) - Gail Chaid
Rocky Mountain Planetarium Association (RMPA) - Jim Manning
Southeastern Planetarium Association (SEPA) - John Hare
Southwestern Association of Planetariums (SWAP) - Donna Pierce

Affiliates not in attendance:
- Planetarium Society of India (PSI)
- Russian Planetarium Association (RPA)
- Ukrainian Planetarium Association (UPA)

Guests:
- Susan Reynolds Button - Chair, Portable Planetarium Committee
- Thomas Kraupe - Chair, Media Distribution Committee
- Jan Sinner - Chair, Technology Committee
- Dale Smith - Chair, Publications Committee

The meeting was called to order at 9:15 A.M. by President Jon Elvert. Jon welcomed Council to Valencia and reviewed changes in the agenda and detailed events to be attended over the course of the conference. As introductions were made, Council formally welcomed several new Council members as well as Committee Chairs. The President emphasized the importance of participation by Council members and the value of our Committee Chairs in the success of IPS.

The Secretary's Report on the Minutes of the 2003 Jena, Germany Meeting had been previously published in the March 2004 Planetarian. One correction to the Minutes was made regarding a spelling error, then Shawn Laatsch moved to accept the Minutes, seconded by Jim Manning, and approved by Council. Secretary Lee Ann Hennig reported that most of the material of the 2004 IPS Council Packets was distributed electronically. This was followed with a hard copy packet distributed by postal mail. The secretary will continue to work on improving the electronic version distribution for 2005. The secretary reported on efforts to produce a report to the membership which would include the Affiliates Committee, Treasurer, President and Past President reports.

Shawn Laatsch presented the Treasurer's Report. Council reviewed and discussed specifics of the 2003 Financial Report, the first quarter 2004 Budget, and the proposed 04/05 Budget. The Treasurer reported that the Slide Service should be distributed in July and that there were SOHO DVDs still available. Council discussed concern over the high cost of DVD production and printing expenses for the Planetarian. Shawn explained that the advertising monies for the Planetarian would not be reported until later in the budget cycle, and therefore would offset some of the apparent deficit. Jim Manning suggested that more detail on expenses over several years of the budget cycle be included in the Treasurer's Report so that trends and changes would be easier to monitor. The Public Information Committee and the Finance Committee will consider reevaluating the advertising rates in the Planetarian. Shawn reported on the Star Partners' Fund activity. Currently, 58 planetariums from around the world have been selected to receive sponsored IPS membership. The full report will be published in the Planetarian and reported to The Planetary Society as a sponsoring organization.

Treasurer/Membership Committee Chair Shawn Laatsch presented the Membership Report. Discussion centered on reasons for the increase in membership for 2004 (at 696 as of the time of the conference). It was speculated that the Planetarian is the IPS Website and the 2003 Wichita Conference might account for the improved interest in the organization. John Hare announced that his company is offering his customers the option of paying their dues ($25) to a regional organization, or to contribute to an association's funds, such as the IPS Star Partners' Fund or the SEPA Scholarship Fund, in the name of the customer. John will be publicizing his company's efforts on behalf of supporting planetarium associations and their projects. Publication Chair Dale Smith reported that the IPS Membership Brochure will be mailed with the next issue of the IPS Directory update mailing. Shawn showed a sample of the IPS Membership Certificate which is available on request from individual members. Council discussed the possibility of providing the certificates online in the members-only section. This would allow members to print their own certificate from a template. Discussion by Council resulted in a motion by Chuck Bueter to provide an electronic template of the IPS Membership Certificate on the members-only section of the IPS Web site, seconded by Jim Manning and approved by Council. Shawn reported on the cost estimates and conditions for obtaining audits of the IPS Treasury. The approximate cost of a full audit is approximately $2500. Council considered the advantages of a full audit versus a review of the books and agreed to the full audit.

John Dickenson moved that IPS provide a full audit for each year of the Society's operations commencing with 2004 and additionally to amend Article IV, Section 2 of the Standing Rules to read: The Treasurer should arrange for an audit of the finances of the Society prior to each meeting of Council. The audit should be completed in sufficient time for circulation with the Council papers. The motion was seconded by Jim Manning and approved by Council.

Shawn reported that the Benefits of Membership Document is ready for posting on the IPS Web Site. John Dickenson raised the question of the status of the Corporate Membership proposal and Martin Ratcliffe responded that no progress has been made on the issue to date. Council agreed to consider the Strategic Planning Committee's recommendations regarding Corporate Membership. Jon Hare moved to approve the Treasurer/Membership Reports, seconded by Donna Pierce and approved by Council.

The Past President's Report was delivered by Past President Martin Ratcliffe. Martin commented on the following topics relative to his six years in office:

- Negotiations are continuing regarding an outstanding sum of money owed to IPS by the Radisson Hotel in Wichita from the IPS 2002 Conference
- The Conference Guidelines will be completed by the end of the year with Martin's additional comments as Conference Host
- The IPS membership is the highest since 1997
- The Strategic Planning Committee under the Chairmanship of John Dickenson is proceeding well in helping us to plan for the future of the organization
- Martin expressed his gratitude to Council for support and friendship during his tenure on the Council
- John Dickenson moved to thank Martin Ratcliffe for his service to the Society for the last six years on Council and as Conference Host, seconded by John Hare and...
President Jon Elvert presented the **President’s Report** as a summary of the organization’s general condition and future goals:

- Jon offered thanks to the Council and Past President Martin Ratcliffe for his leadership and guidance
- All vacant Committee Chairs have been filled and the committees are resuming their functions
- In the President’s Message in the **Planetarian**, he has instituted reports from various committee Chairs to encourage and enlighten the membership on committee work
- Jon will eliminate, incorporate, or redesign the committees to better meet the goals and objectives of the organization
- The President has attended many Affiliate meetings and conferences
- Jon is continuing his efforts at enhancing the image of IPS with professional societies/organizations and seeking opportunities for cooperation with those entities (NASA, JPL, STScI)
- Jon hopes to promote IPS as a distribution center for NASA materials—a vehicle for dissemination of information
- IPS will work with John Stoke to promote the View Space Exhibit among planetarians
- Jim Switzer in Chicago and Anita Sohus of JPL are working with Jon on developing methods to provide planetarians with professional development workshops/seminars. This may also involve the local news media/IPS/NASA as a cooperative endeavor.
- The Jena 2003 IPS Council Meeting was very successful
- Web Committee Chair Alan Gould and his dedicated and talented committee have instituted several productive changes and redesigns to the IPS Website. More details to follow in the Committee Reports.

### Affiliate Reports

**Written Affiliate Reports** were reviewed. In Affiliate News from the floor:

- ADSP Representative Chris Janssen reported that they would be hosting two conferences in 2005 at the Europeanplanetarium, the International Dark Sky Association on April 28, and German Speaking Planetariums on April 10-11.
- IPFA Representative Loris Rampone announced the first week in Italy for a French Planetarium Operator would occur in November 2004 and next year a week would be introduced for a Spanish Planetarium Operator. This expands the collaboration of Serafino Zani Astronomical Observatory to three weeks devoted to different countries participating in the project.

Jan Sifner reported on the progress of the Association of Czech and Slovak Region Planetariums. Presently there are about 25 members from the Czech Republic, Slovakia, and Hungary. The organization was established in 1991 with annual meetings and several special events every year. Jan will document the progress of this organization in anticipation of a possible affiliation with IPS.

CASC Representative Jim Dickinson reported on the highlights of the June CASC Conference in Edmonton, Alberta. The 2005 Conference will be held in Montreal the first week of June.

GLPA Representative Chuck Bueter reported on the upcoming Extreme Astronomy at the Planetarium, a short course for planetarium staff on Sept. 24-26, 2004, which will be presented by the Kavli Institute for Cosmological Physics at the University of Chicago. GLPA and the Adler Planetarium are collaborators in this endeavor. There will be a follow-up session on Oct. 20 at the GLPA conference in Detroit. The 2003 Galileo Award, for intensive service to the planetarium community and in particular to the international community, was presented to Dr. Dale Smith. Chuck reported that the Center of Science and Industry in Columbus, Ohio has suspended operation of its brand new planetarium because of financial difficulties. Many of the GLPA members enjoyed clear skies and large enthusiastic crowds for the Venus Transit on June 8, 2004.

RDP Representative Dr. Andreas Haenel reported that for the reduced price of $2000, “Ring World”, was now available for international distribution. This was an item discussed at the Jena Council meeting regarding the higher cost of the Cassini planetarium program, “Ring World”, for non-US IPS members. President Jon Elvert replied that he is pursuing projects that are inclusive of international planetarium material distribution. IPS should be instrumental in dealing with various agencies in dissemination of not only materials, but also planetarium programs. IPS is now firmly committed to insuring that all members are treated equitably on this distribution issue.

Donna Pierce moved to accept all Affiliate Reports, seconded by Shawn Laatsch and approved by Council.

### Standing Committee Reports

**Standing Committee Reports** were presented, reviewed and discussed.

President Jon Elvert announced that Chair Jon Bell of the **IPS Awards Committee** had only just arrived in Valencia when he had to return home for a medical emergency. Discussion concerning the list of nominations for the IPS Fellows and details relating to procedures and criteria was tabled until Sunday. Council discussed the nominations for the IPS Service Award and *John Dickinson moved to accept the nominations, seconded by Donna Pierce and approved by Council.* The honorees and Service Awards will be presented in 2006 at the IPS Melbourne Conference. The President’s Award Plaque will be presented to Past President Martin Ratcliffe at the Banquet this week. Jim Manning suggested that the Awards Committee be encouraged to make an effort to increase the visibility of the various awards to the membership via the IPS Website and the **Planetarian**.

President Jon Elvert presented the **Elections Committee** report on behalf of Chair Steve Mitch.

The Committee’s selection of qualified candidates for the offices of President-Elect, Executive Secretary and Treasurer/Membership Chair are as follows:

For the office of President-Elect:

- Susan Reynolds Button
  8793 Horseshoe Lane
  Chittenango, NY 13037 USA

For the offices of Executive Secretary and Treasurer/Membership Chair, Lee Ann Hennig and Shawn Laatsch agreed to run as incumbents for the offices that they currently hold. Three other nominations for President-Elect were submitted, but declined for various reasons, and one other nomination for Executive Secretary was submitted but subsequently declined. During the IPS Business Meeting on Monday, additional nominations for the three offices will be accepted from the floor. Voting will take place in the fall, and the newly elected officers will take office on January 1, 2005.

*Motion by Donna Pierce to accept the Elections Committee Report, seconded by Jim Manning and approved by Council.*

The **Publications Committee** Chair Dale Smith reported on the activities of the Committee. The **Planetarian**, under the leadership of John Mosley (now in his 17th year as Editor), is midway through its second year as a full color publication. Council expressed its gratitude to Editor John (who has edited 70 consecutive quarterly issues) and his talented and dedicated Associate Editors and contributors. Chuck Bueter is the new Advertising Coordinator. Dale reminded Affiliates to solicit articles from their membership for publication consideration in the **Planetarian**.

- In December 2003, The **IPS Directory** was placed on the members-only section of the IPS Website. Chair Dale Smith
expressed his thanks to Web Committee Chair Alan Gould for creating the Website structure to hold the directories and for making the directory update forms available on-line. The update of the listings will lead to the new edition of the directory CD-ROM in 2005.

- The Proceedings of the IPS 2004 Conference in Valencia will be a work in progress for the next few months.

Special Publications:
- **IPS Astronomical Songbook** - (Jon Bell, Editor) includes texts for dozens of astronomical songs and recordings of many of them. The CD-ROM master is ready and copies will be pressed and distributed with a future issue of the *Planetary*.
- The Moon Phase Book (Jay Ryan, artist/author) artwork has been digitally scanned and the presentation format is being arranged. Release date for the CD-ROM will be early 2004.
- The text and electronic files are now complete and final arrangements are being made for its release in CD-ROM format. Status of other do cuments, publica tions, and efforts:
- Agnès Ack er and Laurence Demond are aiding in the effort to scan past issues of the *Planetary* into electronic format.
- In cooperation with the Language Committee, work is continuing on translating and printing the membership brochure into several languages.
- Dale reported that IPS keeps three repositories of past publications: the U.S. Repository is with Treasurer/Member ship Chair Shawn Laatsch; the European Repository is with Chris Janssen in Genk, Belgium; and the Asian Repository is with Shoichi Itoh at the Sugami Science Center in Tokyo, Japan.
- IPS continues the program of exchanging abstracts between the *Planetary* and the APLF French journal *Planetariums* and the JPS Japanese journal *Twilight*.
- The Publications Committee now coordinates the inserts included in the *Planetary*.

Council discussed the possibility of making previous IPS Publications available in an electronic format, providing publications for the visually impaired, reprinting selected articles from past issues of the *Planetary* and reminding the membership of the online reference to *Planetary* articles on the website.

Lars Broman expressed his thanks to his regional reporters for their contributions to his column in the *Planetary*.

Because the length of Council meetings has expanded to cover two full days of business, Council discussed the possibility of reimbursing Council members for a second night of hotel expenses. • Lars Broman

moved to have the Finance Committee evaluate the request and report back to Council on Sunday, seconded by Jim Man ning and approved by Council.

President Jon Elvert reminded Council that the amendment to abolish the Ethics Committee a decision made by Council in Jena in 2003, would be on the ballot this fall for the IPS membership to consider.

**IPS 2004 Conference Report**

President Jon Elvert reported there were no updates on the 2004 Valencia Conference which would alter the published program, and that everything appeared to be well organized and on schedule. Jose Carlos is expected to give a detailed report to Council on Sunday.

2006 IPS Melbourne Conference spokesperson Martin George reported on the plans for the July 24-27, Australian event. Conference organizers expect the registration fee to be approximately $360.00 (USD). Pre-Conference Tour will include a two-day visit to Tasmania ($300) and the Post-Conference Tour will include visits to observatories and planetariums of New South Wales and Siding Springs ($700.00). Air fares are not included in those costs. Updates will be posted on the web.

**Ad Hoc Committee Reports**

The **IPS Consumer Affairs/Astrology Committee Report** was submitted by Chair Jeanne Bishop. Jeanne’s article concerning the nomenclature of astronomical objects, “How Astronomical Objects Are Named”, will be published in an upcoming issue of the *Planetary*. Jeanne reports that there is an opening for a reviewer of materials emphasizing astronomical accuracy. Please contact Jeanne if you are interested. The committee continues to monitor the astrological vs. astronomy issues and consumer issues relating to astronomical claims.

The **IPS Education Committee Report** was submitted by Chair April Whit. The “Focus on Education” Column in the *Planetary* is currently without an editor. This is an important feature that Council feels needs attention. The committee is involved in the following pursuits:

- compiling lists of regional and national education standards of science/astronomy
- providing a separate space for the Starlab Lesson Plans on the IPS Website
- establishing a Teacher Pen Pal system to exchange lesson plans and educational ideas

Council discussed the need to have a focused mission for the column as well as defined objectives for the committee. President Jon Elvert will be working with each IPS committee in his continuing quest to increase the effectiveness and define the purposes of committees in terms of their activities and goals.

The **IPS History Committee Report** was delivered by Historian John Hare. Agnès Ack er and her associates are scanning back issues of the *Planetary* for archival purposes. Council discussed some of John’s proposals for archiving materials and suggested the following:

- Agnès will continue to focus on scanning the *Planetary*.
- John will concentrate on scanning the IPS Conference Proceedings.
- Dennis Simopoulos will scan the slides and provide a master DVD-ROM for the archives.
- John will be responsible for two articles/year in the *Planetary*, one of which he will author and one of which he will edit. John’s articles will focus on the history of IPS and its evolution. The edited articles will focus on specific regional affiliations. Both articles will feature historical perspectives including key individuals and events. These articles will appear in the 2005 *Planetary*.

The **Language Committee Report** was presented by Chair Martin George. Martin reported on the committee’s efforts in completing the series of translations for the IPS Membership Brochure and exploring the role of the Committee in translations at conferences. The Language and Public Affairs Committees are working very closely on projects related to multilingual issues.

The **IPS Media Distribution Committee Report** was presented by Chair Thomas Krause. There are currently no plans for any new DVDs or videos, primarily because of the expense. The committee will explore the possibility of a distribution of images via the web or downloading – this would eliminate the cost of hard copy distribution. Council discussed the issues of expense of production and distribution of DVDs and the conversion problems. On-line materials are easier to access and place on a format preferred by the user. Lars suggested that storing the images on the web would be more convenient for the membership. Agnès commended that it would be helpful to some members if we could provide short sequence DVDs on educational/astronomical topics. Thomas will take these suggestions back to his committee and submit a proposal to Council. The next round of materials for the Slide Service is due out next week.

Council reviewed the **Outreach Committee** report submitted by Chair Christine Shupla. The committee is focusing on working more closely with organizations sharing a common goal with the planetarium field. This should result in more resources for the membership and an improved awareness of the planetarium field as an educational out-
reach resource for astronomers, Christine presented a proposal for Council consideration which aims to solidify some of the committee's goals in working jointly with organization and to improve relations.* Council expressed concerns on some of the details and President Jon Elver t will request the committee to address the questions for further clarification.

George Fleenor, Chair of the Light Pollution Initiative Subcommittee under the auspices of the Outreach Committee, and Jack Dunn are working on several articles related to light pollution.

The IPS Planetarium Development Group chaired by Ken Wilson is making progress on the IPS Planetarium Development Guide; however the project is not complete. "So You Want to Build a Planetarium" has been converted to PDF format and has been posted on the IPS Website.

Chair Susan Reynolds Button presented the Portable Planetarium Committee Report. The committee would like to have contact people in each regional affiliate to monitor the presence and utilization of portables. Susan encouraged Affiliates to include in their newsletters information of interest to portable planetarium directors. The committee strives to promote quality workshops and presentations under the dome, as opposed to vendor demonstrations. RMPA Representative Jim Manning mentioned that one of the difficulties his regional has is identifying portable planetarium operators. In order to get them involved in regionals and/or IPS it would be helpful to find a way to identify these facilities/operators. Once identified, Jim suggested that the planetarians can determine if membership is viable for them by offering complimentary planetarium journals, or even reprints of articles. This would serve to pass on useful information to them, and also give them a reason to join the planetarium organization. Susan agreed that the issue is worth exploring and perhaps discussing among the Affiliates.

President Jon Elvert reported that Chair Mike Murray of the IPS Professional Services Committee is reevaluating the committee's goals and objectives. Mike submits that the function of the committee should be "to help planetarium professionals and those interested in developing planetariums to gain the knowledge and background necessary to manage a professional operation." To that end, Mike and his committee are proposing the following directions for the committee:

- Outline the general aspects of planetarium management and a business approach to planetarium operation
- Provide guidance to people interested in potentially becoming involved in the planetarium field

Be available to give recommendations to candidates and institutions regarding profiles and applications offering assistance to planetarians seeking job related guidance within our field.

The committee will design a survey which will help formulate the implementation of these objectives. Council discussed the apparent disconnect between the website posted function of the committee and the Standing Rules description of the committee.

* It was the consensus of the Council that the committee reconcile the differences among the website posting, the Standing Rules description and the newly proposed guidelines and report back to Council for a standard reading.

Steve Tidley, Chair of the IPS Script Contest Committee, submitted a report on the Eugenides Foundation Script Contest. His report detailed a review of the contest guidelines and suggestions regarding improvements in the implementation and goals of the contest. Considerable discussion over the future of the contest, and the objectives and goals of the contest resulted in two motions. *Donna Pierce moved that the IPS Script Contest be dissolved and that the funds be placed in an educational fund to be determined in consultation with Council and the Eugenides Foundation; the motion was seconded and amended by Shawn Laatsch to read: the IPS Script Contest shall be dissolved. The motion was defeated by Council.

* Jim Manning moved that Council direct Steve Tidley and the committee to consult with Dennis Simopoulos as Eugenides Foundation representative, to discuss the submitted report and offer an effective solution to revise the contest and determine the best course for the contest, seconded by Shawn Laatsch, and approved by Council.

Jan Sifner, Chair of the IPS Technology Committee reported on the challenges he sees to the successful operation of this committee. The two main objectives of his committee should be:

- To help planetarians to use, maintain and upgrade their devices
- To help assess and utilize new technologies in the planetarium field

Further, Jan suggests the committee explore the following actions:

- Set up databases of vendors, spare parts, technical solutions
- Discuss with vendors their technical support for older systems
- Set up databases of products specific to the planetarium field

John Hare offered to assist Jan on the technology aspects of planetarium facilities and vendor participation. President Jon Elvert reiterated his support of the Committee and its importance to the membership and directed Jan to focus on the objectives he feels are important to the future of the planetarium field as they relate to his committee. Jon also will address the mission of the Planetarium Development Committee and the IPS Technology Committee in the reevaluation process to ensure they are not in conflict or overlapping objectives. Suggestions from Council included the possibility that the committee could serve as a venue for discussing standards and marketing tools. Lars suggested that Jim Manning's *Planetarian column could also serve as a forum for some of the committee's issues.

President Jon Elvert presented Chairman Alan Gould's report of the IPS Web Committee. Alan could not be at the Council meeting because of a sudden illness. Since the winter of 2003/04 several improvements to the IPS Website have been instituted:

- Updated contact information
- Font changes and minor page layout refinements
- New IPS Membership Directory and Resource Directory files (PDF) posted in the members only area
- Reorganization of the file structure into logical folders according to the main navigation links

The IPS Website is now hosted by the Science Museum of Virginia - thanks to committee member Ken Wilson for volunteering to host the website and to committee member Randi Slaughter (also at the Science Museum of Virginia) for working on the website redesign. Committee member Joyce Towne did an analysis of the website and her findings will enable the committee to improve the form and function of the site. The committee has accomplished a successful mock election through a voting web page form and expects to have on-line election capabilities in the near future. Chairman Alan has assembled a talented and devoted committee to redesign as much of the site as possible on an in-house basis.

John Dickenson moved to adjourn the Council Meeting, seconded by Jim Manning and approved by Council. Council Meeting was adjourned at 6:00 P.M., to be continued on Sunday, July 4, 2004.

Continuation of IPS Council Meeting, 9:20 A.M., July 4, 2004

Additio nal Attendees:
Robert Ballantyne - Strategic Planning Committee Consultant
Alex Barnett - Chabot Planetarium, 2008 IPS Conference Bid
Mario DiMaggio - Scottish Power Space Theatre- 2008 IPS Conference Bid
Genovevo Figueroa and Gerardo Trujillo-Centro de Convenciones de Morelia - 2008 IPS Conference Bid
President Jon Elvert called the meeting to order as a continuation from the previous day. The first order of business was to complete the Ad Hoc Committee Reports. John Dickenson, Chairman of the Strategic Planning Committee, summarized the committee's status and introduced Consultant Robert Ballantyne to present the Executive Summary of the Planning Report prepared by Ian McLennan (Ian could not attend the meeting due to medical concerns) and Robert Ballantyne. Robert discussed the study and fielded questions from Council regarding survey statistics, conclusions, options, definitions of terms, financial issues and other details generated by the report. The discussion was tabled until later in the afternoon.

IPS Conference Reports
2008 IPS Conference Bids were submitted by the following representatives:
- Genovevo Figueroa and Gerardo Trujillo-Centro de Convenciones de Morelia and Gabriel Muñoz, Morelia Planetarium 2008 IPS Conference Bid-Morelia, Mexico
- Alex Barnett, Chabot Planetarium, Oakland, California USA
- Jose Francisco Salgado, Adler Planetarium, Chicago, Illinois USA
- Mario DiMagio, Scottish Power Space Theatre, Glasgow, Scotland UK

Both Morelia and Glasgow had submitted preliminary bids in Jena in 2003. Council reviewed each proposal with attention to facilities, conference agenda, accommodations, travel requirements, pre-conference options, expenses, and conference dates. Specific concerns from Council dealt with the following items:
- actual support from local institutions, the local planetarium/professional astronomy field, tourist in industry, and local governments
- job security/stability of the host institution personnel
- precautions regarding possible cancellation of conference venue support

Each of the potential conference site hosts will present a bid to the general membership on Monday during the Business Meeting. Lars Broman brought up the question of selection of dates for the conference. Council discussed the advantages and disadvantages of holding the meetings at various times of the year and reviewed the historical reasons why particular dates were chosen. *Council agreed to canvass the membership again as to a preference of dates, perhaps in an on-line survey.

Meeting
Council addressed items tabled from the previous day:

Item 1: Awards Committee
Because of outstanding questions regarding procedure and requirements regarding nominations for IPS awards in general, the Council felt it imperative to have Chair Jon Bell present for consultation on the committee's recommendations. As previously stated, Jon was unable to attend the Council meeting because of a medical emergency and was unable to communicate with Council on committee business during this time. In order to move forward with some committee business, *Martin Ratcliffe moved to have Council accept the proposals forwarded by the committee except for two issues that are yet to be resolved, seconded by Shawn Laatsch and approved by Council. NPA Representative Lars Broman requested to be listed on record as voting against the motion. Council directed President Jon Elvert to work with Chair Jon Bell to reevaluate the procedure, documentation, and requirements relevant to the committee's functions and to report back to Council.

Item 2: Finance Committee
Council revisited Lars Broman's motion to have the Finance Committee evaluate the request to reimburse Council members for a second evening's hotel expenses. Discussion resulted in a *motion by John Dickenson to reimburse Council member for two nights' expenses, subject to treasury conditions, and that this procedure be continued through subsequent Council meetings, seconded by Jim Manning and approved by Council.

Constitution Issues
The general membership will be voting on the By-Laws amendment regarding the dissolution of the Ethics Committee on this fall's ballot. The Strategic Planning Committee is in the process of reviewing the By-Laws and Standing Rules to identify sections which need updated terminology, other modifications, as well as reviewing the document's overall structure for ease of reading. The Secretary had included the guidelines of the Armand Spitz Planetarium Education Fund and the Star Partners Fund as appendices to the Standing Rules.

Old Business
President Jon Elvert addressed the status of Loris Ramponi's proposal concerning the production of IPS Update Video for use by affiliates at regional conferences. *Jon will have the CD available for affiliates this fall. He believes that would be the best time for distribution so that affiliates can share with their members the latest updates from Council along with the most recent conference news. The IPS Language Committee will work with Jon on the production to produce the text in various translations and the Media Distribution Committee will work on the distribution.

Council reviewed the Standing Rules regarding Affiliate Organizations, in particular:
Section II.A.2.i, and which addresses the minimum number of members of a potential affiliate organization.

After considerable discussion regarding whether to adopt the broadest interpretation of the rule or to define the rule in more detail, *John Dickenson moved to reword Section II.A.2.i to read:
The minimum number of members of a potential affiliate organization shall be four (4) IPS members each from different institutions/planetariums providing the general geographical region is not currently served by an IPS affiliated organization.

and additionally to amend Section II.C.2 to read:
After affiliation, minimum membership to maintain voting representation on the IPS Council shall be four (4) IPS members each from different institutions/planetariums.

Seconded by Lars Broman and approved by Council.

Council reviewed the draft of the Affiliate Responsibilities Document and suggestions were made for improving the final document. *Jim Manning moved to accept the document as a “welcome letter” accompanied by a bullet list and proposed revisions, seconded by John Dickenson and approved by Council.

NPA Representative Lars Broman reported on the status of the Armand Spitz Planetarium Education Fund grant approved for two master students' internships and field work at a planetarium for three months, April-June 2004. Claudette Martin is pursuing her master's thesis at H.R. MacMillan Space Centre in Vancouver “examining visitor attitudes and motivations”. Hamid Asgari and Kayvan Seyed Nejadian of Falun, Sweden, are doing their field work at the Falun Science Center investigating “important parameters in designing and presenting exhibits and planetarium shows in science centers: A visitor-based framework”. In keeping with the provisions of the grant, the students are submitting a report describing their experiences and the significance of their project to be published in the Planetarian and posted on the IPS Website. *Lars requested a renewal of the grant for a second year and it was approved by Council. Loris is pursuing the promotion of the Fund and possibility of grants by giving it visibility on the website and in the Planetarian. Thomas Kraupe suggested that the IPS Professional Services Committee be more involved in this endeavor.

Council returned to discussion concerning
the Strategic Planning Committee Study. Although the survey generated some interesting opinions, Council questioned the statistical relevance of such a small, selected sample, as well as solicited anecdotal comments. Other concerns included the following issues:

- the lack of input by committee members, officers, Council members, international members
- absence of alternatives/options presented at a lower cost level
- not enough time to see the study results/report before Council meeting
- the proposals offered significant change with too many questions unanswered
- the apparent contradictions in some of the study’s options
- the need for a more statistically valid survey instrument
- the perceived notion that higher membership fees equals more membership benefits
- the impact of significantly increasing dues on small facilities
- a detailed definition of terms used in the study

Council did agree that the study can be an impetus for discussion on issues facing IPS. It provides a chance for the general IPS membership to comment on these issues, and it will help Council utilize the information in a constructive way to plan for the Society’s future. Because of the number of concerns generated by the study and the sense of Council for more membership participation and Council interaction, the following motion was made by Jim Manning to charge the Strategic Planning Committee to establish a process (on-line, discussion, etc.) to define the issues and plan strategies for obtaining the information needed in order to determine the future direction of the organization. The motion was seconded by Dennis Simopoulos and approved by Council.

President Jon Elvert thanked the Committee Chair John Dickenson and consultants Robert Ballantyne and Ian McLennan for their work on the study. Council will immediately begin to look at the specifics of the study and continue the discussion electronically.

New Business

On behalf of IPS, Dennis Simopoulos requested that Robert Ballantyne convey to Ian McLennan (the first IPS Service Award recipient) our warm regards and best wishes for a speedy recovery.

With business completed, Jim Manning moved to adjourn the Council Meeting, seconded by Donna Pierce and approved by Council.

Respectfully Submitted,
Lee Ann A. Hennig
IPS Secretary
August 30, 2004

Addendum to the Minutes of Council: At the general membership business meeting on Monday, July 5, 2004, there were no additional nominees for any of the offices.
Anita Sohus  
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What a wonderful experience to see so many of you in Valencia and to enjoy the hospitality of Jose Carlos Guirado and his staff amid the incredible architecture of the Ciudad de las Artes y las Ciencias designed by Valencian architect and engineer Santiago Calatrava. Calatrava recently completed the cantilevered Turtle Bay Sundial Bridge in Redding, California, which I think we shall have to go see.

Many of you watched the Genesis sample return along with us via satellite, and right about the time we’re all thinking, gee, what an amazingly close camera shot, and gee, its not spinning, its tumbling, and golly, shouldn’t the parachute be out ... thud. My heart went out to the science and engineering teams (and their families) who have worked so hard on this mission. The good news is that much of the science appears to be recoverable, as curators sort through the damaged capsule. And hey, I hear that cratering experts are happy for an unexpected source of data, too! A review board has been convened and their report may be out by the time you read this. The latest information is always available at http://genesismission.jpl.nasa.gov.

In preparation for the Western Alliance Conference in San Diego, I did my usual sleuthing to be able to tell you what’s coming up that you and your students and audiences will be hearing about. The Mars rovers have now lasted three times longer than their design lifetime, and just got funding for at least another six months of exploration. Although the rovers are showing signs of age the operations team continues to find clever ways to cope with these infirmities. Now that they have survived the depths of a Martian winter, the available sunlight to power the craft will increase and the diurnal temperature swings will begin to be less severe, which is good news for the electronics.

The communications network around Mars is working well, as the rovers can communicate directly with Earth or relay through Mars Global Surveyor, Mars Odyssey, or Mars Express. In August, the Mars Reconnaissance Orbiter will be launched, carrying a camera whose images will knock your socks off. Its highest resolution images will rival Ikonos images of the Earth, resolving objects as small as 1 to 2 meters. The next landed mission will be the 2007 Phoenix lander, which uses the hardware intended for the cancelled 2001 mission. Phoenix will land in the north polar plains in northern summer and trench up to a meter deep to sample surface and subsurface soil and ice.

Cassini will ring in the new year with a flyby of Iapetus at a distance of 84,000 km on January 1. (By the way, JPL is using some of its award fee money to put a float in Pasadena’s January 1, 2005 Rose Parade.) The long-awaited descent of ESA’s Huygens probe through Titan’s atmosphere will occur on January 14. The two-and-one-half hour descent should provide a bonanza of data about Titan’s thick nitrogen-rich atmosphere, and could, maybe, might end in a landing. Just in case, the probe is equipped with landing lights. The mother ship Cassini will relay the probe’s data, and then spend 2005 making 15 encounters with Saturnian moons ranging from 750 to 50,000 km altitude (see table). That’s about one flyby per month. The only “dark” months are May and June.

On July 4, Deep Impact will excavate a deep crater in Comet Tempel 1, the better to see its inners and learn about the composition of primordial objects in our solar system. The impact will occur at about 02:00 UTC July 4, and telescopes around the world will be observing, including Hubble. The event is expected to be visible even through small telescopes as a brightening of the comet, if it is after dusk at your location.

Table 2 shows other solar system events in 2005-2006. It is hard to believe that the long-awaited mission to Pluto will be on the launch pad in a year’s time! As usual, all launch events are subject to change, so check http://solarsystem.nasa.gov for updates.

One of the signature education and outreach programs of the 1997 Mars Pathfinder mission was Mars Millennium, a project cosponsored by NASA, the National Endowment for the Arts, and a number of other organizations as an arts, science, and humanities educational program. Mars Millennium continues today under the title Imagine Mars. Imagine what it would be like to live on Mars: not just to survive, but to have a quality of life, a community. How would

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**Table 1. Cassini/Mission Events in 2005**

<table>
<thead>
<tr>
<th>2005</th>
<th>Cassini Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 1</td>
<td>Ring in the New Year!</td>
</tr>
<tr>
<td>Jan 14</td>
<td>Orbiter flyby of Iapetus at about 64,000 km</td>
</tr>
<tr>
<td>Feb 15</td>
<td>Flyby of Titan at about 950 km</td>
</tr>
<tr>
<td>Feb 17</td>
<td>Flyby of Enceladus at about 2,900 km</td>
</tr>
<tr>
<td>Mar 9</td>
<td>Flyby of Enceladus at about 750 km</td>
</tr>
<tr>
<td>Mar 31</td>
<td>Flyby of Titan at about 2,500 km</td>
</tr>
<tr>
<td>Apr 16</td>
<td>Flyby of Titan at about 950 km</td>
</tr>
<tr>
<td>Jul 14</td>
<td>Flyby of Enceladus at about 1,000 km</td>
</tr>
<tr>
<td>Aug 2</td>
<td>Flyby of Mimas at about 50,000 km</td>
</tr>
<tr>
<td>Aug 22</td>
<td>Flyby of Titan at about 4,000 km</td>
</tr>
<tr>
<td>Sept 7</td>
<td>Flyby of Titan at about 950 km</td>
</tr>
<tr>
<td>Sept 24</td>
<td>Flyby of Tethys at about 28,000 km</td>
</tr>
<tr>
<td>Sept 26</td>
<td>Flyby of Hyperion at about 1,100 km</td>
</tr>
<tr>
<td>Oct 11</td>
<td>Flyby of Dione at about 1,600 km</td>
</tr>
<tr>
<td>Oct 28</td>
<td>Flyby of Titan at about 1,450 km</td>
</tr>
<tr>
<td>Nov 26</td>
<td>Flyby of Rhea at about 1,300 km</td>
</tr>
<tr>
<td>Dec 26</td>
<td>Flyby of Titan at about 10,400 km</td>
</tr>
</tbody>
</table>
Table 2. Solar System Exploration Mission Events in 2005-2006

<table>
<thead>
<tr>
<th>2005</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 14</td>
<td>Huygens probe descends through Titan’s atmosphere (ESA)</td>
</tr>
<tr>
<td>Feb</td>
<td>SMART 1 arrives at Moon (ESA)</td>
</tr>
<tr>
<td>March</td>
<td>Rosetta first Earth gravity assist (ESA)</td>
</tr>
<tr>
<td>May</td>
<td>Return to Flight (STS-114)</td>
</tr>
<tr>
<td>July 4</td>
<td>Deep Impact excavates crater in Comet Tempel 1 (2 a.m.)</td>
</tr>
<tr>
<td>July 29</td>
<td>MESSENGER gravity assist at Earth</td>
</tr>
<tr>
<td>August 10</td>
<td>Launch of Mars Reconnaissance Orbiter</td>
</tr>
<tr>
<td>August</td>
<td>Launch of SELENE to Moon (Japan)</td>
</tr>
<tr>
<td>October</td>
<td>Hayabusa (MUSES-C) arrives at asteroid Itokawa (Japan)</td>
</tr>
<tr>
<td>November</td>
<td>Launch of Venus Express (ESA)</td>
</tr>
<tr>
<td>November 14</td>
<td>Launch of STEREO</td>
</tr>
<tr>
<td>December</td>
<td>Launch of GOES-O</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2006</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 11</td>
<td>Launch of New Horizons to Pluto</td>
</tr>
<tr>
<td>March</td>
<td>Launch of Space Technology 5 (small sats)</td>
</tr>
<tr>
<td>June 17</td>
<td>Launch of Dawn (Ceres and Vesta)</td>
</tr>
<tr>
<td>August 22</td>
<td>Launch of THEMIS (5 small sats; Earth’s magnetosphere)</td>
</tr>
</tbody>
</table>

one dance in 1/3 G? Shoot hoops? Make music in a thin atmosphere? Build habitats in a severe environment? Grow food? Get around? The project is tailor-made to get students thinking about what makes communities function and thrive. Local experts in just about any field can contribute their insights into these areas, truly making Imagine Mars a community event. Stephenie Lievense of JPL coordinates the program. Let’s hear from her directly:

**Imagine Mars**

**Stephenie Lievense, Mars Public Engagement Team, Jet Propulsion Laboratory**

Want to integrate science, technology and the arts in a creative and community-based project for your students? Then the Imagine Mars Project at [http://imagineMars.jpl.nasa.gov](http://imagineMars.jpl.nasa.gov) might be just what you’re looking for to inspire your students and energize your classroom or after-school program.

The Imagine Mars Project is co-sponsored by NASA and the National Endowment for the Arts (NEA). It is a Web-based initiative that provides you with lesson plans, Mars facts, and other resources to lead student project teams. The goal is to encourage students to explore their own community, to interact with scientists, artists, and community leaders, and to understand the different planetary environments on Mars. Ultimately, students complete a project that highlights the scientific and cultural elements they determined would be important to their imagined community on Mars.

Participation in the Imagine Mars Project is easy, and can be as simple or as complex as you want it to be.

Just follow these steps:

**Reflect** on what you value about your community - why is it unique? Why do you like living there?

**Imagine** a futuristic community on Mars. What would people on Mars need to survive? What would make Mars a good place to live? Ask your family and city leaders what they think too.

**Discover** the planet you live on and the planet on which you will live - learn from experts like scientists, architects, engineers and artists.

**Create** a new community for the 21st century - design a new community and draw, build, dance, paint or sing about it, and then write about it. Make it your own. It can be as big and wild as you want!

**Share** your project with students all over the world by loading it into the Imagine Mars project gallery.

The Project site, [http://imagineMars.jpl.nasa.gov](http://imagineMars.jpl.nasa.gov), contains participation guides, resources for teachers, profiles of artists, engineers, and scientists, a project gallery, and other interactive features. We invite you to visit our Web site and utilize the resources of the Imagine Mars Project in your curriculum.

On behalf of NASA and the NEA, the Jet Propulsion Laboratory in Pasadena, California, manages the Imagine Mars Project as part of the Mars Public Engagement Program, which seeks to educate the public about scientific discoveries and benefits of NASA’s missions to Mars. JPL is a division of the California Institute of Technology.

The NASA Astrobiology Institute’s “Astrobiology Education Poster”

**Daniella Scalise, NASA Astrobiology Institute, Ames Research Center**

Astrobiology is an emerging field of interdisciplinary scientific inquiry addressing some of the most fundamental questions of humanity: Are we alone? What is life? What is the future of life on Earth and beyond? Astrobiology integrates numerous traditionally discreet scientific disciplines—physics, astronomy, geology, and biology—to name a few. Its mission is to combine the expertise from each and foster a rich dialogue about the origin, evolution, distribution, and future of life in the universe. Educating the next generation of astrobiologists is a large part of the success of that mission.

The NASA Astrobiology Institute developed the poster (inserted into this journal) for middle and high school classrooms to help inspire and prepare that next generation. The poster has a three-fold approach to addressing the questions of astrobiology. First, it can be used as a visual tool. Students will see the link between earthly extreme environments and those on other Solar System bodies just by looking at it. Second, the back of the poster contains extended background science readings appropriate for the teacher, regardless of his/her science discipline expertise. The narrative is meant both as a professional development experience for the teacher, as well as a source of information supporting the three classroom activities described below.

Finally, there are three standards- and inquiry-based classroom activities. Field tested by middle and high school teachers, the activities are usable across a variety of subjects, from biology to physics to astronomy. The activities can be used separately or in sequence. Activity One is on the back of the poster in its entirety. All three activities, as well as further background reading and additional resources can be found on the website: [http://nairec.nasa.gov/poster](http://nairec.nasa.gov/poster).

These activities will be useful support for any curriculum—be it integrated or discipline-based. The questions of astrobiology transcend traditional discipline boundaries, and have the power to engage students in a unique and inspiring way.

One last word from me (Anita) this month: Be sure to bookmark NASA’s Informal Education webpage [http://www.nasa.gov/audience/foreducators/informal/features/index.html](http://www.nasa.gov/audience/foreducators/informal/features/index.html) as it becomes the portal for informal education from all the NASA Centers. ☁
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Many Applications
multiple dome sizes

One Approach
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We didn't invent the planetarium, we just made it...
A. brighter
B. more realistic
C. more capable
D. more versatile
E. more affordable
F. all of the above

MEDIAGLOBE and MEDIAGLOBE LITE
Affordable and versatile digital planetarium solutions for smaller domes (up to 9.1 meters).

Infinium S
Creating brighter and more realistic starry skies in horizontal and tilted 12-20 meter domes.

In North America contact:
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sogawa@ph.konicaminolta.us

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Osaka, 550 0005 Japan
Tel: +81.6.6110.0570 • Fax: +81.6.6110.0572
URL: http://www.konicaminolta.us/

Coming in 2005,
SUPER MEDIAGLOBE
for medium size domes (9.1-18 meters).
PIPS Meeting:

Fifteen enthusiastic teacher planetarians attended a meeting of Powerful Interactive Planetarium Systems (PIPS) that was held, on Monday and Tuesday (August 16 and 17).

Reed Varian (6344 Orchard View Drive, East Canton, Ohio 44730 USA; phone: 1-800-704-4338 or 1-330-488-0801; fax: 1-330-488-0928; email: varian@voyager.net) along with lots of help from Janice Nie to, graciously hosted this meeting. The Conference was held at the Drage Career Center in Massillon, Ohio. There were no registration fees and breakfast, lunch and a picnic were provided free of charge too! Learning Technologies, Inc. provided the funding for this meeting.

During the conference three planetarium lessons ("Native American Skies", "Reasons for Seasons", "Lunar Antics") were presented in a Starlab portable planetarium. Reed presented an Astronomy Update about the amazing exploration of Saturn. We were also able to examine and experiment with the new Starlab Fiberarc projector, along with the most recently produced Starlab cylinders, and to discuss a newly initiated Starlab "Ambassador Program." Contact Reed for an explanation of challenges and opportunities that he is making available for Starlab users in his region at varian@voyager.net.

On Monday afternoon we had the pleasure of visiting the Hoover Price Planetarium at the McKinley Museum where Mr. David Richards (Director, Hoover Price Planetarium, 800 McKinley Monument Drive NW, Canton, Ohio 44708 USA; phone: 1-330-455-7043; fax: 1-330-455-1137; Website: http://www.mckinleymuseum.org/index.html) demonstrated lessons under a beautiful sky that was produced with his Spitz A-3P projector under a stationary dome.

On Monday evening Reed Varian provided an awesome picnic on his farm complete with a hayride, a bonfire, a Native American storyteller, clear skies and a stargazing session held by the Stark County Astronomy Club! Reed involved the community further by inviting a local Girl Scout Troop and their leaders to join us.

Participants demonstrated their own successful lessons and ideas on Tuesday. Later David Ross, a local amateur astronomer, explained and showed the steps involved in building a homemade telescope. We were able to examine one of his telescopes and then use it outdoors to safely look at sunspots. Following that experience he explained how we could use a computer program to guide our telescope viewing. He recommended and helped us to examine the newest version of the computer program "Starry Night Pro."


Participants at this two-day meeting expressed that they were thrilled to be able to attend this mini-conference where they were able to acquire new information and techniques as well as freely share and discuss ideas.

Portable Planetarium Outreach Programs:

Bruce Brazell (Director of the Cook Center Planetarium, Navarro College, Corsicana, Texas USA; email: bruce.brazell@navarrocollege.edu) wrote to tell me, "A few months ago, I posted an informal inquiry to the planetarium listserv Dome-L regarding existing portable planetarium outreach programs. We are currently considering such an outreach program and we were interested in how such programs are conducted at other facilities. I only received responses from five planetarians."

Bruce is very thankful for those people that did take the time to reply to his inquiry and he would appreciate hearing from others. So if you have a minute drop him a note at the e-mail address above.

The Questions:
(1) How many portable planetarium domes do you operate?
(2) Typically, how far do the domes travel?
(3) How many school children are serviced on average during the year by your trav -
eling dome program?
(4) How do you man your traveling dome program (volunteers/staff)?
(5) Do you provide teacher training on dome usage and allow them to take it back to their schools?
(6) What do you charge for portable dome programs or to rent the dome for a teacher to use?

The Responses:
Alan Gould (Director, LHS Holt Planetarium, University of California, Lawrence Hall of Science, Berkeley, California 94720-5200 USA; voice mail: 1-510-643-5082; email: agould@berkeley.edu; Web: http://lhh.berkeley.edu/six)

Three portable domes are in operation at the Lawrence Hall of Science. The domes travel all around the San Francisco Bay Area, within a radius of 80 km (50 miles), but they'll go 2 to 4 times farther than that for extra "mileage" fee. Usually 3 shows are given per visit at 30 kids per show. That means that 90 students are served per visit. They go to approximately 20 or so schools per year, so that's about 1800 students. Most of the time regular staff members man the domes. Half-day trainings are made available so that teachers can qualify to rent the Star Dome. Current prices for teacher training can be found on our website at http://www.lawrencehallofscience.org/proddev/starlab.html and the charge for us to present programs at schools is $485 for two sessions and $105 for each additional session.

Meredith Close (Outreach Coordinator, Arizona Science Center, 600 E. Washington St. Phoenix, Arizona 85004 USA; phone: 1-602-716-2065; Website: http://www.azscience.org/home.html)

The Arizona Science Center's one portable planetarium usually travels in and around the city of Phoenix (up to about 50 km or 30 miles) with a few exceptions. The Starlab Outreach was delivered about 65 times to schools last year, to an average audience of 30 students each time. So, approximately 2000 students were served last year. One outreach staff transports, sets up, and delivers the program. Volunteers are always welcome to help, though! The Arizona Science Center does not offer a training program for teachers. However, Arizona State University has started to offer a Starlab Training Session that consists of 5.5 hours of training to get certified. Once teachers have completed this session, they may borrow the University's Starlab (at no cost) for their classrooms. The Arizona Science Center charges $100 to $150 for a 60-minute presentation. (This price may vary depending on the time of year and how many presentations will be given).

Dave Grebner (Astronomer, Lakeview Museum Planetarium, 1125 West Lake Avenue, Peoria Illinois 61614-5985 USA; phone: 1-309-686-7000)

Lakeview Museum Planetarium has one dome that travels distances varying, from 80 km (50 miles) one way to only 8 km (5 miles) one way. The average distance traveled is about 27 km (17 miles) one-way. The Lakeview Museum Planetarium services about 1300-1400 children per year with the Starlab. A staff member (Dave) operates the Starlab. Training for teachers is offered periodically so that teachers can rent the Starlab and give their own presentations. The charge is $60/day for rental of Starlab, or $250/week. When Dave gives the presentations, the charge is $100 for up to 2 presentations of 40-50 minutes each. Additional presentations are $35/each. In addition, a charge of 35 cents per mile is added for driving to any site outside of the city.

Marc Rouleau, Director (Palucci Space Theater, 1502 East 23rd Street, Hibbing, Minnesota 55746 USA; phone: 1-218-262-6720).

Palucci Space Theater has two portable planetariums that travel as far as 300 km (180 miles). On average Marc takes the portable out once a month. Last year the charge for the first show was $50. The cost for additional shows was $30. A $50 per mile one-way driving fee was also added to the fee. Schools pay so much for busing that this was more affordable for most schools. Marc is thinking about raising the price. Marc will also rent the Starlab to a teacher if they request it. He charged $300 weekly rental last year and the teacher was responsible for transporting the dome from the Space Theater to the school and back. He only had a couple requests for that as he recalls.

Primary Level Shows for the Public:
Marc Taylor (Coordinator, Andrus Planetarium, Hudson River Museum, 511 Warren Avenue, Yonkers, New York 10701 USA; phone: 1-914-963-4580 x223; fax: 1-914-963-8588; email: m.taylor@hrm.org) posed these questions on dome-L:
For those of you who do preschool (pre-K to perhaps 1st grade) shows for the public:
- How many do you have a week?
- Which day during the week?
- What time of day?
- How long is the program?
- How do you let people know that it is a show directed at the youngest visitors?

Marc only received the following two responses. I am sure he would appreciate more feedback from you!

Gloria A. Villalobos (Director, Robert J. Novins Planetarium, Ocean County College, College Dr., PO Box 2001, Toms River New Jersey 08754-2001 USA; phone: 1-732-255-0467; phone: 1-732-255-0400 ext 2111; email: gvi villalobos@ocean.edu; Web: w w w.ocean.edu/planet.htm)

Gloria says that the planetarium offers two shows a week at 11:30 AM, one on Saturday and one on Sunday, during most of the year. (Tuesday - Sunday during the summer) The programs last approximately 50 to 55 minutes. They are live shows (with recorded music & some automated segments), so the exact length may vary. They have one lecturer who does about an hour and 15 minutes fairly regularly before he has to stop the show.

They let people know that it is a show directed at the youngest visitors through the show description. The description usually includes the following (or wording to this effect):

“Wonderful Sky: Recommended for ages 7 and younger. Wonderful Sky is designed for our youngest visitors and is an excellent introduction to the planetarium and the things they can see in both the day and nighttime skies.”

Gloria says, “Although we’re pretty blatant in the description, we’re still frequently asked if the program is appropriate for children. Sigh!”

Denni Medlock (Public Programs & Intern Volunteer Coordinator, Chabot Space & Science Center, 100 00 Skyline Blvd., Oakland, California 94619 USA; phone: 1-510-336-7368) wrote,

“Chabot Space & Science Center shows Sunshine for the under-five crowd once a day at 10:45a m during the summer hours, and once each weekend day: Saturdays at 11:00 a.m and Sundays at 12:30 pm. This is a 15-minute-long interactive show which we advertise on our website, in-house posters, and directly to the parents and younger children who frequent our Discovery Lab area in the Center.”

“As for making sure everyone knows it’s for the under-five set, we always add that in our advertising and pay attention to who enters. Very, very occasionally do we get adults who want to see it just for fun.”

Digitalis Happenings
Karrie Berglund (Director of Education, Digitalis Education Solutions, P.O. Box 2976, Bremerton, Washington 98310 USA; phone: 1-360-616-8915; Web: http://DigitalisEducation.com) wrote to say, “I wanted to fill you on some Digitalis happenings.”

If you would like to evaluate the Digitalis in action and talk about prices, contact Karrie directly.

Karrie wrote:
1) “As a public service we decided to make our lesson on plans freely available on our website. There are 12 lessons written for use with kindergarten through 12th grade students on a variety of topics, as well a s information about alignment with the National Science Education Standards.”
While the lessons are written to take advantage of the Digitarium Alpha's particular features, they can be modified for use with other systems. Here's the URL for the lessons: http://digitaliseducation.com/curricula.html”

2) “We are modifying the optics for the Digitarium Alpha projector in order to improve starfield quality and slightly increase brightness. This will result in a price increase. However, we feel that the Digitarium Alpha will remain by far the most affordable turnkey digital planetarium projector currently on the market. The new optics will be available in November.”

3) “We've also added some new features since you wrote about us in the March 2004 issue. Here's a brief list:

* The Digitarium Alpha allows you to display your own video or images from a CD or DVD. This feature opens up your dome to any topic you might want to explore. You can also project unencrypted video DVDs and fulldome video.

* Polynesian constellations.

* Meteor showers.

* Planet orbits.

* Choice of language for sky labels.”

4) “Since December we've been selling Digitalis portable domes. The domes are available in diameters from 4 to 7 m (13 to 23 ft). Purchase price includes the dome and logo, carrying bag, blower and carrying case. Several dome exterior color choices are available.

The audience is able to view Digitalis domes by use of a vertical zipped doorway, as opposed to an entry tunnel. This allows for projection upon the entire interior surface, a smaller dome footprint, and easier entry and exit. The domes are composed of three layers of fabric, which helps reduce the problem of pinholes. Here's the URL for the dome information: http://DigitalisEducation.com/domes.html.

Mirage3D Portable Dome Setup:
Robin Sip (Mirage3D), Hoenderloosstraat 51, 2573 RK The Hague, The Netherlands; phone: +31 70 3435 800; Web: www.mirage3d.nl wrote to further enlighten me about a new kind of portable dome setup. This seems to be another interesting solution for setting up a planetarium as a semi-permanent exhibit for a visit to a museum or a school.

Here some information about the setup:

“The Mirage3D Dome set-up consists of the Astro-Tec 15 ft (4.5 meter) fiberglass dome, and a truss suspension system, which allows the dome to be raised above the audience, with hand hoists. The diameter of the circular truss is 6 meters, supported on 4 legs of 4 meters. The height of the whole construction is 4.35 meters. The whole is surrounded with a theatrical black curtain, leaving the supporting legs, on the outside of the structure. Inside the dome setup, the dome then seems to fly above the audience, without supports.”

“In case the location for the portable dome does not have a high ceiling, there is an alternative solution: the supporting legs can be split into two, and the result is a 2.35 meter high structure, where the dome itself can be hoisted as high as the ceiling allows it (sticking out above the circular truss).”

“There is enough space between the dome perimenter and the curtain to even mount multiple projectors around the “cove” of the dome. This space also allows for some air to be refreshed, and the dome can be operated without an air-conditioning system. It also allows for slightly more people in the dome than in a normal 15-ft (4.5 meter) dome setup.”

“The setup is very flexible, as it supports a single projector in the center of the dome, or multiple projectors around the cove of the dome. The dome can be used horizontally at any height, as well as tilted in any angle. The projectors and sound systems can be suspended from the dome and there will be no visible cables.”

“The audience does not have to sit on the floor; they can sit on chairs or stand upright, and they can walk in and out normally.”

“The Mirage3D Dome setup can be transported in a rental van which can be driven with a standard driving license (so you can transport it yourself). It takes about one day to set it up, but loading the van, requires additional time. It is a nice setup, for a medium length event.”

“The Mirage3D dome setup is located in The Hague the Netherlands, where Mirage3D uses it as a test/production dome. It is also available for rent.”

Week in Italy Contest
It is a pleasure to announce that the 2004 winner of this year’s “Week in Italy” contest is John T. Meader (Northern Stars Planetarium, P.O. Box 302, Fairfield, Maine 04937 USA; Website: www.northern-stars.com).

John is a business owner who has provided exciting Starlab portable planetarium shows for schools children in Maine since 1987. He has also written numerous articles for planetarium trade journals such as the International Planetarium Society’s publication the Planetarian and the Middle Atlantic Planetarium Society’s publication The Constellation. For those interested, go to http://www.northern-stars.com/articles.htm for a listing of some of John’s planetarium articles.

(Please see Mobile on page 41)


\Hybrid\, n. [L]

1. Strictly defined, an offspring that is a cross between different species, genera, or, in rare cases, families.
2. The result of the union of two distinct species; an animal or plant produced from the mixture of two species.
3. Something made up of a mixture of different components.
4. What all planetariums should be from this day forward.
See also: GOTO INC.

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Reviews

The Depths of Space: The Pioneer Planetary Probes


Over the last ten years or so I’ve found myself drawn more and more to this type of book, which describes in detail the otherwise untold human dramas that often lies behind the high profile space projects. So this publication follows in the wake of many other notables such as Dragonfly (about the combined Shuttle/Mir flights) Genesis: The Story of Apollo 8, A Man on the Moon and Failure Is Not An Option, to name but a few.

James Van Allen’s Foreword sums it up neatly when he writes, “This book is a tale of human achievement – indomitable, perhaps even heroic – at the boundary between the possible and the impossible. It carries the reader along with the gusto and fascination of a good novel.”

The author begins by taking us back to the late 1950s at NASA’s Ames facility in California, charting the early career of Charlie Hall, the man who was destined to become the revered Pioneer Project Manager for 18 years. He turns out to be the book’s main star. In 1962 he was put in charge of a project to build a series of solar probes. They were named Pioneer 6 through 10, following on from other spacecraft that had borne the Pioneer name, but which had largely been glorious failures. The new Pioneers were launched between 1965 and 1969, creating what was effectively a space weather network. The last one, Pioneer 10, crashed into the Atlantic Ocean and so mission control decided to keep the moniker in reserve and use it again for a future probe.

The author uses an economical and fluid literary style that zips along nicely. We learn that in the late 1960s NASA asked Ames Research Center engineers to develop two probes to examine Jupiter and the asteroid belt. To make it look more attractive to Congress and less of a risky mission, they applied the tried and tested Pioneer name to the program, and costs were kept down by designing the probes as refinements of the Pioneer solar probes.

The Atomic Energy Commission happened to be developing a small hybrid nuclear power package and were anxious to raise its profile by putting it on a spacecraft, and so the Pioneer managers saved $15m by accepting the AEC’s proposal to build prototypes for free and to only charge for the flight units. But ultimately even the flight units were free, because a key AEC official

happened to live opposite a key Pioneer official and was convinced by friendly chats that it was in the AEC’s interest to provide the flight units at no cost.

In a particularly eye-opening section of the book we read that a ‘shootout’ was held in which the 25 teams of scientists vying to design one of the 13 onboard experiments had to give a 20-minute presentation to the Pioneer team managers, and then answer questions thrown at them by their competitors!

“... a tale of human achievement – indomitable, perhaps even heroic – at the boundary between the possible and the impossible.”

The human drama that is evenly sprinkled throughout the text gives us other useful tidbits to drop into our presentations. For example: a fishing trawler in the Atlantic accidentally snagged and broke a transatlantic communications cable, cutting the data flow from Pioneer 10 at a crucial moment just as it reached its closest point to Jupiter (I hate it when that happens) and disaster was averted with only minutes to spare by routing probe commands across the world to the Deep Space Network of radio dishes by old-fashioned teletype routed through England; there was backbiting between the Pioneer and Voyager teams about the overall usefulness of the two Voyager probe’s Jupiter data, as the Pioneers had been there first, and $12,000 in US import duty taxes were avoided on diamond material for Pioneer Venus when the mission managers successfully argued that the material was simply in transit to Venus!

Pioneers 10 and 11 are justifiably the author’s main focus; they were the first probes to examine the Sun and the asteroid belt, visit Jupiter and Saturn and examine the void beyond Pluto. They paved the way for the Voyager probes and everything that followed, drove the perfection of communication and telemetry systems and techniques and proved the concept of gravity assist maneuvers. At heart they were simple, uncomplicated probes that, from the evidence of this book, carried a big piece of each team member with them. The book’s closing chapters are particularly touching, as we read about the determined, loving efforts that were made to keep in touch with Pioneer 10 right up to its final transmission in 2003, an incredible 31 years after launch. It’s as though we’re learning of parents looking for their lost loved ones, so close is the relationship between the engineers and their creation.

April S. Whitt
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A range of topics for your home or dome this month, dear readers. We offer a bit of history, a bit of cosmology, a bit of moon exploration, and another excellent teaching resource. My repeated plea is repeated here if you would like a free book to review, contact me at the address above.

Thanks to our reviewers for this issue: Francine Jackson, Terry Johnson, and Steve Tidey.
This is a fine book, filled with lots of nostalgia and heart-warming stories. I'm glad to have it on my bookshelf.

**Echo of the Big Bang**

Reviewed by Terry Johnson, Conway, Arkansas, USA

*Echo of the Big Bang* is an insightful book that discusses the specifics of the WMAP satellite and takes the reader into the mindset of the cosmologists who made it happen. Written in a historical fashion, the book opens with a brief overview of cosmology, leading up to the COBE satellite. The controversy of the Hubble constant is briefly covered with the majority of the background story focusing on the detection and measurement of the cosmic microwave background (CMB).

Uncertainties in the well-known ‘distance ladder’ gives rise to individual interpretations that can make the hypothetic age of the universe any value from 10 to 20 billion years. In 2001, scientists got their chance to stop making cosmology mostly guesswork and give solid numbers to the variables that control the universe.

The Wilkinson Microwave Anisotropy Probe (WMAP) delivered on a promise to give us measurements unparalleled in the history of cosmology by circumventing the distance-ladder altogether and measuring variations in the remnant of the big bang itself. But WMAP didn’t stop there. By searching the fluctuations in the CMB for patterns, the team of scientists working on the WMAP data was able to nail down some long sought-after values such as the percentages of mass, dark matter, and dark energy in the universe. WMAP also shows indications that the first stars “turned on” much earlier than previously thought. That fact alone could re-write many of the details in the Big Bang Theory.

Lemonick explains the science behind the data with remarkable clarity. However, the book still requires that reader know quite a bit about physics and a lot of astronomy to understand the specifics. The science explanations can be skipped without losing the overall feeling, so the book can still be enjoyed by those who just skim these parts.

The largest part of the book is the human story behind pulling together a small research team and each member’s involvement in designing and building a unique satellite. Lemonick colorfully characterizes the specialists by discussing the background, hobbies and family life of each. The many challenges they faced are brought out in detail — from seeking NASA funding to solving mechanical problems to figuring out how to sort the vast amount of data as it came in. How their lives changed throughout the WMAP project is as interesting as the project itself.

“Lemonick uses broad strokes to paint the cosmologists’ view of the universe, and he lets us see the inside story of those who seek answers the big questions.”

The last chapter is reserved for the results. Some of our theories of the Big Bang were confirmed while others were placed in doubt. Both sides of this coin caused a great deal of worry to those first announcing the results to the public. But the science behind the data is solid, and the results have undergone much scrutiny, giving us confidence that they will be validated in future observations. I found this book to be simply wonderful. Lemonick uses broad strokes to paint the cosmologists’ view of the universe, and he lets us see the inside story of those who seek answers the big questions. It would be a great read for anyone wishing to keep current on where cosmology is headed.

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**Welcome to the Moon!**
**Twelve Lunar Expeditions for Small Telescopes**

Reviewed by Francine Jackson, Providence, Rhode Island, USA.

Hi! Welcome to the Moon! Well, not really. Our last manned trek there was over 30 years ago, although there are suddenly whispers about going back – probably to retrieve the golf balls launched from the Apollo 14 landing site by Alan Shepard.

However, we now have close to the next best thing. R.B. Kelsey’s slim (112 page) book is a great way to become introduced to the landscape of our nearest celestial neighbor. Through 12 “expeditions,” he slowly goes through the varied and increasing illumination from a 3-day old Moon to its full phase. For readers just beginning to observe with a telescope, the most important sections of the book will be chapters 1 and 2. Kelsey starts at the very beginning, aligning the finder scope, then reminds the reader to start slow and “Read the manual” before attempting a night’s activities.

And, then, it’s off to the Moon! Each section shows sketches of relevant surface features, and gives a little in formation about them. For example, “(Crater) Petavius’s walls have been damaged by other impacts, and under some light angles you can see rilles in its floor, indicating lava flows.” Each section
has a “Lunar History,” explaining how features were probably formed, why we went to the landing sites we did, or how differing eye pieces change the view of the relevant landscape. Kelsey uses a format similar to an amateur astronomer’s “star-hopping,” starting at an easy-to-find feature and moving around with respect to that point to find other areas of importance.

There are only two points about this book that I found a bit weak. The first appeared to be Kelsey’s desire to show the features through each type of telescope, so some of his sketches show east to the right, others show it to the left; in fact, there are many double pages where each page’s sketch is opposite the other. Perhaps he should have just decided on a convention and let the reader figure out the orientation for himself. Also, there are several photographs of the Moon. Unfortunately, some of them are bright and washed-out, and the relevant feature is hard to make out. For example, Proclus in Photo 2 seems more like a white smudge than a crater. Perhaps the use of a lunar filter would have made these images stand out in more detail.

“(this) book is a great way to become introduced to the landscape of our nearest celestial neighbor. Through 12 ‘expeditions,’ (the author) slowly goes through the varied and increasing illumination from a 3-day old Moon to its full phase.”

However, as an introduction to the Moon and its myriad mysteries, this book is great. Not only was it a good read, but I could see it become a mini-Bible for a mate or school astronomy clubs looking for an observing project. Its reading level is basic enough for all ages; therefore, everyone should be able to follow, and enjoy, this first look at our lunar landscape.

**How Many Pieces of Toilet Paper Do I Need To Get From Here to the Nearest Star?**


Reviewed by April Whitt, Fernbank Science Center, Atlanta, Georgia, USA.

When George Reed mentioned that he had a new book coming out, and I recalled all the times I’ve used his “cosmic art-toons” in planetarium programs and in teaching classes, I asked for a review copy immediately. While the price seems a bit high for a 168-page paperback, I’d still recommend it to anyone with a gift shop, anyone with students aged 10 to 100, and anyone who wants a book that is easy to read and amusing as well.

The back cover describes the book well. To paraphrase, “Everyone has questions about our universe. The questions range from the creation of the universe to the effect of the moon on human behavior. But few people want long answers. Short, simple explanations with some humor are so much better. This book ... is a light, informal, introductory but scientifically accurate approach to aspects of astronomy that are not always found in books on the subject.”

Based on 20 years of his popular newspaper columns, the book is organized in a question-and-answer style that allows the reader to “start anywhere in the book and move in any direction” (another paraphrase). Chapters discuss objects in the day and night skies, telescopes, seasonal constellations - most from a northern hemisphere perspective, astronomers from history and aliens from outer space.

I’ve already used the section about meteorites, comets and near-Earth objects to reassure the public that asteroid 4179 Toutatis is not a threat.

Units of measure are usually expressed in both metric and “standard” versions. The analogies are excellent. The cartoon illustrations are amusing. The book is a great resource.

Let the reader beware, however. There are a number of numerical mistakes (M31 is farther than the printed 2.2 light years, and in the convolution of miles to kilometers for the circumference of Earth an extra zero is listed), and I’m pretty sure Meteor Crater is in the Arizona “desert” rather than “desert.” If you’re recommending this book to a student, remind them to check the math.

(Copyright continued from page 40)

The notion of copyright was included in the Constitution because the founders of the United States recognized the importance of promoting a diverse array of expression. While the complexity of the copyright code sometimes seems like it does more to chill rather than promote expression, with the proper background knowledge and understanding of copyright and its underlying principles and goals, the ability to navigate the waters of copyright can become second nature and a powerful component of the planetarian’s toolbox.

The author wishes to thank Jim Beaber and Thomas G. Field, Jr., for their assistance with this article.

(Mobile continued from page 40)

and where to find them. John holds the position of Historian of the Middle Atlantic Planetarium Society and is also a Fellow of the International Planetarium Society.

The next deadline for the applicants of “A Week in Italy for an American Planetarium Operator” is April 15, 2005. For more details go to the following website: http://www.colibrionline.it/MG/Week_in_Italy.htm.

**Signing Off**

Thank you to all those people who sent me news this time. That really made my job a lot easier. The best way to advance our profession and refresh our spirits is to keep sharing information and inspiration!
The aim of the Education session at NAM 2003 was to highlight some interesting new resources and opportunities available for teachers of astronomy.

Virtual Observatory

The first speaker was Dr Nicholas Walton (Institute of Astronomy, Cambridge) who spoke about the Virtual Observatory, a project still on the horizon but which has massive potential as a resource not only for researchers but also for all levels of education. The concept behind the Virtual Observatory is to make available the data collected by modern ground-based or space observatories at all wavelengths from X-ray to radio, for others to use.

Data taken in recent years has all been in digital form and huge independent databases exist. The scientists who made the observations have analysed the results for their own research but another project could use the same observation for a completely different purpose. A simple example may be that when a supernova is discovered in a distant galaxy it is interesting to find out what is known about the progenitor star before it erupted. Observations of that galaxy may have been made in the past. The task of the Virtual Observatory is to use the latest technologies in information management to develop the software tools for astronomers to access, select and analyse hundreds of gigabytes of data on a remote computer and to see the results without transferring the data to one’s own computer.

Dr Walton is Project Scientist for AstroGrid, the UK’s contribution to the Virtual Observatory. AstroGrid is one of the first of the UK’s e-Science projects and its priority is to develop a virtual observatory capability for astronomical data of importance to the UK community. This will include data from Jodrell Bank, La Palma, Hawaii and Chile as well as space projects such as SOHO and Cluster. There are seven UK institutions involved in the Astrogird consortium, which is in turn a member of Europe’s Astrophysical Virtual Observatory (AVO) Project. The AVO partners held a meeting in January at Jodrell Bank Observatory at which a prototype of the software was presented. The AVO partners are also members of the International Virtual Observatory Alliance (IVOA) which consists of 12 consortia from around the world including the United States and the Asia-Pacific Region who are working together to define global data standards. Astrogrid is a 3-year project which officially started in September 2001. The IVOA aims to be fully operational by 2007.

The Suntrek project

Dr Helen Mason (Cambridge University) then spoke about the Suntrek project. Suntrek is a programme of promotional and educational materials about the Sun and its effect on the Earth’s environment. The UK has a very strong research community in these scientific areas. The project aims to provide accessible explanations of the latest research, including recent data highlights, and to provide educational resources linking these science areas with the curriculum. Some of the material used in Suntrek is based on the successful web site called SunBlock99, which was produced for the 1999 total solar eclipse and uses the presentation of young solar researchers to promote the science.

The software company, Interactive Media Design Consultants, has worked closely with the project team: Dr Dave Pike (Rutherford Appleton Laboratory), Dr Helen Mason (Cambridge University), Dr Robert Walsh (University of Central Lancashire), and Dr Rosalind Mist (ECSITE UK). The Suntrek website is launched in autumn 2003. The style and presentation of the material is unique. The main aim has been to make the site interesting and fun, as well as being educational. Particular attention has been paid to areas of direct interest in the classroom, such as the Earth and Beyond, Satellites and Energy Resources. Care has been taken to ensure that the presentation and content are appropriate for the target age range (11-15 years). Suntrek also contains material of interest to the general public.

For more information contact Helen Mason, H.E.Mason@damtp.cam.ac.uk.

Public Astronomy on a Heritage Site

Dr Robert Massey (Royal Observatory, Greenwich) gave a talk entitled Public Astronomy on a Heritage Site: Antique Telescopes and Online Education. He described the educational activities at the Observatory, including a schools programme of workshops for children of all ages from the start of primary school (elementary school) to post-16. There are also Short Courses for the whole family, suitable for age 8+, normally held on successive Sundays, and one-day conferences on selected topics such as a forthcoming one on Extraterrestrial life. Students can also study for GCSE astronomy (taken at 16 in schools) in a programme run in conjunction with Goldsmith’s College, University of London.

For more information contact Robert Massey, massey@royalobservatory.org.uk.

Space Science News

Billy McClune described a project undertaken by himself and Dr Ruth Jarman (Graduate School of Education, Queen’s University Belfast) entitled Space Science News - the Secret Life of Newspapers.

How can newspapers be used to support space science education in schools? The presentation illustrated how authentic newspaper articles can be used in the science classroom to enrich a number of aspects of the secondary school curriculum. The session highlighted Space Science News, a special edition newspaper supplement, produced by teachers in Northern Ireland. The group received a PPARC grant, and worked closely with Northern Ireland’s regional newspaper the Belfast Telegraph.

In science, as in other subjects, teachers are being encouraged to explore a range of additional resources of which newspapers are an important element. Lift any newspaper and you are almost sure to come across science-related stories. Appropriate articles do not appear to order, however, and relevant news does not break conveniently just as you are about to teach a topic. Furthermore, once suitable stories have been found it takes time to design interesting and effective activities around the report.

The group of teachers working with Billy McClune and Ruth Jarman, has developed a novel science resource which addresses these issues. This publication is in newspaper format and comprises a selected set of authentic articles on astronomy which have appeared in the Belfast Telegraph over recent years. Associated with the articles are classroom activities which teachers can use to help catch the interest and imagination of their pupils as they read the news stories and learn about the related science. The 20-page colour issue addresses topics including the Moon, lunar and solar eclipses, meteoroids, asteroids and comets, radio astronomy, living in space, and includes a number of specially commissioned feature articles.

The newspaper was launched in February and is currently available, free on request, to post-primary schools in Northern Ireland.

For information contact Billy McClune, w.mcclune@qub.ac.uk.

The full text of this newsletter is available at http://physics.open.ac.uk/IAU46.
It's only me.
Welcome to ...

Wait a moment, there's a TV newsflash. "Astronomers all over the world have reported seeing a cow jumping over the Moon. More on that story later..."

Wow. Can't wait.

Now, where was I? Oh yes, the column. Welcome to the column in which cogent and thought-provoking argument are as guaranteed as a slide projector gate sticking in the middle of a show. Believe it or not, this is the tenth anniversary of my first column as Forum editor. (Yeah, I know, it feels like twenty to me, too ...) But you'll be either pleased or disappointed to hear that I'm not going to be giving up anytime soon; I'm just about hanging on to the coat tails of Sue Button-Reynolds and Jim Manning, who have been doing their columns, I think, for 12 and 15 years respectively. So I can't stop now; I've got to catch them up. Hey, Sue and Jim, slow down!

I was thinking of updating the picture of me that's used at the top of this column, with one I had taken recently in which I'm gap-toothed (a crown fell out), unshaven and wearing my Buffalo Sabres road jersey. That's as close as I'll ever get to being mistaken for an NHL player....

To mark my tenth anniversary column, I thought it would be neat to list the:

Ten Reasons Why it's Great to be a Planetarian

1. You can promise your partner the Moon and stars - and deliver!
2. You can drive your cat or dog crazy, wiggling the dot from your laser pointer all over a wall at home.
4. And when you can answer all of their many questions to their satisfaction, a small part of you does, too.
5. The look of gratitude on the faces of teachers and parents gives you a warm glow.
6. Occasionally, the particularly young kids will give you a hug after a show. It's the cutest thing ...
7. It's great to be in the small percentage of the workforce who love their job.
8. You get to work with kids. (Or is that a negative point? It changes from day to day).
9. The spirit of comradeship and willingness to help each other in the profession is priceless.
10. We're giving people an experience they'll probably remember fondly for the rest of their lives.

Apart from all those factors, it's a pretty average job!

Over the last ten years or so we've seen in planetaria an increasing amount of digitally enhanced, 3-D, multi-screen, color-surround, laser-projected, spinning, hologram images - and those are just the exit signs. But I jest. I'm talking about digital technology under the dome, of course. Love it or hate it, it's here to stay and is rapidly gaining a high profile, or, depending on your point of view, spreading like a virulent disease, so polarized are the opinions some planetarians have of the technology in its current state of development. So is it the biggest mistake since the king of the Vikings ordered 10,000 helmets with the horns on the inside, or will it turn out to be the profession's saving grace in tight fiscal times? The current Forum topic for discussion is thus:

There's clearly a 'digital divide' growing in the planetarium community. On the one side are planetarians who don't like full dome video technology, and on the other are those who have been fully converted, and see the technology as the key to our profession's long-term, stable future. How can that gap be bridged?

A strictly non-digitized, fully analogue Steve Russo tips off to get us underway.

***

There is definitely a "digital divide" in the planetarium community, and I think that my opinion is well known on this issue. The first step you have to take into consideration is whether you want to run a movie theater or a planetarium. In my case, I want a planetarium.

When we chose to renovate the Schenectady Planetarium (now known as the Suits-Bueche Planetarium), we went for the system that will give us the best end product, the clearest views, and ease of operation, keeping in mind that we wanted to remain a planetarium, and not become a cinema. So with the help of ECCS, we opted for our main projection to be 21 Kodak ELL's. We also have a Sony video projector, and an LCD projector, that we use when warranted. For example, in the "Hubble Vision 2" program by Loch Ness, there is a video segment. But our main projection is the slides.

So why did I choose to remain in the "dark ages"? Because it's better. I continuously get comments from the public, asking why my images are clearer than ones they see in other planetariums? The answer is simple: Because the old technology of slides is clearer than video and full do me. Yes, all dome is pretty awesome, but when we have beautiful photos sent back from the HST, why put them up on a dome with the latest technology that makes them blurry and the colors diffused? Every planetarium that I go to that has this new technology shows images that are inferior to the old technology. We talk about Hubble giving us "crystal clear" views of the universe, and then we blur them up in our domes. What's up with that?

The fact of the matter is that all dome and digital has a very long way to go before it comes close to the old slide projection system. And because the technology is computer based, it has to be upgraded every few years and it still doesn't get much better. My Kodak slide projection theater is clear now, and 15 years from now will still be clear, without any upgrades. And not only that, but my 30 year-old Sky-Skan special effects projectors, such as the Lunar Eclipse, Solar Eclipse, and Rotating Jupiter, project a clearer and more realistic view than any of the new video or full dome projection around today.

Now everyone has their own reason for going "new" or staying "old", but I think it has to do with how you were raised in the planetarium field. When I went into the field in 1973, I did it for one reason: to teach the wonders of astronomy and the cosmos. As a matter of fact, all of us old "Luddites" (and we all know who we are) went into this business for that reason. However, the folks that are coming into the field today (with a couple of exceptions) are not astronomy people. They are "techno-geeks" (a term used affectionately here) who see the dome as a way to play with their technology. When "old" folks my age went to a planetarium as a kid, it made us want to be astronomers.
kids go to planetariums today, they come out wanting to be video producers and computer programmers. Is there anything wrong with that? No. If it sparks some kid into a career, then that’s good. But, as the sky disappears due to light pollution, isn’t it more important to show a nice clear starry sky, than it is to show an all dome pyramid?

So if you want to become a movie theater get the latest digital technology, some all dome projection and you are on your way. The only thing missing is the Raise nets, popcorn, and sticky floors. If you want to remain a planetarium, where the starry sky is more important, then stick with the opto-mechanical star projector and the “dark ages” technology of Left, Center, Right slide projection, two 6-part slide pan system, and non digital/video special effects projectors.

In “Mr. Russo’s Neighborhood”, staying a planetarium is the way to go.

Steven LJ Russo
Planetarium Manager
Suits-Bueche Planetarium
Schenectady Museum
15 Nott Terrace Heights
Schenectady, New York 12308 USA

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All planetariums begin with a star field. From there, our paths diverge. I prefer to think of our differences not as gaps and divides, but as bridges and multipliers. The more useful resources are available, the more planetarians can implement their own creativity. Requiring one to choose between full dome video and alternative techniques is akin to the tiresome discussion, “Which is better: opto-mechanical or digital?” The audience, capable of appreciating diverse venues, is the final arbiter of what merits support.

When I enter a theater of any kind, I have baseline expectations. A humble stage can provide as rewarding an experience as a Broadway production. Once the lights dim, I judge the impact of the performance, not the bricks and mortar. A well-crafted lesson with a star field under a portable dome can be as equally dynamic as an immersive thrill ride through a digital cosmos.

The planetarium industry is evolving giving rise to new opportunities and challenges. Not everyone has to embrace each emerging technology. We should celebrate when we are happy with what we have. If full dome video serves your institution best, then capitalize on its dazzling capabilities. If other techniques help you to meet institutional objectives, then play that strength. One’s preference is not to the detriment of the other camp.

What is important for stability is that the emerging technologies be user-friendly, reliable, standardized, and affordable. Any institution that invests in full dome capability needs to know it will remain well used beyond the enthusiastic tenure of its original advocate. Presenters and facility stewards alike must be comfortable with putting the equipment through the paces, lest it be technology that only a select few can cajole to life. If, in the long run, price puts quality full dome video out of the reach of most potential customers, it will not be ubiquitous among planetariums.

Regardless of your hardware, give them a good story.

Chuck Bueter
15893 Ashville Lane
Granger, Indiana 46530 USA

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I question whether the gap requires bridging. A digital divide should not result in zealots who cannot see benefits to the other side; rather, we should recognize and emphasize the strengths of our particular medium.

Earth’s night sky is an endangered resource. We should attempt to preserve that resource, even in the form of planetariums’ ersatz project stars. Traditional projection techniques will do a better job of this than digital technology for some time to come, and well beyond that point people will benefit from the opportunity to remove themselves from the frenetic pace of modern life and contemplate the sky as our ancestors have for millennia.

Even as we recognize the need to preserve and cherish the human-centered astronomical experience, however, we must also recognize that we live in a universe incomparably more vast than the ancients’. For the first time in human history, we can visualize our place in the universe in a coherent, unified manner that allows an individual to experience various scales continuously and interactively. Full dome planetariums can teach 21st-century astronomy in a way that traditional domes cannot.

The two goals I describe certainly intersect, but they can also be pursued exclusively, and a range of options exists in between. True, the concept of “planetarium” becomes muddied and more complex, but I believe that enriches our world, even if it presents some marketing problems. Face it: the planetarium medium evolves, and our profession appears to have specified. Rather than referencing dinosaurs or extinction in my analogy, I would prefer to emphasize the more contemporary concept of biodiversity: differing technology does not mean that only the most pixelated will survive, but rather that specialization and variety can thrive. A digital divide that separates one species of planetarium from another should be embraced as a valued difference, rather than a threat.

Ryan Wyatt
Rose Center/Hayden Planetarium
American Museum of Natural History
200 Central Park West
New York, New York 10024 USA

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My opinion in all of these “have vs. have not” issues is that you can always put on a good show if you have a realistic star field, and someone who has the enthusiasm and sensitivity to present a great show. You don’t need all the bells and whistles to keep 10 or 100 or 500 people spellbound. You just need sincerity in your voice and a steady hand on the pointer. If you’ve got that, it’s half the battle. You can make just as bad a show with a big budget as you can with a little one.

Keep the viewer in mind, and the rest will fall into place.

James Hughes
Planetarium Producer
Buhl Planetarium & Observatory
Carnegie Science Center
One Allegheny Avenue
Pittsburgh, Pennsylvania 15212 USA

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As one who operates within a panoramic video dome facility, I have learned to adapt to doing shows in such an environment. There are quite a few drawbacks in video-enhanced facilities, such as the maintenance costs of video projectors, the reliance on proprietary software that makes using multiple vendors for shows more difficult, the lack of flexibility in putting together a show on short notice to accommodate the needs of a few clients, to name a few. And, no matter what the bean counters think, video is not a panacea for solving short-term or long-term financial goals.

Until the video “revolution”, the tools of our trade were such that there was flexibility and ease in both installing and generating shows. And, by shopping around, one could get show kits at reasonable prices (reasonable as defined by the meager budgets many of us still operate under, despite the move to more expensive technology). And, presented properly, audiences could be amazed by these non video-based programs, because many wanted to see the stars (which we still do best) and gather information on the particular topic addressed.

Now the tools have been taken away to some extent. Without large budgets to either hire folks to create video streams for us, or to purchase them from vendors, more and more the result can be the presentation of
the same show over and over and over again, reducing the freshness that was possible with moderate means and little/no video. Don't get me wrong, I enjoy using video in my programs. (I would much rather fly to the Orion Nebula than look at it from a distance, for example). My own history with it included working with the technical people here at the university in the old facility, to get a decent three-gun video projector installed. Through it, I could play segments from video tape, laser disk, and my computer, which I also had installed because it opened up additional video clip possibilities. But that is also exactly the point; with a limited staff (one, in my case, back then) it would be possible to use video as a tool to enhance shows without needing a huge budget.

I understand the vendors' arguments: they took the risks of developing this new technology, possibly at our insistence (as I said, I liked the concept) and feel justified in charging sums to recover the costs of taking those risks. Business is business, and if a business does not recoup the cost of R&D, the business does not survive as such. And in a limited supply-and-demand market, the folks that get a system up and running first, even if banded-together, stand to reap financial benefits before competition comes in and forces the costs to be more reasonable.

So, in response to the initial question of how the gap might be bridged between those who favor all dome video systems and those that resist them, reduction of costs comes to mind. This might be achieved if standards are ever adopted for video-based programs and systems. But, once adopted, it should be on the vendor to retrofit (or even replace, if their system is that out of compatibility) the facility in which their equipment exists to bring it up to standard at little or no cost. (If you anticipated wrong on the way the revolution was going, it should not be my fault; I assumed when hiring you that you knew what was going on). But, more important than that, make it simpler to create segments that can quickly be put together to create new shows. We are, after all, not Hollywood. We will never have the budgets that those folks have to create new shows. If it becomes almost turnkey to create new shows, I suspect a lot of the resistance to moving to video, panoramic or all dome, would be reduced.

J. Scott Miller
Program Coordinator
Gheens Science Hall and Rauch Planetarium
University of Louisville
Louisville, Kentucky 40292 USA

In regards to the "digital divide issue", I do not see that this issue is any different then when video first started to appear in planetarium shows back in the early 80s, or even when 35mm slides started to show up in shows way back when. I can remember talking with other planetarians about the use of video in shows, and how some were dead against it while others embraced it enthusiastically. Anyone remember the big divide when Digistar first came out? Has the fact that some of us have Digistars and some of us have opto-mechanical prevented us from sharing programs? Are there theaters that don't use video or 35mm slides? Could be. Does this fact make their shows bad or poor quality?

Full dome, like video, Digistar, 35mm slides, lasers, etc is just a tool. I have seen some great shows that were just a star machine, a pointer and the presenter and I have seen some real stinkers that had every bell and whistle imaginable. Full dome imagery looks great, but if you don't have a good story all you have is a bunch of nice video and a group of visitors wondering what the show was about. The key to any good show is to tell a good story.

To those who don't like full dome video I say: Don't use it. You don't need it. If your script is so poor that it needs technology in order to get the point across, then you shouldn't bother producing the show. That's not to say that the technology can't enhance a script, but it should not have to carry it. I admit we have show ideas that would look great in full dome video, but we could produce them using slides just as well and still get our message across. (Of course, without funding you can't produce much of anything, but that is off the subject :).""

Wit the demise of slides, I know that there are many who feel that they will have no choice but to embrace full dome technology or shut down. One never likes to be forced into a making a choice with no options, but we as an industry have faced this time and again. Records and LPs, reel to reel, laserdiscs - all have gone the way of the dinosaur. We weren't given a choice about switching from reel to reel to reel over to DA-88 but, as an industry, we adapted and moved on. Vendors will play a key roll in this, through setting standards to ensure compatibility between systems, to finding low cost alternatives and "baby brother" versions of their larger systems. Truth is, just as the CD spelled the end of the LP, full dome systems spell the end to so called "traditional" planetariums.

Perhaps the real issue is that we need to redefine what a planetarium is; perhaps it is no longer a chamber in which to just learn about the wonders of the night sky, but rather that it has become a multi-media theatre in which more is possible. Those few facilities that have both large format film and planetarium shows under the same dome, know that the visitor doesn't always know the difference between the two formats when reading the schedule. To them, a shows is a show. With full dome approaching the resolution of large format film, has the line been blurred between these two industries as well? I read that at the IPS conference in Valencia Sky-Skan showed parts of the large format film, Solar Max, on one of their full do me systems. And no, I am not saying run Everest on your full dome system, but perhaps you could. If our shows are now approaching that level, then the issue isn't one of, Do we use the technology or not? Or even, Do we like the technology or not? It is more about facing our fear of the changing role of the planetarium show. Look at our shows as an industry. Ignoring the technology and just looking at content and style, have they changed all that much from what they were ten years ago? Have we stagnated as an industry? Don't see full dome technology as a threat, see it as an opportunity to grow. After all, it's just a tool. It is how we use that tool that is important.

Paul Trembly
Technical Director, CineDome, Planetarium, & Observatory
Orlando Science Center (a non full dome facility)
777 E. Princeton
Orlando, Florida 32803 USA

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Here's a slightly off-beat and non-controversial topic for the next Forum column, to counter the seriousness of the one you've just read:

What are your favorite constellation to point out during a live sky tour, and why? How do you describe them to your audience in a way that's different from the norm?

You can send me your contributions by email, snail mail or written on the back of a ticket for SpaceShipOne. The choice is yours. (If I get the latter, then great, I'm outta here ...)

The deadline is December 9, and so you can send me your well-reasoned contributions by email, snail mail, or written on the back of a ticket for SpaceShipOne. The choice is all yours. (If I get the latter, then great, I'm outta here).

Oh, apparently I don't! ☆
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first good peek under Titan’s hydrocarbon covers as I write, if all goes well, with Huygens about to be set loose as you read), and Mars Express (I’m still waiting for word any day of the discovery of a termite mound or small herd of flatulent Martian cattle to explain its fascinating discovery of methane in the thin Martian atmosphere), and Stardust (with its view of the meatball-like nucleus of Comet Wild 2, shot as it gathered it treasure of comet dust particles to bring home), and the Spitzer in frared telescope (generating plenty of heat with its beautiful infrared images) and even from the somewhat crumpled Genesis spacecraft whose wreckage may still reveal bits and pieces of the solar wind composition it was designed to collect.

Taken together with the continuing return of ongoing missions such as Mars Global Surveyor, Mars Odyssey, the Hubble Space Telescope and many others, our stockings are rather bulging with presents from the universe this year.

I can hardly compete with that, but still attempt to offer herein a few little informational gifts of my own this December, in bits and pieces gleaned from the “solar wind” of news flowing past my nose. Enjoy.

**Full-dome Standards Summitry**

At the IPS gathering in Valencia this past July, there was a conference going on within a conference, with many of the delegates in attendance also attending the Full-dome Standards Summit special session held on July 7-8. The summit was sponsored by a U.S. National Science Foundation grant to the Denver Museum of Science and Nature and Spitz, Inc. The co-chairs and primary organizers of the summit were Ryan Wyatt of the Rose Center for Earth and Space at the American Museum of Natural History, and Ed Lantz of Visual Bandwidth, Inc.

The summit attracted some 100 delegates altogether and a baker’s dozen of papers ranging from the need for full-dome standards based on experiences in other simulation industries to a standards proposal by Lantz. The summit included an in-dome visualization session, a round-table discussion, and initial development of a standard for full-dome mastering and the creation of an ongoing standards committee. You can review the meeting’s agenda and paper abstracts at http://research.amnh.org/~wyatt/Community/summit2004_description.html; a proceedings document should follow shortly on the fulldome.org website if it’s not already there.

This strikes me as an entirely good idea. With fulldome systems seeming to proliferate at a faster rate than programming can keep up, the new fulldomes are predictably

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**Jim Manning**

Taylor Planetarium

Museum of the Rockies

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USA

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Finish the last column yet? This season’s installment will be more bite-sized, to give you plenty of time to do that holiday shopping.

We of the astronomical ilk have already received presents aplenty this year thanks to some remarkably successful space missions – from the redoubtable Mars rovers (still operational as of this writing, if complaining of a few aches and pains, and still providing colorful insight into Mars’ watery past), and the Cassini/Huygens craft (about to give us our
hungry for good content. By establishing useful standards while the technology is still young, it should be possible to create a situation where content can be readily transferable and runable on different systems. Everybody benefits.

Kudos to Ryan and Ed and Denver and Spitz for spearheading a worthwhile effort. To learn more from the instigators about progress in this new and exciting arena, you can contact Ed at e-mail ed@visualbandwidth.com or Ryan at wyatt@amnh.org.

Zeiss Coming Attractions

Oops. Once in a while (a great while, I hope), something gets lost in translation, and a columnar boo-boo slips through. Such was the case last in last season's column when I referred to the tiny two-headed projector I saw in Zeiss' Valencia inflatable dome as the ZKP4 projector. I must have misread, for the little tyke has emerged since with the name "definiti Twin" marketed by Sky-Skan, Inc. in cooperation with Zeiss, along with the original "definiti PD" - the single-lens system marketed by Sky-Skan in cooperation with elumina, Inc. (There's a third and original version handled by the Houston Museum of Natural Science alternately called the Discovery Dome or the E-Planetarium - more definitive spin-offs than one can shake a stick at!)

In any case, the actual ZKP4 is another new Zeiss product: a more traditional-looking star projector though fitted with fiber optics stars, digital planet positions, and customized options - and bright enough to be housed in a dome up to 14 meters (46 feet) in diameter, according to Laura Misajet of Seiler Instrument. You can contact Laura in the U.S., for details, at Seiler Instrument, 23 Nabor Park, Narbeth, Pennsylvania 19072, telephone +1-800-726-8805, cell phone +1-610-766-0673, fax +1-610-664-0308, e-mail zeiss@seilerins.com, website www.seilerinst.com, or Volkmar Schorcht at Carl Zeiss Jena GmbH, Carl Zeiss Gruppe, Carl-Zeiss-Promenade 10, 07745 Jena, Germany, telephone 0-36-41-64-22-83, cell phone 0170-386-62-44, fax 0-36-41-64-30-23, e-mail schorcht@zeiss.de.

In the continuing marriage of the new full-dome systems with more traditional capabilities, Laura also announced at the Western Alliance Conference (WAC) in San Diego in September that Zeiss is developing a new combo system consisting of a traditional starball coupled with full-dome DLP video projection, scheduled to hit the market in 2006.

The combo concept, designed to marry systems and provide the best of both worlds (bright, sharp stars and gee-whiz full-dome video) continues to proliferate. Stay tuned on this one, and contact Laura for more information as it becomes available.

Digitarium in the Flesh

I've written about it from afar, certainly, with information at hand, but at the WAC in San Diego this fall, I was at last able to meet the new Digitalis full-dome system for portable planetariums in person - and I enjoyed the encounter.

I snuggled under the inflatable dome of the Digitarium Alpha from Digitalis Education Solutions while Karrie Berglund and Rob Spearman ran the system through its paces for me. The "DA," as I'll call it, is an inexpensive solution for those wanting portable full-dome capability (costing $15,750 U.S.), yet maintains full planetarium capabilities along with the ability to show most any video via its DVD drive. The stars are there, and the usual grids, and planets that can zoom in to show close-up images. Deep sky objects can like wise be targeted for closer inspection, zooming in to show Hubble images of the objects, for example. There are constellation figures, including some adapted from the 1801 Uranography, and Polynesian star patterns available as well. To cap it off, I saw a snippet of the full-dome version of Loch Ness Production's new Hubble program (mentioned last time).

A concept drawing of the "Starglobe" system featuring a starball with full-dome video, courtesy of Laura Misajet of Seiler Instrument and Carl Zeiss Jena.

The true Zeiss ZKP4, courtesy of Laura Misajet of Seiler Instruments and Carl Zeiss Jena.
One unusual bit I noticed was that the stars “swam” with a bit of stellar Brownian motion during the daily motion demonstration – presumably a result of the fact that dome resolution is about 770 X 770 pixels – relatively “lo-res,” but in keeping with the low price of the system and a trade-off with affordability. A new lease for the system is coming to reduce chromatic aberration and to brighten and sharpen things. The system (compact and weighing under 16 kilograms) comes with case, user manual, a dozen lesson plans, a two-year limited warranty, and technical support - and an inflatable dome if you need one, ranging in cost from $2,900 for a four-meter (13-foot) to $6,000 for a seven-meter (23-foot) version.

For the price, it’s a cute little system - and an opportunity to bring the digital universe anywhere at an affordable cost. So far, Karrie Berglund tells me that about two-thirds of DA sales have gone to schools and one-third to outreach programs - and it’s a useful system in either case.

For more information, contact either Karrie or Rob at Digitalis Education Solutions, P.O. Box 2976, Bremerton, Washington 98310, telephone 360-616-8915, fax 360-616-8917, e-mail ka rie@DigitalisEducation.com or rob@DigitalisEducation.com, web site www.DigitalisEducation.com.

Bowen – Now Technovating

One new thing about Bowen Productions is its new name: Bowen Technovations, chosen, according to Jeff Bowen, to better reflect the company’s direction and diversity of products and services.

One new product Jeff demonstrated in San Diego is Bowen’s new low cost cove lighting system using LED technology. The AstroFX-Aurora LEDSP, as the system is called, features flexible and continuous 360° LED bands of red, green and blue, which can be faded up or down to create any mix of the three colors (yellow is also an option). The system is controlled either by a console-mounted button panel or through a show control system.

Jeff says the use of LED technology minimizes power requirements and reduces heat generation and maintenance. Certainly the colors are lovely; the stretches of LED tube he demonstrated showed flawless hues, resembling nothing so much as light sabers from the Star Wars movies. Most impressive.

Look for additional information and price at www.bowentechnovation.com/planetarium. You can also contact Jeff and crew at Bowen Technovation, 3924 Pendleton Way, Indianapolis, Indiana 46226, +1-317-536-1283, fax +1-317-536-1293, e-mail jeffb@bowen.technovation.com about their wide variety of products and services.

GeoGraphics News

Despite this year’s pounding of Florida by far too many hurricanes, George Fleenor of GeoGraphics Imaging and Consulting keeps on keeping on, with fingers in a variety of pies. Most recently at the WAC, he demonstrated a series of video clips he’s offering for sale, featuring the lovely artwork of Joe Tucciarone. There’s an ethereal zoom-out sequence from the Earth/Moon system to beyond the galaxy, an asteroid impacting Earth, assorted zooms of spinning planets and asteroids, solar and lunar eclipses, demonstrations of the double star Algol and an extrasolar planet in orbit around its star, the formation of a planetary nebula, a red giant star and a Wolf-Rayet star expelling gas, and much more. The clips can come in NSTC, PAL, HDTV, full-dome formats and more.

If you look at George’s GeoGraphics website (at www.geographicsimaging.com), you’ll see that he’s expanded his offering of panoramas, all-skies and miscellaneous images, including much from Kitt Peak and other observatories, the Grand Canyon, and assorted cityscapes. (My favorite is the all-sky of the gas station canopy from the perspective of being underneath it at night.) He offers comet images and a nice set of images showing the problems of light pollution and the benefits of appropriate lighting fixtures.

George is also marketing a children’s program called “The Friendly Stars” for Bays Mountain Planetarium and McSpadden Animation Productions, taking the original Bays Mountain slide version and converting it to an animated version on DVD. This is designed to be a user-friendly program, using just the DVD and your star projector; programmed stops in the DVD allow you to run through each segment of the show in turn at your own pace.

An animated sun (named Sol, of course), explains his own importance and then takes the youngest stargazers (kindergartners and first graders are the target audience) on a quick tour of his family of planets. When Sol heads back into the sky, the stars come out and group of garrulous twinklers engage in a lively conversation with the operator and the audience. There’s a place to tell your favorite bear story before the show ends.

The show is cute and very well done - good voices, nice animations, beautiful artwork, with lots of opportunities for interaction with the audience. And it couldn’t come in much simpler form. The cost is $299 U.S. according to the GeoGraphics website.

George is also working with Jon Bell on the production of a show called The Whale’s Tale - a show set in the autumn and similar in style to the Bear Tales show Jon produced some years ago - only this one with a light emphasis on seafood. A family raking leaves on an autumn evening sticks around outside for family discussions of the cause of the seasons, lunar eclipses, and constellations and their stories - including the story of Perseus and Andromeda (which includes Cetus) and the “watery” region of the autumn sky. There are a couple of songs interspersed, including one about whales at the end. The show images I’ve seen are quite fetching, and the soundtrack sounds good. You’ll find the script on page 13 in this issue.

For more information on his various projects and products, contact George at GeoGraphics, 7803 25th Avenue West, Bradenton, Florida 34209, telephone +1-941-920-0246, fax +1-941-794-6877, e-mail George@geographicsimaging.com, or check out his website as given above.

Creations from the Carnegie

American children’s television icon Fred Rogers may be gone, but his enormous legacy lives on in part at the Carnegie Science
Center in the form of The Sky Above Mister Rogers’ Neighborhood, created by the Carnegie's Buhl Planetarium in conjunction with Family Communications, Inc. and is still available to interested planetariums, as James Hughes informed us in San Diego at the WAC. The 20-minute show uses characters from the well-known TV show Mister Rogers’ Neighborhood to take a young audience on a tour of the sky above in Rogers’ inimitable and comforting style.

The show package includes video laser disc or DVD computer animations of Neighborhood characters, a nicely-done teacher’s guide, and educational merchandising opportunities for your gift store (for who doesn’t need a Henrietta Pussycat or Daniel Striped Tiger plush toy to hug on occasion?).

The show provides an excellent way for planetariums to capitalize on a bit of popular children’s culture that also happens to provide a first-rate and friendly educational experience for the youngest viewers. If you’re interested, contact James Hughes at the Buhl Planetarium, Carnegie Science Center, One Allegheny Avenue, Pittsburgh, Pennsylvania 15212, telephone +1-412-237-3348, fax +1-412-237-3395, e-mail hughesj@csc.clgh.org, web site www.CarnegieScienceCenter.org or www.buhlplanetarium.org.

And speaking of cultures, we can always count on the Buhl to come up with new and diverse sorts of programs - the most recent of which involves tissue cultures. The program, produced in conjunction with the Pittsburgh Tissue Engineering Initiative, Inc. is called Tissue Engineering for Life. The program is most definitely biological in content, featuring the emerging branches of medicine called Regenerative Medicine and Tissue Engineering - technologically-based sciences that apply new techniques to the human body to heal body parts (bad hearts, broken bones, etc.) in speedier fashion than the body can heal them on its own.

The video trailers I saw in San Diego were reminiscent of Fantastic Voyage, as we hurtled through blood vessels, bone, and other bodily regions, following the body’s army of helpful cells going about their work, and getting diagrammatic ideas about how modern technology can help as well. There are animated characters to move the story along for the younger crowd which can be edited in or out depending on the sophistication of your audience.

For those of us looking for alternative programming opportunities - and who isn’t in these days of strategic diversification - this is something you may want to check out. If biology is part of your strategy, this program offers some cutting edge content.

To learn more about the program, contact James Hughes once again as given above.

The Earth Space Simulator

MMI Corporation, P.O. Box 19007, Baltimore, Maryland 21211 USA, telephone +1-410-366-1222, fax +1-410-366-6311, e-mail mail@mmicroportion.com, web site www.mmicorporation.com is one of those eclectic companies offering all of the sorts of stuff we love - from planetariums and observatory domes and globes to books, slides, CD-ROMs, laser discs, videos, and prints on all things cosmic.

One new item I came across recently in the company’s catalog is the Earth Space Simulator - a small celestial sphere model that can be used as a desktop tool for teaching why the sky works the way it does.

The 13-cm (5-inch) plastic sphere can be readily assembled with a small Earth ball and ecliptic b and inside and a horizon disk and “o-ring” meridian around the outside, with the sphere adjustable for latitude. Once assembled, you can then set off on assorted fiddling's that can help to teach basic concepts we all do in the planetarium - the effect of latitude, seasonal changes of the sun’s path, and so on. The sphere has no stars, but there is an an plotting exercise that allows you to add them if you wish.

The model comes with a guidebook that contains assembly instructions as well as a progression of lessons on basic astronomical concepts in volving latitude, time, the seasons, and so on that can be conducted using the model as a prop. The cost of the device is $99.95 U.S. - at which price it would be nice to have the stars already plotted. But it’s a cute and eminently portable celestial sphere model that can help to put the planetarium in perspective - and vice versa.

For information on assorted MMI products or a catalog, contact the company as given above. It’s a veritable treasure trove of useful things to help us in our work.

Astronomy Notes

Speaking of treasure troves: at the WAC in San Diego, I learned of Nick Strobel’s astronomy web resource called “Astronomy Notes” - essentially an on-line text for teaching introductory astronomy. It encompasses all of the traditional topics - history, solar system, cosmology, life beyond Earth and so on with concise writing and simple, useful graphics and pictures. The site grew out of Nick’s teaching at Bakersfield College in Bakersfield,
In San Diego, I picked up a cool little 1/18 scale impactor model on heavy glossy paper; you cut it out and put it together and have a little model of the thing that’s going to go boom into the comet in about six months. As of this writing, I haven’t been able to locate a source to tell you how to get your own if you don’t have one, but if I find out, I’ll let you know next time. I wouldn’t try banging the model into anything in particular, but it will be a nice prop to pass around as you explain to people what it’s going to do.

In the meantime, check out the following websites to keep track: www.deepimpact.jpl.nasa.gov or www.deepimpact.umd.edu. The JPL page, incidentally, has a great education page on which to pick up some good ideas relating to the mission – how to make (and eat) a comet and similar cool bits.

A Great Idea from Ash Enterprises
John Hare of Ash Enterprises mentioned in San Diego a new policy of his company - namely, when servicing clients in the various ways his company does (providing everything from technical maintenance as a service representative of a number of planetarium manufacturers to design consulting), Ash then donates $25 U.S. either to provide a membership in the clients regional planetarium association or to make a donation to a fund of the client’s choice – the IPS Spitz Fund, the SEPA Scholarship Fund, or another.

What a wonderful idea! It’s a small enough sum to be affordable to the vendor, and yet can go far in providing a planetarium a year’s worth of fellowship in a regional organization or helping to build funds for worthy causes within the profession. John hoped that other vendors would follow suit, and I hope so, too. It can help to strengthen our community, which can ultimately serve to benefit vendors as well - a good deed that come back around to reward the benefactor. And it seems a particularly fine sentiment at this time of year. Gifts that can keep on giving are always at the top of my holiday list; won’t it be on yours as well?

Finally ...
Maybe it’s the eggnog talking, but it seems to me that we all provide gifts that keep on giving, every time we excite or inspire someone about the universe, or give somebody a little push toward cosmic perspective, or help others to do these things in new and useful ways. So let me raise my mug to you all and wish you a happy season, a safe and placid new year, and new and exciting paths to trod as we begin the fifth year of the new millennium.
And most of all, peace. Of every sort.
For now, best wishes, and as always… what’s new? ☆

(Live Music continued from page 11)
makes it all enjoyable.

I have never regretted the effort required because this project has always fulfilled and enthused me anew - I always look forward to the next delightful adventure, as happened recently at the IPS Conference in Valencia, in the fabulous architecture of “L’Hemisfèric”; it was a highlight for me and it was just wonderful to have been present!

I would like to express herewith my friendship/kindness/connection/being in touch/commitment (in Germany we have the suitable word “Verbundenheit,” but we could not find a good translation) to the great “family of planetariums” and to encourage others to try live concerts. ☆

(Rainforest continued from page 19)
of the intensity of nature with its spectacular colors and memorable sounds. “Fascination Rainforest” has also attracted numerous school groups, because many topics from the fields of ecology and evolution are presented within the framework of the show. The show is also being presented in the Hamburg Planetarium. It would assuredly be an attractive enrichment for many planetariums’ programs if the increasing technological advances were used to show the audience not only the wonders of outer space, but also the wonders of life on earth.

The unmistakable red-eyed leaf frog opens his eyes at night. Courtesy Hannes Petrischak
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Grafton, Andreas Hänel, John Hare, Donna Pierce, and Loris Ramponi for your contributions. Special thanks are due to Loris Ramponi, who contributes the Calendar of Events. You are welcome back with new reports, and I look forward to contributions from other Associations as well. Upcoming deadlines are 1 January 2005 for Planetarian 1/5 and 1 April for 2/5.

Association of French-Speaking Planetariums

Summer 2004 was marked by the IPS Conference in Valencia: 19 APLF members were happy to meet in the magic “Hemispheric” center, and time was too short to attend all educational presentations and technical demos, and to exchange with all IPS friends coming from the whole planet. We returned home with a lot of CDs and ideas and projects enriched by new collaborations on an international level. The report of the Conference will appear in the next issue of our APLF-Journal.

The year 2004 is marked by the opening of the APLF web site, constructed by Lionel Ruiz (Marseille Planetarium) and others members of our Web-committee coordinat-ed by Jean-François Delor me. Please visit www.aplf-planetariums.org.

The year 2004 is also a great year because our Planetariums journal celebrates its 10th birthday! Created in 1995 by Jean-Michel Faidit, the journal has appeared each year with increasing quality and in full-color since 2002 - thanks to the faithful advertisers RSA Cosmon, Evans & Sutherland, Sky-Kan, and Zeiss. Since much in formation is now available on the APLF web pages, the journal can devote more space to astronomy and education, and it becomes cheaper. The X-version of the papers and images coming from France and beyond was done by Laurence Demond, in Strasbourg.

As it does each year, Planetariums 2004 presents highlights on astronomy: the passage of Venus in front of the sun is followed by an overview of extralunar planets, then on black matter, the hidden face of the universe, and galactic cannibalism. A second part is devoted to planetarium shows: Venus and the planet-hunters, the mysteries of the southern sky, tales of space. The Planetariums reported on the history of the first big planetarium installed in the Palais de la Découverte in Paris in 1937, about the Ludiver Planetarium near the sea, about the portable planetarium in Kruth, about the innovations in the Epinal Planetarium, and about new European collaborations across the Rhine.

Education is the first aim of the Comité de Liaison Enseignants-Astronomes (CLEA) providing a lot of documents for teachers. Analemic animations for children are described, followed by a reflection about the relative absence of astronomy in books for children, and by a review of the importance of planetariums in teaching astronomy within the official school programs. In What’s new, following Jim Manning in the Planetarian, Planetariums 2004 describes the technical performances of projectors, domes, images, etc. A special place is reserved for News from IPS. And finally Networked Planetariums summarizes the report of the 2003 APLF Conference in Ludiver, with thoughts about the jobs of people working in planetariums. The Journal closed with a directory of APLF Planetariums.

Cover of the APLF Journal 2004 Planetariums Courtesy of L’Intranquille, Strasbourg

Association of Mexican Planetariums

A small but well represented group of AMPAC Planetarians attended the 17th Biennial IPS 2004 Conference in Valencia last July, including Jorge Sánchez, AMPAC President, and Manuel Angel Villagrán, Director of Rehilete Science Center & Planetarium, as well as the enthusiastic group from the Morelia Convention Center headed by its Director Dr. Genevevo Figueroa Silva and its Planetarium directed by Gabriel Muñoz, and Gerardo Trujillo, who eagerly presented their bid to hold the 2008 IPS Conference at Morelia, Mexico. A vote will be cast on the 2008 site selection, when the IPS Executive Council meets next year in Beijing. The Morelia group asks all IPS planetarians to vote for Morelia, Mexico.
The IPS Valencia Conference was most useful to attend for Spanish-speaking planetarians, since it was the first time Spanish was considered an official lan guage for the IPS Conference, having simultaneous translations.

Recently two new portable inflatable planetariums were inaugurated at Guaymas and Hermosillo, State of Sonora, Mexico, probably the first in northwestern Mexico. These add to the couple of existing permanent planetariums at C.D. O bregon and Magdalena de Kino, also in Sonora. Their 5-meter diameter domes use flameless fabric, with a seating capacity of 20 to 35 depending on the age of spectators, and are equipped with Planetronix Projectors, locally made by Saul Grijalva. For more info contact sgrijalva@planetronix.com.mx.

British Associations of Planetariums

It has been a sociable year for BAP. Many members have already met on three occasions, for the AGM, the IPS Conference in Valencia and most recently at Evans & Sutherland’s Discover Digistar 3 evening at the London Planetarium. Over 100 people attended, representing a variety of facilities (not all of them planetaria) from the UK and elsewhere in Europe. They were able to see the 2004 demo that E&S were unable to show in Valencia and some very exciting work in progress from BAP member Julie Thompson of Armagh Planetarium. Thompson demonstrated what can be done after two weeks of training in Salt Lake City and just having a go. She and Tom Mason are currently experiencing what must be the ultimate frustration because they have no dome at present on which to see what they are creating. Armagh Planetarium was a trail-blazer, the first anywhere to use video. Thankfully, plans are in place to ensure that they once again have a facility worth having.

As some of you will have seen on DomeL, Thinktank, Birmingham’s a world-winning museum of science and discovery, is to get a new 200-seat digital theatre, due to be completed in 2005. This, together with associated educational and corporate facilities and the existing museum, will provide an unrivalled science educational facility for the West Midlands. For more information, have a look at www.thinktank.ac. The Royal Observatory at Greenwich is also planning a significant expansion of facilities, in a £15 million project Time and Space which will in due course be spectacular new planetarium. Until this is built (2006/7) they will have a temporary dome on site.

CosmicSky Productions (Francisco Diego and Gill Russell) are busy putting together their award-winning project fusing science and art. Their dome (cosmic space) will begin touring the UK sometime next year. For more information go to www.nesta.org.uk. As a direct result of the Glasgow Science Centre’s successful Superstition Event in February, at least two other science centers are hosting this event: Techniquest in Cardiff, Wales and Science World in Vancouver, Canada.

Glasgow’s event consisted of a Superstition Challenge obstacle course, the Do You Feel Lucky? science show; and the What’s Your Sign? astrological planetarium show. The hope is that this event’s popularity will continue to grow amongst science centers everywhere, thereby promoting skeptical thinking and a healthy perception of science. They have also continued to run a successful series of evening lectures by speakers like Robert Bualv (The Orion Mystery; Keeper of Genesis, and Secret Chamber). For this, the audience was taken back in time to see the sky as it appeared above ancient Egypt 8500 years ago. The series has also featured Dr. Mario Livio (Hubble Space Telescope senior astronomer) who managed the difficult task of giving mathematics a human face. Enterprises like these continue to prove there is a lively market out there for imaginative public programming in the planetarium universe.

Canadian Association of Science Centres

The recent IPS Conference in Valencia, Spain, saw a number of Canadians in attendance. Attendees all had strong interests in the planetarium/science center fields, and several were involved in presentations during the Conference. From the Montreal Planetarium came Director Pierre Lacombe. Pierre is still planning for a new facility, despite some recent political uncertainties, and he is hoping that a location near the old Olympic stadium will be available. We certainly wish Pierre and his staff every success as they plan for their new facility.

From Alberta came Calgary-based architect Bill Chomik, who has recently finished design/build tasks at the new Eugenie Des Plaines Planetarium in Athens. Also from Alberta, but this time from Edmonton’s Odysseum, came Max and Marjorie Scharfenberger. Max Scharfenberger was in Valencia primarily to do further research on full dome video systems. The old Margaret Zeidler planetarium in Edmonton, part of the outstanding Odysseum complex, is finally at the top of the list for refurbishment, and it looks as if Edmonton may be the first Canadian planetarium to convert to full dome video, perhaps as early as 2005.

From BC came consultant Robert Ballantine and IPS Council member John Dickinson. Dickinson chairs the IPS Strategic Planning Committee, and he and Ballantine spent the two days immediately prior to the Conference presenting and talking with IPS Council members about the planning report which consultants Ian McLennan and Robert Ballantine had recently completed. This report which includes an analysis of the IPS Organization, Operations and Membership Services generated a great deal of interest among Council members, and at this time it looks as if Council may be considering some changes in IPS operations and direction. IPS Council has asked the Strategic Planning Committee and the consulting team to do further pro bono work on their proposals. This is now being undertaken and the new research will be submitted to IPS Council about the time that this article goes to press. Basically, what the authors of their report have done is firstly to provide some examples and some real opportunities should IPS decide to go with the paid secretariat scenario originally proposed to IPS Council. Secondly a scaled down version of “First Class” is suggested, which if accepted would enable a variety of new tasks to be more efficiently done by Council and its various committees. The scaled down version would probably include IPS Council members, and the Chairs and Members of the various IPS committees.

While attending the Conference, Dickinson chaired and Ballantine presented during a session titled Partnership and Collaboration: A Model for Success. This session also included presentations by Jim Manning and Agnes Acker.

One final piece of news about a show that is playing at four of the big five Canadian planetariums. Origins seems to be well-produced, and perhaps more important a very well received (i.e. popular) show. It appears to be doing very well in Vancouver, Calgary, Winnipeg, and Montreal, and we look forward to more joint funding opportunities which can help in the production of future joint programs. Congratulations to the team involved in the production of Origins.

Council of German Planetariums

After it became clear at the Valencia IPS
Conference that European planetariums will have no chance to get the planetarium show Ringworld on the same conditions as their American colleagues, the planetarium team of Forum am Deutschen Museum in Munich decided to produce their own show on the Cassini/Huygens mission. The script was written in collaboration with Andreas Hänel of Osnabrück, and has been distributed to some ten German planetariums at very reasonable cost. The concept of the show allows a continuous supplementation with latest imagery from Cassini and Huygens. The production and distribution could be made possible with the help of NASA, ESA, DLR (German Space Agency) and others, and might be adapted to other languages too. For further information on its availability, please contact Markus Steblei, steblei@forumam.deutschemuseum.de, phone +49 89 21125 252.

The nationwide Long Night of the Stars, initiated by the German magazine Stern on 18 September, was one of the very successful highlights in autumn. About 170 planetariums and public observatories in Germany, Austria, and Switzerland welcomed a total of some 100,000 participants on this day. Some planetariums had thousands of visitors that night! People were eager to learn more about astronomy and related topics. Due to this success, it has already been decided to repeat the Long Night of the Stars in 2005.

In September, Dieter B. Hermann retired as director of the Zeiss Grossplanetarium in Berlin and Archenhold Observatory. Many colleagues came to the historical Archenhold Observatory to join his farewell party. The special surprise guest was Sigmund Jähn, the first German cosmonaut, who spoke about his space flight on board of the Russian Salyut space station in 1978.

**Great Lakes Planetarium Association**

**Illinois** The Strickler Planetarium in Bourbonnais has had some exciting events. As with many facilities, they teamed up with their local astronomy club to host public viewing of the Venus transit. Many people were in attendance as student planetarium workers from their university (Olivet Nazarene) manned a Celestron-8 and digital video camera that displayed the transit on a television screen. The Lakeview Museum Planetarium announced that in July, the local Vintage Volkswagen Club sponsored a trip to Pluto in Peoria’s Community Solar System model. The vintage VWs traveled seven times the speed of light, making this the fastest trip to Pluto yet. In August, the museum sponsored the Tenth Annual Interplanetary Bicycle Ride.

The William M. Staerkel Planetarium at Parkland College in Champaign “survived” through a drainage and re-landscaping project that blockaded their front doors while a college “walk of honor” is installed. The staff also offered a telescope buyer’s seminar in October, plus a five-week public workshop on backyard astronomy. Storytellers from two local museums were also invited for two storytelling nights in September and November.

**Indiana.** Art Klinger and Chuck Bueter celebrated the 2004 transit of Venus in Mishawaka. Highlights preceding June included Art’s presentation of the Transit of Venus planetarium program; a display of historic transit of Venus artifacts; two teacher workshops; a performance of John Philip Souza’s Transit of Venus March by the Penn High School Band; a multi-state art exhibit featuring NASA’s Sun as Art display and Don Tuttles’s Transit Time quilt; and the brewing of Transit of Venus Sunrise Ale by the Mishawaka Brewing Company. For the 8 June observing celebration, about twenty telescopes and free eclipse shades helped a morning audience of over 200 people from five states witness the transit under mostly clear skies. Six monitors under a tent showed live webcasts, CNN and local news broadcasts, an image from a video camera mounted on an H-alpha telescope, excerpts from the Transit of Venus program, and website images.

**Michigan.** The Public Museum of Grand Rapids hosted a fascinating exhibition this fall entitled The Endurance - Shackleton’s Legendary Antarctic Expedition. To accompany it, producer Ethan Brown and the staff produced a planetarium experience that tells of exciting exploration stories from throughout history, including Shackleton’s incredible survival story. The 40-minute audio-visual presentation, entitled To Boldly Go, also looks to the future, when the first space explorers set foot on the planet Mars.

Longway Planetarium in Flint presented a wide variety of programs this autumn, along with Girl Scout merit badge workshops that started in September and the first telescope users’ workshop in October. After being shut down for the last two months, the Abrams Planetarium in East Lansing reopened with a brand new 12,000 watt, 5.1 surround sound system and updated Spitz equipment.

The Cranbrook Institute of Science Planetarium in Bloomfield Hills featured their in-house production of The Sky Tonight: Our Invisible Universe in September. This show featured a live tour of the current night sky, a taped segment exploring the cosmos in types of light human eyes can not detect, and a tutorial on how to use a star chart. In September, they also offered a Masters of Science Education astronomy course. In late October, the Cranbrook Institute and the Dassault Systèmes Planetarium in Detroit co-hosted the GLPA Conference.

The Kalama Zoo Valley Museum Planetarium premiered Abuelo’s Stories for the Seasons in late-September. The program was locally produced and features the talents of the New Latino Vision’s Theater, the Tex-Mex sounds of Los Banditas, artwork by local Mexican American artist Robert de los Santos, and some amazing work contributed by

![People waiting to enter at the Long Night of the Stars in the Nürnberg Planetarium, Germany. Photo: Uwe Lemmer.](image-url)
students of Bangor High School. The program presents a series of seasonal stories with an explanation of how the seasons come about.

Ohio planetarians had good weather for the transit of Venus at sunrise on 8 June. Wes Orloff (Euclid Schools Planetarium, retired) and Gene Zajac (Shaker Heights Planetarium) reported good viewing and good crowds from sites in the Cleveland area. Roger Grosenbacher (Lancaster Schools Planetarium, retired) led a transit-watch at a southeast Columbus MetroPark and an Otterbein College/Weitkamp Observatory group did a similar program in northwest Columbus. At the Bowling Green Planetarium, nearly 120 people showed up for a 6 a.m. observing session from the University of Toledo's rooftop observatory. With a laptop computer linked to the transit's webcast, a half-meter telescope trained on the third-quarter moon, and three portable telescopes aimed at Venus, viewers had much to see. Many even stayed for a 7:30 a.m. showing of the Transit of Venus planetarium program.

Cleveland area planetarians gathered on 27 June for their annual summer picnic. After several years of hosting this event, Bob and Ingrid Slez passed the baton to Fran and John Ratka, whose warm hospitality and grassy back yard provided a welcoming site for the gathering.

Alex Mak is happy to report that the University of Toledo's Ritter Planetarium has survived its first year as a self-supporting institution and that their fall programs will include a number of planetarium shows including the perennial Moonwatch. Congratulations to recent UT grad student Lori Schmetzer, who received her Masters in Planetarium Science and has begun teaching astronomy and physical science full-time at St. Francis High School in Toledo. Ritter alum Dawn Mulliss recently started working at the Boonshoft Museum of Discovery as their Physical Science Coordinator.

Wisconsin/Minnesota The Minnesota state legislature did not say "no" to a new state-of-the-art planetarium in Minneapolis, nor did they say "yes". The Planetarium bill received bipartisan and statewide support in 2004 session. Unfortunately, the legislature adjourned without any bonding bill being passed. Plans call for the Minneapolis Planetarium to go back to the state legislature in 2005. If funding is obtained in the spring of 2005, the new Minnesota Planetarium & Space Discovery Center would open in late 2007.

On more positive news, two planetaria in the Milwaukee area are receiving major investments. In Wauwatosa, the Gary Sampson Planetarium is receiving an almost quarter million dollar upgrade. And in Waukesha, a brand new Charles Horwitz Planetarium is being built. Director Dave DeRemer reports that the building's foundation has been laid and plans are to open by June of 2005.

In Hibbing, Minnesota, the stars aligned for director Marc Rouleau as he recently married on the summer solstice. His planetarium, the Paullucci Space Theatre, is also building a new Solar System model. The scale will be 4000 miles to an inch (i.e. 2500 km to a cm). The sun is represented by an 18-foot (5.4 m) painting on the planetarium lobby's wall and the planets will be set out in to local schools, attractions, and tourist areas. Pluto will be 12.5 miles (20 km) away in the model.

Italian Planetaria's Friends Association

During the IPS Conference in Borlänge, Sweden (1990), the situation of the SS existing Italian planetaria was described. After fifteen years, the number of planetaria has doubled, but the most frequenlly used planetaria are always the small models, operating mainly for schools. Modern science centers, with adjoining planetaria, were not existing in 1990; now the Naples City of Science and Museo del Bali (Pesaro and Urbino; www.museodelbali.org) are the only that include a dome. In Rome, a new planetarium has opened, connected with a permanent astronomical exhibition. In 1990 only few cities had big or medium planetaria which organized lectures addressed both to schools and to the general public, while today many of the existing domes are open not only to students.

In the last years, the number of buildings specifically planned and devoted for planetaria has increased, while in 1990 the planetaria was well visible only in three cities. The increase in the diffusion of the Italian domes is easier to connect also to the work of promotion made by Italian Planetaria Friends Association through yearly meetings, courses, publications, papers, the Day of Planetaria, and the census of Italian planetaria that is available on the site www.planetaria.it.

Among the existing planetaria, 54 are built in Italy, 34 are the small Goto Ex-3 model and 20 are produced abroad; among those, 10 are itinerants with inflatable domes. That means that in the past, the availability of an inexpensive manual model for nautical schools and the production in the last years of competitive models made by Italian craftsmen limited the market to foreign manufacturers to the field of high cost projects. Digital planetaria now begin to appear also in Italy - Turin (www.planetarionordinario.it) is the first step in this field. The planetarium is close to a professional astronomical observatory, which may open the interest of operators also to non-traditional sky domes.

The list of the communications presented by Italian delegates during the IPS Conferences is described in the Italian pages of the site www.ips-planetarium.org. Among the first Italian representatives during the IPS Conferences we remember Guido Casadei (1929-1995) from Brescia, participant in the Salt Lake City and Cocoa Beach conferences, Luca Talamoni from Riviera del Brenta Planetarium, Mira, Venezia, who since 1994 follows IPS Conferences, and Gianluca Ranzini and Fabio Peri from Hioepi Planetarium, Milan.

The Italian delegates attending the IPS conference in Valencia for the first time numbered more than 15. Paola Rodari, SSSA, Trieste; Attilio Ferrari, Turin University, who presented the project of the Astronomical Museum and Planetarium of Turin; Vittorio Mascellani, Modena Planetarium F. Martino; Luca Fini and Sara Albanese, Firenze Planetarium; Franco Pacini, Astronomical Observatory, Arcetri, Florence, who presented 2009 Year of Astronomy; Walter Righi and Marina Costa, Righi Observatory and Cassiopea Project, Genova; Vincenzo Vomero, Gabriele Catanzaro, and Gianluca Ranzini, who described the new Rome Planetarium and Astronomical Museum; Fabio Peri, Hioepi Planetarium, Milan; Giampalco and Claudio Gambato, Chiara Frezza, and Alessandra Zanazzi, City of Science, Naples who presented their planetarium model together with the music show of the American group Starball.

Nordic Planetarium Association

This last winter the Orion Planetarium in Jels, Denmark, had its Zeiss star projector upgraded to ZKP/3. Planetarium director Lars Petersen points out that the new Windows-based software has proven to be much more user friendly and easier to program using the built-in time-line. In May the Orion Planetarium launched a new planetarium show in collaboration with the Steno Museum Planetarium in Århus, Denmark called Stjernemusik & Planet dans (Music of Stars and Dance of Planets). This show takes the audience on a tour in time and space to visit current and future satellite-based research projects with emphasis on stellar oscillations and the search for exoplanets. It includes many new computer simulations produced especially for this show. News about next year's NPA Conference in Jels is now available at www.orionplanetarium.dk. More details on NPA-2005 will be added from time to time to the web site.

Per Broman reports that Broman Planetarium recently has delivered two new Starlab planetariums to Nordic customers, one to Viborg in Denmark and one to Science Circus in Norway. Both projectors are the
funded by NASA. Prospective students for the 2005/6 one-year program should apply before 1 March 2005. More information is available at www.ScienceCommunication.se.

**Pacific Planetarium Association**

In Southern California at Los Angeles Valley College, David Falk has received a NASA Curriculum Improvement Partnership Grant. Funds will be used to replace an old Spitz A-3p with a Spitz Scidome Digital Projector. It is Macintosh-based so that campus Media Arts and Commercial Music departments can participate in cross-discipline content creation. A new sound system and cove lighting will also be upgraded. All improvement should be complete by February, 2005. Early in the fall, JPL and Valley College sponsored a workshop called *Teaching Introductory Astronomy*. Later in the year a new course called Planetary Science will be offered.

Moving north to San Jose, California, teachers attending programs at Independence Planetarium kept telling Gail Chaid, Director, that Boards of Trustee members needed a statement of purpose before they would allow funds to transport students on a field trip to the planetarium. Using the information on the California State Standards website Chaid rewrote the planetarium brochure to reflect the standards. Astronomy is only officially taught in third, fifth, and eighth grades in California. Astronomy is connected to all science, so Gail took the standards and a generic program called *Creatures of the Sky* and wrote a description including the words from the standards for each of the grades 1-10. In this way, the teachers can use the description taken directly from the standards for their “purpose” on field trip forms. The results have been extremely positive. Grades levels that previously could not visit the planetarium now have the justification to take the field trip. Attendance has increased.

Lawrence Hall of Science in Berkeley is working on an exhibit funded by NSF to give visitors control of a telescope in Australia. They will acquire astronomical images and deliver to those images with simple image processing software tools. LHS also has a new audience-interaction show on the sun funded by NASA.

A bouquet of thanks to John Young for preparing and running the San Diego Western Alliance Conference 29 September to 1 October 2004. Vendors gave many presentations and provided all kinds of support for the three-day conference. Vendors who presented papers were Ash Enterprises, Audio Visual Engineering, Bowen Technovation, Evans & Sutherland, Geographics Imaging and Consulting, Goto USA, Starlight Production, Loch Ness Productions, Konica-Minolta, Sky-Skan, Spitz Inc, and Seiler Instruments. The conference provided the 76 attendees with a vital platform for networking, sharing and learning new things to take back to their planetarium communities.

At the PPA meeting Alan Gould, president, expertly guided the attendees through the business agenda. The bylaw revisions were approved and reports were made. At present there is no 2005 or 2006 conference site, but Fairbanks, Alaska, has invited PPA members for September of 2007 (2 weeks on either side of the equinox when there is a new moon). Regions will vote on the 2007 site next year. In the meantime, Alan Gould and Gail Chaid are on the conference committee and they will work with representatives from the other regions to come up with a site for 2005, to be decided on by the end of November. The 2006 site will also be chosen but probably not until spring of 2005. A number of suggestions have been made.

**Southwestern Association of Planetariums**

Jim Rusk, SWAP’s renowned Secretary/Treasurer, was elected Fellow at the IPS Conference last summer. Jim’s name was placed in nomination by SWAP IPS Representative Donna Pierce. Jim has been an active member of SWAP and IPS for over twenty years and has served as SWAP Secretary/Treasurer since 1997. In 1978 Jim was co-host for the SWAP Conference held in Dallas; in 2000 Jim was on the Planning Committee for The Western Alliance Conference Texas 2000 in Dallas. Jim has published a number of articles, several of them in Planetarian. Rusk is presently the Director of the Russell Planetarium in Mesquite, Texas.

Grand Prairie ISD. Board of Directors has announced the naming of Grand Prairie Schools Planetarium for former director Carole Helper, Fort Myers, Florida addressing new members at the recent SEPA/MAPS Conference in Richmond, Virginia. Photo by John Hare.
John Carl Pogue. Pogue is a well known educator in the planetarium field, having served as SWAP President and IPS President, and was a former member of the Grand Prairie School Board.

**Calendar of events 2005**

1 March. Deadline for application for the program that starts 22 August 2005, Master of Science Communication at Dalarna University, Sweden. www.ScienceCommunication.se

20 March. International Day of Planetaria. www.planetaritalian.it


15 April. Yearly deadline for the applicants of a week in Italy for an American Planetarium Operator. www.brescia.scienza.it/cityline/cult/photog.htm

Late April or early May. Middle Atlantic Planetarium Society Conference (MAPS), Fels Planetarium, Philadelphia (USA).

6-8 May. British Association of Planetaria (BAP), Annual Conference, Museum of Science and Industry, Manchester (United Kingdom). It will be a joint meeting with the AAE (Association for Astronomy Education).

6-8 May. III European Meeting of Itinerant Planetaria, Nantes (France) in conjunction with the yearly meeting of Association of French-Speaking Planetariums (APLF). www.aplf-planetariums.org and www.colibrionline.it/MG/international_collaboration.htm


14-18 June. Southeastern Planetarium Association Conference (SEPA), Fernbank Science Center, Atlanta, Georgia, USA. www.sepadomes.org


16-18 September. Nordic Planetarium Association Conference (NPA), Orion Planetarium, Jels, Denmark. www.orionplanetarium.dk

24-25 September. International Planetarium Society Council Meeting, Beijing Planetarium, Beijing, China.

30 September. Yearly deadline for the applicants of a week in Italy for a Spanish and a French Planetarium Operator. www.colibrionline.it/MG/international_collaboration.htm

9 October. XX National Meeting of Italian Planetaria, Brescia, Italy. www.colibrionline.it/MG/planetari_news.htm

17-23 October. A week in Italy for an American Planetarium Operator (each year since 1995). www.bresciascienza.it/cityline/cult/photog.htm

31 December. Deadline of Eugenides Foundation Script writing Contest (contestants can submit scripts from 1 July 2005). For more information: stidey@sabreshockey.com

**2006**


For corrections and new information please send a message to Loris Ramponi at loris@colibrionline.it or info@serafinozan.it.
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request for a copy of the *Spacekids Work-book* on your letterhead and send it to: Northrop Grumman Space Technology, Community Relations, One Space Park, E2/10062, Redondo Beach, California 90278. They also offer reprints of their very informative *Space Primer*, a glossy 32-page booklet updated in 2004!

The are lots of great resources available all about the closest star to us, The Sun. Check out the Living With A Star Program at http://lws.gsfc.nasa.gov. There was a large contingent of educators from Goddard Space Flight Center giving away lots of cool handouts, posters, star shaped pencils and related materials. Together with the great movies at the SOHO website, http://sohowww.nascom.nasagov you can make an awesome show on the sun. A fast connection to the Internet will allow you easy access to the MPEG movies at http://sohowww.nascom.nasa.gov/bestofsoho/Movies/movies2.html.

Touting the slogan “The Mother Of All Data Bases,” the Naval Research Laboratory in Washington D.C. has a cool movie called “The Art of Orbital Debris,” it shows the myriad human-made objects that dance around the Earth. Contact Dr. Henry Dardy for information about the Large Data Visualization program at dardy@cmfnrl.navy.mil.

The National Coalition for Aviation Education has a website that links organizations interested in Aviation and Aerospace Education at www.aviationeducation.org.

People on the Move

If you reside in Massachusetts, Vermont, New Hampshire, or Maine, be on the lookout for Michael (Mike) A. Marks. Mike was recently appointed as exclusive Starlab systems representative by Learning Technologies, Inc. of Somerville, Massachusetts. Mike is also the president and chief astronomer (COA???) of a complementary business, The Sky Connection, which provides hands-on astronomy experiences for camps, schools, nature centers, and other organizations and gatherings. For more information about The Sky Connection visit http://www.theskyconnection.com.

While attending the American Institute of Aeronautics and Astronautics Conference in San Diego I spotted a friendly-faced man with a familiar name sounding name printed in crisp bold letters on his name tag. It turned out to be Doug Baldwin (formerly with the Kelly SpaceVoyager Planetarium in Charlotte, North Carolina). Doug is now with the Education Department of the Steven F. Udvar-Hazy Cetner of the National Air and Space Museum, Smithsonian Institution in Chantilly, Virginia. Also on hand to field questions from hundreds of school students visiting the Education Alley section of the Conference was Margy Natalie, the Aerospace Educator in Residence from the Fairfax County Public Schools. You might be interested in obtaining some of their Aerospace 4 Educators CD’s. For more information contact Doug at baldwin@nasmsi.edu or visit them online at www.nasmsi.edu/museum/udvarhazy.

Over at the Western Alliance of Planetariums Conference, I ran into another friendly face. It was none other than Bill A. Gutsch, Jr., Ph.D. Bill is now the President and CEO of the Challenger Center for Space Science Education in Alexandria, Virginia. You can drop Bill a note at his new email address, wgutsch@challenger.org. I heard Bill deliver one of the best keynote addresses I’ve ever heard at the MAPS/SEPA conference in Richmond, Virginia, back in June of this year. It was a talk about the top things to remember in order to make a great planetarium show. When I asked Bill if he would consider letting me print a copy of it in this column, he said that he thought he might be able to get a few more free meals out of it first. I’ll keep after him, so keep your eyes on this column for an update. In the meantime, if you’ve got an interesting tip or enlightening revelation to share, send it to me at the address above and I’ll be happy to share it with the readers of this journal.

**Planetariums On The Move**

In a ceremony held in Dhaka and presided over by Prime Minister Khaleda Zia, the Moulana Bhashani Novo Theatre was inaugurated as the first planetarium in Bangladesh on September 25th, 2004! An aggressive campaign to link rural schools via the Internet using the latest computer technology is an initiative of the Ministry of Science and Information Communication Technology and the Ministry of Housing and Public Works.

The Beijing Planetarium in Beijing, China will be the first planetarium to feature the Zeiss All Dome Laser Image Projection System (ADLIPS) driven by a Silicon Graphics Onyx II visualization computer. It should be open soon. Keep an eye out for more details.

And speaking of Zeiss, Carl Zeiss has been commissioned by Asahia wa, the second largest city on the island of Hokkaido (Japan), for delivery of a Starmaster planetarium for a new science center currently being built there. It is the first Zeiss planetarium in 40 years to go to Japan. The planetarium is due to be delivered and installed in spring 2005.

**Did you know …**

… that you can view thousands of images of Earth taken by students via a digital cam-
era aboard the ISS? Visit the website http://www.earthkam.ucsd.edu to learn all about this great program that your visitors and students are sure to enjoy. The ISSEarthKam program has been giving school students the opportunity to control the camera via the web since 1996.

... that Lance Bass the “certified cosmonaut” and *NSYNC member and World Space Week Youth Spokesman visited public schools in and around Los Angeles during World Space Week 2004 (October 4 - 10), speaking with students about space exploration and why science and math are critical keys to their future. Launched on the same day, Scaled Composites hopes to clinch the $10 million Ansari X Prize, World Space Week will leverage the excitement of this new space race to spotlight the need for improved math and science education in our nation’s schools.

... that the historic hangar at the Yankee Air Museum near Ypsilanti, Michigan, burned to the ground! Their had been plans underway for a $55 million dollar expansion project. No word on how it will effect the expansion.

... that planetarians Shane Horvatin and Jennifer Easton were married in the chapel at MSU and had the reception in the Abrams planetarium Sept 4th, 2004. They met at the IPS in Kansas. She works at the Longway Planetarium in Flint Michigan and he’s at the Abrams. They honeymooned in Orlando between Frances and Ivan.

Shane Horvatin and Jennifer Easton met at IPS 2002 in Wichita, Kansas!

The Esky II iinside the Hackworth IMAX theater in San Jose, California, awaits the more than 200 visitors to the first ever ASTC Full Dome Video Showcase! Picture courtesy of SPITZ, Inc.

The Pacific Science Center is distributing complimentary science center resources related to the NOVA Origins Four-part Television Series on PBS! The series host is popular astrophysicist Neil deGrasse Tyson, who guides viewers on a cosmic journey from the beginning of time to the far reaches of the universe—in search of the recipes for life. To get your hands on the freebies go to http://www.pbs.org/wgbh/nova/origins for more information. You can also obtain the materials from http://www.space Telescope Science Institute, Simulation by Chris Milhos (Case Western Reserve University) and Lars Hernquist (Harvard University); “Cosmic Cruising 2” Visualization by Frank Summers, STSCI, Simulation by Martin White and Lars Hernquist (Harvard University); Virtual Voyage – “Flight to the Milky Way Core” from the “Black Hole Project” – produced by Thomas Lucas Productions in collaboration with the Denver Museum of Nature and Science and the NCSA, Producer/Art Director - Donna Cox, Choreographer/Art Director - Robert Patterson, Visualization Programmer - Stuart Levy; “Space Library Trailer” and “Oasis In Space” – Produced by Spitz Creative Media, Producer - Mike Bruno, Animation Design & Direction - Brad Thompson, Animators - Bill Carr, Inna Leonov, Wes Thompson, Music - John Avarase. A variety of short trailers were also presented including, “Mars” – Produced by the National Space Center, Producer / Director - Annette Sotheran, Lead Animator - Andy Gregory, Senior Animator - Roger Jones, Animator - Paul Mowbray, Production Assistant - Helen Osbourn, Music & Sound Effects - sonicXploras, Surround Sound Mix – George Barnett; “Earth’s Wild Ride – Canyon/Thunderstorm” - Produced by Home Run Pictures, Director - Tom Casey, Animators - Tom Nypaver and Gerry Wagner; “Dinosaur” – Produced by Home Run Pictures, Producer/Director Tom Casey, Animators - Tom Nypaver, Desiree Roy and Gerry Wagner; Show Reel Including Trailer for Stars of the Pharaohs* - Evans & Sutherland Digital Theater, Producer - Michael Daut, Executive Producers - Terence Murtagh & Kirk Johnson; “Legends of the Night Sky: Orion” – Produced by AudioVisual Imagineering & Spitz Creative Media, Director - Eddie Pittman, Technical Director - Joe Sandstrom, Screenplay by Derek Mackey and Eddie Pittman, Producer - Willie Castro, Executive Producer - Joanne Young; “The Search For Life: Are We Alone?” and “Passport to the Universe” Developed by the American Museum of Natural History in collaboration with the NASA; “Sonic Vision” - Developed by the American Museum of Natural History in collaboration with Moby and in association with MTV2. “SonicVision” is made possible by generous sponsorship and technology support from Sun Microsystems; “Katuokahina, The Enchanted Reef” – Executive Producer – Softmachine GmbH, Producer/Director/Writer – Peter Popp, Art Director/Production Designer - Daniel Plochinger, Original Music – Florian Kappler & Daniel Requardt, Additional music – Les Dabacools; “DarkStar Adventure” – Work-in-process, produced by Spitz Creative Media, Producer - Mike Bruno, Story Concept - John Stowe, Animation Design &Direction - Brad Thompson,

What’s the Good Word?
Keep me in mind if you have any great ideas or news to share. Your contributions make a world of difference! Send you comments, wedding photos and program news to the address at the top of this column.
The Universe - Now Available in an Easy to Open Package...

- Planetarium Theater Engineering
- Premium Seam Dome
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- ATM-4 Automation
- SciDome powered by Starry Night
- ESky II
- GOTO CHRONOS Star Projector
- Spitz 1024 and 512 Star Projectors

Spitz is honored to acknowledge some of our recent customers:

1. Hamburg Planetarium, Germany
2. Griffith Observatory - Los Angeles, CA
3. Moody Planetarium - Texas
4. Museo del Nino Papanotta - Mexico City
5. Children's Museum of Virginia
6. Panther Academy Planetarium - Paterson, NJ
7. Mauna Kea Astronomy Education Center - Hilo, HI
8. Fels Planetarium - Philadelphia, PA
9. Woburn High School
10. Community College of Baltimore County
11. Aerospace Education Center - Little Rock, AR
12. East Kentucky Science Center
13. Clarkstown South High School - Nyack, NY
14. Ingram Planetarium - Sunaet Reach NC
15. Science Center of Iowa
16. Avampato Discovery Museum, Charleston, WV
17. Rowan University - Glassboro, NJ
18. Mt. Cuba Observatory - Delaware
19. Asahikawa Planetarium - Yokahama, Japan
20. Delmont High School - Decatur, IN
21. Challenger Center - Tallahassee
22. Tulsa Air & Space Museum
23. Denver Museum of Nature and Science
24. Hikory Environmental Center - Oakland
25. Hibbing Community College - Minnesota
26. Carle Mollon Planetarium - Norristown, PA
27. Beijing Planetarium, China
28. Arlington HS - Indianapolis, IN
29. Indianapolis, IN
30. Independant School District - Brainerd, MN
31. Whitman College - Walla Walla, WA
32. North Pom School District Planetarium, Lansdale, PA
33. Bakosfield College
Solstice season greetings. Whether you’re sunning on a beach or skiing down a snowy hill, best wishes for a safe holiday season and a prosperous new year.

* * *

Steve Tide opens this column with a contribution from the Valencia meeting:

A highly experienced Canadian planetarium architect, Bill Chomik, gave a knowledgeable and fascinating presentation from an outsider’s perspective, about the realities of designing and building our weird theatres. He was followed on stage by Balir Parkin, a British planetarium design consultant, whose first words were, “I don’t believe it; I’ve just met an architect who speaks fluent dome!”

* * *

Garry T. Stasiuk’s contribution may be of use during holiday programs:

Q: How does Santa deliver presents all over the world on Christmas Eve?
   A: With Rudolf the red-shift reindeer.

* * *

At Fernbank, we’ve been visited by classes of fourth graders studying the solar system. During one of their visits, we were talking about the surface of Venus, and how a person without a spacesuit could step out of a spaceship on Venus’ surface and be smashed flat, fried and poisoned all at once.

“Is Venus a good place to send human astronauts?” I asked, ready to talk about robot explorers.

“NO!” came the chorus.

“What should we send instead?” I asked.
“Monkeys!” was their answer. Not exactly what I was expecting.

* * *

Several dozen planetarians gathered at the Adler Planetarium and Science Museum at the end of September for a short course in extreme astronomy. Professors from the University of Chicago and Northwestern University lectured about X- and gamma-rays; ground- and space-based research in high energy astronomy, cosmic ray and neutrino detection, black holes and active galaxies. My brain was nearing critical (knowledge) mass and narrowly avoided going nova. (Perhaps this brain would have simply gone white dwarf?)

The presentations were full of excellent analogies, useful for answering questions from the general public. Computer-generated simulations of various phenomena showed us that an animation is definitely worth a thousand words.

And there were delightful stories. Dr. Angela Olinto related an experience on the Argentina/Chile border, where she and colleagues are working on the Pierre Auger array. A 3000 square kilometer array of water Cherenkov tanks is spread over flat Pampa Amarilla desert, with four fluorescence detectors looking over the array.

The people who live in nearby towns have taken an interest in the project. Scientists have presented information sessions for the local population, and have spoken to school classes in the area. Student essay-contest winners have had tanks named for them. Almost anyone can tell you what the project is and what data it will be collecting.

As Dr. Olinto related, she and a colleague were driving back to the airport late at night, and were stopped at a military police roadblock, probably set up to catch smugglers. Two officers questioned them. She mentioned that they were working with the Auger array, a response that is usually met with, “Oh, no problem. Move along.”

One of the officers replied that he had no idea what the array was, and directed them to get out of the car and open the trunk.

The second officer turned to the first one in astonishment and asked, “You mean you never heard of high energy cosmic rays?”

They were waved through the roadblock with no further questions.

* * *

Al Harper is another researcher at the University of Chicago, working with infrared instrumentation. He wrote the following poem in the style of Robert Service. I remember hearing Service’s poetry as a child, and the rhythms fit star formation as well as they fit auroras. As the Hunter is visible for most of us this season, I hope you will enjoy this as much as I have.

**East Texas Epithalamion**
*(Friday Night at the Orion Café)*

From deep in the night
Past the moon’s cool light
In a dark cloud’s smoky sway
Comes a neon glow
And a backbeat slow
That marks the Orion Café

Where heat and light

*(Please see Last Light on page 58)*
A Planetarium: A Solution

Museums - Amusement Parks - Universities - Schools - Associations
Digital - Simulation - Production - Optics - Fixed - Portable

In Space System
Digital Planetarium

V-Dome
Digital Projection

NovaMax
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