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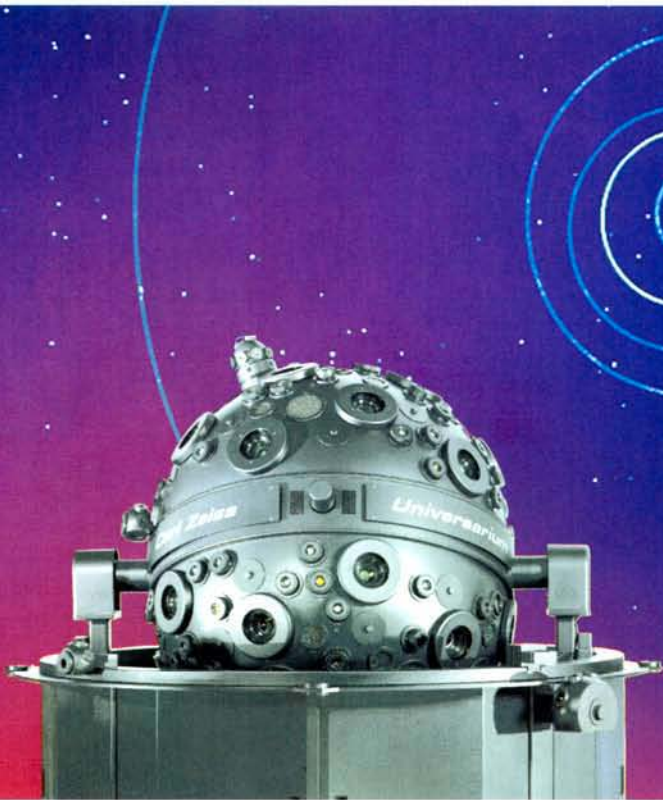
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# Planetarian

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March: January 21  
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# Sputnik, Planetaria, and the Rebirth of U.S. Astronomy Education

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The launch of the first *Sputnik* satellite on 4 October 1957 caught Americans off-guard as dramatically as the news of Pearl Harbor almost 16 years earlier (Divine 1993; Clowse 1981). Political historian Walter A. McDougall argues that, by not anticipating *Sputnik's* extraordinary propaganda value, the Eisenhower presidency was dealt its greatest defeat (McDougall 1985; Lule 1991). Scholars generally agree about the public's crisis of confidence, which significantly redefined national goals and objectives for the exploration and utilization of space (Killian 1977). Equally powerful reactions were generated through revised perceptions of the role of federal support for education (Spring 1976).

## Astronomy Education Before *Sputnik*

In the years before 1900, an astronomy course enjoyed widespread acceptance as a suitable prerequisite for college admission. This situation reflected astronomy's preeminent role as a *mental discipline* subject in the secondary curriculum. It was widely believed that the mind functioned analogously to the muscles of the body; only through proper stimulus and exercise could one's powers of thinking become fully developed. The study of astronomy, which furnished numerous applications of geometrical and mathematical reasoning, was regarded as ideal for improving a student's mental discipline. This perception, however, experienced a sudden and dramatic change.

In the late-nineteenth century, vigorous debates arose among educators concerning pedagogical theory and practice. These clashes were spawned largely by Gilded Age transformations of American society into an urbanized/industrialized economy and were tempered by the entrance of newly heterogeneous student populations composed of women and immigrants into the schools. Our educational process was likened to the

organizational system of a machine; some asserted that students should be trained in a factory-like manner, with a minimum of

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Except for the Japanese attack on Pearl Harbor, probably no event [took] the American people so much by surprise as the launching of the first Soviet earth satellite." —(Sullivan 1961)

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waste to produce a maximum of product (Montgomery 1994). As the result of increasing demands for greater efficiency and occupational relevancy, as well as a broader understanding of adolescent psychology, higher education's traditional, classical curriculum and its mental discipline model of pedagogy were called into question. With the collapse of the mental discipline model, astronomy education lost its once-powerful rationale of support (Marché 1999).

According to one leading interpretation, astronomy was largely eliminated from the nation's secondary schools and colleges, following recommendations drafted by the National Educational Association's Committee of Ten, chaired by Harvard University president Charles W. Eliot (Bishop 1977, 1979; Krug 1964). The Committee's report, published in 1893, reduced astronomy from a college prerequisite to an elective subject while elevating the laboratory sciences of physics and chemistry to the forefront. The Committee's actions, it is argued, interrupted the cycle of astronomy teaching and learning prevalent during much of the nineteenth century and triggered a progressive decline in astronomy education, which was not reversed until the launch of *Sputnik* roughly 60 years later.

## Rise of Progressive Education

The Committee's arguments reflected still broader reforms that gradually dismantled higher education's classical curriculum.

Eliot's elective system, first inaugurated at Harvard University, has been viewed as an administrative compromise between retention of the classical curriculum and admission of the newer laboratory sciences (Veysey 1965). Supporters of this effort comprised one of four major interest groups that vied for control of the twentieth century American curriculum (Kliebard 1987). These competing interests gradually fused into what has been called *progressive education* (Cremin 1961).

How did progressive education differ from preceding approaches? Educational historian Diane Ravitch has styled this pedagogical amalgam as turning sharply away from the subject-matter-centered, rigid, authoritarian manner of instruction upon which mental discipline skills were formerly honed. Progressivism eschewed traditional book learning, content-based curricula, rote memoriza-

tion, and evaluation by performance mastery. Progressive educators strove to promote effective living rather than the acquisition of knowledge and sought to connect the program of the school to the life of the community around it. By the 1920s, progressive education had become the dominant American pedagogy (Ravitch 1983).

## Post-Sputnik Educational Reforms

Following the launch of *Sputnik*, critics blamed the nation's public schools and identified the perceived failures of progressive education as the primary reason that Americans had fallen behind the Soviets in space technology (Divine 1993). Whether these charges were accurate or not, *Sputnik* brought this succession of debates to a sudden climax and produced dramatic changes of lasting significance. Words were replaced by actions. Reforms involved a movement toward consolidation of American high schools (Conant 1959) and rapid acceptance of the so-called disciplinary approach to curriculum design by leading educators. Harvard University psychologist Jerome Bruner stood as the antithesis of earlier progressive thinking and provided a rationale for curriculum revisions utilizing a *disciplinary* approach (Bruner 1960). These reforms helped indirectly to reinstate astronomy education into the American curriculum.

The National Science Foundation (NSF) underwrote many post-*Sputnik* curricula in mathematics, biology, chemistry, and

physics (Duschl 1990). Support for these revisions was highly dependent upon prevailing issues of Cold War ideology, manpower channeling, and widespread criticisms of the public schools (Spring 1976). Although seldom taught as a semester-length course, astronomy was incorporated as a unit of study in the American Geological Institute's Earth Science Curriculum Project and its text, *Investigating the Earth* (1967), as well as in *The (Harvard) Project Physics Course* (1970). Further, an Elementary-School Science program designed to introduce astronomy in grades 1-6 was written and produced by two University of Illinois educators (Wyatt 1972). However, the rebirth of U.S. astronomy education was mainly accomplished when the 85th Congress passed the National Defense Education Act (NDEA) of 1958.

NDEA legislation broke long-standing resistance to federal support of education and brought sweeping changes to U.S. science, mathematics, and foreign language instruction (Clowse 1981). Initially, \$70 million per year was appropriated over four years from 1959-1963 to fund Title III of the Act. Allocations were distributed among state educational agencies on a matching basis for the "acquisition of equipment ... and for minor remodeling." To receive funds, a state was required to submit a state plan which met requirements specified elsewhere in the Act (Chapter 17 1959). In Pennsylvania, for example, enthusiasm for NDEA assistance ran so high among officials that over 100 new planetaria were installed in the coming decade (described below). This began the first large-scale integration of planetaria with the nation's public schools.

To complement NDEA legislation, the 88th Congress extended these same educational opportunities to our nation's colleges and universities through the Higher Education Facilities Act of 1963. Passage of the Act was fueled by expectation of soaring enrollments from the nation's first baby boomers. Initial appropriations of \$230 million per year were allocated for the construction of "academic facilities ... necessary or appropriate for instruction of students" (Chapter 21 1964). Through this legislation, substantial numbers of planetaria became part of post-secondary astronomy instruction.

An unexpected windfall of federal legislation was the continuing education planetaria offered to the attentive public, who attended regular programs, often free of charge, and were kept abreast of the latest developments in astronomical research and space exploration. Even today, institutions with planetaria act as focal points for countless amateur astronomical societies and serve as clearinghouses for upcoming space-related

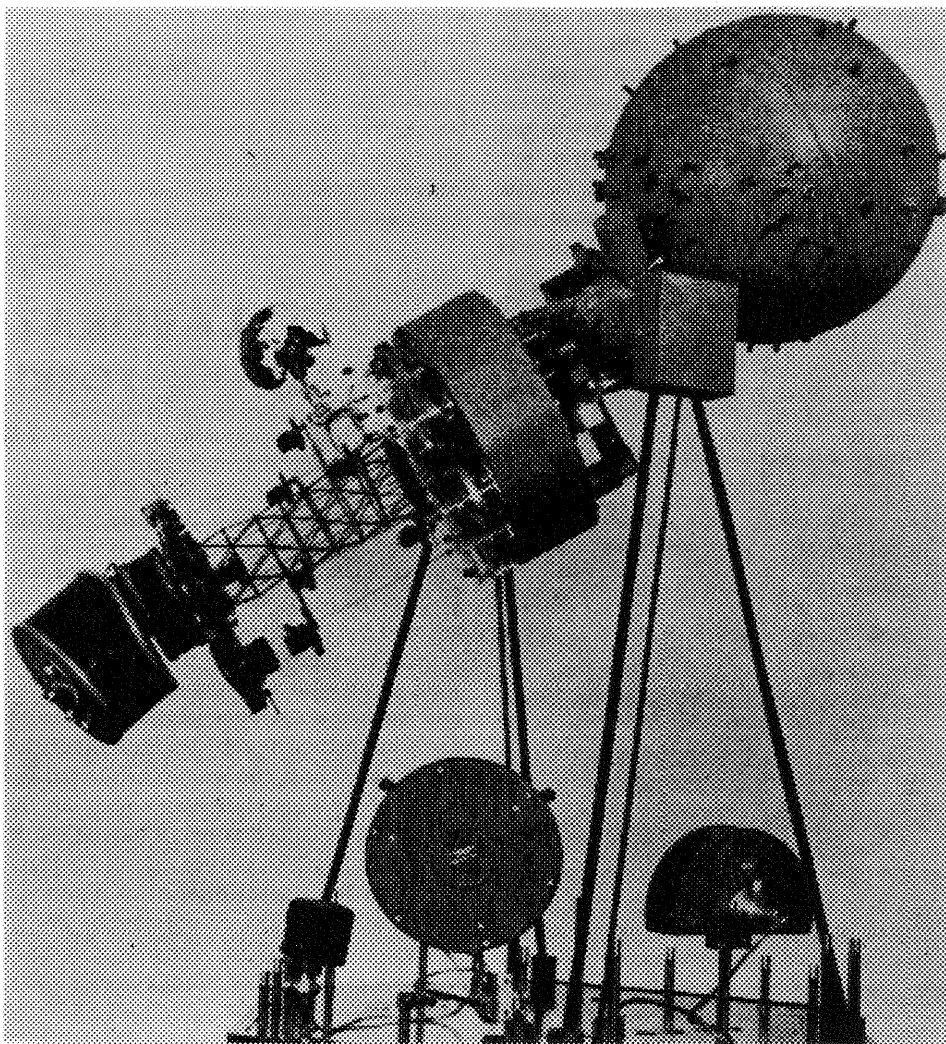
news and information. In addition to educating visitors, planetaria have stimulated younger audience members to pursue future careers in science and technology. Planetaria have improved the attentive public's understanding of science, not only within their fields of specialization but across a host of related disciplines.

## Response of American Planetarium Manufacturers

Prior to the launch of *Sputnik*, American entrepreneur Armand N. Spitz (1904-1971), formerly a lecturer at Philadelphia's Fels Planetarium, had begun to manufacture small, inexpensive (\$500) pinhole-style planetarium projectors in 1947 (Abbatantuono 1994). Over the next decade, more than a hundred of Spitz's Model A devices were installed in the U.S., earning Spitz the nickname, the Henry Ford of planetaria. Spitz's achievements in popularizing astronomy

brought him several distinctions, including an honorary doctorate from Otterbein College, Westerville, Ohio. Spitz was appointed national coordinator of visual satellite observations for Project Moonwatch, a collaboration organized by the Smithsonian Astrophysical Observatory, Cambridge, Massachusetts, which enabled amateur astronomers to assist professionals in reporting preliminary satellite observations (Hayes 1967). The first manmade object observed by Moonwatchers was the spent rocket booster of *Sputnik 1*.

Spitz's product line was expanded and a marketing strategy was initiated after NDEA legislation was signed into law in September 1958. The first of these resulted in design of a more sophisticated, versatile projector dubbed the A3P, which became the most widely manufactured planetarium instrument in the world. In place of Spitz's awkward-looking dodecahedron, a spherical *starball* exhibiting a sleek, professional appearance was substituted. More importantly,



A3P star instrument, designed by Spitz Laboratories president Wallace E. Frank (b. 1921). The A3P became the most widely manufactured planetarium instrument in the world. Courtesy Grace Scholz Spitz.

techniques of miniaturization made possible the fabrication of a fully integrated system of planetary projectors, which had been absent on Spitz's earlier models. Designed by Spitz engineer (and later president) Wallace E. Frank, the A3P, with its capability of demonstrating a full range of planetary phenomena, represented a milestone in the technical development of small planetarium instruments (Norton 1968).

A second strategy adopted by Spitz Laboratories was to incorporate its new projector within a larger package known as a space science classroom. Based upon the latest pedagogical theories, the educational role of the planetarium was redefined to meet the challenges of a new era. As promotional literature of the time stressed, our nation's allocation of unprecedented research expenditures demanded a basic understanding of space science among scientists and all citizens as well. To meet this challenge, a profound curriculum revision was advocated (Spitz Laboratories, n.d.).

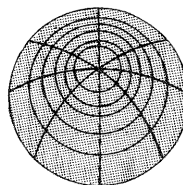
Even without the spur of federal legislation, planetarium usage in revitalizing American science education was encouraged by leaders of existing facilities. John C. Rosemergy, director of the Ann Arbor (Michigan) High School planetarium, remarked to colleagues at a 1958 symposium that "*Sputnik* made the American secondary school, and particularly its science programs, the subjects of a suddenly magnified and panicky concern." School planetaria, Rosemergy argued, "are a resounding answer to some of the questions directed at our schools because of *Sputnik*" (Rosemergy 1959).

### Pennsylvania's Earth- and Space-Science Curriculum

In 1958, Charles H. Boehm, Pennsylvania's Superintendent of Public Instruction, attended an Air Force Association convention in Dallas, Texas. Boehm later described this experience as "a preview of the kind of world in which today's youth would live the greatest period of their lives" (Boehm 1963). Boehm returned to organize a committee of 14 educators who drafted the nation's first integrated earth- and space-science curriculum. After preliminary testing, it was introduced throughout the Commonwealth during the 1959-60 school year (Kosoloski 1962). The course was usually implemented at the 9th grade level, replacing existing general science courses. Pennsylvania's curriculum was later adopted by other school districts across the country, but came to acquire an even broader significance in fulfilling the state's own educational mission.

Pennsylvania's earth- and space-science coordinator, John E. Kosoloski, and other

# THE USE OF THE PLANETARIUM IN THE TEACHING OF EARTH AND SPACE SCIENCES



PREPARED FOR SPITZ LABORATORIES, INC.  
BY ROGER NEIL EARLY

*Spitz*  
**LABORATORIES, INC.**  
**YORKLYN, DEL.**

**1960**

*Inside cover, Roger Neal Early, The Use of the Planetarium in the Teaching of Earth and Space Science (Yorklyn, Delaware: Spitz Laboratories, 1960). Courtesy Grace Scholz Spitz.*

state officials considered it their responsibility as citizens to maximize the potential offered by the unprecedented NDEA resource. They envisioned that school planetaria, along with astronomical observatories and earth/space science laboratories, could form the principal vehicles for delivery of the Pennsylvania curriculum, while satisfying the NDEA mandate for a state plan. By 1971, Pennsylvania boasted of having 151 or approximately 20% of the nation's 729 planetaria (either operational or in planning stages), of which 125 were operated by school districts (Sperling 1971a). Kosoloski described this task as being "not (simply) a job; it is a calling" (Kosoloski n.d.).

### Rebirth of U.S. Astronomy Education

Federal legislation, generalized under the

Elementary and Secondary Education Act and the Higher Education Act of 1965 (Clowse 1981), triggered a third and by far the largest phase of American planetarium growth. From just over one hundred permanent planetaria operating within the U.S. before *Sputnik*, their numbers rose dramatically. During years of peak activity in the late 1960s, coinciding with NASA's Apollo lunar landing program, approximately 80 new planetaria were established *each year*. Within the U.S., planetaria were located in every state but two (exceptions were North and South Dakota), plus the District of Columbia. With increasing frequency of occurrence, these were distributed among 102 museums or science centers, 238 universities/colleges, and 375 schools/districts. Fourteen installations did not fit these institutional categories (Sperling 1971a). Federal



funding significantly increased the planetarium community's institutional base, especially among school and collegiate institutions. This extraordinary movement yielded two principal consequences.

First, the cycle of astronomy teaching and learning, which had been absent since the turn of the century, was re-established. Both the content and rationale of astronomy education were dramatically altered by the space age, however. Astronomy was no longer accorded a place in the secondary curriculum to satisfy college entrance requirements or the mental discipline model of pedagogy. After 1957, astronomy and space science were looked upon as academic *disciplines* to be mastered in the nationwide rush to catch up with the Soviets. The necessity of offering a space science education to students of all ages justified the construction of hundreds of new school and collegiate planetaria through the 1960s (and beyond). Within a formalized educational context, planetaria remained in the schools and were used in instructing students well after other curricula, textbooks, and laboratory equipment purchased in the wake of *Sputnik* disappeared. At the same time, a second, informal context of astronomy education was strengthened, whose primary audience (akin to museum visitors) consisted of the attentive public, including families and children. While appropriations for planetaria were directed only toward formal education, an equal or greater emphasis upon learning occurred within the informal context, thus establishing planetaria in public facilities that by themselves could not have attracted the financial support needed to construct and operate them.

A second major impact of federal funding resulted in professionalization of the community of planetarium educators. Rapid institutional growth fostered urgent needs of formalized training programs in planetarium instruction. NSF-sponsored summer institutes and graduate-level internships were hurriedly established to satisfy these demands. A wealth of new institutions and personnel served to redefine the social structures of the community itself. The space age exerted a profoundly unifying effect upon the American planetarium profession. Two national symposia on planetarium education were convened in 1958 and 1960, which resulted in publication of the discipline's first professional monographs (Jagger 1959; Roche n.d.). Leaders of major U.S. planetaria hosted the first international conference in 1959, inviting directors from institutions in Iron Curtain countries (Anon. 1959). In 1959, NASA began astronaut training exercises at the Morehead Planetarium, Chapel Hill, N.C.,

which continued through the historic Apollo-Soyuz mission in 1975 (Langfeld 1962; Hall 1966). During the 1960s, NASA underwrote expenses for an elementary education resource guide and conducted the first comprehensive survey of the community's 421 extant planetaria (Wagner 1966; Ahrendt n.d.).

Planetarium personnel first organized themselves into regional associations, modeled after the National Science Teachers Association (NSTA) and other affiliate-member societies. In 1970, the first continent-wide association was formed at Michigan State University's Abrams Planetarium and welcomed institutions of both Canadian and Mexican origin (Sperling 1971b). From its inception, the International Society of Planetarium Educators (ISPE), now known as the International Planetarium Society (IPS), has remained the most viable professional organization of its kind and has grown to encompass some 19 affiliate chapters from around the world. Last year, it celebrated its 30th anniversary and hosted its fifteenth biennial conference in Montréal, Québec, Canada. It is difficult to imagine how either the regional associations or ISPE/IPS could have organized themselves as quickly, or with the same results, if the Soviets had not orbited a satellite before U.S. launch preparations got underway for the International Geophysical Year (IGY).

### Planetaria and Educational Research, 1963-1970

Significant educational research in American planetaria only began in the mid- to late-1960s. The unfavorable conditions prior to *Sputnik* contributed to the delay of this research. While astronomy was largely absent from elementary and secondary curricula in the pre-*Sputnik* years, student exposure to planetaria was limited to periodic visits at public museums/science centers. Once NDEA-funded planetaria began to proliferate, and space science classrooms became regular features of districts (Williams 1960; Berland 1961), educators realized the relevance and importance of studying the types of learning resulting from the use of planetaria as compared with traditional forms of instruction. Two distinct methods of inquiry were used: demographic surveys administered to determine patterns of utilization, and experimental analyses comparing the effectiveness of planetarium instruction to ordinary classroom techniques.

Among the former category, Ruth Ann Korey (1963) was the first to explore the nationwide scope and nature of planetarium programs in relation to elementary education. She reported that organized class visits

constituted the services most often requested by elementary schools. Little formal evaluation of student learning was conducted by planetarium instructors and limited opportunities existed for student participation. Maurice G. Moore (1965) examined selected characteristics of adults enrolled in continuing education classes. Moore analyzed the media habits, word-recognition abilities, and personal attitudes toward expenditure of funds for space research among those who attended planetaria and those who did not. Planetarium attendance was correlated with higher word recognition abilities and more positive attitudes regarding space exploration. Moore's research provided evidence of positive reinforcement between the popularization of science and increased levels of public support for science/engineering policy decisions.

An important advance accompanied the first experimental analyses of planetarium lecture-demonstrations. Astronomy educators anticipated that planetaria would prove to be the most effective means of instruction, because of the theory that "the closer the vicarious experience" — representation of the night sky — "is to the actual objective experience, the stronger and more accurate (will be) the perception of the learner" (Reed 1970a). Yet, four independent investigations of that hypothesis reported disconfirming



*International Society of Planetarium Educators' first president, Paul R. Engle (1919-1992). Courtesy John Hare IV and IPS Archives, Bishop Planetarium, Bradenton, Florida.*



*Conference of American Planetarium Educators (CAPE), Michigan State University, 22 October 1970. Host Von Del Chamberlain and keynote speaker Dr. George O. Abell (Armand N. Spitz Lecture) are visible at lower right corner. Courtesy Michigan State University Photographic Laboratory (neg. no. 703198-1).*

evidence. Classroom lecture-demonstrations either produced results that differed little from, or were judged superior to, planetarium demonstrations (cf. Smith 1966; Reed 1970b). This finding was the first major blow to instructors and manufacturers who were surprised at the apparent inadequacy of the planetarium as an instructional device. Experimentalists suspected, however, that the problem lay not with the planetarium or its utilization, but rather with the means used to assess student performance. Researchers unwittingly uncovered the difficulties experienced by students of all ages in attempting to transfer knowledge acquired in the context of planetarium instruction (namely, the darkened, three-dimensional planetarium chamber) to the context of evaluation (the lighted classroom environment filled with two-dimensional representations). The difficulties of transferring between the two contexts appeared to explain the planetarium's measured lack of effectiveness as a device for teaching a variety of astronomical concepts (Reed 1970a; Warneking 1970).

Research into planetarium education expanded and diversified after 1970, while the number of facilities topped the one-thousand mark. Experimental analyses yield-

ed more sophisticated understandings of the learning strategies and preconceptions by which students and adults acquire and display their thinking skills. One of this era's leading developments was an emphasis on participatory-oriented planetarium programs (Friedman 1975). Whether adopted in formalized educational contexts, or included as general audience-participation techniques, this approach demonstrated superior learning potential and retention of information (Friedman et al. 1980). Thereafter, it became widely diffused among planetarium educators.

## Conclusions

Dissatisfaction with our nation's educational system, which reached crisis proportions with the launch of *Sputnik*, resulted in hundreds of new planetaria being installed in schools/districts, universities/colleges, and museums/science centers, along with the renaissance of U.S. astronomy education. Correspondingly, new social structures, research opportunities, and means of professionalization arose in response to the rapid increase in planetarium facilities. Equally important to the impact of *Sputnik* on the public's understanding of science was the

resulting feedback generated from audience members. The attentive public's voice for continued support of space exploration had a significant impact on later space initiatives.

Since their inception, planetaria have provided significant levels of both formal and informal education for the astronomically-minded attentive public. They have inspired future generations to fashion careers around the scientific and technical innovations accompanying the dawn of spaceflight. United States astronomy education and the American planetarium community benefited enormously from the Soviet Union's surprise launch of *Sputnik*. Without this jolt, curriculum rebirth and the enhancement of professional status among planetarium educators might not have been so readily achieved.

## Acknowledgements

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# Bear Tales (And Other Grizzly Stories)

1998 IPS Eugenides Foundation Script Contest  
Third Place Winner

Jon U. Bell  
Hallstrom Planetarium  
Indian River Community College  
3209 Virginia Ave.  
Fort Pierce, Florida 34981 USA.

tor of Indian River Community College's Hallstrom Planetarium in Fort Pierce, Florida. This program allows audiences to revel in the wonder of the night sky and the joy of storytelling between generations. Replete with Jon's trademark songs and occasional puns, it never forgets that people learn well from stories and that they (especially children) have enviable imagination.

The script won 3rd prize in the Biannual IPS Eugenides Foundation Script Contest and will soon be included with all of the other entries in the IPS script bank curated by Gary Sampson. For inquiries about the show, contact Jon at +1 (561) 462-4888 email JBELL@ircc.cc.fl.us or mail to Hallstrom Planetarium, Indian River Community College, 3209 Virginia Ave., Fort Pierce, FL 34981 USA.

- Alan Davenport

Bear Tales (and Other Grizzly Stories) entered the 1998 Eugenides Script Contest from the creative mind of Jon U. Bell who is an Assistant Astronomy Professor and Direc-

## BEAR TALES (And Other Grizzly Stories)

G: Grandpa Ben - retired NASA engineer  
K: Mom Kay - research biologist  
B: Dad Bob - sky interpreter, musician  
J: oldest son Jim - aspiring troublemaker  
S: youngest daughter Skye - aspiring astronaut

## VISUALS/EFFECTS

house lights on  
sidereal time: 9h 30m  
house lights down to dim  
ambient light  
forest pan & campfire fx  
stars on

smoke curls up from campfire

Blackbeard profile

xf to xy sailing ship

Maynard profile

xf to battle

xf to head on spike

xf to head gone from spike

Blackbeard and devil

Blackbeard and friends

## SCRIPT

sounds of crickets and crackling fire  
[THIS LAND], song by Woodie Guthrie)  
B: (singing) As I was walking that ribbon of highway, I saw  
Above me an endless skyway, I saw below me a golden valley -  
This land was made for you and me.  
CHORUS:(everyone sings) This land is your land,  
This land is my land, from California to the New York Island;  
From the redwood forests to the Gulf stream waters,  
This land was made for you and me!  
K: That was a great song - that takes me back to the sixties ...  
J: Hnmph - you mean the stone age...  
B: Well, maybe the Rolling Stones age.  
G: Y'know, it *sure* is nice out here in the country. I want to thank you kids for comin' along on this trip.  
I've always liked it out here ...  
K: Oh, Dad, you know we enjoy camping out under the stars with you - and you're *such* a good story teller ...  
G: Hey, I ever tell you the one about Blackbeard the Pirate?  
J: Only about a zillion times ... ouch!  
K: We'd love to hear it, Daddy -  
EVERYONE: (imitating pirates) Arr!  
G: Okay, here goes. You all know Blackbeard the Pirate, the scourge of the Spanish Main. His real name was Edward Teach, and he did his wicked deeds all up and down the eastern coast of North America in the early 1700's.  
Well sir, the gov'ment had finally had enough, and sent a naval vessel under the command of Lieutenant Robert Maynard out to capture Blackbeard. Maynard caught the pirate by surprise out near Cape Hatteras. After a fierce battle, Blackbeard was killed, and Lieutenant Maynard cut off his head for good measure.  
EVERYONE: Eeuh!)  
Then the Lieutenant had the head set up on a tall spike, where it remained for some time. Finally, the head disappeared one night. No one knows who took it or why.  
J: (sarcastically) Ooh, scary!  
S: And that's the story?  
G: Well, not quite. See, some people say that Blackbeard's body is still out there somewhere, searching for his head. Some say he needs it in order to deal with the devil, others that he wants the head so that his old shipmates will be able to recognize him. Nights like this, when there's a little breeze in the air, you



can sometimes hear him trampin' through the woods, calling out, "Where's my head?"

[rustling noise]

J: Hey, what was that?!

B: Oh, just a raccoon or skunk, I expect.

S: A skunk - eeuuuuh!

G: Or Blackbeard come lookin' for his head -

K: Stop that, Daddy!

B: Now relax everybody, nothing's coming out of the woods, and the wildlife will give us a clear path...

S: What about bears?

[owl hoots]

S: There aren't any bears in these woods. Are there?

J: Naah.

K: You're probably right, unfortunately. There used to be bears out here, years ago. But like wolves, and woodland bison, and mountain lions, the bears haven't been able to compete with civilization. You'd have to travel way out into the wilderness to find any - maybe up in the mountains.

J: Boy, I'd hate to meet up with a big ol' grizzly way out here!

K: Grizzly bears - no, they're not that common anymore, although you can still find them in Alaska, or the Rocky Mountains. Now Black Bears, that's more like it. They're a bit smaller than a grizzly, but they can still weigh as much as 600 pounds or more!

(exclamations of "wow!", etc.)

K: The black bears have been more successful in adapting to cities and people, but even so, their numbers have dwindled to only about 250,000 today.

S: Aren't they still habitatin'?

K: No, honey, it's springtime now, so the bears should be out looking for food. And even in the winter, bears don't truly hibernate. They *do* try to stay inside the shelter of caves or fallen trees, and they *do* tend to sleep a lot, but a bear's body temperature only drops slightly, and it will sometimes come out for a little stretch ... but like I said, I don't think there are any more bears left here. The forest is greatly changed since the days before settlers came to the land.

G: It's been said that back in the old days, a squirrel could go from the east coast of North America all the way across to the Mississippi, without ever having to touch the ground, that's how many trees there were.

J: Guess that's impossible now.

K: Oh, look kids, I see Orion, way over there, low in the sky! See the three Stars that form his belt?

J & S: Oh yeah!

B: Better look now. You won't see him too much longer. He'll be setting in another hour. And when we get into summer, we won't be able to see him at all, unless we get up just before sunrise.

S: What's that bright star off to his left?

G: That there, Skye, is what's called the dog star.

J: Hey, has anybody seen Toby?

S: He's prob'ly off chasin' after his star ...

K: Oh dear, he has run off. We should have tied him to his leash - I hope he's ok.

S: Why's it called the dog star?

G: It's supposed to mark the nose of Canis Major, the Great Dog in the sky. There's a little dog, too, Canis Minor, over here by the star Procyon. But their master Orion is setting now, and I 'spect the dogs will go followin' after him...

J: What are those two stars over there? They look a lot alike.

K: Oh, those are the twins, Castor and Pollux. They're the heads of Gemini - twin sons of Zeus, who the Romans used to honor when they swore, "by the Gemini", which is where our modern oath, "by Jimminy" comes from ...

B: No, no, that came from a Walt Disney movie about a little cricket ...

(everyone groans)

B: Now up over here in the north is a pretty easy star pattern - it's the Big Dipper. See - three stars form the handle, and four stars make up the bowl.

S: Looks like a big shopping cart without the wheels.

B: Hmm, never thought of it that way. Yeah, I guess maybe it does ... Anyway, the Big Dipper is a good thing to find because we can use it to discover a lot of other stars. For example, take the last two stars of the Big Dipper's bowl; connect them with a line; then stretch that line out the open end of the bowl - and it leads you to the North Star.

J: Wait a minute. *That* can't be the North Star. It's not bright enough.

B: Well, a lot of folk *think* that the North Star's the brightest star in the sky, but it really isn't - in fact it barely makes the top fifty list.

J: Then why's it so important?

B: It's special because out of all the stars in the sky, it's the only one that doesn't move.

J: I don't see *any* of them moving ...

B: Ah, that's because in order to see the stars move, you have to watch for a long time; their

Pole star diagram	motion is very slow, caused by the earth's rotation. But the North Star is special, because it's almost right over the earth's north pole. The north pole always points in that same direction, like the point on a spinning top. So the North Star's always in the north. Maybe by the time we climb into our sleeping bags we'll come back to the North Star and see if anything's changed. Anyway, the North Star's also at the end of the handle of the Little Dipper; it's a faint group of stars, and not as easy to see as a lot of people think; the North Star and the two stars at the end of its bowl show up the best.
Little Dipper Outline	Now if we take the line that we drew from the Big Dipper to the North Star - and keep on going—we wind up over here, at a group of stars that looks like a letter "W".
Cassiopeia outline	S: I think it looks like an "M". B: Could be. Any way you look at it, it's still the constellation Cassiopeia, the beautiful queen of ancient Ethiopia. Now let's return to the Big Dipper's pointer stars, and this time let's go the other way. We eventually bump up against a "question mark" pattern of stars here - it's the mane and the head of Leo the Lion, a great springtime constellation.
Leo outline	K: Ah, that's one of my favorites; I can almost see him up there, stalking the Gemini twins. There's Regulus, the bright star that marks his heart. B: OK, let's go back to the Big Dipper. This time we'll use the handle to guide us to some other stars. If we trace a line along the bend of the handle, and think of it as part of a circle, or an arc, then we can travel along the arc to this bright star here in the east, called Arcturus. And the way we remember the name of this star is by saying, "we arc to Arcturus"; and then if we continue along the arc, we "speed on to Spica," in the constellation Virgo.
Virgo outline	J: Hmm. "Arc to Arcturus, and Speed on to Spica." Got it. K: Do you kids want to see an ice cream cone in the sky? S: Show me! Show me! J: All right! K: I thought so. This is one of those pointed, sugar cones, the kind that Skye likes - S: Oh boy! K: Arcturus is at the tip, so here's one side of the cone; here's the other side; here's the top of the cone, and here are the sides again ... J: "Hey, yeah! I see it!" S: I can see it too!" K: And over here's a scoop of ice cream that fell off the cone.
Bootes & Northern Crown outlines	(exclamations - J: "oh, mom", S: "get real") K: Well, these are really two other constellations - Bootes the Shepherd, and the Northern Crown, that belonged to the beautiful princess, Ariadne. B: Hey, I've got an idea. Let's move away from the campfire, so we can see the stars a little better. J: But what about Blackbeard? S: And bears?
Campfire pan down ambient light off - dark sky	K: Lions, and Blackbeards, and bears, oh my! (kids and K repeat this verse twice) B: Cute. Anybody coming? (footsteps. crickets give way to small wind sounds. At various points in the show, train whistles and dog barks can be heard.) G: Gorsh, it sure is purty, all those stars! S: How many stars are there? J: A lot. B: Hmm. Well that answer will do for the moment. K: There are so many stars up there that it's hard to find a lot of the constellations we just saw. Let's see if we can find the Big Dipper again. J: There it is! But there are a lot of other stars around it. Hey, and I can finally see the Little Dipper! B: Yes, there's a whole lot of stars that we couldn't see before. Few people get to see the constellations like this there're usually so many lights turned on at night that we can't find a dark sky anymore. G: Ah, at last, I can see the bears. (kids - "Where!", followed by adults chuckling) K: I don't think your grandfather meant real bears. I think he was talking about bears in the sky. G: Kay, you spoil all my fun. Yes, that's right. The Big and Little Dippers are also known as the Greater and Lesser Bears. G: The Big Bear's not too hard to see after you look at it a couple of times: the top of the dipper is the bear's back; way out here is the bear's head; down along here are stars that trace out the front legs, all the way down to the paws; up here's the bear's stomach; here are the back legs; and finally, the dipper's handle becomes the long, beautiful tail of the bear. Want to see it again? (uncertain J: "yeah", S: "ok" and J: "do it again") G: OK. The back .. the head .. the front legs .. the stomach, the back legs ... and the long bushy tail. J: Hey, wait a minute - bears don't have long tails! S: Yeah, they got little, short stubby tails. G: Well, these bears are a little different from earthly bears, and thereby hangs a tail ... (everyone - groans, S: "Oh Granpa", J: "that was awful," etc.) K: Any way to stop him? B: Forget it. He's on a roll ... G: Now a long time ago, there were strange and powerful gods, according to the myths of ancient Greece; and most of them lived way up on a mountaintop - Mount Olympus, it was called - and chief among the gods was Zeus, who was the king of them all. Zeus was nearly <i>everybody's</i> boss, except <i>he</i> in turn
Mt. Olympus add Zeus	

add Hera	had to answer to his wife, Mrs. Hera Zeus, whom he managed to displease at least twenty or thirty times a day.
xf to Zeuss arguing with Hera	One afternoon he and Mrs. Zeus got into a big fight, and next thing you know old Zeus went storming out of Mt. Olympus he'd decided to walk it off down on earth amongst mortal men. Only it wasn't mortal man he crone across, but mortal woman. Her name was Callisto, and she was the most beautiful thing Zeus had seen for quite some time. Anyway, he lost his head and asked her out for a date, and the next thing you know they'd settled down and gotten married, and pretty soon they had a handsome young son named Arcus.
xf to earth pan	
xf to Callisto	
Zeuss & Callisto	
add Arcus	Course, the only thing wrong with this happy family life was that old Zeus had forgotten that he was already married, and the first Mrs. Zeus was absolutely furious! She caught up with the second Mrs. Zeus out in the woods one day, and after a little bit of name calling and such, Hera let loose and turned poor Callisto into a grizzly bear -
angry Hera	S: How could that happen, Granpa? Nobody can <i>really</i> get turned into a bear, can they?
Hera & Callisto	G: Well, honey, this is just a story that was told a long, long time ago,
xf to Hem tums Callisto into bear	S: (brightly) Oh, just "pertend," huh?
	G: Yes, Sky, that's right. Anyway, here was Callisto, suddenly turned into a bear, and thinking like a bear, she runs off deeper into the forest, Zeus looked for her for a real long time, but he couldn't find her. Hera had had her revenge.
Callisto bear	Well, a lot of years pass, and one day a brave and handsome young man is hunting in those very same woods, when all of a sudden, out from the bushes shambles a large and shaggy bear! It was Callisto, of course. No sooner does the young man see her, when he pulls out an arrow and fits it to his bow. He draws a bead on the bear, and is all ready to shoot her, when, to his horror, he discovers his hands turning into claws! He drops his bow and arrow, and then he falls to the ground <i>himself</i> , growling all the time.
xf to puzzled Zeus	J: It was her son, wasn't it?
	G: Yep, it was Arcus all right.
Arcus	J: How come he was turning into a bear like his mom?
xf to Arcus & bear	G: Well, as luck would have it, old Zeus had finally caught up with Callisto, just as Arcus was about to kill her.
xf to Arcus aiming arrow	He <i>couldn't</i> change Callisto back into a woman again, but he <i>could</i> stop Arcus from making a big mistake, by turning <i>him</i> into a bear as well.
xf to Arcus & bear claws	So the immediate danger was over; mother and son were reunited as bears. But Hera was still a threat, so Zeus decided he'd better hide the bears, or at least put them some place where she couldn't get <i>at</i> them.
xf to Arcus into bear	After he thought about it a while, Zeus figured out that the sky was the best place to put them - Hera could <i>never</i> reach them way up there!
	Now the problem was, how was he going to pick them up? They weren't thinking like people anymore, and if he wasn't careful, they'd be likely to take a few pieces out of him before he could get them safely up into the heavens.
xf to Zeus looking on in previous scene	He couldn't pick them up by their ears, could he?(chorus of No! They'd bite him!)
	G: Well, how about picking them up by their paws? (chorus of No! They'd scratch him!)
	G: So where do you grab a bear? Zeus studied the problem from all ends, until the answer finally hit him - in the end, of course.
xf to Zeus turning Arcus into bear	(laughter, "oh no!")
xf to mother and son bears	G: Zeus went behind Callisto, and picked her up by her little short, stubby bear tail. Then he swung her over his shoulders, faster and faster, until she was spinning so fast she became a blur - that's when he let go!
	Callisto quickly reached escape velocity (about 7 miles a second by the way), and she sailed off into space and became a constellation!
pointer as needed	Then he went around to Arcus and picked <i>him</i> up by <i>his</i> little stubby tail, and spun <i>him</i> around until he too was launched up into the sky!
	And that's why there are two bears up in the northern sky tonight - Callisto, the big bear, or Ursa Major as the Romans would have called her; and Arcus, the little bear, or Ursa Minor.
Zeus picking up Callisto	S: So how come they got long tails granpa?
xf to Zeus spinning Callisto	G: Oh, well that's the easy part. Both these bears were pretty heavy, and Zeus had to use a lot of strength to lift them up off the earth. So when he picked them up by their tails, he stretched them out, and that's why these bears have such long tails, even to this day.
xf to Ursa Major outline	K: Oh daddy! That was terrible!
xf to Zeus picking up Arcus	G: Kinda un <b>bear</b> able, huh.?( more groans)
add Ursa Minor outline to Ursa Major outline	B: You should be em <b>bear</b> assed to tell that <i>tale</i>
	G: Trying to <i>beary</i> me in puns, eh? Well <i>bear</i> with me - it gets much <i>grizzlier</i> from here on out. (more groans)
	J: So where's Blackbeard's head?
	B: Not up there, I'm afraid. Hey, would you kids like to see a dragon?
	J: Yeah, dinosaurs with heartburn!
pointer as needed	B: (a' la W.C. Fields) Then look no farther for you've come to the right place, m'boy! Look north again. Now, winding between the two dippers in the sky is a long faint line of stars they start way over here, midway between the bowls of the dippers; then wrap around the Little Dipper; then down again, and finally end up here: a few bright stars that form the head of Draco the Dragon. Draco was thrown into the sky by Zeus' daughter Athena, the goddess of wisdom, following a big fight

Draco outline	S: between the gods of Olympus and the Titans. Did she stretch out his tail too? J: Dragons come that way. S: Oh, I knew that. J: You still haven't told us how many stars there are. B: Well, right now we can see a couple of thousand stars. That's not too bad, considering that we'd only be able to see a hundred or so if we were still in the city. J: But that isn't what you were getting at, was it? You meant something else when you said there were other stars we couldn't see. B: Hmm. Let me see if I can tell this right. There's a great old poem by Robert Frost, called "The Star Splitter." And it's all about a man who burned his house down for the fire insurance so he could buy a telescope. Many people had heard him say "The best thing that we're put here for's to see; The strongest thing that's given us to see with a telescope." "Often he bid me - come and have a look Up the brass barrel, velvet black inside, At a star quaking in the other end. That telescope was christened the Star-Splitter, Because it didn't do a thing but split A star in two or three.. We've looked and looked, but after all where are we? Do we know any better where we are?"
19th century brass telescope	
slow diurnal motion (+)	
stop diurnal motion sid: time = 11:00 hrs.	So what did Frost mean when he called the telescope a star splitter? There's a good example coming up now in the eastern sky that will help demonstrate this. Look over here, at the constellation Lyra the Harp, marked by the bright star Vega. Nearby Vega is another bright star, called Epsilon Lyrae. How many stars do you see here?
Lyra outline pointer as needed	S: I see one! B: Ok, now let's look at that star with binoculars. Now how many stars are there? S: Two! B: Now let's go over to the telescope that we set up earlier and look at Epsilon Lyrae. Now how many stars?
double star in binocular sights	J: Four! B: So why couldn't you see those stars before? J: They were too dim.
xf to 4 stars in telescope field of view ocular	B: Yes. <i>And</i> they were too close together. The telescope separated them for us. So what do telescopes and binoculars do? J: They magnify? B: Well, yes, telescopes and binoculars <i>do</i> magnify, but that's just a byproduct. What they <i>really</i> do is make things brighter and sharper. So things that <i>were invisible before</i> can be <i>seen</i> , and where there was just one star, there are now two or more. J: But how many stars are there altogether? B: Well, a couple hundred years ago, another man asked just that same question. His name was William Herschel. But he wasn't content just to ask - he really wanted to know! So Herschel decided to count all the stars in the sky!
William Herschel	(all kids say Wow!, Holy Cow!, etc.)
scan outlines	B: Actually, he didn't count them one by one; he made scans of various parts of the sky, and then used those scans to estimate how many stars were there in all. S: What's es-ti-mate? J: It means guess. B: It's a bit more scientific than that, but that's the basic idea. What Herschel found was that the stars weren't evenly spread around, but instead seemed to be bunched together in a broad band across the sky, that happens to match up with the Milky Way ...
xf to Herschel's observational sketches	K: Where is the Milky Way? B: This isn't the best time to see it, in the springtime, but you can see a little of it; it's that faint hazy patch of light over there.
pointer	J: Oh, I thought those were just clouds. B: In a sense, they <i>are</i> clouds, but not of this earth. You're looking at clouds of stars <i>trillions</i> of miles away. Anyway, what Herschel found was that there are more stars <i>near</i> the Milky Way, especially bright stars. This made him think that there was a definite organization of stars that he called a galaxy and that our planet was orbiting a star, the sun, that was just one of billions.
Milky Way detail	S: So how many stars are there?
rotating galaxy effect, with slow diurnal roll (+)	B: Herschel counted nearly six million stars in the Milky Way Galaxy before he was satisfied. Of Course we've counted a few more since then, and we're pretty sure that there may be as many as 200 billion stars!
diurnal motion off sid: time = 14:00 hrs. pointer	S: That's a lot! B: But that's only the beginning! Because beyond our star city, The Milky Way, there are other galaxies - J: There are? B: Wait a minute. There's another constellation up there that will help me explain this better. Look over here at this faint group of stars beneath the handle of the Big Dipper. J: Oh you mean the ones that sort of look like a letter Y?



	S: It looks like a wishbone to me!
	K: I think it looks like the Eiffel Tower!
	G: Yes, it was placed up there in the sky to commemorate the building of the Eiffel Tower in France. If you look carefully, you can see Mrs. Eiffel waving from the top ...
	S: What is it really?
	B: Well, the truth is actually a little stranger than that. You see, this group of stars is known as Coma Berenices. (kids go Huh?)
	B: Well, that's the Latin name. We call it Bernice's Hair. (kids go Huh?)
Bernice profile	B: You know, the thing I like about this constellation story is that, unlike the other ones we've been talking about tonight, <i>this</i> one is actually true and really happened.
add Ptolemy	You see, a long time ago, nearly three thousand years ago, in fact, there really was a woman named Bernice who lived in Egypt. She was married to a man named Euergetes ...
	J: A yur-ge what?
	B: Well, let's call him Ptolemy - that was his title. Anyway, he fought a lot of battles and Bernice was always worried about him.
	There was one really big war coming up, and Bernice was afraid that Ptolemy would be killed. So she made a promise. She vowed that if her husband came back safe and sound, she would cut off her beautiful long brown hair and offer it as a sacrifice to the gods.
victorious Ptolemy	Now Ptolemy came back from the battle, and he was fine - in fact he'd won! So true to her word,
add Bernice at barber's	Bernice cut off her hair and placed it on the altar in the temple.
xf to Bernice at gate & surprised Ptolemy	She met her husband at the city gate, and he said, "Bernice, what have you done to your hair!" - She'd gotten it permed. Well, she told him about her promise, and he said "ok, makes sense to me. "So they went to the temple to look at the sacrifice, but during the night, someone had broken into the temple and stolen the hair!
empty altar	J: Go figure.
	B: Yes, it was a classic case of 'hair today and gone tomorrow ... '
	(groans)
Ptolemy dragging priests outside	B: Anyway, Ptolemy got real mad! He took all the priests out into the courtyard and was going to execute them right there on the spot.
xf to pointing priest pointer	But just then it started to turn dark again. And one of the priests, who happened to be very smart and very clever, pointed to this part of the sky, and said, "Look, Ptolemy - the gods have accepted your wife's sacrifice and placed it up in the heavens to commemorate the occasion!"
	J: And Ptolemy bought it?
Coma Bernices outline	B; Hook, line and sinker! He didn't know the constellations, and didn't realize that the priest had made up that star pattern right there on the spot. And so from that time on, this part of the sky has been known as Bernice's Hair.
	G: Quite a hair-raising story. (groans)
binocular view of Coma Berenices star cluster	K: And now I guess you could say it's become a "permanent" constellation in our sky ...
	(more groans)
	J: So what does this have to do with galaxies?
	B: Oh. I'd nearly forgot. And this is really the neatest part of the story. Aim your binoculars at Bernice's Hair.
	B: What do you see?
	J: Lots of stars.
xf to Coma Berenices galaxy cluster	B: Yes, this is what we call a star cluster. There are a lot of open clusters like this in our galaxy.
	Now what you <i>can't</i> see lies beyond Bernice's Hair; beyond our Milky Way in fact. You'd need a pretty good-sized telescope to find them, but further out, there is another kind of cluster; instead of a cluster of stars, it's a cluster of galaxies - more than a thousand of them, nearly 400 million light years away.
xf to allsky galaxies	And beyond that, in all directions, there are literally billions of galaxies, each containing billions of stars...
pointer as needed	J: Makes me want to go inside and turn on all the lights.
	K: Maybe we <i>should</i> turn in for the night. Look how late it's gotten! You can't see Orion anymore, or Sirius, or Gemini! Leo the Lion was at the top of the sky when we started looking at the stars, but now he's drifted way over to the west. And meanwhile, if we turn around to the east, we'll see that there are three bright new stars that have suddenly appeared: we call these three stars the summer triangle.
	J: Hey, I see what you mean about the North Star. Look, it's still in the same place! See, the Big Dipper has moved, and everything else, but the North Star is still in the same spot in the north.
slow fadeup of campsite pan with ambient light	K: Yes, Jimmy, while we were out here looking up at the sky, the earth was turning under our feet, causing all the stars to shift their places. All except the North Star, which is almost directly above the earth's north pole, so we never see it move. Now, let's move on back to the campfire.
	(sound of crunching footsteps, then a rustling noise)
	J: Hey, what's that over there in the bushes?
	S: I dunno, but it's awfully big! (sounds of a menacing animal growl)
	K: And noisy!
add bear into dog series, or "bear rotates into dog"	J: Whatever it is, it's coming this way!
brute force shadow projector	(more scuffling in bushes noises, followed by more growling, panting, and barking)
	J: "Hey, wait a minute - that isn't a big ol' bear, that's just my dog Toby!"
	(dog barks)
	J: Good boy. Catch any bears? (more barking)
	S: Eeuuhh - I think he caught a skunk!

(everybody sounds disgusted)

K: Well, James Edward, Now you have a project for tomorrow - clean the dog!

S: We'll help you, Jimmy ...

B: Hey, let's close this campfire out with a song! I ever tell you 'bout your grandfather's brother Walter?

J: Oh yeah, Uncle Walter!

S: And his dancing bears!

K: Oh, the children love that song, Bob. Let's sing it!

B: Why not! And we'll even post the words on this tree over here just so's anyone who wanders in unexpectedly can join in on the chorus.

(K and company sing *Waltzing With Bears*, by Robert Force & Al D'Osche; original words by Theodore Geisel - "Dr. Seuss")

Uncle Walter & bears K: My Uncle Walter goes waltzing with bears;  
It's a most unbearable state of affairs;  
Walter on back stairs Every Saturday night he creeps down the back stairs  
"posted" sign on tree SNEAKS out of the house and goes waltzing with bears!

Walter dancing with bears CHORUS:  
He goes wa-wa-wa-wa-wa, waltzing with bears,  
Raggy bears, baggy bears, shaggy bears too,  
And there's nothing on earth Uncle Walter won't do,  
So he can go waltzing, a wa-wa-wa waltzing,  
So he can go waltzing, a waltzing with bears!  
nephew at light switch I went to his room in the middle of the night,  
empty room I tiptoed inside and I turned on the light,  
But to my despair he was nowhere in sight,  
'Cause my Uncle Walter goes waltzing at night!

dancing Walter CHORUS  
Walter and coat I bought Uncle Walter a new coat to wear,  
xf to hairy coat But when he comes in it's all covered with hair,  
xf to shredded coat And lately I've noticed there's several new tears,  
I'm sure Uncle Waiter's been waltzing with bears!

family scolding Walter CHORUS  
We asked Uncle Walter, "Why won't you be good?  
And do all the things that we say that you should?  
Walter looking toward forest We know that you'd rather be out in the woods,  
We're afraid that we'll lose you, we'll lose you for good!"  
We begged and we pleaded, "Oh please won't you stay?"  
And managed to keep him home for a day,  
But the bears all barged in and they took us away,  
Now we're dancing with pandas, and we don't understand 'em,  
But the bears all demand at least one dance a day!

Walter sitting down CHORUS (Now WE'RE wa-wa, etc.)  
Bears invading house (conversation during instrumental lick):  
dancing family S: Mama, we shouldn't really dance with bears, should we?  
K: No, honey, that would be very dangerous.  
S: Mama, we don't really have an Uncle Walter, do we?  
J: Not anymore - ouch!  
G: Let's do that chorus one more time!  
(all sing CHORUS again)

dancing bears animation K: And now our pajamas are covered - with hair!  
series (last note is punctuated by a dog howl)

"Waltzing With Bears" musical reprise and show credits as house lights come up ...

THE END

# IPS Eugenides Foundation Script Writing Contest

Steve Tidey  
Astronomy Educator  
Alexander Brest Planetarium  
1025 Museum Circle  
Jacksonville, Florida, 32207

After a break of two years, the International Planetarium Society is pleased to announce the return of its script writing competition, sponsored by the gracious support of the Eugenides Foundation in Athens, Greece. Scripts can be submitted between July 1 and December 31, 2001, and awards for the winners will be presented at the IPS conference in Mexico in July, 2002. But don't worry, if you are a winner you will not need to be present to accept an award. The competition is open to all IPS members.

The IPS has appointed me Coordinator for the competition, succeeding Alan Davenport, who put in sterling work when he held the post the last time the competition was held in 1997. Thank you, Alan, for your customary good work.

One of my first pleasant duties was to appoint three judges. I was keen for the panel to have an international flavor, and so I'm pleased to welcome back one judge from the panel for the last competition, and welcome onboard two newcomers. The returning judge is Marc Moutin of the Cite de L'Espace Planetarium in Toulouse, France. He will be joined by April Whitt of the Fernbank Science Center in Atlanta and my compatriot, Alex Barnett, of the Millennium Planetarium at England's new National Space Science Centre. These fine people will evaluate all entries based on the revised rules below.

The general category under which submissions will be judged is Most Creative Public Show Script. The two best scripts will be selected to share the prize money, which totals \$1,000. The first prize winner will receive a US check for \$700. The runner up will receive \$300.

The IPS can only accept scripts that have not been entered in a previous competition, and have been unpublished elsewhere. Please ensure that you enclose a signed copy of the release form given below, which assigns the script to the IPS. This will allow the Society to publish the scripts in the *Planetarian* and add them to the IPS Script Bank.

When this competition last ran, in 1997, Jim Manning of the Taylor Planetarium in

Bozeman, Montana, won first prize. That script bore his usual hallmarks of high quality, and so I encourage everybody to aspire to those heights. Please take the time to go back and read his script and list all its strong points. I'm not asking you to duplicate it, just realize what made it a winner.

In a GLPA Tips booklet that I edited on script writing, Jim wrote that for him one of the joys of writing shows is the chance to communicate his love of the stars to others. We are all communicators with a genuine love of and commitment to our work and subject matter, so writing a script is (or should be) a natural extension of our regular duties. I'm reaching out here to ask for submissions from people who perhaps would not otherwise send one in. If you think you don't stand much chance because you perceive the competition to be too strong, make that negative a positive force to sit down and write, anyway, and push your entry to greater heights. If you don't land one of the winning prizes, OK, but perhaps you will discover (or re-discover) a love for writing shows, which will benefit your dome in the long run.

The IPS Council have worked hard to bring back this competition, so please reward their efforts with high quality entries. A key to achieving that is to read carefully the competition rules. Once you've finished your script, read the rules again and check that you've abided by them. If you're not Haile Selassie delighted with it, amend what needs changing. You'll be doing yourself and the judges a huge favor by making the script as good as it can be.

I'd like to give you two other tips, for everybody's sake. First, if you can't sum up your script's purpose and objectives in 25 words or less, you're tackling too big a topic. Narrow the focus. Secondly, to stay focused on your subject, after each paragraph ask yourself, "Is the script sticking to the basic theme?"

I shall be delighted to receive entries reflecting the skills that we all know are plentiful in the worldwide planetarium pro-

fession, so send them, along with a release form, to me, Steve Tidey, c/o Alexander Brest Planetarium, 1025 Museum Circle, Jacksonville, Florida, 32207, USA.

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## IPS EUGENIDES FOUNDATION SCRIPT WRITING COMPETITION RULES

### I. General

- A. In recognition of individual excellence in public planetarium show production, the Society shall hold a continuous biennial contest sponsored by the Eugenides Foundation, Athens, Greece, under the category of Most Creative Public Show Script.
- B. Any currently enrolled IPS member may participate, by following the rules and procedures listed below.
- C. Winners shall be recognized in *Planetarian* and at the IPS conference, where they shall be awarded a certificate indicating their selection.
- D. The Society retains the right to publish copies of any and or all entries in the IPS journal, *Planetarian*, and/or include any and all scripts in an archive of scripts for the benefit of all Society members.

### II. Contest Rules and Procedures

- A. Any IPS member (individual or institutional) may submit, per contest, one entry which was completed within the past three years.
- B. Entries consisting of or containing previously submitted scripts, or material published elsewhere, will be disqualified.
- C. Each contestant shall submit six copies of each entry to the contest Coordinator: one copy for the Eugenides Foundation's files, one copy for the IPS files, and one copy for each of the three referees, plus the Coordinator. A single electronic document may be substituted for the hard copies, and is recommended, provided the format follows all guidelines established by the Coordinator in the current request for submissions. NOTE: A hard copy of the release form, as described below, *must* accompany electronic submissions.
- D. The contest Coordinator shall choose, from the list of IPS Fellows, three independent referees to consider each coded entry, based on a set of general and specific criteria listed below. The names and institutions of the authors will be kept anonymous from the referees, until all final decisions have been made and announced.
- E. The opinions of the three referees shall be

## ASSIGNMENT AND RELEASE

### IPS EUGENIDES SCRIPT CONTEST ENTRY FORM

(Complete one form per script. Enclose with each script by the deadline Dec. 31, 2001.)

Submission date: \_\_\_\_\_

The undersigned does hereby assign and release unto the International Planetarium Society

(IPS) the script entitled, \_\_\_\_\_,  
and permits the use of content of the script in whole or in part in connection with planetarium programs of all kinds.

The undersigned acknowledges that the script assigned here may be included within any script bank maintained by IPS, that IPS may publish the script in the Society journal *Planetarian*, that IPS may maintain scripts for distribution to its members on magnetic media and in hard copy form, and that scripts assigned to IPS may be screened by a committee to control duplication of material and to eliminate known proprietary material.

The undersigned does hereby represent unto IPS that this assignment and release is not contrary to any copyright registration or other registration relating to copyright protection with respect to the script; that this assignment and release is not in conflict with any other agreement executed by the undersigned, and that the undersigned will, to the extent reasonably necessary, execute such further assurances of title as may be necessary and defend the same.

IN WITNESS HEREOF, the undersigned has executed this assignment and release as of the date first above written.

SUBMITTED BY:

(Signature) \_\_\_\_\_

PRINT NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

ORGANIZATION/PLANETARIUM: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
(City, State)

WITNESS: (Signature) \_\_\_\_\_

PRINT NAME: \_\_\_\_\_ Title: \_\_\_\_\_



- quantified and averaged by the Coordinator, who shall then make recommendations to the Council, submitting along the referees' opinions.
- F. Entries are to be submitted between July 1 and December 31 of the non-conference (odd-numbered) years. Winners of that contest shall then be recognized, during the awards ceremonies at the following IPS conference.
- G. All scripts submitted must conform to the following format:
1. A cover page (one per entry) indicating Title, Author, Institution, Address, Telephone, Fax, Email address, number of pages and approximate running time of script/program.
  2. A completed IPS release form must accompany the entry.
  3. Script with narration, audio directions, and visual notes in text only, in English, typed or computer printed, double-spaced, pages numbered. Also, a heading to the script body must include a statement of goals/purpose of program and intended audience or age level.
  4. Text on one side of the page, with corresponding visuals noted on the other side. Line numbers are optional.
  5. Recommended visuals shall include such elements as slides, panoramas, video and special effects, plus appropriate star instrument functions/motions.
  6. Length should not exceed 45 minutes, but shorter scripts are acceptable.

### III. Evaluative Criteria

- A. The Referees will evaluate each script by assigning each of the 20 criteria, listed below, a numeric value as follows:
1. Five (5) for superior (or strongly agree)
  2. Four (4) for above average (or agree)
  3. Three (3) for average (or neutral)
  4. Two (2) for below average (or disagree)
  5. One (1) for inferior (or strongly disagree)
- B. Each referee shall respond to the following:
1. General Evaluative Criteria
    - a) The program's purpose/goals are clear.
    - b) The overall program achieves the perceived purpose and goals.
    - c) The program is appropriate for the intended audience.
    - d) The style and technique of the program enhances its purpose/goals.
    - e) Overall originality and creativity are evident.
  2. Specific Evaluation Criteria
    - a) Information Style:
      1. Contents are clear and minimize potential misconceptions.
      2. Sufficient and appropriate amount of astronomical and related concepts are included.
      3. Perceptual capacity of the viewer is acknowledged and respected. (For example, no information overload occurs.)
      4. Concepts are conveyed through creative devices, or new approaches that facilitate understanding.

5. The continuity of ideas expressed is readily apparent.
  6. Opening, concluding, and intermediate "scenes" are used to provide structure to the content.
- b) Entertainment Style:
1. Program features an attention-grabbing, or contemplative beginning.
  2. Program uses creative and dramatic elements to maintain interest.
  3. Perceived tone of address is positive.
  4. Examples/amount of humor used are appropriate and positive.
  5. The attitude of the script might motivate audience members to explore the topic(s) further on their own.
- c) Media Style:
1. Script and visuals are mutually supportive.
  2. The program makes good use of a planetarium's unique qualities to supplement and augment the show content.
  3. Writing is conducive to aural delivery of the script by narrators, characters, and/or performers.
  4. Pacing of the visuals and concepts optimizes comprehension and engagement of the intended audience.

### IV. Awards Categories/Values

- A. First Place      \$700.00 (USD)  
B. Second Place    \$300.00 (USD)

## Letters

To the Editor,

Often times, when a president leaves office, one of his/her last duties is to thank the people who have served with and on committees for that president. I would like to change that approach. I serve on one little task force (i.e. I serve only until the job is done) that was set up by President Kraupe and re-appointed by President Smith. During this time, I have worked closely with Dale Smith. I have seen him, at his own expense, travel the globe on behalf of IPS, spend countless hours proofing material, being an ambassador of good will, organizing tasks and committees and, in general, making sure IPS' work got done until the wee hours of the morning and on only a few hours of sleep. All this while, he held another post in a planetarium regional that also took a fair amount of time. He handled both admirably.

So, it is not Dale Smith who owes anybody any thanks, it is the members of IPS who owe Dr. Smith their utmost admiration and sincere thanks. I cannot speak to what the

other officers and committee members have done. I'm sure we owe them thanks as well, but Dale went above and beyond the call of duty. The only other person I know who even approaches Dale is John Mosley (there may well be others, but I have no personal knowledge of the amount of work they have invested). So the next time you see Dale, talk to him, thank him. Now he may actually have time to talk back.

Thank you Dale!

Gary Tomlinson  
Grand Rapids, Michigan

*I would like to heartily endorse Gary's kudos to Dale for a job superbly well done as president of the IPS. Dale brought a tremendous amount of energy to the organization, and he leaves us much the better off. -Ed*

Fellow Planetarians:

In the December 2000 issue of the *Planetarian*, Jim Manning, in his "What's New" column, reviewed "Navigating with Lewis and Clark." This half-hour planetarium production was written and produced by me for Valley City State University in

North Dakota. Generally Jim liked the production, but he did have a "quibble" concerning the use of an eclipse of the sun to determine longitude. Once the error was pointed out to me, I realized that I knew better.

It was fairly easy to change the tape so that it is correct and to change three slides to accompany the tape change. Everyone who had purchased the program before the error was discovered has received the replacement tape and the three new slides. New orders will receive the revised material.

My email address was given incorrectly in the column - there should be an underline between my first and last name. See the correct address below.

The music behind the "Navigating with Lewis and Clark" is spectacular. Keith Bear, the flutist on the sound track, was nominated for a Grammy this year.

Sincerely,

Eileen Starr  
Valley City State University  
Valley City, ND 58072  
701-845-7522  
Eileen\_Starr@mail.vcsu.nodak.edu

# Astronomical Quotes

Steve Tidey  
Astronomy Educator  
Alexander Brest Planetarium  
1025 Museum Circle  
Jacksonville, Florida 32205 USA

Picture the scene. You're either writing a script for a planetarium show, or you're in the middle of presenting a show. You come to that moment when you say to yourself, "What I need right now is a nice little quote that perfectly sums up [insert subject under discussion]."

With this predicament in mind, I present below over 100 astronomically-orientated quotes that I've gathered from a variety of sources. Have fun with them.

\*\*\*

"Astronomy teaches the correct use of the sun and planets." Literary Lapses, *A Manual Of Education* (p. 67)

"The history of astronomy is the history of receding horizons." Edwin Hubble. Quoted by D. W. Sciamia, *The Unity Of The Universe* (p. 74)

"TELESCOPE, n. A device having a relation to they eye similar to that of the telephone to the ear, enabling distant objects to plague us with a multitude of needless details. Luckily, it is unprovided with a bell summoning us to the sacrifice." Ambrose Bierce, *The Enlarged Devil's Dictionary*.

"As a pale phantom with a lamp  
Ascends some ruin's haunted stair  
So glides the moon along the damp  
Mysterious chamber of the air."  
Henry Longfellow, *Moonlight*

"OBSERVATORY, n. A place where astronomers conjecture away the guesses of their predecessors." Ambrose Bierce, *The Enlarged Devil's Dictionary*

"The night has a thousand eyes  
And the day but one ..."  
F.W. Bourdillon, *Light*

"Had I been present at the Creation, I would have given some useful hints for the better ordering of the universe." Attributed to Alfonso "The Wise" of Castille (1221-84)

"Damn the solar system. Bad light, planets too distant, pestered with comets. I could make a better one myself." Lord Jeffrey. Quoted by John Barrow, *The Artful Universe* (p. 34)

"The eternal silence of these infinite spaces [the heavens] terrifies me." Blaise Pascal, *Pensees*

"How inappropriate to call this planet Earth, when it is clearly Ocean." Attributed to Sir Arthur C. Clarke, *Nature*, 1990

"In the night sky when the air is clear, there is a cosmic Rorschach test awaiting us." Carl Sagan, *The Cosmic Connection* (p. 9)

"I can personally attest that fecal and urine spills can break the monotony of even the dullest days in space." William Pogue, *How Do You Go To The Bathroom In Space?* (p. 53)

"You seen one Earth, you've seen them all." Harrison Schmidt, walking on the Moon during Apollo 17. Quoted by Gene Cernan, *Last Man On The Moon* (p. 324)

"There was a young lady named Bright  
Whose speed was far faster than light  
She set out one day

In a relative way  
And returned home the previous night."  
Relativity, England's *Punch* magazine, December 19, 1923 (p. 591)

"Who cares about the half a second after the Big Bang? What about the half a second before?" Fay Weldon. Quoted by Paul Davies, *About Time* (p. 19)

"Black holes are the bungholes of space."  
*Beavis And Butthead* TV show.

"Your theory is crazy - but not crazy enough to be true." Quoted by Sir Arthur C. Clarke, *The Lost Worlds Of 2001* (Chapter 30)

"The sky speaks in celestial objects; the Sun, the Moon, the planets and the stars are its vocabulary. The sky's grammar is what these

objects do ....The whole sky is a stage, and the things we see there are players. They make their entrances and exits, take their bows and return for repeat performances." E. C. Krupp, *Beyond The Blue Horizon* (p. 4)

"You can pick a bright star from your doorstep and call it anything you like - for free." *Sky & Telescope*, August 2000 (p. 28)

"I don't take any notice of the laws of physics; they're so inconvenient." Q, *Star Trek: The Next Generation*

"If it's green and wiggles, it's biology If it stinks, it's chemistry. If it doesn't work, it's physics." Source unknown

"Now, there is one outstandingly important fact regarding Spaceship Earth, and that is that no instruction book came with it." R. Buckminster Fuller, *Operating Manual For Spaceship Earth*

"In all the history of mankind, there will only be one generation that will be the first to explore the solar system, one generation for which, in childhood, the planets are distant and indistinct discs moving through the night sky and for which, in old age, the planets are places, diverse new worlds in the course of exploration." Carl Sagan, *The Cosmic Connection* (p. 69)

"I now know how Lewis and Clark must have felt when they began exploring the West. It's fantastic!" Gerald Soffen, Viking Project Scientist, speaking at a press conference, June 23, 1976

"No matter how often you knock on nature's door, she won't answer in words you can understand. She'll vibrate and moan like a violin, but you musn't expect a song." Ivan Tugenev, *Fathers And Sons*

"... torrent of light and river of the air  
Along whose bed the glimmering stars are seen  
Like gold and silver sands in some ravine...  
Henry Longfellow, describing the Milky Way." The Galaxy. Quoted by Robert Burnham Jr., *Burnham's Celestial Handbook* (p. 1631)

"Von Braun himself had quipped that the first US astronauts to reach the Moon might have to pass through Russian customs. For the first decade of its history, the principle job of NASA was to ensure that American space travelers would not require a visa." Tom Crouch, *Aiming For The Stars* (p. 149)

"Polaris is like some politicians - famous but not too bright." *Planetarian*, Ed Frederick, Alden Omnisphere, New England Science Center

"Newton saw an apple fall and discovered the Laws of Gravity. Eve made an apple fall and discovered the Gravity of Law." Alexander King, *I Should Have Kissed Her More* (p. 51)

"Infinity is where things happen that don't." Quoted by W.W. Sawyer, *Prelude To Mathematics* (p. 143)

"Many a night I saw the Pleiades, rising through the mellow shade, glitter like a swarm of fireflies tangled in a silver braid." Alfred Lord Tennyson, *Locksley Hall*

"Nature, apparently, can make a gorgeous hexagon [in a beehive] but she cannot (or did not deign to) make a year with a nice even number of days or lunations." Stephen Jay Gould, *Questioning The Millenium* (p. 137)

"Nature and Nature's laws  
lay hid in the night.  
God said, 'Let Newton be!'  
And all was light."  
Alexander Pope, *Epitaph Intended For Isaac Newton*

"I once built a solar system [in Earth orbit] using a blob of orange juice as the sun, and M&Ms as the planets." Space shuttle astronaut Mike Mullane, *Do Your Ears Pop In Space?* (p.126)

"Discovery consists of seeing what everybody else has seen, and thinking what nobody has thought." Albert von Szent-Gyorgi, Quoted by Irving Good, *The Scientist Speculates*

"I find, in discussions with first graders and hippie communities, congressmen and cab drivers, that there is an enormous, untapped reservoir of interest and excitement in things astronomical." Carl Sagan, *The Cosmic Connection* (p.75)

"Of all the meteors in the sky  
There's none like Comet Halley  
We see it with the naked eye  
And periodically."  
H.H. Turner, *The Mathematical Gazette*, Volume VI, Number 91, 1911 (p. 53)

"Arithmetic and geometry, those wings on which the astronomer soars as high as heaven." Robert Boyle, Works, *Usefulness Of Mathematics To Natural Philosophy*, Volume 3 (p.

429)

"I am a detective in search of a criminal - the cosmological constant. I know he exists, but I do not know his appearance." Sir Arthur Eddington, quoted by Paul Davies, *About Time* (p.146)

"There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact." Mark Twain, *Life On The Mississippi*

"Science," Ann Druyan notes, is forever whispering in our ears, "Remember, you're very new at this. You might be mistaken. You've been wrong before." Carl Sagan, *The Demon-Haunted World* (p. 37)

"[Comet] apparitions are dangerous because people make them so. Comets kill people by self-fulfilling superstitions, when those who read them as telegrams from the gods or the Devil turn in panic to homicide or suicide." Nigel Calder, *The Comet Is Coming* (p. 12)

"The comet was so called because it had hair on it, I believe, but in late years the bald-headed comet is giving just as good satisfaction everywhere." Bill Nye, Remarks, *Skimming the Milky Way* (p.125)

"An expert is someone who knows some of the worst mistakes that can be made in his profession, and who manages to avoid them." Wernher Heisenberg, *Det Teil und das Ganze*

"If I have seen further, it is by standing on ye shoulders of Giants." Sir Isaac Newton, From a letter written to Robert Hooke in 1675

"Mortals, rejoice that there existed so great an ornament of the human race!" Part of the epitaph on Sir Isaac Newton's tomb in Westminster Abbey, London.

"The stage of the sky presents a free show. It will amaze, entertain, amuse and intrigue for a lifetime." James Kaler, *The Ever-Changing Sky*

"His knees should bend and his neck should curl his back should twist and his face should scowl One eye should squint and the other protrude And this should be his customary attitude." Harlow Shapely and Winslow Upton, describing a typical astronomer *Popular Astronomy*, *Harvard Observatory Pinafore* Volume 38, Number 3, March 1930 (p. 125)

"I ask you to look both ways. For the road to

a knowledge of the stars leads through the atom, and important knowledge of the atom has been reached through the stars." Sir Arthur Eddington, *Stars And Atoms*

"Basic research is what I'm doing when I don't know what I'm doing." Wernher Von Braun, quoted by R.L. Weber, *A Random Walk In Science*

"He wrested the world's whereabouts from the stars and locked the secret in a pocket watch." Dava Sobel, describing John Harrison's solving of the longitude problem, *Longitude* (p.176)

"I think there should be a law of Nature to prevent a star from behaving in this absurd way." Sir Arthur Eddington, commenting on black holes. *Observatory 58, Relativistic Degeneracy* (p.37)

"The sun's rim dips,  
the stars rush out  
At one stride comes the dark."  
Samuel Taylor Coleridge, *The Rime Of the Ancient Mariner*

"You may think it's a long way down to the chemist [drug store], but that's peanuts to space." Douglas Adams, *The Hitchhiker's Guide To The Galaxy*

"Einstein had a little theory  
It had something to do with relativity  
Well, Einstein put that theory to the test  
That's why he looks confused,  
and his hair's a mess."  
The New Rhythm and Blues Quartet

"The sky is a canvas on which is drawn the loveliest art." James Kaler, *The Ever-Changing Sky*

"To mistrust science and deny the validity of the scientific method is to resign your job as a human. You'd better go look for work as a plant or wild animal." P.J. O'Rourke, *Parliament Of Whores*

"Not explaining science seems to me perverse. When you're in love you want to tell the world." Carl Sagan, *Washington Post* (January 9, 1994)

"Einstein said that if quantum mechanics is right, then the world is crazy. Well, Einstein was right. The world is crazy." Daniel Greenberger, quoted by Paul Davies, *About Time* (p.163)

"The distinction between past, present and future is only an illusion, however persis-

tent." Albert Einstein, From a letter to Michaelangelo Besso, March 21, 1955

"The beauty of the Earth from orbit is something difficult to capture in words, but the soul has no difficulty in celebrating the experience. It's your wedding night, your children's births, your first Little League home run and every childhood Christmas rolled into one." Mike Mullane, *Do Your Ears Pop In Space?* (p. 140)

"Lost somewhere between immensity and eternity is our tiny planetary home." Carl Sagan, *Cosmos* (p. 4)

"Before I went to the Moon, I was a rotten s.o.b. Now I'm just an s.o.b." Alan Sheppard

"[Astronomer] The only nightwatchman who doesn't sleep on the job." Evan Esar, *Esar's Comic Dictionary*

"Energy = milk chocolate square." Source unknown

"... perusing the Great Volume of the Author of Nature ..." William Herschel, on viewing the night sky, in a letter to a friend, Dr. Hut-ton, in 1781

"We see what we want to see, and observation conforms to hypothesis." Bergen Evans, *The Natural History Of Nonsense, A Tale Of A Tub*

"Just because you know a thing is true in theory, does not mean that it is true in fact." Harry Harrison, *Deathworld*, Book One (p.153)

"When Einstein went to Mount Wilson and posed for photographs at the 100-inch telescope, Hubble gave his usual explanation about how the giant telescope was used to determine the structure of the universe. 'Well, well,' said Mrs. Einstein, 'My husband does that on the back of an envelope.'" Quoted by Ronald Florence, *The Perfect Machine* (p. 149)

"There are two kinds of physicists in Berlin: on the one hand is Einstein, and on the other is all the rest." Rudolf Ladenberg, *Einstein: A Centenary Volume* (p. 125)

"As surely as the Sun has risen this morning, and as surely as it will set this evening, the human race is going to the stars." Robert Zimmerman *Genesis: The Story Of Apollo 8* (p. 307)

"The running away of the galaxies doesn't mean they have a kind of aversion from us." Sir Arthur Eddington, *New Pathways in*

*Science* (p.210)

"Light brings us the news of the Universe." Sir William Bragg, *The Universe Of Light* (p. 1)

"I would rather believe in ghosts than in hyperbolic meteors." Sir Arthur Eddington, quoted by David Levy, *The Man Who Sold The Milky Way* (p. 8)

"No point is more central than this, that empty space is not empty. It is the seat of the most violent physics." John Wheeler. Quoted by Heinz Pagels, *The Cosmic Code* (p. 274)

"I have a horror of sunsets. They are so romantic, so operatic." Marcel Proust, *Cities Of The Plain*

"Pity the poor neutron  
He thought he was a proton  
But he wasn't positive."  
*The Physics Teacher*, Volume 22, Number 5, May 5, 1984 (p. 301)

"In physics you don't have to go round making trouble for yourself - Nature does it for you." Frank Wilczek, *Longing For The Harmonies* (p.208)

"Space isn't remote at all. It's only an hour's drive away if your car could go straight up." Fred Hoyle, England's *Observer* newspaper, September 9, 1979

"Space tells mater how to move, and matter tells space how to curve." *Gravitation* (p. 23)

"We are all in the gutter, but some of us are looking at the stars." Lord Darlington, in Oscar Wilde's play *Lady Windermere's Fan*, Act Three

"Time is Nature's way of keeping everything from happening at once." John Wheeler, quoted by Paul Davies *About Time* (p. 236)

"Time is just one damn thing after another." Source unknown

"The Moon is a different thing to each of us." Frank Borman, speaking aboard Apollo 8 in lunar orbit, December 24, 1968 *Genesis: The Story Of Apollo 8*

"Can we actually 'know' the Universe? My God, it's hard enough trying to find your way around in Chinatown." Woody Allen, *Getting Even* (p. 29)

"It is impossible to imagine the universe run by a wise, just and omnipotent God, but it is quite easy to imagine it run by a board of gods. If such a board actually exists, it oper-

ates precisely like the board of a corporation that is losing money." H.L. Mencken, Sample 79, *Minority Report: H.L. Mencken's Notebooks*

"I may not understand it, but it sure looks important to me." Ian Stewart *Does God Play Dice?* (p. 121)

"The solar system is a clock with nine hands. The ends of those hands are the planets. We live on the end of one of its moving hands." Fred Schaaf, *The Starry Room* (p. 138)

"The universe is just a fleeting idea in God's mind - a pretty uncomfortable thought if you've just put a down payment on a house." Woody Allen, *Getting Even* (p. 33)

"The universe is simmering down, like a giant stew left to cook for four billion years. Sooner or later we won't be able to tell the carrots from the onions." Arthur Bloch, quoted by John Barrow, *The World Within The World* (p. 221).

"The center of the universe is everywhere and the circumference nowhere." Giodarno Bruno, quoted by Joseph Silk, *The Big Bang* (p. 84)

"The universe: a device devised for the perpetual astonishment of astronomers." Sir Arthur C. Clarke, quoted by Clifford Pick-over, *Keys To Infinity* (p. 41)

"Isaac Newton is in the driver's seat now." Jim Lovell, halfway to the Moon in *Apollo 13*

"We hope to explain the universe in a simple equation you can wear on your T-shirt." Leon Lederman, quoted by Richard Wolko-mir, *Quark City, Omni*, February 1984 (p. 41)

"The universe was dictated, but not signed." Source unknown

"A vacuum is a heck of a lot better than some of the stuff Nature replaces it with." Tennessee Williams, *Cat On A Hot Tin Roof*, Act Two

"Missed it? Don't worry - nature will make more." Jon U. Bell, Hallstrom Planetarium, Indian River Community College, Fort Pierce, Florida

"Astronomers have a saying: To the general public, astronomy is just three things - the man in the Moon, the rings of Saturn and Halley's Comet." Quoted by John Goldsmith, *The Astronomers* (p. 50)

(Please see *Quotes* on page 40)

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# Reviews

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

Greetings for the first equinox of the millennium, planetarians. Here are some books and a software package that are worth your perusal. And as always, if you have read a good book lately and want to share it with your colleagues, contact me at the address above. We would welcome your contribution!

Many thanks to our reviewers for this issue: Richard Dreiser, Kristin Lester, John Mosley, George Reed, and Gary Tomlinson.



*Planet Quest, The Epic Discovery of Alien Solar Systems*, by Ken Crosswell, Oxford University Press, 116 High Street, Oxford OX1 4BZ, 1999, ISBN 01928 80837, \$9.95 paperback.

Reviewed by George Reed, National Space Centre, Leicester, England

Is it a history book? Is it a textbook? Is it a reference book? Is it interesting? Yes. Yes. Yes. And above all yes. This is an interesting book even if you feel that you are already familiar with the material. It's an interesting book even if you are not interested in the material.

I discovered *Planet Quest* when I was looking for some information on the naming of the planet Pluto. What I found was so interesting and so different than any other source I had looked at on the subject that I started looking at other subjects in the book. I finally just started at the beginning and read to the end. Did you know that Percival Lowell's widow, Constance, wanted to name the planet after herself? She didn't have a chance because Clyde Tombaugh "despised that

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"Planet Quest also includes numerous refreshing examples for looking at old material in new ways."

---

woman."

The thing that makes *Planet Quest* different from other similar books is that it brings you into the "real" world and lives of the astronomers who are involved in the competitive search for planets beyond the solar system.

Using an oral history approach you meet astronomers who are bitter about not being recognized for their early work, astronomers who express doubts about their abilities and astronomers who try to upstage the discoveries of others in the media. We know astronomers are human, but we are not often allowed to hear about the jealousies and bad feelings between astronomers in their own words.

*Planet Quest* also includes numerous refreshing examples for looking at old material in new ways. We often describe the Sun as an ordinary star. Crosswell points out that this is not so. "Incredibly, 99 percent of the stars visible to the naked eye outshine the Sun, yet 95 percent of all stars that exist actually emit less light than the Sun. It's just that these dim stars can't be seen unless they lie close to the Sun."

But the best thought was saved for the final paragraph. After listing the different ways in which people see the Universe, Crosswell states, "its most astonishing features are two of the simplest: it exists, and so do we."

*Planet Quest* includes an excellent glossary, bibliography and chapter notes as well as tables and diagrams throughout.



*Welcome to the Moon!: Twelve Lunar Expeditions for Small Telescopes*, by Robert Bruce Kelsey, Naturegraph Publishers, P.O. Box 1047, Happy Camp, CA 96039, 1-800-390-5353, 1997, ISBN: 0879612452, \$11.95.

Reviewed by Kristin A. Lester, Framingham State College, Framingham, Massachusetts, USA.

The next time someone says to you "I just bought this telescope; what can I do with it?" refer them to the book, *Welcome to the Moon!* In this book author Robert Bruce Kelsey takes you on a guided tour of the Moon through 12 expeditions. Kelsey is an expert at making the journey interesting; at no time does it seem the Moon is just another boring rock in space. He not only describes the magnificent lunar terrain, he also takes the time to explain such things as how different lunar features formed and how you can tell the relative ages of craters.

To get the new observer started, the first chapter is devoted to operating a telescope. It's written in a down-to-earth manner that anyone can understand. Unlike some texts (and some telescope users manuals) it's short and not bogged down with technical details. It has just enough information to get someone up and running with his or her telescope.

Once you've had some practice using your telescope, Kelsey takes you on 12 expeditions, each one exploring a small section of the Moon. He leads you skillfully on the journey, first learning to navigate by "crater-hopping," then on to deciphering the history of the Moon by looking closely at the details of craters, rilles, mountain ranges, and the maria. He accomplishes all this in a conversational tone that's always friendly, and never condescending.

During the expeditions, Kelsey often pauses to explain some of the geological history of the Moon. This serves to make the expeditions even more interesting. You are not only looking at interesting features on the Moon, you are looking at over 4 billion years of history. And from your view in your own back yard, through your own small telescope, you can figure out just what happened and when it happened to make the Moon look as it does today.

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"This book was definitely written for the novice observer with a small telescope.... I would particularly recommend this book to any adult or high school student who is new to observing."

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The book is full of sketches that complement the text nicely. They were all drawn by Kelsey, mostly based on views through a 60mm or 80mm refractor. At first I was disappointed that there weren't more photographs of the Moon. However, the lack of pictures inspired me to see the specific features for myself. I couldn't wait for dark so I could take a good look at the Moon. Despite the large number of drawings in the book, there were, on occasion, a few craters and the like that were mentioned in the text but not labeled in the drawings. One can only hope his directions are good enough that you do not need a map for those craters.

This book was definitely written for the novice observer with a small telescope. However, it is still quite interesting for even the well-experienced observer, particularly one such as me who usually considered the

Moon nothing more than annoying light pollution. I would particularly recommend this book to any adult or high school student who is new to observing. Middle school students with a strong interest in astronomy may enjoy it, as well.



*Catalogue of Meteorites*, With special reference to those represented in the collection of the Natural History Museum, London, Fifth edition (Revised and Enlarged), by Monica M. Grady, Cambridge University Press 40 West 20th Street, New York, NY 10011-4221 2000. ISBN: 0521663032. GPB 90.00, about \$131.00 (US).

Reviewed by Richard Dreiser, Yerkes Observatory, Williams Bay, Wisconsin, USA.

The advertising for the excellent and definitive 2000 fifth edition of the *Catalogue of Meteorites* states that it will, undoubtedly, "like previous editions, become an essential reference volume for all those with an informal interest in meteorites. The volume is a complete catalogue of all authenticated meteorites, and gives information on their classification and chemistry. It is the definitive descriptive list of The Natural History Museum, London, which maintains the official world database of all known meteorite falls and finds. It includes the 10,000 new specimens recovered since publication of the fourth edition, including those from Antarctica and [other] deserts. An important development is the addition of [a] CD-ROM to accompany the book, which greatly expanded information (literature references and analytical data for each meteorite) and an important search facility. The *Catalogue* is the major reference volume for everyone interested in meteorites: professional scientists, meteoritists, collectors, dealers and academic libraries."

The Forward to the *Catalogue* (incorrectly referred to in the Contents as the Preface) is required reading for those who are unaware of recent advances in the study of meteorites. In the past, scientists wrote of meteorites as belonging to one of three categories: stone, iron or stony-iron. The 2000 *Catalogue* points out in the Introduction that "great advances have been made in understanding the inter-relationships between meteorite groups, advances made possible by the ever-increasing numbers of specimens recovered from deserts: Antarctica, the Sahara and the Nullarbor Region of Australia."

Specifically, the 2000 *Catalogue* classifies 22,507 specimens according to the most recent methods. An "Ordinary Chondrite" may be an H, H/L, L, L/LL, or LL-Group. There are seven classes of Carbonaceous Chondrites. Enstatite Chondrites may be E, EH, or EL. One dozen varieties of Achondrite Chondrites have been described (these include lunar and Martian meteorites). Mesosiderites and Pallasites comprise the two classes of Stony-Irons, and, there are more than one dozen Irons.

The *Catalogue* also classifies all 22,507 known meteorite Falls and Finds back into the three familiar, traditional categories: Stones, Stony-Irons, and Irons. (A Fall, incidentally, is a meteorite seen to fall, then collected, reasonably soon thereafter. A Find may have fallen any time between recently and long ago, but, it was not seen to fall.)

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"The volume is a complete catalogue of all authenticated meteorites, and gives information on their classification and chemistry."

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As in earlier editions, it is not the intention of the *Catalogue* "to discuss the science of meteoritics, but simply to provide a summary of the nomenclature and classification of meteorites and the system of entries adopted." The *Catalogue* is more than adequate at doing what it was intended to do.

For a splendid introduction "through the jungle that is meteorite nomenclature," readers should supplement the excellent material of the *Catalogue* with a copy of *Rocks From Space: Meteorites and Meteorite Hunters*, by O. Richard Norton, 2nd edition, March 1998, Mountain Press Publishing Company; ISBN 0878423737, reviewed by John Mosley in the December 1994 issue of the *Planetarian*.

Unlike the 1985 *Catalogue*, the fifth edition does not mention tektites, the odd, dark, twice-melted, aerodynamically-sculpted bits of glass found all over the world.

A useful two-page set of Instructions for use of the *Catalogue of Meteorites* on CD-ROM is on page 3. System requirements for the software CD-ROM are found on the final page, 690, which is not numbered. I recall reading that Monica M. Grady, while pleased that the *Catalogue of Meteorites* is now completed, respectfully asked to be exempted from working on future editions. She has performed an admirable feat. The final version, covering all meteorites from Aachen to Zvonkov, was well worth the wait.



*Soaring Through the Universe: Astronomy Through Children's Literature*, Joanne C. Letwinch, Teacher Ideas Press, Libraries Unlimited, Inc., P.O. Box 6633, Englewood, CO 80155, 1999, ISBN 1-56308-560-7, \$23.00 (at amazon.com).

Reviewed by Gary Tomlinson, Chaffee Planetarium, Grand Rapids, Michigan, USA..

The purpose of this book is to blend literature and science. Some current curriculum reform initiatives suggest this very blending of disciplines, so this would make a good addition for any school system trying to do so. It would also be a good reference for the planetarian trying to construct cross-curricular programs. While this book is designed for grades 3 to 6, no grade level is assigned to specific activities within the book.

The author spent 11 years collecting the abundant resources referenced within the book. The author also paid special attention to the seven intelligences constructed by Thomas Armstrong. Six chapters divide the book into the following topics: The Moon, the Sun, planets, stars, traveling through space, and tips on using literature. Each chapter has an extensive bibliography. The only missing resources (that I am aware of) are publications by the Great Lakes Planetarium Association (GLPA) and the Astronomical Society of the Pacific (ASP). For example in chapter 1, under paper plate activities, no

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"...if you are looking to do some cross-curricular programming in your planetarium or want to bring some literature linked to astronomy into your classroom, then this book will be of great benefit to you."

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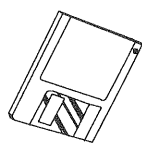
mention is made of the new GLPA paper plate tips booklet and associated video. Nor where poetry is mentioned are the two extensive anthologies of astronomical poetry by GLPA mentioned. Of course, these publications are not well known outside the planetarium field. Also missing are references to the great lists of resources that the Astronomical Society of the Pacific (ASP) publishes. By combining the above-mentioned GLPA and ASP publications with this book, a teacher would have a very powerful resource collection.

The book promotes storytelling, poetry, using food, scavenger hunts, original stories, and cooperative learning plus its own stories, activities and games to share with the reader. All in all, this would make a good addition to your bookshelf.

I did find some faults. In the chapter on the Sun, no safe direct observation methods were listed. Today, access to inexpensive safe filters is the norm rather than the exception. The warnings about observing the Sun were not emphasized enough (they could have been bolded or boxed in and not hidden within the text).

I did find at least two wrong or misleading statements in the book. In the chapter about planets, it states, "Unless it is twilight or just before sunset, Mercury's brightness makes it difficult to see." Of course, that is incorrect. In the chapter about stars, the shapes of the Big and Little Dipper are wrong as well as a few others, but any self-respecting planetarian would not be stopped by this. They would know the correct shape and go on.

So if you are looking to do some cross-curricular programming in your planetarium or want to bring some literature linked to astronomy into your classroom, then this book will be of great benefit to you.



*Digital Universe*, Syzygy Research and Technology Ltd., Box 83, Legal, Alberta, Canada. Software on CD-ROM for MacOS computers. support@syz.com; 780-961-2213. \$149.95 Canadian

Reviewed by John Mosley, Griffith Observatory, Los Angeles, California, USA.

Basic and accurate astronomical information is at the core of all we do as astronomy educators, and desktop planetarium programs have given us the ability to summon much information quickly and effortlessly. Those of us who use Macintoshes see few new programs, and the release of a major new one is an event. *Digital Universe* is new and powerful - but it is a strange program with both strong plusses and strong minuses.

First, installation is a snap - although it can take some time if you load the full 620 mb database onto your hard drive. Drag the files you plan to use regularly to your computer and use the CD for the rest.

Upon opening the program and looking at the default starfield, the first thing I noticed was that I couldn't recognize anything, at least not without peering closely and thoughtfully. The stars are all very faint and they're pretty much the same brightness.

Even the Big Dipper and Orion don't stand out, and I needed to toggle the constellation outlines on and off to make sense of the view. That in itself is a three-step process: go to the Settings menu, then the Display sub-menu, and then click or unclick Constellation Outlines in the little box (or "command-D" and then check the box). Then I noticed that many of the constellation outlines are pretty goofy (inspired, I fear, by H. A. Rey). The starfield is designed to be "photorealistic," but it's not the sky that my eyes see.

"OK," I thought, "let's find a planet." Surprise number 3 - in virtually every Macintosh program ever written, you press "command-F" to "Find" anything, but in *Digital Universe* you press "command-J" to find a solar system object, "command-K" to find a constellation, "command-H" to find a star, and "command-Y" to find a deep-sky object. What! A full menu is devoted to the "Find" command.

I've owned every Macintosh astronomy program and can usually figure out much of what to do by trying the obvious, but I had to consult the manual to learn how to zoom in and out. There is no control panel to let you do it; zooming is accomplished by "control-I" to zoom in and "control-O" to zoom out. This is reasonable once you know, but unless you go to the manual you may be a long time in discovering it.

Move around the screen with the arrow keys or use a control panel devoted to moving; there are no scrollbars (so you can't resize the screen or display more than one screen at a time).

The time is expressed in five different formats with Delta-T calculated according to advanced theory (or you can enter a value manually), but the time is expressed in 24-hr military style and can't be changed to a.m./p.m. familiar to so many Americans.

These surprises put me off from the get-go. The programs' faults are numerous and serious. You can view the planets or not, but you cannot select which planets to see. I generally prefer to deselect Uranus, Neptune, and Pluto, but with *Digital Universe* it is all or none. Likewise, it offers a set of the moons of the planets without allowing you to select which moons to view. Jupiter, for example, displays Io, Europa, Ganymede, Callisto, Amalthea, and Thebe. Amalthea and Thebe! In heavens name, why? All moons are displayed as featureless disks.

There is no Milky Way outline.

*Digital Universe* uses an incorrect method of specifying years B.C. Contrary to the program and manual, the year -5 is not same as 5 B.C. The year -5 is 6 B.C. in a convention long ago adopted by astronomers and historians.

In general, many things that should be simple to do - like running continuously forward through time - are awkward. I can't help but feel that the programmer did not first look at how other competing astronomy programs are organized.

So - what is good about the program?

First, the accuracy is impressive. The flyer claims that *Digital Universe* "is the most accurate astronomical simulator commercially available, even including an enhancement to the current theory of lunar motion (ELP2000-85) developed specifically for the software, enabling the position of the Moon to be determined to an accuracy of better than 100 metres." Rigorous formulae take into account the cumulative effects of precession, nutation, aberration, and stellar proper motion, and the program will give star positions accurate to 1 arcsecond for the epoch of the construction of the pyramids of Egypt. I asked it for the position of Mars for a date in 3,000 B.C. and in 3,000 A.D., and the position was within arcseconds of the ephemeris generated by the Jet Propulsion Laboratory; Mars' angular diameter was within 0.1 arcsecond, and the percent of illumination was within 0.1 percent. The Jet Propulsion Laboratory limits you to within about 3,000 years on either side of the present, but *Digital Universe* will let you compute positions and other planetary data for 100,000 years from the present.

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"... *Digital Universe* does not shine as a beginner's guide to what's up tonight, but it is useful for research projects where accuracy is paramount."

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Positions are expressed to nearest hundredth of an arcsecond; rising and setting times to nearest second (effects of changing air temp, air pressure, and altitude are taken into account, and the moon and sun appear flattened when very near horizon).

*Digital Universe* can show the sky during years 100,000 BC to 100,000 AD, including the effects of proper motion and precession. You can watch the north celestial pole through a complete precessional cycle (or two, or three). You watch the Big Dipper stretch out to become the Big Lounge Chair or Arcturus pass Spica in the 54th century and disappear into the southern sky.

Twenty million objects are in the database, including almost 100,000 deep-sky objects, which are shown as outline shapes with their proper size and orientation, and



several hundred photographs are included. You can find a star by any of 14 designations (Greek, Bayer, YBS, HD, variable star, GSC, etc.)

Click on an object and you're giving a surfeit of information on it totaling about a page. In the case of a star, you see its position in five coordinate systems, velocity, rising and setting times, see it plotted on a small H-R diagram, and for most stars see the approximate spectrum.

Zoom into Mars to see a detailed globe with more features than you will see with any backyard telescope, shown with the correct orientation and phase.

A powerful Report Generator lets you create customized tables of magnitude, distances, rising/setting times, angular diameters, phase angle, radius, etc. of solar system objects (but not stars), and save them as text files. This could be very useful to generate, for example, a table of topocentric altitudes of Mercury at 6 p.m. (excuse me; 18:00) during its next evening appearance, the distance from the earth to Mars at 5-day intervals for 2008, or the setting azimuth of the moon each day next month.

An included hypertext astronomy encyclopedia is divided into four parts - Introduction to Astronomy, Famous People, Astronomy Definitions, and Object Information. They are integrated into the program and to each other and are available at a mouse click. The first part is a book-length astronomy tutorial approaching college-level in places. The short biographies include an odd mix of few dozen astronomers and astronauts (Galileo is followed by Richard Gordon Jr.). Most of the definitions in the astronomy dictionary are short, but some are quite detailed. Object Information contains a truly amazing amount of tabular data, text, and photographs, and it is a wonderful addition to the software package. As an example, for Titan you are given a table of the moon's physical and orbital characteristics, a one-page hyperlinked encyclopedia entry, and several photographs; if you pursue the links you learn about the Cassini mission in great detail. The encyclopedia weighs in at 200+ megabytes. I put an alias of its index page in a handy place on my hard drive and can open it independently of Digital Universe with my web browser.

A separate (and very un-Macintosh-like) program "3DStars" is included. It lets you navigate through interstellar space and view the stellar neighborhood from anywhere within a few thousand light years of the sun. It is an amazing and fun program that adds substantial value to the package.

The proverbial bottom line is that *Digital Universe* does not shine as a beginner's guide to what's up tonight, but it is useful for research projects where accuracy is paramount. My impression is that it seems to have been designed by mathematicians who are insufficiently familiar with how people actually look at the sky and with what makes a desktop planetarium useful on a daily basis. But, if you need rigorous accuracy (as we often do), it has much to offer. The Report Generator, encyclopedia, and 3DStars are bonuses that make it a desirable package for power users. It won't displace the first desktop planetarium program I turn to, but I'm glad to have it for the times when I will need it.

For further information including screen samples to go <http://www.syz.com/DU/mac>.

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# What's New

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

Welcome to the new millennium, definitely under-celebrated at the start, but here at last. Does it feel any different?

We've fallen a little short of Clarke's vision from several decades back. We have a space station of sorts, but it's not yet accepting commercial flights. And it's hard to have moon bases when we haven't been back to the moon in a generation. That monolith will just have to wait a while longer .... But we make progress, however more slowly than we dreamed of during the heady Apollo Era. While we dream still, why not reminisce a bit, too? This column's first item may help.

### The First One Hundred

Last October, we reached another milestone of sorts when the hundredth space shuttle mission did the last bit of housekeeping at the infant International Space Station prior to the arrival of the first station crew. To commemorate the milestone, the United Space Alliance and the Space Foundation have issued a CD entitled "Space Shuttle: The First 100 Flights" which is a small gem of documentation.

It opens with a montage of shuttle images and then proceeds to a timeline in which the shuttle flights (each represented as a small black box with the flight number inside on a calendar grid) slowly scroll past, from the first verification flight in April, 1981 to STS-92 in October, 2000. (Be prepared to explain why the flight numbers are not in order of launch). If you position the mouse icon so that the boxes scroll past it, you get a quick listing of the flight number, the dates of the mission, and a short statement of the mission highlights.

Click on a box and you get more: a nicely designed screen which provides a mission summary including payload, mission activities, the orbiter used, launch and landing dates, distance traveled in statute miles, a crew listing, the mission patch, and a flurry of pictures and video clips from the flight.

You can access this summary screen for any flight from a menu of the hundred flights. You can also access pictures and short biographies for every astronaut who flew on

any of these missions. Additionally, you can browse through sections which offer information on shuttle operations from mission design and planning to flight operations, or information on various shuttle systems, or information on future upgrades of the shuttle, or information on a selection of technological benefits: spin-offs ranging from joysticks to heart pumps to gas leak detectors.

All the while, multiple-choice trivia questions pop up periodically on the screen (a feature which can be disabled if it gets in your way). Example: which shuttle was built as a test vehicle and never intended for space flight? Why, the *Enterprise*, of course; I'll bet you got that one right, even without seeing the choices. (If not, please give back your Spock ears.) So you think they're all easy? Try this one: NASA aerodynamics technology originally developed for Space Shuttle External Tank airload analysis was later used to enhance what? You'll never get it, so I'll tell you: to enhance accuracy and distance for golf balls!

All in all, it's a very nice CD, with excellent esthetics and good information and visuals. Minimum system requirements for use are Windows 95/98/NT/2000, Pentium II 266MHz, 32 MB RAM, 16 Bit Video Card with 8MB RAM, and 24XCD-ROM Drive. (I don't know if there's a Mac version.)

It makes a great archival CD, and would make, I think, a nice computer station interactive for classroom, exhibit, or Challenger Center-type use. My review copy came unencumbered by any auxiliary information, so I can't tell you what it costs or how to order in quantity for gift shops. Check the referral web site at <<http://shuttle.unitedspacealliance.com>>.

It was not yet up and running as of mid-January, but it may be now as you read. Or, you can check with the organization that sent me my copy: United States Space Foundation, 2860 S. Circle Drive, Suite 2301, Colorado Springs, CO 80906-4184 USA.

### Thar She Goes ...

Now that the ISS is starting to really look interesting and is getting brighter, lots of people want to see it go over. With most of the world underneath its orbital path, they can. And if you want to make it easy to find out when, check out the web site of Heavens-Above at <<http://www.heavens-above.com/main.asp>> (include the hyphen), if you don't already know about it. It will provide flyover data for virtually any place on the globe.

Follow the instructions and you can select a country, select a town within the country, click on "ISS" and get data on visible flyovers for the next ten days, including the time, altitude and azimuth of when the ISS first

becomes visible, reaches maximum altitude at the specified location, and disappears. Save it and bookmark it and you have virtually instant access to the next ten days of flyover for the selected location whenever you access the bookmark.

It's just wonderful. Now *this* is the kind of technological convenience I expected of the year 2001! If you have internet access and you've not accessed this site yet, do so. Immediately.

It also offers data on other satellites and bears links to many other useful places. This should be on your short list of helpful web sites. After all, the space station is only going to get bigger and brighter!

### Moons, Moons, Who's Got More Moons?

In recent months, the big, gassy planets have seemed locked in a satellite arms race of sorts, as astronomers with big telescopes add new moons to their tallies in big bunches. For a while last year, Uranus was ahead with 21. Then it was Jupiter with 28. And now it's Saturn with a whopping 30. (Well, at least as of January.) How's a body to keep up?

Clearly, I needed a good, up-to-date reference on planetary data, which is not always easy to find. (Even the *Observer's Handbook* of the Royal Astronomical Society of Canada, for example — normally one of my reference bibles — still gives old figures which say Titan is larger than Ganymede.) I had no choice but to surf the internet, and came up with a new source of very up-to-date information indeed: the web site of the National Space Science Data Center, apparently headquartered at the NASA Goddard Space Flight Center in Greenbelt, Maryland USA.

The home page address is <[http://nssdc.gsfc.nasa.gov/planetary/planetary\\_home.html](http://nssdc.gsfc.nasa.gov/planetary/planetary_home.html)>. And it's become my new reference bible for the latest facts and figures on the solar system.

The site has links to fact sheets for all of the planets, their satellites and ring systems, and selected asteroids, Near-Earth Objects, and comets, listing a wealth of physical and orbital data in metric units (with an English-units planet table for hold-out Americans). The appropriate sheets listed all of the newly-announced satellites of Jupiter and Saturn, including radii and orbital parameters for all of the new Jovians and some of the new Saturnians. And the Uranus listings included provisional satellite names for most of the newer finds around Uranus. There were also links to press releases announcing the new discoveries. And the nice thing is that the fact sheets are updated in timely fashion—the last update just two days ago as I write.

Additionally, the site offers links to a nice

selection of solar system images (mostly from spacecraft), a timetable of upcoming planetary missions and events, a chronology of lunar and planetary exploration with specific information on spacecraft and missions, information on NASA's Discovery program of small, focused planetary missions, and other tidbits. It's definitely now on my bookmark list, and should be on yours as well. I figure it's as close as we'll get to the proverbial "horse's mouth" neighing accurate, up-to-date data on the sun's ever-growing brood. All the site needs to do is add the Centaurian asteroids/comets/whatever-the-heck-those-things-are, and the Kuiper Belt Objects, and it will offer a pretty complete family picture.

### For Your Ordering Pleasure

I recently ran across a fun catalog worth checking out — from Spaceshots, P.O. Box 1743, Studio City, California 91614-0743 USA, telephone 800-272-2779, web site <<http://www.spaceshots.com>>. The attractive catalog offers a wide variety of spacey stuff. There are colorful posters of popular Hubble images and others, lovely charts on comets, the sun, the solar system, the Great Red Spot,

galaxies, planets, and stars, some nice Mars maps and Hubble views of Mars, Apollo and space shuttle posters, astronomy calendars, slide sets, videos and CD-ROMs.

Some of the less usual stuff includes lovely bookmarks with space imagery, celestial greeting cards, and an assortment of panoramic cityscapes of some of the larger U.S. cities—quite attractive, if not technically space-related (\$30 apiece). Another striking offering is a wide variety of colorful satellite views of various portions of the Earth, including a number of U.S. localities, selected other countries (Mexico, Spain, Italy, Britain, New Zealand, Switzerland, Australia, etc.), and the continents—as well as global satellite maps.

Most of the space posters are under \$20 U.S. (even laminated), the satellite views about \$20 apiece, more for lamination. You can also get them framed for a higher cost. Check it out; it's another good source for spacey and educational things.

### AV Heaven

Another brief catalog has arrived from Slide & Sound Corporation, 2184 S.E. 53<sup>rd</sup>

Ave., Hillsboro, Oregon 97123 USA, telephone 503-649-6055, fax 503-649-5852, touting all manner of video-data projectors, generally of the "true SVGA, compressed XGA" variety or vice versa — not three-gun varieties, but generally bearing one lens. They look exceptionally portable, and come in a variety of brightnesses and throw distances with assorted features. Most are of the Sanyo brand.

The company offers a variety of equipment including slide and overhead projectors and other AV accouterments and lenses and bulbs and mountings and screens, with all of the well-known names represented: Kodak, Navitar, Schneider, Buhl, Eiki, Arion, Tascam, Chief, Sony, Elmo and more. And the prices look reasonably competitive to me—especially the wholesale pricing offered. The company also offers "free technical support." If you're looking for stuff, here's another company to check out.

### Finally...

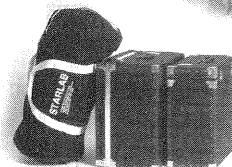
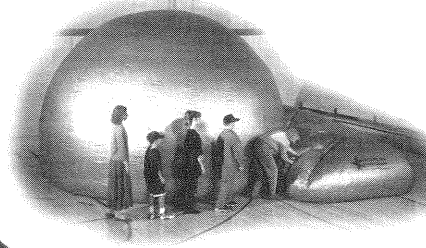
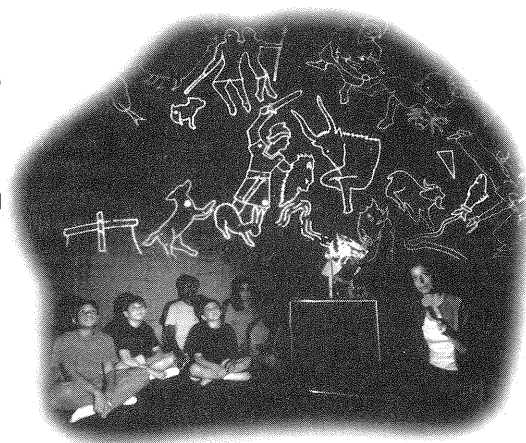
That does it for this round; do let me know what's going on in your sector of the universe. Enjoy the 21<sup>st</sup> Century, and, as always — what's new? ☆

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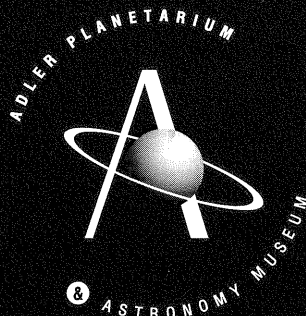
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**30 minutes / 200 slides / \$895 for show kit with video  
on laser disc / \$795 for show kit without laser disc**

## **NEW!** **Spirits from the Sky: Thunder on the Land**

Providing a never-before-seen journey into the culture of the Skidi Pawnee Native American Nation, this sky show produced in cooperation with the Tribal Elders, will explore the Skidi Band's cultural philosophy of patterning their lives from the observations they made of the Earth and celestial phenomena. This show is funded in part by a grant from the National Science Foundation.

**30 minutes / 200 slides / \$475 for show kit**

## **Clouds of Fire: The Origin of Stars**

Exploring the interconnection of all matter in the Universe, this sky show presents an overview of star formation and the modern instruments which help us gain a clearer picture of stellar life cycles.

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## **In Search of New Worlds**

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**33 minutes / 217 slides / \$595 with laser disc /  
\$495 without laser disc**

## **Seeing the Invisible Universe**

Narrated by Bill Kurtis, host of the successful PBS series "The New Explorers," this sky show explores the amazing discoveries in wavelengths beyond the range of human perception. Highlighting the Gamma Ray Observatory, the show features interviews and computer animations.

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Spring/Autumn greetings to everybody in domeland.

This issue's topic for discussion produced a particularly full (e)mail bag, for which your associate editor is deeply grateful. The question posed was:

**"Is there a danger that, as entertainment technologies improve, in the long term some planetarium domes may be given over entirely to non-astronomical shows such as full-dome laser and other eye candy productions, thus putting our profession in danger of being eroded?"**

Ken Miller is the first to put his hand up, so let's hear what he has to say.

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At age fourteen, my first job with a real paycheck was as a projectionist for our small town movie theater. I got to learn all about carbon arc lamps, film splicing, Cinemascope anamorphic lenses, exit light levels, audio systems, popcorn popping, ticketing, marketing, audience surveys, and cleaning the theater at the end of the evening. (Hmmm; sounds a lot like my later career except for the popcorn). Late one evening I remember a discussion with the theater's owner about color television being introduced into our little town. (OK, so I'm *old*).

At fourteen, I saw the very real threat looming that movies were about to lose their only overpowering advantage over home (b & w) television. My boss, a veteran of years in the movie business, said, "You know Ken, I think there's always going to be an audience for a good film. Put a hundred people together in the dark, tell them a good story, and they're going to come back even if you do it with shadow puppets." The communal experience of being truly entertained (or even edu-tained) was what his theater offered, and continued to offer for many more generations of fourteen year-olds. As our little theater tried out various new technologies like red/blue 3D films, stereo, and

even quadraphonic sound, the same thing held true. A bad film, a bad storyline, bad acting, all resulted in bad box office. It seemed that the technology was almost irrelevant. Sure, one had to keep up with competing theaters to some extent, but the medium was *not* the message. The message was the message. Today we can easily look at continuing technological evolution in the planetarium business. A simple slide projector becomes a panorama, becomes an all-sky becomes all-dome video. Cove lights become colored coves, become addressable colored coves become laser light shows. A 16 mm film (remember?) insert in a planetarium show becomes projection video from tape, then laser disk, then DVD, then hard disk. We've even seen video attempt to simulate a beautiful opto-mechanically projected sky. We see different technologies come and go. Many are used in other education or entertainment contexts as well. But so far, none has really upstaged the essence of good planetarium programming. What we do in our domes, if we're good at it, is to bring people together in a dome, suspend their disbelief for a few minutes, take them, vicariously, outside to look at the night sky and tell them a story. If done well, they love it. If done poorly, they don't. Sure, DVD now appears in homes. Laser light shows appear in nightclubs and concerts. Nearly seamless video walls appear at the local Disney store. And all-dome video and laser animation will fill some domes with non-astronomical content at theme parks and science centers. Some new theaters will even be built exclusively for these technologies, and some existing planetariums will decide to change their missions or their messages (as has been the case for decades). But there is absolutely nothing that says that planetarium domes must be automatically and totally turned over to new technologies, any more than my old theater needed to shut down with the introduction of color TV. Good stories, presented well, will continue to bring in eager audiences, almost regardless of the medium used. Poor ones won't. New technologies in and of themselves will not draw an audience with any staying power. After the novelty wears thin, audiences will once again want a good story.

As an example, take a look at the large format film industry (Imax to most of us) as it flexes and evolves. Watch as new 3D Imax theaters shut down or fall back to 2D programming, and other 3D theater projects are killed before they are built. The stories and quality products just aren't available yet. So no matter how spectacular the technology, (and it *is* great) the tickets just aren't selling. Without good film, without good stories, the projector goes nowhere. That's not to say

that great entertainment films and nature documentaries aren't ahead in that medium, it's just to say that those who jumped on a technology bandwagon are now learning a hard lesson. Likewise, all-dome video or laser animation technologies will live or die, not on the hardware, but on how it is used. If it is used to tell great stories, those technologies will be embraced. If not, then they will be relegated to a small number of novelty venues. So, should the planetarium field worry about the "threat" of new technologies taking over our domes? No. We should worry about keeping our storytelling and presentation standards high, regardless of the technologies used. We'll be just fine.

Ken Miller  
USA Liaison

GOTO Optical Manufacturing Company

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I believe the temptation to present nothing but "eye candy" is a clear and ever-present danger to a planetarium. The degree of danger depends on how the planetarium is positioned or regarded within its parent institution. For the purposes of this Forum question, the parent institution would probably be a museum or science center.

Museums and science centers are mission-driven, and it is the nature of the mission, which can determine how the planetarium is regarded. Although the mission of the institution might be clear, the planetarium frequently has no special identity or separate mission of its own. Within the museum's corporate structure, the planetarium might be regarded as an exhibit, an attraction, or a program. As just an exhibit, the planetarium serves to advance the overall mission of the museum, but with no more importance than any of the dozens of other exhibits on the museum's floor. As just an attraction, its purpose is clearly to provide programs that drive attendance and provide income. If it does that while furthering the educational mission of the institution, all the better.

When the planetarium is regarded as an educational program, it is safer from being subverted as a venue for revenue-producing, non-astronomical shows. However, even institutions which are mission driven, and which regard the planetarium as an educational program, can be tempted to sacrifice their mission in pursuit of the dollar. After all, survival is more important than mission.

Ideally, the planetarium should have a separate mission, such as "to serve as an astronomical resource for the community (schools, general public, media)". If this mission is paramount, then the planetarium could be secure from such misuse. However, if the planetarium's educational mission is

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vulnerable, it can take a back seat to the parent institution's larger mission.

Sheldon Schafer  
Director of Science Programs and Facilities  
Lakeview Museum of Arts & Sciences  
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One could look at this question from at least two main streams: whether or not the facility is part of a school/museum/science center, or if it's a private one. I would think that the risk would be greater for the latter than for the former as administrators might tend to favor whatever rakes in money. As long as a planetarium is associated with an education/scientific institution and serves in an educational/public outreach role, then I would like to believe that its future is ensured fulfilling that mission.

Adding such alternative programming has its points from both practical and a financial aspects. Offering the public some sort of alternative programming might bring in a different crowd to see a planetarium show who might not otherwise come as well as generate revenues to help support the facilities main goal: astronomy education.

One can't deny the advantages that having these added technologies brings when applied to a planetarium presentation. This notion may make some of the more traditional planetaria cringe, but the bottom line is that both schools of planetarium thought are trying to turn people on to the night sky and what it contains, visible, or invisible, to the eye. How they may go about doing it are two different things.

In the long run I think that having such extras can be beneficial and will not erode the profession. The planetarium has grown quite a bit since the original facility at the Deutsches Museum in Munich, Germany. There is a considerable technology and presentation gap between that first projection planetarium and the latest, all-dome video and yet we're still in the same business of promoting the beauty and wonder of nature overhead.

And in the long run, it probably doesn't hurt to be in an educationally-oriented public institution...

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This is an interesting question, but I don't

think we have to look very hard into our crystal ball to see the answer. We're already seeing some of the effects. And, as with every other shiny new technology to come along in the planetarium industry, the effects vary from one venue to the next. However, in every situation, when a new tool becomes available to us we'd be silly to not use it. As with any tool, it's how we use it which determines the future of our profession.

I'm encouraged by some of the uses of full-dome video. With the proper combination of technical skills and pedagogical insight, these new technologies can give us additional methods to achieve those "ah-ha!" moments we all strive for. In this way, our profession hasn't lost anything - no erosion. Instead, we've augmented our abilities, perhaps reinforcing our foundation. The new tools can provide another perspective for teaching difficult concepts, or pique interest and imagination.

These new tools could certainly be used to teach non-astronomical concepts as well. These technologies can be a new way for us to take our audiences "where none have gone before": outer space, inner space, or some other place on our world.

I believe the danger of these new abilities eroding our profession come not from the technology, but from the improper use of these technologies. Sure, we can use the new tools to teach biology or social studies concepts, but does your/our staff have the knowledge or background to do it well? Sure, we can toss one cool effect after another at our audiences, but should we? It's my opinion that if they don't serve a purpose, or challenge our intellect, they simply serve to desensitize our audience, eroding our ability to capture their interest and imagination.

Our industry has already added slewing spacecraft, video effects, lasers, and more. Yet somehow, the effect which still receives the most sincere "oohs" and "aahs" is the stars. I believe times and technologies will change, but the night sky will remain the star of the show.

Geoff Holt  
Planetarium Director  
Madison Metro School District  
Planetarium 201 South Gammon Road  
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The vast majority of planetaria that are associated with schools, or possibly small museums, will likely not change their programming regardless of the much-improved entertainment technologies. These planetaria were for the most part designed and built as educational facilities with less emphasis on entertainment. These facilities

of course are generally small and modestly equipped, and so the pressure to draw larger and larger audiences and to continually justify their existence is usually a minor annoyance. So, I do not see much change caused by the entertainment business in most of these planetaria.

However, there certainly are a handful of large planetaria located usually in the major metropolitan areas that have for many years sought out a wider spectrum of audience to help generate revenue. These facilities were expensive to build and are very costly to maintain, and they must reach the much larger non-astronomical-oriented audience in order to pay their way. I suppose it is possible that some of these planetaria could completely abandon astronomy-oriented planetarium programs and become simply multimedia theaters that extend the Hollywood vision of entertainment. But I do not think this is likely. I believe there will always be a demand for what might be called a standard multimedia planetarium show. It seems ironic to me that planetarium multimedia technology has grown and improved over the years, but in the future audiences may come to our planetarium star shows to get away from the multimedia entertainment blitz that engulfs them.

Mark S. Sonntag  
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Angelo State University  
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It's been said that the only constant in life is change. The planetarium world is certainly not immune from the effects of change. New planetariums are being built; old facilities are being renovated, moved, or even closed.

I have seen several examples of the apparent idea that a solution to survival in the dome is technology. "If I have the best equipment, the patrons will come." While keeping in touch with technological advancements and improvements is certainly valuable, it is not a guarantee of success.

The solution to success is founded heavily in the planetarium staff. A good director, a good production team, and good theater operators are critical to a successful program. The planetarium theater is a unique environment, and should be marketed to the public as such. Planetarium programming should not be founded in a philosophy of competing with Hollywood or IMAX. We should concentrate on, "What can we do that cannot be done anywhere else?" and focus our efforts on the unique nature of the planetarium.

However, we also need to realize that, for

public planetariums that rely on the patronage of residents more than that of tourists, a vital key is building programs that bring people back. Educating the audience is certainly our mission, but nobody pays tuition for the same class by choice. Our public programs must provide our audiences with an emotional experience as well as an educational one. If a patron leave the theater knowing that Jupiter now has 28 known moons, well, great, but they aren't going to pay another five dollars to hear that again. If a patron leaves the theater having had a thought-provoking, emotional experience, they may not remember what they learned, but they will remember where they learned it and they will be more inclined to return soon.

In catering to education audiences, be they visiting K-12 school groups or college courses partly held in the theater, the same issues apply. We must focus on the uniqueness of the theater and use the instrument to do things that cannot be done in a lecture hall or even under the night sky. The ability to speed up diurnal motion and draw constellations is great; but most planetarium instruments can also be used to eloquently discuss retrograde motion, the difference between the ecliptic and the celestial equator; and some systems can even demonstrate the proper motion of stars and the three dimensional nature of space - things which cannot be done nearly as well or at all in any other setting. I have heard dozens of teachers and students tell me that they never understood a certain concept until they saw it demonstrated in the planetarium.

If we can focus on these two points: 1) accentuate the unique nature of the planetarium experience, and 2) provide our audiences with thought-provoking, emotional experiences, the technology race becomes secondary. The technology is the tool of the planetarium astronomer - not the other way around.

Richard S. Cox  
Administrative Manager: Education  
Hansen Planetarium  
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There appear to be two separate subjects to this question.

First, the presentation of non-astronomical shows.

Non-astronomical shows aren't necessarily "eye candy." For decades, many planetariums (especially school planetariums) have been responsible for using our unique theaters for educational productions on other

earth sciences subjects, biology, history, and even psychology! Concerns over whether technologically-advanced facilities may dedicate more time to non-astronomical subjects strikes me as extremely prejudicial.

Astronomy remains one of the most popular subjects that can be presented in *any* theater, especially a planetarium. Several large-format films have been made on astronomy. Yes, it is a subject near and dear to all of our hearts, but we shouldn't begrudge the possibilities of other subjects being covered.

The second aspect is whether we may lose sight of the educational objectives, in our eagerness to use new technologies to make our presentations more entertaining.

Any non-profit organization that hosts a planetarium is probably receiving funding from some outside donor. Frequently, some of the funds are from grants, and others are from sponsorships. Why would any organization or individual provide funds for a facility that has no educational value?

Any facility that cannot ultimately justify its existence will lose its funding, and either die or metamorphosize until it is no longer a planetarium but instead a simple joy-ride that its facility uses to raise funds. If the surrounding community realizes the educational value of a true planetarium, perhaps another organization will eventually have the opportunity to create a new one.

My final words: as long as we create useful, quality presentations for our communities, they will support us. If a once-valuable planetarium becomes "eye-candy," its former advocates and funders will support someone else.

Christine Shupla  
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After walking a mile from our middle school in the breezy afternoon sunshine of a typical Key West winter's day, we entered the enemy territory of our arch rivals' school grounds. As we walked down the forbidding hallways to the auditorium, two of my classmates began issuing challenges to their counterparts, trapped impotently at their desks in the classrooms we passed until the teachers pulled them by their ears back into line.

Finally, we entered the auditorium where we were to hear a talk about, "Something to do with the stars," our teacher had said. But what greeted us on the stage wasn't a podium and slide projector. Rather, there was this huge, half-inflated, beach ball with a noisy

fan trying to blow it up. What was this?

We were told to squeeze through a tight slit in the side of the beach ball and sit cross-legged on the floor inside of it. What had seemed to be a large beach ball on the outside, turned out to be a small, domed, room on the inside. Our teacher then introduced the astronomer to us. He told us that this was a planetarium, and soon the dim light would go out and we would see the stars, but I couldn't see any of those glow-in-the-dark stars pasted on the inside of the dome. After watching Neil Armstrong walk on the Moon a couple of years earlier, I was familiar with those kinds of stars. I even had some pasted up in my bedroom. But there weren't any of those in here. What was this guy talking about?

Then the dim light went out, and there all around us were the stars! Not the five-pointed variety, like the ones in my bedroom, no, these looked the ones in the sky at night. What had appeared to be a tiny room turned out to hold the entire universe! The possibilities, even to my 12-year old imagination, were endless.

Alas, the operator was only able to show us Orion, before my two ear-sore classmates got our whole class thrown out. But I was hooked! What had been a moderate interest in astronomy, which every schoolboy of the Apollo era had, had become a full-blown passion. Though the phrase hadn't been coined yet, that virtual reality theater had shown me my real future.

Today I run a 9-meter, Minolta planetarium with 36 slide projectors, various special effects projectors, a video projector, audio system and a computer automation system to control it all. But I'll always remember that very small, but universally large, portable planetarium with no projectors other than the star projector, and no audio other than the operator's voice, that introduced me to my future profession. It left me with an indelible belief that the star field, that virtual universe of time and space, is the most important part of any planetarium. It is what makes planetaria unique.

Now, with laser shows, large format films, and full-dome video systems showing up, many in our field are asking if there is a danger of our profession being eroded by more and more planetaria abandoning astronomical shows for non-astronomical, eye-candy, or mass entertainment shows. Already, many of the larger planetaria with large format films under the dome are discovering that their astronomical planetarium shows are suffering. Some may already be considering giving up these shows because they no longer attract the larger audiences that the films and laser entertainment shows do. But



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why is this?

The main problem with large format films under the dome is that planetaria cannot produce these shows themselves. The facility must rent the films, frequently under contracts that have fixed prices and require X number of shows, whether or not there is anyone in the audience. After all, this is the way movie theaters work. Well, if you are going to have to pay the same fee no matter how many people you draw into your theater, you are going to be under tremendous pressure to give those films the maximum exposure and the best show times. And if your film is showing in the same dome as your planetarium, your planetarium shows will inevitably end up with little or no promotion and the worse show times for attracting an audience. This is simple economics. Throw in pure entertainment laser shows as well, and soon you'll have fewer and fewer planetarium show times and less and less incentive to produce or purchase new planetarium shows. And with the advent of full-dome video systems, this could very well end up as a major trend in our profession. This can easily become a vicious cycle that will erode our profession. But it doesn't have to. For example, planetaria that have placed large format films in a separate room from the dome can run both planetarium shows and the films at the peak audience times. They may still compete with each other, but they can do so on a more equal footing.

But more than this, it is important to remember what a planetarium is and where it came from. Planetaria have the ability to grab the attention of most children, be they six or sixty, and teach them of the wonders of the universe in a way that classroom teachers dream of. Astronomy gave birth to planetaria, and it still remains at the heart of all planetaria. Remember that little portable dome and the life-long passion for the stars that it instilled into that 12-year old school boy. The stars are what make a planetarium. Although there is nothing wrong with showing the occasional non-astronomical show or even throwing in a weekly pure entertainment laser show to attract attention and increase revenues to support the planetarium. Unless of course, these shows replace the planetarium shows. Then you will no longer have a planetarium. You will have something else that might run the occasional planetarium show. For example, when I asked for directions to the planetarium at the newly opened Orlando Science Center a couple of years ago, a member of the staff told me that, "We don't have a planetarium, we have a Cinedome, although they do do some planetarium shows in there."

Will the future see more and more planetaria going this route? Perhaps some. Only the largest planetaria will be able to afford this route for some time to come. Most of these facilities will be located in science centers and museums. But over half of the world's planetaria are associated with educational institutions of one level or another. I think it unlikely that these facilities will choose to leave the planetarium field for other venues. Of course, the costs of these systems will come down with time and more and more planetaria will be able to afford them, even at educational institutions. To what use will these institutions put this emerging technology?

A laser system can be a wonderful multi-fx projector for astronomical shows, demonstrating esoteric concepts like black holes and rotating neutron stars, etc., in full color motion. They and the new full-dome video systems will be able to do this and much more as they are improved and they become more affordable for the majority of planetaria. These new media are certainly going to change the quality of our shows just as all-skies, video, etc., have already done. But I have discovered that the dramatic impact of these systems is reduced in direct proportion to the number of times they are used in any given show. They can be extremely effective if used carefully, and intermixed sparingly with other media. This will also be true of the newer full-dome video, laser, and even large format films. Of course, the latter would require the large format film industry to produce astronomical film clip libraries of the type we already see in video.

While there is an overwhelming drive to use new systems as much as possible, producers need to remember that you don't have to use every effect in every show just because you have them. Planetaria were the world's first virtual reality systems, far ahead of their time, but as the rest of the world catches up to us, we need to be very careful that we don't overreact and end up becoming something other than what we are. That little portable planetarium should always remain in the back of our heads, as a reminder of why we do what we do.

Laurent Pellerin  
Seminole Community College  
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The integration of more visual and interactive technologies into our planetarium programs should not be a threat of putting our profession in danger of being eroded, unless of course, the administration of such

facilities re-evaluates the objectives and mission of the planetarium. Although when funding cuts are made, the knee-jerk reaction to ensure survival is to offer all-dome entertainment, but then how long does this typically last? I believe school-based planetariums would find it difficult offering visually entertaining, non-educational/astronomical shows to students. Planetariums not entirely committed to educational content have more flexibility in program offerings and are more prone, or tempted, to provide visual entertainment to offset or increase operating expenses.

The question whether entertainment technologies would erode our profession may apply largely to planetariums here in the United States, primarily due to the way so many planetariums here are funded. Marketability for survivability may be becoming more widespread, but science does contribute to a community's culture and in most parts of the world the planetarium is regarded as an educational and cultural resource.

When we embark upon capital campaigns and rattle our beggar bowls to fund entertainment technologies, we as educators must also educate our administrators, as well as the prospective donors on how these new technologies will augment and support our educational goals, missions and standards. It's those bean counters and administrators, more concerned about a profit, who would consider turning the planetarium completely over to non-astronomical and entertainment productions. It is part of our job(s) to prevent this from ever occurring, or when it does it might be time to move on.

Jon Elvert  
Lane E.S.D. Planetarium  
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What audiences want.

A planetarium has always held an appeal to those who truly have sought knowledge about the night sky at its most basic level, usually by hearing it firsthand from an able astronomer during a sky show or knowledgeable instructor in a class. In recent years, though, as planetaria have had to compete with film, video, and other entertainment media for audiences, some appear to have moved away from the ready availability of the on-site expert and instead have sought to bolster flagging attendance with gimmicky demonstrations as a means to capture and convey an interest in subjects traditionally part of the museum experience.

Even Matt Groening, creator of *The Simp-*

sons, lampoons the lengths to which museums seek to attract audiences, showing Homer and his family spending a day at the "Knowledgeum" an arcade-style museum theme park, where "we do science with brightly colored balls."

But with new entertainment technologies, sky show producers can immerse audiences in their surroundings, having them fly past the planets while cresting a wave of solar plasma. Perhaps a physician in the same audience may be inspired to see the scene differently, envisioning platelets floating past while following an infusion of blood plasma. These two different scenes could be represented in the same manner, as the computer models and animations that comprise them may only require varying degrees of difficulty to get it to look right. That planetarians and physicians could portray concepts with the same techniques show that entertainment technologies have a considerable degree of versatility to reach beyond traditional sky show audiences.

However, if producers and planetaria believe that this versatility alone will help them shore up flagging attendance, they may be deluding themselves. Entertainment technologies for their users seem likely to offer the versatility, but for audiences they may not always offer the verisimilitude of an entertainment experience. That is to say, a great show for the planetarian to produce may not always be a great thrill for the audience to watch.

The planetarium profession has less to fear from entertainment technologies than it does from those who seek to master the nuances of planetarium show production without a requisite knowledge of astronomy, or with a reliance on heavy doses of process. Sky shows are often the result of many strands woven together, so already the profession becomes eroded when the content of the show and the story that presents it to an audience are not thoroughly vetted.

No doubt every sky show producer agrees that what beats or bolsters entertainment technologies is a good story. Where there is little or no story, a production may get padded with excess special effects. But a good story, aptly told, will immerse an audience and hold its attention with little need for fluff and fanfare. What makes a good story is a producer or production team that vets the script early, to eliminate emphasis on high-minded hearsay and reliance on cheesy special effects. What makes a good story is not so much a clever turn of phrase to mark the next segue; rather, it is often that satisfying blend of unambiguous content, insightful commentary, and the occasional engaging metaphor, all delivered with the voice of a single author.

Planetaria need not fear danger from entertainment technologies if they can continue to hold forth with good stories and a clear, engaging presentation of astronomical fact.

Roy A. Kaelin Jr.  
Production Department  
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First off, technology changes, and it changes the world with it. Just as the planetarium field began with a technological innovation (the ability to recreate the night sky under a dome in the middle of the day), it will continue to evolve hand-in-hand with technology.

We planetarium professionals cannot see ourselves as victims of technology, however; we have to see ourselves as empowered by the technology we have access to, and we need to recognize the dangers and limitations of technology as applied to our field.

My interpretation of the question revolves around my experience with full-dome video technology, so I will address it from that perspective.

Yes, full-dome video entertainment programs will take place - some under commercial banners, others associated with non-profit educational institutions. The opening of Madame Tussaud's in New York has already put one for-profit entertainment program out on the market, although it, too, has some educational merit (giving a historical tour of New York events over the last fifty or so years). More will come. The medium is too effective and too compelling for producers (of all stripes) to ignore.

But "eye-candy" productions have taken place under planetarium domes for decades. How can we see this as any different? Many domed theaters already run education programs during the day and entertainment programs in the evening, and as long as non-profit educational institutions remain cognizant of their mission statements, this should concern planetarians no more than the technologies that already exist. Rather than become embroiled in a debate over the sanctity of the dome, let's consider a more likely source of erosion.

Will some planetarium domes be given over to non-astronomical shows? Not necessarily non-educational, but non-astronomical? Yes. Again, the new dome technologies are too compelling to limit (yes, limit) the content areas they illustrate to astronomy. Much as large-format films address widely-varying topics, full-dome video programs will take on a variety of topics - as real-time

image acquisition becomes cheaper, programs will also move out of virtual environments and into the real world (maybe even showing real starfields), expanding topic areas even further. And why shouldn't the domed environment address a variety of topics?

An institution will require considerable resources - in terms of money or personnel or (best of all) both - to produce full-dome media of appropriate quality. The tools are getting cheaper, admittedly, but maintaining a digital production staff will probably prove even more challenging than maintaining a traditional production staff. The solution will almost certainly lie along the lines explored by large-format filmmakers over the last few decades.

Science center and museum administrators familiar with the large-format film production model will find it appealing to apply the model to producing full-dome shows. Evans & Sutherland has already jumped into the production business with "Wonders of the Universe." Others will follow.

We already have domed theaters that aren't planetariums - domed theaters with large-format film, domed theaters with interactive systems (such as the Exploration Place), domed theaters running entertainment programs (such as the aforementioned Madame Tussaud's in New York) - and we will see more and more of them in the coming years.

My guess is that we will lose some planetariums down this route. They will essentially become domed movie theaters, akin to our large-format brethren. You could certainly call that erosion.

But I believe this will be a transition period, at least as far as planetariums are concerned. Much as taped multimedia programs make sense for certain applications but (thankfully) have not completely displaced live programming in most planetariums, full-dome playback programs will not alleviate planetarians' interest in producing live, interactive shows.

I challenge everyone to think a bit further into the future ... when full-dome video projection becomes cheap and reliable, when CPUs run however many times faster than they run today, when inexpensive real-time systems will be able to move into even a small dome (perhaps replacing, perhaps complementing, the star projector). Small educational domes that permit flying through the universe in real-time - or exploring the human body in a classroom environment - could crop up everywhere, plus teaching about the night sky and astronomy and a host of other topics. Domes that currently sit dormant or underused might very well be revitalized by the new technology.

Does this scenario seem like an erosion of our facilities? I wouldn't call it that.

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Albuquerque, New Mexico 87104

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I think a greater danger than an erosion of the planetarium profession, is the conclusion that what works in one planetarium is by definition going to work in every *other* planetarium. Recently, the staffs of some domes seem to find themselves in the position of having to define to their administrations what a planetarium is and how important astronomy is to the planetarium's existence or, in a few instances, how important the planetarium's existence is to their parent institutions. In some cases, there seems to be a push for diversification of content, for the versatility of a multiple-use venue, and for a compromising of the primarily astronomical role of the planetarium. Some planetaria find themselves victims of a changing market, or of a shrinking budget, while others embrace a newfound function as all-purpose multimedia theaters. Some, because of a more tourist-oriented mandate, driven perhaps by competition, may *need* to go the "eye-candy" route, while others, comfortable in their role

as basic astronomy classrooms, may not. But despite what a few big-budget major museums may do, there will always be the small school theaters (which *far* outnumber the "big guys") that can't afford the multimillion dollar upgrades and who don't need them. The glitzy, blinky stuff may be nice, but it isn't part of their mission.

The growing sophistication of cinematic special effects, computer graphics, and even video games coupled with a shorter attention span that's been weaned on today's faster-paced, in-your-face media style has caused many audiences to expect far more than just a star-talk and a slide show when the house lights go down. Indeed, many of us have already participated in discussions on the future of slides as a visual medium, on the growing scarcity of projector parts, and on the eventual dominance of video projection. But not every planetarium has to be *Star Tours*. We all do the same thing, but in so many different ways what flies gloriously in one planetarium may go thud in another, and vice-versa. On one hand, there are new theaters being built or older theaters undergoing major upgrades where simple star shows have been replaced by effects-filled technogasmis in six-channel Surround Sound that rival Hollywood. On the other, there are your basic, no-frills astronomy classrooms. One is not necessarily better than the other. Both extremes and everything in-between

have different roles in the context of their locations, in the missions of their parent institutions, and in the needs of their communities. However, all of these planetaria do fundamentally the same thing and they each do it in the way that works best for *them*. It was once tough enough trying to convince visitors that a planetarium show isn't just "a movie about the stars." Oops, don't look now; some of them *are* just movies, but are they planetarium shows? Does it really matter, as long as our ultimate goal is astronomy education one way or another?

Bing F. Quock  
Assistant Chairman  
Morrison Planetarium  
California Academy of Sciences  
Golden Gate Park  
San Francisco, California 94118

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Here is the topic for the next Forum:

**Why do so few planetarians try their hand at script writing, and what can be done to change the current situation?**

If you have any thoughts on this subject that are burning to be consigned to paper (or a computer screen) please let me see them by the deadline of April 18. ☆

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*(Jane's, continued forward from page 56)*

I decided to get involved in this gourd process. They needed to be dried out to be useful to make rhythm instruments, birdhouses or drinking gourds. I took some green (fresh) gourds, hung them up in the closet next to the water heater, thinking that the heat would dry them out nicely. They rotted. Guess that wasn't the way.

Then I was ready to try growing them. I got some seeds from my friend with the garden, planted them in the ground in the spring. I had to pull them up before they produced any gourds. The vines attached to some young flower bushes, wound round and round them and threatened to kill them.

Meanwhile, I added a whole new segment to my planetarium lesson. I learned that most 3<sup>rd</sup> graders don't know what a gourd is. So I added "I brought some gourds today; I'll pass them around so you can think of a way that people use these gourds. They are vegetables, but no one eats them. Q. What do people do with them?" A.: "Shake them to

make an instrument." Then I show the bird-house gourd, then the drinking gourd before we find it in the sky.

I talk about *drinking gourds* that hung near the bucket of water from the well, 200 years ago. I tell the story of a 3<sup>rd</sup> grader who came to the planetarium one day and said, "I've just come from Africa to live in America. In my village in Africa, we have drinking gourds by the village well." My collection is growing. Sometimes, when we sing the song near the end of the lesson, each student gets a gourd to use as a shaky instrument while we are singing the song.

I really don't need any more gourds. I have enough gourds to give each of the 100 3<sup>rd</sup> grade classes I'll be teaching a souvenir: a few drinking gourd seeds and a real, dried-out gourd.

Last summer, my husband and I decided to try one more time to grow some gourds. We were inspired to do so when, in a feed and seed store in another city, we actually found some seeds called "dipper seeds". We were led to believe that these seeds made dipper-shaped gourds. Since I really only

have one "drinking gourd", it seemed like a good idea to try. Remembering the last time, we moved the gourd seed placement section far away from any other plants and bushes. Then we proceeded to go away from home for about two months. When we came home, we went down to the garden to see how the gourds were doing.

The garden was a jungle, as you might guess with no attention for two months. No drinking gourds were visible. We had bought the wrong thing, I guessed. A bird's squawk overhead made me look up. And there they were: the drinking gourds. The vines had crept 25 feet ( 8 meters) across the ground, then wound themselves around the guy wire of a telephone pole to the top of the pole, then across to the top of two trees that were touching the pole. There were four of them, all shaped like potentially wonderful drinking gourds, hanging down from vines, forty feet (12 meters) up in the air! I wonder where I can buy or borrow some of those spiky things you strap to your feet for climbing telephone poles! ☆



# Mobile News Network

Brought to you by and of interest to:  
Powerful Interactive Planetarium Systems

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## Tape Your Lessons:

I now understand why very few people want to send me taped lessons for the *IPS Handbook*! I keep taping mine and they are less than perfect! In fact some of them are even less than that! Despite that obvious pitfall it is extremely helpful and informative to tape your presentations even if no one hears them but you.

I found that the lessons that sometimes seemed plagued with what I thought was idle student chatter were not as disjointed as perceived and real learning was happening. When I listened to these lessons it was clear that most of the students' comments were on task and it was easy to hear that pupils were processing experiences and learning from them. I could hear statements such as, "Oh, I get it, when the sun is low in the sky it is colder." However, I also discovered that many times I responded appropriately to that quiet little voice of a child who asked herself quietly aloud something like, "What happened to my star?" or, "I wonder what would happen if we went to midnight!" I am flexible and the lesson plan does not drive my lessons; the learning and questioning does. It is gratifying to notice when you do the right thing by instinct! The classes that I thought were really focused and quietly working on task were frequently so quiet that it was difficult to know what was being learned. I noticed that I had to draw out student responses and challenge them to learn what was going on in their minds.

It is also helpful to learn about the part of your teaching style that needs to be fine-tuned, for example, what phrases are repeated too frequently. In short it helps you to grow and keep your lessons fresh. Even though I like to avoid criticism (my internal voice is already strongly critical!) I will share

some of these tapes because I think they will be valuable to the novice planetarian. I encourage you to do the same!

## Visiting Colleagues:

In October 2000 I enjoyed a visit from some fellow planetarians who work in the GLPA region, Dale and Barbara Greer (greer@alma.edu). Following the visit Dale wrote, "Thank you for allowing us to visit you at Solvay Elementary and taking a few minutes out of a busy schedule to talk with us. It was very informative and we enjoyed seeing how someone else uses the Starlab.

"In the next several weeks, I will try to get some information together on some of the activities we use on our 'pre-visits' to the classroom and send it to you by 'snail-mail'. Hope it will be of some use to you. Again, thank you for sharing some time with us, it is very much appreciated!"

This is an ideal way for planetarians to share. Dale and Barbara were visiting relatives in my area and took some time to visit me. I usually try to do the same thing whenever I go and it is always a rewarding experience. Planetarians on the whole are a generous and welcoming breed and everyone benefits from this kind of sharing! Each gains a new perspective on their job, new ideas and sometimes even materials!

My latest visit was to the Chabot Space and Science Center in Oakland, California. My family and I attended the Christmas planetarium show and marveled at the beauty of the twinkling fiber-optic stars! Jose Olivarez, Director of Astronomy, graciously gave us a complete tour of the brand-new planetarium, museum, Challenger Center, and observatory as he explained their exciting plans for the future. It is indeed a marvelous facility and he even arranged for us to have a conjunction of the crescent moon and Venus and then the most magnificent sunset I have ever seen!

## Publicity:

In New York State there is an almost manic push for documenting how programs align with state standards. School districts are mandated to comply with our state "core curriculum" by the pressure of statewide testing and the publication of test scores in the newspapers. I find myself designing promotional materials that directly address the current climate. I suspect that others are feeling the same pressure to market the planetarium according to country and/or regional standards. Following is the argument I posed for schools to consider. Perhaps it will give a format to follow if you have not already designed your own. Just substitute your own standards requirements and dress it up as a

beautiful promotional flyer or part of a brochure.

The flyers for Grades K-7 and 8-12 are reproduced on the following two pages.

## MAPS 2001:

Buhl Planetarium is hosting the MAPS 2001 Conference from May 9th to 12th in Pittsburgh, Pennsylvania. James Hughes (hughesj@csc.clpgh.org), director, has arranged a special day of workshops designed to serve portable planetarium users in the Pittsburgh area. This event will conclude with a reception at the Andy Warhol Museum at 6 pm which will be filled with portables as the first formal function of the MAPS conference. This is a wonderful way to try and get some folks who don't normally attend MAPS to come to the conference

## Keep in Touch:

Please keep the e-mail, cards and letters coming! Until June ... signing-off! ☆

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(Quotes, continued from page 22)

"Seeing a partial solar eclipse is like being the bridesmaid; seeing a total eclipse is like being the bride." Roger Tuthill, *Sky & Telescope* December 1999 (p.88)

"Jim Lovell said, many years after his flight, that being cooped up in Gemini 7 for such a long mission was akin to spending two weeks in a latrine, particularly after one of the urine collection bags burst." Quoted by Eugene Cernan, *Last Man On The Moon* (p. 95)

"Superstition is to religion what astrology is to astronomy. A very stupid daughter of a very wise mother." Voltaire. Quoted by J. de Finad, *A Thousand Flashes Of French Wit, Wisdom And Wickedness*

"The heavens are the eyes' widest and grandest field in which to adventure." Fred Schaaf, *The Starry Room*

"I don't pretend to understand the universe - it's a great deal bigger than I am." Thomas Carlyle. Quoted by D.A. Wilson and D.W. McCarthur *Carlyle In Old Age (1865-1881)* (p. 177)

And finally ... "NASA - Nice And Safe Attitude." A T-shirt slogan I once saw at Disney-world in Florida

## Further Reading:

*More Things In Heaven And Earth*, David Levy, Wombat Press, ISBN 0969082878 ☆

# What Good is a Planetarium?

**Standard Four** of the New York State Learning Standards for Mathematics, Science and Technology states, "The Earth and celestial phenomena can be described by principles of relative motion and perspective."

At the **Commencement level students** are expected to be able to "explain complex phenomena such as tides, variations in day length, solar insolation, apparent motion of the planets and annual traverse of the constellations."

*"Science process skills curriculum should be based on a series of discoveries. Students learn most effectively when they have a central role in the discovery process." –Physical Setting/Earth Science Core*

**The OCM BOCES Starlab Planetarium is the perfect tool for involving students in their own learning!**

**Earth Science Programs now available:**



**Sun and Seasons**

**Motions of the Moon and Earth**

**Celestial Motions**

**Planet Motions**

**Seasonal Constellations**

**OCM BOCES Planetarium Specialists** have developed experiences for schools that are interested in student-centered learning. A problem-solving approach is used to enable students to make important discoveries that enhance understandings. We have been providing high level and intensive Planetarium lessons since 1986. We will be happy to schedule a time when we can make a presentation and explain our program. For further information or to book the Planetarium at your school, please phone or e-mail:

**Susan Reynolds Button, Planetarium Specialist**

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**Cathy Wegman, Secretary**

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(315) 433-2671



# *What Good is Astronomy or Why Spend Money Studying the Universe?*

**Standard Four** of the New York State Learning Standards for Mathematics, Science and Technology states, "The Earth and celestial phenomena can be described by principles of relative motion and perspective."

- ❖ **Elementary students** need to be able to "describe patterns of daily, monthly and seasonal changes in their environment."
- ❖ **Intermediate students** must be able to "explain daily, monthly and seasonal changes on Earth."
- ❖ At the **Commencement level students** are expected to be able to:
  - ✓ "explain complex phenomena such as tides, variations in day length, solar insolation, apparent motion of the planets and annual traverse of the constellations."
  - ✓ "describe current theories about the origin of the universe and the solar system."

You can help your students to truly understand and be able to fulfill these requirements. The OCM BOCES **Starlab Portable Planetarium** can come to your school to be used as a hands-on laboratory for discovery. It is the most cost and time effective means for solidly locking in concepts that cannot be experienced by reading textbooks. Since Astronomy objectives are built into State and National Science Standards, we believe that it is imperative that students have the advantage of using the Planetarium as a laboratory to examine and confirm space science concepts explored in the classroom.

OCM BOCES has been providing high level and intensive Planetarium lessons since 1986. We will be happy to schedule a time when we can make a presentation and explain our program at your next meeting. For further information or to book the Planetarium at your school, please phone or e-mail:

**Susan Reynolds Button, Planetarium Specialist**  
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**Cathy Wegman, Secretary**  
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# International News

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New millenium or not? It seems like many of my planetarian colleagues regard year 2000 turning into year 2001 marks the real change from our second to our third millenium. With due respect for your reasons, we are now - astronomically speaking! - somewhere in the earth's 4.6 millionth millenium. For me, the great fun was to celebrate a new year's eve when a happy crowd counted down the last ten seconds until all four digits changed, from 1-9-9-9 to 2-0-0-0. Good order should now however be restored, and we can all agree that we live in the third millenium of what is called AD!

The International News column depends entirely on contributions from IPS Affiliate Associations all over the world. This time I especially acknowledge the first report from Glen Moore on one of IPS' latest Affiliate Associations, APS. Many thanks also to Bart Benjamin, Ignacio Castro, Kevin Conod, John Dickenson, Jon Elvert, Jean-Michel Faidit, John Hare, Loris Ramponi, and Mark Sonntag 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* 2/01 and 1 July for 3/01.

## Association of French-Speaking Planetariums

Among news from France is a new show about Earth Planet and its environmental face, seen from space. This show will present evolution under nature and human influences and will be produced with the CNES (Centre National d'Etudes Spatiales). It will be programmed after 2 April 2001 by nearly 40 planetariums, registered at the time to print this paper.

This is the biggest such joint project in France and French speaking countries

among planetariums. For more information, contact Agnès Acker, Strasbourg Planetarium, <acker@newb6.u-strasbg.fr> or Pascal Prieur for techniques by Fax +33 (0)5 61 80 74 70. Another show for young people is announced by the Saint-Etienne Planetarium (Eric Frappa / <planetarium@sideral.com>).

This spring, at the invitation of Loris Ramponi, President of Italian Planetarium Association, the APLF annual meeting will be held in Italy. It is the second French language Planetarium meeting in another European country, after the meeting of 1992, held at München/Garching ESO Center (European Southern Observatory). This meeting of 2001 will be at Milan Planetarium <fabio.p@tiscalinet.it>, and at Brescia and Lumezzane <info@serafinozani.it>. Travel to Venice is also programmed as an option <luca.talamoni@shineline.it>.

Another travel is proposed to planetarians this spring. After the total eclipse of 11 August 1999 through France, those who would like to study the 21 June 2001 eclipse in Africa may go to Zambia (information: <Gilles.ROUSSEL@mairie-nantes.fr>). At the turn of the millenium, a survey about audio visual documents in astronomic and space news is now held by Claude Ganter, manager of the Planetarium de Bretagne <contact@planetarium-bretagne.fr>.

Among new planetariums, after technical works, the Bourget Planetarium reopened 24 November. Two other new planetariums opened during year 2000, Planetarium-Observatoire Ludiver in La Hague and Côte Basque in Anglet, while the new planetarium dome of Montpellier is announced for the end of 2001.

Finally, we received an interesting invitation to the exhibition *Lunes* at Museum d'Histoire Naturelle de Lyon. This exhibition about Moons will be open until 1 July 2001 <museum@cg69.fr>.

## Association of Mexican Planetariums

During the celebration of the 8<sup>th</sup> anniversary of the inauguration of Universum, Museo de las Ciencias, Mexican Autonomus University, the Rector Dr. Juan Ramón de la Fuente, publicly announced the construction of a new building at the Science Museum. This will accommodate a new planetarium with a big dome of 22 meters or more, with an Omnimax theatre for about 400 spectators. Ground breaking will probably take place as early as April 2001, but obviously many technical and budget proposals have to be solved first. Ing. Jose de la Herran, current AMPAC President, is in charge of the project.

## Australian Planetarium Society

APS now has members from Australia, New Zealand, and Guam. Many of the APS planetaria are either new or are undergoing refurbishment. For example Martin George has recently survived a major refurbishment in Launceston and Pam Eastlick's Guam facility has had a major system upgrade from a Spitz ATM3 to ATM4. The Melbourne Planetarium, which opened in August 1999, and the new Wollongong Planetarium which opened in January 2000, are both connected with busy science centers and have had busy years. There is a new planetarium in the planning stages for Perth which will also be connected with a science center.

Most Australian planetaria have been busy writing their own shows with Melbourne's new Digistar-based shows being *Spinning Out* (launched in June 2000), and *Escape from Andraxus* (to be launched February 2001). Canberra Planetarium's new shows in production are *Guidebook to the Moon* and *Phoebe and the Time Machine*.

Wollongong Planetarium has introduced laser shows into its offerings for the first time in and these have been incredibly popular with both children and adults.

Along with the physical changes there have also been staff changes with Peter Williamson leaving the Canberra Planetarium and Jack White and Richard Allen leaving the Melbourne Planetarium. White has moved on to work for Sky Skan while Richard has re-located to the UK. Clare Williams is now busy producing shows for Canberra, as well as Tanya Hill, joined by newcomers, Monica Zetlin and Martin Bush, for Melbourne.

A feature of the year has been the noticeable increase in the number of planetarians visiting from the northern hemisphere. Perhaps practicing for 2004?

## Canadian Council of Science Centres

Plans are well in hand for the 2001 Canadian Museum Association Conference to be held in Ottawa 3-7 April. CCSC will hold its general meeting at the conference on Wednesday, 4 April, as well as a full day of discussions and workshops of interest to the science center/planetarium community. A number of items on the CMA conference program will also be of interest to CCSC members, including a keynote address by Canadian astronaut Marc Garneau on 6 April and an evening of science *Wired, Weird and Wonderful* at the Canada Science and Technology Museum, the country's largest museum of its kind with close to 10,000 m<sup>2</sup> of exhibits.

The Western Science Centres Collabora-

tive group held its most recent meeting 16-18 November at Manitoba's fine Museum of Man and Nature. The agenda included several sessions on "governance" issues, as well as a special focus on planetarium development and collaboration. Planetarium production staff from Vancouver, Calgary, Edmonton, Watson Lake, and Winnipeg were joined by a special guest Pierre Chastenay of the Montreal Planetarium. In addition to sharing ideas on future developments within the Canadian planetarium community, the group saw Manitoba's new show *Cosmic Perspectives*, a well produced program on the changes in human perspectives of the cosmos over the last two thousand years. Other shows for possible collaboration were discussed, and several interesting educational products developed by the Montreal Planetarium were reviewed. These products include a space game and a two sided Moon jigsaw puzzle. Anyone interested in these products should contact Pierre Chastenay at the Montreal Planetarium. Next meeting of the group will be at Watson Lake's Northern Lights Planetarium in the fall 2001.

Preliminary results from a recent CCSC sponsored survey of Canada's Science Centers and Science Museums show the following highlights:

- \* School groups are an emerging and growing market in an otherwise static or declining attendance pattern.
- \* There is growing evidence that science centers are regarded as integral and important components of our educational system.
- \* The majority participates in Teacher development programs. And the following challenges:
- \* Many facilities feel that they are not serving well the educational needs of Canada's young people.
- \* A lack of funding is seriously impairing their ability to create meaningful educational experiences.
- \* Science centers are not reaching or meeting the needs of underprivileged children in our society.
- \* Science centers have fallen behind in their ability to showcase current technology or information on current scientific discoveries.

## Great Lakes Planetarium Association

**Illinois** planetarians decided at the GLPA Conference not to have a state meeting in the spring of 2001. The decision was made to hold a state meeting in the fall of 2001 instead, the date and location to be determined.

Scientists are becomingly increasingly

aware that the existence of black holes seems to satisfy the requirements of theory. That there are black holes of varying masses, and different effects associated with each mass, may not be surprising. What may be surprising is that the theory appears to fit increasingly with observation. These and other viewpoints were presented in the newest sky show to debut in the StarRider Theater. *Black Holes: Into the Dark Abyss* is the Adler's latest entrée for its audiences to enjoy as they interact with and learn the likely and observed effects of black holes on space and time. The sky show culminates in a roller-coaster ride through a fictitious wormhole.

The Cernan Earth and Space Center of Triton College in River Grove featured a C-360 "Film Fest" to start off the 21st Century. On 19 January the Center hosted day 1 of the Near and Far Sciences for Illinois workshop. Waubonsie Valley High School Planetarium hosted day 2. At William M. Staerkel Planetarium in Champaign there will be three more installments in their annual *World of Science* Lecture Series featuring lightning, airplanes and how they work, and poisonous plants. Lakeview Museum Planetarium hosted a Near and Far Science Workshop 2-3 February.

The ISU Physics Department has hired Thomas Willmitch as full-time planetarium staff member. Due to the Christmas Day partial solar eclipse, the ISU Planetarium featured a solar eclipse show during the month of December. During these special presentations, participants learned about eclipses, how to predict them, and how to safely view them.

**Indiana.** The PHM Planetarium, Air & Space Museum in Mishawaka has added an air museum to its space museum, featuring 30 scale models of aircraft from the Wright flyer to the X33. Also included are the autographs of Orville Wright, Lindbergh, Earhart, Doolittle, Rickenbacker, Yeager, Neil Armstrong (when he was an X-15 pilot), Crossfield, Rushworth, Wyle Post and others. In March, the PHM Planetarium will pass the one-half million mark in attendance - not bad since the planetarium has only been in operation since 1981 and only seats 83.

Dayle Brown of Pegasus Productions will be attempting an astronomy overnight experience for 3rd and 4th graders presented by her 6th grade young astronauts for a fee. This will be one of their fund raising projects to take the 6th graders to Space Camp in Huntsville. The E. C. Schouweiler Planetarium in Fort Wayne is one of the sites chosen for *The Explorer's of Mauna Kea*.

**Michigan.** In Grand Rapids, the Roger B. Chaffee Planetarium has successfully replaced their Digistar I, the last such Digistar in Michigan. They report that their sky is

better than ever! Robert T. Longway Planetarium in Flint offered the popular *How to use your new telescope* workshops for everyone who gets a new telescope and can't even figure out how to find the Moon. Cranbrook Institute of Science Planetarium in Bloomfield Hills hosted a Telescope Users Workshop on 22 January as well as their teaching *Astronomy for Inquiring Minds: An Introductory Astronomy Course* during April.

The Exhibit Museum Planetarium in Ann Arbor has completed the installation of its East Coast Control Systems console for the Spitz A-4. In addition, they have installed a low-budget, but very functional, LCD video system with a laser disk player; they are planning to add VHS next. A dual solenoid system both turns the projector on and off and opens and closes an aperture, via automation system signals. Talks continue with the astronomy department on a collaborative effort to construct a stand-alone planetarium facility behind the current Museum building.

The Grand Haven Area Public Schools Planetarium had its grand reopening in mid-November for the Board, administrators, science committee and teachers. Their equipment now includes Audiostar, Videostar, a refurbished A3P, Techniwerke's newly designed audio system, and refurbished seating, carpeting, structural and esthetic improvements. Beginning in January, Kalamazoo Valley Museum Planetarium started producing a new program, in conjunction with local Hispanic organizations, which is related to the sun and seasons as told through a story about migrant farming. The anticipated opening for this show is in 2003.

**Ohio.** Ohio's oldest planetarium, the Wolff Planetarium in Cincinnati celebrated its golden anniversary on 5 November. Dean Regas directs this facility which is operated under the aegis of Cincinnati Parks. Ohio's newest planetarium is the Fred F. Silk Planetarium, which opened last fall at the Wilderness Center in Wilmot. Featuring a 5-meter dome and a Goto EX5 star projector, the facility is coordinated by Rev. Dave Ross. Groundbreaking ceremonies for the new Shafran Planetarium at the Cleveland Museum of Natural History took place on 14 September. Joe DeRocher is anticipating a fall, 2001 opening.

Chuck Bueter is co-teaching a celestial navigation class with Jeff Sanders at the Lake Erie Nature & Science Center in Bay Village. The adult class has given rise to some of the most technical paper plate devices yet, dedicated to sight reduction and celestial navigation theory. Bueter suggests that a class like this is a planetarian's delight, for it uses the planetarium to its maximum capacity. If anyone is looking to support an existing



celestial navigation class in their community, feel free to contact Bueter for input.

Gene Zajac tells about visitors from near and far to the Shaker Heights Planetarium. Lawrence Krauss (of *The Physics of Star Trek* fame) came over from Case Western Reserve University to speak to astronomy and physics classes at the school. Three modern-day Maya from Guatemala shared their knowledge of keeping their ancient calendar.

CRAP meetings were held at Garfield on 19 September and at Strongsville on 15 November. Ohioans plan to assemble on 31 March 2001 for a dual-site spring state meeting. They will meet at the Hoover-Price Planetarium at Canton's McKinley Museum, where David Richards is the new planetarium director. Later, they will move over to nearby Wilmot for a look at the new Silk Planetarium at the Wilderness Center. Plans for a fall 2001 state meeting are also underway, thanks to Susan Batson who has invited us to the Pittsburgh area. The date and specific location will be set later.

**Wisconsin/Minnesota.** The wrecking ball should be swinging at the doors of the Minneapolis Planetarium in late 2002. This destruction will make room for the construction of a brand new one on the same site by late 2005. A city referendum for a new library building passed on 7 November which provides the space for the new planetarium. Money still needs to be raised from the state legislature and private sources.

## Italian Planetaria's Friends Association

The next *Day of Planetaria* will be held on 18 March (see *Planetarian* 4/00). This day is the annual occasion for each planetarium to inform the public about the distribution and the activities of planetaria in the world, the initiatives of the International Planetarium Society and the problem of light pollution.

In fact the planetarium is generally the perfect reproduction of the real sky with all the naked eye celestial bodies that both adults and children don't have the possibility to know due to strong limitations of the sky of the very populated areas. The planetarium is then the only instrument able to show, above the head of onlookers, an exact view of the night sky without the light pollution. At the same time it is the most powerful tool to make knowledge both of the problem and of the technical solutions to reduce the diffusion of the artificial light upwards. The planetarium is a monument to the night sky as it had been visible in the past. The programs of the *Day* sent to Italian Planetaria's Friends Association will be made available in the Internet site <[www.cityline.it](http://www.cityline.it)> (pages of *Science*).

Programs are also collected in each country by *Day of Planetaria* collaborators. In Slovakia, for example, the programs are collected by Patricia Lipovska.

The new yearly publication of Italian planetaria is named *Tuttoplanetari* (All-planetaria). It contains different contributions concerning the activities of Italian domes and much useful information. It includes the IPS information leaflet translated into Italian and the summary of *Planetarian* issues published in 2000.

The next Meeting of the French-Speaking Association will be held in Italy on 5-7 May. The first day will be in Milan Planetarium and devoted to the Italian and French planetarium experiences in the field of the diffusion of astronomy in the schools. Participants will be hosted in a convent hotel near Garda Lake. During the second day, the astronomical facilities in Lumezzane, the scientific collection of the historical Museum of Santa Giulia, and the astronomical clock (XVI century) of Brescia will be visited. The program includes also a post-conference tour to Venice. Costs for three days are 230.000 liras (per person in double room), 250.000 liras (single room), plus liras 85.000 of registration fees (see <[www.cityline.it](http://www.cityline.it)>, pages of *Science*).

## Middle Atlantic Planetarium Society

Plans for the MAPS 2001 Conference in Pittsburgh at the Carnegie Science Center's Buhl Planetarium and the Pittsburgh Hilton are well on their way. The staff of the Buhl Planetarium is trying to make the conference more worthwhile and informative than ever, so please put 9-12 May 2001 into your calendar.

Some of highlights of the conference are: "Stargazing" at The Andy Warhol Museum. Join the portraits of the rich and famous as we fill the galleries with Starlabs, at a unique evening for exchanging ideas on presentation and story telling at the opening reception on Wednesday night.

Visit to the Millennium Theater at the Carnegie Museum of Natural History. This Panoramic SkyVision Theater by Sky Skan presents programs on a variety of topics. Besides viewing their latest show, participants will have a chance to explore innovative interactive techniques being used in this theater that were created in conjunction with students at the Theater Department at Carnegie Mellon University.

First Planetarium Crawl. We want to be able to show you a variety of theaters in the Pittsburgh area. Instead of pre and post conference tours, we are trying to set up a *Planetarium Crawl* that will allow all partici-

pants to visit these facilities on Thursday night in place of the traditional Dinner on your Own option.

Conference participants can experience MAPS' latest planetarium show kit offering, *The Sky Above Mister Rogers' Neighborhood* and get a chance to meet Fred Rogers. This program has been created to fill the many requests we get for preschool shows. Find out how the program works and see if it is right for your dome. The staff of Family Communications Inc. (the creators of *Mister Rogers' Neighborhood*) have also agreed to give workshops on presenting information to the very youngest learners.

Add in a variety of speakers, papers, posters, vendor demonstrations and the infamous "Taurus Sessions", and this conference is an event you won't want to miss. Check out the conference web site at <[www.buhlplanetarium.org/MAPS](http://www.buhlplanetarium.org/MAPS)> for weekly conference updates. E mail conference coordinator James Hughes <[hughesj@csc.clpgh.org](mailto:hughesj@csc.clpgh.org)> if you have any questions. We have already received inquiries from as close as Erie, PA and as far away as Germany and India, so we hope you will join us at the conference as we start a new millennium of planetarium education.

## Nordic Planetarium Association

The new Space and Astronomy exhibition at National Museum of Natural History in Stockholm, opened in November. The exhibition, which was created by Mariana Back, is complementing the museum's Cosmonova Space Theater and includes a Star planetarium among its several exhibits. Contact Mariana Back <[mariana.back@nrm.se](mailto:mariana.back@nrm.se)> for more information.

As a consequence of the opening of a new large Science Center in Göteborg, Universeum, Experimentum in Floda outside Göteborg closed down earlier this month. Experimentum's founding director Stephan Mangold will work with academic-industrial contacts at Chalmers in Göteborg. Unfortunately, Universeum will not have a planetarium, in spite of its name and the original plans to include one.

A new science center is planned to be created at the site of classic long-wave radio station at Grimeton near Varberg at the Swedish west coast. This is a joint project between University of Halmstad, Telemuseum in Stockholm, and the regional museums in Varberg and Halmstad. Contact Cecilia Anderberg <[cecilia.anderberg@ide.hh.se](mailto:cecilia.anderberg@ide.hh.se)> for more information.

Also Mora, in the middle of Sweden, has started to move towards a communal Science Center. The idea is to create the institution in collaboration between the com-

munity and local companies. A temporary Science Center - including a giant Starlab dome - was set up during the Lucia week in mid-December and it was a great success with well over a thousand visitors. Contact project initiator Ingrid Herrdin <ingrid.herrdin@morase> for more information.

A new one-semester course, Communicating science, will start next fall at University of Dalarna. The course will be bilingual (Swedish and English) and students will be able to, among other tasks, create both a planetarium show and an interactive exhibition. Since Swedish universities (at least for the time being) are tuition-free also for students from abroad, spending half a year in Sweden could be very worthwhile for young aspiring planetarians. Course coordinator Lars Broman, <lbr@du.se>, can be contacted for more information.

During the Nordisk Science Center Förbund (Association) board meeting in late October, the possible joining of NSCF and NPA was discussed. Since then NSCF Rules have to be changed, no decision could be taken. Since no-one at the present time is pushing for a merger, not much is believed to happen in the near future, anyway.

Broman Planetarium has created a new and exciting home page with animations, music and much more on line: <www.planetarium.se>. Interested in technology in mathematics education? Then the inter-Nordic TiM network maybe is something for you! Check the homepage <www.du.se/kol/samhallskontakt/tim/> for more information. Subscribe to TiM Newsletter by means of an e-mail to <pbr@planetarium.euromail.se>.

Those who are interested in the Nordic Planetarium Scene are invited to subscribe to the approximately bi-monthly Nordic Planetarium Electronic Newsletter NPEN by sending a note to <lbr@teknoland.se>. Backnumbers are available at <www.dalnet.se/~stella/npen/>. The latest issue contains, among others, a report by Olga Stankiewicz from the ECSITE Conference 16-18 November 2000 in Naples, Italy.

Teknoland's 5¥9 m<sup>2</sup> exhibit *Kepler's Dance*, which gives the users a "whole body on" experience of the three planetary laws by Johannes Kepler, now exists also in Norway, where Teknoteket in Oslo recently has built its own version. Construction instructions and license are available at a low cost. If you are interested, please send a note to <lbr@teknoland.se>.

## Pacific Planetarium Association

This year's Great Western Alliance Meeting, more commonly known as *Quadruple Conference*, representing the PPA, RMPA,

GPPA, and SWAP affiliates, will be hosted by Jon Elvert at the Lane ESD Planetarium in Eugene, Oregon. Dates are 4-7 October. Members of these affiliates will be receiving further information via snail and electronic mail. There is also a link to the planetarium's web page at <www.laneplanetarium.org>.

The Lane ESD Planetarium has signed a letter of intent to purchase a full-dome Sky-Vision system. There are also plans to build a new, larger planetarium at a new site.

At the July 2000 meeting of the Astronomical Society of the Pacific, over 150 astronomy instructors from around the country met for three days to discuss techniques for teaching the introductory college astronomy course for non-science majors. (The meeting was co-sponsored by the American Astronomical Society, and supported by NSF and NASA.) All the presenters were asked to prepare handouts, so that participants could take home a written record of the proceedings.

Now the non-profit Society is making a 334-page loose-leaf collection of these handouts, entitled *Cosmos in the Classroom 2000*, and edited by Andrew Fraknoi, available to any astronomy instructors who were not able to attend. The 81 papers cover such topics as:

- \* Practical advice from research on how students really learn.
- \* Better ways of assessing student performance than boring multiple-choice quizzes.
- \* Ways to get out of lecture mode, even in big classes.
- \* Inexpensive lab exercises for poor departments.
- \* Using science fiction to teach astronomical concepts.
- \* Teaching tools on the Internet.
- \* Favorite demonstrations (from a number of veteran teachers).
- \* Offering courses in astrobiology and other interdisciplinary topics.
- \* Resource guides to readings, software, and web sites.
- \* Ways of responding to creationism (and religious issues in general) in your classroom.
- \* "Some things I wish I had known when I started teaching".

Both experienced instructors and those new to astronomy teaching will find a great deal of interest to them in this volume. Many of the materials and guides are published for the first time, and cannot be found in any other format.

The book is available for \$24.95 (plus \$5 shipping and handling in the U.S.) It may be ordered through the Society's mail order catalog (item BO 260) by calling 1-800-335-2624. The catalog is also available on line at:

<www.aspsky.org>. Or you can send payment to: Astronomical Society of the Pacific, Cosmos 2000 Offer, 390 Ashton Ave., San Francisco, CA 94112. Outside the U.S., please add an additional \$5 additional shipping, and remit in U.S. funds. California residents, please add sales tax.

## Southeastern Planetarium Association

The beginning of the new millennium marked the beginning of the term of a new president for SEPA. Dave Maness (Peninsula Planetarium in Newport News, Virginia) took over the office from outgoing president George Fleenor (Bishop Planetarium, Bradenton, Florida). Maness has a hard act to follow as Fleenor was responsible for the mini-planetarium show *Saving the Night* which was first distributed to all SEPA members and subsequently made available to all IPS members. Fleenor also established strong ties to the International Dark-sky Association (IDA) which is a strong global proponent of controlling outdoor lighting and light pollution.

Assuming the office of President Elect is Mike Sandras of Kenner, Louisiana. Mike will assume the office of President in 2 years.

SEPA is looking forward to hosting a joint conference in Richmond, Kentucky this coming June. Both SEPA and GLPA will convene at the Hummel Planetarium at Eastern Kentucky University in June for what promises to be a meeting of epic proportions. Each organization has traditionally attracted large numbers of attendees at their respective conferences and the combined conference should exceed all previous numbers. International participants are always welcome! Visit our website at <www.sepadomes.org> for more details.

Dale Smith's recent article in the *Planetarian* on the distribution and geographical make-up of IPS ignited some controversy within the SEPA region as evidenced by the following remarks from Dave Maness, "HMMMM ... I could say something about the next SEPA president who comes from a State that IPS doesn't recognize as part of the SEPA region, but naah." Instead Maness chose the following, "As the true millennium comes to a close, I would wish everyone the best for the next 1000 years. With the success of the *Saving the Night* program, I hope and believe that there will be more opportunities to work together on projects that can benefit planetarians from around the world."

## Southwestern Associations of Planetariums

The Texas 2000 Conference was hosted by the Southwest Association of Planetariums 4-

8 October 2000 in Dallas, Texas. Member associations of the Western Alliance (SWAP, RMPA, GPPA, PPA) and other guests attended this successful meeting.

A pre-conference tour (Space City 2000) was held in Houston 2-4 October. Attendees visited the Houston Museum of Natural History, Johnson Space Center, and the Burke Baker Planetarium. The 4 October agenda included a *Full Dome Festival* in the planetarium with numerous all-sky video demonstrations. The post-conference tour went to the Fossil Rim Ranch & Dinosaur Valley State Park at Glen Rose. The Texas 2000 Conference convened at the Harvey Hotel - Dallas on Wednesday evening, 4 October with early registration and a reception.

The conference schedule included invited speakers, paper presentations, workshops, and visits to local planetarium facilities. The meeting officially began on Thursday, 5

October with an opening welcome by SWAP president Barbara Baber and a talk by Marianne Dyson (National Space Society). Day one included numerous paper presentations and workshops. In addition to finding out what others in the planetarium field are doing, there were talks by the National Space Society, Texas Astronomical Society, Lockheed-Martin, Jet Propulsion Laboratory, and the Space Telescope Science Institute. Also, displays from National Space Society, Texas Astronomical Society, American Association of Amateur Astronomers and the Astronomical League, Lockheed-Martin, and the Dallas Amateur Rocket Society were set up. And, of course, displays and information from numerous supporting vendors were available.

Vendors' presentations and regional meetings highlighted the morning of day two. The Friday afternoon agenda allowed partic-

ipants to choose to visit the Digistar facility at the University of North Texas or visit three school planetariums in the North Dallas area (Richardson, Mesquite, and Garland).

Saturday (day three) the group headed south on a trip to Corsicana to visit Navarro College and their Digistar facility. Following the return to the conference hotel, the banquet featured keynote speaker, Caroline Collins-Peterson of Sky Publishing Corporation.

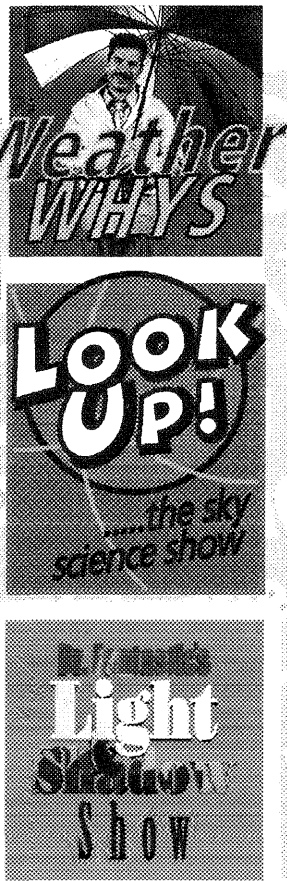
The local flavor of the conference was provided by the entertainment of cowboy storyteller Don Sanders, a dinner trip to the "West End" area of downtown Dallas, and a Texas-size steak at Trail Dust Steak House. The meeting adjourned with all member organizations of the Western Alliance agreeing to meet again in Eugene, Oregon 3-7 October 2001. ☆

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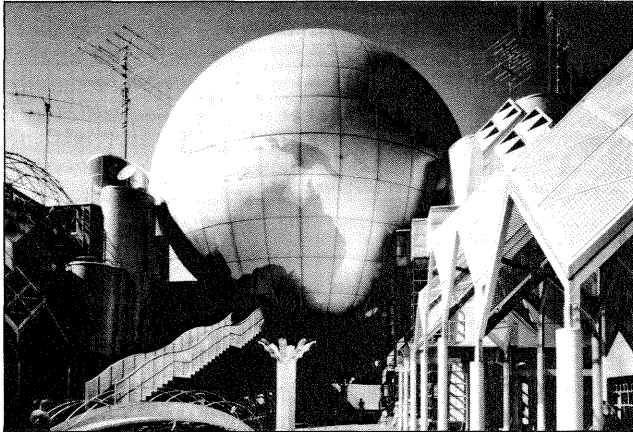
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# SPACE CREATORS

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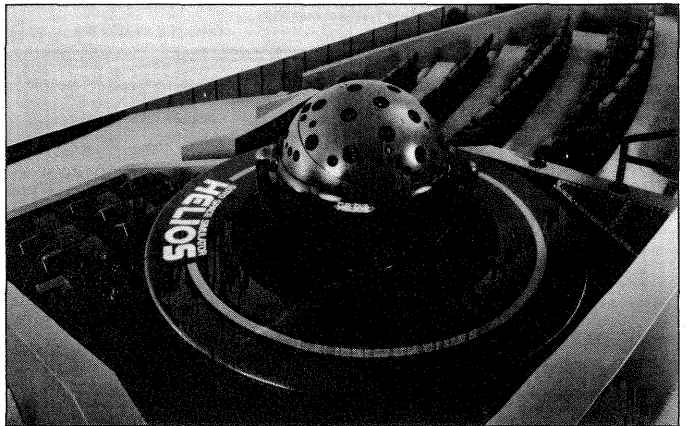
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*A spectacular view of a crisp, clear star field!*



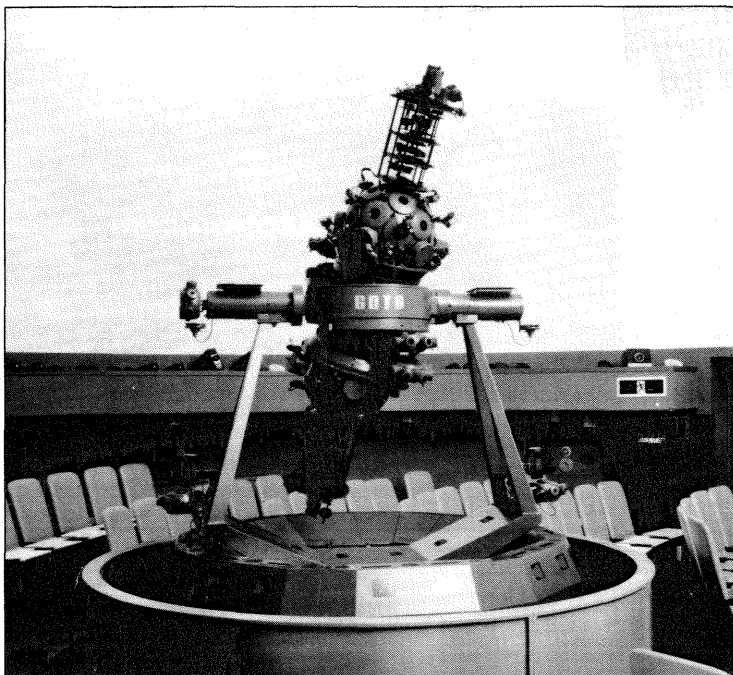
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# President's Message

**Martin Ratcliffe**  
**Exploration Place**  
**300 N McLean Blvd**  
**Wichita, KS 67205**  
[mratcliffe@exploration.org](mailto:mratcliffe@exploration.org)

Welcome to the new millennium, and the year 2001! It is startling to me, who as a child saw the movie/film *2001: A Space Odyssey*, a movie that changed a generation and triggered many to dream great things, that the year 2001 is actually here. Do you remember back in the 1960s the idea that perhaps the entire world would be able to communicate with each other instantaneously? We all imagined that this would be done via TV or radio, with small wrist worn appliances that could call anyone on the planet. Who would have imagined that the internet would provide the communications revolution. It's a revolution that is impacting us in many ways. Nearly all IPS council deliberations take place via email. It makes international communication easy.

I recently received a nice email from a former President of IPS, Dr Jeanne Bishop, who commented to me that all her council dealings were done before email. How the world has changed in the past fifteen years!

Yet as I grew up there was one person who dreamt of those ideas and wrote about them, both in works of fact and fiction. I am speaking, of course, about Arthur C. Clarke. A visionary and practical prophet in his own lifetime, it is perhaps lesser known that Arthur Clarke was also a member of the British Astronomical Association, a society of amateur astronomers in which I am proud to be a long-time member. I had the privilege of collating all of Clarke's works in the *BAA Journal* for use by the publisher of his scientific autobiography, *Ascent to Orbit*, published in 1984. My signed copy is my most treasured possession.

Meeting Arthur briefly at the press showing of the movie *2010: Odyssey Two* in London along with his wonderfully friendly brother, Fred Clarke, was an additional treat for me personally. I will never forget those brief meetings. His writings, especially *Report on Planet Three*, did for me in England what Carl Sagan did for a generation years later with his series *Cosmos*. Now this year Arthur Clarke will grace with his presence a confer-

ence supported by the International Planetarium Society in his home country of Sri Lanka in this special year of 2001. You can read more about that conference later.

First, onto some important items in Society activities, after which I will continue my ramblings. The following few items relate to items that Dale Smith worked on very hard during his term as President and I will continue to pursue in the following months. Dale, by the way, has just returned from a wonderful trip to Antarctica, thus completing a lifetime's ambition to visit every continent on this blue planet, something he did at his own expense but to great benefit to this Society. Thank you, Dale, for your hard work, and welcome back! I look forward to continued dialogue with you now as Past-President. Your shoes are tremendously hard to fill.

The following news items relate to what you, the membership, get from IPS and can be an encouragement to those who are not members to join the organization.

## Slide Service

The best of intentions by IPS do not always work out the way we had planned, and the Slide Service is an example. Some of you who joined the service are perhaps wondering whether to continue for a second season, since only one set of slides were released in the first. You are quite right to wonder. Admitting that things weren't perfect is the first step to ensuring that we all work hard to make sure the second season of the slide service is a good one. In the past year we have cleared a few bumps in the road with the slide service. What you won't know until you read this is what is being planned to the second round. Nearly all of the bumps have been ironed out, largely due to excellent work by Dale Smith and Thomas Kraupe, the great support of Jeff Bowen at Bowen Productions, and the good offices of Anita Sohus at JPL and John Stoke at the Space Telescope Science Institute. I can assure you that the efforts by these fine people have laid the groundwork for a very good season of slide releases that will come right to your desk in the near future if you sign up for the slide service. You won't want to miss them. The new period started on February 1, 2001. I have seen some of the slides that will be on their way to you soon after you sign up. You will be able to incorporate them into your shows on current astronomy, use in talks and lectures, and add to your growing library of astronomical images. They will also keep you up to date on the most recent slide releases. This second season of the new IPS Slide Service promises to be a good one and I encourage you to sign up. Contact

Shawn Laatsch if you reside within the United States of America or your regional coordinator for the most up-to-date information about the slide service.

## Eugenides Script Contest

I am thrilled to announce the return of the Eugenides Foundation script contest. It has been a few years since we last ran this contest. Now, through the kind generosity of the Eugenides Foundation, the contest is back. I would like to use this opportunity to thank the Eugenides Foundation in supporting the creativity of the planetarium field in this way. It is a tremendously valuable aspect of this Society's work. I encourage you as IPS members to enter the contest. The first prize is a check for \$US700. The runner up will receive \$US300. Submit your new scripts between July 1 and December 31, 2001. IPS has appointed Steve Tidy as the script contest Coordinator. Please take a moment to read important details about the contest in Steve's article earlier in this issue of the *Planetarian*. IPS thanks Alan Davenport who fulfilled the Coordinator role so well prior to Steve.

## Second IPS Video Disk

A second video disk is being prepared as you read this article (I know because I am preparing it for you). Having produced a number of planetarium shows in the past that have included video disks, and also having purchased a few commercially available video disks, I can tell you that the IPS Video Disks are incredible value for money. Normally costing over \$700 in US currency, IPS is producing a series for its members at only \$95 plus shipping. The second disk will include the wonderful "Mars Compilation" by the Jet Propulsion Laboratory. This is just in time for the wonderful opposition of Mars that occurs in June (mid-winter, of course, for our southern hemisphere members).

Enclosed in the mailing envelope with this issue of the *Planetarian* is an order form for this video disk. If the order form is no longer with this issue, please contact our Treasurer for details.

The video disk is produced in one format, NTSC, so that we can provide the disk for the widest possible market, allowing IPS to sell the disks at the lowest possible cost.

A third disk is in the works, but as a small society with limited resources, we have to wait until the bulk of the second disk is sold, so hurry. The sooner you buy this one, the sooner more material will become available to you.

If you are a non-member and wish to buy the video disk, you can do so at a higher price. However, please do consider that for



an extra \$10 above the non-member's price of the disk, you can become a full member of IPS, and so additionally receive your own copy of this journal, and take advantage of all the other services IPS offers. You will also know that you are a member of a society of your professional colleagues.

### Sri Lankan Skies Conference

As you receive this issue of the *Planetarian*, nearly 100 delegates from many countries are preparing to congregate in Sri Lanka for a fine conference to discuss astronomy and education. The conference itself is a product of some very hard work done by Dale Smith and Dr T.T.C. Samaranayaka, and IPS is honored to have the opportunity to share some of our work with Arthur C. Clarke, who lives in Sri Lanka and whom I mentioned at the beginning of this column.

This conference is also an excellent opportunity for our new affiliate in India to share their work with colleagues from around the world, and we welcome the Indian affiliate to IPS. I hope that the conference in Sri Lanka and the new affiliation with India will strengthen and support efforts of our planetarium colleagues in that part of the world.

Arthur Clarke has been such an influence on all of our lives in many ways, and has inspired many planetarians to share his dreams through the performances in our domes. I wish all of those attending the conference in Sri Lanka a wonderful and inspiring few days of discussions and building ties and friendships for the future.

So here we are in 2001, a world where discoveries include extra-solar planets and an accelerating universe. A world where our domes are undergoing a revolution, re-inventing the planetarium for a new millennium. Recently I flew through a very detailed, almost photographic, three-dimensional model of the Orion nebula - yes, "flew" through it. At least that was the vivid impression left in my brain after seeing a full-dome video presentation. After years of viewing this stunning and beautiful nebula through my own telescopes and gasping at each generation's dramatically successful attempts to image it, most recently with the infra-red camera on the European Very Large Telescope, I was actually there! The resolution of video keeps improving, year after year. Three years ago the very idea that we planetarians could take our audiences "into" the spectacular nebulae that we have been showing them from afar was a mere pipe dream. We could only imagine it! Now we can do it - and it is breathtaking. The beauty is awe-inspiring. What an industry, and what a time to be alive. It gives me great hope,

even with great changes, for the future of our profession. The planetarium is here to stay for the 21st century, worry not.

Soon, perhaps within the next ten years, the "pitless planetarium" will appear - a planetarium theater with no projection system in the center of the room (the best seat in the house). The projection system of the future will be hidden behind the dome. Photo-quality stars and full color images will sprinkle our domes, but with a 3-dimensional reality that will cause our profession to grow beyond its own wildest dreams. Gone, perhaps, will be the audience's awe of the central projection system and they will be left with magic of the sky itself - alone with the universe. After all, that is our collective goal, to inspire our visitors a lifelong interest in the magic and majesty of the sky. Radical, maybe, but fear not. One thing is certain. Every audience will still wonder how we do it and ask the same questions of just how the magic is produced.

We members of the International Planetarium Society are united in our love of the sky, united in the passion for telling the story of what is going on there. Each and every one of us tells that story in a unique and interesting way. Inside our professional world we debate the pro's and con's of doing things in certain ways, but nothing removes us from the fact that we love what we do. This is what does and should unite us around the world as members of the International Planetarium Society.

Since each of us brings different creative elements to our shows, it seems reasonable to say that each of our shows attracts a certain kind of audience. Indeed, some theaters around the world cater for specific audiences - perhaps it is a school group, perhaps it is the educated 8-year-old, perhaps it is your university department. Other institutions, usually the larger ones, cater for a broad audience; schools, general public, special groups and so on. This might seem like a simple statement, but whoever your audience might be, trying to understand exactly "who" you are appealing to is the key to success. I would encourage those of our member institutions who sometimes see falling audiences, take up the challenge to try something bold and new. The ride can be rough, but there is never a dull moment.

I have been fortunate in my career to have used every type of planetarium projector, from an inflatable planetarium, through an electromechanical star projector, a digital planetarium projector, and now a fully interactive, full-color all-dome system. I count myself very lucky to have worked in facilities that demanded the creation of new things. I have worked for boards and managers who had a vision of changing the nor-

mal way of doing things, and trying new things. Some ideas work well, and others didn't. However, one thing I can say with certainty and that is that I have catered to a different type of audience in each of these facilities. Sometimes when a change occurs in the same facility, one is met with resistance by an audience unwilling to try new things. Yet the new audience often is thrilled by what they see, and in my experience, these audiences have been larger in number. These new changes have required new skills. The kind of skills required in a staff of a planetarium, if you are lucky enough to have any help at all, is changing in some regions of the world. If you are on your own, and many of you are, there are opportunities to devise new and creative ways to present the drama of the universe on your domes, especially through collaboration with your colleagues in this society.

IPS as a society of professionals has a challenging task on its hands. Its members now represent a wider range of skills, and bring a wider range of opinions, than ever before in our history. The new construction of planetaria is going through rapid change. New technology is, in most new facilities, changing what our audiences identify as a planetarium theater.

So just how does IPS represent the planetarian who spends his or her life excelling at teaching students about the wonders of the universe in a school system with a staff of one, while at the same time represent the those who spend their profession developing new computer graphics that accurately represent some dramatic astrophysical process and is presented to thousands of visitors per week in some large facility?

It is this diversity of skills in our membership that is our strength as an international society. The mutual respect that each planetarian has for others in different facilities, in different cultures, and in different countries, all bound together by a love of the universe, and a desire to talk about it. As members of IPS, each of us strives for the highest of professional standards. This is an unstated goal of being a member of IPS, and one that I like to emphasize. Considering the number of fellows of this society, clearly we all take this aspect of our work very seriously, and I am humbled and honored to be serving you in the role of President.

One of my aims during the next two years is to increase the membership of IPS. For a professional society, our dues are quite low, yet the many, many benefits are offered to members. By being a member, you save many more dollars, pounds, rubles, francs through the reduced cost services that we offer. With growth in our membership comes growth in the services we can offer.

This is your society, one that you can contribute to. If you are a new member and wish to know how to use your skills to make a contribution, please let me or one of the other officers know. If you are a long-time member, and have not contributed yet, now is the time. Let's hear from you. In particular, I would encourage you to look at the maps of the world in Dale Smith's last President's message in the December 2000 issue of the *Planetarian*. In his excellent review of the state of the world's planetariums, the maps show how many planetariums there are, and how many IPS members there are. It is my hope that in two years time, the gap between the number of domes and number of IPS members has reduced.

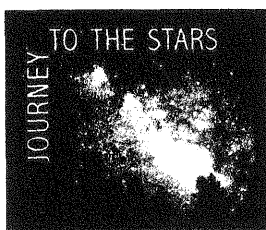
### American Astronomical Society

Let me tell you briefly of my recent visit

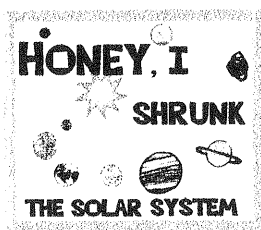
to the American Astronomical Society Conference in San Diego. This was my 11<sup>th</sup> such visit to an AAS conference. There were at least eight concurrent sessions, morning and afternoon, combined with poster papers that changed on each day of the four day conference, amounting to thousands of papers representing the last six month's of research. The meeting was held in collaboration with the American Association of Physics Teachers. A total of 3,000 people attended, the largest ever. The pace of advancement is phenomenal, and these meetings capture the pace and excitement of today's astronomical world. Attendance at these meetings, at least once per year, has always been a part of my activities as a planetarian, and I would encourage other US-based IPS members to try and attend. The AAS have an ever-growing active education-

al component, and the increased visibility of planetarians at this conference, at least in the United States, will serve our profession well. The next meeting will be held this summer (northern hemisphere) in Pasadena, California. Check <http://www.aas.org> for further details.

Finally I would like to welcome President-elect, Jon Elvert, to the leadership team. Jon brings a wealth of experience and knowledge, and like me is an ex-patriot European! Both of us will strive to continue the excellent work of Dale Smith in ensuring we continue to be an international society. Saying thanks to Dale Smith does seem enough for what he has done for IPS. However, his skills and dedication toward IPS will continue for some years to come, I know. See you next time! ☆



## MINNEAPOLIS PLANETARIUM SHOW PRODUCTIONS



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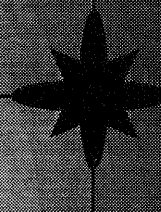
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# Gibbous Gazette

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## Happy New Millennium

I made a resolution last year to stop letting life fly by and to start enjoying it more. This resulted in taking a few more trips and subsequently having a chance to see a few other planetaria and theaters. The start of a new millennium and the passing of another birthday (40<sup>th</sup> on 1/15/01) prompted me to reflect on some of the things I've seen in the past few months. I hope you will have a chance to ponder some of the experiences you may have had recently. Now would be a good time for you to write some of those things down and to send them to me so that they can appear here in the near future. I want this to be your column, and I haven't heard from very many of you, so make a resolution to contribute to **your** Gibbous Gazette today.

### September - New York City

I missed the post IPS conference tour of the **Hayden Planetarium**, so I made the pilgrimage in September to see their first show before it went away. Fantastic architecture! - I think one reviewer said, "it is the greatest architectural achievement in America since the Washington Monument was built over 100 years ago." From the seat shakers to the Big Bang Theater the experience is first rate. The morning I was there, I encountered more security guards than exhibit explainers. The very young staff are kept busy moving visitors through the multi-level floor plan. If you want to take dramatic photos of the building at night, call ahead. When I was there they had cleaning crews out doing the windows.

### November - Toronto

The American holiday of Thanksgiving is

an excellent excuse to leave the USA to explore its neighbor to the north, Canada. After a few nights in Niagara Falls, I went to my second favorite city in North America (Montreal is #1) the capitol of Ontario, Toronto. I ventured out to see Cyberworld at the **3D Imax** in a reconditioned former movie house in the entertainment district. It was great to see *The Simpsons* jumping off the screen at me, but the connecting story lacked a compelling plot. Computer bugs ala an animated roach commercial threaten the Cyberworld. I've found out that the technique employed allows the animators to create this virtual world within a 3D database much like the technology sweeping our industry.

While in Toronto, I wanted to find a place to visit that the whole family could enjoy. A brochure in the hotel lobby caught my eye, "Visit The Children's Own Museum". Upon closer inspection I noticed the address, "In the **McLaughlin Planetarium** building @ Museum subway". I knew that the planetarium had been closed for some time so I just had to investigate. We paid \$20 to crawl around in a lot of soft sculpture recreations of real life. I was trying to imagine the space when it was the lobby of the planetarium that I had visited over 10 years ago. Gone was the spectacular Stellarium and other multimedia treats. Instead of signs revealing the universe, I found signs on baskets for the collection of museum exhibit pieces. "Please place objects here if your child has put them in their mouth so that they can be sanitized, thank you!" I was a little melancholy as we put on our coats and were getting ready to leave. It was then that I noticed a wall full of paper stars and a banner proclaiming, "Buy a star to put in our sky to support our museum".

### December - New York City (Again)

To close out the year, I went on a two day getaway to explore NYC because I wanted to see two shows that I knew would rekindle my love of multimedia and show production. One was playing just down the street from my hotel at the **Imax at the Sony Lincoln Square Theaters**. Much to my disappointment, *Fantasia 2000* had just closed in Baltimore when I was there for the MAPS conference last year. I even avoided purchasing the 3 pack Special Edition DVD with the hope that I might first see it in the venue for which it was designed. I eagerly purchased a ticket for the only showing of the day at 10:30 am. I went inside to find about 200 3<sup>rd</sup> graders who had come for a field trip. The students were either extremely well behaved, totally enthralled, or asleep because they didn't make a sound throughout the entire film. I have to commend the teachers

and parents of these very nice children. I was equally impressed by the colors, the music, and the celebrity introductions that make *Fantasia 2000* a worthy sequel to the original. The opening sequence with the animation cels flying through space was worth the \$9.50 alone! Check out the online teachers guides at [www.fantasia2000.com](http://www.fantasia2000.com).

**Madame Tussauds** - The last time I was in Times Square I was on my way to the MAPS conference at the Hayden in the 1980s. Back then, Times Square was full of XXX rated movie houses, peep shows and porn culture. Now it is a canyon devoted to media and pop culture and smack dab in the middle of it all is the brand new **Madame Tussauds Wax Museum**. This was the second stop on my itinerary. The folks at the Tussauds Group obviously know what they are doing.

If you attended the IPS Conference in London you know how amazingly life-like their wax figures are. And unlike most American wax museums, they allow you to get right up to the figures and they even encourage you to take lots of pictures. Well, like their facility in London, they decided to install a planetarium-type experience and here on the fifth floor you will find, "It Happened In New York". Inside a 30 foot **Astro-Tec** dome is an all dome video system by **Evans and Sutherland**. The theater has a large waiting area with an 8 minute preshow. You then move into the (standing room only) theater. Here is the premise of the show: It's 11:45pm on New Year's Eve and you are in your hotel lobby and the doorman is trying to hail a cab so that you can get to Times Square before midnight. Along comes a horse drawn carriage that magically transports you though space and time to witness some of the greatest moments in New York City history.

After this 12-minute magic carpet ride you exit into a sizable gift shop so you can purchase trinkets emblazoned with the images of Elvis Presley, Betty Boop, Lucile Ball, James Dean, Marilyn Monroe and The Beatles. This was definitely the place to do your holiday shopping since they even have one-of-a-kind movie star memorabilia for sale. These items, sometimes called Startifacts, range from Cher's shoes priced at \$335 a pair, to a \$3500 N'Sync Autographed Leather Jacket, to a Marilyn Monroe worn dress for \$14,000. A lock of Elvis' hair from his Army boot camp haircut goes for \$2500 and an actual concert ticket for the next show that he would have given if he hadn't died was a bargain at \$200!

Instead of paying the full \$19 admission fee, I opted to purchase the Dome Show Only Ticket for \$6.95. No one asked to see my ticket so I wandered up into the wax works to meet the stars. You don't want to



miss the opportunity to have your picture taken with the wax effigies of Neil Armstrong and Buzz Aldrin, Janis Joplin and Jimi Hendrix, Barbara Streisand and Yoko Ono, Woody Allen and Andy Warhol, Whoopi Goldberg and Elton John and His Holiness The Dalai Lama and Yasir Arafat (who looks a lot like a mature Ringo Star).

Unexpected Surprises .... With very tired legs I jumped on the cross-town subway to catch a ride over to **Grand Central Station**. I have never had the opportunity to see the celestial mural on its ceiling, so, I thought I would go and have a look. I entered its grand vaulted great hall and gazed up at the stars and constellations filling the immense space above. I knew of the mural but the knowledge of it hadn't prepared me for its incredible size. It was as if someone had taken a planetarium and unrolled it high overhead. Soft Christmas music was playing. And there at the height of rush hour, elegant laser patterns of snow flakes and candy canes floated amongst the stars. And for about 10 minutes a great many people did something that they very rarely do. They paused from their frantic lives and they looked up and they marveled at the sky, even though it was an artificial one. Then the music stopped and their mad ballet commenced.

The young lady behind the cash register at the gas station on the Pennsylvania Turnpike couldn't figure out why I was laughing as I paid her for my fill up. There on the counter was a display of laminated Elvis concert ticket stubs for the show he would have given if he hadn't died. "These are a real bargain at \$2.00", I said, "they're selling for \$200 up in New York City". "Oh," she said, "Next."

## Condolences

to the friends and family of **Larry Mundo**, a longtime South Florida planetarian, who passed away on Wed Oct 11, 2000. He was 40 years old. Larry was the planetarium technician at Buehler Planetarium in Davie Florida during the mid 1980s. Since 1990 Larry had been employed at the Space Place Planetarium, Miami Dade County Schools in Miami, Florida as planetarium technician and console operator. He was a true friend of the planetarium field and enjoyed telling children about the wonders of the universe. He will deeply be missed.

## People On the Move

**Thomas W. Kraupe** (former IPS President) will head the new planetarium in Hamburg, Germany. The facility is in the base of an enormous water tower. Thomas hopes that one day he can fill the tower with beer for his visitors to enjoy!

**Mark Howard** was recently named the per-

manent director of the Planetarium and Astronaut Memorial Hall, in Cocoa, Florida. Mark had been serving as acting director for more than a year since the departure of former director, **Ian Griffin** who is now at the StarDome Observatory in Auckland, New Zealand.

**Rob Landis** (formerly of Abrams, Strasenburg, STSCI and JSC) is headed to JPL in Pasadena, California, to work on the Cassini Mission to Saturn.

**Kelly Stammer** (formerly with the Halstrom Planetarium in Fort Pierce, Florida) has joined the staff of Bishop Planetarium in Bradenton.

**Carolyn Collins Peterson** (formerly with *Sky & Telescope* magazine) is now at OneCosmos.net, a cosmic internet portal based in California.

**David Menke** has taken over the director's role at the Poinciana Elementary School planetarium in Boynton Beach, Florida, replacing Kris Swanson who has assumed a job as media coordinator for the school system. Dave also recently became a grandfather.

## Congratulations

to **Jon Elvert** (Lane ESD Planetarium in Eugene, Oregon) on his recent election to the office of IPS President-Elect. Thanks to the Elections Committee for chadless ballots!

to **Tom Hocking** (Moderator of Dome-L and formerly of Bowen Enterprises) and Deb Kranzel-Horan on their marriage on Friday, December 15, 2000. The couple will reside in the mountains of northeastern Pennsylvania.

to **Lynn Rice Leland** (Producer, Christa McAuliffe Planetarium in Concord, New Hampshire) and her new husband Ron. They were wed on September 30, 2000 and will make a home in Webster, NH.

to **Joe Ciotti** (Hokulani Planetarium at Windward Community College in Kane'ohe, Hawai'i) on his brand new planetarium. Inside you'll find an **Evans and Sutherland** Digistar 2 complete with a **Sky Skan** Interactive System, automation and ancillary projection equipment.

to **Jose Olivarez** on the opening of the new Ask Jeeves Planetarium at the Chabot Space & Science Center in Oakland, California. Here you will find the **Zeiss** Universarium, lasers, a MegaDome Theater and the Celestial Café.

to **Orange Imaginarium**, Bristol, U.K. opened its **Spitz ElectricSky** Theater opened in July 2000. The theater is inside a 40-foot diameter tilted dome theater with immersive video panorama, 1024 star instrument, LED cove lights, laser projection, and surround sound operating via Spitz ATM4

automation system. The Imaginarium was home to the premiere of *Oasis in Space*, a show about water and our solar system done completely with custom 3D graphics by Spitz' Creative Media Department. The Imaginarium is part of the new **Explore-at-Bristol** complex. Find out more at [www.at-bristol.org.uk](http://www.at-bristol.org.uk).

## Can You Believe ...?

**Scott Pohl** (Nimitz High School Planetarium in Irving, Texas) is beginning to get things back in order after more than a year of heavy construction that has impacted his planetarium. The work involved encompassing the planetarium within the main school complex. This involved the removal, relocation, and addition of walls, bathrooms, workspaces, etc. Scott reported that one day while using the planetarium, a wrecking ball came crashing through one of the exterior walls. He was mandated to continue running planetarium shows even though he couldn't make it dark at times! A service visit was required to clean cement dust from interior components of the Spitz Star Projector.

American late night talk show host, **David Letterman**, complaining to NASA about the brightness of the ISS. He claims it's so bright that it keeps children awake at night.

## Tips, Hints and Tricks

**Karl von Ahnen** of the Minolta Planetarium at the De Anza College in Cupertino, California offered up these ideas via Dome-L: "I don't really like the laser pointers for pointing out stars in the planetarium and only use them as a backup. We also hand the pointers out into the audience so they can participate. So, what we use is a standard (cheap) flashlight with a perforated opaque disc placed in front of the regular lens, and then a cheap projection lens taped with a piece of cardboard in front of that, all taped together to focus the dot at the average dome distance. A Kodak mask with an arrow would work well. We just get funky irregular spots with our pointers, but they do the job. Another trick I have found for keeping the cheap flashlights working is to place a small piece of wadded up aluminum foil under the lamp contact. The solder on the tips of the lamps gets smashed down after a while, and many rechargeable batteries have a recess on the tip which makes for a bad connection. The small piece of aluminum foil works wonders." Thanks Karl!

**Gene Zajac** from the Shaker Heights High School Planetarium in Shaker Heights, Ohio takes every opportunity to share the joy of astronomy. Here is his idea as posted on Dome-L. "To all with a telescope: Last night was a great night for observing Halloween

and the stars. This is the third year in a row that I sat outside with my telescope and candy. Every trick-or-treater was treated to candy and the view of the moon. Not one person passed either one up. Many told me what they saw last year and the year before. (Saturn and Jupiter). My biggest regret is that I did not take a picture of the ghosts, hockey players and monsters in line for their turn. Parents were equally pleased and commented we were on their list of places to get to because of the telescope. I use a 10" Meade with a 26mm eyepiece.

Since I was dressed as an astronaut, it prompted additional questions. This is a wonderful way to introduce people to the night sky. They are all in a great mood before and after their encounter with our treats." Thank you Gene!

### Did You Know ... ?

The world's oldest working planetarium is in Franeker in the Netherlands. It is a working model of the Solar System built between

1774 and 1781 by Eise Eininge to combat the 'superstitious nonsense' being written by newspapers about an upcoming planetary alignment. Go to <http://www.planetarium-friesland.nl> (include the hyphen) to find out more about it.

You can buy optics, Soviet Buran Space Shuttle heat shield tiles (US\$79), and other artifacts of the Space Race for next to nothing at [www.sovietski.com](http://www.sovietski.com).

Telescopes, prisms, fireworks, photography and electricity take center stage in *Light! The Industrial Age: 1750 - 1900 Art, Science, Technology and Society* from April 7 - July 29, 2001, at the Carnegie Museum of Art in Pittsburgh, PA. During the Industrial Revolution, the ways people understood and used light changed enormously. As a result, many artists, such as the Impressionists, made light the subject of their art. In *Light! The Industrial Age 1750-1900*, works of art, science, and technology demonstrate how light changed the artist's studio, the inventor's laboratory, city streets, and the home. This cross-disciplinary exhibition combines masterpieces of

the visual arts with hands-on demonstrations and creations of light experiments and experiences from previous centuries.

Organized by Carnegie Museum of Art and the Van Gogh Museum, Amsterdam, the exhibition will be seen in these two venues alone. For a virtual preview visit <http://www.vangoghmuseum.nl/light>. This exhibit will be one of the highlights of the Middle Atlantic Planetarium Society conference in Pittsburgh from May 9 - 12, 2001. Go to [www.buhlplanetarium.org/MAPS](http://www.buhlplanetarium.org/MAPS) for more information.

The 37<sup>th</sup> annual GLPA conference will be held June 26-30, 2001. It will be a joint meeting with the Southeastern Planetarium Association and it will be hosted by the Hummel Planetarium of Eastern Kentucky University in Richmond, Kentucky. **Jack Fletcher** is the director. For more information, visit <http://www.pa.msu.edu/abrams/GLPA/Index.html>.

If you have information you'd like to see here, send it to me at the address above. I look forward to hearing from you ...! ☆

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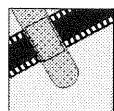
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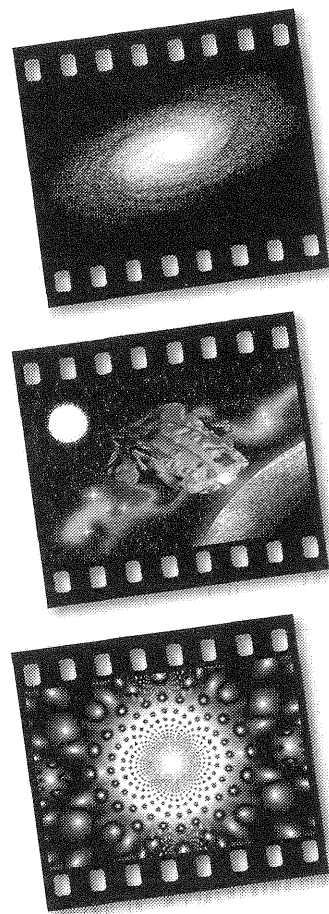
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# Jane's Corner

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## A Drinking Gourd Story:

Many *planetarians* have heard, by now, of the planetarium show produced several years ago by the New Jersey State Planetarium called "Follow the Drinking Gourd". The show is based on a fictional children's story by Jeannette Winter with the same name.

It was very cheap (\$125, I think), as planetarium shows go, so the thought of ordering it was appealing. A lot of planetarium shows are over \$500, way over *my* budget. I decided to try it out. I wasn't sure how I was going to use it.

When the planetarium show kit arrived, it had some slides, a video which also served as sound track, and a script. As I read the script, several things stood out:

1. The show was about the constellation called "Ursa Major (Big Dipper)". In certain segments of the population in the United States, this constellation was once called "The Drinking Gourd";
2. It was about the role of Polaris (the North Star) in locating the direction north, and the "Drinking Gourd's" role in finding the North Star; and
3. It was about a time in history of great concern to Americans: the era of slavery in the U.S.

I began to see real possibilities for a school lesson. I am required by the school division to teach certain concepts in the planetarium at certain grade levels. This is because state-wide curriculum goals, called "Standards of Learning (SOLs)" are mandated and evaluated at the end of the year by state-administered tests. If the students in your school don't do well, your school, as well as similarly failing schools in the school division, are put on probation. If the SOL scores don't improve, the school is not to be accredited. As a matter of fact, the SOLs have not been around long enough for any schools to lose accreditation. As a result of being under this swinging hatchet, NO ONE ASSOCIATED WITH THE SCHOOL DIVISION TEACHES ANYTHING BUT SOLs. Sad, but true. If it ain't a SOL, no one teaches it.

That includes the planetarium. If the lessons are not SOL-related, no one will

come. So, I realized that the New Jersey "Drinking Gourd" program was perfect. I had to teach, at 3<sup>rd</sup> grade level, about several constellations, including the "Big Dipper". I was also supposed to demonstrate the uniqueness of the placement of the North Star. And, because January and February are 3<sup>rd</sup> grade months at the planetarium, I could throw in a little black history to my predominantly African-American students during Black History month. It all came together; a perfect match except for one thing: I was also supposed to teach about the rotation of the earth.

Hey, who doesn't like a good challenge? Easy for a planetarian, right? Here's a brief outline for my 3<sup>rd</sup> grade lesson: I start with a 20-minute segment of earth rotation which includes looking at a spinning globe, then imagining we are on the globe, looking at the sky for 24 hours. During this segment, I am very careful to make sure that everyone sees what the "Big Dipper" looks like, and that the North Star doesn't move when the earth turns.

Now begins my 2<sup>nd</sup> 20-minute segment. I say something like this: "Now we are going to start over, as if you just walked into the planetarium. I would like to share a little piece of American history with you. About 200 years ago, black children in the Southern United States were slaves ..." Now the New Jersey show tape cuts in, beginning with a short discussion of the horrible life of slaves, which encouraged them to escape to non-slave regions up north. "They traveled at night [when they escaped] so that no one could find them. [Visitors to the plantations who were sympathetic to the plight of slaves often secretly tried to help them. They would teach the slaves a song: 'Follow the Drinking Gourd']". I play the song, then we figure out how learning a song about following a "drinking gourd" could help you find north. After they are led to see that the "Drinking Gourd" is another name for the "Big Dipper," they could figure out how the Drinking Gourd could be used to find the North Star. It was the star to be used at night to figure out which way was north, heading toward freedom. The lesson ends when we sing the song together and then see a short clip from the N.J. video of part of the fictional Jeannette Winter story.

I tried out my outline on real classes: everyone loved it! I had a winner! But it could be improved, I thought. So I began to do some research. I found three recordings of the song "Follow the Drinking Gourd" from the 1960s when it apparently had a renewal among folk singers. I found out, from interviewing Dr. Christopher Brooks, a college professor from Virginia Commonwealth University, that this song is an example of

what were called "map songs" from the slavery era. He said that "Follow the Drinking Gourd" is the only song of this genre to survive. "We don't know the specific words of any of the others," he said. "We only know they existed, that directions for following specific routes north were memorized by potential escapees in these 'map songs.'" I added this information to my lesson.

I hit on a treasure one day at a craft show: someone had made a "drinking gourd". It was for sale. I bought it. I remembered the dipper I had that my grandfather had used at the well in his yard, before plumbing came indoors at his house in 1925. It looked kind of like the drinking gourd: both had long handles and a scoop-shaped liquid-holder at one end. I took them both to the planetarium and showed them to 3<sup>rd</sup> graders when I asked them to figure out why those seven stars in the sky were called (in first segment) the "dipper" and (in second segment) "drinking gourd".

In the autumn, grocery stores and roadside stands sell what they call "ornamental gourds". They are small and usually oddly colored when freshly picked. People are encouraged to buy them to make fall decorative arrangements for the home. I bought a bunch of them. I discovered that if you let them sit around for awhile, some would rot. Others, however, will dry out, become very light in weight, and when the seeds inside loose themselves from the sides, you can shake gourds and come up with decent rhythm instruments for music. I realized that maracas are really gourds (at least the original ones were).

I asked people with gardens if they grew gourds. I begged for ones they didn't want. I got some really nice big ones, of different shapes and sizes. Wow! My collection was growing!

I found a round gourd, about 10 inches (25 cm) in diameter, which had a 1-inch (2 1/2 cm) circular opening cut in one side. It was for sale; it was a birdhouse. I bought it. I saw, while riding around in the country, lots of these "bird house gourds"; I had never noticed them before.

A friend grew some gourds one year in her garden. Gourds grow on a vine and spread out quickly. She gave me a few. The next year, she did not plant any gourd seeds, but the ones from the year before came back with a vengeance, threatening to take over the whole garden. I got more.

I began to wonder why I would often hear the music called "The Sorcerer's Apprentice" sounding in my ear, as I visualized Mickey Mouse in the Walt Disney classic: *Fantasia*.

(Please see *Jane's* on page 39)



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