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March, 2003
Vol. 32, No. 1

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March: January 21
June: April 21
September: July 21
December: October 21

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Mobile News Network
Susan Reynolds Button

NASA Space Science News
Anita Sohus

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April S. Whitt

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Jim Manning

Cover: “Our Vanishing Sky” is a new exhibit at the Evansville Museum of Arts, History and Science in Evansville, Indiana, that addresses the issues of light pollution, light trespass and glare. This diorama depicts an amateur astronomer. See “Our Vanishing Sky: A Traveling Exhibition” on page 14.
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Produced at the Griffith Observatory, Los Angeles, California;  http://www.GriffithObs.org/IPSPlanetary.html

March 2003  Planetarian 3
Editor’s Keyboard

It probably didn’t take regular readers of the Planetarian very long to realize that changes have happened. The journal has a new look and a new method of production. This has been in the works for a little over a year, but with this issue you see the results.

The first change – which was largely transparent to the reader – was to switch from traditional (and by now old-fashioned) production methods that involved paper printouts, camera-ready artwork, color separations, hand-stripping, and high costs to run photographs, to an all-digital procedure that replaces labor-intensive processes with high technology. This issue left my desk as a set of files on a CD-ROM; the only paper involved was the address label on the plastic CD-ROM case. This switch from traditional to all-digital began with the March 2002 issue and took a full year to phase in, but with this issue it is complete. Although costs were not lowered significantly as we originally imagined would be the case (sometimes simple methods are also inexpensive), what the reader does see is a lot more photographs (at no additional net cost), and expenses were reduced for advertisers.

With this issue you see the second change, which is a redesign of the journal’s appearance. Although there was talk of setting up a committee to study the problem as long as two and a half years ago in Montréal, in reality the redesign began after last summer’s IPS Conference in Wichita, where the Council authorized the use of full-color throughout. Following that authorization, the journal was redesigned in September and October to take advantage of the new opportunities offered by both an all-digital production process and by printing in four colors, and you see the result here. Much of the redesign, including new font selection, is the work of Helen Jorjorian, graphic artist at the Griffith Observatory, and I would like to thank her very much for her creativity and contributions. Helen did not make a jarring break from the look of past decades, and the new design retains the feel of a professional society journal rather than attempting to become a pop magazine. I hope you are pleased with it.

(Another improvement – and this is non-trivial – is that, after a lapse of a year or two, the planetarium convinces the administrator in 3 1/2 pages. Following that authorization, the journal was redesigned in September and October to take advantage of the new opportunities offered by both an all-digital production process and by printing in four colors, and you see the result here. Much of the redesign, including new font selection, is the work of Helen Jorjorian, graphic artist at the Griffith Observatory, and I would like to thank her very much for her creativity and contributions. Helen did not make a jarring break from the look of past decades, and the new design retains the feel of a professional society journal rather than attempting to become a pop magazine. I hope you are pleased with it. (Another improvement – and this is non-trivial – is that, after a lapse of a year or two, the Society once again has a Publications Chair, Dale Smith. Dale is an effective advocate for publications on the Council and his oversight will make things run much more smoothly all around.)

The Associate Editors work hard to gather material, and I salute them. This journal would be very short without their labors. Give them a hand when they need a book reviewed, news for International News, comments for the Forum, etc.

Last summer at the IPS Conference in Wichita, Lars Broman made several suggestions for the improvement of the Planetarian, one of which is the inclusion of photographs (“mugshots”) of the Associate Editors. Done. He also suggested a regular Editorial by the Executive Editor (me). I’ve published brief notes relating to the production of the Planetarian from time to time, but will expand that beginning in the next issue to a regular feature that will encompass a range of topics. And I’d be happy to share this space with readers who write letters-to-the-editor.

Please think of the Planetarian and contact me directly if you would like to announce a conference, internship, or special program or activity that would be of interest to the entire planetarium community (like the one in the box on page 8).

Finally, if you’d like to contribute an article, please read the updated “Guidelines for Contributors” posted at www.GriffithObs.org/IPSGuidelines.html. One illustration from an article (yours, perhaps?) will appear as the cover’s photograph.

Enjoy the new layout and all the color!

JM

The Spring 1977 issue (note the hemispherical bias) was published by the International Society of Planetarium Educators before it metamorphosed to IPS. It began with an apology by Editor Bill Fagan for being so late – long-time members will recall those weary days – and an appeal for more material. The journal has not been late for 15 years, but it still needs good material.

Some things never change. Jeanne Bishop wrote an imaginary dialog (subtitled “A Case You Can Present to Those Who Hold the Purse Strings”) between an administrator and a planetarium director who is called to justify his planetarium’s existence when faced with cutbacks. The planetarian convinces the administrator in 3 1/2 pages.

Educator T. V. Smith, Ph.D., wrote on “The Construction of a Variable Spatial Orientation Ability Instrument” (too complicated for me!). Lee Shapiro listed the “REAL Constellations of the Zodiac” (since posted at www.GriffithObs.org/IPSPlanetarian.html and expanded in a follow-up article). Jeanne Bishop’s second article was on astronomy at Acadia Park. E. Carr wrote on Iroquois star myths and on Indian moons. Herbert Schwartz surveyed selected 40-foot planetariums (almost all were Spitz; the mean director’s salary was $15,000).

Interesting (to me, at least) is the fact that the 32-page journal contained seven articles but no regular columns. “Jane’s Corner” had run since the first issue, but did not appear in this one.

Another striking difference: There was not a single advertisement. Advertising revenue is important these days; I wonder how the journal was funded 25 years ago. The inside and outside back covers were blank white paper.

There were several cartoons (one is reprinted on page 33; it’s as true today as ever).

And the logo was in blue – the only place that color appeared.

25 Years Ago

March 2003

Planetarian
Science demonstrations can make a planetarium program more effective. In a test involving about 1,900 fifth graders, the students who saw both the planetarium program and the science demonstration scored over 19% better than the control group. Furthermore, students from low socio-economic backgrounds benefited more from the science demonstration than other students.

Science demonstrations can make a planetarium program more effective. In a test involving about 1,900 fifth graders, the students who saw both the planetarium program and the science demonstration scored over 19% better than the control group. Furthermore, students from low socio-economic backgrounds benefited more from the science demonstration than other students.

A class holds their moonballs with the 'sun' to their right, simulating a first quarter moon.
roles. The class that had the moonball demonstration took the test, while the test-takers participated in the moonball demonstration.

The experiment was arranged as a non-equivalent group design; that is, classes were assigned to either the experimental group or the control group randomly. Generally the last class seated became the “A” group that took the quiz before doing the moonball activity, and the first class seated became the “B” group that took the quiz after doing the moonball activity. It was expected that some groups would receive more instruction in the classroom, and be better prepared than others, and therefore, some sets would show a decline rather than an increase in average scores.

The test itself consisted of 14 questions, including both multiple choice and matching questions, designed so that there would be few perfect scores. Some questions only tested basic recall of facts, such as “How long does it take the moon to go through one full cycle?” Other questions required higher order thinking skills, such as matching a set of moon diagrams to the names of the phases. Still other questions were designed to trap students with common misconceptions: “Why do the astronauts have to wear a spacesuit on the moon?” One of the choices was “There is no gravity on the moon,” a common misconception.

There were two hypotheses that the data could validate or falsify: (1) A majority of sets would show an increase in learning after participating in the moonball demonstration and (2) students from Title 1 schools would benefit more from the moonball demonstration than other students.

Two anomalies were discarded from the data set. In one case an A group included ESL (English as a Second Language) students even though the test was in English. In another case the A group had performed the moonball demonstration in their classroom the day before coming to the planetarium. The final data set consisted of 32 sets (64 classes), for a total of about 1,900 students.

**Results**

The average improvement in scores was 19.48%. Only two sets showed no improvement. The data overwhelmingly showed that the moonball demonstration helped reinforce what students learned in the planetarium program.

To determine whether Title 1 schools benefited more from the moonball demonstration than other schools, the sets were sorted by the percent of increase. A count of Title 1 schools whose percentage of increase was above the median score was compared to the count of Title 1 schools below the median.

Five Title 1 schools were in the group below the median gain, while 11 Title 1 schools were in the group above the median. In other words, more than twice as many Title 1 schools showed large gains than showed smaller gains. The impact of the moonball demonstration on student learning was much greater for Title 1 schools than for other schools.

The planetarium experience has been shown by previous researchers to be a valuable learning environment. The data presented in this study, however, show that whenever possible, planetariums should provide students with live science demonstrations in addition to the planetarium program itself. This study also reinforces the idea that the planetarium is a unique resource for school districts, providing students with learning and laboratory experiences that cannot be obtained in most classrooms.

**Bibliography**


Abstracts, Ann Arbor, Michigan, University Microfilms, Inc., XXXIX (1968-69), 56-A.
Geiger, H. Bruce, "How to Integrate Planetarium Usage into the Educational Program," Nation's Schools, LXXXV, (May, 1970), 112-113.
A grassroots effort to highlight the beauty of the night sky and to draw attention to the ever-increasing levels of light pollution across the United States caused by poorly designed lighting, has the endorsement of the American Astronomical Society (AAS) and the International Dark-Sky Association (IDA).

The AAS and the IDA believe that the opportunity to experience the natural night sky should be available to every citizen of our nation. This natural resource, which inspires our attempts to understand the cosmos, should be protected through the use of well-designed lighting systems that put light where it is needed and not waste energy through unnecessary illumination of the sky. Properly designed lighting systems provide safety and convenience without polluting one of our greatest natural assets.

This is the second year that Jennifer Barlow, a high school student from Virginia, has organized this grassroots campaign. ‘The night sky has been forgotten by many,’ she says, and she hopes that National Dark-Sky Week will encourage people to ‘look up’ and appreciate its wondrous features. As we reestablish that connection, we hope to raise awareness about how to reduce light pollution and protect our heritage of dark skies.

The American Astronomical Society and the International Dark-Sky Association encourage all Americans to use the evenings of April 1st to April 8th 2003, from 10 pm to 12 am (ET & MT) and 9 pm to 11 pm (CT & PT) to attend public star parties, visit their local planetarium or public observatory, or simply go outside to a safe, dark location to enjoy the wonder of the night sky. Learning the constellations, observing the planets, wondering about the stars and the Milky Way are some of the most basic of human experiences and should be enjoyed by all.

National Dark-Sky Week is also endorsed by the Astronomical League, a non-profit federation of 250 astronomical societies and nearly 20,000 members, and by Sky & Telescope magazine.

No matter how hard you try to be clear and concise, up to 10 percent of your audience has trouble understanding what you are trying to communicate because of vision, hearing, or language barriers. In this paper I describe methods of presenting alternate languages and of captioning planetarium shows and films using specific hardware and software. The process can, however, be adapted to other types of equipment and software.

I describe methods of presenting alternate languages and of captioning planetarium shows and films using specific hardware and software. The process can, however, be adapted to other types of equipment and software.

Basically, I edit a text file and turn the text into a series of computer graphic images. Then I sequence them with an automation system.

Before beginning your own captioning efforts, watch TV with captioning on and the sound off to get a feel for what the hearing impaired audience needs.

The captioning process

Get the script from the producers or transcribe it. Eliminate items such as visual descriptions and camera positions. Music and sound effects can be added if they pertain to the presentation. Leave the voice-overs and the names of the characters or narrators. Listen to the sound track while editing the caption script. Get a feel for how much text you want on the screen at one time. Using a word processor, break the paragraphs down into lines that contain only a few statements at a time, just enough to read. Preface each line with “narrator”, or the character’s name the first time they speak. If the same person continues speaking there is no need to continue to use their name.

When finished save the script as a text file with line breaks.

I use software called Belle-Nuit (available for the Macintosh only, unfortunately). PowerPoint can be used, but it lacks certain features that make captioning easier. Import the text into Belle-Nuit. Split the lines as needed so that each is limited to 2 lines of text. Adjust font, size, justification and color. Try some samples on your screen to see how they look. Double-space to create a “black slide”. Put a black slide at the start and the end of the show, or fade the projector out at those times. Red or yellow letters help preserve dark vision for planetarium presentations, while white letters are best for films. The background should be black in either case. CRT projectors are preferred because LCD projectors do not project black well. To avoid interfering with the visuals I do not like to leave words on-screen for more than six seconds, so if there is a period of time with no voice-over, replace the image with black. Print the script, and Belle-Nuit will number the lines, including “black slides”, helping you keep track of things.

Using Belle-Nuit, save the finished file to its own directory. Then choose export, which renders the captions. This process converts the text file into a series of graphic images. I use a Mac program called Graphic Converter in slide-show mode to present the captions. PowerPoint will also work. Test the program and images together. In our system, the automation closes an electronic relay that is connected to the Macintosh’s mouse. There are other methods however, including SPICE software.

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Make a work tape using SMPTE code derived from the projector or system used in your theater. Record the start time at 10 minutes, in case you need to add a trailer at the start of the film. Never start the code at zero, for a variety of reasons too long to go into here. Suffice it to say, bitter experience has shown it to be a bad idea. I usually record a cassette for timing work. Put SMPTE on one track and the voices on another.

Get timings from the sound track by playing the tape while capturing the SMPTE times. Capture the start and end times of each line.

The automation system we use, System I by R.A. Grey, saves up to 100 times. When I have 99 times, I save them with a unique name. Then I capture another 99 and save them. I continue until all lines are timed, then paste them into the program. I insert a command to select the next image in between each time. I paste the words from the start of each line under the time so I know what line is supposed to be up at any given time. Please see the programming example.

When using SPICE automation, I import the script as comments and delete all but the first few words from each line to help me keep track of where I am in the script. I alternate the script comments with the command "time ?". As the tape plays, press the return key to capture the time.

**Hearing-Impaired audio**

For the hearing-impaired, a separate audio mix is required with reduced volume on the surround channels. The idea is to lower the music and sound effects, and to allow the visitor to increase the volume of the voice-over to increase the narration’s intelligibility because loud music and sound effects interfere with the voice. The narration is generally found on the center front channel. At the Reuben H. Fleet Science Center we have a patch bay that has several extra outputs for each audio channel, but a “Y” cord could serve the same function. A separate audio feed is taken from each channel and fed into a small mixer such as a Rane SM26. This allows precise control over the level of each channel. The audio is mixed down into a single channel and routed to the radio transmitter.

**Alternate-language audio**

Do not use a mixer for alternate languages. Instead, route the replacement language directly to a transmitter with a different frequency so the alternate-language listeners can hear the sound effects and music played in the theater itself. If sound effects and music are also mixed into their headphones, it makes an unpleasant echo effect. The receiver listed is capable of selecting several different frequencies so it can be used for hearing-impaired patrons as well as alternate-language speakers.

The audio source can be taken from an extra track of a multi-track tape player, eliminating synchronization problems, or from a slaved CD or DVD player. IMAX provides us with Spanish language versions of most of their films, or we create our own. We start the CD with SPICE through a Tarragon unit. The SPICE system listens to time code generated from the projector and is programmed to start the CD player at the correct moment. The voice-over usually does not start immedi-

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**Equipment Needed**

**Captioning:**
1 Macintosh, 1 CRT video projector.
1 automation system that can click the mouse on the Mac.

**Alternate language, hearing impaired or descriptive audio system**
1 small mixer.
1 radio transmitter with a separate frequency per language or program.
1 controllable CD or DVD player per program.
Multi-frequency receivers with headsets, 10% of audience capacity suggested.

**Equipment used at the Reuben H. Fleet Science Center:**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Product</th>
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<td>Audio Mixer</td>
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</tr>
</tbody>
</table>

**Software**

| Image sequencing | Graphic converter | Leake Software | www.lemkesoft.com   |
| Captionsing      | Belle nuit subtitler| Belle-Nuit    | www.belle nuit.com/subtitler |
| DVD player       | Pioneer DVD V7400   | Pioneer       | www.pioneeerelectronics.com |
| SMPTE generator  | JSK Shaft Encoder   | JSK Engineering, Inc | www.jskengineering.com |
audio description

To generate SMPTE time code from a film projector, use a shaft encoder. The encoder is connected to a Lynx Time Line, Adams-Smith Zeta Three, or any system that creates time code. Planetarium programs usually have the SMPTE time code already recorded on a separate channel for use with the automation system.

audio description

Audio description is the addition of narration that describes the visual presentation or performance. The same technology used for alternate languages can be used to synchronize descriptions for the blind.

conclusions

We caption two shows a day, in the late afternoon and for special requests. We communicate this fact to local deaf awareness groups, in box office signage, and on our web site. Using the correct, internationally recognized symbols is also important. We also reach out to the Spanish-speaking community. Captions and alternate languages are an excellent way to reach out to the community and further your facility’s goals. Captioning and headsets for the hearing impaired provide a service that fulfills the Americans with Disabilities Act. Although it is initially time-consuming to program, the rewards are great.

Please feel free to contact me for more information.

www references

Captioning Planetarium Programs for Hearing Impaired, Bridget Shea, September 1993: http://www.griffithobs.org/IPSCaptioning.html
Deaf links: http://www.deafvision.net/alda-sandiego/links.htm
Joe Clark’s Caption articles: http://www.joecark.org/ccbibl.html
Comparison of caption systems in the Langley Theater: http://cgbinn.erols.com/jhyder/resume/captrept.htm
Association of Science-Technology Centers: http://www.astc.org/resource/access/medcaption.htm
The Captioning Web: http://www.captions.org/index.html

script prepared for captions:

narrator: Honored Parents. I am now on an expedition to the westward, with Captain Lewis and Captain Clark, who are appointed by the President of the United States ... to go through the interior parts of North America ... to ascend the Missouri River with a boat ... and then to go ... to the western ocean.

If we live to return ... and if we make Great Discoveries as we expect ... the United States has promised to make us Great Rewards.

action montage (SFX, music only)

aerials

narrator

They were a small party charged with going where no one from the outside world had ever gone, to open one of the last great wilderness regions of earth ... a place they thought might still hold woolly mammoths and other prehistoric creatures. To find out what was really out there and to survive - was the equivalent in its day ... of a journey to the moon.

script before editing including visuals:

narrator

dark river aerial

honored parents. i am now on an expedition to the westward, with captain lewis and captain clark, who are appointed by the president of the united states to go through the interior parts of north america to ascend the missouri river with a boat and then to go to the western ocean.

if we live to return and if we make great discoveries as we expect, the united states has promised to make us great rewards.

(black “slide”)

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a place they thought might still hold woolly mammoths and other prehistoric creatures. to find out what was really out there and to survive, was the equivalent in its day of a journey to the moon.

caption and program examples

script before editing including visuals:

narrator

dark river aerial

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(black “slide”)

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a place they thought might still hold woolly mammoths and other prehistoric creatures. to find out what was really out there and to survive, was the equivalent in its day of a journey to the moon.
When Mars makes its very close approach to Earth in August, astronomers everywhere - and especially planetarians - will be asked when Mars last came this close, and when next it will come closer. The answer would be simple if it were a matter of a few hundred years, as planetary distances can be calculated quickly and accurately within a few thousand years of the present, but in this case the actual answer is more difficult to determine.

Essential to a solution of the problem is an understanding of the changing eccentricities of the orbits of the Earth and Mars. In 1994 Simon et al. (1) published an expression for the eccentricity of the orbit of the Earth (see Chapter 33 in More Mathematical Astronomy Morsels). Presently, the eccentricity is 0.0167 and decreasing. The next minimum of the eccentricity will be 0.0023 in about the year 29,500. Another, still deeper minimum (0.0006) will occur near A.D. 465,000 and near that epoch the orbit of the Earth will be almost exactly circular. But at other times the eccentricity can be as large as 0.06. The eccentricity of the orbit of the Earth reaches maximum values at intervals of about 100,000 years.

The eccentricity of the orbit of Mars appears to vary with a period of 96,000 years, which is superposed on a greater variation with a period of about 2,200,000 years. Presently the eccentricity varies around the value 0.09, but one million years ago its mean value was 0.03.

In the year 2000, the value of the eccentricity of the Martian orbit was 0.0934. It is slowly increasing, and it will reach a maximum value of 0.1051 around A.D. 24,100. But 186,000 years later it will reach a still higher maximum, 0.1184, the largest within a two million time span around the present. Figure 1 shows the variation in the orbit of Mars during a time span of two million years. Oppositions of Mars occur at intervals of 780 days, or 25.6 months. Pages 63-96 of the second edition of my Astronomical Tables of the Sun, Moon, and Planets (Willmann-Bell, 1995) gives the complete list of all oppositions of Mars taking place between the years 0 (as astronomers call 1 B.C.) and A.D. 3000, and also the corresponding date when the distance of Mars to the Earth is a minimum.

Each opposition is followed by a very similar one 79 years later. For example, the very favorable opposition of 1956 was a close repetition of that of 1877, when Asaph Hall discovered the two satellites of Mars. This period corresponds to 79 revolutions of the Earth and 42 revolutions of Mars around the Sun. After 79 years, the oppositions of Mars repeat under nearly identical circumstances, with a delay of only 2 to 5 days in the year. The opposition of August 28, 2003, is a repetition of the oppositions of August 23, 1924 and of August 18, 1845.

In the course of centuries, close oppositions of Mars are gradually becoming more frequent. For example, Mars came to less than 0.375 AU from the Earth 11 times between the years 0 and 1000, and 15 times between 1000 and 2000, but 22 times between the years 2000 and 3000. This gradual improvement is due to the secular variations of both Mars and the Earth, resulting from the gravitational attractions of the other planets. The orbit of Mars is slowly becoming more elliptical, its eccentricity increasing from 0.09156 in the year 0 to 0.09430 in A.D. 3000. This allows it to approach closer to Earth. In August 2003 Mars comes closer to the Earth than at any time in the last several thousand years, although actually only a little closer than at the approach of 1924. Table 1 shows the closest approaches of Mars from the years 0 to 3000. The next time Mars will come closer than this August will be on August 28, 2287, when Mars will be 0.37225 AU distant. The least distance between Mars and the Earth during this millennium will be 0.37200 AU on September 8, 2729. Because the closest distance between the orbits con-

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When Was Mars Last This Close?

Jean Meeus
Leuvense steenweg 312, box 8
3070 Kortenberg
Belgium

In August Mars comes closer to Earth than in the last 60,000 years. This article explains why this is so.

Figure 1: Variation of the eccentricity of the orbit of Mars during a time span of two million years. Horizontally: the time in thousands of years from A.D. 1850. (Figure 35a in More Mathematical Astronomy Morsels)
continues to decrease after A.D. 3000, smaller distances will occur then. Between the years 3000 and 4000 the least Earth-Mars distance will be 0.37061 AU on September 25, 3818.

As the orbital eccentricity of Mars will continue to increase until A.D. 24,100, when it will be as large as 0.1051, the planet's perihelion distance will decrease accordingly. It appears that around A.D. 25,000, the least separation between the orbits will be only 0.3613 AU, its smallest value during the two million years around the present.

Figure 2 shows how the least distance between the orbits of Mars and Earth has varied in the past. The two figure have been calculated on the base of work by the French astronomer Bretagnon (ref. 2 and 3). From this work I deduced that since the year 71,000 BC the least distance between the orbits of Earth and Mars has been larger than 0.3706 AU, with the consequence that closer approaches of Mars than that of 2003 happened more than 73,000 years ago. This was stated in my book.

After my book was published, I contacted Dr. Aldo Vitagliano (of Naples University, Italy) and asked him to investigate the motion of Mars by numerical integration. In April 2002, Prof. Vitagliano found that the last time Mars was closer to Earth than it will be in 2003, was on September 12 of the year -57616 (that is, 57617 B.C. of the historians). So, that was 60,000 years ago. The 73,000 years cited in my book was, after all, a good approximation. It should be noted that the aim of the articles by Bretagnon is to provide a good approximation of the evolution of the orbits in the course of two million years, not to provide a method for calculating accurate ephemerides. “Care must be taken with that date, September 12. To define that date, the Julian calendar has been extended indefinitely towards the past — as is custom for astronomers. However, we know that the Julian calendar is off by 1 day after about 130 years. So, after 58,000 years the calendar is off by about 446 days, or more than one year!”

References

Much of the text of this article, including the table and two figures, is taken from Chapters 33 - 36 in More Mathematical Astronomy Morsels by Jean Meeus, Willmann-Bell, Richmond, Virginia, 2002. For more information see: http://www.willbell.com/math/moremorsels.htm.

For a full list of Mars oppositions from the years 0 to 3000, see Astronomical Tables of the Sun, Moon, and Planets, second edition, Jean Meeus, Willmann-Bell, Richmond, Virginia, 1995.

(4) A. Vitagliano, personal communication to the author, 2002.

<table>
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</table>

Table 1: Approaches of Mars to less than 0.375 AU to the earth, years 0 to 3000. (Table 36B in More Mathematical Astronomy Morsels)

The next time Mars will come closer than this August will be on August 28, 2287 …

Figure 2 shows how the least distance between the orbits of Mars and Earth has varied in the past. The two figure have been calculated on the base of work by the French astronomer Bretagnon (ref. 2 and 3). From this work I deduced that since the year 71,000 BC the least distance between the orbits of Earth and Mars has been larger than 0.3728 AU, with the consequence that closer approaches of Mars than that of 2003 happened more than 73,000 years ago. This was stated in my book.

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(4) A. Vitagliano, personal communication to the author, 2002.
The stars symbolize our human potential – past, present and future. They represent part of our natural heritage and have been an inspiration to artists, poets, songwriters, romantics, and people from all walks of life throughout the ages. Past generations grew up knowing the stars. Today, sadly, many people live their entire lives never seeing the stars as they appeared to their ancestors. Some ninety-nine percent of the people in the U.S. and Europe live beneath skies that are in some way impacted by poor outdoor lighting practices. More than two-thirds of the U.S. population and twenty percent of the world population can no longer see the Milky Way (1).

Our Vanishing Sky is a 110 sq. meter (1,200 sq. ft.) traveling exhibition created by the Evansville Museum of Arts, History and Science that addresses the issues surrounding light pollution, light trespass, and glare. The exhibition was designed to educate homeowners about the problems and solutions surrounding poor outdoor lighting.

As a planetarian and long-time amateur astronomer, I've always wanted to do something positive about bad outdoor lighting. Increasingly, over the years, visitors were stopping by after my star shows to comment about how difficult it was for them to see the stars. About the same time, I began to notice more and more examples of poor lighting applications in my community and the deterioration of the skies at my dark-sky site outside of town. It was at that point that I became active in outdoor lighting education. I joined the International Dark Sky Association (IDA) and the Indiana Council for Outdoor Lighting Education (ICOLE) and began accepting invitations to speak to civic groups. I sought out those individuals in my community who were in a position to make a difference, and as a result have had promising discussions with utility officials, business leaders and elected officials.

The idea for a museum exhibition to enhance people’s awareness of how we use outdoor lighting and the waste which occurs every night was a logical step. In my role as the director of a science center and as a planetarian, I was in a position to do something especially positive. After making my case for an outdoor lighting exhibit to our governing body, an exhibition with a lighting theme was approved and placed on the schedule for 2002. Later, our local utility agreed to sponsor our effort. With that, we were off!

Bringing together an accurate and effective combination of exhibits and content dealing with light pollution is more difficult than you would think. It was apparent from the beginning that this would be a rather large task. After an initial meeting with my small staff (me and my two science educators), work began on the project early in 2002. Because we knew we’d be spending considerable resources as well as creating something that we believed other institutions would be interested in, we decided...
early on to travel the exhibition after its ini-
tial display in Evansville, Indiana.

I was fortunate to have two resourceful,
bright colleagues working with me. Light
pollution was new subject matter for them,
but both turned out to be quick learners and
inventive exhibit designers. We surveyed
our intended audience, created prototypes,
and did lots of research. Valuable help and
permissions were provided by the Inter-
national Dark-Sky Association and individu-
als involved in outdoor lighting on a nation-
al level. George Fleenor, chair of the Inter-
national Dark-Sky Association’s Informal
Education in Science Centers and Planet-
tariums Work Group, was especially helpful.

What we came up with were full-color
vinyl, graphic panels, dioramas, and hands-
on components to get our message across.
Our Vanishing Sky would clearly show how
poor outdoor lighting affects people, animals
and astronomers. The exhibition was de-
dsigned to offer solutions and to examine
what can be done to preserve the precious
resource of the starry night sky that is slowly
vanishing before our eyes.

Portions of the exhibit focus on glare, the
right light for the job, safety and security,
energy savings, and it provides examples of
good and bad lighting. The exhibition also
details the nature of light, the history of out-
door lighting, lighting myths, lights and
health, and it offers information about out-
door lights and their effect on amateur and
professional astronomy.

Because of my twenty years experience
working in science and technology muse-
ums, I’ve come to understand the impor-
tance of hands-on components. One of the
interactive exhibits we designed allows visi-
tors to experiment with a light shield to
increase the efficiency of a lamp. Another
shows two lamps, one that creates glare and
another properly shielded. Employing fiber
optics, a third component provides a simu-
lated view of the night sky in a way similar
to the way it’s done in a planetarium show –
first displaying the view from a light pollut-
ed city and then from a dark site. The exhibi-
tion features two displays with button-acti-
vated audio excerpts submitted by amateur
astronomers, professional astronomers, and
other individuals active in night sky preser-
vation efforts. A lighting myths turntable,
examples of good and bad outdoor lighting
fixtures, and two full-size dioramas that
depict amateur astronomy activities round
out the show.

Themes covered in Our Vanishing Sky
include light pollution, the history of out-
door lighting, lighting myths, how light
effects people and animals, dark sky restora-
tion, and professional, amateur, and back-
yard astronomy. The exhibition also pro-
vides take-home star charts that allow visi-
tors to gauge sky darkness from their
favorite site. Another hand-out describes
how to talk to a neighbor who has bad lights
and offers outdoor lighting tips in a take-
home format.

Our Vanishing Sky was developed by a
team that included Mitch Luman, the
George and Dorothy Eykamp Director of the
Koch Science Center and Planetarium; by
Science Educator Michael Smith; and by
Senior Science Explorer Laura Barnett from
the Evansville Museum.

With its initial venue in Evansville having
ended on December 1, 2002, Our Vanishing
Sky is slated to circulate to other interested
museums, planetaria and observatories. More
information and images can be found at

Reference
(1) Cinzano, P., Falchi, F. (University of
Padova), and Elvidge, C.D. (NOAA/NGDC).
Monthly Notices of the Royal Astronomical
The latest sky show available from the ADLER PLANETARIUM & ASTRONOMY MUSEUM...

Skywatchers of Africa

$795 show kit comes complete with:
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- Production guide to use in connection with your planetarium presentation
  - Educational materials to use with the sky show

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- Spirits from the Sky: Thunder on the Land
- Clouds of Fire

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For more information or a demo tape of Skywatchers of Africa, contact Matt Pulford at (312) 322-0510.
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With the recent meeting in Wichita came the second meeting of the IPS Education Committee. Chaired by Gary Sampson, the meeting was as followed:

1. New Chair – With Gary Sampson stepping down, April Whitt has kindly agreed to chair this committee at least till the IPS conference in 2004.

2. Panel Discussion – During the IPS conference, a discussion was presented on “The Planetarium as a Site for Informal Science Education.” (See below.)

3. New Projects: a) Mr. Kabra of Goto India asked we the committee could create a script for a school planetarium program about the Moon, for 5th grade level. If a script is written, Mr. Kabra offered the company’s artists to illustrate it. The committee is looking into this proposal; b) Members were encouraged to check out the posting at http://saturn.jpl.nasa.gov/cassini/english/soc/index.html.

4. Gary Sampson gave his regards, and thanks to everyone who had become a part of this committee last conference. He also welcomed April as new chair, believing it to be in good hands.

It always seems that one of the major problems with being in this field is to justify our existence. As a reminder of our place in the educational scheme, Susan Button sent this document, from the IPS Council. It can’t be stated enough.

The Planetarium: A Rationale

“Why did not somebody teach me the constellations, and make me at home in the starry heavens, which are always overhead, and which I don’t know half to this day?”

- Thomas Carlyle, 1795-1881

The human fascination with the cosmos springs from our earliest awareness of the natural world. Our quest to understand this world and the laws that govern it – and the application of this knowledge to our daily lives – forms the basis of science, and astronomy is the oldest and most inclusive of the sciences. Advances in astronomy have paralleled human development and contributed to our growth into a technological civilization capable of comprehending the cosmos that gave us birth.

In our efforts to explain the natural world, we humans have found it necessary to construct models, both mental and physical, to simulate, explain, and explore the workings of the cosmos. Some of these models were physical representations of the sky and the objects in it. The modern planetarium is the best of these models. The audience sits under a hemispherical dome. A central projector turns the dome into the starry sky and can show all its patterns, motions, and cycles as seen at any time and from any place on Earth.

Planetariums unite a learning laboratory and a performance space. They are an unparalleled teaching tool for reproducing the night sky and for revealing the constellations and the motions and cycles of the sky that are a basic part of our natural environment. Moreover, enhanced by technologies ranging from slide projection, laser imagery, and multi-channel sound to fiber optics, three-dimensional digital projection and all-dome video controlled by computers, the modern planetarium is a captivating audio-visual environment in which the universe beyond the backyard view is also brought inside and portrayed as the active and exciting place that modern discoveries are revealing it to be. Today more than ever, the planetarium can capture the whole exciting spectrum of astronomical discovery and take audiences on journeys from the turbulent atmospheres of the planets to the edges of black holes.

An estimated 80 million visitors a year attend planetarium programs in more than 2,000 permanent planetariums and hundreds of portable planetariums around the world. These programs incorporate new technologies and educational paradigms that make the modern planetarium a flexible and versatile teaching environment that can be used in multiple ways and fill a variety of niches in both formal and informal educational settings. Visitors are drawn to planetariums to experience the wonders of a night sky brought inside, to learn about the science behind the cosmic sights, to put head-line discoveries into a meaningful context, and to better understand their own place in the cosmos. Because planetariums are so versatile, interdisciplinary uses are legion: musical concerts, poetry under the stars, and live theatrical performances enrich the schedules of many planetariums.

But the lure of the planetarium goes far beyond the public’s fascination with the universe. The modern planetarium also fulfills a critical need to improve scientific literacy among a diverse populace. Planetarium programs inspire their audiences to study, to understand, and to appreciate the universe we inhabit. In helping to improve general science literacy, the planetarium is a key player in work toward the goal of achieving an enlightened society capable of making informed choices about science and technology and about the future of our species and our planet.

In the words of one planetarium educator, “There are other means by which information about the universe can be conveyed. But none so befits the enormity and grandeur of the subject, none is so directly analogous to the sky itself, as the vast dome of a planetarium.”

The lament of the 19th-century English author, Thomas Carlyle – “Why did not somebody teach me the constellations?” – seems even more relevant today as our modern technological civilization increasingly severs our connections with the natural world and obscures the sky that so fascinated our ancestors. The world’s planetariums and those who operate them strive to encourage and strengthen these connections to the larger cosmos in the minds and spirits of the children and adults they serve. In doing so, planetariums constitute a vital force in the cause of astronomical and scientif... (Please see Education on page 51)
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International News

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It is still cold and snowy winter in Sweden when late in January I edit contributions that I have received from all over the world. But it snows not only in northern Europe - Sho Itoh complains that there is a lot of snow also in Tokyo. In between, when the skies are clear, we have been able to watch all the visible planets in the evening and mornings.

The International News column depends entirely on contributions from IPS Affiliate Associations all over the world. Many thanks to Ignacio Castro, John Dickenson, Jon Elvert, Jean-Michel Faidit, John Hare, Sho Itoh, Loris Ramponi, and Jennie Zeiher for your contributions. You are welcome back with new reports, and I look forward to reports from other Associations as well. Upcoming deadlines are 1 April for Planetarian No. 2 and 1 July for No. 3 2003.

Association of French-Speaking Planetariums

The new show made for the 40th anniversary of ESO still has great success and is requested for being projected in new planetariums. For information, write to <acker@newb6u-strasbg.fr>.

This year, the annual meeting of APLF will be in May in the Planetarium Ludiver, at La Hague, which opened in 2000; further information from <ludiver@wanadoo.fr>.

Like every year, this first half of 2003 is time to prepare the annual French-speaking Planetarium magazine. This is the 9th edition since 1995. The magazine contains information about planetaria in France and the French speaking countries Belgium, Switzerland, Algeria, Tunisia, Morocco, Quebec and, new this year, a project in Vietnam. The magazine is now also open to news from other European planetariums. More information is available from <faiditmontpellier@yahoo.fr>.

Association of Mexican Planetariums

The most sincere thanks for a very rewarding and well-organized XXXI AMPAC General Meeting, which took place on 4-7 December 2002, go to Gabriel Muñoz and Gerardo Trujillo, Director and Marketing Subdirector, respectively of the Morelia Planetarium. Lic. Felipe Riivera and Dr. Genovevo Figueroa Silva, Director of Morelia’s Convention Center are thanked for their dedicated attention as well as their staff for the event, making all of the participants and representatives from seventeen planetariums from throughout Mexico, feel at home.

The meeting had something for everyone from interesting lectures given by local physicists and astronomers from UNAM’s Space Physics and Planetary Sciences, like Dr. J. Americo González, who spoke about the facility at Coeneo, Michoacan’s New Interplanetary Pulsations Radio Telescope - Mexico’s first - and Dr. Yolanda Gómez, who talked about Stars, Birth and Death, illustrating their evolution.

Participating with technical talks were Enrique Fonte, for a long time Carl Zeiss planetarium representative in Mexico, now associated with Evans and Sutherland. He invited Alan Friedmann and Kirk D. Johnson, who eagerly presented the upcoming E & S new technologies on digital projections, like the Digistar-III System full dome projection and, coming in the near future, laser projection, They provided everyone with the DVDs Wonders of the Universe and New Horizons as samples of what can be achieved with it, as well as the possibility of using the new Digistar 3D Junior for smaller domes using a fish-eye projection lens.

Also eager to promote Spitz products were Michael Bruno and Ed Lantz, currently involved in the upcoming Mexico City’s new Digital Planetarium planned to be inaugurated by the end of 2003. Bert MacGregor from Papalote’s Children’s Museum presented an ample and detailed renovation project of their facility, which includes new areas and participatory exhibits, the Digital Planetarium being one of them. Spitz is an advisor, playing the integration part, i.e. to recommend the best technical proposal for the project.

Learning Technology’s portable inflatable planetarium was also presented by Enrique Kerbel and Daniel Tanur, Mexico’s representatives. They presented the latest equipment such as the projector shown last summer at Wichita, with brighter miniature arc lamps for fiber optics use, and with new projection cylinders.

Silicon Graphics impressed everybody with their three-dimensional images on computer screen, and immersive and interactive environments, and also the capabilities of their SGI Digital Planetarium laser video projection.

Also present was Linux Open Systems, a Morelia-based software company, which has offered automation for most of the older planetarium models and the control of special effects projectors, very useful for Zeiss ZKP-I star projectors, some of which are still in operation.

On topics dealt at the general assembly, three planetariums, either under construction or in planning stages, were accepted as new AMPAC members: Papalote’s New Digital Planetarium, Chiapas State Planetarium on a possible planning stage, and the University of Sonora Planetarium in construction, a small 8 m (24 ft) dome, with an in-house built projector.

A communications commission was set to be able to inform all member planetariums of recent developments or themes of interest for all. AMPAC’s 2003 General Meeting will take place at the Rehilete Planetarium in the State of Pachuca. Dates are still to be set, probably May or June 2003.

Australasian Planetarium Society

The Australasian Planetarium Society would like to congratulate Martin George on becoming the first Southern Hemisphere President Elect 2006. Well done Martin!

Sir Thomas Brisbane Planetarium. The path of totality during the solar eclipse of 4 December 2002 may not have included any Australian planetariums, but it didn’t stop the curator of the Sir Thomas Brisbane Planetarium from escaping the theater to travel to remote Ceduna in South Australia to see a short but sweet event. Two diamond rings and a stunning corona were the reward following high winds and considerable cloud on the waterfront where thousands from around the globe had gathered for the first total solar eclipse in Australia since 1976. He did plenty of media interviews by mobile phone in the couple of days around the event. Another pleasure was running into
Launceston Planetarium director, friend and IPS President-elect Martin George at a remote observatory in the middle of the night a couple of days before.

**Canberra Space Dome and Observatory.** The year 2002 has been another successful year for the Canberra Space Dome & Observatory. They had a record numbers of visitors and experienced a dramatic increase in the number of daytime bookings over last year. They even made a profit and the Board of Directors is very happy with the facility's performance. The facility is now regularly booked out and is investigating methods of increasing the capacity, both in the planetarium and the observatory.

The new video hard drive system is scheduled to be installed during the maintenance period in February 2003 and the staff is looking forward to being “the first kid on the block” to try the new technology. There are quite a few others out there eager to know how they fare with it. They have been busy doing video captures to get all the animations into a suitable format and this has been quite a job in its own right. It should all be worth it, though.

**Canadian Association of Science Centres**

**Mission statement:** The Canadian Association of Science Centres is dedicated to improving the capacity of its members to enhance and promote public understanding of science and technology.

The CASC continues to make excellent progress on a number of fronts:

* Membership continues to grow and there are now 31 full member facilities.
* A new reciprocal admission agreement has been implemented for 2003, giving members of our organization complementary or reduced admission fees to other member facilities.
* Natural Resources Canada (NRCan) has recently announced funding support for three CASC initiatives: the 2003 CASC Conference, concept planning for a new traveling exhibit and funding for construction of Climate Change traveling exhibits.
* Work on a new Industry Canada funding and support program for Canada's science centers and planetariums continues at the political level.
* 2003 sees the implementation of the new CASC Awards Program. Awards for excellence in exhibit, program or planetarium show production and for outreach and extension programs will be announced at the June 2003 Sudbury conference.
* Sudbury conference planning continues and proposals for papers and presentations are presently under review. It is hoped that well over a hundred CASC members’ staff will attend the 2003 conference.

Members of the *Origins* planetarium show consortium signed a Memorandum of Understanding late last year and are now awaiting word from possible funding sources. Members of the production consortium include the Planétarium de Montréal, Manitoba Museum, Calgary Science Centre and H.R. MacMillan Space Centre. Once funded, production responsibilities will be assigned to individual facilities, including production co-ordination, music, photography & graphics, video and video animation. An independent consultant will be contracted to undertake script development work.

The 100th anniversary of flight - the Wright Brothers first flew on December 17, 1903 - has motivated a number of organizations to build their 2003 programming around this theme. Vancouver's H.R. MacMillan Space Centre is opening a new planetarium show called *Flight* in mid-March, and is also working with the local aviation council and aviation museum to provide additional programming and marketing support. For further information on any of the stories above, contact John Dickenson at <jdickens@hrmacmillanspacecentre.com>.

In each of the next five issues of the *Planetarian*, it is planned to highlight one of Canada's major planetariums: Planétarium de Montréal, Planetarium at Manitoba Museum, Discovery Dome at Calgary Science Centre, Margaret Zeidler Star Theatre at Odyssium, and H.R. MacMillan Planetarium at H.R. MacMillan Space Centre. This begins with Vancouver's H.R. MacMillan Planetarium, which opened 1968. It has a 20 m (67 ft) dome with 232 seats and a Zeiss Universal Planetarium Projector. The planetarium runs public, school and laser shows.

**Italian Planetaria's Friends Association**

In the center of Italy, in the city of Perugia, a new planetarium is in the planning, supported by the Municipality and the Province with €723,000 (or approximately as many US$). The building will be finished during this spring and will be situated in the main school area of the city (Piscille). Under a dome of 8.40 meters 60 people can be seated. A small room useful for exhibitions will also be available. The planetarium is one of the sites of the city museum system that also includes a science center. Among the participants of the project group are architect Katia Brigiari and astronomer Paolo Maffei, discoverer of the galaxies Maffei 1 and 2. In the Umbria region there are at the moment structures of astronomical interest in the cities of Foligno, Terni, and Amelia.

Another planetarium has opened the doors in the Observatory of Monti Cimini, <www.hesnet.it/candy/ciao/planetario/planet.html>. Under a dome of 6 meters, the projector shows 2100 stars and many other special effects are included. The director of this astronomical center, Paolo Candi, is a well-known astro-photographer. The original images collected through the telescope of Monti Cimini will be among the main subjects of the planetarium projections. Photos of the facility can be found at <www.hesnet.it/candy/ciao/planetario/planet.html>.

The Day of Planetaria, initiated by IPFA, has been held in different countries yearly since 1995. This is an important opportunity for involving the international community in a collaboration that aims to increasingly promote knowledge of planetaria in the public. The next Day of Planetaria will be held on 16 March 2003.

During the Day, planetaria can offer their ordinary program or organize special events (such as lessons, shows, exhibitions, practical sky viewing, and so
Imagine writing an article for a newspaper inviting readers to visit the local planetarium. Which is your short sentence that suggests to everyone to discover the local planetarium or which is your reply to a journalist that asks you: Why should people visit a planetarium?

Collaborate with Italian Planetaria’s Friends Association by writing us a few words that will be mentioned, with your name if you like, in the official press release of the next Day. IPFA has already received the following contributions for the 2003 Day:

“A planetarium can help its visitors gain a unique perspective on our Universe, helping us to better understand our place within it, our origins, our resources, and our opportunities for the future.” (Christine Shupla, Arizona Science Center, USA).

“I frequently tell to people or kids we are not monkeys! If so, we only need food. We need to know where we are, where we came from as well as we need clothes and houses. To study astronomy and space science is always human’s fundamental desire. When we study the Universe, we learn how our earth is small and the difference of races or nationalities can be by-passed. On the other hand, the study of DNA also gave us the same conclusions. Anyway to study science, particularly to study astronomy and space science, introduces us each a broader world as well as a more interesting and exciting world. It also helps to promote the important human’s mind. Nowadays, planetaria act as churches for telling about the Universe to the people.” (Sho Itoh, Suginami Science Education Center, Japan).

Japan Planetarium Society

The Annual Conference 2002 of Japan Planetarium Society was hosted by Sanyoh Space Fantasy Planetarium of Sanyoh Women’s High School in Hiroshima on 24-27 September. The conference theme was The Challenge to the Future. About ten papers were given and there were five workshops or discussions such as Beginners’ Workshop, School Shows for Educating Kids who love Stars, How to Make the Show using PC, To Replace the Star Projectors and to Keep their Maintenance, and The Copyright. JPS Education Committee announced they would start to support the programs in the planetarium for collaboration with planetarians and research astronomers. Mariko Takahashi, one of the Committee members, had demonstrated a sample program with Prof. Maekawa at Okayama Astrophysical Observatory. The conference participants stayed in the hotel at Miyajima that is one of the World’s Heritages, the beautiful location in Japan.

Regarding the Tokyo regional meeting of JPS at Suginami Science Center on 16 November, there was a challenging program of audience participation for studying black holes in the planetarium on the collaboration with Prof. Inoue. He was one of the discoverers of super massive black hole in NGC 4258 at Japan National Astronomical Observatory.

Some other regional meetings and workshops will be hosted. Tohoku (North-east Japan)-block and Kinki-block hosted workshops on 20 February and on 24 January, respectively.

Nordic Planetarium Association

Plans are now well under way for the first NPA Conference outside the Nordic states, namely in Tartu, Estonia, 12-14 September. Please contact Conference Chair Tiiri Sild at <tsild@ebc.ee> or wait for Planetarian 2/2003 for more information.

Broman Planetarium <www.planetarium.se> has recently delivered another Starlab, this time to Lerum’s Gymnasium, a high school in the vicinity of Göteborg. There are now well over 30 Starlabs in the Nordic countries.

Did you read the article on the 1-year Master Course in Science Communication in Planetarian 4/2002? Its first year will begin on 1 September, and applications must reach Dalarå University no later than 15 April. More information on the course is found at <www.duse.it/lbr/scicom.htm> or from Lars Broman at <lbr@duse.se>. The application form is also available at the course home page. Please contact Lars Broman if you would consider hosting an intern doing field work for the thesis during three months from April to June 2004. There are already over 20 science centers and planetariums all over the world which have expressed such an interest, but he would appreciate more planetariums as intern hosts.

Pacific Planetarium Association

A major fund-raising campaign is in full swing at the Minolta Planetarium, De Anza College, to modernize the star theater. A local bond measure that passed two years ago will go to refurbishment of the building, and a large sum of money from the recently passed state bond issue is earmarked for a new star projector. Negotiations are under way to obtain federal funds, and private and corporate sponsors are being sought. How far the project can go will depend on how much funding actually come up with when all is said and done, but the staff is thinking big and things are looking pretty promising. In the mean time they have been getting sell-out crowds at public shows and school group visits have increased as well.

Construction of the Cimmarusti Science Center at Glendale Community College is well under way. The photo shows the way the skeleton for the 30-foot dome looked in mid-November. Scheduled for completion in summer 2003, the planetarium will be equipped with a SkyVision Full Dome Video system and it will seat 50. The staff eagerly looks forward to moving out of rectangular box classrooms and into an inspiring hemisphere.

California Academy of Sciences’ star pro-

JPS Conference delegates relaxing at the Kinsuikan hotel, Miyajima. From left to right: Takanori Wakamiya, JPS President, Kawasaki Sci. Museum; Nobutaka Goto, Goto Opt.; Yuuji Imai, Minolta Planetarium; and Hiromichi Gan, Hiratsuka City Museum. Photo: Sho Itoh.
jector has turned 50, and was appropriately celebrated. Morrison Planetarium Chairman Steve Craig, Academy Director Patrick Kociolek, and volunteers served the Planetarium’s birthday cake to visitors.

The Reuben H. Fleet Science Center is celebrating its 30th Anniversary in 2003. The staff has planned an exhibit on the Center’s history, and talks by long time staffers. San Diego is hosting the 2003 SIGGRAPH conference from 27 to 31 July and the Fleet Science Center will feature a morning class on full dome video presented by Spitz, Inc Product Development Manager Ed Lantz. Also featured in their weekly special event Fridays at the Fleet will be several entries in last years computer animation reel. For the conference itself there will also be screen selected portions twice an hour for their evening in the park. In November will also be hosted the San Diego SIGGRAPH chapter design completion, and screen the winning DXF models on their Digistar II. For more information see <http://siggraph.org> and <http://sandiego.siggraph.org>.

A Digistar revision of the classic Monty Python-esque Planetarium show The Flying Blue Marble has recently been completed and combined with Behind the Dome, and The Sky Tonight to give the visitors a look at how planetarium presentations are created and two good examples. Work is now beginning on updating To Worlds Beyond narrated by Patrick Stewart. This presentation focuses on the search for extra-solar planets. Because it has been 10 years since the first version was made, there is a lot to update. It will be available for purchase, and includes a survey of our solar system and its origin as well. Digistar II, more video and the newest Hubble imagery will be included.

At Holt Planetarium in Berkeley, California, they are working on a new show on the Sun for early childhood. This is partly driven by National Science Education Standards that feature the Sun at young ages. As usual, it will be an audience participation program! For publication of Holt’s Planetarium Activities for Student Success (PASS) series, they are into the first year of publication agreement with Learning Technologies Inc. (LTI). For purchase of any of their planetarium shows, please contact them at <www.starlab.com> or by e-mail to <starlab@starlab.com>.

Bill Gutsch is currently working on a number of show projects. These include an updated version of a live stage play expressly designed for planetariums entitled The Night of the Martians. The program was originally created for the reopening of the H. R. MacMillan Space Centre in Vancouver a few years ago. Given the fact that Mars will be closer to Earth in 2003 than it has been in
centuries, and the fact that several nations have advanced probes scheduled for arrival at Mars over the next 12 to 14 months, Vancouver felt it was the perfect time to bring the show back with even more animation and special effects plus updates on the latest probes heading for the Red Planet.

Designed to be performed with as little as one actor, The Night of the Martians spans over 500 years from the 19th to the 24th centuries and is all about our long term fascination with Mars and the possibility of life there. The program is already scheduled to open in both Vancouver and the new Clark Planetarium in Salt Lake City (where some scenes will be created using Salt Lake’s exciting, new Digistar III full-dome video system). For more information, contact Bill Gutsch at (01) 973-492-8165 or Erik Koelemeyer at (01) 604-738-7827.

Also scheduled for release in Spring 2003 is Ring World: The NASA/ESA Cassini-Huygens Mission to Saturn. Being created with Brian Sullivan under a grant from JPL/NASA, the program is narrated by Star Trek’s John Billingsley (Dr. Phlox on the new Enterprise series). It will also feature a soundtrack by Hollywood’s Mark Mercury, full color 3-D animation by Emmy Award winner Jon Williams, and artwork by such famous space artists as Vic Costanzo, Laura Missajet, Michael Carroll, and Pamela Lee. Planetariums equipped with Digistar I or II will also be able to obtain exciting Digistar graphics expressly designed for the show by Clint Hatchett. Versions of the show can be requested in either Imperial or metric units A Japanese version of the show has also been expressed for the show by Clint Hatchett. Versions of the show can be requested in either Imperial or metric units A Japanese version of the show has also been approved by JPL/NASA. For more details on the show, please contact Bill Gutsch or Brian Sullivan at (01) 801-350-8340.

Finally, Bill Gutsch will also be in production shortly on another new show, Mysteries from the Depths of Space which is being produced for and underwritten by the Coca Cola Space Science Center in Columbus, Georgia and The Renaissance Center in Dickson, Tennessee. The program is scheduled for release in spring 2003.

Southeastern Planetarium Association

Louisiana will open four new and very different planetariums in 2003. Luling, Louisiana, features a 6 m (20 ft) dome with the world’s first full-color digital planetarium. In Lafayette, there will be a brand new 12 m (40 ft) dome facility featuring Spitz, Inc. and JHE technology. In Kenner/New Orleans, there will be a brand new 15 m (50 ft) dome with the first Zeiss Starmaster in America. Baton Rouge’s Irene W. Pennington Planetarium at the Louisiana Arts and Science Museum (LASM) will feature the latest integration of Minolta and Sky-Skan digital dome technologies all under an 18 m (60 ft) dome.

All of these facilities will serve as a perfect setting for a SEPA conference with the theme Building Planetariums for the 21st Century. For the first time at any conference, planetarians will see side-by-side the latest optical-mechanical and digital planetarium projection systems. This conference will not only present the latest examples of machines, technology, and design; it will also examine the programming, staffing, and funding issues that must be addressed for planetariums to succeed in this new century. Four Great Reasons to Attend SEPA 2003:

1. Great Speakers and Conference Theme. We already have a number of world class speakers, including science writer and comet hunter David Levy and Academy Award-winner and former planetarium space artist George Murphy, to name a few.

2. Great field trips.

Opportunity to visit four brand new planetariums. We will visit two public observatories and have (weather permitting) one evening observation session at The BREC Observatory, a 50 cm (20 in) research grade instrument and several dozen asteroid discoveries to its name. We have arranged a special behind-the-scenes tour of LIGO: Laser Interferometer Gravitational-Wave Observatory, one of only two such operating observatories in the world. Its research is fundamental to our understanding of gravity, black holes, relativity and the nature of the universe. It is featured in the April, 2002 issue of Scientific American.

3. The SEPA Conference Hotel. This elegant hotel overlooking the Mississippi River is less than 200 yards from LASM’s Pennington Planetarium

4. Some of the best food in the universe. Your registration fee helps pay for 10 meals, more than have ever been provided at any North American Planetarium Conference. This makes the registration fee a world-class bargain.

SEPA 2003 Conference Summary: Dates are 17 June - 21 June, 2003, and the location is Baton Rouge, Louisiana. Host is Louisiana Arts & Science Museum’s Irene W. Pennington Planetarium & ExxonMobil Space Theater - 18 m (60 ft) dome facility representing the latest integration of a precision optical-mechanical planetarium with digital dome technologies. Tel: (1) 225 344 9478. Fax: (1) 2253449477. Contacts: Cherry Dean, email cdean@LASM.org and Philip Groce, email <groce@inf.net>.

Hotel site is Sheraton Hotel Convention Center. 102 France Street, Baton Rouge, Louisiana, 70802. Telephone for reservations and information: (1) 225-242-2600, fax (1) 225-242-2601. Room rate is $89 plus tax per night-single/double till 15 May 2003, and the projected conference fee is $295-early registration, after 15 May $330. Air Transportation: Baton Rouge Metropolitan Airport is serviced by five major airlines: American, Continental, Delta, Northwest, and US Air. New Orleans International Airport is 63 miles from Baton Rouge and is serviced by Air Canada, America West, American Airlines, Continental Airlines, Delta Air Lines, Northwest Airlines, Southwest Airlines, TWA, United Airlines, US Airways, and AirTran. Conference host will provide transportation to all sites. The Sheraton Hotel provides free transportation to and from the Baton Rouge Airport. Limited transportation to and from the New Orleans Airport will be provided on upon request on 17 June and 21 June.
Now Available

THE STARGAZER

For STARGAZER video clips, sample slides, and ordering information on this $150 star show, please visit: http://www.astro.uiuc.edu/~kaler/sg.html, or call Dave Leake at 217-351-2567.

STARGAZER was produced by Minneapolis Planetarium with an IDEAs grant from the Space Telescope Science Institute and is distributed through Great Lakes Planetarium Association.
What a great way to start a new year with beautiful views of Saturn, Venus, and Jupiter! I hope you have been enjoying them as much as I have. The 2003-2006 deluge of solar system exploration events is beginning. Space exploration is a risky business, and we hope the delay in the launch of the European Space Agency's Rosetta comet mission (due to failure of a launch vehicle) is just that - science postponed, not science lost. Twin Mars Exploration Rovers are scheduled for launch in late spring/early summer, to arrive at the Red Planet in January 2004 and explore the surface for at least 90 days. I thought you might enjoy seeing one of the rovers with a twin of the Sojourner rover that explored Ares Vallis in 1997. In September, we will bid farewell to the valiant Galileo as it plunges to its death in Jupiter's atmosphere. Better than risk a crash into Europa.

In April 2003, the fourth of NASA's Great Observatories is scheduled to lift off. The Space Infrared Telescope Facility (SIRTF) is the infrared complement to the venerable Hubble Space Telescope, Chandra (X-ray), and Compton Gamma-ray Observatory. SIRTF - yes, it will be given a more public-friendly name after a successful launch - promises to rival its brothers in terms of discoveries and beauty of images. It will have a short lifetime, about 2 1/2 years, because its optics need to be cooled to near absolute zero, and lifting that much nitrogen into orbit is no small feat.

This month we have two guest columnists to tell you about resources related to solar eclipses and coronas, and a success story from one of NASA's IDEAS grants. And away we go!

**Total Eclipse: Solar Eclipses and the Mysteries of the Corona**

A New Video by Exploratorium and NASA's Sun-Earth Connection Education Forum

Isabel Hawkins
UC Berkeley Space Sciences Laboratory

Perhaps the most spectacular natural phenomenon visible from Earth, total solar eclipses have captivated humankind with their dramatic beauty for thousands of years. Total Eclipse: Solar Eclipses and the Mysteries of the Corona, a new video in VHS and DVD formats, explores the science behind eclipses and how these events can provide insight into the dynamic nature of the Sun and its effects on Earth and society. This new video, produced by the Exploratorium and NASA's Sun-Earth Connection Education Forum, features the best footage of recent total solar eclipses from the Caribbean, Turkey, and Africa. The modular thirty-minute program covers the following areas:
- The mechanics of eclipses.
- A historical perspective tracing human interest in this awe-inspiring natural event.
- The role of eclipses for studying the solar corona, and the importance of NASA Sun-Earth Connection research on our modern understanding of the Sun.
- Modern eclipse expeditions shared with thousands of remote viewers via webcast. Rich imagery, a fascinating storyline, as well as clear explanations and analogies offered by Sun-Earth Connection scientists contribute to making this video an engaging new product. The five scientists featured in the video include Janet Luhmann, Nahide Craig, and Gibor Basri of UC Berkeley, David Alexander of Lockheed-Martin, Todd Hoeksema and Madhulika Guhathakurta of NASA Headquarters, and Fred Espenak of NASA/Goddard Space Flight Center.

The video will be shown on NASA Television to feature solar eclipses, and the first such showing was connected with the December 4, 2002 eclipse that occurred over

Members of the Mars Exploration Rovers Assembly, Test, and Launch Operations team gather around Mars Exploration Rover 2 and its predecessor, a flight spare of the Pathfinder mission's Sojourner rover, named Marie Curie, in the Spacecraft Assembly at NASA's Jet Propulsion Laboratory, Pasadena, California, in January 2003.

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NASA News
Ten students from Baltimore City College High School (BCCHS) are partnering with Maryland Science Center (MSC) staff and scientists from the Space Telescope Science Institute (STScI) to produce a new planetarium show called *Hubble Heritage: Poetic Pictures*, blending the latest astronomical research with creative writing. Poems – that's right poems, though surely better than the one above, written by the BCCHS students will be recited to accompany beautiful Hubble Space Telescope images on the dome of the MSC's Davis Planetarium.

Who’s on first?

Forming the team for this project involved selecting experts in different areas - astronomy and the Hubble Space Telescope, language arts and creative writing, and planetarium production and science education.

First, we needed an astronomy team familiar with the Hubble Heritage project and also knowledgeable about the Hubble Space Telescope. Moreover, we wanted to find people local to Baltimore who had the time and interest in joining the team. From the Hubble Heritage team at the STScI, meet Dr. Keith Noll (PI) and Ms. Lisa Frattare (Image Processor).

Second, we needed a high school teacher, also in Baltimore, willing to assist us with identifying interested students and guiding their creative writing. Meet Mr. Mark Miazga from BCCHS.

The planetarium production business is left to us – the staff of the Davis Planetarium. The planetarium has a history of stellar (no pun intended) productions both for the general public as well as school groups. The Davis Planetarium team includes Senior Director Jim O'Leary, Planetarium Producer Wendy Ackerman, Chief Technician Joe Halley, and Assistant Producer and Education Coordinator Sally Goff. Supporting the Planetarium staff in this project are Crosby Ramsey Memorial Observatory Coordinator Melissa Jan and SpaceLink Director Flavio Mendez.

Over the course of several months, the selected students visited the Maryland Science Center and the Space Telescope Science Institute (STScI) to learn about astronomy, the Hubble Heritage project, and the work required to produce a planetarium show. Both Ackerman and Noll also made repeated school visits to keep students’ interest high!

After students selected their images from the Heritage collection, they visited the STScI, where Frattare talked to them about the image analysis process. Dr. Noll described and interpreted the science behind each one of the selected images.

Students then began the writing process under the guidance of English teacher Miazga. Once the writing was completed, students visited MSC to share their creations with the Davis’ staff. This is when the Planetarium team began the production process, including storyboarding, photography, special effects creation, and programming for the final production.

The Maryland Science Center in Baltimore will open its new planetarium show, *Hubble Heritage: Poetic Pictures*, in June 2003. The production combines poems written by high school students inspired by beautiful images from the Hubble Space Telescope’s Hubble Heritage collection. In addition to the planetarium show, a related teacher workshop is planned. *Hubble Heritage: Poetic Pictures* is funded by a NASA IDEAS grant (ideas.stsci.edu).

This original production was presented live on January 30, 2003, with the students reading their poetry as the images projected on the Planetarium dome. The same poems will also be incorporated into an automated planetarium program that will play for general museum audiences, school groups and teachers – come and check it out this June!

Tell me more about the Hubble Heritage collection!

By emphasizing compelling Hubble Space Telescope (HST) images distilled from scientific data, the Heritage team hopes to pique curiosity about our astrophysical understanding of the universe we all inhabit. The images on the Hubble Heritage collection are mined from the HST archive but the Team is also granted some observing time of its own. One image is released the first Thursday of every month and the collection now has over 50 images including planets, galaxies and nebulae. See them on the web at heritagespace.org.

Maryland Science Center gets ready for *Poetic Pictures*!

Wendy Ackerman and Flavio Mendez
Maryland Science Center

Roses are red, violets are blue, the universe is full of stars like you!

How do you go from a bunch of pictures and some poems to a planetarium show?

(See NASA on page 51)
MEDIAGLOBE, the world's first full-color digital projection planetarium.

Minolta's new MEDIAGLOBE combines traditional planetarium motion with a digital projection system. With the touch of a screen, MEDIAGLOBE accurately and realistically immerses audiences in 6,000 stars, the sun, moon and planets, all at the speed of light.

MEDIAGLOBE features:
- High speed dual processors
- Proprietary dome-correcting software
- Full-dome diffraction-limited Minolta optics
- Built-in sound system

At 1220mm (48") in height, the MEDIAGLOBE is designed for smaller domes that like to think big and can be customized to fit existing planetariums or any size classroom or exhibit hall. So, whether it's a look at tonight's sky, a shuttle launch or a simulated flight through an asteroid field, learning has never been more exciting.

MEDIAGLOBE:
- Can be connected to remote host computer through LAN
- Instantly projects the sky from anywhere on Earth or anywhere in the near Solar System at any time in full color
- Can project full-dome anything that can be rendered on a standard PC
- Eliminates the need for slide, video and special effects projectors

For more information contact:
All planetarium products now available directly from Minolta
Minolta Planetarium U.S. Office  201.934.4732  •  Fax 201.818.0498  •  www.minolta.com
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It's not your father's planetarium.
Mad March is upon us, fellow planetarians. Whether you’re swinging into spring or falling into autumn, there is something for you here. Preparing for a planetarium program about space exploration? There’s a great little overview by Alan Tribble and some specifics from Richard Wagner. Thinking about the Mars opposition later this summer? Get some insights from the Red Planet software. Keeping an eye on sunspot counts? Storms from the Sun can provide some background.

Many thanks to our reviewers this equinox: Ed Albin, Dayle Brown, John Mosley, John Schroer, and Paul Trembly.

A Tribble’s Guide to Space

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

When this book arrived, I glanced at the title and thought immediately of the cozy fluffy comfort-objects of Star Trek fame. Flipping through the chapter headings reinforced the idea at first: “Space. The final frontier,” “Standard orbit, Mr. Sulu,” “I cannae do it, Captain! I’ve got to have more power!”

But then there was something about “not being in Kansas anymore,” and I had to start from the beginning and read straight through.

In teaching, I’m always looking for an example or an analogy that will help the audience understand and remember information. Mr. Tribble worked on spacecraft development and design for over ten years, and his chatty and understandable prose is easy to follow. The Guide to Space is full of explanations and information useful in planetarium teaching.

Some of them are the kind that I read and think, “Of course! I should have known that!” Things like “without the powerful fans inside today’s space vehicles, carbon dioxide exhaled by the crew would not move any farther than out the crew member’s nose.”

Storms from the Sun

Reviewed by John Schroer, Digital Dome Planetarium, The Detroit Science Center, Detroit, Michigan, USA

Designs on Space - Blueprints for 21st Century Space Exploration

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

This is a short book – 200 pages – and it is a perfect introduction to the “nuts and bolts of space exploration, from how to get there to how to survive the harsh environment of space, to how to phone home.”

This is a short book – 200 pages – and it is a perfect introduction to the “nuts and bolts of space exploration, from how to get there to how to survive the harsh environment of space, to how to phone home,” as the press release states. Even though the book was published last year (2002), the Mir space station is referred to in the present tense, which some readers may find confusing. It would still be an excellent choice for a gift shop or book store. I’ll put it on our list of recommendations for interested students and the general public. And I’ll keep that last chapter heading in mind: “One can’t discover new lands without consenting to lose sight of the shore for a very long time.”

Ad Astra
with the Shuttle fleet and/or weather and supplier deliveries to support the missions.

The second part of Designs covers upcoming robotic missions. Stardust is to sample the tail of Comet P/Wild2 and return the material to earth after an almost seven-year journey. The MUSES-C mission to sample asteroid SF36 was designed by Japan’s Institute for Space and Astronautical Sciences and carries a NASA nanorover. Mars Express-Europe’s first Martian mission with the Beagle 2 lander is designed to search for signs of past or current inhabitants of the Red Planet. The Rosetta mission will place the RoLand lander onto the surface of Comet 46P/Wirtanen eight years after launch in 2003. The now-lost CONTOUR mission to Comet Schwassman-Wachmann 3, Comet d’Arrest, and Comet Encke; Aerial missions to the Red Planet, Mars Sample Return in 2008, the NASA/ESA Cassini/Huygens mission to Saturn arriving in 2004, and the killed and resurrected Pluto/Kuiper Belt Express mission are among others.

The last part of Designs features technological missions that might be launched within the next 20 years and beyond, including a manned mission to Mars, solar sails, space tethers, a fusion ramjet for interstellar travel, and solar power stations converting sunlight to electrical power beamed down to earth. Clearly presenting each mission’s rationale and the clever engineering that goes into solving the problems mission designers face, Designs on Space provides a remarkable and mesmerizing sneak preview of space voyages later in the twenty-first century.

### Storms from the Sun, The Emerging Science of Space Weather

by Michael J. Carlowicz and Ramon E. Lopez,

The complexities and mysteries of the workings of our nearest star and its atmosphere are explained for readers from all walks of life.

Or perhaps it was “... an airline passenger’s exposure to cosmic radiation doubles with every 6,500 feet of altitude, and solar flares can increase radiation exposure by 10 to 20 times.”

The authors did go on to assure readers, “… there is no demonstrable harm at the levels of radiation received by airline crews and passengers.” Still, they had my undivided attention!

This compelling book explains the relatively new science of space weather. Dramatic events of the distant and near past illustrate the real and imagined impact of solar activity on human kind. The complexities and mysteries of the workings of our nearest star and its atmosphere are explained for readers from all walks of life.

The recounting of an incident that almost overtook the astronauts of Apollo 16 and 17 was another that riveted me to the pages of the book. On August 2, 1972, the sun produced a “sudden and spectacular resurgence of solar activity” lasting 10 days which yielded a proton blast followed by a coronal mass ejection.

On Earth, on August 4, a magnetic storm began and auroras were reported as far south as Illinois. On August 7 a flare lasting four hours lit up the sun. Energy levels hurtled to hundreds of thousands of times higher than normal. X-rays and energetic particles were off the measurement scales. Protons bombarded the upper atmosphere. A 230,000-volt transformer blew up in British Columbia.

By pure luck, this massive solar storm fell right between NASA’s Apollo 16 (April 16-27) and 17 (December 7-19) missions to the moon. A few days earlier or later for launch, and the astronauts could have been caught in the middle of the proton swarm.

According to experts, if the astronauts had been en route in the command module during the storm, the situation would have been dangerous, but not life-threatening. However, the lunar module’s shielding is not much better than a space suit. If astronauts had been on the moon, they would have been instructed to find a crater and burrow underground. Studies on the storm’s effects to the astronauts state that they would have suffered from vomiting, nausea, and other symptoms of radiation sickness. At worst, each crew member would have been hospitalized for three to six months, with a 20 percent chance of death from accumulated radiation.

A more universal hazard is faced by our electric and communication systems. Magnetic storms have resulted in massive power outages and satellite “deaths.” Today’s world relies more and more on these systems. System vulnerability and the resulting danger to humans are well documented.

What can we do to protect ourselves? The International Solar-Terrestrial Physics (ISTP) program was launched in the 1990’s. The ISTP coordinates comprehensive, quantitative studies of the movement of energy from the surface of the sun to the surface of the...
Earth. This is just the first of many steps in the process of understanding the Sun-Earth system.

As James A. Van Allen writes in his foreword, “I commend this book to a wide spectrum of readers who may join me in enjoying a compelling account of the fascinating field of space weather and its evolving effects on our daily lives.”

Red Planet: Scientific and Cultural Encounters with Mars


Reviewed by Paul Trembly, Orlando Science Center, Orlando, Florida, USA.

Red Planet is the first DVD-ROM software I have ever used and as such I had only one machine on site that could handle it; a 1.5 GHz Xeon running Win2000. I can only assume that this package will run as well on other platforms.

For Windows-based machines, you need a Pentium II or better, running no slower than 200 MHz. Win9x or better, 32MB of RAM and a DVD-ROM drive. For Macs, a G3/iMac running OS 8.6 with 32MB of RAM is needed, as well as that pesky DVD-ROM drive. Please note that this DVD is not compatible with video-only DVD players.

Red Planet comes with a single DVD and a short but comprehensive instruction book. Divided into two sections, the first describes installation and navigation within the program. The second deals with Educator's Resources which include questions, answers and key terms of which teachers might make use.

Red Planet runs completely off the DVD in a Macromedia environment that requires QuickTime. After a brief introduction, you are presented with a Table of Contents. Clicking on any heading will take you directly to that section. There is a simple navigation menu at the top of each screen as well as embedded links within the text. You can read the text or opt for a narration. The links will take you to more in-depth explanations of terms such as retrograde motion or opposition. There are also video clips and interviews with noted researchers, among them Richard Zare and Carol Stoker.

The sections are in chronological order beginning with “Early Views” of Mars, discussing such topics as religious beliefs of the ancients about Mars, and the work of Huygens and Herschel, among others. Other chapters cover Lowell and his canals, and Mars in literature and film. There is good information about past Mars missions as well as such futuristicsubjects such as terraforming. The information contained in each section is topical and very clear. The explanations are concise and understandable. The images are of high quality and the interviews are insightful.

There is a good index of concepts and subjects and a simplistic but useful help file. There are also links to Mars related web sites.

For anyone wanting to know about Mars in all its many facets, this is a great resource and well worth the price, but educators will make the most use of this product.

Meteorites: A Journey Through Space and Time


Reviewed by Ed Albin, Fernbank Science Center, Atlanta, Georgia, USA.

This large-format, beautifully illustrated book offers an excellent introduction to the study of meteorites. Laid out in a logical fashion, the book tells the story of meteorites from ancient times to present. I found the book literally an encyclopedia of meteoritics, more a handy reference than a “just for reading” text.

Meteorites is lavishly illustrated with color photographs, most being original and new to this reviewer. There is a stunning sequence of images showing the recovery of the 3.5 ton Mundrabilla meteorite from the Nullarbor Plain in Australia. It was very interesting to see the documentation of the “main mass” of this meteorite, as I own a small bit of the iron in my personal collection. Private collectors at all levels will enjoy this aspect of the text.

For anyone wanting to know about Mars in all its many facets, this is a great resource and well worth the price, but educators will make the most use of this product.

I was particularly impressed by the section on tektites, as it clearly states that these bits of impact melt are produced by impact events on the Earth, and the authors did not include any mention of the antiquated theory of origin from the Moon. I also found the Reference and Suggested Reading sections very useful.

Meteorites is certainly not a replacement for O. R. Norton's Rocks from Space, particularly if you are looking for a thorough introduction to these wonderful celestial stones. It does belong on the astronomy bookshelf, however, and I highly recommend it as a useful companion to Norton’s book.

What Your Astronomy Textbook Won’t Tell You


Reviewed by John Mosley, Griffith Observatory, Los Angeles, California USA.
I've known Norm for many years, and he's a creative, original thinker. He always has interesting comments on how astronomy is presented to the public and to students and how people (mis)understand the sky. Part of this comes from having taught thousands of students and part comes from the experiences he's had through the wide variety of astronomical jobs he's held in the San Francisco Bay area. Much of it comes because Norm is a thinker and questioner with, as the book jacket says, “fresh, intriguing ideas.”

This book is a seemingly random compilation of astronomical musings that have caught Norm's attention through the years, such as how the way that introductory astronomy textbooks present the state of astronomical knowledge has evolved through the years (Norm notes that they all give short shrift to what isn't yet known); how science is really done (as opposed to how most school teachers and textbooks claim science works — Norm is right and his little diagram is wonderful); and what it means to “buy a star.”

Most sections are short and deal with one oxymoron or frequently-misunderstood word or term. Why do we call it a “first-quarter” moon when it looks half full? What is the meaningful difference between an asteroid, a meteoroid, and a meteorite? What is a “frozen gas” that we're told comets are made of? What is the significance of Hubble's “tuning-fork” diagram of galaxy shapes? What does a “typical” galaxy look like? What do meteorites really tell us? How many planets are there in our solar system, and how has that number gone up and down through the centuries (it has varied from 6 to 11)?

Along the way Norman sprinkles in enough humorous samples from answers his "least-attentive" students wrote on tests to fill April Whitt's Last Light column for a dozen years. Two samples (and it was very hard to pick only two): “Gravity is the force that keeps everything from falling out of the Earth's atmosphere,” and “Comets are important because the gases they release are good for the solar system.”

I do have a complaint about the book's layout, which I found confusing and annoying. He reproduces the work of others at length, but it is difficult to know where the transitions lie. And his wild use of multiple fonts was a real barrier to enjoying the text. Such are the hazards of self-publishing and this is a good example of why it is to be avoided.

What Your Astronomy Textbook Won't Tell You is a very informal and delightful romp through Norm's fertile mind.
The folks at Spitz, Inc. and Starry Night Software had the attendees of the Macworld Conference in San Francisco, California, seeing stars from January 7 - 10, 2003. Visitors to the trade show were able to see trailers of Spitz productions and a demonstration of Starry Night Dome - created especially for Spitz by Starry Night. Spitz set up its SciDome projection system inside the 5-meter (16-foot) portable dome. “Audiences were pretty anxious to see the display - apparently we were the first planetarium ever set up at Macworld. Visitors packed into the dome nonstop from opening until closing each day”, says Scott Huggins of Spitz. The booth was listed as the most “unusual” booth at the conference on Wired.com, the website for computer savvy web surfers. Several thousand people are estimated to have seen the booth. Each presentation featured a preview of Spitz’ soon-to-be-released Dark Star Adventure, AVI’s Legends of the Night Sky - Orion and a real-time journey to the edge of the universe using Starry Night’s powerful stellar database. Starry Night software contains an enormous variety of stellar objects and information. There are $500,000,000 (that’s half a billion) stars in the Starry Night universe - users can fly to each one in the 3D environment. It’s even possible to travel to the edge of the universe and see the large scale structure of the galaxies - all in their accurate positions. The view of space from Earth is equally impressive with printed data on every visible object, beautifully rendered orreries, constellation figures, grids and even real-time images of every satellite flying over head.

Detroit Science Center played host to a special show featuring the music of Surround sound artist Alexander Jero. The staff of the Digital Dome Planetarium provided video and Digistar effects to enhance the music of Mr. Jero. Tickets were available through Ticketmaster and two performances were well attended at the end of December.
2002. Planetarians Jenny Pon and John Schorer provided the Surround visual accompaniment for this Concert. If you’d like to learn more about this music experience in 3-Dimensional sound visit www.surroundrecords.com and click on Surround Show or email info@surroundrecords.com.

If you have any stories of unusual and different uses of your theater, send them along and I’ll be sure to feature them in a future column. But for now we send...

Our Condolences to...
...the friends and family of Grote Reber, the Father of Radio Astronomy who passed away in Bothwell, Tasmania on December 20, 2002 just two days short of his 91st birthday. Reber created the first purpose-built radio telescope in Wheaton, Illinois in 1937. He had located to Tasmania because of the local transparency of the ionosphere to the radio telescope. Reber created the first purpose-built radio telescope in Wheaton, Illinois in 1937. He had located to Tasmania because of the local transparency of the ionosphere to the wavelengths of interest. He had made significant studies of the sky at long radio wavelengths, using a dipole antenna array near his home in Bothwell.

Thanks to Martin George (see below) for this news and for offering to carry our messages of grief to the memorial service for Grote.

...the friends and family of Long time SouthWestern Association of Planetarians (SWAP) member Bill O. Walker who passed away Saturday December 14, 2003, after a lengthy illness. Bill was at the Hudnall Planetarium at the Tyler Jr. Community College in Tyler, Texas. He had been there for the last 12+ years. Prior to his position at the Hudnall Planetarium, he was there at the Planetarium Director at The Science Place Planetarium in Dallas, Texas.

...to the residents of Canberra, Australia, who lost loved ones in the recent bush fires, and to the staff of the Mount Stromlo Observatory. The fires destroyed four telescopes, the equipment workshop, eight houses which had been occupied by staff, and an administration building. Preliminary estimates have valued the losses at more than $20 million. Thankfully no staff or students were injured in the Mount Stromlo fire. The Observatory, operated by the ANU Research School of Astronomy and Astrophysics, is one of Australia’s leading centres of astronomical research.

Congratulations to ... 
...our new President-Elect Martin George (Launceston Planetarium, Queen Victoria Museum, Launceston, Tasmania Australia)

...the integration of Management between Konica Corporation and Minolta Co., Ltd. In a announcement released on January 10, 2003, Yasushi Inani, (President, Minolta Planetarium Co., Ltd.) stated, “The primary objectives of this integration are to create corporate structure that targets the top position in the industry by greatly strengthening competitive capabilities in the image information products business, the largest business sector, and to further solidify our number one position in the field of optical products by combining the strong optical technologies of both companies, and to aggressively pursue well-timed, strategic business collaborations that result in new levels of strength for our corporation. The integration of operations between both companies is scheduled for October 2003. We have just started direct marketing in the US of all Minolta Planetarium products starting January 1, 2003. As one of the members of Konica and Minolta corporate group, we will continue to work with the goal of increasing the level of customer satisfaction. This move provides additional strength as we aggressively seek to satisfy the emerging needs of the customer and face the challenges and opportunities we encounter over the long term.”

People On The Move
George Wurtak has left the Manitoba Museum Planetarium (Winnipeg, Canada) as a result of a major museum reorganization. George was the Director of Education and Interpretive Programs (with responsibilities for the Planetarium and Science Gallery). If you’d like to keep in touch with George, you can contact him via email at gjwurtak@mb.sympatico.ca or via post at 27 Packard Place, Winnipeg, MB R2N 2M9 or by phone at 204-256-9278.

Alex Barnett (formerly of the National Space Centre in Leicester, UK) will take over as the CEO and Executive Director of the Chabot Space and Science Center in Oakland, California, in March 2003.

Dr. David Menke (formerly of Beuhler Planetarium in Ft. Lauderdale, Florida) is now teaching Advanced Placement Physics at the High School level in South Florida. Send him a note at DrDHMenke@aol.com.

A Friend In Need...
Wes Anderson (VCSU Planetarium Director) is looking for anyone who has an old Spitz Meteor Shower projector (working condition please) that they would consider selling. He is also looking for any other “toys” suitable for a 30-year-old Spitz 512 system – constellation projectors … etc. Contact him at 701-845-7452 or 701-845-0966.

Have You Heard?
A new planetarium show starring the friendly characters from the children’s show, Blue’s Clues, is being developed by Bill Gutsch and the staff of COSI in Columbus, Ohio. For more information contact Bill at 973-492-8165 or Mike Stanley at mikenstanley@mail.cosi.org.

GOTO Optical Mfg. Co. has a new US office and has doubled its staff. Toshi Yasuda joins Ken Miller at 401 Kamakee St., Suite 319, Honolulu, Hawaii 96814. You can call toll free from the US at 888-847-5800 or at (1) 808-597-8688 from the rest of the world.

Mario Di Maggio (Staff Scientist: Planetarium, Glasgow Science Centre, Glasgow, Scotland) reports that a new Science Centre is being created in Macao, China. The new facility is being designed by world famous architect I.M. Pei. Mario had the opportunity to host a delegation of representatives of the Macao Foundation at his facility last June. They were so impressed with his knowledge
and enthusiasm during his planetarium demonstration that they decided to equip their new Science Centre with a planetarium rather than an Imax theater. Way to go Mario!

The Ann Arbor Public Schools, Ann Arbor, Michigan, have signed an agreement to purchase a Digistar 3 SP from Evans & Sutherland of Salt Lake City, Utah. The new system will be installed this spring. Michigan has more Digistar planetariums than any other state in the USA.

Always an innovator, Timo Rahunen of the Tampere Planetarium at the Tampereen Sarkanniemi Oy in Tampere, Finland, has developed a new 3-Channel Immersive Digital Video System. By combining Barco Projectors and DPS Reality hard disc players, his home-made system delivers images rendered on 3D Studio Max running plug-ins written in-house. The first show using this wide screen system is called, Out of Stardust, and the results are out of this world! Read the full report starting on page 178 in the Proceedings of the 2002 IPS Conference.

After having been closed (pending refurbishment), The Star Theatre at the Armagh Planetarium, Armagh, Northern Ireland, will reopen soon. Plans are to rebuild rather than renovate the existing planetarium and observatory!

Zeiss, Inc. held a two day workshop on their ADLIF/ZULIF laser projection system in Jena, Germany, in early December, 2002, for about 80 international guests.

The Eugenides Planetarium in Athens, Greece, will open in October of 2003. Slated to be one of the largest planetariums ever built, it will include a 12-projector Digital Sky system from Sky-Skan, Inc of Nashua, New Hampshire, USA. For more information visit www.eugenfound.edu.gr.

The Griffith Observatory in Los Angeles, California, took delivery of a SkyVision all-dome projection system from Sky-Skan in January and has begun production of their premiere planetarium show. Reopening is scheduled for late 2005.

And Finally ...

I’d like to feature artwork or other interesting imagery from your planetarium - past, present or future. Maybe you have a neat old ad or an awesome new graphic for your latest production. Send it to me and I’ll make sure it gets into a future column. Thanks! 🌟
President’s Message

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How well our Society functions depend on many variables, but it is the commitments and accomplishments of past leadership that defines our present and shapes our future. As your incoming President, I feel very fortunate to begin my term with an accomplished, committed leadership team, a team I have had the privilege to work with during my first two years as President-elect. On behalf of IPS, I wish to extend a well-deserved thank you to Martin Ratcliffe, who I spoke with shortly before the New Year to transfer the presidency. The shoe size of past presidents continues to get larger to fill, but I look forward to the challenges ahead. Martin, of course, will continue to work as Past-president. My congratulations to Lee Ann Hennig and Shawn Laatsch for their continued appointments as the IPS Secretary and Treasurer respectively. I would also like to welcome Martin George to the leadership team as President-elect, who brings a wealth of experience and knowledge and is our first elected officer from the Southern Hemisphere. Also thanks to out going Past-president Dale Smith, who has provided six years of invaluable leadership, resourcefulness and friendship. I look forward to serving and working with all of you – Officers, Committee Chairs and their committee members, and those of you who would consider becoming involved in serving the Society. I encourage all IPS members to communicate directly with me or any of the IPS Officers on issues you feel are important to our Society.

With this issue, the Planetarian takes on a very different look and layout. When I became an IPS member in 1980, the front and back covers of the Planetarian journal were solid colors - sometimes a dark blue, other times purple and occasionally even pink, but the articles were always in black and white. There was also virtually no vendor advertising in the journal during the early eighties. In the nineties, the cover became black and white and advertising began appearing in color! As you have already noticed, this issue of our primary publication premiers with an exciting new look, which is a direct result of a lot of preparation and hard work primarily by our Executive Editor John Mosley and his assistant editors. John’s editorial in this issue introduces us to our new format.

Along with new beginnings, I would like to implement a series of reports from the Chairs of both our Standing and Ad Hoc Committees. These brief reports will be included in the body of the President’s message and are intended to better inform our membership by keeping us current with the committees’ goals, accomplishments, and who serves on these committees. In this issue, Susan Reynolds Button presents a brief synopsis of the Portable Planetarium Committee.

As my term of office begins, I look forward to the continuation of projects begun by Martin Ratcliffe and I, especially on developing closer partnerships with the Education and Public Outreach programs of NASA, JPL, and more recently with The Planetary Society. In recent issues, these agencies in particular have begun to offer our members CDs, posters and The Planetary Report, a sampling of membership benefits we can look forward to in future issues. Perhaps the most challenging and exciting project, one that will effect all of us, is being developed by the Strategic Planning Committee lead by John Dickenson, Managing Director of the H.R. MacMillan Space Center in Vancouver, Canada. The Strategic Planning project will have a far-reaching impact on the Society and will result in the growth of both services and membership. Martin Ratcliffe worked very hard to implement this project during his term as President and it is one that I will continue to actively pursue. The challenge for the Strategic Planning Committee in the months ahead will be to look at our current organizational structure – the Society’s governance, structure, operations and budgeting process, services to members, as well as an analysis of the effectiveness of this structure. The idea and hope of this process is to have a much improved Society, one that encourages international membership growth and becomes more relevant and effective in serving its members over the long term. Funding has been approved to move ahead on the Strategic Planning project (thanks largely to the IPS 2002 Conference revenues), which begins with hiring a consultant to work with John Dickenson and his committee.

Speaking of revenue, not only did Martin Ratcliffe and his staff succeed in hosting a wonderful 2002 IPS Conference, but they managed to realize a profit of at least $55,000! As a result of these proceeds, the IPS is in a strong financial position, one which will only strengthen the offerings to our membership. Thank you Martin!

Over the coming months, IPS Officers will focus on a variety of issues - from the appointments of vacant Committee Chairs to redefining how new affiliates will be admitted to the IPS. These and numerous other important issues will eventually effect the way the IPS is governed, so I encourage you to become involved in the process of change that lies ahead, make a difference and our Society will be better for it. Let me share with you a few updates on our Society’s activities:

Membership Brochure
Thanks to April Whitt, our new membership brochure is available and is being distributed to the IPS Council representatives. Although now in English, the brochure will eventually appear in different languages. Representatives are encouraged to distribute the new brochures to their regional members at upcoming regional conferences.

Slide Service
By the time you read this, those of you who are subscribers to this service should have received the latest distribution of slides, a selection of the newest JPL images from the Mars Odyssey, and all the latest Hubble Space Telescope pictures. If you do not already subscribe to the IPS Slide Service and would like to, you can do so by using the subscription form available on the IPS Website (www.ips-planetarium.org) or in the Planetarian journal.

IPS 2006 Conference
Concerning the IPS Conference 2006 site, last December we received a letter from the Vienna Planetarium, one of the two site candidates, indicating they could not effectively host the conference in 2006 and therefore were withdrawing their invitation. This leaves the Melbourne, Australia proposal as our only invitation. Although the site selec-
tions normally would have been voted upon during our 2003 Council meeting, it was decided that a vote by the IPS Council to approve the Melbourne bid would give our future hosts more valuable time to plan and make early decisions.

The 2003 IPS Council meeting will take place in Jena, Germany October 3-5. I will report on this important meeting in more detail in the June issue of the Planetarian.

Finally, I want to again welcome aboard President-elect Martin George, which definitely now makes the leadership team more international. Both of us will continue to follow up on the work of our past presidents, collaborate closely with fellow Officers and Committee Chairs, meet the unexpected challenges that certainly lie ahead, and ensure that we continue to become a stronger international society - one of my commitments to you.

IPS Portable Planetarium Committee

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The function of this committee is to help those interested in the use of portable planetaria and to provide a support system to assist portable planetarium directors or teachers.

Accomplishments:

This committee has been very active since its inception in 1998. In the beginning members were sought and then e-mails began to flow along with information and support within the committee. It was exciting to begin this communication between friends from regions around the world. We began to form a community of portable planetarium directors.

In 1990 a column, “Mobile News Network”, for mobile dome directors began to be published as a regular feature in the Planetarian. Portable planetarium workshops and papers began with the 1990 conference in Sweden and have been appearing at each IPS Conference since. Now it is assumed that portable planetaria will always be represented at IPS conferences.

Each year, since 1995, Serafino Zani Astronomical Observatory (Lumezzane/ Brescia) collaborates with the IPS Portable Planetarium Committee to host an American planetarium operator who presents lessons with an itinerant planetarium to high school students of English. There is an Internet page devoted to the week that contains many photos, at the following address: http://www.cityline.it/cult/invitatio.html.

In 1995 the committee co-sponsored the first European Meeting of Itinerant and Small Planetaria in Lumezzane, Italy. In 1999 a second European meeting was held in Strasbourg, France, in conjunction with a meeting of the French-Speaking Planetariums Association. At this time we are studying the feasibility of holding the next meeting in 2003.

The committee maintains resources including a database of directors and specialists and a list of current mobile planetarium manufacturers. Resource materials, curriculum and lesson materials have been cataloged and these public domain materials are currently housed in Syracuse, New York. A portable planetarium business owner’s survey was designed, distributed, and the results collated and published.

A handbook for portables has been published and was distributed to all members in December 2002. This handbook contains information about all aspects of buying and running a portable planetarium, whether as a business or as some type of outreach program.

Goals for the Future:

The committee is seeking contact people in each regional affiliate. We would like a report from each affiliate that explains the number of members who have portable planetariums and in what capacity they are used.

We would like the IPS affiliates to include information of interest to portable planetarium directors in each of their newsletters. We need our work and services advertised.

We are interested in promoting quality work in mobile planetaria through workshops and papers for portables at all regional and IPS conferences. It is important to have papers and workshops, not just demonstrations of equipment, presented at conferences. We would like to see lessons given under a variety of domes and using an assortment of planetarium projectors.

We would also like written reports of any activities involving mobile domes that occur in each region. These reports will be published in the column in the Planetarian as another way to improve networking between mobile dome planetarians.

We will continue to promote communication in every way possible. We feel that planetarians who work in mobile domes need to hear from others in the same job to share concerns and successes. Our numbers are growing and each new director needs to know what is going on in our world of minidomes.

Committee Members:

Members of this committee include people from several affiliate regions. We would like to have at least one new member from a region in the Southern Hemisphere. The current members represent planetarians who work in portable domes at all educational and business levels. They are familiar with a wide range of venues for portable planetaria and are ready to provide support to everyone interested in mobile planetaria.

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Past President’s message

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The aftermath of the IPS2002 conference was both one of self-enforced rest along with an exciting last few months of my term as President. As luck would have it, my October deadline for my last President’s message flew by without mention or notice on my part. And so in consultation with the new President, Jon Elvert, it was deemed appropriate for me to offer a few comments following both the conference and the end of my term as President.

By all accounts that I have heard, the IPS 2002 conference in Wichita, Kansas, was a
resounding success. I attribute this success to two things. First is being surrounded by a fine team of people. Davin Flateau on my staff at Exploration Place provided invaluable behind-the-scenes support ensuring many details were dealt with. The special meeting organizer, Diana Palmer of Designer Events, did a superb job of handling hundreds of details ensuring the smooth operation of the conference.

When we first set out to organize the conference, in September 2001, we were very unsure of the numbers to expect. After all, at that time the entire airline industry in the United States was grounded in the aftermath of the terrorist attacks of September 11. It was a risky time to be planning an international conference. We hoped for 300 delegates, the number required just to break even on our projected budget. However, following a nervous few months, we eventually attracted 451 delegates.

And this brings me to the second reason for the success of the conference - you, the delegates. With such a large number of professionals in one place at one time, it was wonderful to see the various collaborative discussions occurring. From vendors discussing details of new science center construction to educators discussing new strategies, the environment we created appeared to work very well. So a big thank you to all who attended, you are the ones that made the conference successful. We just provided the right environment.

I am also very pleased to say in light of the strong attendance and generous sponsorships, the conference turned a healthy profit. As our meeting organizer stated at the outset of our planning, if a large conference does not make some profit we’re not doing it right. At the end of 2002 I sent a check for $50,000 from Exploration Place to the IPS Treasurer, representing the bulk of the remaining funds following all receipts payable. I am pleased to report that IPS is now in a very stable and strong financial position for the future, and I hope future conferences will be able to sustain similar levels of profitability. IPS can create the environment that encourages a host to generate a profit. Our current rules encourage a host to break even, and indeed this has happened over the past few conferences. I hope our experience will encourage future hosts to plan accordingly. Such funds will allow the Society to develop our effectiveness in many areas, especially as we try to develop new relationships with other societies.

I am excited about the future of IPS. Following a strong showing by NASA’s Education and Public Outreach officials at our summer conference, our dialogue is continuing to develop. IPS has been fortunate to have NASA funds to travel to various meetings by IPS officials and such commitment to continuing the dialogue is critical to our future planning.

There are other avenues that we can explore. In January I attended the 201st American Astronomical Society meeting in Seattle. The AAS has a very active education division and are actively looking for collaboration with other societies. It would be natural for IPS to have an active link with the AAS in some form. In addition to an excellent pair of workshops on developing skills in teaching astronomy led by Dr. Tim Slater, well known to many IPS members, the conference held a panel session on careers in astronomy, focusing the discussion on careers other than pure research. Careers in the planetarium industry are wide and varied, and offer interesting opportunities to new graduates. IPS is a fine first point of contact to assist newcomers to the possibilities of a planetarium career, and I was thankful to the organizers of the session to allow me to say a few words about IPS during the meeting. To be effective, the profile of IPS needs to be higher at such meetings, and that costs money. It is a personal hope that a higher profile can be developed.

Strategic Planning update

At our council meeting last summer, we passed the strategic planning initiative after a long discussion on how to finance the effort. A large percentage of the financing was agreed to come from any profit that the conference generated. Once I confirmed that the funds would be available from the conference, I am pleased that we could give the go-ahead to John Dickenson to move ahead with the project. I have great hopes for this initiative. While a voluntary organization such as ours tends to move more slowly than fully-funded organizations with a staff, I am also quite sure that after a fine 30-year history of IPS, a new look at how we do business can only benefit everyone in the society.

In looking back over the past two years, much has happened, far more than I imagined when I took office. I realize that nearly three quarters of my term was spent worrying about our conference, yet hosting the conference was the most treasured moment of the two years of work. I would like to thank you for electing me to the position, and wish the society a long future. It is in the excellent hands of Jon Elvert as our new President, and I encourage you to read his words in this issue. There are many people to thank. While I would like to thank each person individually, I think it best that I encourage you to turn to the page with the list of council members, officers and chairs of committees, to see who the society is really run by. My grateful thanks to each of you. However, I would be remiss if I did not mention three names, with a plea for forgiveness if I do not mention more and you feel I should have. Phyllis Piltuga, who, with an enduring style and grace, has managed the awards committee and ensured that the awards the society bestows upon its members are properly recognized at our conferences, stepped down last year. Phyllis, from all of us, a big “thank you” for years of service to IPS.

The two marathon runners of the society are Lee Ann Hennig and Shawn Laatsch. These two people do 80% of the society’s work, most of it unseen and all voluntary. A thank-you does not seem enough. The membership knows how valuable they are to the smooth operation of the society, and a sincere thanks to both of them for two more years of steady management of the Society’s affairs.

Finally, I wish Jon Elvert every good wish for his Presidency, and it is with a distinct measure of relief on my part that I can hand the reins to such an able person.

Past-Past-President’s Report

Dale W. Smith
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Presented at the IPS Council meeting in Wichita, July 27, 2002, when I was serving as Past-President.

I would like to offer a few reflective comments on the state of IPS as my six-year term of service in elective office (1997-2002) draws toward a close. First I will note some of the Society’s accomplishments and progress during this time and then offer some challenges for the future.

Among our accomplishments:
• we have held three outstanding conferences, in London, Montréal, and Wichita. Especially, the sophistication and demands of the vendor demonstrations, have taken a quantum leap over previous conferences, as we shall see again this week.
• we have found talented people willing to run for and serve in our elective offices, and that prospect continues unabated in the current election.
• we have increased our globalization, with the admission of new regional affiliates in Australasia (1999), India (2000), and Spain
The prospective admission of a Dutch-speaking affiliate at this meeting will complete the process of filling western Europe with IPS affiliates, fulfilling a goal envisioned by Dennis Simopoulos with the founding of EMPA in 1978.  
• we have inaugurated the IPS video service
• we have published our journal on-time, every time, so regularly that we may make the mistake of taking the efforts of John Mosley and his team of associate editors for granted. John has completed the transition to fully electronic preparation of the journal, and we can expect further steps to enhance our flagship publication.
• we have firmly established the ability of IPS to publish robust directories, both the new IPS Resource Directory and the continuing IPS Directory of the World’s Planetariums.
• we have established the publication of Proceedings as an integral part of IPS conferences and have inaugurated their distribution to all IPS members as benefit of membership.
• we have released a continuing series of special publications, including a revised special effects handbook (1997) and an international mythology book (2001). At least four others are in the pipeline, as I will detail in the Publications report.
• we have made the transition from print to electronic as the primary medium of distribution for all publications aside from the Planetarian.
• we have established the IPSnews service as a means of rapid communication with the majority of IPS members.
• we have established the IPS Education Committee, whose work is now taking hold and appearing in the Planetarian and on the IPS web site This committee underscores our central role as astronomy educators.
• we have held three consecutive off-year Council meetings at sites with astronomical observatories (the Observatoire de Strasbourg, Lowell Observatory, and the Vatican Observatory), thereby underscoring our roots as astronomy educators.
• we have established the Star Partners fund as a means of providing limited assistance to our colleagues in economically challenged countries, and we underscored our commitment to planetarium work in developing countries with significant in-kind support of the 2001 conference in Sri Lanka.
• we have centralized and expanded the scope of the IPS slide service and maintained a uniform subscription price worldwide.
• we have inaugurated the IPS video service and distributed two video compilations (one ESA, one NASA), with a third to come this year.
• we have put our governance documents in order, including the By-Laws, Standing Rules, Conference Planner (nearly done), Officers Job Description, Officers Calendar, Script Contest Guidelines, and Affiliate Report Forms & Responsibilities Document.
• we revised the IPS web site into a more accessible format and established a members-only area, and placed versions of the IPS Directory and Resource Directory on the web site. We have put the job bank on-line and developed an extensive annotated on-line list of educational web sites of interest to planetarians.
• we have, through the travel agendas of three successive presidents (and others), represented IPS at numerous affiliate conferences and individual planetariums around the world and, I hope, helped tie our community closer together.
• we have forged closer ties with other professional societies or organizations, including (but not limited to) NASA Outreach, ESA, AAS Division of Planetary Sciences, and TPS, an important work in progress which is certain to yield future benefits.
• the list goes on, and many other accomplishments are described in the President’s Messages of Presidents Kraupe (esp. December 1998), Smith (esp. December 2000), and Ratcliffe (continuing), and chronicled in the articles and features in the Planetarian. This is an abbreviated list, not given in order of importance, and I apologize to those whose contributions aren’t listed here either by oversight or for lack of space. Together, we have made substantial progress and I have been privileged to be able to contribute to some of these areas, few of which are really completed and most of which represent ongoing projects for a stronger future.

Future Challenges:
I would also like to leave you with a list of specific challenges for the future, which together with the initiatives of President Ratcliffe, can help IPS do even better in the years ahead. These are in addition to continuing our work in nearly all the areas listed above. In some cases, these challenges represent areas in which I leave office frustrated at the lack of timely progress.
• we need to expand our affiliate societies and IPS membership to cover the rest of the world, in particular to:
  – bring in the Brazilian Association of Planetariums, which has been a viable national society since 1996.
  – help the rest of South America form functioning groups along sensible geographic boundaries and eventually bring them under an IPS affiliate. No such groups exist at present.
  – foster the formation of an affiliate in Central and Eastern Europe, where there are dozens of active planetariums.
  – foster the formation of an affiliate in the Arabic countries in northern Africa and the Mid-East, where there are planetariums in almost every nation.
  – foster the formation of a Chinese affiliate. There are 100 planetariums in China.
  – bring the planetariums of East Asia into the IPS fold. In particular, I refer to South Korea, the Philippines, Taiwan, and southeast Asia.
• we need to find ways to support the attendance at conferences of a limited number of delegates from planetariums in economically distressed countries. The efforts of the NPA to include the Baltic countries are a notable example of this on a regional scale.
• we need to encourage and expand the fledgling efforts of the twinning program to supplement Star Partners with materials exchange. This program was described by Carole Helper in the December 2000 Planetarian.
• we need to market our membership much better within and beyond the regional affiliates. We need to market both in those affiliates where more than half the members are also IPS members and in those affiliates, both large and small, where there are just barely enough IPS members to maintain the affiliate’s vote on Council. We also need to market beyond affiliate membership in both served and unserved geographic areas. We have many benefits to offer which are poorly marketed beyond (and sometimes within) our membership.
• we need to ensure that affiliate representatives are active participants in the work of IPS, not only at Council meetings, but also on the other 363 days of the year. The tasks listed in the Affiliate Representative Responsibilities document are a small step toward this end. In particular, you should be actively promoting IPS in regional conferences and newsletters and you can also help immensely by participating in projects you suggest at Council. This is also a two-way street and requires ongoing communication between meetings from the Officers and especially from the President. None of us recent presidents has an especially good track record in this area.
• should the forthcoming restructuring study examine the one-affiliate one-vote structure of Council, given the enormous differences in IPS membership from affiliates.

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(Please see Dale Smith on page 47)
Minutes of the IPS Council Meeting

Wichita, Kansas
July 27, 28, and August 2, 2002

* indicates action items

In attendance:
President Martin Ratcliffe
President-Elect Jon Elvert
Past President Dale Smith
Treasurer Shawn Laatsch
Secretary Lee Ann Hennig

Affiliate Representatives:
Association of French Speaking Planetariums (APLF) - Marc Moutin for Agnès Acker
Association of Mexican Planetariums (AMPAC) - Gabriel R. Muñoz for Ignacio Castro Pinal
Association of Spanish Planetariums (APLE) - Javier Armentia
Australasian Planetarium Society (APS) - Martin George for Glen Moore
British Association of Planetaria (BAP) - Teresa Grafton
Canadian Association of Science Centres (CASC) - John Dickenson
Council of German Planetariums (RDP) - Thomas Kraupe for Wolfgang Wacker
European/Mediterranean Planetarium Association (EMPA) - Dionysios Simopoulos
Great Lakes Planetarium Association (GLPA) - Susan Reynolds Button
Great Plains Planetarium Association (GPPA) - Jack Dunn
Italian Planetaria's Friends Association (IPFA) - Loris Ramponi
Japan Planetarium Society (JPS) - Shoichi Itoh

Middle Atlantic Planetarium Society (MAPS) - Lee Ann Hennig for Peter Connors
Nordic Planetarium Association (NPA) - Lars Broman
Pacific Planetarium Association (PPA) - Jon Elvert
Rocky Mountain Planetarium Association (RMPA) - Aaron McEuen
Southeastern Planetarium Association (SEPA) - John Hare
Southwestern Association of Planetariums (SWAP) - Mark Sonntag

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

Guests:
José Carlos Guirado - Valencia, Spain
Manuel Toharia - Valencia, Spain
Gerardo Trujillo Jiménez - Morelia, Mexico
Phyllis Piñuga - Chair, IPS Awards Committee
Steve Mitch - Chair, IPS Elections Committee

The meeting was called to order at 10:20 a.m. by President Martin Ratcliffe. Martin welcomed Council to Wichita, Kansas, on behalf of his facility, Exploration Place, our host for the Council Meeting and 2002 IPS Conference. After a few short announcements regarding the conference, facilities, and the Kansas weather, the President reviewed the rules and privileges of the Affiliate Representatives regarding Council matters.

The Secretary’s Report on the Minutes of the 2001 Castel Gandolfo, Italy Meeting had been previously published in the March 2002 Planetarian. John Dickenson moved to accept the Minutes, seconded by Dale Smith, and approved by Council.

Shawn Laatsch presented the Treasurer’s Report. Council reviewed and discussed specifics of the 2001 Financial Report and the mid-year 2002 Budget. Discussion of print media, laser and slide service projects and their costs would be held during the Publications Committee Report. There was considerable discussion regarding the 02/03 Proposed Budget. The advantages and disadvantages of a dues increase were debated. President Martin Ratcliffe reported that the Finance Committee is reviewing the issue of revenue and funding issues. Final approval of the Budget would be considered after further discussion during the meeting. John Hare moved to approve the report, seconded by Jack Dunn, and approved by Council.

Past President Dale Smith presented the Past President’s Report as a state of IPS upon the close of his six-year term of service in elective office. Among the accomplishments were:

• conducting three successful Conferences with outstanding vendor support
• finding talented people willing to run for and serve in elective offices and as chairs of committees
• publishing our journal on-time, every time thanks to our Editor and his team of associate editors
• enriching the publications aspect of our organization both in print as well as other media
• establishing the IPSnews service as a means of rapid communication with the membership
• strengthening the work of several committees such as Education and Media
• establishing the Star Partners Fund to provide limited assistance to some planetarians

• refining and organizing our governance documents
• improving the IPS Web Site into a more accessible format
• forging closer ties with other professional societies

Past President Dale Smith challenged Council to address the following items as areas for improvement or attention:

• expand affiliate societies and IPS membership to other parts of the globe
• encourage and expand efforts to assist planetariums in economically distressed areas
• market IPS membership within and beyond the regional affiliates

• ensure that Affiliate Representatives are active participants in the work of IPS all year long
• address the multilingual issues in publications and at conferences
• revitalize the work of many of our committees
• examine the one-affiliate, one-vote concept of Council in the restructuring study

This entire report will be published in the Planetarian.

The President’s Report was delivered by President Martin Ratcliffe. Much of Martin’s attention since the summer of 2001 has been focused on organizing and overseeing a successful 2002 Conference.

• The IPS 2002 Conference has an excellent attendance and vendor support was quick, strong, and supportive.
• The conference will showcase efforts at enhancing the image of IPS with professional societies/organizations and building bridges of cooperation to those entities (such as the American Astronomical Society, the Association of Science and Technology Centers, and NASA.) Several of our speakers, workshops and discussion groups were scheduled as a direct result of these initiatives.
• Martin and Jon Elvert continue to explore links with NASA’s Office of Education and Public Outreach. One of the goals, “to inspire and educate the next generation”, will be the centerpiece of a document in which IPS will be offering input.
• The operation of IPS is dependent upon the work of Committee Chairpersons and Affiliate Representatives. We need dedicated and strong leadership in these positions. The entire report will be printed in the Planetarian.

Affiliate Reports
Written Affiliate Reports were reviewed. In Affiliate News from the floor:
EMPA Representative Dennis Simopoulos
spoke to the EMPA issue of the representation of that regional area. Although EMPA has shrunk in size geographically, it will continue to foster growth in the eastern European region with Greece and Bulgaria remaining members of EMPA.

AMPAC Representative Gabriel Muñoz introduced Gerardo Trujillo Jiménez of the Centro de Convenciones y Exposiciones de Morelia Mexico, Gerardo spoke to the unfortunate cancellation of IPS 2002 in Morelia and expressed the hope that IPS would reconsider visiting Mexico in the future for a conference. AMPAC will be meeting in Morelia in December 2002 and planetarians are invited to attend that conference. Council thanked Gerardo for his efforts to encourage participation in the astronomy and planetarium initiatives in Mexico.

CASC Representative John Dickenson reported the official name change of the Canadian Affiliate to the Canadian Association of Science Centres.

President Martin Ratcliffe reported that Zina Sitkova, RPA Representative could not be present at the meeting, but did send her greetings and best wishes for the Conference and Council meeting.

President Martin Ratcliffe reviewed the draft of the Affiliate Responsibilities Document and discussion by Council followed. Suggestions included:

- Advise Representatives as to the specific time and agenda of meetings so they may plan accordingly
- Determine the percentage of financial reimbursement based on the time spent at Council Meetings
- Assure that the IPS Membership List is distributed to Representatives before the Affiliate Reports are due
- Adopt a common format for the Regional Affiliate map
- Include Affiliate Reports and Maps in the Proceedings

Council Members were urged to send any further comments regarding the Document to Secretary Lee Ann with a copy to Martin. RMPA Representative Aaron McCluen will investigate the digital format as a map template for use by affiliates in their reports.

Martin George moved to accept all Affiliate Reports, seconded by John Hare and approved by Council.

Standing Committee Reports

Standing Committee Reports were presented, reviewed and discussed.

Treasurer/Membership Committee Chair Shawn Laatsch presented the Membership Report. As a follow-up to the 2001 Report, Shawn discussed the global representation of membership and reiterated that some affiliates are very close to the minimum membership for representation on IPS Council. The Benefits of Membership Document has been forwarded to all Affiliates and is available on the IPS Web Site. Thomas Kraupe suggested that Affiliates should include in their Affiliate Report a list of the benefits in their native language and it should be posted as such on the IPS and Affiliate Web Sites.

Stevie Simopoulos questioned the fairness of Affiliate representation in terms of large and small affiliates alike having a single representative. Discussion centered on how to be equitable in the representation process if a change were effected and it was acknowledged that this would be a challenging issue.

President Martin Ratcliffe appointed Past President Dale Smith as chair of a committee to research alternate methods of representation of votes among Affiliates. Thomas Kraupe suggested that the focus should be on building a strong membership within the regional prior to a formal affiliation with IPS.

Other discussion centered on attendance at conferences and how to address low attendance issues. Some suggestions were: hold simultaneous conferences at several locations and incorporate electronic conferencing techniques, alternate the conferences between the United States and international venues, consider holding annual conferences. It was agreed that these are complex issues.

President Martin Ratcliffe reported that little had been accomplished regarding a redefinition of Corporate Membership. Martin will attempt to put a proposal together regarding levels of corporate membership and benefits and forward to Council for discussion. John Hare reminded Martin to be aware of how corporate membership would impact vendor contributions to the Conferences.

John Dickenson presented a report on a revised IPS Information Packet. John and Lars Petersen developed a Membership Guide document to replace the Information Packet. Discussion followed regarding the content of the Guide and a proposal to produce an Annual Report. The Annual Report could contain the information in the Membership Guide as well as other material which may be of interest and value to the membership, such as:

- A review of IPS activities and achievements
- Copies of financial statements
- Committee membership and activities
- Affiliate reports
- A directory of consultants and vendors
- A list of projects under development
- Lists of IPS Fellows and Service Award recipients
- Membership list
- A list of benefits and services

Other discussion centered on how the report would be produced and distributed. John Dickenson moved to endorse in principle the publication of an IPS Annual Report, seconded by Shawn Laatsch and approved by Council. Comments by Council regarding the proposal should be submitted to Membership Chair Shawn Laatsch by February 28, 2003. The Membership and Publication Committees will work together to produce the first IPS Annual Report by the 2004 Conference.

IPS Awards Committee Chair Phyllis Pitluga reported that the President Award Plaque will be presented to Past President Dale Smith at the Conference Banquet. Several IPS Fellow Awards will also be presented at that time with a list of recipients to be published in the Planetarian. Phyllis presented two versions of a proposed IPS Technology and Innovation Award. Council discussed the two versions and supported the following:

**IPS Technology and Innovation Award**

1. An IPS Technology and Innovation Award shall be bestowed, from time to time, by the Society upon an individual, institution or commercial vendor whose technology and/or innovations in the planetarium field have been, through the years, utilized or replicated by other members and/or planetariums.

2. The criteria for such an award call for subjective judgment since there is no easy way to describe more concretely the prerequisites for the nominations and/or candidacy of a prospective recipient. It should be implied, nevertheless, that a nominee for this Award has had a broad, deep, and concrete effect in the profession and its development.

3. Recipients shall be recognized at the IPS Conference at which time they shall be awarded an appropriate plaque indicating their selection.

* Jack Dunn moved to accept the above version of the Award, seconded by Thomas Kraupe and approved by Council.

Because of the small number of IPS Fellows nominated this year, Phyllis suggested that we need to review the policy and manner of selecting individuals. Discussion implied that perhaps reinstating the 10 year longevity statement in lieu of active contributions to the Society might allow more potential nominees. However, a motion to approve this statement failed.

* President Martin Ratcliffe directed Membership Chair Shawn Laatsch to design several proposals addressing membership awards for longevity and present them to Council for discussion by March 2003. Phyllis will be
stepping down as Chair of the Awards Committee, a position she has held since 1984. Council expressed its appreciation and admiration for her outstanding service on behalf of the membership.

**Elections Committee** Chair Steve Mitch submitted his report on the Committee’s selection of qualified candidates for the offices of: President-Elect, Executive Secretary and Treasurer/Membership Chair. For the office of President-Elect:

Martin George
Launceston Planetarium
Queen Victoria Museum
Wellington Street
Launceston, Tasmania 7250 Australia

Professor Tony Fairall
Department of Astronomy
University of Cape Town
Rondebosch 7700, South Africa

For the offices of Executive Secretary and Treasurer/Membership Chair, Lee Ann Henri and Shawn Laatsch agreed to run as incumbents for the offices that they currently hold. No other individuals were nominated for these offices. During the IPS Business Meeting at the IPS Conference in Wichita, Kansas, 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, 2003.

The **Publications Committee** Chair Dale Smith reported on the activities of the Committee. “The **Planetarian** remains the flagship publication of IPS under the able leadership of John Mosley, now in his 15th year as Editor.” In keeping with the redesign initiative of the **Planetarian**, an all-digital layout is now in operation and other design changes will be evident in future issues. The distribution of the IPS 2000 Montréal Proceedings (edited by Marc Jobin) marked two milestones in the history of IPS. (i) it was the first to be distributed primarily in CD-ROM format, and (ii) it inaugurated the new IPS policy of distributing conference proceedings to all members as a benefit of membership.

Several special publications are in various stages of development:

- **The Portable Planetarium User’s Handbook** – Susan Button reported that the publication is ready to be pressed to CD-ROM and will be issued as an insert in the December **Planetarian**

- **Astronomical Songbook** - Jon Bell reported that the project will be distributed on CD-ROM as well as available on the IPS Web Site for members only later this year. Jon gave a musical demonstration of a sample of the contents.

- **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 2003.

- **Small/Portable Planetarium Guidebook in Spanish** (Pedro Saizar, astronomer/educator/author) is a project in the works intended for Spanish-speaking planetarians. Other documents and publications and their status include:

  - The **IPS Directory of the World’s Planetariums** and the **IPS Resource Directory** will be available on CD-ROM format (print option available) as a single volume with “white” and “yellow” pages sections. This early 2003 edition will include the co-publication of the two directories.

  - An “Eloquent Rationale for Planetariums” was presented in its final form to Council and will be available on-line and printed in the **Planetarian**.

  - The redesigned Membership Brochure was reviewed.

Chair Dale reminded Affiliate Representatives that it would be helpful in the production of the Directories to have delegate lists from regional conferences and membership lists from affiliates. Dale reported that IPS keeps three repositories of back publications: the Central Repository is in the Strasenburgh Planetarium in Rochester, New York; the European Repository is in Ghenk, Belgium; the Asian Repository is in Tokyo, Japan.

Council Meeting was adjourned at 5 p.m., to be continued on Sunday, July 28.

**Continuation of IPS Council Meeting, 10:00 A.M., July 28, 2002.**

Additional Attendees:
Planetarium Society of India (PSI) - Professor R Subramanian
Jeanne Bishop - Chair, IPS Consumer Affairs/Astrology Committee
Ken Wilson - Chair, IPS Planetarium Development Group
Michel Hommel - Temporary Chairman, Association of Dutch Speaking Planetariums
Milo Grootjen - Association of Dutch Speaking Planetariums

President Ratcliffe called the meeting to order as a continuation from the previous day. The first order of business was the introduction of Michel Hommel and Milo Grootjen of Amsterdam, representing the Association of Dutch Speaking Planetariums. Michel and Milo presented the formal application for IPS Affiliation and answered Council questions regarding membership, geographic representation, and organizational documents. **John Dickenson moved to grant affiliate status to the Association of Dutch Speaking Planetariums, seconded by Susan Button and approved by Council.**

As a continuation of **Affiliate Business**, Council agreed that the **Affiliate Report Form** should stipulate who the Affiliate represents in terms of geographical area and language reference. **Susan Button moved that the officers review the By Laws regarding Affiliate Representation and draft changes to be presented to Council for consideration, seconded by Thomas Kraupe and approved by Council.**

As a continuation of **Publications Committee Report**, Chair Dale Smith reported that along with the redesign of the **Planetarian**, the Publications Committee and Finance Committee would review competitive costs associated with printing. Council discussed a proposal concerning a **Planetarian** archive that will require a budget, possibly several thousand dollars, to scan the issues. Lars Broman and Thomas Kraupe suggested that the archive be in a word document so it is searchable. John Hare, IPS Historian, suggested that his committee’s project to preserve historical documents and the **Planetarian** archive project serve parallel purposes. **The Finance Committee was directed to propose a budget which would meet the needs of both projects.** With the redesign of the **Planetarian** now in motion, the Editor is encouraging the membership to submit articles with illustrations. **The Publications Committee will publicize the information on how to submit an article and describe the opportunities to contribute to the **Planetarian** as a result of the redesign initiative.**

Lars Broman suggested that each Affiliate should submit a contribution to the **Planetarian**.

Javier Armentia presented the **IPS 2004 Conference Report** on the plans and preparations for the conference in Valencia, Spain. He will address the membership at the Business Meeting and will answer questions relating to the Conference when Council reconvenes on Wednesday, August 1.

John Dickenson, Chair of the **Strategic Planning Committee** summarized the report on the proposal addressing the restructuring of IPS. The proposal is designed to conduct a study of IPS operations to:

- determine member satisfaction with IPS services
- develop a strategic plan for the Society
- recommend options for future governance and structure

The proposal includes a rationale, process for review, request for proposals, terms of reference for study, the composition and functions of the planning committee, the budget, the deliverables, and the timeline for completion of the project. Council discussed the
budget requirements which were of considerable concern, as well as how the consultant would be chosen. John Hare moved to endorse the initiative and authorize $5000 from the IPS Treasury and to encourage the President to seek an additional $5000 from other sources to meet the proposed $10,000 budget, seconded by Jack Dunn and approved by Council.

With the Strategic Planning Committee budget item finalized, John Dickenson moved to approve the 2003 Budget in the Treasurer’s Report, seconded by Thomas Kraupe and approved by Council.

Ethics Committee: vacant

The Finance Committee Report was included in the Treasurer’s Report.

Ad Hoc Committee Reports

Armand Spitz Planetarium Education Fund has a balance of $4764. The Treasurer reported no activity regarding the account this year.

The IPS Consumer Affairs/Astrology Committee Report was submitted by Chair Jeanne Bishop. Jeanne is working on an article concerning the naming of astronomical objects. Dr. George W. Collins II, Astronomy Professor at Case Western Reserve University will assist Jeanne with the accuracy of the article, which will then be submitted to the Planetarian. The Committee continues its work of informing catalogue editors that carry advertisements for companies “selling stars” about how stars are named in truth.

The IPS Education Committee Report was submitted by Chair Gary Sampson. The “Focus on Education” Column has appeared in the last four issues of the Planetarian. Co-Editors are Kathy Michaels and Francine Jackson from the U.S. and Marie Rádbo from Sweden as the European correspondent. The on-line Lessons project under the leadership of Brock Schroeder with assistance from Geoff Holt has posted a series of lessons on the IPS Web Site. Jon Elvert and assistant Chris Janssen have continued to update the 200 web sites from Jon’s original list. International links are still being sought. One of the future goals of the Education Committee is to offer teacher astronomy workshops on the day prior to the opening reception at IPS Conferences. Gary will be retiring from his position as Chair of the Education Committee and will place its future in the able hands of April Whitt. Council expressed its pleasure at the great foundation that Gary has built for this committee which highlights our central role as astronomy educators.

The IPS History Committee Report was delivered by Historian John Hare. John continues to pursue the preservation, documentation, and display of IPS historical items as well as Affiliate items of interest. The committee reminds members to please pass on any relevant materials to Chair John Hare.

Dennis Simopoulos suggested that we need to profile and promote our past conferences in order to generate a “Sense of History of IPS”. Suggestions included:
- documents of past conferences
- Photo Gallery of past conferences
- solicit articles dealing with certain aspects of the history of IPS and the Planetarium Community
- featured articles of IPS 10 Years Ago, 20 Years Ago
- a regular “Historical Feature” article in the Planetarian
- Personal Musings of Conferences Past

The Language Committee Report was presented by Chair Martin George. Martin reports that most translation software is considered inadequate for translating detailed text. The Committee will continue to monitor the technology. Several versions of the membership brochure are now available on the Website in different languages. The Committee intends to explore providing translation services at the conferences by setting up a system in which there are two translators for each language, with each pairing consisting of a native speaker in each of the two languages. Marc Moutin suggested that perhaps a survey of the membership would reveal more details as to what the membership requires or expects in terms of translation services.

The IPS Planetarium Development Group chaired by Ken Wilson is making progress on the IPS Planetarium Development Guide. Ken could still use volunteers for authors interested in the following topics: Special Effects and Multi-Image; Sound Systems; Interior Domes; and Wide Angle Film Systems. Ken proposed that the document be posted to the IPS Web Site (the completed, peer-reviewed chapters with the approval of the Publications Committee) along with a listing of the unwritten chapter topics in order to encourage additional volunteers to come forward. In essence, the IPS Planetarium Development Guide would become a living document on-line, with revisions occurring when needed. Ken will include an educational purpose clause in the documentation so for copy purposes. Council agreed that a web based format would be the preferred medium for dissemination to the membership.

The meeting was adjourned until Thursday, August 1, 2002.

Continuation of IPS Council Meeting 7:30 AM, August 1, 2002.

Additional Attendees:

Southwestern Association of Planetariums (SWAP) - Wilgus Burton for Mark Sonntag
Rocky Mountain Planetarium Association (RMPA) - Christine Shupla for Aaron McEuen
Prof. R. Subramanian - Planetarium Society of India (PSI)
Michel Hommel - Association of Dutch Speaking Planetariums
Milo Grootjen - Association of Dutch Speaking Planetariums
Tanya Hill - Melbourne Planetarium - Bid for IPS 2006
Jose Carlos Gurrado - Valencia, Spain
Manuel Toharia - Valencia, Spain

The Media Distribution Committee Report was given by Chair Thomas Kraupe. Thomas reviewed the reorganization of roles of committee members in the Slide Distribution Service in order to insure the quality, timeliness and production of the slides. Updated information and order forms will be posted on the IPS Web Site and in the Planetarian. The committee has been successful in obtaining HST Press Photo releases for European planetaria as well as distributing an ESA SOHO Exploration of the Sun CD-ROM to all IPS members. Projects in progress include:
- ESA/ESO Astronomy Exercise Series on CD-ROM - student exercises using observations from HST and ESO Telescopes utilizing a cross platform PDF-format and available in 7 languages.
- the ESA Hubble Image Collection on CD-ROM - Jpeg previews in HTML overview structure and the highest resolution tiffs available. This project is a result of a collaborative effort involving the European Association for Astronomy Education, the European Consortium of Science and Technology Exhibits and IPS.
- IPS Video Release # 3 - The SunSOHO and Beyond on DVD - the first IPS DVD

The Committee is in the planning stages for other projects including the following:
- ESO/VLT Images - these images will be available for the IPS Slide Service as well as CD-ROM.
- Asteroids and Comets - a DVD focusing on NASA’s Stardust and ESA’s Rosetta Missions as well as imagery from NEAR Shoemaker and the Galileo flybys of asteroids.

IPS Lasers in Planetariums Committee Chair Jack Dunn reported on the committee’s work to date. A section on lasers was submitted to Ken Wilson for inclusion in the IPS Planetarium Development Guide. Jack reported that lasers are now competing for time in the planetarium programming schedule and budget with other forms of technology. He
anticipates conducting more chats on laser issues led by Rovy Brannon on the planetarium.net site.

**Outreach Committee** Chair Christine Shupla reported that the IPSnews Service is very healthy with a current list of 516 addresses. The Service has primarily been used to inform the membership of IPS Conference and astronomy updates as well as IPS Job Service announcements. Chair Christine would like to see more committee chairs use IPSnews as a means of informing members of the purpose and work of their committees and to encourage participation in the committees. Christine, who is anticipating that the birth of a baby will be keeping her busier than usual, will be handing over the duties of IPSnews coordinator to John Schroer. Outreach to other organizations is continuing. Christine reported that several IPS members attended the ASTC conference and DPS (Division of Planetary Sciences) conference as representatives and participated in panel discussions. The committee has produced a document listing the following information:

- Planetariums Interested in Collaborations
  - a partial list of a few planetariums that would like to collaborate with scientists
- Possible Collaborations with Planetariums
  - a list of methods by which scientists can include planetariums as educational partners in their science grants.

The committee will continue to pursue partnerships and cooperative ventures with organizations sharing a common goal with the planetarium field.

Chair Susan Reynolds Button presented the **Portable Planetarium Committee Report.** An update on *The Portable Planetarium Users Handbook* was included in the Publications Committee Report. Susan reported that a portable planetarium business owners’ group has been established and a new survey is being distributed. Susan reported on a number of activities by portable planetarians and manufacturers as well as workshops and contributions to conferences. The latest news regarding portable planetaria is published in the *Planetarian* column “Mobile News Network”, so please send your news to Susan.

President Martin Ratcliffe reported on behalf of Steve Tidey, Chair of the **IPS Script Contest Committee.** Due to personal commitments, Steve was unable to administer the contest this year.

* President Martin Ratcliffe will draft a report addressing some of the issues related to the contest.

The **IPS Professional Services Committee** report was submitted Chair John Dickenson. Steve Fentress, Chair of the **IPS Job Information Service Subcommittee**, reports that in the last year he has posted 38 jobs, and all but one was in the United States. Steve suggests, based on his experience with the career market in planetariums, that a good strategy for job seekers is to also look at the web pages of institutions in their geographical area of preference, searching for jobs that match their skills and interests. Dome-L is an excellent source for job announcements. Steve will continue to post to our Web page and also to IPSnews.

The **IPS Technology Committee** chaired now by Jan Silner, was reviewed. As a new chairperson, Jan envisions two primary objectives of this committee:

1. to help planetarians use, maintain, and upgrade their devices
2. to help utilize new technologies in the planetarium field - collect information and provide independent recommendations about domes, technologies, facilities, etc.

To accomplish these objectives, Jan proposes to:

- set up databases of vendors, spare parts, technical solutions
- discuss with vendors their technical support for older systems
- set up databases of products useful in the planetarium field
- revise the IPS Technical Committee Web page

John Hare, speaking on behalf of Jan, suggested that vendors would be welcome to serve on the committee and would certainly provide expertise and another perspective which would benefit the committee’s work.

Chair Tom Callen submitted the **IPS Web Committee Report.** The bulk of the year’s work was devoted to maintaining and updating the site. The Jobs Bank page was redesigned to make it more efficient and changes were made to allow for easier posting of job announcements. Tom also re-standardized web page content as well as removed non-standard HTML code tags to ensure that all pages are read the same way by all web browsers. Committee Chairs are encouraged to update their pages and to provide information for posting on the web site. Tom and his committee will be introducing new features and improvements to the Website.

In a continuation of business from Sunday, the **IPS Awards Committee** submitted a list of IPS Fellows for nomination. *Motion by John Dickenson to approve the Award nominees, seconded by Thomas Kraupe, and approved by Council.* The recipients of the IPS Fellows Award will be presented at the Conference Banquet.

**IPS Conferences**

In a continuation of business from the previous Council session, discussion and review concerning upcoming conferences progressed.

**IPS 2004 Valencia Conference:** the theme of the conference is still being discussed as is the total cost. Several council members expressed concern about translation services and Martin George, Chair of the Language Committee, said they were looking into several alternatives.

**IPS 2006 Conference** No one from Vienna was present to provide further information on their bid document to host the 2006 Conference. *Council directed President Martin Ratcliffe to request more information regarding missing items from the bid requirements and then pass them on to Council for review.*

Tanya Hill and Martin George presented the Melbourne Australia bid documents. A review of the facilities, conference agenda, accommodations, travel requirements, and costs prompted discussion and questions. Tanya and Martin will make a presentation to the membership at the general meeting during the conference.

**2003 IPS Council Meeting:** President Elect Jon Elvert announced that the next IPS Council Meeting will take place October 3-5, 2003, in Jena, Germany. Details will be forthcoming.

**Old Business**

The Conference (Guidelines) Planner as it stands at this point was reviewed by Dale Smith. Council was requested to send comments on the document to Dale by September 1, 2002. The entire document will be ready for approval by Council before the 2003 Council Meeting.

The remaining Old Business was covered under Committee Reports.

**New Business**

Jack Dunn introduced the following proposals on behalf of the International Dark Sky Association:

- IPS become an organizational member of IDA
- IPS and IDA exchange ads in their respective publications
- create a light pollution committee in IPS to further establish communication
- make the IPS Mail List available to IDA for the purpose of sending out information on the organization and light pollution education
- establish a column or highlight the light pollution issue in an existing column of the *Planetarian*

* At the suggestion of President Martin Ratcliffe, Council agreed to have George Fee-
nor act as Chair of the Light Pollution Initiative Subcommittee under the auspices of the Outreach Committee. The subcommittee will report to Council in October of 2003 on the progress addressing the proposals.

As a continuation of the Affiliate Reports, Professor R. Subramanian, President of the Planetarium Society of India, briefed Council on the status of the affiliate. PSI is actively recruiting new members in India, Thailand and the surrounding areas. They have participated in programs to popularize astronomy, promote the planetariums, and support the education of students in the study of astronomy. Many of the planetariums were involved in observing sessions for the Leonid Meteor Shower, and The Day of the Planetarium will be celebrated by much of the PSI membership.

John Dickenson, on behalf of Council, praised Conference Host Martin Ratcliffe and the staff of Exploration Place on their outstanding effort, support and work on the 2002 Conference. John Dickenson made the following proposal:

As a result of the unique circumstances of this conference, and in special recognition of the short lead time for preparation for the conference, IPS will make a $5000 Grant to Exploration Place on the condition that the net revenues from the Conference exceed $10,000. If the net revenues are less than $10,000, then any amount over $5000 be awarded to Exploration Place as a grant, and that a plaque or other permanent marker be placed in Exploration Place in recognition of such.

Because of Martin’s position as Host as well as President, President Elect Jon Elvert took the Chair and Martin left the room during Council’s discussion of the proposal. Considerable discussion took place regarding the proposal, its implications, and its timeliness. Among those points relating to the issue were:

- how much revenue would be generated by the conference
- what would sponsor reaction be to the award in terms of support at future conferences
- conference fees are too high, would this not signal that they should be lower if there is a high profit
- other organizations use conferences to generate funding - so it is an appropriate mechanism
- the proposal is premature - could this not be considered after the final conference budget is resolved
- this is a matter for deliberation for the Finance Committee and then to be considered by Council as a whole
- registration Fees for conferences should not be influenced by profit margin issues
- would this proposal influence a host to set the fees higher to gain a profit
- this could be an incentive for hosts to be creative in bringing in revenues
- IPS should consider several models for conference planning and revenue sources
- Wichita is a model of success and should be recognized as such
- if hosts knew they would reap the rewards of profits, it would increase the number of potential hosts
- John Dickenson moved that the proposal be accepted, seconded by Jack Dunn. Approved by Council on a vote of: 12 - Yes; 3 - No; 5 - Abstain; 3 - Absent (out of the room).

Loris Ramponi brought to Council three proposals for consideration:

Proposal 1:
IPS produce an IPS Update Video for use by affiliates at regional conferences

Proposal 2:
Affiliate Reports be published in the Planetarian (odd year) and in the Conference Proceedings (even year)

Proposal 3:
IPS publish a calendar of events in the Planetarian which would list the dates of affiliate conferences and other events

* General discussion of the proposals resulted

in Council directing the President to move the items to appropriate committees for action. The following suggestions were made regarding the proposals:

- the Media Committee will investigate Proposal 1 with respect to using a CD format
- incorporate the Affiliate Reports in Lars Broman’s “International News” column in the Planetarian
- publish the affiliate maps in the Planetarian as well as on-line
- Affiliate Reports should be in the native language as well as English
- publish the affiliate calendars in Lars’ column as well as contact information

Dennis Simopoulos reminded Council of the need to review the Standing Rules regarding Affiliate Organizations, in particular:

- Section II.A.2.ii, which addresses the minimum number of members of a potential affiliate organization
- Section II.C.1-3, which addresses voting representation
- Section X.1.2, which addresses travel expenses and reimbursement for representatives attending Council Meetings.

President Martin Ratcliffe directed Secretary Lee Ann Hennig to coordinate the discussion among officers regarding revisions to the Standing Rules. Discussions would be copied to Council Members for further comments.

With business completed, Christine Shupla moved to adjourn the Council Meeting, seconded by Martin George and approved by Council.

Respectfully Submitted,
Lee Ann A. Hennig
IPS Secretary
October 28, 2002

Addendum:
At the General Business Meeting no additional nominations from the floor were made to the slate of candidates for office.

(Dale Smith continued from page 41)

• we need to become much more language-friendly to non-speakers of English, not only by continuing abstract exchange with non-English affiliate publications, but even more by getting translation software on the web site, by considerably expanding other-language pages on the web site, and by providing translation help at conferences. Efforts in these long-standing goals have been stalled by years of committee inaction, but I am confident that the new Language chair will make rapid progress in these areas.

• we need to revitalize the work of the Technology Committee which has been dormant recently. We should encourage and support the work of the new Chair.

• we need to revitalize the development of the web site, which done right can help represent us effectively to the world, can be a recruiting tool, and can be a real resource for our members both in the public pages and in the members-only area. I believe this represents a list of practical goals that can be largely accomplished or at least substantial progress made within two or three years.

It has been a great pleasure to serve IPS as future, current, and now past president and to work with such talented and dedicated colleagues. I look forward to future work in areas where I can be of help.
The Planetarium: A Rationale

At its 1999 meeting, the IPS Council authorized the creation of an “eloquent rationale” for the existence of planetariums. Jim Manning, John Stoke, and Christine Shupla contributed essays that were edited together by Gary Sampson and Dale Smith to create the text presented here. At its 2002 meeting, Council accepted this document as an official statement of IPS.

Why did not somebody teach me the constellations, and make me at home in the starry heavens, which are always overhead, and which I don’t know half to this day?

–Thomas Carlyle, 1795-1881

The human fascination with the cosmos springs from our earliest awareness of the natural world. Our quest to understand this world and the laws that govern it—and the application of this knowledge to our daily lives—forms the basis of science, and astronomy is the oldest and most inclusive of the sciences. Advances in astronomy have paralleled human development and contributed to our growth into a technological civilization capable of comprehending the cosmos that gave us birth.

In our efforts to explain the natural world, we humans have found it necessary to construct models, both mental and physical, to simulate, explain, and explore the workings of the cosmos. Some of these models were physical representations of the sky and the objects in it. The modern planetarium is the best of these models. The audience sits under a hemispherical dome. A central projector turns the dome into the starry sky and can show all its patterns, motions, and cycles as seen at any time and from any place on Earth.

Planetariums unite a learning laboratory and a performance space. They are an unparalleled teaching tool for reproducing the night sky and for revealing the constellations and the motions and cycles of the sky that are a basic part of our natural environment. Moreover, enhanced by technologies ranging from slide projection, laser imagery, and multichannel sound to fiber optics, three-dimensional digital projection and all-dome video controlled by computers, the modern planetarium is a captivating audiovisual environment in which the universe beyond the backyard view is also brought inside and portrayed as the active and exciting place that modern discoveries are revealing it to be. Today more than ever, the planetarium can capture the whole exciting spectrum of astronomical discovery and take audiences on journeys from the turbulent atmospheres of the planets to the edges of black holes.

An estimated 80 million visitors a year attend planetarium programs in more than 2,000 permanent planetariums and hundreds of portable planetariums around the world. These programs incorporate new technologies and educational paradigms that make the modern planetarium a flexible and versatile teaching environment that can be used in multiple ways and fill a variety of niches in both formal and informal educational settings. Visitors are drawn to planetariums to experience the wonders of a night sky brought inside, to learn about the science behind the cosmic sights, to put headline discoveries into a meaningful context, and to better understand their own place in the cosmos. Because planetariums are so versatile, interdisciplinary uses are legion: musical concerts, poetry under the stars, and live theatrical performances enrich the schedules of many planetariums.

But the lure of the planetarium goes far beyond the public’s fascination with the universe. The modern planetarium also fulfills a critical need to improve scientific literacy among a diverse populace. Planetarium programs inspire their audiences to study, to understand, and to appreciate the universe we inhabit. In helping to improve general science literacy, the planetarium is a key player in work toward the goal of achieving an enlightened society capable of making informed choices about science and technology and about the future of our species and our planet.

In the words of one planetarium educator, “There are other means by which information about the universe can be conveyed. But none so befits the enormity and grandeur of the subject, none is so directly analogous to the sky itself, as the vast dome of a planetarium.”

The lament of the 19th-century English author Thomas Carlyle—“Why did not somebody teach me the constellations?”—seems even more relevant today as our modern technological civilization increasingly severs our connections with the natural world and obscures the sky that so fascinated our ancestors. The world’s planetariums and those who operate them strive to encourage and strengthen these connections to the larger cosmos in the minds and spirits of the children and adults they serve. In doing so, planetariums constitute a vital force in the cause of astronomical and scientific enlightenment, as they offer student and visitor alike knowledge and understanding and a sense of place in a vast and wondrous universe.

Contributors and References


Editors: Smith, Dale W., and Sampson, Gary E.
Simplicity

sim·plis·i·te  n.
The property, condition or quality of being simple. Absence of complexity. Clarity of expression.

ElectricSky®, the world's first and only single-projector full dome video system for large planetariums.

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In what state, technologically and sociologically, would the planetarium profession be today, had we, as a worldwide civilisation, not invented and developed space travel to its present level over the last 45 years? Remember, planetaria in their modern configuration had been around for several decades prior to Sputnik, but the satellite’s shock launch gave the profession a massive boost in the arm. In the first few years after Sputnik a huge number of domes were built, and since then we planetarians have been the cheerleaders for a multitude of space missions and other stuff related to space travel.

[Phone rings]

We have a respondent. Hello, you’re through to Forum...

Hi, guys! Since the beginning of humanity’s interest in space, we have been looking “up” at space. It was considered to be a place above us. Out There. When space travel began, we came to see our home more as an island rather than the foundation of the cosmos. While scientist knew otherwise, the ordinary folks going about their lives saw only the Earth below, and the stars above. The famous Apollo photograph showing for the first time, the entire Earth, contributed substantially to the changing perception of our place in space. Planetaria from before this era were oriented towards looking up at the sky from the Earth, but after this time they attempted to place the audience in space, looking down at the Earth, or other planets below them. The tilted dome concept was an attempt to create this viewpoint. The classic view of a planetary segment at the front of the dome with the stars above, places the audience in space. This shift in perspective is the most significant change in the planetarium field caused by space exploration.

John Young
Planetarium Producer
Reuben H. Fleet Science Center
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Considering the wealth of scientific knowledge that has been obtained, let alone the excitement of manned and unmanned space exploration in the past 45 years, it is difficult for me to imagine a world without it. Indeed, it was inevitable that if Sputnik had not flown when it did, it would not have been long before some other country, likely the United States, would have launched the first satellite into space. However, leaving the element of vehicular space exploration out, for the sake of this discussion, is interesting. For most of us in the planetarium field, the advancement of astronomical knowledge by any means is important and exciting. Ground-based astronomical science would have most certainly continued to advance. Casual observational astronomy by students and their families may also have prospered at normal levels.

Planetaria thrive by developing and presenting programs from a variety of astronomical sources. Perhaps there is a good chance that those facilities which remained in touch with science research by other means, and those which continued to develop imaginative, interesting and entertaining programs, may well have continued to prosper normally. On the other hand, there may also be a case for the thought that without the exciting evolution of rockets and space vehicle research, there may not have been a large public and political interest in the building of new school and community planetariums. School planetariums would have been affected the most.

It is ironic that the greatest advancement in science education in the United States was not brought on by our own initiative, but largely a “space race” competition brought on by the Soviets. This brings up another interesting question: If the United States had been first to launch a satellite into space, would we have had the same push for the advancement of science education in America?

Dave DeRemer
Charles Horwitz Planetarium
School District of Waukesha
222 Maple Avenue
Waukesha, Wisconsin 53186-4725 USA

Our Producer informs us we only have those two respondents this time. Hey, my brother has three words to say to that: ‘Ba- lo ney!’ But it’s true. No, it’s not ‘Boooooogus!’ It’s a pretty good puzzler, but people just didn’t get round to contacting us this time. Hey, it happens.

We’ve thought about this next one long and hard... well, no, not really. We scrambled around the studio just now, madly hurling ideas at each other while you were listening to a jingle! So here’s the Forum puzzler for next time, which, spookily, is the flip side of the one we’ve just had:

Looking to the future, if China succeeds in its stated objective of having a permanently occupied lunar base by approximately 2010, will this development lead to another spike in the building of new planetaria similar to that which was evident after Sputnik was launched in 1957?

Send us your contributions by email, or written on the back of a first-class return ticket to Hawaii by April 17. The mailing address above is nowhere near Cambridge, Massachusetts (our fair city), but we’re working on that!

Well, it’s happened again, you’ve read this column all the way through. Didn’t take long, did it? We’ll have a longer one for you next time, I promise. Before we go we’d like to thank our new Russian school bus driver, Pickup Andropov.

Until next time, don’t write scripts like my brother...
Local teachers get a workshop too!

In addition to the student component of the project, a teacher workshop will be held for first-year-teachers in the fall of 2003. Along with a full day’s activities designed to learn about the Hubble Space Telescope and its astronomical discoveries, the workshop participants will be expected to create a bulletin board in their classrooms to highlight the Hubble Heritage collection and to display its monthly image. Teachers will be expected to encourage their students to compose original poems on an on-going basis.

Who’s paying for all this?

The poetry project is funded by a grant from NASA’s IDEAS program. The following statement of purpose from the IDEAS web site provides some background.

The IDEAS Grant Program is administered by STScI on behalf of NASA’s Office of Space Science Education and Public Outreach Strategy. It provides start-up funding for innovative, creative education and public outreach projects that feature active collaboration between astronomers/space scientists and education professionals. The IDEAS objective is to enhance science, math and/or technology education in the U.S. for students, teachers and the general public by promoting partnerships that explore translating astronomy and space science in ways that will educate and stimulate the interest of students, teachers and the general public. More information about the IDEAS program, including abstracts of winning proposals can be found at ideas.stsci.edu.

You can visit the Maryland Science Center on the web at: www.mdsci.org and the Baltimore City College High School at: knight.city.ba.k12.md.us.

Credits


Editors

Smith, Dale W., and Sampson, Gary E. C.
There are seven wonderful stories about the Milky Way in this book. Listed below is the Table of Contents:

- The Seventh Night of the Seventh Moon - Japanese
- The Milk That Flew Across the Sky - Greek
- Yukaisdahi, Which Awaits the Dawn - Navajo
- The Stellar Dance - Australian Aborigine
- A Raiment for Rangi - Maori
- The Girl Who Threw Wood Ashes Into The Sky - Kalahari San
- Nagaik, The Path to the Place of Abundance - Toba Indians of Argentina

And the section called “Poetic Astronomy 2.43” reads: “There is a certain circle among the stars, white in color, which some call ‘milky.’ Eratosthenes says that on one occasion, Juno unknowingly suckled the infant Mercury, but when she recognized him as Maia’s son, cast him away from her, and thus the brightness of the spilled milk appeared among the stars.

“Others say that [the infant] Hercules was placed at Juno’s breast as she slept and that when she awoke, what we recounted above occurred. Others say that Hercules, in his great eagerness, took so large a quantity of milk that he was not able to contain it in his mouth, and that the [galactic] circle shows what was spilled from his mouth. Others say that at the time when Ops brought to Saturn a stone in place of the child she had borne, he ordered her to offer it milk. When she squeezed her breast, the milk that flowed forth formed a circle, as we recounted above.

“The galactic circle was one of the eleven heavenly circles distinguished by the ancient Greeks. In addition to the galactic circle, these included the equator, the tropic of Cancer, the tropic of Capricorn, the Arctic Circle, the Antarctic Circle, the horizon, the meridian, the zodiac and the two colures (two perpendicular lines running through both poles).”

In a final “Commentary” the author states: “The Galaxy was identified by Greek authors as early as Parmenides; however, the few myths associated with its formation occur no earlier than The Constellations. In addition to the two myths recounted above, there is one myth that explains the Milky Way as formerly marking the path of the Sun, who changed his course in abhorrence at the deed of Thystes (slew his son and placed the cooked parts before the gods), and another that explains the Milky Way as the ashes of the scorched heavens left in his path by Phaethon.

“Poetic fancy saw in the Milky Way a road, either the road of the gods, or the road beside which stood the palaces of the gods, or the road traveled by the souls of the dead, or the path of the Sun.

“The Milky Way was known to the Babylonians, who saw in it a serpent or a rope. The Egyptians saw in the Milky Way a reflection of the River Nile. The designation of the Galaxy as Milk or Milky was, apparently, original with the Greeks. (A Modern Greek myth explaining the Milky Way as the trail left by a grain-thief as he fled in haste, is said to derive from an Ancient Near Eastern Story which may have been known to Eratosthenes.)”

The following two poems about the Milky Way can be found in this book.

We are the stars which sing.
We sing with our light.
We are the birds of fire.
We fly over the sky.
Our light is a voice.
We make a road
For the spirit to pass over.
-Traditional Song (Passamaquoddy)

It is above that you and I shall go;
Along the Milky Way
You and I shall go
Along the flower trail
You and I shall go
Picking flowers on our way
You and I shall go.

-Anonymous (Wintu Songs) Translated in 1935


Mr. Bruchac writes, “Among the Abanaki, this story is told. After you die you travel..."
along the Milky Way, the spirit trail that leads into the sky. But as you travel you will come to a place where there is a break in the trail. There is a log across that deep chasm, and you can walk over that log. But it is held firmly in place by all the dogs that you have owned on the earth. They hold the log with their teeth. If they hold it firmly, then you will be able to get across.

"Those dogs look at you as you step onto that log. They remember how you treated them when they lived with you. If you did not treat them well, if you beat them or starved them, they will not hold the log steady. You will fall, and you will continue to fall."

(The Abanaki are located in the North-eastern United States)


This book tells us that a Tanabata Festival is held on July 7 each year. This festival is held on July 7 each year. This festival is based on a legend associated with Weaver Girl (Vega) and Cowboy (Altair). The girl and boy were forced to live on opposite sides of the Ama River (Milky Way) by the Heavenly Master as a punishment for spending too much time together and not doing their work. They could see each other on only one day, July 7th, each year. If it was rainy, though, the river would flood and they would not be able to cross it.

In the evening the couple go down together in the west and then on July 7th they rise together to get ready to be together for that night.


This book has beautiful illustrations. It begins, "Long ago when the world was new, there were not many stars in the sky.

"In those days the people depended on corn for their food. They would grind it and keep it in bins behind their homes. Bread made from the cornmeal often kept them from starving during the long winter months.

“One morning an old man and an old woman went to their bin for some cornmeal. What they found there upset them very much. The lid was off the bin, the level inside had dropped by a handspan, and there was cornmeal scattered over the ground. Surely no one in the village would steal from the elders! Who could the thief be?"

When their grandson heard of this he decided that he would catch the thief. That night he hid near the bin and waited. He was surprised to see a strange giant dog was responsible for the missing cornmeal.

When he told the people about it they were not able to think of what to do so they sought advice from a wise old leader, ‘Beloved Woman.’ She told them that this was no ordinary dog; it was a spirit dog and they must be careful of its powers. She told them to bring all their drums and rattles. That night they would hide by the bin and make a great noise to scare the dog off. When they saw the spirit dog they were frightened but when he began to eat they made a tremendous noise which scared the dog. He ran away and as he ran cornmeal spilled from his mouth as he ran up to the top of a hill and into the sky.

The story ends with, “It ran across the sky until the people could see it no longer. But the cornmeal that had spilled from its mouth remained behind as a great band of light across the night sky. Each grain of cornmeal that fell became a star.

“Just as the Beloved Woman had said, the great dog never returned to bother the people. But where it ran across the sky was left that pattern of stars the Cherokee call Gil’liusan stanun’yi (Gil-LEE-ooot-stan-UNH-yye), ‘the place where the dog ran.’ That is how the Milky Way came to be.”


There are several comments about the Milky Way in this book:

“The Milky Way has been thought of as the pathway to the home of Zeus/Jupiter. It was also considered the path of Phaeton’s wild ride across the sky in the sun chariot.”

“The Chinese and the Japanese saw it as the silver celestial river.”

“The Norsemen believed the Milky Way to be the path traveled by the departed souls going to Valhalla. In ancient Wales it was the silver road to the castle of the king of faeries, Caer Groyden.”

“The Algonquin Indians believed it to be the path of the departed spirits on their way to their villages in the sun. Their path is marked by the stars, which are campfires that guided them along the path.”


This book is a good source for understanding some other cultural connections to the Milky Way.

Here is an excerpt from page 140, on Shamanic symbolism: “In the temperate latitudes, where the pole governs the sky, the shaman climbs to the northern stars. Those who live near the equator, however, need not glorify the celestial pole. Yet their shamans, too, journey to the sky and to another zone of cosmic order. In the Colombian Amazon, for example, the Tukano Indians travel beyond the Milky Way. Many equatorial peoples of South America use the Milky Way to organize the sky. Among the Tukano, the Milky Way is the sky’s chief structure. It arcs up from the underworld and flows east to west over the earth. Because it intersects the horizon and reaches into the sky, it is the channel of communication between the powerful spirits of the upperworld and the people of the earth.”

On pages 175-176 we can learn about the Andean concept of the Milky Way: “The Milky Way establishes intercardinal horizon directions; it rolls up each night from the eastern horizon like a cresting wave and eventually arcs through the zenith. One end of this diffuse band of light intersects the southeastern horizon, while the other drops out of sight in the northwest. Because the axis of the Milky Way is skewed with respect to the earth’s rotation, its orientation changes. About 12 hours later, its other half transits overhead, and then the band runs from northeast to southwest. All four intersections with the horizon provide two more interesting cosmic axes – like the main routes and canals of Mismanany. On the ground everything intersects at the Crucero; everything crosses at ‘the Cross.’ In the sky the corresponding point is the zenith.”

“The zenith is one of the organizing principles of the Andean world, and it establishes the character of sacred space.”

“In the Andes the Milky Way is a river. ... Alpha Crucis ... was associated with the ‘center’ of the Milky Way, the place where the oppositely flowing ‘waters’ of its two halves collide. The Milky Way is bright there, and its light is the ‘foam.’”


The story in this book begins, “Altair and Vega fell in love in heaven. But when the Queen Mother heard of it, she was angry and punished Altair by sending him to Earth to herd cattle. Taurus tried to help and was sent to Earth to become an ox-beast of burden.”

Altair’s kind brother took him in but the brother’s wife was very cruel. Altair had to “graze the ox, sleep in the barn and eat slops while she ate the good food while he was away.”

Taurus, the OX, advised Altair to come home early so that his sister-in-law would have to share the good food. After trying this
successfully for several days the sister-in-law told him he would have to live somewhere else. Taurus told Altair to “ask for him (the ox) as his share of the property in the place of room or fields.”

The weaving maid never stopped thinking of Altair. On day she saw some magpies and took this as a good sign. She left the “Palace of Heaven” and went to earth to wash her clothes. There she saw Altair and Taurus. The ox told Altair to play his flute and the music drew the maiden closer. They married and had two children, a boy and a girl.

They lived as a happy family until the “Celestial Dog” found them and reported back to the Queen Mother. The Queen Mother sent the god “Erlang” to deliver a message. It said that if the weaving maid did not return to heaven her family would suffer, so she returned. The ox gave Altair a horn which turned into a magic boat which took him and the children through the thick clouds. They followed a shuttle that Vega had thrown to them. They approached the South Heavenly Gate only to be turned away by the Heavenly Generals.

“The Queen Mother saw them approaching and drew a line between the husband and wife with her jeweled hair pin. Water flowed in, forming a turbulent river—the Milky Way—that separated them forever. The cowherd went nearly mad with anxiety. If he could not, Sympathetic magpies built a bridge across it so that once a year on the night of the seventh day of the seventh lunar month the couple could meet. And to this day they appear as two stars, one on each side of the Milky Way, facing each other sadly.”


This is another informative book that also contains references to the Milky Way.

According to the author, in the Lakota tradition the stars are “the holy breath of the Great Spirit.” The sky and earth events mirror each other and sacred power can be drawn down to earth if the people are attuned to the will of the Great Spirit.

Although in the Lakota culture there are many variations of the story about what happens after death, there are some common themes. In all the versions there is a belief in a spirit that travels the Milky Way, “the road of spirits” to “the place of the spirits.”

On page 23 of this book it says that the place of the spirits, “not only provides hope for (or rather knowledge of) a life after death, it provides an ideal. In traditional pre-reservation Lakota society the People strove to mirror this ideal of the good life in their everyday family existence ...”

11. Another resource to seek out is a book suggested by Jeanne Bishop. The book is very old and is called *Stars in Our Heaven* by Peter Lum.

Conclusion: It is most interesting to examine cross-cultural references to the Milky Way. Presenting the Milky Way in this way, in the planetarium, may encourage students to try and find it in the real sky. Pointing out that it is not visible unless you go to a really dark location will promote thought about the impact of light pollution. Some students might even be inspired to help save the Milky Way! You can direct them to the following websites:

- http://darkskyinstitute.org

II. Using Glow-in-the-Dark Materials in Planetarium Programs

Jeanne Bishop (Westlake School District in Westlake, Ohio, USA)

Jeanne showed us that there are many things one can do with glow materials in planetarium programs. The first 20 participants to sign up for this portable planetarium workshop received a package of glow materials for use in their own planetariums. Jeanne demonstrated how to use glow-in-the-dark slinkies to illustrate light waves. She used glow fake fingers to point to stars and constellations and glow bracelets to “frame” them. We used glow pinwheels to simulate a Big Bang and modeled distances between celestial objects with glow spheres and glow putty. Glow stars or papers can be taped to the dome to mark the sun’s apparent motion. When you make the path of the sun “glow,” by charging the markers with a flashlight, students can then compare the paths of the moon and the other stars to the sun’s path.

III. Treasure Island

Dayle Brown (“Pegasus Productions” in South Bend, Indiana, USA)

In this presentation, we explored some of the navigational tasks that would have been encountered by the characters in the fictional trip to “Treasure Island” by Robert Louis Stevenson. We worked in small “crews” to seek treasure. We determined our approximate latitude on Earth by measuring the altitude of the North Star using a model of a mariner’s astrolabe. We determined the approximate longitude given, the time in Greenwich at our local “noon”, and plotted our estimated position on earth by means of a map using latitude and longitude. The winning “crew” received “treasure” (gold foil-wrapped candy).

Dayle modified this program from Lesson 16, Volume 2, “Activities for the School Planetarium.” Written by Gerald L. Mallon. (Lawrence Hall of Science University of California, Berkeley, CA and the New York Hall of Science, Flushing Meadows Corona Park, New York, USA) The Quadrant design by Alan Gould, was also modified from Volume 10, “Who ‘Discovered’ America?” of the same series.

A Manual for the Sunspotter

Learning Technologies, Inc. (Address: 40 Cameron Avenue, Somerville, Massachusetts 02144 USA; Phone: 1-800-537-8703 (U.S. only) or 1-617-628-1459; fax: 1-617-628-8606; website: http://www.starlab.com/e-mail: starlab@starlab.com) sells a solar telescope called the Sunspotter. Now LT1 has published a handy manual for the care and use of this instrument during several interesting activities. Write or call for a copy if you have not received one for your Sunspotter.

“Cove” Lighting System for the Portable Planetarium

In the past my older students were required to write notes in the planetarium while holding individual flashlights. Thanks to Dan Case, one of our staff members, we now use red “cove” lights that are hard-wired into a remote control plug. Here is some information about how to put a cove lighting system in your portable planetarium.

You can go to a large hardware store and purchase three or four 5.5 meter (18-foot) Super Bright Rope Light Kits (#775 096 Red). This indoor/outdoor lighting flexible tube has quick connections to create any length up to 61 m (200’). The flexible tubes are 54 watts with impact-resistant bulbs and are made of solid core PVC with 1 bulb per 2.54 cm (per inch). Plug this into (or hardware into) a regular or a remote dimmer and you can have a great cove lighting system!

The flexible tube can be attached to the wall of the dome with Velcro tabs. Find your horizon line. (For Starlab, turn on the projector without a cylinder to see the height of the horizon.) Drop down about 10 centimeters and attach 5 cm tabs of sticky back Velcro to the dome. The sticky back Velcro is best to use the non-sticky backed hook side of the Velcro for hangers that go on the light rope. The sticky backed Velcro tends to detach
Cut pieces of non-sticky backed Velcro (hooked side) to 15 centimeter lengths. Make loops by sewing the ends together across the top and also stitch the loop together at about 3-4 cm (measure to make sure you can slide the Velcro loop onto the light rope over the end caps!). If you use a sewing machine to stitch the Velcro, use waxed paper under the Velcro as you sew each piece or else the Velcro will “grab” the thread and the machine will jam. Make enough loops so that you have enough to attach the rope at each Velcro tab you have placed on the dome. Slide the loops onto each section of the lights. Attach the lights to the tabs on the wall with the loops. (I can still run my fan on low and keep the dome inflated while the lights are hanging on the wall.)

Plug the lights into a remote dimmer that can be placed in the fan tunnel or hung on the wall with Velcro. Or you can plug or wire the lights into a regular dimmer switch outlet to have at your console. For travel or storage, remove the lights from the wall and coil the rope light so it fits around the projector bulb assembly or in an auxiliary box.

It will cost about $US100 for this lighting system. It is very effective, requires a short set up time, and is durable. Students can use the lights during the lesson to make notes and drawings on their papers. You can dim the lights down or off as needed.

Following is a list of materials that were used for the OCM BOCES planetarium cove lighting system.

**Materials List:**

**From a hardware store:**

1. Remote Light Dimmer (Wall mount dimmer with 7.6 m remote control. #724-398. Commercial Electric 2455 Paces Ferry Road N.W. Atlanta, Georgia 30339, USA)
1. PS White Decorator Outlet (78500719144)
1. PS 2 Gang Decorator Plate (78500727553)
1. Quick Click Box Adj. 2 (78500720718)
1. 16/3 Med. Capacity Cord (04513144033)

**From a fabric or sewing store:**

4.6 m 1.27 cm sticky backed Velcro
4.6 m 1.27 cm non-sticky backed Velcro

**Next PIPS Meeting**

There will be a PIPS meeting for portable planetarium directors in mid-June 2003. It will be held in Syracuse, New York, USA. If you would like more information please contact me and I will add you to the mailing list.

**Bye for now!**

Please share your Milky Way stories, ideas you have for glow-in-the-dark materials and any other materials or lessons you think work well in the portable planetarium. Contact me with your suggestions or questions at the address, phone, or e-mail at the top of this column.

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Nine year-old students record observations about the sun’s apparent path for each season in North Syracuse, New York. Photo by Susan Button.
GOTO asked what planetarium professionals wanted in a projector for 26-40 foot diameter domes. Here’s what they asked for, and what we built into the new GOTO CHRONOS:

“no fuzz balls! A real sky.”
Light guide technology, GOTO’s superb optics, and new star plate technology offers 8,500 brilliant, tiny stars down to mag 6.5, a Milky Way you can get lost in, and 26 deep sky objects. Spectacular!

“a true Time Machine.”
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What’s New

Jim Manning
Taylor Planetarium
Museum of the Rockies
Montana State University
Bozeman, Montana 59717
USA

Okay - who knows who the following ladies are: Themisto, locaste, Praxidike, Harpalke, Isonoe, Erinome, Taygete, Claudene, Kalyke, Mageclite, and Callirrhoe? If your answer is that these are no ladies, you’re partly right; they’re the new names of eleven of the tiny moons of Jupiter discovered in recent years - the names taken, albeit, from mythological ladies associated in some way with Jupiter or Zeus. And the “e” at the end of most of the names tells us that these moons orbit “backwards” around the planet.

Uranus also has small moons recently christened with “tempestuous” new names taken from characters of Shakespeare’s stormy play: Caliban, Stephano, Sycorax, Prospero, and Setebos.

A dozen more recent discoveries around Jupiter, a dozen around Saturn, and one or two more diminutive Uranians still without names (including one just announced this past October) insure that the IAU will be hailing more obscure Greco-Roman monikers out of its mythological name-bag in the coming months. And as bigger and better telescopes sift smaller and smaller satellites out of the background clutter (the newly-named Jovians are estimated at no more than 4 km in radius - 5 miles wide - for example, and those most recently discovered are but half this diameter or less), one begins to wonder if we’ll end up with a Plutonian-like debate over how big a satellite has to be in order to be called a satellite as opposed to a rock.

For future argument, no doubt. In the meantime, I’m reminded, in a convoluted sort of way, how the planetarium field is rather like the gravity field of Jupiter: new things keep turning up when we take the time to look. And I’ve included some of my recent new discoveries in this first column of 2003. They already all have names, but are still worth some investigation. Enjoy.

Ringworld

In mid-2004, Saturn will acquire yet another satellite that also already has a name. It’s called Cassini. And Brian Sullivan has assembled a production crew of familiar names to help him create a JPL-funded planetarium program on the Cassini/Huygens mission called “Ringworld” that should be ready for distribution to every planetarium in the U.S. virtually as you read. For free!

According to Brian, the show is both designed to be readily adaptable to a variety of planetarium configurations and to be readily adaptable to accommodate what Cassini reveals as the mission unfolds. For more specific information on the program, contact Brian at e-mail address sbrian62@qwest.net, or contact the Cassini Outreach Office at e-mail address www.cassini@jpl.nasa.gov.

It’s not clear to me if the program can be made available to non-U.S. facilities (in terms of no charge, at least), but I suspect that Brian will try to accommodate everyone in his project in whatever way he can. So ask.

The Moon and Planet Repository

One of the places where all of this moon and planet data ends up is at the Lunar and Planetary Institute (LPI), operated by the Universities Space Research Association (USRA) and located at the Center for Advanced Space Studies (CASS) in Houston, Texas. I had a chance to visit the place along with colleagues roaming about the Houston area last October on a pre-conference adventure prior to the Western Alliance meeting.

One of the principal allures for people like us is the Center for Information and Research Services - LPI’s excellent library of books, journals, pictures, documents, films and videos designed to facilitate continued study of the solar system. It was most impressive to wander among stacks and shelves and file cabinets housing imagery from the Apollo days and other Moon and planetary missions including Lunar Orbiter, Clementine, Mars Pathfinder, Voyager, Magellan, Galileo, and Mars Global Surveyor. The Center offers reference, cataloging, photographic and distribution services (at a price) for researchers (and educators, for that matter) who want to delve into the treasures housed here. And treasures abounded.

LPI also offers educational products including planetary slide sets, CD-ROMs, a book or two, and an instrument called a reflectance spectrometer for classroom use. The spectrometer sells for $160 U.S. (classroom lesson documents are offered for an additional cost), and the slide sets run about $25, the CD-ROMs a little less. Orders may be placed by calling 281-486-2172, faxing to 281-486-2186, or e-mailing to order@lpi.usra.edu. Some scholarly publications are available for the cost of shipping and handling. Products are listed in the LPI Bulletin that regularly updates LPI activities; contact LPI at 3600 Bay Area Boulevard, Houston, Texas 77058 USA or use the contact numbers above.

While visiting, we were ushered down a long hallway decorated on one side with an artistic rendering of a timeline showing the key events in the universe and on Earth over the lifetime of the universe. It was very well-done and very impressive. This “Wall of Time” is also very long, but according to Mary Ann Hager, Manager of Information and Research Services, is available as an electronic file on a CD; if you're
interested in reproducing it for your facility, the CD can be taken to a photo lab for reproduction or Mary can make arrangements with a lab in Houston. Contact Mary if you’re interested in learning more about or obtaining this excellent piece of work.

Another piece that impressed me at LPI was a large wall mounting of the surface of Mars showing surface altitudes as derived from the altimetry data from the Mars Global Surveyor. Altitude was rendered in bright colors overlaid on a topographic map of the surface, and it was quite breathtaking to examine so large a copy close-up. The polar regions were mounted as separate maps from the rest of Mars. You can view this data representation yourself by going to the web site http://photojournal.jpl.nasa.gov/targetFamily/Mars and typing the following image identification numbers into the search box at the upper right: PIA02035, PIA02036, PIA02037, PIA02031, and PIA02820. It’s esthetic as well as revealing.

As a side note, our visitor’s packet included a solar system lithograph set I hadn’t seen before, featuring new images of the sun and planets on one side of each sheet and the usual useful descriptive copy and facts on the other. Asteroids, comets, and the Galilean satellites are included on separate sheets. Very nice! If you’re interested in tracking it down, the NASA identification number is LS-2001-08-002-HQ.

If you want to learn more about LPI services and products, Mary Ann Hager is a good person with whom to talk. You can reach her at telephone 281-486-2136, fax 281-486-2186, e-mail: hager@lpi.usra.edu.

**Technologies Redux**

Last October’s Western Alliance planetarium meeting in Houston, Texas also offered further glimpses of much of the technology presented at the IPS conference in Wichita not quite three months earlier. While these technologies were covered in some detail in the last column, seeing some of them in a new setting with new wrinkles to report makes it worthwhile to undertake a brief revisit.

**Evans & Sutherland:** the company had the Digistar 3 SP (the system formerly known as Digistar 3 Junior) in residence and running through its paces in a 4.9-meter (16-foot) dome in Houston during the conference. It was nice to see the single-channel small-dome version of the Digistar 3 full-dome video system in action (it wasn’t present in Houston). Attendees were able to see many of the same sequences shown in Wichita on the six-channel big-dome system, and they held up very nicely indeed, I thought, through the single fisheye projector on the smaller dome. We saw some additional things, as well, such as SP trainer Kevin Scott’s programs to turn the stars into pumpkins and other items. Kevin also let me play with the company’s new remote control button box, an adapted Palm Pilot-like device that allows one to initiate pre-programmed sequences and actions by the touch of a button – without being tied to a console or a plug-in cord. Cool!

Later in the conference, participants had an opportunity to see the full-sized D3 in performance in the Burke Baker Planetarium as it had been in Wichita, with the smaller (15m, 50-foot) horizontally-aligned dome providing a new setting to compare with the experience remembered under the larger tilted screen of the Cyberdome in Houston. The more intimate setting worked well for the programs and sequences I’d seen earlier in Kansas, and I liked the brightness, color saturation, and clarity of the imagery on the Burke Baker dome. The E&S folks also
showed us additional astronomical capabilities of the system in comparison to Wichita, and we had a chance to see what a standard starfield looks like through the D3; the result was very credible and creditable. The starfield looked good.

I continue to be pleasantly surprised by how reasonable the video starfields produced by various systems are beginning to look - and they're only going to get better. And with the new small-dome systems, they're also going to be available to everyone. My how the field is changing!

For more information on either the big D3 or the little D3, contact E&S Digital Theater Sales Director Jeri Panek at 600 Komas Drive, Salt Lake City, Utah 84108 USA, telephone 801-588-7500 or 801-588-7405, fax 801-588-4520, e-mail: jpanek@es.com, web site: www.es.com.

**Sky-Skan, Inc.** the Skanners were also present in force in Houston to show off their SkyVision system, and delegates again saw a digital theater festival of programs and sequences much as it was presented in Wichita, including the astronomical capabilities of Digital Sky and Sky-Skan's good-looking video starfield. Again, I thought the smaller and “horizontal” dome setting, at the least, offered a different viewing perspective to evaluate the system, and to me, seemed to enhance how things looked.

For information on the system, contact Sky-Skan at 51 Lake Street, Nashua, New Hampshire 03060 USA, telephone 603-880-8500 or 800-880-8500, fax 603-882-6522, e-mail: office@skyskan.com, web site: www.skyskan.com.

Sky-Skan also has European and Australian offices. Contact the Skanners in Europe at Museumsinsel 1, D-80538 Munich, Germany, telephone 49 (0) 89 428 923, fax 49 (0) 896 428 9232, e-mail: smith@skyskan.com. In Australia, try 441 Spencer Street, West Melbourne, Victoria 3003, Australia, telephone 61 3 9329 5501, fax 61 3 9329 6609, e-mail: white@skyskan-australia.com.

**Spitz, Inc.** the Spitz people brought the single-channel fisheye Electric Sky II system to Houston, and the audience was treated to a much more extensive demonstration of the system than IPS attendees witnessed in Wichita, given the ongoing development of the intervening months. In the Wichita preview, we saw primarily full-dome abstracts. But in Houston, we saw many of the sequences that in Wichita were presented on the six-channel Electric Sky I video system. And I was very impressed with the quality of the imagery on the 15m dome in comparison to what I remembered from the Electric Sky I demo in Wichita, all coming from the fisheye lens in the center. And of course, there were no seam blends - and but one projector to align.

I still fret a bit that full-dome fisheye video doesn't yet provide the contrast and black skies for starfields that I'm used to (and like), but people tell me that I overblow an issue in which *relative* contrast is the key - and to enjoy the otherwise cornucopic capabilities and wait for laser projection to proliferate. Regardless, there's no denying the versatility and potential of full-dome video. My goodness - where will it take us next?

To talk to the Spitzers about their systems (including the small-dome version called SciDome), contact them at P.O. Box 198, Route 1, Chadds Ford, Pennsylvania 19317, telephone 1-610-459-5200, fax 1-610-459-3830, web site: www.spitzinc.com, e-mail: cholmes@spitzinc.com.

**Minolta Planetarium Company, Ltd.** the company had the MEDIAGLOBE at work in Houston, which is another of the single-channel fisheye full-dome systems for the petite planetarium. Phil Groce had the U.S. version of the system on hand this time,
which runs at 30 frames per second, twice that of the Japanese version, and it looked good. I especially liked the lovely Milky Way it produces.

Phil confirmed for me that the slight squarishness of the brighter (larger) stars and planets that I noted in Wichita was a limitation of the pixel resolution (which is 1,024 pixels across). And I continue to be impressed with how good video looks through the system, seeing again many of the sequences I saw in Wichita.

To learn more about the system, which looks like a cute little robot on wheels and can be operated by a laptop computer, revisit last December’s column and/or contact Phil at Helping Planetariums Succeed, 619 Orange Street, Macon, Georgia 31201 USA, 1-478-750-7870, fax 1-478-750-7826, e-mail groce@mto.infi.net, or Minolta via Kosy Sasaki at Minolta Corporation, 67 Washington Road, Monroe, New York 10950, telephone 1-845-782-9056, fax 1-845-783-0496, e-mail ksasaki@minolta.com.

**Carl Zeiss Jena:** Laura Misajet, representing Zeiss, reported in Houston that the company’s ADLIP system, using laser projectors to project part-dome or all-dome video, can now be demonstrated in the U.S. (A legal snag prevented a demonstration in Wichita.) That’s good news; I’m looking forward to seeing the full-fledged system that we saw as a zoom-slew projector of sorts in Montreal at IPS ’00. Laura said that the first system is to be installed in Beijing, China, in June of 2004.

To find out more about this system and Zeiss’ range of planetarium projectors, contact Laura Misajet, Sales Manager for the Planetarium Division of Seiler Instrument, at 23 Narbrook Park, Narberth, Pennsylvania, 19072, telephone 800-726-8805, cell phone 610-766-0673, fax 610-664-0308, e-mail: zeiss@seilerinst.com, web site: www.seilerinst.com, or, in Germany, Volkmar Schorcht in the Planetarium Division of Carl Zeiss Jena, Carl-Zeiss-Promenade 10, 07745 Jena, Germany, telephone 49-36-41-64-22-83, fax 49-36-41-64-30-23, e-mail schorcht@zeiss.de.

**Goto Optical Manufacturing Company:** not to leave out Goto, whose new CHRONOS projector so charmed me in Wichita, Ken Miller reported on the new purple projector (see last December’s column), and also indicated that Goto’s new small portable, called the NEX (which replaces the EX-3), will become available in just a month or two as you read this. The portable projector is motorized, shows 1,000 stars, features positionable planets, can be computer controlled, and sells for $4,000 U.S. Add an inflatable dome for $7,000, or a vinyl framed “umbrella” dome, and you’re set.

Ken also mentioned that GOTO has available three DVDs of computer graphics created by the company, with eleven more planned over the next few years. Animations presently available include standard astronomical stuff (he showed us moon phase, Earth rotation and Saturn ring fly-through clips, for example - nicely done). The disks sell for $890 U.S. apiece.

I should likewise mention that Goto offers its exhaustive library of planetarium pano-
ramas for sale as well. And it’s great stuff; I remember touring the Goto site some years back and wandering through their Disneyland of an artwork library and being amazed. If you can think of it, Goto has probably created a panorama of it. Check with Ken.

Goto has also announced, in a card sent with its handsome 2003 calendar, that Toshi Yasuda is joining Ken Miller in the company’s Hawaii office. For information on the company’s products, you can now contact either Ken or Toshi at 401 Kamakee St., Suite 319, Honolulu, Hawaii 96814 USA, telephone 808-597-8688 or 888-847-5800, fax 808-597-8682, e-mail: gotousa@earthlink.net, web site: www.goto.co.jp.

The Baby Laser

While every fast food restaurant seems ready to “supersize” one’s order of fat and cholesterol these days, our industry is doing the opposite, creating petite versions of big-dome technologies to serve those of our number for whom smaller (and cheaper) is better.

Joanne Young of AudioVisual Imagineering, 10801 Cosmonaut Blvd., Orlando, Florida 32824 USA, telephone 407-859-8166 or 800-952-7374, fax 407-859-8254, e-mail: joanne@av-imagineering.com, web site: www.av-imagineering.com, continued this trend at the Western Alliance Conference in Houston by introducing the Omniscan Junior (since christened the “Skylase”), a cute little black flying saucer that is actually a full-blown, portable Omniscan laser system for small domes. The tyke is a mere five inches (13 cm) high and 14 inches (36 cm) across and weighs in at a paltry five kilos (11 pounds) “soaking wet,” as they say - although that would probably short it out. Using modulatable laser diodes and Cambridge scanners and drawing a mere five amps of power, the device is available to two flavors: a 10 milliwatt RG (red/green) version, and a more expensive 10 milliwatt RGB (red/green/blue) version – blue being a tricky hue to squeeze out of a laser. The selling price ranges between $35,000 and $51,000 U.S., depending on which flavor you want with what features, and is designed for use in domes 9 meters (30 feet) and smaller.

It seemed improbable to me that an object the size of a bansai container could actually run Omniscan programs, but Joanne plopped the thing on a table in the middle of one of the 16-foot demonstration domes and ran her signature “Legends of the Night Sky” Perseus and Andromeda piece – and there it was. And the laser imagery looked great! It certainly sold me.

What it means is that small domes, for a cost considerably under what a regular Omniscan would cost, can have Omniscan capabilities. And the portability factor means that you could put it most anywhere, and that several small domes within reasonable traveling or shipping distance could actually share a system.

This is a neat little machine - and another excellent example of how vendors are working on ways to bring their wares to the full spectrum of the planetarium community. Good show! For more details, contact Joanne as given above.

Sci Fi CD

More and more vendor wares seem to come in the form of CDs these days, whether software, infoware, or musicware. One nice piece of musicware I’ve received recently comes from Cosmonova at the Naturhistoriska Riksmuseet, Box 50007, Se-104 05, Stockholm, Sweden, telephone 46 (0)8 519 540 00, fax 46 (0)8 519 551 00. It’s an album of music by composer Mark Snow compiled from the soundtrack of Cosmonova’s planetarium program “UFO: The Truth is Here.”

Talk about The X-Files! This stuff is perfect for it. The program offered a scientific view of the UFO phenomenon and the possibilities and search for real life beyond the Earth, but the music could slip behind a good Monsters-From-Outer-Space show without changing a note. It’s great music - eight long pieces all acoustic and atmospheric and very much in the style of a good movie soundtrack, in turns contemplative and forbidding, lyrical and tonal, anticipatory and cl-
mactic, quiet and scary. And always dramatic. It's a good listen.

Tom Callen at Cosmonova tells me that the album (also entitled "UFO: The Truth is Here") is available through the Cosmonova gift shop for about 150 Swedish Crowns – the equivalent of about $15 U.S. He adds that it's not to be hijacked for use in a planetarium show – though it would be great for such and if you're interested in doing this, you might ask him about getting permission – but would make a great item for your personal music library or for sale in your gift shop, especially if you do any UFO-related shows or have a big X-Files clientele. It would also provide great atmospherics for Halloween. I highly recommend it. Contact Tom as given above or via e-mail at tom.callen@nrm.se for more details and perhaps a sampler.

Seasonal Stuff

Speaking of Halloween, let me make the phase shift complete by reminding you that for some of us, it's the beginning of autumn rather than spring, and regardless, as reckoned from the March equinox, you've only got 225 shopping days till Pumpkin Day and just 280 shopping days till Christmas. That should be sufficient rationale to get your orders in for a couple of fine holiday treats that recently popped into my in-basket.

The Halloween Show. The Calgary Science Centre, Box 2100, Stn. "M," Loc. #73, Calgary, Alberta, Canada T2P 2M5, telephone 403-268-8332, fax 403-237-8967, website: www.calgaryscience.ca, has produced a delightful little Halloween show (called, appropriately, The Halloween Show) for ages five and up, another in its series of quality children's programming making excellent use of video. The program features Holly Ween, a student witch-in-training, who encounters a talking pumpkin named (of course) Jack O'Lantern in the school attic; Jack promptly filling her in on some of the finer points of the holiday – and sneaking in some astronomy on the side.

The video I received features live-action scenes of actors playing the parts (and very well, too), leading the audience in a brief exploration of the origins of Halloween, the jack-o'-lantern, and Halloween practices. The show debunks superstitions and focuses on the non-scary and fun side of the celebration, with an all-important reminder about being sure to dress appropriately on the big candy-trolling night. The show also manages to work in astronomical bits including the rotation of the Earth and how it makes the sky shift overhead, the phases of the Moon, and a brief pointing-out of fall and winter constellations. Other bits include imagining Halloween versions of these constellations, learning to say "Happy Halloween" in cat and bat, and singing a song at the finale that reviews the key points of the program. It's all very nicely done; the video I screened was very good, both in the live action sections and in the charming cut-out animations.

The only quibble I have came in the Moon phase section, where it is implied that the Moon's period of revolution about the Earth and its cycle of moon phases are the same length (29 1/2 days) – and they aren't. This isn't the age group or the show with which to launch into a scholarly discussion of the difference between the sidereal and synodic periods of the Moon, but I might have preserved a vague correctness by simply referring to both time periods as being about a month.

It's a small point in another great show from Calgary, and it's definitely worth investigating if you're looking for a nice Halloween program for younger age groups. The show is available as a video show kit for $1,500 U.S. (including Beta, SVHS, or DVD videos of the actors and animation sections, all-sky slides, annotated script, and production notes), or as a slide show kit for $995 (including a CD soundtrack, slides of the characters, and the rest). I suspect that there are also Digistar files available for facilities of
that persuasion. The show kit becomes available in April 2003 (next month as you read). Contact producer Susan Cannon at susan.cannon@calgaryscience.ca for more details. This is right up the dark, spooky alley of facilities wanting to capitalize on the current Harry Potter craze, so do have a look.

'Tis the Season – the Album. Also arriving late last year was word that Loch Ness Productions was making available a CD album of music from its popular Christmas show, 'Tis the Season. Good move, for these are very nice renditions of the familiar music of the season – perfect for use as intro or exit music for the very show, and for sale in your gift shop afterwards.

Given that the pieces were originally used to underlie the narration of the planetarium show, they’re all short – between one and three minutes – and are pretty straightforward treatments of the familiar carols and songs, but with some nice electronic presentations and pacings. Seventeen selections add up to almost 33 minutes of music, all full of sparkles and twinkles and jingles and choral touches and instrumentation and good cheer. A fine piece of work, and decidedly Christmassy.

To get more information or to order, contact the Nessies at P.O. Box 1159, Groton, Massachusetts 01450 USA, telephone 978-488-3666 (or 888-4-NESSIE), web site: www.lochness.com. You’ve got, oh, about eight months or so to lay in a store for next holiday.

The Electronic LNC

Loch Ness Productions has also come out with a new edition of its Loch Ness Planetarium Compendium (LNPC), a compilation of all known planetariums in the known universe. The hard-copy version is available as always, but new this year is a browsable electronic version, obtainable on CD and browsable from there, or importable from the CD onto your computer and browsable from there, or transmitted to you as an attachment to an e-mail that you can load onto your computer.

I received an electronic copy from the Nessies to preview, and found it to be very Jim-Friendly. And if it’s Jim-Friendly, it will be easy to use for Anybody. It’s a Web Browser edition of HTML (ASCII) files, and I was able to open it through Netscape and graze to my heart’s content. I could click on icons for each country (and each state within the U.S.) and access all of the facilities in that region as if I were running my gaze down a page. Green links led to external web sites associated with entries.

Alternately, I could click on a “Projectors” link and obtain a listing of various planetarium projectors with links to all of the facilities in the data base possessing those projectors. And a “Names” link brought me to an index of all the personages listed in the directory, with links taking me to their entries in the data base.

I’m one of those throwbacks who actually prefers to sit down in a comfortable chair in his bedroom slippers with a good book, smelling of wood pulp and library glue (the book, not me), flipping pages with one hand and sipping something good to drink with the other – as opposed to letting my muscles stiffen and my eyes go bad squinting at a computer screen all day. (And the LNPC hard copy is there for such as me.) But if I still want the convenience of an electronic directory to sort through, the Loch Ness approach is a very good one indeed. Contact the Nessies if you want to check it out; the e-mail attached version costs $30 U.S., the CD version costs $40, or you can opt for the printed edition for $50.

Spaceshots

We live in a resource-rich environment, and one of the richest and prettiest resources I’ve encountered recently is Spaceshots, Inc., a company that claims to be the largest provider of satellite images and space and astronomy-related imagery. And to look at its stunning catalog is to believe.

Spaceshots offers a remarkable array of
beautiful pictures in a variety of guises. There are extraordinary images of the Earth, to start, rendered from satellite data. (One of my favorites is “The Brilliant Earth” which shows human-produced night-lighting on a rectangular Earth projection derived from satellite data.) There is a wide assortment of space vistas and objects, planets, Hubble images, comets, and eclipses. All are offered as posters and many can be laminated or framed to order. Colorful and educational posters on the solar system, stars, galaxies, and other subjects are available, as are charts and maps of planetary surfaces and the night sky. There are also renditions of antique maps of Earth and sky, color space photos taken from Earth (including a stunning image from Kitt Peak that places the “Pillars of Creation” into their Eagle Nebula context - it graces the cover of the Spaceshots’ current catalog).

There are assorted astrophotos, including selected constellations with star colors, adjacent nebulas and other details color-enhanced to turn them into works of art. There are greeting cards, bookmarks, and magnets. There are NASA videos and mission report books, NASA manned space program prints, postcards, interactive software CD-ROMs, and video DVDs.

Spaceshots also offers a gorgeous set of panoramic city views in 34 cm by 1 m (13.5-inch by 40-inch) full-color formats. Subjects include a large number of major cities in the U.S. plus selected cities including London, Paris, Rome, Madrid, Sydney, Tokyo, and Rio de Janeiro. Just beautiful. And also in profusion are selected satellite images of cities and regions, including about half of the U.S. states and specific other countries beautifully rendered as regions set out from the surrounding terrain in very pleasing fashion. Most all of the prints can be framed at your discretion.

You’ll want this catalog. And then you’ll want more out of this catalog than you can probably afford. But the prices are reasonable; most of the products are under $30 U.S. apiece, a little more if you want lamination, and even the most expensive pieces and sets of things, including lamination, are under $80. Wholesale and retail rates are available. You’ll want some of this stuff for your gift shop, but I’ll warn you in advance that you’ll also want some for yourself.

For a catalog and/or to order, contact Spaceshots, Inc. at 26943 Ruether Ave. #R, Santa Clar, California 91351 USA, telephone 800-272-2779, (or 661-299-5594 for outside the U.S.), fax 661-299-5586, web site: www.spaceshots.com. You can make an on-line catalog request, or can call 800-272-2779, extension 12, to do the same. If you want to talk to a person, Cynthia Compagnale, Promotional Director, at 800-272-2779, extension 14, e-mail: wholesale@spaceshots.com, is a good person to try.

A Universe on DVD

The prettiness of space comes in many formats – and now in DVD, as well. All the proof you need is in the video product called Universe produced and marketed by Universe Productions, P.O. Box 727, Menlo Park, California 94026 USA, telephone 650-328-9808, web site: www.universedvd.com, e-mail tim@universedvd.com.

This DVD takes the viewer on a romp through space as imaged by the Hubble Space Telescope and other space observatories, in a series of a dozen chapters beginning with the sun and extending out to edge of the known cosmos. After the observatories are acknowledged, the sun is presented as seen through SOHO and TRACE stills and movies. The next chapter whisks us through the solar system via Hubble pictures and spacecraft images. Succeeding chapters focus exclusively on Hubble imagery and take us on an examination of stars, nebulae, and clusters in our Milky Way galaxy, then the sights in nearby galaxies, and finally to the most distant reaches of the universe via the Hubble Deep Fields and other images. The narrator offers concise descriptions and explanations of objects as scientists currently understand them, while these images dissolve and zoom and pan to provide a more active presentation. The narrator is good, and the music fills in and around in rich electronic layers, but like all really good soundtrack music, doesn’t get in the way.

It’s a fine esthetic piece with lots of information included. It’s also available in VHS format, though I found that 60 minutes of material without any change in manner of presentation is a lot to sit still for when taken in one session. Therefore, I recommend the DVD, which allows you much more flexibility in how you enjoy the experience. You can select chapters individually and digest in smaller doses. You can elect to hear the narration, or turn it off and just watch the lovely sights with the music alone. The DVD also has a pair of short “talking-head” discussions following that are quite excellent - one by astronomer Alexei Filippenko of the University of California, who offers the most cogent and easily-followed explanation of “dark energy” – what it may be, how he and his team stumbled upon its apparent effect, and what it means for the expansion of the universe - that I have yet heard. And Karel Schrijver of Lockheed Martin Advanced Technology Center offers an equally lucid account of the solar observatory TRACE and how it’s helping us to understand the sun.

If I had a quibble, it would be that a more varied presentation style than relentless “picture-and-description” would help to alleviate the risk of the program becoming monotonous if you try to take it all in at once. But that seems to be on its way. A press release I received announced that Universe
Productions is working with Public Broadcasting System affiliate KCSTM-TV in San Mateo, California to produce a version of the program for public television that will feature introductions by well-known astronomers to nine chapters of the program. As we know from our own experiences in the planetarium, it’s important to give the pictures and data a human context, and I think the astronomer prefaces will help to do just that.

The only other quibbles I can produce are the occasional name mispronunciation (at least according to my own lexicon) and the misspelling of a nebular name (“Triffid” instead of “Triffid” and mispronounced accordingly, but the narrator pronounced the name of Pluto’s moon Charon correctly – hard “K” as opposed to soft “Sh” – and so in my book it’s a wash). Nothing critical, and the accompanying information is sound.

This is a nice piece of work, especially in DVD format, with lots of potential uses in the classroom and as a gift shop item. The DVD retails for $24.95 U.S., and the VHS for $19.95. For other details and to order a supply or to ask for a sampler, perhaps, contact Tim Tully at Universe Productions as given above.

Catalogs

A pasel of catalogs have been collecting on my shelf, all of them designed to help stimulate the economy – theirs or yours. Here goes with a short list.

Space Trader, from Space Center Houston, 1601 NASA Road #1, Houston, Texas 77058 USA, web site: www.spacetrader.com, ordering line 800-746-7724, fax ordering line 281-283-7787, offers a selection of spacey items from the large and diverse gift shops at Space Center Houston just outside the gates of the Johnson Space Flight Center in Houston. You can spend a little or a lot by selecting from an assortment of patches, toys, figurines, key chains, mugs, posters, books, videos, prints, spacecraft models, T-shirts, jackets, ball caps, flight suits, etc. One seldom gets out of Space Center Houston without finding something you can’t live without, and the same may be true of the catalog if you’re into space (and who isn’t?). The catalog offers world-wide shipping, gift certificates, and 10% senior citizen and educator discounts. Contact as above for a catalog.

Astrographics Product Catalog 2003, from Astrographics, 85 Oakside Drive, Smithtown, New York 11787 USA, web site: www.astrographics.com, ordering line 888-827-8768. It features, as its name implies, pretty pictures in a variety of product guises. NASA pictures, Hubble Space Telescope imagery and David Malin’s Anglo-Australian Observatory photos are rife in the selection of calendars, gallery prints, and posters that this company offers, along with a selection of gallery prints of colorful microscopic objects ranging from fleas and mites and insect heads to blood cells and molds photographed by Dennis Kunkel. A small selection of T-shirts is included. The catalog makes a colorful space gallery; contact as given above for a copy.

Ortional Trading Company Inc, Business Edition Catalog, from Oriental Trading Company, P.O. Box 2659, Omaha, Nebraska 68103 USA, web site: www.oritentaltrading.com, order line 800-526-9300, customer service line 800-226-7450, is bursting with an endless array of small gift items, decorations, and novelties useful for parties, “attaboys,” and personalized give-aways and promotional items for advertising your company. I won’t even begin to start a list, for it would never end. If you can think of it, it’s doubtlessly here in some form, and you can put your facility name and logo on it if there’s a surface big enough to manage it. You never know when things like this might come in handy; contact as above for a catalog.

Successful Events Catalog, from Successful Events, P.O. Box 64784, St. Paul, Minnesota 55164 USA, web site: www.successfulevents.org, order line 800-352-9501, fax order line 800-896-9221, is of the same bent as the previous catalog, but as the name implies, focuses more on events, providing trade show accessories, badges and neck straps, ribbons, lapel pins, labels, tote bags, folders, mugs and assorted drinkware (though I noticed no flasks ...), and so on, most of which can be emblazoned with logos and messages. Again, a handy reference for those esoteric meeting needs. See above for contact information.

Baudville Catalog, from Baudville, 5380 52nd St., S.E., Grand Rapids, Michigan 49512 USA, web site: www.baudville.com, ordering line 800-728-088, fax ordering line 616-698-0554, is of yet a similar bent but shifts the focus to providing assorted lapel pins, certificates, plaques, stationery, greeting cards, posters, gifts items, and assorted do-dads to reward and recognize employees and create team-building fuzzy feelings and motivation. It’s full of assorted “attaboys” at various prices, and you may find something here that’s useful in showing your appreciation of your own employees, volunteers, student workers etc. – as I did with the catalog mentioned next.

Best Impressions Catalog, from Best Impressions, 345 N. Lewis Ave., Oglesby, Illinois 61348, web site: www.bestimpressions.com, order line 800-635-2378, fax ordering line 815-883-8346. This catalog I’ve mentioned before, but is worth mentioning again in conjunction with the previous several of the same genre. Again, it offers an endless assortment of chachkis on which to imprint a message or logo or name and distribute for promotional and other purposes. This is the place from which I obtained some gold star pins that made the perfect “thank you” for the volunteers who helped last year with our summer stargazing events – and I got a free supply of 25 name-imprint-ed pens to boot for making the order. (I noticed that the Baudville catalog above has gold and silver star pins as well.) See; These things can come in handy. And again, see above if you want a copy.

My Kingdom for a Slide Mount ...

For those of us still dependent on slide projectors to help visualize the universe, word as of this writing is that the slide mounts produced formerly by Wess Plastic and more recently by BCA Manufacturing, Ltd. (which took over Wess’ slide operation) are still available and without ordering delays – at least in terms of the standard 002 mounts. (That’s been my recent experience as well.) Specialty mounts like circles and squares may be a different story; Mark Petersen of Loch Ness Productions reports delays on these.

Mark also kindly supplied me with new contact information for the company. To order those mounts that keep us from resorting to shadow puppetry, contact the company at 539-1 Acorn Street, Deer Park, New York 11729 USA, telephone (1) 631-300-000, fax 631-667-8474.

Finally ...

I would be entirely remiss, writing the column that I do, if I failed to mention what by now has become obvious to you: that starting with this issue, the Planetarian has a new, colorful, and very classy look.

This new look comes to us thanks to the good work of long-time editor John Mosley, with the encouragement, blessing and support of the IPS leadership. It isn’t the first time that John has taken our journal to a new plane of existence during his tenure. And the professional discipline he’s brought to it – and to his stable of associate editors as a result – has kept our primary organ of communication coming out like clockwork for so long that few of us remember that it wasn’t always so.

So next time you see John, or are near enough to your computer to send him an e-mail, be sure to thank him for his dedication and his laudable accomplishments. He’ll like it even better if you send him your contributions for the next issue ....

And until that next issue, when we’re getting ready for either summer or winter, depending on hemisphere, be sure to let me know, as always, what’s new!

March 2003

Planetarian 65
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When Editor John Mosley sent around the word that this issue would be the inaugural full color printing of our journal, I had to dig out the photograph Dr. Jeanne Bishop took at the IPS conference in Wichita last July, honoring the latest winner of the M104 Award. (He’s the one in the hat.)

From what I can gather, this prestigious award has been traveling the globe since 1997, when it was a door prize at a Hutchison, Kansas planetarium group meeting. The stipulation was that the winner was to pass the prize on to someone in another region.

The sombrero has lived in Florida (where a cat removed the silver bobble fringe), has stopped briefly in the mid-West, crossed the border to Canada, returned across the border to Michigan, sweltered through a Georgia summer, retreated to Virginia and is currently at an undisclosed location in the Southern Hemisphere.

Each recipient has autographed the interior of the crown, some more legibly than others. Some have left photographic evidence of their award. Some have preferred to remain anonymous. Various criteria have been mentioned as requirements for recipients: a spirit of friendship, a good sense of humor, contributions to the profession, a spacious closet for storage, a hefty bribe to the current holder, or willingness to move to another region for eligibility. The last two are pure fabrication.

The big challenge, of course, is transporting the sombrero to the next conference. If anyone wants a big plastic box, e-mail me at the address above.

***

Former Morehead Intern Pat Madison shared this delightful anecdote:

One of the world’s greatest scientists was also recognized as the original absent-minded professor.

One day, on board a train, he was unable to find his ticket.

The conductor said, “Take it easy. You’ll find it.”

When the conductor returned, the professor still couldn’t find the ticket.

The conductor, recognizing the famous scientist, said, “I’m sure you bought a ticket. Forget about it.”

“You’re very kind,” the professor said, “but I must find it, otherwise I won’t know where to get off.”

***

The Southeastern Planetarium Association listed some commandments in the summer 1999 issue of their journal. In American vernacular, they are reprinted here courtesy of author Kelly Quinn and Southern Skies editor Duncan Teague.

The Fifteen Commandments of Planetarium Education

1. Control the perihellions, and demand respect for the opportunity you’re offering your audience to take a trip across the universe.
2. Always wear your shades when you exit the star theatre.
3. Eschew polysyllabic discourse.
4. Use analogies and simple, concrete examples.
5. Don’t forget to breathe.
6. Hold the laser pointer steady.
7. Memorize the placement of the planetarium’s equipment and furniture.
8. Develop your own style.
9. Remain open to suggestions and experimentation. As long as you’re having fun, your audience will too.
10. Stay on top of current information about the universe.
11. Listen to the questions you’re being asked.
12. If you really don’t know the answer to a question, don’t be afraid to say so.
13. Make sure everything is set up for a show. (“God is in the details.”)
15. Communicate to your audience the wonder and the excitement that brought you here.

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And finally, a saying from the Native American Ojibwa people, sent to me by Gary Lazich: “Sometimes I go about with pity for myself and all the while Great Winds are carrying me across the sky.”

May your spring or autumn breezes bear you well.

---

April S. Whitt
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This year’s recipient of the M104 Award poses with some previous lucky recipients. From left: Pierre Lacombe, Patrick McQuillen, April Whitt, Tony Fairall, Jon Bell. Photo by Jeanne Bishop.
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