North America Welcomes a Brilliant New Character in Star Shows: Zeiss Fiber Optics

With the dawn of the new millennium, visitors of the new planetariums in Oakland, CA and New York City will experience brilliant stars produced by the Carl Zeiss Universarium fiber optics systems. Invented by Carl Zeiss, the stars appear in their natural tiny size, but shine with extraordinary brilliance.

Come and see this absolute pinnacle projections of stars. Fiber optic systems by Carl Zeiss are not only offered to improve the quality of Star Shows for audiences of the Universarium. They are also offered with the Starmaster, the medium planetarium.

Quality at the highest level which you can afford.

We will be happy to inform you about how Carl Zeiss can make sure that you will experience a new experience of Star Shows.

Carl Zeiss
Planetary Division
D – 07740 Jena
Telephone: + 49-3641-64 24 06
Fax: + 49-3641-64 30 23
E-mail: planetarium@zeiss.de
Internet: http://www.zeiss.de/planetariums

Seeing Is Believing!
In the U.S. & Canada contact Pearl Reilly:
1-800-726-8805
Fax: 1-504-764-7665
E-mail: ppreilly@aol.com
Executive Editor
John Mosley
Griffith Observatory
2800 E. Observatory Road
Los Angeles, California 90027 USA
(1) 323-664-1181 daytime phone
(1) 323-663-4323 fax
jmosley@GriffithObs.org

Advertising Coordinator
Sheri Barton Trbovich
The Clark Foundation
PO Box 9007
Salt Lake City, UT 84109-0007 USA
(1) 801-725-2771 voice
(1) 801-583-5522 fax
sheri@clarkfoundation.org

Membership
Individual: $50 one year; $90 two years
Institutional: $200 first year; $100 annual renewal
Library Subscriptions: $36 one year
Direct membership requests and changes of address to the Treasurer/Membership Chairman; see next page for address and contact information.

I.P.S. Job Information Service

Back Issues of the Planetarian
Available from:
Charlene Oukes
IPS Back Publications Repository
Strasenburgh Planetarium
Rochester Museum & Science Center
657 East Avenue
Rochester, NY 14607

Index
A cumulative index of major articles that have appeared in the Planetarian from the first issue through the current issue is available on paper ($12 ppd) or disk ($5 ppd) from the Exec. Editor. A shortened copy is at the Planetarian web site.

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

The Planetarian (ISSN 0090-3213) is published quarterly by the International Planetarium Society. ©2000, International Planetarium Society, Inc., all rights reserved. Opinions expressed by authors are personal opinions and are not necessarily the opinions of the International Planetarium Society, its officers, or agents. Acceptance of advertisements, announcements, or other material does not imply endorsement by the International Planetarium Society, its officers or agents. The Editor welcomes items for consideration for publication. Please consult (or request) "Guidelines for Contributors" printed on page 56 in the September 1997 issue and posted at the web site. The Editor reserves the right to edit any manuscript to suit this publication's needs.

INDEX OF ADVERTISERS
Adler Planetarium ........................................................... 13
Audio Visual Imagineering .............................................. 40
Bowen Productions .......................................................... 32
Calgary Science Centre ................................................... 22
Commercial Electronics .................................................. 29
Conceptron ................................................................. 42
Davis Planetarium ......................................................... 49
East Coast Control Systems .............................................. 18
Evans & Sutherland .......................................................... back cover
Goto Optical Manufacturing Co. ..................................... 39
Learning Technologies, Inc. .............................................. 16
Miami Space Transit Planetarium .................................... 15
Minneapolis Planetarium .................................................. 28
Minolta Corporation .......................................................... inside back cover
Pangolin Laser Systems, Inc. .............................................. 23
R. S. Automation ............................................................ 8
Seiler Instruments ............................................................ inside front cover
Sky-Skan, Inc. ............................................................... 9
Spitz, Inc. ................................................................. 31

Associate Editors
Lars Broman
International News
Susan Reynolds Button
Mobile News Network
Jane G. Hastings
Jane's Corner
James Hughes
Gibbous Gazette
Richard McColman
Planetechnica
Jim Manning
What's New
Steve Tidey
Forum
April Whitt
Reviews

International Planetarium Society WWW home page:
http://www.ips-planetarium.org

Planetarian journal WWW home page:
http://www.GriffithObs.org/IPSPlanetarian.html
President
Dr. Dale W. Smith
BSU Planetarium
Physics & Astronomy Dept.
Bowling Green State University
Bowling Green, OH 43403 USA
(1) 419-372-8666
(1) 419-372-9938 fax
dsmith@newton.bgsu.edu

President Elect
Martin Ratcliffe, Director,
Theaters & Media Services
Exploration Place
711 W Douglas, Suite 101
Wichita, KS, U.S.A.
(1) 316 263 3373
(1) 316 267 4545 fax
martinr@southwind.net

Past President
Thomas W. Kraupe
EuroPlanetNet & ART OF SKY
Runforstr. 41
D-80469 Munich (Munich)
Rumfordstr. 41
(49) 89 21031532 fax
49 89 21031531 voice

I. P. S. Officers

Executive Secretary
Lee Ann Hennig, Planetarium
Thomas Jefferson High School
6560 Braddock Road
Alexandria, Virginia 22312 USA
(1) 703-750-8380
(1) 703-750-5010 fax
lahennig@pen.k12.va.us

Treasurer/Membership Chair
Shaun Laatsch
Arthur Storer Planetarium
600 Dares Beach Road
Prince Frederick, MD 20678
USA
(1) 410-535-7339
102424.1032@compuserve.com

IPS 2000 Conference Chair
Pierre Lacombe, Director
Planetarium de Montreal
1000 rue Saint-Jacques O.
Montreal, QC H3C 1G7
Canada
(1) 514 872 4530
(1) 514 872 8102 Fax
pierre_lacombe@astro.umontreal.ca

IPS 2002 Conference Chair
Ing. Gabriel Muñoz Bedolla
Director del Planetario "Lic. Felipe Rivera"
Centro de Convenciones y
Exposiciones de Morelia
Av. Ventura Puente Y
Cancun, Mexico
(52) 44 14-24-65
(52) 44 14-84-80
http://michoacan.gob.mx/
turismo/3036/cconveccions.htm
convenciones@michoacan.gob.mx

Historian/Photo-Archivist
John Hare
Ash Enterprises
3602 23rd Avenue West
Bradenton, Florida 34205 USA
(1) 941-746-3522
(1) 941-750-9497 fax
jhare@aol.com

Publications Chair
April Whitt
Fernbank Science Center
156 Heaton Park Drive NE
Atlanta, Georgia 30307 USA
(1) 404-378-4314 ext 221
(1) 404-370-1336 fax
april.whitt@fernbank.edu

European/Mediterranean Planetarium Association
Dennis Stopoulos
Europastronomia Planetarium
Syngrou Avenue—Attalidae
Athens, Greece
(30) 1-941-1181
(30) 1-941-7372 fax
dps@eugenides_found.edu.gr

Great Lakes Planetarium Assoc.
Susan Reynolds
Onondaga-Cortland-Madison
B.O.C.E.S. Planetarium
P.O. Box 4774
Syracuse, New York 13221 USA
(1) 315-433-2671
(1) 315-433-1530 fax
srey@eugenides_found.edu.gr

Michael Atlantic Planetarium Society
Don Knupp
The Henry W. Ray Special Experience Room
McDonald Elementary School
666 Reaves Lane
Warmminster, PA 19074
(1) 215 441-6194
(1) 215 441-6006 fax
medomar@voicenet.com

Norwegian Planetarium Association
Lars Broman
Broman Planetarium
Ostra Hamngatan 1
7000 Drammen, Norway
(1) 541-461-8227

Great Plains Planetarium Association
Jack Dunn, Coordinator
Mueaker Planetarium
213 Mornings Hall
University of Nebraska-Lincoln
Lincoln, NE 68588-0375
(402) 472-3641
(402) 472-8899 fax
jdunn@paceclasser.com

Italian Planetaria’s Friends Assoc.
Letizia Rampoldi
National Archive of Planetaria
c/o Centro studi e ricerche Serenata Zani
da Brescia 24. CP 104
25066 Lumezzane (Brescia), Italy
(39) 30 872164
(39) 30 8724055 fax
http://www.cityline.it
info@serenatazani.it

Japan Planetarium Society
Sotoki Itoh
Suganami Science Education Center
3-3-13 Shinzui, Suganami-ku,
Tokyo 167 Japan
(81) 3-3396-4301
(81) 3-3396-4303 fax
KIF1 1056@niftyserve.or.jp

Middle Atlantic Planetarium Society
Don Knupp
The Henry W. Ray Special Experience Room
McDonald Elementary School
666 Reaves Lane
Warmminster, PA 19074
(1) 215 441-6194
(1) 215 441-6006 fax
medomar@voicenet.com

Pacific Planetarium Association
John Evert Lane
EJD Planetarium
2200 Lee Harris Pkwy
Eugene, Oregon 97401 USA
(1) 541-461-9277
(1) 541-667-6459 fax
jevette@lane.k12.or.us
http://www.edu.org/~esd_plt/

Rocky Mountain Planetarium Association
Christina Shipka
Dorrance Planetarium
Arizona Science Center
600 East Washington
Phoenix, AZ 85004 USA
(1) 602-716-2078
shipka@azscience.org

Russian Planetariums Association
Zinaida P. Shkova
Nabatnaya Planetarium
Pochayinsky SYezd 5-A
Nabatnaya, 603 001, Russia
(7) 812-34-21-51
(7) 812-36-20-61 fax
shkova@plan.sci-nnov.ru

Elections Committee Chairman
Steven Mitch
Benedum Natural Science Center
Oglebay Park
Wheeling, WV 26003 USA
(1) 304-243-4034
(1) 304-243-4110 fax
stargate@hgo.net

Awards Committee Chair
Phyllis Pitiluga
The Adler Planetarium
1300 S. Lake Shore Drive
Chicago, Illinois 60605 USA
(1) 312-322-0319

Permanent Mailing Address
International Planetarium Society
c/o Taylor Planetarium
Museum of the Rockies
Montana State University
600 W. Kagy Blvd.
Bozeman, Montana 59717 USA

IPS Web Site:
http://www.ips-planetarium.org

Southeastern Association of Planetaries
Wayne Wyrick
Kirkpatrick Planetarium
200 NE 52nd St.
Oklahoma City, OK 73111 USA
(405) 424-5545 work
(405) 424-5106 fax
wayne.wyrick@hotelcal.com

Ukrainian Planetariums Assoc.
Dr. Alexander P. Lenin
Republik Planetarium
57/3 Kristiansundska Street
Kiev 252 005, Ukraine
(7) 443 227-51-66
(7) 443 227-51-45 fax
kiewplt@svcom.m

Please notify the Editor of changes of IPS officers and affiliate representatives.

The final deadline for the September issue is July 21.

Produced at the Griffith Observatory, Los Angeles, California; http://www.GriffithObs.org/IPSPlanetarian.html
Ladies and gentlemen, dear friends, I barely speak English and that is why I don’t take part in international conferences. Therefore I am especially glad to greet all of you and to send you the warmest wishes from my Russian colleagues, from the Management Board of the Russian Planetarium Association, and from Georgy Grechko and Zina Sitkova. Thank you for your interest in Russian planetariums.

**Planetariums in Russia**

Carl Zeiss Jena delivered more than 100 star projectors to educational institutions in the USSR. Some went to schools and others went to institutions of supplementary education. Today we know about the creation of nearly 50 public planetariums in Russia; many are still open, but some are closed. All are very different. They include both standalone facilities and structured subdivisions of lyceums, schools, extracurricular facilities, museums, theatres, parks, and even an officers club. Their schedule is usually defined by legislation on culture or education. Their staff varies from one to twenty creative workers, including scientific employees, teachers, and lecturers. These people have different loads, duties, and salaries. Many Russian planetariums are in Europe, around Moscow, but there are a few in the Urals and Siberia. The planetariums are separated from each other by thousands of kilometers and they come under different government departments and founders; they have only some advocates and limited budgets in local government offices and the society “Znanie”.

There are three large planetariums with dome diameters up to 26 m; the others range from 5 to 15 m, but most of these are 8 m or larger and have 30 - 500 seats. Only eleven planetariums are located in special buildings; more often they are in annexes with 50 to 1500 square meters of useful area; some have large exhibition halls and some do not. Only about half have the German star projectors “Skymaster” ZKP-1, ZKP-2, and ZKP-3. Others have the simplified postwar projectors that were made in workshops of the Moscow planetarium and were saved.

**Moscow and St. Petersburg Planetariums**

Unfortunately there has never been a definite government policy with respect to planetariums either in the USSR or in Russia. The Moscow planetarium carried out scientific, methodical, and even technical consultations for the planetariums of all country despite of its financing by the Moscow public organization “Znanie”. It was the 13th planetarium in the world and it made a huge work for Cosmic era’s coming. The Moscow planetarium was opened in 1929 and it has 500 seats and a dome diameter of 26 m.

The leaders of the Moscow planetarium now are far from science and the problems of astronomical education. Exactly for this reason the planetarium was privatized by the firm “Twins,” which is specialized in carrying out of mass shows in Moscow. The planetarium was closed in autumn of 1994 for reconstruction and practically destroyed, so the privatization of non-state property met judicial obstacles and was resisted by the community. Private investment was stopped and today’s director Igor Mikitasov (the head of “Twins”) hopes to get support from the budget of the Moscow government. Meanwhile he performs some activity of a planetarium. We don’t want the planetarium to be converted to a nightclub. We are doing everything we can to revive this unique centre of science, culture, and education.

Now the provincial planetariums are left without the “flagship” and are in a complicated and dangerous position. They need practically everything, including partial reconstruction of buildings and modernization of techniques. They execute their educational mission only due to the enthusiasm of their remarkable professionals. In the crisis situation of the years since 1994, fewer than thirty planetariums in Russia were left. Half of the closed planetariums were located in churches and mosques, which are now being returned to religious societies.

The RPA celebrated the 40th jubilee of the St. Petersburg planetarium in November 1999. This planetarium has 450 seats, a dome diameter of 24 m, a conference hall with 200 seats, and holds nearly 2300 sessions annual...
ly. Under the new director Mikhail Belov, it now refuses to operate as a night disco-

The Russian Planetarium Association and its work

Having known the reality of past events, we are pleased to note the variety of the sta-
ble activity of many planetariums in Russia. Each planetarium has its own history and
life. The Russian Planetarium Association (RPA) was founded in March 1994 due to
efforts of the staff the Nizhny Novgorod planetarium. The management board of RPA
works in Nizhny Novgorod. The Euro-
Asiatic Astronomical Society (AstrO) sup-
ports RPA in its effort to protect planetari-
uns and raise their level of activity. RPA
unites 30 planetariums, including 28 in
Russia and 2 in Ukraine.

RPA renewed the organizing of annual sci-
entific-practical conferences for planetarians
to exchange their experiences. Conferences
have been held in Nizhny Novgorod, Mos-
cow, Kaluga, Kiev, and Yaroslavl. The center
of training cosmonauts was especially im-
pressive.

The bulletin Vestnik of RPA and UPA
(Ukraine Planetarium Association) has been
published since 1995, soon after the RPA
became affiliated with IPS. Zina Sitkova,
director of the Nizhny Novgorod planetari-
um, is the RPA representative on the IPS
Council.

In other countries of the former USSR, the
position of planetariums has become more
complicated: two-thirds of Ukrainian plane-
tariums were closed and three-fourths of
Belorussian planetariums were closed. After a
meeting in Kiev at the beginning of 1998,
representatives of planetariums of Belorussia,
Russia, and Ukraine explained their difficult
circumstances to their Presidents, and since
this time RPA works with the Russian Gov-
ernment. The Government approved the
project “Program of Immediate Steps for the
Maintenance and Development of Russian
Planetariums.” This program was designed
by the Management board of RPA with the
participation of Ministry of Education. The
Program has 4 sections:
1. Legal authorization of planetarium
activity
2. Methodology of planetarium activity
3. Repairs and new building
4. Technological modernization.

This program foresees support of the min-
istries of science and technology policy,
finance, economy, culture, education, and
justice; the committee on statistics; Russian
Aviacostric Agency; Russian Cosmonautic
Federation; Government of Moscow; and the
vice-prime minister of the Government of
Russia; and offices of local government are
attracted to the implementation of this pro-
gram. Executing this program in practice
meets many natural difficulties because of
political instability and crisis in Russia.

Nizhny Novgorod Planetarium:
history

The history of the Nizhny Novgorod plan-
etarium is quite interesting. Nizhny Novgo-
rod is located at the confluence of the Volga
and the Oka rivers 450 km east of Moscow.
Nizhny Novgorod is 8 centuries old. It is the
third city of Russia after Moscow and St.
Petersburg. It is possible to imagine a route
from Nizhny Novgorod to Tampere going
through Moscow and St. Petersburg (former-
ly Leningrad). In 1933 our city was renamed
Gorky in honor of the world known writer
who was born here. As a center of arms pro-
duction, the city was closed to foreign visi-
tors after the Second World War and until
1990 disappeared from the world maps. The
Oka River flows from the west and the Volga
River flows from the north. The Whole-
Russia Fair occupied a huge territory on the
low-lying shore. This territory is now rather
a big exhibition complex, and the exhibition
“Russia on the Boundary of Centuries” took
place in September 1999. The medieval
Kremlin (fortress) is situated on the opposite
high-lying right bank. The regional and
municipal governments are seated in the
Kremlin. The Volga River crests against the
Kremlin and flows southward to the Caspian
Sea. The river Oka is the main “street” of the
city and merges here with the Volga River,
the main “street” of Russia.

An expedition in 1887 of 4 steamships
moved up the Volga River to observe the
total eclipse of the Sun. Bright impressions
from this observation led to the creation in
1888 of the “Nizhny Novgorod Amateurs
Circle (Society) of Physics and Astronomy,”
the first of its kind in Russia. It was organized
only one year after the eclipse, with the
highest permission of the Czar. This “Circle”
became the second society of such status
after the one in Paris and Camille Flammar-
ion was an honorable member of the
“Circle.”

The Blagovechensky Monastery is of the
same age as the city. It was closed after 1917
and reopened in 1994. The initiative to create
the planetarium in Nizhny Novgorod proba-
ably came from the aforementioned “Circle”.
The municipal administration chose the
Alekseevskaya Church of the monastery as
the site for the planetarium and after the
reconstruction the building stopped being a
church. Construction of the observatory and
sighting platform were not foreseen, and the
southern part of the sky is half-blocked by a
slope. In those postwar years, it could not
have been done better. The second planetari-
um in the USSR was solemnly opened on the
August 31, 1948.

Two directors and two lecturers had
already been changed by 1950 due to ideo-
logical considerations. The third director
was Ivan Chubarov, a subcolonel in the army
reserve. Before the war he was the principal
of a school, and served under Marshal Zhukov.
The star projector was made in the workshops of Moscow Planetarium.

The planetarium has 76 seats, a dome of 8-m diameter, a Skymaster ZKP-2, and holds 1400 sessions and seminars, concerts, performances, and literary evenings serving 56,000 visitors annually. Several million spectators have visited the Nizhny Novgorod Planetarium, and more than one hundred thousand shows have been given.

The scientists of the city at educational and research establishments were often invited as lecturers, including the world-known scientists. One was Samuel Kaplan (1921-1978), professor of Nizhny Novgorod Research Radiophysical Institute (NIRFI), and the author of dozens of scientific papers, including many overseas monographs on "The physics of stars." Another was the academician Vsevolod Troitsky (1913-1996). He studied Venus and the Moon by the method of radiolocation in NIRFI from the very first days of radioastronomy. He devoted the last years of his life to debates on the theory of "Big Bang."

Nizhny Novgorod Planetarium today

The Blagovechesky monastery reopened in 1994 and at once began to demand returning of Alekseevskaya church. The planetarium nearly dominated the city's skyline after it began to be illuminated at night for Yeltsin's visit in 1997 to the Whole-Russia Fair, which is located just on the opposite bank of the Oka river. The planetarium was fenced off by the monastery wall. This wall was restored without any coordination with the planetarium, and the planetarium was deprived of its signboards. The fate of the planetarium was repeatedly discussed by two governors. The three-colored flag on the top of the Dome was replaced by the Orthodox Cross with the blessing of the abbot of the monastery on the night before the Day of Independence of Russia, on June 12, 1995. Public prosecutors refused to hold anyone responsible. Nizhny Novgorod has watched the unequal opposition of the planetarium and monastery for the past five years. The children, scientists, and educators of the city, Astra, and the Russian Federation of Cosmonautics, as well as IPS Presidents W.

Gutsch, T. Kraupe, and J. Manning supported the planetarium. The last threat to close the planetarium and replace it with a computer sounded in April of 1998 from Klimentiev, a businessman and candidate for the mayor of the city. Klimentiev won the elections, but ... was convicted of crimes and now is being held in prison. During all these years there was a search for what to do about the planetarium since the religious building absolutely doesn't want to have the planetarium too.

On May 30, 1998 our planetarium celebrated its fifty-year jubilee without officials. The president of RPA Georgy Grechko attended the celebration and so did cosmonaut Vladimir Dzhanibekov. The chairman of the Public Council of the Planetarium, Yakov Khanin, Gumboldt prize winner, also attended. Among other guests were the Management board of "Circle," including its 11th president Sergey Ponomariov, pro-rector of Nizhny Novgorod Pedagogical Academy, and scientific secretary Svetlana Zolina. Later, members of the Moscow district staff of "Carl Zeiss Jena" visited the planetarium.

Today's scientists also support the planetarium. Among today's visitors and supporters are the leaders of Astra, professors of Moscow University Anatoly Zasov, Gennady Boschkariov, and others. Our planetarium continues to work. The veterans of the Baikonur cosmodrome, cosmonauts, their second staff, the pilots-testers, engineers and designers of the spacecraft visited our planetarium more than once. A seminar called Kaplan's Memories was held in 1996 with the participation of scientists of NIRFI. Alexandr Serber is a lecturer at our planetarium and a scientist of IPF RAN (the Nizhny Novgorod Research Institute of Applied Physics of Russian Academy of Sciences). Alexey Belianin too is a lecturer and scientist of IPF RAN.

The fairy tale "New Year on the Olympus" was performed in 1997. Live theatre is staged at the planetarium. It included illustrations by artist Marina Gusarova, who is also a student of the Building Academy at the same time. The Saratov Culture Institute performed in 1999.

The project of a new planetarium is almost ready. Plans are for an 18 m (diameter) common-room and a small theatrical stage. An observatory, museum of astronomy and cosmonautics, recording studio, and common-rooms for the Internet are foreseen. Only this year (1999) did we gain confidence that the planetarium will get its new building. It may happen possibly in 2000 or 2001.

We shall be pleased to see all of you at its opening and hope that you can take part in a conference in our city sometime in the future.

This paper is based on a talk given at the conference of the Nordic Planetarium Association on September 5, 1999 in Tampere (Sarkanniemi), Finland. Original text provided by the author and edited to present form by IPS President Dale Smith.
Closer to the stars.

A planetarium is a spectacle, an event, but above all a tool which provides amusement at the service of knowledge. To meet all these needs, RS AUTOMATION INDUSTRIE, thanks to its specialization in automation, has developed a complete range of planetariums, all designed to provide a specific and immediately operational solution.

COSMODYSSEE II et III

The portable planetarium ... and fixed

SN 95

Just like a grown-up

ROVING STAR

A planetarium on the road

R. S. AUTOMATION Cosmos

is a division of

Z.I. de la Vaure - B.P. 40 - 42290 SORBIERS - FRANCE
Tel.: +33.4.77.53.30.48 - Fax.: +33.4.77.53.38.61 - E-mail: rs.automation@wanadoo.fr

See us on the Web at
http://perso.wanadoo.fr/rsautomation
Sky-Skan, Inc.
The single solution to your theater's needs for over thirty years

SkyVision™ All Dome Video Systems
DigiDome™ Image Processing
SPICE™ Automation Systems
Seamless Motion Control
Full Production Services
Complete Shows
Digital Surround Audio Systems
Full Theater Design Services
Interactive Theater Solutions
Expansive Video Libraries
Portable Dome Services
Classic Special Effects

Sky-Skan, Inc.
51 Lake Street, Nashua, NH 03060  Fax: 603-882-6522 Tel: 603-880-8500
www.skyskan.com
Reviews

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

Solstitial salutations, fellow planetarians. Ken Wilson and I are pleased to offer some reviews, which we hope will be useful in selecting software or hardbacks this season. There are children’s books here, some resources for other cultures, and even a free software package.

With thanks to our reviewers: Jeanne Bishop, Pam Eastlick, Francine Jackson, and Ken Wilson.

StarCalc 5.5 Freeware by:
Alexander E. Zavalishin
for Windows 95, 98 & NT,
available free of charge
via the World Wide Web
at: http://www.relex.ru/
/zalex/main.htm

Reviewed by Ken Wilson, Science Museum
of Virginia, Richmond, Virginia, USA.

We are blessed with an abundance of planetarium computer software, especially for the ubiquitous Microsoft Windows platform. Some of this software is quite expensive and some is bargain priced or shareware. The best bargains of all come under the heading of ‘freeware’. One such program is Alexander E. Zavalishin’s StarCalc, currently in version 5.5.

StarCalc downloads as a very modest size (728K) zipped file. The author claims that it will even run on the lowly 486DX processor, so hardware requirements shouldn’t be a concern for most users.

As with most programs of this type, StarCalc will display user defined selections of the stars, planets, Sun, and Moon from any location on Earth at any date and time. Constellation lines and boundaries; lines of altitude, azimuth, right ascension and declination; and object labels may also be selected for display. The Messier objects and a selection of the brighter NGC objects can also be displayed. By importing databases, StarCalc will also display comets, asteroids, and other objects including alternative stellar databases. The magnitudes of displayed stars are selectable in half magnitude steps down to 7th magnitude. The display can easily be zoomed from an all sky view to one spanning only about a quarter of a degree. Tool bar controls allow the user to easily advance the time of the display in small or large increments including sidereal or solar days. There is even an “autorotation” mode which will smoothly advance time at selectable rates. One particularly nice feature of StarCalc is that you can easily print out the displayed map, or save it as a .GIF, .BMP, .WMF, or .EMF file. This makes it simple to edit the map or incorporate it into another document.

Selecting any of the displayed stars and right clicking on it will allow you to view information about the star including name, Greek letter designation, HD number, coordinates, visual magnitude, spectral classification, and parallax. The same process applied to a solar system object will produce coordinates, distance, magnitude and apparent size. Also available are the rising and setting times for all displayed objects.

For the most part StarCalc’s user interface is fairly intuitive. Most functions are accessed from the tool bar or pull down menus. Perhaps the most counter-intuitive placement is the location for selecting location, objects, fonts and sky projections. These are found under the “options” item in the “parameters” drop down menu. Nonetheless, it doesn’t take long to learn how to use StarCalc’s functions.

The program loaded quickly and without any problems onto my computer and I’ve been using the program for almost a year without any crashes.

Although StarCalc may not have a huge stellar database, nor all of the ‘bells and whistles’ of expensive commercial planetarium software, it’s a fine program for making star maps for naked eye or even binocular viewing that you can hand out to students or for public star parties.

“...it’s a fine program for making star maps for naked eye or even binocular viewing that you can hand out to students or for public star parties.”


Reviewed by Pam Eastlick, Puiton Tasi Planetarium, Mangilao, Guam.

This is a small paperback marketed for children. Though there is no age level indicated, it would be useful from about third grade through middle school. The book addresses stars (their birth and death), constellations, the Milky Way, other galaxies, nebulae and the birth of the universe. It also talks about the Solar System and each planet individually. In other words, it attempts to talk about everything in the night sky and most of astronomy, a tall order for its 52 pages.

However, like a good planetarium show, the main purpose of this book is to promote interest in the subject. Several activities in the book allow children to explore further. Instructions are provided for constructing a “stone compass” that allows the child to find the north-south line. There are also activities on modeling the phases of the Moon, building a papier-mâché model of the Moon, cratering, and creating a solar spectrum with a glass of water.

Creating children’s science books involves simplifying complex subjects. Many times this leads to bold, general statements that aren’t quite accurate or leave the wrong impression. This book has a few of these common errors. We see a drawing of the Milky Way with the caption “From out in space, the Milky Way looks like a huge pancake. A side view shows the bulge at the center where most of the stars live.” This implies that we’ve actually seen the Milky Way “from out in space.”

“...like a good planetarium show, the main purpose of this book is to promote interest in the subject...”

Next to a picture of a multiple exposure of the setting Moon the caption is the caption “Everything in the sky moves. The moon follows a path across the sky. If you look at it from time to time one evening, you’ll see how its position changes. In this view, less than an hour has...”
The book is proof of the veracity of its introduction's last statement. "There is nothing special about our place in the Universe — but the view is spectacular."

The first plate shows the COBE Four-Year Map of the 3K radiation background. The second plate is the only non-photo in the book and it is a computer simulation of the 'lumpiness' of the large scale universe. The third plate is the Lick Galaxy Map, and from there we go to the Hubble Deep Field and then on to beautiful pictures of galaxies.

Our first picture of something in our own galaxy doesn't come until plate 16 when we see 47 Tucanae in all its glory. Then come stunning photographs of Milky Way delights. We see star-forming regions and the consequences of stellar death. Then we're treated to lovely pictures of our own solar system and we end with several views of Earth, site of our own origin. The last plate is a Space Shuttle picture of a large crater in Namibia. The accompanying text points out that "We owe our own origins directly to the blow from space that removed the dinosaurs from their dominant positions ..."

This is a beautiful book and I did not find a single factual error. Some things are stated as fact that are, in fact, only theories, but this is a common 'error' in books designed for the popular market.

I do have a nit to pick however. The general trend of the book is from large to small (the Universe to the Earth). It was a little disconcerting to read about Supernova 1987A in plate 27, the Crab Nebula in plate 28; Supernova Remnants in plate 29 and turn to plate 30 to find a lovely picture of ... Jupiter? Next come pictures of other planets (though not all of them) and then a SOHO image of the Sun followed by the asteroid Ida and the Giotto photograph of Comet Halley.

Perhaps after the supernova plates, we could have been treated to some of the protoplanet pictures from the Orion Nebula (which are not included) and then some pictures of the Sun and then photos of the Sun's family of planets, moons and assorted other relatives. I don’t think this sequence would have offended my sense of orderly progression quite as much.

But orderly progressions aside, this is a lovely book and well worth the price of admission. The pictures are uniformly good, the accompanying text is factual and very easy to follow. It belongs in your library and it belongs in your stores. The book is proof of the veracity of its introduction's last statement. "There is nothing special about our place in the Universe - but the view is spectacular."

Reviewed by Francine Jackson, University of Rhode Island Planetarium, and Bryant College, Smithfield, Rhode Island, USA.

Many of you know that my weekends are spent in the art of gaming (working, not spending). So when I mentioned to my customers that I had recently gone to Foxwoods, most of them know I don't even know how to bet and were downright shocked. (Foxwoods, in rural eastern Connecticut, is one of the largest gambling casinos in the world.) However, most of my customers were also shocked to learn that, in addition to the casino, the Mashantucket-Pequot Indians, controllers of Foxwoods, also invested $100,000,000 in a museum of their cultural heritage, one of the most beautiful examples of natural history presentation I've ever seen. Forget the tables - come to southern New England for this.

"For those of you looking for additional - or alternative - ways to present the night to children and their families, this book is for you."

Of course, if you do visit this museum, you also have to stop in its gift shop. It was there I found this marvelous little book, dedicated to something most of us already do: night programs. But, this was more than a
book just proclaiming the night sky as a source of wonder - it included activities that incorporated all the senses, not just sight. Yes, of course there are star legends, including How Grizzly Bear Climbed the Mountain, and The Seven Star Dancers, but we also meet Chipmunk and the Owl Sisters, and Moth, The Fire Dancer, and learn How the Bat Came to Be. These additional myths introduce chapters that enrich the evening as a time of activity, and a way of living not often experienced in today's life.

Want to add realism to a night program? Make a (safe) campfire for your storytelling, while eating traditional foods. Learn to "hunt" animals with your ears and nose, and make a trail you can follow back home. Follow the construction techniques of a spider web, and watch as fireflies attempt to attract a mate. This book shows you to understand and appreciate the night as a truly integral part of life, both for us humans and all other animals that share this wondrous part of the day.

This book instills a respect for the night, and an awareness of the magic of the dark. It takes what we astronomy educators do, and shows how to incorporate sky identification with every other aspect of night living. For those of you looking for additional - or alternative - ways to present the night to children and their families, this book is for you.


Reviewed by Pam Eastlick, Pouton Tasi Planetarium, Mangilao, Guam.

It's hard for early baby boomers to realize, but the trips to the moon are history. We went, and we haven't been back since. Anyone under the age of thirty has no personal knowledge of mankind's trips to the moon. It's tragic, and it makes it very important to teach children about these events.

"Moonwalk is a small and very inexpensive book that belongs in every planetarium bookstore."

Moonwalk is a Random House "Step into Reading" book rated at Step 4 (Grades 2 to 4) that provides a great start toward learning about this event. The text is well written and easy to understand and I found no factual errors. There are real photos of the Apollo 11 astronauts and spaceships, and informative and accurate drawings by Dennis Davidson. The book tells about the launch of Apollo 11, briefly reviews the history of lunar exploration, tells how the astronauts were trained and then describes the actual mission.

Moonwalk is a small and very inexpensive book that belongs in every planetarium bookstore. Having it available for purchase is one of the best 'gifts' you can give your child patrons.

After seeing this book, you may become enthusiastic about presenting a program with this or a similar title. The book is filled with detailed information about how the Inuit have interpreted and used the sky. At far northern latitudes, the sky has a long polar night, and in the summer, the stars are never seen. The moon is often circumpolar in winter. Stars, which are low and have different azimuths in circumpolar or near-circumpolar circles, are the ones which are watched for calendar and other signs. Polaris, at its high altitude, does not seem to attract much interest.

To the Inuit, stars are both people and spirits, and those we designate as the Big Dipper, Cassiopeia, Orion, the Hyades, the Pleiades, Gemini, Sirius, Procyon, Vega, Altair, and Arcturus are the ones for which stories are told and which traditionally were useful in navigation and time-keeping. Myths often contain gruesome and sad occurrences, probably reflecting the harsh life confronting the Inuit. The book contains a number of myths of not only stars, but also of the creation (with sister sun and brother moon), rainbows, halos, meteors, aurora, the earth and the sea. Moon-man is an important Inuit character.

John MacDonald gathered the information for his book over the past decade, in collaboration with the Inuit elders of Igloolik (69° 22' N, 81° 48' W). His close involvement in the collection and documentation of the area's oral history and traditional knowledge over an extended period makes this the most important work about Inuit astronomical ideas in print. As MacDonald points out, earlier explorers often lacked the astronomical understanding and interest to learn much about Inuit astronomy.

"After seeing this book, you may become enthusiastic about presenting a program with this or a similar title."

MacDonald's scholarship is outstanding. There are extensive chapter notes, a large bibliography, and a good index. A number of chants, poems or songs are translated and included. He is careful to present alternate Inuit names and note ambiguities in versions by different authors.

Since the planetarium can transport us so easily to near-North Pole latitudes, a program based on the "Arctic Sky" seems feasible and desirable. And such a program offers the opportunity to present information about another culture. Members of audiences who have never seen the sky from the far north should not only enjoy the view, but also should be intrigued with the Inuit cultural ideas.

"Universe 2000, Focusing on Astrobiology, Meets July 13 - 19"

The 112th annual meeting of the Astronomical Society of the Pacific (ASP) focuses on astrobiology, the study of life outside the Earth. The key activity at "Universe 2000," taking place in Pasadena, California, July 13-19, is a three-day astrobiology research symposium, "From Dust to Life: Surviving the First Billion years of the Solar System." Meeting Monday through Wednesday, July 17-19, this sub-conference features experts addressing the physical and chemical conditions that scientists consider important for the onset of life outside the interstellar environment. The fee for non-ASP members, the fee is $279, with a $110 fee available for students.

For details, visit www.aspsky.org/meeting.html, call (415) 337-1100, FAX (415) 337-5205 or e-mail meeting@aspsky.
NEW!
Images of the Infinite
Since its deployment from the space shuttle Discovery on April 25, 1990, the Hubble Space Telescope (HST) has provided us with spectacular awe-inspiring images and has enriched our understanding of the Universe. This sky show highlights the history and top science findings of the telescope, as well as taking audiences on an unforgettable tour through the Solar System, Milky Way Galaxy, and to the limits of the visible Universe!
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.
33 minutes / 266 slides / $795 with laser disc / $695 without laser disc

In Search of New Worlds
Posing the age-old question of “Are we alone in the Universe?” this show utilizes special effects, computer animations and interviews with planet hunter Geoff Marcy to offer a comprehensive look at the search for planets beyond our own solar system.
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.
33 minutes / 232 slides / $295 with laser disc / $250 without laser disc

ORDER TWO OR MORE SHOWS AND
TAKE 10% OFF
THE PURCHASE PRICE!

Adler Planetarium & Astronomy Museum brings you our latest sky shows for you to include in your programming.
Each show kit includes: script, production notes, education guide, slide set, soundtrack on compact disc, either with or without video on laser disc.

Please send purchase order and check to:
Roy Kaelin, Show Sales Manager
Adler Planetarium & Astronomy Museum
1300 South Lake Shore Drive
Chicago, Illinois 60605
312.322.0516
kaelin@adlernet.org
I'm editing this column on April 20, 2000, the one year anniversary of the Columbine Tragedy in Littleton, Colorado. I remember the moments after I watched the news and saw the terror in the faces of the students as they ran from their school. I turned, stunned, to my IPS Directory to see if the school had a planetarium, as if to reach out to a colleague who might be in distress. The only listing I found was for a Starlab at a nearby school in the same town, gave me little relief that day. And now one year later as I look at that listing again, I send my sincere condolences to a community still in anguish over their loss. I hope that our work can close the gaps in the social classes so that we can all feel proud to be a part of our home planet.

Congratulations

to John Peterson (Director of the El Paso Planetarium, Texas) who has gotten engaged! His partner is a wonderful lady named Cynthia Strakal. John brought her to the romantic Caribbean to pop the question onboard the Seabourne Sun, one of the fleet of one of the World's most exclusive cruise lines (where John was serving as astronomy enrichment lecturer).

to NASA on the picture-perfect launch into space last December, of its premier Earth Observing System Satellite, Terra. The EOS flagship has completed its on-orbit checkout and verification phase and is "open for business". The first data and science images from Terra's five instruments were released April 19, 2000. Check out the latest images at http://www.terra.nasa.gov.

to Space Telescope Science Institute and John Stone on the 10th Anniversary of the Hubble Space Telescope. Great work John on the website and on your efforts to get the scientific images into the hands of so many, so fast and so easily. Can you get any free stamps for us?

to Evans & Sutherland who recently announced that they will supply the People's Republic of China with two advanced digital theater systems. The systems, valued at over $5 million, will be installed in two science centers being constructed in the cities of Shenzhen and Shanghai. Scheduled to open in 2001, the facilities at the Shenzhen Children's Palace and Shanghai ScienceLand will install the E&S StarRider® and Digistar™ II, respectively. This will be the second Digistar in China following the previous installation in Tianjin, the third largest city in China. The Shenzhen installation marks the first for StarRider outside the United States. The Shenzhen Children's Palace Space Theater, will also feature an 18-meter Astro­Tec dome, an Iwerks 870 large-format film projection system, and a Sky­Sk an theater automation and surround sound audio system. Shanghai ScienceLand will feature the E&S Digistar II projector in its 23-meter Space Dome Theater. The theater is funded by the Shanghai Municipal Government and will be the largest of its kind in China.

People On The Move

David Little (formerly the Production Assistant at the Henry Buhl, Jr. Planetarium in Pittsburgh, Pennsylvania) is heading to Japan to teach English as a part of a cultural exchange program. David has a chance to visit some planetariums and can send us some reports for this column.

Chuck Greenwood (formerly the Producer at the William M. Staerkel Planetarium, Parkland College in Champaign, IL) is going to an undisclosed planetarium in Florida. Good luck, Chuck!

Lee Hines is the new Director of the Goddard Planetarium in Roswell New Mexico. Welcome aboard Lee.

Diane Beam (former Hansen Planetarium Producer) has started her own production company. Visit Diane's website at www.skylore.com.

Dave Oxenreider and Andy Hagerman (former AVI Producers) have a new consulting service for laser applications in the planetarium. Visit them on-line at www.singularityarts.com.

Roberto Molowny is the new Planetarium Manager at CosmoCaixa, the new Science Center in Alcobendas, Madrid, Spain. You can contact Robert at 34 - 91 484 52 00 or by fax: 34 - 91 484 52 25.

Did You Know

The International Association of Astronomical Artists has an Internet site for its members. If you'd like to make use of the talent of a professional artist who specializes in astronomical subjects or if you'd like to join their ranks, visit http://www.iaaa.org/index.html.

The Pacific Space Center in Vancouver, BC, Canada has officially changed its name to The H. R. MacMillan Space Center in honor of the original planetarium benefactor.

The planetarium in Vinh City, Vietnam is in need of our support. Dr Donat G. Wentzel wentzel@astro.umd.edu, Professor emeritus, University of Maryland and the IAU ask you to contact them if you have any shows that the planetarium can adapt and present in their isolated facility.

Thanks to Pierre Chastenay from Montréal for the information he posted to DomeL.

You can catch up on the latest shows, techniques and even see a presentation of The Rocky Horror Picture Show at the second FLORPLAN meeting on Saturday, September 30, 2000 at the Dr. Buzz Aldrin Planetarium in West Palm Beach, Florida. FLORPLAN is an unofficial meeting of planetarians in the state of Florida, U.S.A., that meets twice a year to tour various facilities around the state and to discuss "hot topics" and other planetarian concerns. The meeting is informal and open to anyone who works in or with planetariums and related fields. Please RSVP by September 15, 2000 with phone call or e-mail to Erich Landstrom at (561) 832-1988 x24 or starlite@SFSM.org.

Ole J. Knudsen of the Steno Museum Planetarium in Aarhus, Denmark uses a stuffed toy lion named Regulus to calm frightened children during planetarium shows. The Prague Planetarium, in the Czech Republic has new telephone numbers. You can now contact Mr. Jan Sífner at +420 2 33764652 and via fax at +420 2 3376434 or on the Internet at www.planetarium.cz.

I Need Your Help

I hope that you will help me to fill this column with your important news and ideas. Send me your information at the email address listed above. I will be attending IPS 2000 and would like to meet you, so look for me at the Buhl Planetarium booth in the Vendors Area during the conference. Thanks!
Most Frequently Asked Questions:

**QUESTION:** What is the most frequently asked question about ‘STAR GAZER’?

**ANSWER:** That’s easy. Everybody asks about our theme song which is the classic ‘Arabesque #1’ by Claude Debussy performed by Tomita on the still available “Snowflakes Are Dancing” album (RCA).

**QUESTION:** At what times and days of the week can I see ‘STAR GAZER’?

**ANSWER:** Most TV stations air ‘STAR GAZER’ just before nightly sign-off. However, due to ‘STAR GAZER’s’ enormous popularity a number of stations find the show’s 5-minute format can fit anywhere during the broadcast day and air the show more frequently. Local TV listings seldom include 5-minute shows, so it’s best to call the station for the broadcast schedule.

**QUESTION:** If I can’t find ‘STAR GAZER’ on my hometown PBS station, how can I see it where I live?

**ANSWER:** ‘STAR GAZER’ is provided free of charge by WPBT, Miami to all PBS stations. If you can’t find it, write or call your local PBS station and ask if they will air it and remind them that it is available free of charge.

**QUESTION:** Is it necessary to get special permission to use ‘STAR GAZER’ for astronomy club meetings, teaching in the classroom, science museum or planetarium use?

**ANSWER:** No. In fact, many astronomy clubs, teachers, science museums and planetariums have been taping ‘STAR GAZER’ off the air and using it regularly as a way to reach their public.

**QUESTION:** Is there any way I can get ‘STAR GAZER’ other than my local PBS station?

**ANSWER:** Yes. A month’s worth of ‘STAR GAZER’ episodes are fed monthly to a satellite from which all PBS stations take it for their local programming. Anyone with a satellite dish is welcome to the satellite feed. Again, no permission is required. For satellite feed dates and times call Monday through Friday (Eastern time) 305-854-4244. Ask for Ms. Harper or Mr. Dishong.

**QUESTION:** I am a teacher planning my curriculum and would like several ‘STAR GAZER’ episodes in advance, but I do not have access to a satellite dish. Is there any other way I can obtain ‘STAR GAZER’?

**ANSWER:** Any teacher anywhere around the world can obtain ‘STAR GAZER’ episodes in advance through their NASA C.O.R.E. Teachers’ Resource Center. For details write: NASA C.O.R.E.; Lorain County Joint Vocational School; 15181 Route 58 South; Oberlin, OH. 44074. Or visit our website: www.jackstargazer.com

**QUESTION:** Why does ‘STAR GAZER’ always say “Keep Looking Up!” at the end of each show?

**ANSWER:** Have you ever tried star gazing looking down?
An exciting series of workshops will again be presented at the IPS Conference. We hope to see you in Montreal and look forward to your input. A full report will be provided in the September column. Titles and presenters of the scheduled workshops follow:

"Inuit (Eskimo) Astronomy and Mythology"  
by Jeanne E. Bishop (Westlake Schools Planetarium, Westlake, Ohio, USA)

"Introducing the ZPS Portable Planetarium"  
by Juan Carlos Zabalgoitia (Astronomia Educativa Buenos Aires, Argentina)

"The Power of StarLab"  
by Mary Lou Whitehorne, (Learning Technologies Inc., Somerville, MA, USA)

"Discovery Rooms and Science Shows with 'Magic StarLab'"  
New 'LIDEAS' for Museums and Planetariums" by Loris Ramponi (Associazione Amici Dei Planetari, Centro studi e ricerche Serafino Zani, Lumezzane (Brescia), Italy) and Susan Reynolds Button (OCM BOCES Planetarium and MST Center, Syracuse, NY, USA)

"Dispelling Misconceptions in the Planetarium"  
by Philip M. Sadler, (Learning Technologies Inc., Somerville, MA, USA)

Many of you, in planetariums worldwide, already know how easy it is to incorporate a STARLAB into your existing planetarium programs. Because of its versatility, portability, ease-of-use, and cost-effectiveness, the STARLAB is considered an invaluable and exciting multicultural tool for education. STARLAB can be used in conjunction with a fixed planetarium for:

- school outreach  
- training programs  
- multicultural education  
- workshops  
- special events  
- community outreach  
- hands-on education  
- public relations  
- teacher training  
- fundraising

Visit our Website at <www.starlab.com> or contact us for free information about the STARLAB Portable Planetarium.

"International Exchange Program: Five Years of Success: A Week in Italy for an American"  
by Susan Reynolds Button (OCM BOCES Planetarium and MST Center, Syracuse, NY, USA) and Loris Ramponi (Associazione Amici Dei Planetari, Centro studi e ricerche Serafino Zani, Lumezzane (Brescia), Italy)

"Starlab Educator In Italy"  
by April Whitt (Fernbank Science Center, Jim Cherry Memorial Planetarium, Atlanta, GA, USA)
Lessons/Shows

We need quality audiotapes or written lessons of presentations given about specific topics such as: Primary Level Program, Seasons, Moon, Celestial Motion, Mythology, Planets, Navigation and so on. The contributing presenter must include the following information along with the tape or script:

- Source of lesson (original or adapted from ...)
- Goals and Objectives
- List of equipment/materials needed
- Show a correlation with National or State science standards
- Specialized Vocabulary
- Briefly explain sequence of lesson elements
- The evaluation form used after the lesson
- A signed release form

In addition, we still need some tips and ideas for how to train teachers to use a portable. Also please send samples of brochures and other advertising used to promote your program.

"The Magic List" - Alternatives to Punitive Discipline:

Questions have frequently been asked, during PIPS meetings, about how to handle discipline in the planetarium. The following list (column at right) covers many points that have aided me in my work with the public as well as with school children. Feel free to send me some of your own tips so that they too can be pass along, especially to new planetarians. [One excellent article is Roger Keen’s “Ask the Teacher: Keeping Control in the Theater -or- How to Survive a School Show With Your Sanity Intact,” which appeared in the September 1992 issue of the Planetarian; it is also posted at the Planetarian web site.]

That’s All For Now:

I look forward to seeing many of you at the conference! 

Vol. 29, No. 2, June 2000 Planetarian 17
East Coast Control Systems

Manufacture • Install • Service • Maintain

Aquila Time Code Controller

Full Color Laser Projectors with ADAT Playback

Pangolin Lasershow Designer

ALSO AVAILABLE: Slide Projectors • Projector Racks • Special Effects • Laser Equipment • Video Equipment • Audio Equipment
Planetarium Renovations • Theater Upgrades and Maintenance • Technical Support Hardware and Software Development • On-Site Consulting Services

East Coast Control Systems, Inc.
Main Street, P.O. Box 486 • Bigler, PA 16825
(814) 857-5420 (814) 857-5422 fax
jfeccs@aol.com

Innovative Controls for Planetariums and Laser Displays
Greetings to one and all.

Variety, so we are told, is the spice of life. Planetarians are more attached to their work, and focus more intently on it, than many other professions I could name. This led me to ponder how planetarians ensure that the deep enthusiasm evident across the profession for the basic subject matter is maintained at a high level, year in, year out, without suffering burn-out. Do people wind down with a variety of activities outside of the profession? Perhaps they keep reinventing themselves in the dome, which keeps their approach fresh and up to date.

Here is the topic:

Other than taking vacation time, how do you recharge your batteries to prevent staleness, boredom and over familiarity with the subject matter creeping into your planetarium work?

Eric Schreur, detergent in hand, is the first to let us in on his approach.

* * *

I have a reputation as a workaholic. I spend way too many hours under the artificial sky putting shows together, running shows, or maintaining equipment. I don’t have a lot of choice, because other than running weekend shows I’ve been the whole staff for the last 15 years. If I don’t do it, it won’t get done.

So how do I maintain the energy reserves to keep going when the stress builds up? What’s recharging my batteries? You’d never believe it!

I do mindless household chores that fill up time, but they don’t require mental strain. It’s kind of a Zen thing. I gather the laundry, do the dishes, take a walk around the yard, read a book, watch TV... anything to keep the mind off work. As the saying goes, “No work” takes some of the fun out of it but also to remind myself, “Oh really, I’m always in the dark about these types of things.”

Let me share a few of the lessons I’ve learned, and relearned in addressing this issue. I’m writing this not only to share ideas, but also to remind myself. Even if you’ve already learned these same lessons, hopefully they will serve to remind you, also.

Lesson #1: Get and share new ideas

We’re doing this right now! Whether it’s going to planetarium conferences, reading journals and newsletters, following discussions on Dome-L, or talking with a colleague, exchanging ideas and techniques recharges my batteries, gives me energy, and shines new light on dark times.

Lesson #2: Learn and Update

We are fortunate to work in a subject matter which is not stale. New discoveries are being made all of the time, and with each new discovery seems to come two new mysteries. Exciting! Incorporate these into the programs.

Lesson #3: Balance

This is a tough one for me. I’ve learned to be careful not to over-commit. Sometimes saying “No” to a cool new project or idea is actually better for me and the service.

What an excellent topic for us to share ideas and experiences on! I’m sure that most people experience “staleness, boredom, and over familiarity” in their jobs; however, I think we are fortunate to work in an environment where fixing and preventing this problem comes somewhat naturally. Yet, it is a problem I deal with every year.

As the days get longer, and the weather outside is getting warmer, a combination of spring fever, burn-out, and “staleness, boredom, and over familiarity” creep in and rob me of the joy I usually receive from my work. In the spring, we pack our show requests into long busy days. People come to the planetarium wearing shorts (this seems like a new thing every year in the north), remarking about the beautiful weather, and all I can think of is the stale reply; “Oh really, I’m always in the dark about these types of things.”

Hejda from Lasse.

Lars Broman
Broman Planetarium
Ostra Hamngatan 1
S-791 71 Falun
Sweden

* * *

Vol. 29, No. 2, June 2000

Planetarian

19
Lesson #4: Step Back
It also helps me to step back, identify our mission, examine the services we provide, and look for ways to improve. Sometimes, by doing this we even get a "charge" out of the realization of what we are accomplishing.

Lesson #5: Slow Down
Sometimes I get so busy that I forget to notice the rewards and exuberant energy stirring me in the face. If you are a technician or administrator that doesn't work directly with the audience, sit in on a show every once in a while. By slowing down enough to look at and listen to my audience, their expressions of awe and wonder, their exclamations of "ooohs" and "aaahs" and their energy, interest and enthusiasm become contagious.

I have to remind myself that each program provides the opportunity to touch people's lives - make them think, wonder, and ask questions about the universe around them! When I can slow down and enjoy each program, even the over-exuberance of a wild group can become humorous rather than annoying.

Good luck to you in this battle. And I look forward to getting new ideas from the other responses to this important topic.

Geoff Holt
Planetarium Director
Madison Metro. School Dist. Planetarium & Observatory
Madison, Wisconsin

There are only three ways I can think of to keep my interaction with an audience fresh. Actually, there is a fourth but drastically changing your presentation daily is a lot of work. Besides, it took me years to perfect my "performance." The three ways are:

1. Having a good group. In a live show, if the audience responds appropriately my performance is much better. As a very wise person once said (actually it was my boss, Dave DeBruyn), "Every audience deserves the best show we have to offer." One would hope that my every interaction is the best, but in reality the audience does make a tremendous difference.

2. Having more than one staff member. Not having to do every show, and having time to devote to other creative endeavors, helps make the job more enjoyable and therefore more fresh. Inter-office conversations (although we don't do it nearly often enough) can be a great rejuvenator.

3. Attending conventions. If you get one or two good ideas from a planetarium convention, then it has been worth it. Attending these recharges your batteries perhaps better than anything, although there is a down side. Hearing all the great things everybody else is doing and you're not can be depressing.

So, there you have it. I did think of another. If you had all the time and money you needed and could do what you wanted, that would be refreshing!

Gary Tomlinson
Chaffee Planetarium
Public Museum of Grand Rapids
272 Pearl NW
Grand Rapids Michigan 49504

No matter how much you love astronomy, too much of anything -even something good- isn't always a good thing! Sometimes you have to separate yourself from your work, even for a short time. I really hate to admit, but after a day full of school shows there are times when I think "If I see the Big Dipper one more time, I'll lose it!" There are two things I do to cope with this. One is to read more astronomy! One of the things I love about this field (though textbook writers may hate it) is that it is always changing. There's always another article, a recent discovery, or maybe a new picture on the Web that make me go, "Wow!" I get the same feeling at GLFAC conferences! I also teach physics at our college and, let's face it, year after year, a "force is a force ... of course, of course." Not so with astronomy. Now there are days where I don't want to read anything either. On these days, I keep an electric guitar stashed in the planetarium gallery. Though I don't plug it in, sometimes you just need to take it and jam! My colleagues know that if the guitar is by my desk, it's not all that good of a day!

One last observation to note. When I started doing astronomy for a living just shy of a decade ago, I found I really needed another hobby, besides astronomy; for the little free time that comes along. I chose model railroading. The reason I am mentioning this is, I was amazed to find the number of train enthusiasts in GLPA! It's like a secret society of railroad engineers! Now I'm wondering, just how widespread is this trend! Do astronomy and trains go together?

Dave Leake
William M. Staerkel Planetarium
Parkland College
2400 North Bradley Avenue
Champaign, Illinois 61821

Honestly, I haven't had the problem of boredom and staleness yet. Every time I start to feel weary, something new crops up to take my attention. New sound system, renovated planetarium projector and room, getting a new grant, or improving my automation seem to divert my attention.

Being chief cook and bottle washer of the facility as the only full time resource teacher, technician, maintenance guy, writer and coordinator, occupies my time away from strict astronomy. That could be good or bad, depending on what the diversions consist of.

Sometimes it is good to get away from a full load of astronomy for a while and work on other pursuits. I'm interested in Civil War history, which is almost expected since I live halfway between the Gettysburg and Antietam battlefields. Recently, I have spent spare time tracing the involvement of my great-great-grandfather from his enlistment to death at the Wilderness. This is leading me to adapt David Duchon's planetarium program about the Skies of the Civil War for use at my facility.

All in all, I believe that the best way for me to recharge is to do planetarium lessons and programming on my outside interests, which incorporate astronomy concepts into the topics. My interests and enthusiasm show by the lesson selections by teachers.

Follow the Drinking Gourd, adapted from Stu Chapman's lesson, is the most popular and most selected one of the year, and it integrates astronomy with social studies.

Rodney Martin
Washington Co. Planetarium & Space Science Center
823 Commonwealth Avenue
Hagerstown, Maryland 21740

During the course of the season, I recharge my batteries by trying to relax. Relax? Hmmmm. What does that mean? Here are a few ways that work for me.

Occasionally, after a long hard day under the dome, I like pondering the "deep questions" with friends over a few liters of Margaritas or pitchers of brown pop. You'd be amazed how that can be both stimulating and relaxing.

Sometimes, in May, when on a rare occasion the Sun is shining (I live in N. Indiana where the Sun is an exciting rumor) I like to take off ("sick day") and do some Sun observations on a nearby manicured green pasture. I have about 14 instruments in a bag that is usually attached to a two- or four-wheeled cart. (Depends on whether I walk or ride.)

Here I study the ever changing sun angle (this implies that I'm on the pasture for a...
length of time) as well as the effects of UV radiation on my skin. A lesson on F=ma and centripetal/centrifugal force occurs once in awhile when I try to engage a round white pellet with one of the instruments in the bag. Sometimes Newton’s First Law is applicable. “An object at rest will remain . . .” You know the rest.

As you can see, it’s a relaxing afternoon spent in scientific inquiry.

Another thing, it’s hard to relax when you have family responsibilities. I have a nine year old daughter who is a Britney Spears wannabe, a precocious five year old son, and a wife who thinks the planetarium is my mistress. So my chances of relaxing in the evening are about as good as my chances of making the first crew to land on Mars.

However, if I’m still standing when everyone goes to bed I might steal away a few moments by reading: John Grisham novels, biographies, Civil War books, and sports stuff.

My final technique for relaxing, everyday around noon (my schedule permitting) instead of lunch I run (we need to define run) two miles on a nearby track (We’re fortunate to have an outdoor and indoor track facility). I’ve been doing this for about 30 years, and for me it’s a great way to get re-energized for the remainder of the day.

So if you need to get a grip, or regrip, or restart, try one or all of the above or call me at 1-800-RECHARGE.

Did I mention a massage? I think I’ll save that for another article.

Art Klinger
P-H-M Planetarium
Bittersweet Elementary School
55860 Bittersweet Road
Mishawaka, Indiana 46545

* * *

A very interesting and timely topic. Just last week, one of my sixth grade kids said to me during our usual question and answer period: “Mr. Russo; you always seem so excited when teaching us about space. Don’t you ever get bored with it?” My response, without hesitation was “No way!”

Quite frankly, I don’t think that anyone who teaches in a planetarium decided to do this on a whim one morning. I think that, for the most part, planetarium people have had the hobby of astronomy since childhood, and most people don’t grow out of hobbies.

In my case, my first telescope was an A. C. Gilbert, back when I was 5 years old, accompanied by a trip to the Hayden in NYC. So I have been involved with astronomy for 40 years now; as a profession for 27 years.

One of the reasons that I don’t get bored is that I was lucky enough to have grown up in the profession at the right time. I remember watching Telstar and Echo move across the sky, the television launches of Mercury, Gemini, and Apollo, and the unfortunate end of the Challenger. Kids, and most of the young teachers today, only read about those things in books, the same way that they read about George Washington. But I lived through the birth of the space age, and re-live those wonderful feelings each time I watch The Right Stuff, Apollo 13, October Sky, etc.

I also believe that the people you work with, and the area where your planetarium is located, has a lot to do with it.

In my school, it is basic policy to do all subjects as “interdisciplinary”, and work with other teachers and subject areas. My planetarium lessons revolve around Astronomy, Geology, Meteorology, Mathematics, Social Studies, and even Music. Each year, the other subject teachers and I get together to introduce new lessons to the students. I am also fortunate that I have a great core of science teachers to work with. We feed off of each other’s enthusiasm and excitement.

I am extremely lucky to be in a planetarium located on Long Island, which also keeps my interest in the skies at a high level. Long Island IS the “Cradle of Aviation”. It is from here that Charles Lindbergh made his historic flight, and where the first air mail originated from. More astronauts are from Long Island (10) than any other place in the country. And only five miles from my planetarium, is Grumman, where all of the LEMs were designed and built. Many of my teacher’s parents, and student’s relatives built, and signed their names on the footpads of the LMs that now sit on the Moon. Although the Apollo 13 movie shows the folks at Kennedy Space Center and Johnson Space Center troubleshooting the mission, it was the folks at Grumman here on Long Island that solved the problems to get the astronauts home.

One of the original LMs is still here on the Island. Along with the LMs, the tail, wings, landing navigation system, and audio distribution systems of all of the Space Shuttles were built here. And Neil Armstrong, our first man on the Moon, is CEO of a Long Island-based defense electronics company.

All of these things add up to the fact that Long Island is still a community that is space oriented, and because of that, there is a great deal of interest in my school system concerning the planetarium. This interest rubs off on me, and keeps my creative juices flowing, and even though I have the entire summer off, I still go in several times and meet with the other science teachers to come up with new lessons.

Considering the above, and the fact that in this day and age, astronomy is always making new discoveries, boredom is something that I don’t have to worry about. As a matter of fact, I can honestly say that in my 27 years of teaching in the planetarium field, I have never been bored.

Steven L. Russo
Plainedge Planetarium
Massapequa, New York

* * *

What can I do to restore the energy and incorporate new ideas back into my program, after a year of teaching astronomy in the classroom and in the planetarium? That’s a tall order, and one with which I have been challenged for a lot longer than I care to admit. There are several methods we’ve practiced over the years that have proven useful for me.

a) Review notes and ideas garnered during conferences, lectures, workshops and flag those that I find worthy of trying out in my own venue.

b) Alter an activity or change the order of the presentation to force a new approach to the topic.

c) Make an effort to visit planetaria whenever I’m traveling. It’s great to see what someone else is doing and how they’re doing it.

d) Listen to questions that students/teachers ask, and then consider several different approaches to answering the question. Different learning styles demand different approaches, and experience is the best teacher.

e) Walking is therapy for me. It is my time to think and create. I love walking at night, especially clear nights. That quiet time allows me to reflect on a problem, consider a new idea, or just enjoy the solitude a four mile walk can provide.

f) Summer is my time for camping/eclipse chasing/family outings. Astronomy is a family hobby as well as an occupation, so my son has been immersed in the topic since birth. Nature’s sky is the inspiration for our profession - nothing restores your enthusiasm, passion and love of astronomy better than experiencing the real thing.

Lee Ann A. Henning
Planetarium
Thomas Jefferson High School for Science + Technology
6560 Braddock Road
Alexandria, Virginia 22312

* * *
Every spring, my wife and I begin to discuss our vacation plans for the coming summer, and every spring she knows that our plans inevitably will include a destination involving a planetarium conference or relate to an astronomical event, such as a solar eclipse. Why these two events always seem to occur in sequence and during the summer months (or where there’s a summer), somehow seem more than a coincidence to her. Of course, no matter when or where these events occur, they personally provide me with a sense of job renewal.

Attending conferences provide me with an opportunity for verbal contact and interaction with colleagues, a chance to either observe or participate in our rapidly changing field, learn to integrate other teaching methods or presentation skills, adopt new technologies, or return to simpler technologies. All have a very energizing effect. (I wish I had time, however, to read through those extra pounds of conference materials I bring home.) And those few minutes it takes to observe a total solar eclipse provide me with months of inspiration, and rekindle my passion for what I do. My childhood fascination for astronomy was ignited by observing a partial solar eclipse, which then led to visiting a planetarium and ultimately a career in this field. Resurrecting this adolescent fascination always is a reminder of why I enjoy my work.

Although attending conferences and traveling to observe an eclipse are two sources of work-related inspiration for me, I am also regularly energized by the feedback I receive from daily show performances. Continuous, positive customer feedback is very important, although less intensive, sources for me to thwart job staleness. My job is certainly never repetitive, and I enjoy the daily challenges of finding creative solutions.

So, while on vacation I do enjoy afternoons on the beach and evening in the cafes, I always feel more charged up and ready to go after returning home from a good work-related vacation. I’m looking forward this year to IPS in Montreal, and next summer to the eclipse in Africa!

Jon Elvert
Director, Lane
E.S.D. Planetarium
Lane Education
Service District
2300 Leo Harris
Parkway
Eugene, Oregon
97401

It is a great tribute to planetarians, and the subject matter we teach, that many of the replies above center round philosophies that allow people to feel they don’t necessarily have to do stuff away from the dome to stop their commitment level from flagging. The excitement of spreading the joy of sharing the universe is its own reward, one that is so satisfying it transcends the many other negative factors that so many people in other professions struggle with every day.

Here is the subject for the next Forum:

If you could keep only one piece of equipment, inside or outside of the dome (apart from your star projector) simply for its proven educational and/or inspirational impact among your audiences, which would it be and why?

Any contributions will be gratefully received. Don’t worry if your thoughts only cover a few lines, send them to me anyway. The deadline is July 18.

Until then, a safe and enjoyable trip for all of you who will be going to the IPS conference in Montreal.

---

(Does, continued forward from page 50)

stead of a box in the corner, and maybe people who see it will want to borrow it.

The semester was almost over. One day I realized that the newly-assembled telescope had not returned to me. I looked up Billy’s schedule, found him in study hall, and asked him about it. “Oh,” he said; “it’s in the car. I keep forgetting about it. We can go get it now, if you want to.” “Yes,” I said.

We went out to the street. We walked around to the trunk of the car. He opened it. As I looked inside, I almost gasped audibly, but was able to look undisturbed. The telescope was back in the box! Billy had finished the project, and then disassembled it. Then I realized: I had never told him to bring it back assembled! He had figured he needed to return it the way he found it.

The telescope box is back in the corner. I could kick myself for not mentioning that the telescope could be returned assembled. I was outfoxed on this one. As a matter of fact, now that I think of it, I may have really been outfoxed. Is it possible that the telescope never left the box at all?
Lasershow Designer

The next-generation system for the new millennium

If your planetarium is interested in laser shows, then you probably know about our Lasershow Designer. It's the world's most popular software for professional-quality laser shows.

Now, we've made so many improvements that we're introducing Lasershow Designer 2000. It uses the all-new QM 2000 board, to give you ten times the processing power of our older LD system.

Faster speeds for faster scanners

LD 2000 is specially designed to get improved graphics from new, faster scanners. It can run at 120,000 pts/sec, which easily supports ILDA 60,000 pts/sec speeds -- twice as fast as the 1990's standard.

Twice-as-fast speeds mean twice as much detail in your graphics. It's like getting a second set of scanners for free!

New effects for better images

LD 2000 has new tools for artists. Lines can be feathered for soft endings. This is perfect for depicting comets and other wispy phenomena.

With more colors and faster speeds, you can now project long video sequences. The woman's picture above shows the amazingly improved photorealism you'll get using standard laser scanner projectors.

Compatible with ILDA, Pangolin

LD 2000 is compatible with ILDA connectors, DMX lighting, and Pangolin projectors. Any show created on the older LD for Windows system will run on LD 2000.

You can use any standard Windows 95/98 or NT/2000 computer. The new QM 2000 board fits right into modern half-size PCI slots — you probably already have LD-compatible equipment in your facility.

LD 2000 retains the best features of the multi-award-winning LD system: over 25 free shows, thousands of clip-art frames, free lifetime updates, and free phone support. And you'll be completely satisfied, thanks to our unconditional 90-day money-back guarantee.

50% off for LD clients

If you already use LD, we have a special half-price offer to help you move up to LD 2000. If you don't own LD, contact one of our many high-quality dealers such as Audio-Visual Imagineering, East Coast Control Systems, Laser Fantasy, Laser Images, Lighting Systems Design, and Lightspeed Design Group.

For more information call us or visit Pangolin's extensive website. You'll find out why LD is the #1 choice of planetarians and other laser show professionals.

Pangolin Laser Systems Inc.
771 S. Kirkman, Orlando, FL 32811
1-800-PANGOLIN toll-free sales line (407) 299-2088, fax 299-6066
www.pangolin.com
The spring issue of *Planetariums* magazine carries news about French language planetaria, a general catalogue of French language shows (planetarium by planetarium, year after year), a gallery with photos of all planetariums built during the twentieth century in French language countries, and a list of planetarium meetings. It has a catalogue of new shows (with an abstract) and a new guide of planetariums shows, hours and prices.

The magazine also carries papers about planetarium activities, an article on the August 1999 solar eclipse, new technical contributions from Planetarium de Bretagne for a planetarium without a central projector, and the abstracts of the main papers published in the *Planetarium* during 1999. Of course, this APLF magazine will be presented at IPS 2000 in Montreal. It is also possible to obtain it from Planétarium de Monpellier, B.P. 1088, 34007 Montpellier, France, fax (+33) 467 611 008.

It is also reported that the annual meeting of APLF was held at the Cité de l’Espace 6-8 May, and that the Planetarium at Musée de l’Air et de l’Espace at Le Bourget soon will be reopened.

**Canadian Council of Science Centres - Planetarium Group**

Representatives from 24 Canadian science centers met with the Canadian Space Agency 11 - 12 February to discuss areas of common interest, including strategies to develop more public and educational programs on space, and more effective communications between the CSA and the science center/museum community. An outcome of the meeting was a draft Memorandum of Understanding between CSA and CCSC stating the areas of joint interest, and outlining opportunities, which might be pursued to meet these objectives. It is anticipated that the MOU will be finalized in time for signing at the CCSC annual meeting to be held in Charlottetown, PEI on 10 May.

The Canadian Space Agency will be closing down the five regional CSA Space Resource Centers at the end of the school year in June. The five centers, located in Vancouver, Saskatoon, Toronto, Montreal, and Halifax have provided information, resources, and workshops primarily to the education community for the last four years. Modeled on the NASA resource centers, these five Canadian centers have performed a valuable function in connecting students and teachers to both the Canadian space program and international space science and technology. Strategies to replace these services will include a new CSA web-site, 1-800 free telephone service and periodic webcasts.

Additional services are being considered.

Planning for a new planetarium in the Toronto suburb of North York continues to proceed very positively. Funding is now being sought from key stakeholders. Meanwhile in Edmonton, Montreal, and Winnipeg, recapitalization is still on hold until funding sources can be identified. The permanent closure of Toronto’s McLaughlin Planetarium has created an unfortunate impression in some quarters that the large planetarium is no longer viable. One only has to look at New York, Chicago, Los Angeles, etc. to know that this is not the case. Hopefully the IPS Conference in Montreal will also provide some impetus for the Canadian planetarium community to reverse this situation.

CCSC will hold its annual meeting as part of the Canadian Museums Association Conference in Charlottetown, PEI, on Wednesday 10 May. The meeting will be part of a full day series of workshops for CCSC members, which will focus strategies for improving funding for facilities, both from government and the private sector. The workshops are free and are open to anyone from the Canadian science center/museum/planetarium community.

Hopefully a large number of Canadian planetarians will be in Montreal for IPS 2000. A special reception for all Canadian planetarians will be organized.

**Great Lakes Planetarium Association**

As a result of the GLPA elections last fall, Jeanne Bishop is now President of GLPA, Gary Sampson President-Elect, and Dan Francetic Past-President. Bob Bonadurer and Sue Reynolds-Button retain their positions of Secretary/Treasurer and IPS Representative, respectively.

**Illinois:** The Adler Planetarium & Astronomy Museum in Chicago hosted a temporary exhibit, entitled *The Mars Exploration Station,* which was created especially for the Mars Millennium Project. This exhibit brought visitors into the layout of a possible science station on Mars in the year 2030, including a working greenhouse, science lab, library, living quarters, museum, and meeting area. From mid-May through mid-June, as part of a *Near and Far Sciences for Illinois* grant-funded project, Adler showcased approximately 45 student-created Mars Millennium Project models, websites, and photos of student-conceived Mars settlements.

The Cernan Earth and Space Center at Triton College in River Grove recently ran *Nature’s Fury,* which is about severe weather. Nearly 50 young people in four age groups...
are enrolled in Triton College's Mars Millennium Project, which runs through the school year. The Illinois State University Planetarium in Normal has shown the Minneapolis Planetarium's production The X-tra Terrestrial Files. Every Saturday morning through 1 April at the Lakeview Museum Planetarium in Peoria, a different school show was presented for public audiences, with a hands-on activity preceding each show. A Girl Scout Badge Day was held in March for Cadets and Seniors. The girls spent the day at the planetarium, and earned their astronomy badge by the end of the session.

The end of 1999 was a successful time for Stricker Planetarium in Bourbonnais. The Halloween weekend saw the return of The Haunted Planetarium. This show is an improvised show that combines fun music, stories, and special effects that is produced and presented by the university students that work for the planetarium. Record attendance helped to confirm that entertainment is just as important as the educational programming. The William M. Staerkel Planetarium at Parkland College in Champaign recently presented a new, original light show based on the music of The Who. They also did two special public programs this spring, one on the solar maximum and the other on the May planetary conjunction. In March, they assisted the local scouts with the astronomy merit badge. In April, they partnered with their local astronomical society for National Astronomy Day, while in May, they partnered with their local children's museum for Space Day activities.

Indiana: The P-H-M Planetarium & Space Museum in Mishawaka has added autographed pictures of Charles Lindbergh and Amelia Earhart to their collection. The planetarium has adopted Indiana Astronaut Jerry Ross to be featured in their museum. Upon completion of his next flight, Astronaut Ross will hold the record of the most flown astronaut. The Muncie Community Schools' Planetarium held a week-long renovation and celebration opening. Recent renovations included installation of seats and carpeting. NASA scientists and researchers from the Stardust Mission, Dr. Steven Jones and Aimee Whalen, recently visited students in 16 Muncie Schools, presented a free public presentation, and held a workshop for teachers discussing the Stardust Mission. NASA has donated a permanent display of the Stardust Spacecraft and Aerogel to the MCS Planetarium.

Michigan: As spring eases into summer, the Kalamazoo Valley Museum began showing to the locally produced show Terri & Her Telescope. Cranbrook Institute of Science in Bloomfield Hills hosted an Eclipse Event on 20 January that was attended by over 400 people, including two television stations and several newspaper reporters. They debuted their in-house produced show Planet Alignment 2000 in February. In addition, they hosted special planet observing events in March as well as a four-week course entitled Astronomy for Inquiring Minds.

School shows at the Peter F. Hurst Planetarium in Jackson feature the solar system and the New Jersey State Planetarium's Follow the Drinking Gourd. The Delta College Planetarium in Bay City opened their rooftop observation deck to the public for the 20 January eclipse. Even though there were some clouds, they were able to see the event along with the 200 people that showed up, two TV stations, and a radio station that broadcast live from their lobby. In March, the Chaffee Planetarium in Grand Rapids ran Our Restless Planet, the weather show they produced last year. In June, about fifteen local schools will display exhibits and/or performances at the Public Museum as part of the Mars Millennium Project. This will be held in conjunction with a local event entitled Festival of the Arts, a three-day festival that is one of the largest all-volunteer festivals in the U.S.

Ohio: Ohio's oldest and smallest permanent planetarium turns 50 this year. The golden birthday festivities for the Spitz A-1 (this is no misprint) at Cincinnati's Wolff Planetarium ran from 6 to 9 April. Local amateur astronomers provided some sidewalk viewing (solar and otherwise) at various times during the week. This facility seats 20 people under its 12-foot dome and offers public shows at least twice monthly. The main winter show at Youngstown's Ward Beecher Planetarium was Strange New Worlds, a creative in-house production that details the search for extra-solar planets. The Bowling Green Planetarium welcomed the new year with Starfest 2000, which featured encore runs of many of its public shows since opening in 1984. A dozen shows ran for one week each and another fifteen shows ran for just one night apiece. Director Dale Smith began the year with three days in the 24-hour arctic darkness of Spitsbergen in early January and then escaped the winter weather for a few days in February as a guest of T. C. Samarayakaya, director of the planetarium in Colombo, Sri Lanka.

Wisconsin/Minnesota: A new show, Journey to the Stars, has been produced by the Dave, Bob and Bob Company. Their sur- names of DeRemer, Allen and Bonadurer wrote and produced this 29-minute opus for any planetarium that needs the all-encompassing show about the universe for grades 6 and up. The show will be sold through the Minneapolis Planetarium. The Minneapolis Planetarium will present two brand new shows which also will be available as showkits: Aurora and Honey, I Shrunk the Solar System.

Italian Planetaria's Friends Association

The updated list of Italian Planetaria contains 88 projectors from the small Goto Ex-3 to the big Zeiss IV of Milan Planetarium that last May celebrated 70 years since the foundation and where a new star projector will be installed. The second largest Italian planetarium will be opened in Rome probably next year. The news about the second Italian dome were released by Diego Azzaro, chairman of the local astronomical association Astris during the latest national meeting of Italian Astronomical Society.

Another planetarium has changed its star projector. Professor D'Urso communicates that the old Galileo projector under the six meter dome of Nautical Technical Institute of Riposto (near Catania, Sicily) has been replaced by a Gamba projector, built by the most active Italian craftsmen in the planetarium field. During the last January-February, 1200 students visited the planetarium where 2300 stars are projected.

Serafino Zani Astronomical Observatory is interested in receiving children's astronomical drawings from different countries made by students that have visited planetariums; preferably, but not necessary, about a topic from a lesson/show under the dome. An alternative, the Observatory is also interested in drawings about Comet Hale-Bopp, solar or lunar eclipses, meteor showers, or other sky phenomena studied by the schools. All the drawings will be collected in a permanent exhibition on line (on the science pages of www.cityline.it). The first drawings have come from Slovakia, Spain, and United States and many others from the Italian national contests of children's astronomical drawings.

Nordic Planetarium Association

At the end of last spring, Kosmorama Space Theater in Borlänge, Sweden presented a new program entitled Journey into Infinity, written and produced by the planetarium staff. This program is mainly intended for the general audience. Before summer this year, an English version of the program will be produced. The educational live shows - The Solar System and Secrets of Heaven - can now be continually updated with new slides, special effects, and video sequences, thanks to a new digital equipment recently installed in the theater. In several stages of "taped" show production the new equipment also means a considerable simplification. Within
the next few months a new fabric in the theater seats will be installed. This is a good sign of frequent use! A new theater entrance is under planning and will hopefully be ready before the end of May.

The great astronomical event of 1999 – the total solar eclipse on 11 August – was successfully observed and photographed by an expedition from Kosmarama Space Theater from outside a small village on the center-line near Lake Balaton, Hungary. Slides from the eclipse are presented in one of their live shows. A public lecture has also been given with videos and slides from the event. There are ongoing plans for observing the next total solar eclipse on 21 June 21, 2001, from a location in Zambia or Zimbabwe.

At the time of writing, the American ASH projector for Stella Nova Planetarium at Teknoland in Falun, Sweden has just been delivered. The Planetarium will show Per Broman's computerized version of En resa i ryumen (A travel in space) during the summer. Latest astronomical addition to Teknoland is Walking on the moon, a true whole-body-on experiment inspired by a similar exhibit at Clore Garden of Science in Rehovot, Israel. Teknoland's first season is 13 May - 8 September 2000 (closing date happens to be Lars Broman's sixtieth birthday - strange coincidence?).

About the planetarium in Tartu, Estonia: the ZKP-2 will not put up this year because of financial problems, but the Center has obtained a portable Starlab planetarium from Carl Zeiss in Jena, Germany. At present they use their old demo set. The new one will be delayed due to problems related to the changed currency rate between US and Germany.

Pacific Planetarium Association

Announcing The Cosmos in the Classroom: A National Symposium on Teaching Astronomy for non-science majors on 17-19 July 2000 in Pasadena Convention Center, Pasadena, California as part of the 112th Annual Meeting of the Astronomical Society of the Pacific (co-sponsored by the American Astronomical Society). Designed for everyone who teaches introductory astronomy, the symposium will focus on ways to improve teaching, to involve students more effectively, and to put astronomy in a wider context. Participants will range from veteran instructors (grumbling about how much better students were in the old days) to nervous graduate students about to teach their first solo course. The organizers especially hope to involve those teaching astronomy in small colleges without extensive astronomy research programs, and colleagues in other sciences who teach astronomy on a part-time basis. The structure of the symposium (and the opportunities for participating) will be a little bit different from typical scientific meetings. There will be almost no traditional lectures at the symposium. Instead, the program will consists of panels with educators from around the country (with opportunities for audience participation), hands-on workshops on innovative techniques and approaches, small discussion groups, and contributed papers in written form (made available as handouts to all meeting participants).

The following panels have been scheduled during the meeting:

1. How to Teach 100 Students and Still Get Out of Lecture Mode.
2. Teaching via the Internet/Distance Learning: Boon or Boondoggle.
3. Effective Lab Experiences on a Limited Budget.
5. Responding Effectively to Creationism, Astrology, UFOs, and Other Pseudo-Sciences.
6. Interdisciplinary Approaches (from Astrobiology to Science Fiction): Special Courses and Topics within the General Course.
7. What Practical Advice Does Research into Teaching and Learning Have for the Average College Astronomy Instructor?

Hands-on workshops will explore and demonstrate new approaches to forming collaborative groups in lecture classes, testing your students in non-traditional ways, doing effective demonstrations, clarifying your goals in teaching the course and designing the curriculum to fit those goals, and many other topics. For more information about the entire program and how to contribute, see the web site http://www.aspsky.org/meetings/2000hedsymposium.html, or request a registration package by e-mail to meeting@aspsky.org, by fax to +1-415-337-5205, or by mail to 2000 Education Symposium, A.S.P., 390 Ashton Ave., San Francisco, CA 94112, USA. (Be sure to specify your interest in the Education Symposium).

A limited number of scholarships are available to those who are teaching or are planning to teach in institutions without extensive research programs in astronomy and who cannot cover their expenses from any other source. See the web site for more information about how to apply.

Bill Gutsch reports that Where in the Universe Is Carmen Sandiego? opened in Japanese at the Sugihami Science Center in Tokyo on 25 March. (The conversion of the show to Japanese was a joint effort of Great Ideas and Libra Corporation.) Within a few weeks, Carmen also debuted at OMSI and the Newark Museum in New Jersey and will open soon in Houston, Charlotte, and Kansas City. The very successful show is also still playing at the $650 million City of Arts and Sciences in Valencia, Spain. He now has programs appearing simultaneously on three continents! Meanwhile, the script for the Carmen sequel, Where in the Universe Is Carmen Sandiego? - II is now finished and production is underway. Original animation is being provided by Broderbund/The Learning Company as well as a host of talented planetarium based animators from Vancouver to Houston and from Salt Lake City to Dickson, Tennessee.

Meanwhile, Gutsch will travel back to Japan in May to work with Minolta on the Japanese version of another of his shows and a possible joint effort on a new program for children based on a Japanese television series. He is also working on a new public show for the Coca Cola Space Center and Discovery Place, Inc. in Charlotte that will feature lots of original 3-D Maya and Lightwave animations and may have Star Trek's Jeri Ryan (Seven of Nine) as the narrator. Finally, he also continues to do lots of consulting work for science centers and private companies from San Francisco to Bristol (England) and Beijing to Calcutta. As a result, he reports that he expects to soon have enough frequent flyer miles to open a branch office on Mars.

For more information on any of these projects or to talk to Gutsch about doing something special for your planetarium, please contact him at Great Ideas, Eleven The Crossway, Smoke Rise, Kinnelon, NJ 07405 USA. phone +1-973-492-8165, fax +1-983-492-1836, e-mail 102417.2073@compuserve.com.

Fleischmann Planetarium and a steering committee of local citizens have begun a formal feasibility study regarding the construction of a science center, including a new planetarium, interactive exhibits, and likely a large-format theater, in the Reno area. The study is being conducted by White Oak Associates, a firm familiar to many in the planetarium community. The next time PPA meets in Reno, we may have some new things to show the participants.

The Reuben H. Fleet Science Center has ordered a Digistar II from Evans & Sutherland, which will replace the Spitz STS projector. In addition, a complete audio upgrade to an all digital format (Panasonic DA-7 surround sound mixer, EMU & MAC G3) is nearly complete.

The Morrison Planetarium has also entered the digital age by integrating EMU Darwin digital playback units into their Spice system. Future renovations are in the
works as well. A third Summer Series includes astronomy & sky lore presented by local storytellers.

Eileen Starr, Valley City State University Planetarium, has field tested her Navigating with Lewis & Clark show, which is 29 minutes and contains 210 slides for US $499. More information about this will be given at the IPS Montreal conference.

Rocky Mountains Planetarium Association

Air Force Academy, Colorado Springs, CO. Mickey Schmidt is busy installing The Explorers show slated to open this summer as their public offering from May to September. All their programs are still free of charge and showtimes are Tuesdays through Friday 1:00, 2:00 and 3:00, Memorial Day through Labor Day. The planetarium may be modifying the schedule listed above if, the funding and materials arrive to remodel the planetarium interior. They will be getting a new handicapped accessible restroom, a display case in the lobby, new carpet and seats in the theater. The seats (by American Seating) have been modified according to a design by Doug Glosson and Schmidt. They will feature an LED lighted tablet arm for note taking in the dark. The seats will also be wired for future expansion of the interactive system. Work is scheduled some time this summer with completion prior to Cadet classes starting in late August.

Hansen Planetarium, University of Utah, Salt Lake City, UT. At Hansen Planetarium, the production of two shows has just been completed, and two more are in production. The Simple Gifts of Christmas is a multi-media entertainment show, designed to present a strong seasonal message and to entertain with the most popular of Christmas sounds. Parts of this show are being rebuilt in order to eliminate the local innuendo, so that it can be sold to other regions. 20th Century Universe is a show written to deliver a 20th century wrap up on how we perceive our universe, giving a historical look at the people and the discoveries over the past few centuries.

Hansen is currently working on a new show, Supernova - The Seeds of Creation. This show was scheduled to open 24 April. As for the future, they are still working on a title, but will be doing a show in conjunction with the University Museum of Natural History, based on flight. Tentative opening date is 18 September. Where in the Universe is Carmen San Diego is still running! So far, it has been their all time popular show. It will be run it until Hansen opens Carmen part 2, this fall. More information from http://production.hansen.utah.edu.

The Ott Planetarium, Weber State University, Ogden, UT. At Weber State University they recently added an observatory to their operations. The new observatory contains numerous telescopes including a 98 cm (25 inch) Dobsonian telescope. Details can be found at http://physics.weber.edu/planet/observatory.html.

Taylor Planetarium, Museum of the Rockies, Bozeman, MT. The Taylor Planetarium has two new grant-funded shows in the works. Here Comes the Sun is funded by the NASA EPSCoR program. The first one, a full-length feature show written by director James Manning opened in late May. With one of the world’s foremost solar research centers located right across the street at Montana State University, this program highlights the school’s latest solar research including never-before-seen photography and animations from the orbiting SOHO observatory. Another program, called Time Stalkers, is slated to open in late June, and is funded by the Montana Space Grant Consortium. This original production will examine the astronomical basis for timekeeping. Both shows will become available for purchase to the planetarium community.

Russian Planetarium Association

The resignation of Jetsin on 31 December made a strong effect on Russian society, which yet didn’t sum up results of December elections to Duma, Putin, who fulfilled the duties, became a favorite automatically and finally became the new Russian president.

The first weeks of January - winter school holidays - are as always an intensive work in all Russian planetaria. Star halls are usually overfilled.

Vadim Belov had two missions to Moscow by the end of January and in the beginning of February. There were twenty-five Readings on cosmonautics, conference devoted Giordano Bruno, and the hearing of the Moscow planetarium. On these hearings in Moscow city, the Duma’s sharp scientific society criticism sounded concerning the trade by stars in planetaria. An important agreement was achieved on founding of the scientific/methodical council attached to the Moscow planetarium and a request was given to Luzhkov, mayor of Moscow, concerning acceleration of the beginning of rebuilding the planetarium.

On 15 February, the National Russian weekly Uschitel’skaya gazeta (Teacher newspaper) was the initiator of discussion on the planetarium problems. They published on 22 March the reply of Belov about Moscow planetarium with the estimations of the reasons of stopping its work and anxiety about its future. This weekly thus published one more paper about other Russian planetariums.

Nizhny Novgorod Institute of Education Development (NIRO) hosted the Conference in memory of S. Kaplan from 5 to 7 March. Astronomers who arrived from Kazan (400 km down by Volga River) told that about 700 mosques have been built in spite of budget constraints during last years.

The Kazan planetarium was closed a few years ago because of rebuilding it into a mosque, where it was placed. Now a new hope has appeared to include the building of a new planetarium as part of arrangements to celebrate the 1000-year jubilee of the regional capital Kazan.

There were as always a wide program in the Russian planetaria on the Day of Planetaria 19 March. Nizhny Novgorod planetarium had seven shows, as well as observations of the sun, the moon and the available planets. On the equinox - 20 March - there were a lot of interviews of planetarians in local mass media. All were interested in the date of the laying of the first corner stone and in the perspective of the future planetarium building.

The spring Astronomical Teachers Conference took place on 29 March in Nizhny Novgorod planetarium. There were reports by prof. Koscharovsky on Physical problems of the universe evolution, by Prof. Zlotnik on What news have we learned about the Sun for the last years?, by Dr. Serber on The edge of Universe, by Dr. Sitkova on The telescopes of twenty-first century, and some others. Mr. Suglobov, the member of Russia Cosmonautics Federation Presidium, made a suggestion to make A path to the stars in the park of the car company GAZ on 5 May, which would lead to the new planetarium. It would be in commemoration of the 45-year jubilee of cosmodrom Balkonur.

On 29 May - 3 June, Evstignieeva (Kaluga), Latisheva (Kostroma), Sitkova and Belov (Nizhny Novgorod) will take part in the work of Joint European and National Astronomic Meeting (JENAM - 2000). The Seventh Conference of APR will take place in Altay 22 June to 1 July in honor of the 50-year jubilee of the Barnaul planetarium.

Southeastern Planetarium Association

Saving the Night is the title of the SEPA commissioned and produced show that is now in distribution to members. The show was one of the major goals that SEPA President (and producer) George Fleenor, Bishop Planetarium, Bradenton, set out to accomplish during his two year tenure. The show was written and is narrated by noted dark-sky advocate, David Levy. Several members
within the SEPA organization contributed to the project including original artwork by Edwin Faughn, artist in residence at Memphis' Pink Palace Planetarium, and composer extraordinaire Jonn Serrie, who created an original music score for the 10 minute mini-show. The show will be presented to the membership at the opening reception of this year’s SEPA Conference on 20 June at the SciWorks Planetarium in Winston Salem. Negotiations are continuing with IPS to make the production available on a worldwide basis.

Speaking of George Fleenor and David Levy, consult page 90 of the May 2000 issue of Sky and Telescope and you’ll find an amusing story on George’s traumatic attempt to deal with the problem of light pollution. Be sure to visit the SEPA website where a variety of information about members, facilities, and activities of the organization is available: www.sepadomes.org

Southwestern Planetarium Association

Texas 2000 Update: Visit http://andrews.esc18.net/PLANET/texas2000.htm. The registration fee is set to US $80, late registration after 30 June will be $100. Pre-Conference trip will be hosted by Dr. Carolyn Sumners, Burke Baker Planetarium in Houston, with a visit to NASA, SWAP President Barbara Baber will chair the Post-Conference Tour to Dinosaur Valley State Park and Fossil Rim Wildlife Center. The following organizations (plus vendors) will have a display area: Lockheed-Martin, National Space Society, Dallas Area Rocket Society (DARS), Texas Astronomical Society (TAS), McDonald Observatory, and American Association of Amateur Astronomers (AAAA).

Wednesday, 4: Pre-Conference Tour in Houston (hopefully you can come in the night before). Wednesday evening: registration opens with welcoming reception at hotel in Dallas.

Thursday, 5 Oct.: registration, breakfast, paper sessions, luncheon with Cowboy storyteller, vendor time, workshops, dinner at Trail Dust Steak House with boot scollin’.

Friday, 6 Oct.: breakfast, paper sessions, affiliate meetings, box lunches on buses to either Digistar presentations at North Texas in Denton, or Spitz 512 school presentations at Mesquite Schools Planetarium and heliostat viewing at Richardson ISD Planetarium, or school and portable planetarium sessions at Garland ISD Planetarium (and Highland Park Planetarium if needed), return to hotel, dinner at West End with The Local Group as tour guides.

Saturday, 7 Oct.: breakfast on bus from hotel to day in Corsciana (planetarium presentations, luncheon at Cooke Science Center, and optional tours of local sites), buses return to hotel, banquet with Carolyn Collins Petersen from Sky & Telescope as main speaker, door prizes, affiliate award presentations, hospitality room opened.

Sunday, 8 Oct.: Post Conference Tour to Glen Rose.

Barbara Baber, Morgan Jones Planetarium in Abilene, is a Grandma as of last April! Her son Steve and his wife in Brownwood adopted beautiful Lunday born 8 Feb. at 8 lbs, 18” long. Our heartfelt sympathy goes to Donna Favour, Richardson ISD. Planetarium, on the loss of her husband Jim last spring.

---

The Magical Millennium Tour

The countdown has started and the millennium awaits. But what does it all mean—a passing of 1,000 years. Explore the power of time in our boldest show yet.

Available May of ‘99

Also available from Minneapolis Planetarium Show Productions--

The X tra Terrestrial Files

Amazing Stargazing

Honey, I Shrunk the Universe

Hercules & Other Superhero Stars

3-2-1...Blast Off!

Ancient tales and modern truths come together when a wish made “once in a blue moon” brings everyone’s favorite night light to life! Loaded with “luney” tales and scintillatin’ science, it’s a rockin’ lunar romp for kids of all ages!

Available February of ‘99

All Shows $350.00

Call (612)630-6155 for a brochure and complete show sample cassettes.

---

Planetarian Vol. 29, No. 2, June 2000
"I have worked with the best of the best. Compared with systems for stage theatrical lighting and other planetarium systems, the Omni-Q System has shown to be the most versatile of them all!"

Aaron McEuen - Hansen Planetarium

Here are just a few of the OmniQ Planetariums:

- PACIFIC SPACE CENTRE
  Vancouver, British Columbia
- PLANETARIO de Pamplona
  Spain
- PLANETARIUM DE MONTREAL
  Quebec, Canada
- Zeiss Planetarium
  Jena
- HANSEN PLANETARIUM
  Salt Lake City, Utah
- PLANETARIO de Pamplona
  Spain

For more information visit our Website at
www.comlectron.com/omniq
or contact us at omniq@comlectron.com
NASA’s recently lamented Mars missions notwithstanding, we’ve been getting lots of new views of the cosmos of late, in a variety of manifestations. At this writing, I can scan ever-more-detailed pictures of the banana-shaped asteroid Eros as NEAR Shoemaker tightened its orbit around the object of its affections. Or scrutinize the first views of Galileo’s February pass over the lava fields of Io. Or scroll down Mars Global Surveyor’s new viewstrip of the summit of Olympus Mons as if I were skimming above it in one of Bradbury’s Martian sky-buggies.

And of course, I can search out what latest cosmic wonders the Hubble Space Telescope has captured, and marvel over the Louvre-like art gallery that the Hubble Heritage Project has become.

This year we celebrate Hubble’s tenth birthday, and despite a myopic start, it has proved to be a prodigy indeed. To help us celebrate its very considerable achievements, the Space Telescope Science Institute is offering some birthday treats that make up this column’s first item.

Anniversary Audiovisuals from HST

In March, John Stoke, Informal Science Education Coordinator (and formerly one of us) in the Office of Public Outreach at the Space Science Telescope Institute, 3700 San Martin Drive, Baltimore, Maryland 21218 USA, telephone +1-410-338-4394, fax +1-410-338-4579, e-mail stoke@stsci.edu, web site http://www.stsci.edu, announced on the Dome-L listserve the availability (for the asking) of a 40-slide anniversary slide set (with full captions) on the telescope and its science discoveries, and an 8-minute retrospective on VHS video including comments from scientists, computer animations, and images set to music.

As of this writing, I’ve just received my copy of the slide set, and it’s quite excellent. The first half of the visuals show the telescope and the telescope being built, blasted into space, serviced in orbit, and controlled from the ground; the second half offers a representative selection of visual highlights (which, incidentally, can be very nicely supplemented by ongoing HST visuals you receive if you’re subscribed to the IPS slide service). The accompanying booklet offers short and long captions for each slide. I’m eagerly awaiting the video, which I expect to be just as good - especially if it has production values similar to the clever and colorful prototype computer-based piece that John showed at the Desert Skies conference in Phoenix, Arizona last October.

These are fine bits of work to use for talks, classes, planetarium shows, lobby exhibits, and so on. If you weren’t previously aware of these, and would like to request them, contact John as given above. Alas, he indicates that the offer is limited to US planetariums, but has also said that high-resolution slide set images would be available soon for anyone who can download them and make their own slides; contact John for URL information.

In recent years, I’ve come to feel closer to the doughty telescope as I, too, have come to require optical aid to continue to reach my own targeted limits of resolution. So I say happy birthday, Hubble - and many happy returns of the day!

The Nessie Musical Backpacks Go CD

And if you’re casting around for something to put in the old CD player as you gaze at Hubble’s visual renditions of heaven, Mark Petersen of Loch Ness Productions, P.O. Box 1159, Groton, Massachusetts 01450 USA, telephone +1-978-448-3666 or +1-888-4-NESSIE (that is, +1-888-463-7743), fax +1-978-448-3799, e-mail mark@lochness.com, web site http://www.lochness.com, has announced that his entire “Music Back-Pack” collection is now available on CD.

The music consists of compilations from a variety of Loch Ness planetarium shows, albums, and other sources created over 25 five years, in largely chronological order with the volume number. Each of the former tape volumes has been digitally re-mastered for cleaner, better sound, and has been laced with new selections of music. A typical volume contains about two-dozen selections, most ranging between one and six minutes, with some longer pieces ranging up to more than 20 minutes. Each volume comes with composer’s notes, and a handy, short description of the musical style. Considering that the entire library contains some 300-odd pieces of music, you can find most any style you’re looking for, from spacey to Native American, all in Mark’s inimitable phrasing. And a big plus is that it’s music written for planetarium shows by people who produce planetarium shows. So it “fits.”

Our facility has been the happy procurer and user of a number of the “old style” Back-Pack tapes; they’re of excellent quality, very versatile, and have seen much use in our planetarium - so I can recommend them highly. The new CD format, of course, sounds even better. And the Nessies offer user-friendly use rights: purchase includes in-house performance and synchronization rights, limited broadcast rights (that is, you can broadcast portions in the context of planetarium promotion), and you can make copies for production purposes and back-up or archival needs. You can’t use the music outside of your facility otherwise, distribute the music to others, or use it to score that astronomy program you’ve always wanted to produce for The Discovery Channel - but you can ask Loch Ness for permission. And all the Nessies ask in return is a screen credit when their music is used. Oh - and the purchase price.

Each volume costs $125 US, the entire 12-volume library, $995 (a one-third discount). As an introductory offer, the Nessies are offering a $10 credit for each Back-Pack tape you’ve bought in the past, which can be applied to your first CD order. And for a limited time, if you order the entire set, you’ll get a CD rack to hold them all.

These days, it’s very valuable to have a music library at one’s disposal for the sort of work we do. And this is one of the best around for planetariums. Do check it out. For more information, contact Loch Ness as given above, or visit their web site and read more about it.

By the way, if you’ve ever wondered where the term “Music Back-Pack” originated, Mark’s composer notes tell us that it comes from the phrase “MUSIC designed to be BACKGROUND PACKAGE.” Something with which to impress your colleagues at that next conference hospitality suite.

The Rocket Man’s Millennium Catalog

And if you’d like to have at hand an inexpensive model of the HST while you’re looking at the slides and listening to a Nessie Back-Pack, check out the catalog of “Rocket Man” Christopher Centi of Centi Astro-Space Activities, 1328 West Ninth Street, Eerie, Pennsylvania 16502 USA, telephone +1-814-453-7700 or +1-800-772-7951. Access Code 01, e-mail CiteRocketMan@aol.com.

Centi’s “Millennium Catalog” includes a variety of 3-D paper models of famous spacecraft - HST, Voyager, Magellan, Galileo, Mars Global Surveyor, Lunar Prospector - and the ground-based Keck Telescope. I haven’t seen the models in person, but the black-and-
ElectricSky™ is a proven, multi-use digital dome theater powered by award-winning desktop graphics and video production tools like 3D Studio Max®, Adobe Photoshop® and Adobe After Effects®.

The heart of ElectricSky is ImmersaVision™ — a panoramic, digital video display system developed by Spitz especially for planetaria. Compatible with 2D and 3D computer graphics, film, HD video, still art, photographic images and more, ImmersaVision gives you the freedom to create original, wide-format video content from a variety of source media.

Add the planetarium standards — star projection, hemispheric multi-image, surround sound, laser graphics and our new ATM-4 show controller — and the result is a complete, flexible environment for group education, entertainment and training. Open-architecture design, high audience impact and affordable price make ElectricSky the immersive theater for the next millennium.

ElectricSky and ImmersaVision are trademarks of Spitz, Inc. All other trademarks or registered trademarks are the property of their respective owners.
white pictures in the catalog look good - and the models are nicely detailed. They sell for $14 U.S. apiece.

Centi offers a variety of other space-based products in his catalog, including soda-bottle rocket launcher kits, planispheres, a simple 16-power telescope-making kit (the same power that Galileo first used), constellation books, posters, CD-ROMs, bookmarks, greeting cards, globes, and activity books, all at reasonable prices.

Centi also offers a variety of workshops (within a 200-mile radius of his base of operations, farther if overnight lodging is covered) on a variety of space topics ranging from solar system topics to space exploration to sky observing. The workshops are described as conforming to U.S. National Science Standards, using hands-on activities, and lasting two to six hours mostly, with some running longer or shorter as desired. Cost depends on arrangements. They're available to students, teachers, and other youth groups and organizations. Forty-five to 60 minute programs are also available; a half-day's worth costs $175 U.S., a full day's worth, $290.

For more information, contact the Rocket Man as given above.

New Laser Fantasies

Laser Fantasy International has recently (as of this writing) announced the availability of two new programs. The first is a 20th anniversary special edition of “Pink Floyd, The Wall.” Laser Fantasy has remastered and reprogrammed the show and it's available for ILDA standard laser systems. The introductory cost is $950 U.S.

The second program is a collaboration with the Boston Museum of Science and is called “A Brief Mystery of Time.” It's described as “an educational laser-light show with a planetarium show package” - the company’s “first laser based planetarium program” - and a general-audience program on the science and perceptions of time. It sells for $1,850 U.S., and includes 25 minutes of laser imagery as well as a planetarium show package including slides, panoramas, all-skies, and video, with soundtrack in CD or ADAT format.

For more information on either program, contact the company at 300 East Evans Street, Suite P290, West Chester, Pennsylvania 19380, telephone +1-610-918-8292, web site http://www.laserfantasy.com.

Finally...

As always, if you have or hear of something new, don't be bashful about passing word along. Happy Solar Maximum, enjoy your summer/winter, and, as ever, what's new?
Moon Phase Exhibit

Richard McColman
Morehead Planetarium
CB #3480 Morehead Bldg.
University of North Carolina
Chapel Hill, North Carolina
27599 USA

Usually, this column concentrates on technical or production issues inside the planetarium theater. This time, however, we’ll diverge just slightly by exploring an outside-the-planetarium idea that will dovetail nicely with planetarium education - a lunar phases exhibit.

VistaPro Follow-up

Before we dive into this material, I’d like to take a moment to follow up on the previous installment entitled “Create Panoramas With Your Computer.” Since the time of that writing, I have done some more work and experimentation with the VistaPro landscape rendering application, and have discovered that - contrary to my initial concern - the Auto Exposure option can be activated without creating perceptible brightness “steps” between the final panorama sections. (Apparently, Auto Exposure doesn’t alter the brightness of the entire image, but instead adjusts the scene exposure continuously throughout the entire sweep of heading angles in a landscape scene.)

This attribute has another positive benefit, in that it allows the user to set very low lighting (Sun) angles in the scene without detrimental effects (as opposed to my initial statement that Sun declinations of 55 to 70 degrees were necessary to achieve good results). This affords the user an additional benefit in that lower Sun angles (25 degrees or less) create more dramatic and interesting panoramic views. These shallow lighting angles can also add to the realism of the rendered scenes in VistaPro.

Once again, consider giving VistaPro a try. If you’re like us, you’ll find great benefits with it in creating your own computer-generated panoramas.

Back to the Exhibit

Surely all of us are familiar with using a light source, a Styrofoam ball, and an observer’s eyes to create an interactive classroom-style demonstration of lunar phases. Many of us, no doubt, regularly use this demonstration in our planetariums. However, this demonstration requires direct supervision by an “instructor,” and I’ve long pondered a way for planetarium visitors to better understand the concept behind lunar phases in an unsupervised exhibit-style setting. Such a display could help reinforce the classic planetarium or classroom demonstration, as well as creating an effective and attractive educational exhibit activity for those waiting for a planetarium show. After mulling over the idea for some time, I wondered if modern video technology might help us implement such an interactive exhibit at Morehead Planetarium. This is the basic design idea behind Morehead’s new “Why Does the Moon Change Shape” exhibit. Perhaps some of you would be interested in recreating this exhibit for your own facilities.

The basic concept of the lunar-phase exhibit centers around models of Earth and Moon, illuminated by a single light source, as if lit-up by the Sun (Figure 1). At the press of a button, the observer can - via motors built into the model - revolve/rotate the “Moon”...
around the “Earth,” while the “Earth” rotates. A tiny video camera positioned at the Earth continuously transmits an image of the Moon to a video monitor in the exhibit. With this setup, the observer can simultaneously experience both a three-dimensional “view from space” and a “view from Earth,” and thus gain a cause-and-effect understanding of lunar phases. By releasing the button, the observer can pause the model’s motions and study in greater detail the relationships between light, shadow, and viewing perspectives at any time during the lunar cycle.

“Spacey” Backdrop

Morehead Planetarium is housed in an old 1940s-style building with very little, if any, open, modern exhibit space. However, we do have a number of vintage, glass-fronted exhibit cases set into some of the hallway walls. One of these cases seemed to be a workable, if not ideal, location for the moon-phase exhibit’s installation. (Alternately, it would be possible for such an exhibit to be recreated within a free-standing kiosk or case in a more modern exhibit space.)

We started by removing the previous exhibit from the case. Since we wanted to give the lunar-phase exhibit a dramatic look, we started by building a plywood “false back wall” (seen in an overhead view in Figure 2) that, when painted black (along with the rest of the case’s interior) - would form a backdrop with a “spacey” appearance. Before installation, this backdrop’s plywood panels, though, were randomly drilled to create “star holes.” These were made by first drilling with a Forstner bit - one-inch-diameter (25.4mm) “cups” most of the way through the panels from their rear-surface side, then continuing with a conical countersinking bit, and finally finishing off with a tiny bit to create small holes extending through to the front-side of the panels. This drilling sequence created holes with a cross-sectional geometry seen in Figure 3. The larger countersunk cups in the plywood would allow the light from behind the backdrop to be visible through the tiny holes from a variety of viewing angles, even though the light would be passing through 1/2-inch (12.7mm) plywood. (Had the countersinking not been done, the “stars” would have only been visible from directly in front of the exhibit case.)

The actual back wall and access doors of the case behind this starry backdrop were painted white and illuminated with fluorescent lights mounted between them and the false back wall. Once the starry backdrop was framed and installed (complete with star holes), the fluorescent lights mounted, and all the painting done (white in the area behind the starry backdrop and black in the main case interior), the illusion of distant stars set within inky-black space was then visible through the display-case window. (Although all the tiny star holes were of similar size, a variety of fainter stars were “created” by stapling small bits of index cards and white poster board to the back-sides of most of the holes, creating an approximation of varying star magnitudes.) While we could have used fiber optics to create our “stars,” the method we used has proved easier, less expensive, and just as effective. A small door was also built into the backdrop to allow access into the exhibit interior for installation and maintenance.

With the display-case preparation done, the other elements of the exhibit had to be designed and fabricated. These elements include a model of a rotating Earth, revolving Moon, and associated mechanism; a light source to create “sunlight,” a descriptive transparency light box; a button for the user to activate the model's motion; and of course, a video camera and monitor.

Since we wanted to illuminate the Earth and Moon models only, the light source - a single 50-watt halogen narrow-beam reflector floodlamp - was placed in a box over which are mounted “barn doors” to mask-off areas of the directed light beam. This arrangement allows us to direct light only onto the Earth and Moon models and prevents light from spilling onto the starry backdrop, the case’s glass window, and the rear part of the model’s support.

Mechanical Construction

Next, the mechanism for the model (seen
in side-view in Figure 4) was designed and built. The main support shaft for the mechanism is a length of galvanized steel plumbing pipe, threaded at one end and screwed into a steel floor flange, which, in turn, is bolted over a 1-inch (25.4mm) hole in the plywood backdrop. A 1/2-inch-diameter (12.7mm) hollow shaft is placed inside the fixed support shaft to revolve the "Moon," and in turn, a 1/4-inch (6.35mm) solid shaft is placed inside the 1/2-inch shaft to rotate the "Earth." These two smaller shafts extend through the hole in the plywood panel behind the mounted floor flange and are rotated by drive motors mounted behind the backdrop. To fit everything together for a smooth motion, both the fixed support shaft and the 1/2-inch hollow shaft were center-bored at each end on a metal lathe and press-fitted with oil-impregnated bronze flange-type sleeve bearings. (Although we have a metal lathe at Morehead, the lack of one shouldn't prevent construction of this exhibit. Simply take the necessary parts to a local machine shop for any specialized fabrication.) This feature allows both rotating shafts to spin smoothly within the fixed support. Two "stop collars" (available at a good hardware store) were tightened onto each rotating shaft to maintain a fixed position lengthwise within its "mother" shaft.

To obtain a geometry which would help eliminate eclipse shadows (since this exhibit isn't about eclipses), the Earth/Moon model and its mechanism is tilted slightly with respect to the light beam. In our case, this angle was easily achieved because the backdrop itself onto which the mechanism is attached is slightly angled.

The plumbing-pipe (and its mounting flange), the steel tube for the hollow rotating shaft, and the smaller solid shaft were all acquired at a local home improvement warehouse. Because the 1/2-inch and 1/4-inch shafts didn't come machined to precision tolerances (they were actually just a bit large), it was necessary to first chuck each in a portable electric drill, and sand them down with the drill running until the proper bearing-fit tolerances were achieved. They were then polished in the spinning drill with extra-fine sandpaper to achieve a mirror-like contact surface, which would allow them to rotate smoothly inside the bronze bearings. (This grinding and polishing procedure could be avoided if precision-ground shaft stock is acquired.) After all remaining metal particles and abrasive powder was cleaned away, the shafts were assembled together using the stop collars and lubricated with a few drops of machine oil at each bronze bearing.

To spin the two shafts, two synchronous AC gearhead motors were fitted to the mechanism behind the backdrop and interfaced to their respective shafts via 1:1-ratio brass gear sets (Figure 5). The 1/2-inch hollow shaft is driven by a 1 RPM motor to revolve the "Moon," while the "Earth" is rotated by a 30 RPM motor through the 1/4-inch shaft. These motors are wired to the 120-volt AC supply through an illuminated momentary push-button switch activated by the observer.

As for the models themselves, the "Moon" is made from a 1-inch (25.4mm) wooden ball purchased in a craft store. On the other hand, you'll notice that the Earth model is not a complete sphere. Instead, it is a cut-section of a relatively small plastic dome. This design choice was made because the observer would only see the Earth model from "in front" of the display, and also because the video camera would need to be placed as close as possible to the center of the Earth.
Figure 6

Figure 7

Figure 8

Creating the Earth-View - Video

The Moon-arm also turned out to be the best location to mount the video camera. Because of the relatively small size of the model, a very small camera is required. The best solution turned out to be one of the tiny CCD board cameras currently on the market, housed within a suitably-small metal case. These cameras are quite small indeed—typically less than 2 inches (51mm) square—and only about 3/4-inch (19mm) deep. Given this small size, such a camera would tuck nicely behind our Earth model. The other advantage of such cameras is that they have built-in electronic shutters that automatically adjust their exposure, without the need for a separate and bulky iris control on the lens.

We purchased a black-and-white CCD board camera (since the Moon is mostly gray, we wouldn’t need a color unit) for about $80 U.S., and a metal camera housing for only about $20 more. The next issue we needed to tackle was that of the camera lens. The 3.6mm lens supplied with the camera gave a wide-angle view which would make the image of our Moon model show up too small on the video monitor. Although there are some specialized replacement lenses for
CCD cameras on the market, the longer focal-length units are most-often not designed to thread into the chip-housing of CCD board cameras, and the few that do exist are quite specialized in application - and therefore are quite pricey.

Because of this dilemma, we set out to make our own long-focal-length replacement lens. To do so, I first experimented with the lens that came with the camera. These are typically referred to in the video industry as "pin-hole" lenses - a term that we found initially confusing, since the classic "pin-hole camera" uses no glass optics, but only a tiny pin-hole to focus light. Actually, the "pin-hole lens" on a CCD board camera does incorporate glass, but instead of using multiple lens elements to correct for chromatic and other aberrations, these lenses are merely single-element optics. Aberrations that would normally be a major problem with such lenses are reduced/eliminated by stacking a tiny aperture (1mm or smaller) over the glass lens. Initially, you might assume that this tiny aperture wouldn't transmit adequate light, but in reality, the sensitivity of the CCD chip is so high, that it actually needs the lower light transmission afforded by the small opening.

After some experimentation, I discovered that I could make just the lens we needed from part of an old Unitron telescope eyepiece that we had stashed away in our attic area. I simply removed the outer barrel and all but one of the lens elements from the eyepiece, and cut a special aperture from black construction paper to glue over the plastic eyepiece-element retaining cap. In doing so, I ended up with a lens approximately 25mm in focal length, compared with the 3.6mm lens supplied with the camera. With the 1-inch Moon-model diameter and its 12-inch orbital radius, the Moon image nearly fills the video screen, and is razor-sharp when focused.

Experimentation showed us that, if we used an unshaded lens, we would get lots of lens-flare problems every time the camera rotated past our "Sun" light source around the "new Moon" phase. In fact, even fashioning a normal, black cylindrical shade for the lens wasn't enough to eliminate the problems. With such a shade, light would scatter partially down the flat-black inner walls of the lens-shade, which would still visibly flare the lens and also cause the camera's electronic shutter to reduce the displayed Moon-image brightness.

For this reason, we had to design a special lens shade with two ring-shaped light baffles built into it (seen in Figure 6 in cross-section). The main cylindrical part of the lens-shade is made from a short piece of thin-wall PVC plumbing pipe, which we painted flat-black inside and out. The light baffles were cut from black construction paper, with one positioned and glued about halfway down the tube interior, and the other glued onto the front. The rear end of the shade was then glued onto the front cap of the converted-eyepiece lens.

This entire lens assembly was then mounted to the camera via a special collar attached to the front of the camera's metal CCD chip housing (Figure 7). This collar is made from a short section of Schedule-40 PVC pipe which was side-drilled and tapped for set screws that were designed to hold the rear of the custom-built lens in place. Since the rear-end of the old Unitron eyepiece was slightly smaller than the inside of this PVC collar, we simply wrapped a couple of turns of masking tape around this rear portion of the lens which took up the dimensional slop. (Admittedly, this isn't an elegant engineering solution, but it is, nonetheless, quite effective, especially given the low mass of the lens.) The set screws allow the lens - once installed and focused - to be positively held in position. Once mounted in its metal housing, the camera was then attached to the Moon-arm hub with machine fasteners in such a way as to allow the camera aim to be...
adjusted for centering the Moon model in the video field of view.

Before mounting the Moon arm onto its shaft, it needed to be balanced. With the Moon ball hanging off to one side and the video camera strapped-on, the center-of-mass didn't coincide with the center-of-rotation. Preliminary tests with this unbalanced arm assembly mounted onto the rotating shaft revealed that the motion wasn't smooth and consistent. Experimentation with the unmounted arm suspended via its center-hub's shaft-hole on a thin metal hand-held rod gave us a rough idea of the degree of imbalance. By positioning the arm on the rod in several different rotational orientations, it was possible to gauge this imbalance fairly well (similarly to the procedure used to gauge the imbalance of a telescope tube on a German equatorial mount). By strategically placing and fastening a stack of steel fender washers to the proper position on the arm hub, the arm's imbalance was virtually eliminated. An application of flat black paint on this assembly (except for the Moon ball and camera, of course) readied the Moon arm for installation.

'Round and 'Round - Slip Rings

However, there is another very important component that is required to make the video camera work in this application. Despite having a camera mounted on a rotating shaft, power and video signal must still be routed between it and a power supply and video monitor. Achieving this requires the use of a slip-ring assembly. We had the option of incorporating a used slip-ring and contact set from a star projector to deal with this issue. However, we opted instead for a new, commercially-available assembly manufactured by Litton Poly-Scientific (1213 North Main Street, Blacksburg, VA 24060; phone 800-336-2112; fax 540-953-1841; web address - www.litton-ps.com). Their product AC4598 (Figure 8) seemed well-suited to the task. Litton Poly-Scientific advertises this unit as "compact and maintenance-free... (with) no lubrication required." It also features a "fiber brush technology... minimizing contact wear and extending operational life." Despite the $250 price-tag for the basic 6-conductor unit, the maintenance-free and fully-self-contained characteristics made it well worth the price, in our estimation. The black color of the slip ring assembly's cover-housing is also well-suited for this exhibit application. Aside from making the simple wiring connections to our video and power circuits, the only additional requirements for using the unit were the machining of a special adapter to mate the slip ring assembly's center bore to our smaller-diameter "Moon shaft" and a simple index pin attached to the support shaft to engage into a plastic fork protruding from unit's rear cover. This last addition would keep the stationary part of the slip-ring assembly from rotating during the exhibit's operation.

With all of the mechanical components ready, the Earth/Moon mechanism was finally assembled (seen in a side-view taken inside the exhibit case in Figure 9). The motors and drive gears aren't visible in this shot. As mentioned earlier, they are mounted behind the exhibit backdrop (seen on the left-hand side of this image).

"Juice" for the Video

The CCD board camera requires a consist-
The GSS-Helios (GSX) features 25,000 stars reproducing a sky seen only from space. Digital shutters mean panoramas without stray stars twinkling through the image. Computer-assisted functions give manual mode the ease of auto mode without replacing the lecturer. The list of special GOTO features goes on and on. Contact your nearest representative and find out what your planetarium could be like.

The G1014si offers Space Simulator functions plus GOTO's exclusive automatic lamp replacement mechanism. No more shows lost to lamp burnout. With the G1014si, your spare lamp leaps into action with a simple touch of a button at the console. Simple, fast and efficient. That's a GOTO Planetarium.
OMNISCAN™

Edu-Tainment at the Speed of Light
AVI-Imagineering With Lasers is offering the world's only FULL-DOME (360 x 180 degree) FULL-COLOR laser projection system — OMNISCAN.

OMNISCAN works perfectly with all forms of starfield and special effects projection systems
- Planetariums
- IMAX Theatres
- IWERKS Theatres

Spark the imaginations of audiences with a dazzling array of effects and colors that illuminate astronomical/scientific concepts in ways that only animated full-color images can communicate.

This cutting-edge technology is now available worldwide and ready to help move your programs forward at the "speed of light." Entertainment laser show rental arrangements are available.

For more information please call or write to AVI-Imagineering with Lasers
1-800-952-7374 (407) 859-8166
President’s Message

Dr. Dale W. Smith
BGSU Planetarium
Dept. of Physics & Astronomy
Bowling Green State University
Bowling Green, Ohio 43403
USA
+1-419-372-8666 voice
+1-419-372-9938 fax
dsmith@newton.bgsu.edu

Sri Lankan Skies and Sir Arthur: A 2001 Odyssey
- Announcing a Special Conference -

A 2001 invitation!

The magic year is almost here. The year of Hal. The year of the Monolith. The year of the Odyssey. The year of the film that changed the world. The year that once was oh so far in the future. But now it is almost here.

You remember the film. Perhaps you saw it in 1968 when Clarke and Kubrick forever changed what a science fiction film should be. Perhaps you saw it later. But whenever it was that you saw it, the film was a masterwork of art. It redefined a standard, and all the future films have followed in its wake.

When the Space Odyssey first lit up the cinema screens, Sri Lanka was still called Ceylon, IPS had not been born, Apollo 8 had not circled the Moon, and most of us were not yet planetarians, and perhaps not even dreaming about it. But the film asked us who we were, and in its soaring mix of art and action, it inspired a new generation of spacefarers. Perhaps you were among them.

Stanley Kubrick the director is gone, but the brilliant writer Sir Arthur C. Clarke is alive and well and living in paradise. Paradise means Sri Lanka — “beautiful island” — and Sir Arthur, now in his 80s, is an honored icon in his adopted home.

I had the high honor of meeting Sir Arthur in February during a visit to Sri Lanka. Though I didn’t quite muster up the courage to ask him, I’d bet he didn’t really expect to see the film’s magic year for himself. But that year is almost here, and with it you’ll have the once-in-a-lifetime chance to meet Sir Arthur in the magic year itself.

What’s the occasion? A unique international conference — “Sri Lankan Skies and Sir Arthur: a 2001 Odyssey” — will convene in Sri Lanka next March. Sir Arthur himself will deliver the keynote address. Paper sessions and panel discussions will center on the theme “Teaching the Universe in the 21st century,” a subject that’s important to us all. Three days in the island’s interior will feature night sky observing under truly dark skies, day and evening visits with enthusiastic astronomy students and their teachers, and time to see the landscape that bestows the island’s name which means “resplendent land!” Yes, it’s a long airplane flight to get there, but if the week I spent in February is any indication, you are in for a real treat if you attend this special conference.

A Day to Remember in Sri Lanka’s Planetarium

Sri Lanka is served by a single planetarium in the capital city of Colombo. Directed by T. C. Samaranayaka, the 23-meter, 570-seat facility carries a busy schedule of school and public shows (many in English) that serve Colombo and other nearby cities. Recently equipped computer rooms provide internet resources to many students and a new suite of video, slide, and effects projectors join the Zeiss under the dome. “Sam” also has established a traveling telescope program that has by now served nearly half the students in all of Sri Lanka — and so it should come as no surprise that he is planning the conference agenda to include real night observing under ink-black skies.

My visit to Sri Lanka coincided with the annual awards ceremony honoring top-notch astronomy students and the winners in the year 2000 national astronomy exhibition sponsored by the planetarium. En route to the planetarium, the driver kept reiterating that we needed to arrive at exactly 10:15 am. Soon enough, I saw why. Sir Arthur was waiting for the IPS President, and we were introduced and shook hands. But the conversation was brief, for an honor guard attired in brilliant red awaited our attention. They sounded the call with their sea horns, they beat out the step with their drums, and then to our front and sides, they led the way to the dome. It was really a moment of honor for all planetarians.

Sacred space, someone called our domes. Perhaps. But even if not, this procession moment was a reminder to me that the work we do is significant, that it affects lives, and that we are indeed a global profession. In my remarks to the assembled students, I spoke of the common thread — our passion for the universe — that unites us and brings us together across the lands and languages. I really did feel very much at home in another dome nearly ten thousand miles and a dozen time zones away from the one I work in — at home because the room was filled with kindred spirits, from my gracious host to the throng of students.

My gaze stole across the room to the 400

Sri Lanka Planetarium

Vol. 29, No. 2, June 2000
students and teachers who had assembled there. We came from different nations, different cultures, different languages almost, different generations, different faiths, different economies. But the thread we shared in common was the greater one and after the formal ceremonies, we could have spent all day talking. As Sam, Sir Arthur, and I alternated in handing out prizes, I stood in awe of the talent that walked before me. Even though I was handing prizes to them, the real flow of inspiration came from them to me. Look at what they have done already, I thought. Look at the enthusiasm that flows from their shy smiles. What will they be doing in ten years, I wondered? Will they maintain this interest as adults, I both hoped and expected. Might some go into the sciences as a career? The late Cyril Ponnamperuma, an early leader in exobiology, was a son of Sri Lanka. At least one future scientist was among the award winners, a young man named Jagath, and the next morning Sam and I visited him at his jungle home to see his self-made nature museum, observatory, and other projects. I hope I can see his work again in another ten or twenty years. Again, Sam and I agreed that it was the student

who, quite unknowingly, had inspired us. Is it not often so? I will long remember this day as a highlight of my career as a planetarian and member of IPS.

Conference Activities

Conference host T. C. Samaranayaka is passionately concerned with the issues of education and that focus has shaped the conference theme – “Teaching the Universe in the 21st century” – which centers on education. So this conference on Asian soil provides a chance for a special set of planetarians and astronomy educators to meet and share insights on this topic that lies at the heart of all that we do in the planetarium. Depending somewhat on the mix of registrants, the formal sessions will be a mixture of papers and panel discussions. And what more appropriate time and place than in the year 2001 in the adopted homeland and presence of the man whose *2001: A Space Odyssey* inspired so many of us.

So the conference will open with two days of formal sessions at the conference hotel in Colombo. These days will also include a visit to the planetarium and the address by Sir Arthur.

Then the conference will leave Colombo and move to the island’s cooler interior. These subsequent days will provide ample time for those invaluable informal discussions that follow the formal sessions. To help plan this more mobile part of the itinerary, Sam and I departed Colombo after the awards ceremony described above and we drove northeast up to the village of Habarane which lies just north of the island’s center. Here I exchanged the S-star Lanka Oberoi Hotel of Colombo for a delightful chalet at the Habarane Lodge, a very pleasant lakeside resort. It would have been easy to spend the day lounging around the lawns and open-air dining areas. But we were scouting out potential night-sky observing sites for the conference and found a prime site a few minutes’ walk from the Lodge. Free of both intrusive and indirect lighting, this generous rock outcrop provides an accessible and spacious area with a clear 360° horizon. At about 8° north of the Equator, the site will provide a clear view of the southern sky for us boreals starved for the sight of the Southern Cross and a clear view of the northern sky for australis begging for the Big Dipper. Conference plans call for two nights at the Habarane Lodge with observing on
that crown the island’s 2000-meter crest. A few switchbacks more, and then the bus will descend into Bandarawela, a pleasant town perched in the southern highlands, and graced by a classic 1890s colonial style hotel. Here will be the final observing site, most likely at an outlying school, where again we’ll meet the local students and share sky-watching together.

Along the way from Habarane to Bandarawela, Sam and I scouted out a variety of other observing sites but in the end preferred the two mentioned here as providing the best combination of dark skies and ease of accessibility. One stunning site we checked was called Lipton’s Seat (this is tea country, after all). Hidden at the end of a precipitous heart-stopping jeep trail twisting above the tea fields in the middle of nowhere, it was a thrilling site that few visitors ever see (we walked in the last 2 km), but we feared the trail would be too risky after dark and the ride too far after a full day already on the road. If you are ever in Sri Lanka with a full day to spare, try to get there — regretfully, there’s not enough time in the conference schedule to make it.

Both nights, weather permitting, or alternate activities in the unlikely event of clouds.

Another unique feature of this conference will be the opportunity to meet local students and teachers. Tentative plans call for a visit to a school near Habarane on the afternoon we arrive and the chance to spend time with students chosen for their good work and active interest in astronomy. Later, they will also join us for night-sky observing. We’ll have some time to see the skies ourselves first, and then we’ll help share these skies with the students. We are teachers, aren’t we, in our various ways, and don’t we learn best by sharing our newfound knowledge with others? While the larger scales of an IPS conference tend to hinder opportunities like this, the more intimate scale of “Sri Lankan Skies...” will encourage this type of activity.

From my own time spent with students at the awards ceremony described above, I can assure you that this will be a real treat, though I realize that most readers need no such persuasion. While I enjoyed giving my formal remarks and a solar system talk at the ceremony, it was much more fun answering questions and enjoying the give-and-take of the informal conversation afterwards where the “expert” has as much to learn as the “student.”

You can also reach for the stars in a quite different way at Habarane, for it is only a short drive to the world heritage site of Sigiriya. This 5th century fortress sits atop a stunning rock outcrop that presses skyward 600 feet (200 meters) from the surrounding plains. You can work off all that tasty seafood and rice you had for lunch by climbing to the top. It is only 1000 safe steps up, and even the acrophobic prez managed to conquer them. You are a wee bit nearer (half of) the stars when you reach the top, the view is incredible, you earn a spell in the King’s Seat (with no danger of a head-lopping to follow), and the walk down is easier, thanks to both gravity and exhilaration. Conference plans call for an afternoon visit to Sigiriya with a chance for the adventurous to climb it. Earlier in the day there will likely be time for an elephant ride or a jeep safari to look for wildlife.

From Habarane, the conference bus will wend its way south into the central highlands, and exchange low-lying rice paddies for tea fields that cling to hillsides once you’re above a few hundred meters elevation. The route will climb to the former capital of Kandy in a scenic mountain setting and twist on up to Nuwara Eliya, clinging to the slopes...
After a final night in Bandarawela, the conference bus will return to Colombo, with a cultural stop or two en route if time permits, and depending on whether the preceding night was clear or cloudy. There will be a while to relax in Colombo before transfer to the airport to meet the flights departing for home.

**Schedule**

So the tentative conference agenda is this:

**Sunday, March 18:**
- Late night arrival in Colombo (or arrive one day earlier)
- Overnight at Lanka Oberoi

**Monday, March 19:**
- Conference begins early afternoon
- Paper sessions/panel discussion
- Visit to planetarium
- Overnight at Lanka Oberoi

**Tuesday, March 20:**
- Paper sessions/panel discussion
- Address by Sir Arthur C. Clarke
- Overnight at Lanka Oberoi

**Wednesday, March 21:**
- Bus to Habarane (morning)
- Visit to school (afternoon)
- Night-sky observing (evening)
- Overnight at Habarane Lodge

**Thursday, March 22:**
- Free time in morning, or elephant or jeep safari (morning)
- Visit to Sigiriya fortress (afternoon)
- Night-sky observing (evening)
- Overnight at Habarane Lodge

**Friday, March 23:**
- Travel to Bandarawela (day)
- Night-sky observing (evening)
- Overnight at Bandarawela

**Saturday, March 24:**
- Return to Colombo (day)
- Late evening departure for home

**Conference Arrangements**

All flights to and from Sri Lanka use the Bandaranaike International Airport a half-hour drive from Colombo. I found that arrival formalities were easy and currency exchange was readily available at the airport. Most international flights tend to arrive and depart in the middle of the night due to the time zone Sri Lanka is located in. The conference will provide transfer between the airport and the conference hotel in Colombo on both arrival and departure.

Prices in Sri Lanka, including lodging, food, and transportation, will seem quite reasonable to most visitors. The conference registration fee will cover conference costs, all transportation within Sri Lanka, and most meals. The registration form will also include lines to reserve and pay for hotel accommodation.

The conference dates will be March 19-24, 2001, set to fall near a new moon late in the dry season, and chosen to give the best chance of clear, dark skies, moderate hotel rates, and (for most) low-season airfares. These dates are also chosen to allow all international travel to be completed on the weekends before and after the conference.

For most delegates, the most expensive item will be the international air travel, and the conference organizers expect to seek a special conference rate for a common flight from a European gateway to assist European and North American delegates. Final prices are not yet determined at the time I am writing this in mid-April.

I spent my two nights in Colombo at the Lanka Oberoi, which will be the conference hotel and site for most of the sessions in Colombo except for events at the planetarium. The Oberoi, a 5-star hotel, is an excellent and comfortable facility that is a frequent conference site in Colombo, and in fact a small international meeting was being held there during my days in town.

The food was excellent both at the Oberoi and throughout my stay in Sri Lanka. The hotel buffets tend to offer both Western and Lankan foods, and the local restaurants serve a tasty Lankan menu. The native dishes are usually based on rice mixed with a tempting variety of seafood, veggies, or meat. It helps if you like it spicy and if you don't ask what everything is, and it’s even better when you get to enjoy it at an open-air table.

Despite press reports that might have led me to expect otherwise, I felt quite safe at all times during my days in Sri Lanka, and found no cause to be worried about personal safety beyond the normal precautions I would take in any large city, and the countryside along the conference route is as peaceful as countryside anywhere. Though few Americans realize it (I did not), Sri Lanka's beaches and highlands draw many European vacationers seeking to escape the winter's dark and gloom. Colleagues who had previously spent time in Sri Lanka told me to expect a warm and gracious welcome, and that is exactly what I found, and it is what you can expect too.

You can find further details in an article by T. C. Samaranayaka that will appear in the next (September) issue of the *Planetarian*. A conference web site will be opened soon; the URL is not determined at the time of this writing, but a link to it will be installed on the IPS web site. Look for a conference mailing in August or September.

So as you prepare to attend IPS 2000 in Montréal and start planning for IPS 2002 in Morelia, Mexico, here is a great way to observe that most special year in between — 2001 — in a unique way. I am looking forward to returning to Sri Lanka on this special occasion and hope that many of you will join me.
Planetariums on three continents

My flight to Sri Lanka took me across the Pacific and a 22-hour connection in Bangkok gave me time to spend a delightful day at Bangkok Planetarium with Salin Weerabutra and her colleagues. The setting of the 20-meter dome is exquisite. Enough that it's next to Thailand's premier science and technology museum. The museum's exhibits, by the way, give due credit to Thailand's hard-working king, who is a strong supporter of the sciences. Memories of shivering my way to Detroit Metro airport thirty-some hours earlier faded at the sight of the park-like setting and colorful flowers that carpet the planetarium grounds. Above this green sea, you spot the dome. Yes, there's a sign that tells you it's the planetarium, but you really don't need the sign because this dome shows the Universe on the outside as well as on the inside: it is painted with galaxies! Inside, a well-done exhibit area surrounds most of the planetarium. The more permanent exhibits on astronomical history, spaceflight, planets, stars, and galaxies were joined by an interesting display of past planetary clusterings akin to this May's grouping, visible proof that they don't mean the end of the world each time. Once in the planetarium, I of course couldn't understand the show's narration (it was in Thai), but the images let me follow the story of planetary exploration and it was clear to me that the rest of the audience (who could understand the narration!) knew they were seeing a good show. The day sped by too quickly, and a late evening flight took me on to Colombo. (An aside to anyone who complains about airline food: fly Thai — not only is the food both good and plentiful, but they serve a full hot meal on the 10 pm flight to Colombo and on the 1:30 am return flight!)

Three weeks later found me in Sydney, Australia on spring break. Or should that be fall break? I spent a while looking around the recently restored Sydney Observatory. This historic structure is almost in the shadow of the Harbour Bridge and its exhibits chronicle the extensive stellar transit studies performed there decades ago as well as aspects of modern astronomy. There is also a small planetarium that is used occasionally when school classes visit.

Soon after, I made the short hour’s drive down to Wollongong to visit Glen Moore and his newly rebuilt Wollongong Science Centre. Since its predecessor was lost to a disastrous mudflow two years ago, Glen has been hard at work acquiring fresh funding and building a new and improved facility. The new centre is securely elevated as protection against any recurrence of another hit by a mudflow. Wollongong is an aboriginal name that means “place of big waves.” The city is located on a coastal plain backed by the Great Dividing Range and washed by the Tasman Sea. The Science Centre is east (shoreward) of the city and not too far from the shoreline. An observatory turret attached to the Centre houses a DFM telescope that feeds an image to a screen in the exhibit area. The planetarium sporting its new Zeiss ZKP3 was ready to run, though in Oz they have to re-narrate most shows they might buy from the US in order to get the accent right. The exhibits were nearly all ready when I saw them in March, a couple months before the scheduled opening in May. Most of the exhibits are interactive (I didn’t crash the car in the driving test, thank you) and every age will find some exhibits that are right for them. One of my favorites was elegantly simple: a horizontal parabolic surface with a probe at the focus and a little stairway beside to an adjacent platform. Drop the ball and...
under one dome. One topic of discussion at the meeting was work toward the creation of a formal association of Spanish planetariums. This society, once formed, would apply to become a regional affiliate of IPS. Thanks to the steady encouragement of Asunción Sánchez (Madrid), the careful work of Antonio Camarasa and José Carlos Guirado (both Valencia) in drafting a proposed constitution, and the commitment of all present, a firm foundation has been established. Discussion identified some further aspects that need attention. It's likely that the remaining work can be completed relatively soon, and then IPS can expect an application for its twentieth regional affiliate. I would be remiss not to mention the wonderful meals we enjoyed at the meeting, even if they operated on Spanish time – lunch at 3 pm, dinner ending around midnight! L’Hemisferic’s shows combine the stunning Zeiss VIII Universarium starfield, lavish graphics from the AVI Omniscaen, and video and still images, and the two opening shows are the adept creations of Bill Gutsch. En route home, I also had the good fortune to see a couple shows in the Madrid Planetarium, led by Asunción Sánchez, whose energetic and educational shows are filled with exquisite video, pan, and all-sky scenes.

Now in those statistics courses I enjoyed many moons ago, we were warned that you can't make sweeping assertions from small sample sizes with any confidence, but let me stretch that rule just a bit. If I take this small sample size of planetariums on three different continents all seen within a two-month span, it is very tempting to conclude from that in all its diversity, our profession is a healthy one. One filled with talented, dedicated people each sharing the cosmos in their own distinctive ways. Ways using the resources at hand and attuned to the local audience. As in a gene pool, it is in our diversity, not in our sameness, that we find our strength.

**Signs of strength**

As I’ve worked with Shawn Laatsch the last several weeks in the labor of producing the current edition of the *IPS Directory of the World’s Planetariums*, I’ve seen another sign of strength as well. In the long labor of opening dozens if not hundreds of planetarium web sites, I sometimes paused and lingered a while. Sometimes they were web sites of people I knew. More often they were web sites of people I didn’t know. But as I browsed around those sites, and saw the diversity of how they were designed and the diversity of how their planetariums (and frequently, observatories) were used, the site often seemed to convey a sense of excitement about the planetarium and its work and mission — in the pictures, in the text — “come see this” — “look at this program or project!”

Taken together, these sites bespeak a profession that’s excited, diverse, and committed to astronomy education. Though each of us can know only a fraction of our colleagues in person, a look at some of these sites can give a glimpse at the work of colleagues we may never meet. If you can find a little spare time (and that is a rare commodity among us), open up that new *Directory* you just received (or go to the “planetariums of the world” page on the IPS web site), and then try opening a few of the more than 700 planetarium web sites it lists and take a virtual tour. I think you’ll find it as fascinating and inspiring as I did.

**Speaking of education**

Last time, I made brief mention of a planetarium panel at January’s AAS meeting in Atlanta. As many other research societies are doing, the American Astronomical Society is giving increased attention to education. In addition to an oral paper session on education, AAS meetings now include a special session “Astro 101: a continuing dialog”. Organized by Doug Duncan and Gina Brissenden of the AAS Education Office, the session meets on the afternoon preceding the full meeting’s opening reception and features three successive panels discussing different topics. For the Atlanta meeting, I suggested a panel on the use of planetariums in teaching introductory college/university astronomy. Besides myself as chair, the panel included Dr. Stephen Doty (Denison Univ., a small liberal arts college), Dr. Mike Bennett (ASP and DeAnza College, a community coll.), and Dr. Doug Ingram (Texas Christian Univ.) substituting for Dr. Paul Hodge (Univ. of Washington and Editor of *AJ*). We each described how we use our planetariums (that is, the star projector) in teaching “Astro 101”. We found the phenomena we tried to demonstrate
were much the same (stellar, solar, and planetary motions), that none of us spent too much time on constellations, and that we had a variety of interactive modules depending on class size. If you're interested, you can retrieve our handouts from the AAS web site at www.aas.org/education/oldhands.html by clicking on the links that say "real sky and planetarium panel". These “Astro 101” sessions are drawing more than 100 people at each meeting, and the education session in the main meeting is also well attended. There are many astronomers at colleges and universities who care deeply about education, as we do. While there were not many people in the panel’s audience whose institutions had a planetarium, the value of our facilities was well recognized by our audience and I think we helped raise the visibility of planetariums among our AAS colleagues at the session.

In the US at least, there are a lot of planetarium people at colleges and universities, whether or not we see them at IPS or regional affiliate meetings. A search of the IPS Directory reveals that more than 300 US planetariums are at colleges (including community colleges) or universities, nearly twice as many as are at museums or science centers, though the majority of US planetariums are at schools. While some of the collegiate planetariums are large public facilities (such as Morehead), 75% are smaller than 12 meters and thus almost surely find use as an astronomy classroom or laboratory. So here is a widespread use of the planetarium that I think has not received too much attention in our Society, and we might do well to try to remedy that.

If you are a subscriber to dome-1, you probably noticed the suggestion by Deb Fuller that IPS should have an Education Committee. This was an excellent idea and I have authorized the creation of such a committee. I am also pleased to report that Gary Sampson has accepted my invitation to serve as chair; Gary directs the planetarium at Wauwatosa West High School in Wisconsin USA, is president-elect of GLPA, and won the ASP's Brennan Award in 1994 for substantial contributions to the teaching of high school astronomy. Gary is an outstanding educator and I am sure that he will provide superb leadership to this new and important committee. Several US planetarians responded to my call for committee volunteers on dome-1 and as I write, we are also recruiting international members as well and will be defining the specific tasks of the Committee. We can look forward to much productive work from Gary, Deb, and their fellow committee members. We are all, in our various ways, educators, and the creation of this committee recognizes the educational mission that lies at the heart of what planetarians do.

See you in Montréal

The world’s planetariums are spread among at least 88 countries at last count. (There are also 88 constellations, 88 keys on a piano, 88 counties in my home state of Ohio, and 88 papers in some packages of muffin cups.)

Once every two years we assemble as a profession in the biennial IPS conference, and we are on the verge of doing that again as IPS 2000 in Montréal opens on July 9. Conference host Pierre Lacombe and his team have been working hard to create a great conference and I hope that you've made all your plans to attend, greet old friends, make new ones, share your work and
insights with the rest of us, learn a lot, see
great new products from the vendors and
exhibitors, and return home freshly inspired
and a bit wiser.
IPS Council will meet in Montréal on
Sunday, July 9, just before the conference
opens. As always, your suggestions are wel¬
come (and your volunteering to help is even
more welcome!), so please convey your
thoughts to your affiliate representative or
to the officers.

Nightfall at noon

Do you take day and night for granted? Sure, you do. Unless you live in the arctic,
the passage of sun-time and dark-time is a
normal part of your life. If your planetarium
is a classroom, you probably show this diur¬
nal motion to your classes. You show how
the Sun’s rising and setting points slip north
and south with the seasons and you show
how the length of daylight waxes and wanes
from solstice to solstice. You may even show
the midnight Sun and explain the endless
days of the arctic summer. My classes at lati¬
titude 41°N are fascinated by this, so foreign is
it to their everyday experience.

The high arctic world is now enjoying its
brilliant summer. The days are already end¬
less, the warmer temperatures will follow, and
the pack ice will melt, though in some places not until August. In Spitsbergen, the
island of “pointed mountains” far to the north of North Cape, Norway, the Sun has
not set from the time I write this in mid-April until you read it in mid-June, and in
fact will not set again until August.

But this polar world has a dark side, and
that is the winter night. To most of us, this
night is a stranger, but a couple days after
perihelion passage back in January, the bore¬
al forces caught hold of me and I found
myself flying into the arctic night.

The Sun set behind us as the jet sped north.
We had left Oslo, Norway (latitude 60°N) in
the dim twilight of an overcast 9 a.m. and
thankful I was to have my camera fortified
with expensive 1600 speed film. As we
climbed through the cloud cover, the Sun
peeked out for a few minutes. But it lay to
the south and as our plane pulled away to
the north, the clouds soon swallowed up our
daystar, and I switched on the reading light
above my seat.

Ahead, I spied a dark haze rising up from
the cloud bank beneath. Bad weather must lie
ahead. But half an hour later, as twilight
faded, the mist was no nearer, though per¬
haps a bit thicker. Then I realized that the
dark mist was no storm at all, but rather was
the shadow of the Earth cast on the sky by
the sinking Sun, the same shadow that we
see cast on the Moon during a lunar eclipse.

Later in the morning dark, we made a
bumpy descent into Tromsø, at 69°N home
to the Nordlysplanetariet, northermost of
our domes in the world. When I’d last been
there a decade earlier, it was in the endless
light of summer and then I had relished the
dark of an interior room as a guest in the
home of planetarian Erling Husby. But this
time the landscape was draped in the deep
twilight of 11 a.m., the faint promise of a
weeks-gone Sun whose return was still many
days away.

Soon we were airborne again and as my
watch slipped past noon, the last hints of
twilight faded away, and night fell. When I
wrote the first draft of this paragraph 60
hours later in my room at the Svalbard Polar
Hotel, it had been dark ever since, and the
midnight scene from my window looked
just like noon!

But back to the plane and noontime. A
steady light in the eastern sky caught my eye
by surprise. Jupiter? I knew that at home that
January noon was the south at 6 p.m., so
I reasoned it must rise about noon. Except
for the Moon, I’d never seen anything rise at
noon. Yet there was an easy way to identify
this light. I looked again, and this time found
Saturn, fainter than Jupiter, to the left, and
below, just as it should be. Presto — planetaris
at noon, and from 10 km high at that.

But then as I watched over the next hour,
the planets seemed to twist around. As our
plane sped north a degree of latitude every 9
minutes, and its path bent around the curve¬
ture of the Earth, the sky twisted back in
response, and by the time we landed an hour
later, Saturn, still to the left and fainter, was
now clearly above Jupiter, as the ecliptic
angled down toward the unseen Sun.

We set down in Longyearbyen, the “capita¬
l and metropolis” of Spitsbergen. At 78°13′
north, this modern town of 1400 is the most
northerly community in the world, aside from
a handful of scientific, weather, and
military outposts. It was my second time to
Spitsbergen — the first was a summer visit in
1990 following the IPS conference in Borlänge.

As I stepped off the plane, the air was sur¬
prisingly warm — a toasty -6°C (23°F), barely
ten Celsius degrees cooler than my summer
visit — and my minus forty clothing re¬
mained neatly folded at the bottom of my
duffel, unused.

Later that afternoon, I went stargazing. If
only those pesky thin clouds all over the sky
would go away, I muttered to myself. But
didn’t go away and they kept changing shapes — from sheets to graceful swirls to
scattered puffs — and they held just the
taintest hint of color — and soon it dawned on
me that I was searching for stars behind
the sheen of the aurora, just as our colleague
David Leverton in Watson Lake, Yukon,
must often do.

So I faced north, secured the Big Dipper 45°
high and right-side-up, confirmed my foot¬
ing in the snow and ice, and twisted my gaze
far, far up and found Polaris almost at the
zenith, higher than I’d ever seen it in the real
sky before, though it all seemed strangely
familiar from North Pole demonstrations at
home. Cassiopeia led the parade of stars

A January noon in Spitsbergen.
around the southern sky. My eye dropped down past Perseus to the Pleiades, but any hopes of seeing Orion were dashed. Split by the horizon-hugging Celestial Equator, he would never climb above the tall mountains that inked the southern skyline at this arctic outpost.

This place is so far north that for a month around the winter solstice there isn’t even twilight at noon. Twilight fades in come mid-January, but the Sun itself returns only in late February. Then daylight grows by 20 minutes a day until the Sun goes circumpolar a month after the March equinox, not to set again until late August.

But in early January, the Sun and its life-giving light are long gone. Noon is as dark as midnight. Perhaps, I thought, this is what it might be like on a future Earth when the Sun has become a white dwarf and night follows night without sunrise.

Absent the Sun, we humans crave the light. The public lights in winter Longyearbyen burn “day” and night. In the nearly empty hotel, the lights are turned on in every room. Every house and apartment leaves some lights on all the time. A walk through the snow-draped town center looks the same at any hour. I slept with the room lights on, so much did I want to keep the dark at bay. When the wind and snow howled and the sky was hidden, only my watch told me the time.

Yet I knew that this was not the planet of a white dwarf Sun, though it surely felt as if it were. When the gale let up, there would be a plane to the Outside and Light, to classes and shows I would soon be missing, weather-bound, and to the AAS meeting in Atlanta I might still make if my rebooked flight plan (Longyear-Tromso-Oslo-Amsterdam-Detroit-Atlanta) actually worked (it did, barely).

The town name Longyear, by the way, has nothing to do with astronomy. It is the surname of an American entrepreneur who began coal-mining operations there in the early 1900s, and whose grandson I knew a half-century later as a sociology professor during my college days.

But the name, in a sense, has everything to do with planetariums. Our lives are governed by celestial cycles that we take for granted. Perhaps only when they are to extreme, as they are in remote and beautiful Spitsbergen, do we become so acutely aware of them. But our planetariums are superbly equipped rooms to teach about these cycles, to inspire people to watch the sky wherever they are, and to help our charges understand a bit more about the genuine connections between themselves and a universe that must often seem so far removed from their everyday lives.

You don’t have to go to the ends of the Earth to teach about the seasons and all the other real-universe topics that we cover. We can do that wherever we are—to explain the astronomical roots of the everyday world and to impart to our audiences and classes a sense of the excitement we feel ourselves. One of my best-ever student evaluations read “he took a boring subject and made it seem interesting!” We may not inspire all of our students to our own level of native passion for our chosen subject, but if we can light a spark of interest in the dark and teach a bit besides, we’ve done our job well.

Till next time ...

SHOW KITS AVAILABLE FROM THE

DAVIS PLANETARIUM

DON’T DUCK, LOOK UP! 20 minutes / 108 slides / $450
A fun, friendly and interactive exploration of the sky! Designed especially for Pre-K through 1st graders, this is an ideal first show for primary school audiences. Your presenter conducts this program blending live interaction with prerecorded segments.

LIFE BEYOND EARTH 31 minutes / 368 slides / $350
Consider the possibility of life elsewhere in our galaxy and throughout the universe.

DESTINATION: UNIVERSE, OUR FUTURE IN SPACE 38 minutes / 321 slides / $350
Journey into the future from a space station out to the stars.

WORLDS OF WONDER 25 minutes / 314 slides / $350
Investigate some of the exciting discoveries made about the worlds in our Solar System.

PARTNER • SHIP • EARTH 25 minutes / 250 slides / $350
Explore our planet from its violent birth to today and see how its wealth of resources make life possible. Find out how we can better preserve and enjoy the future of the world.

PRODUCTION KIT INCLUDES:
- Production Book with annotated script, visual list, special effects notes and educational materials
- Soundtrack on cassette, Dolby B, C or dbx
- Slides

PLEASE SEND ORDER TO:
Distribution, Davis Planetarium
Maryland Science Center
601 Light Street
Baltimore, Maryland 21230

Make check or Purchase Order payable to: Maryland Science Center

Indicate preferred noise reduction:
Dolby B, Dolby C, or dbx

For more information call the Davis Planetarium at 410.545.5976 or fax inquiries to 410.545.5974

MARYLAND SCIENCE CENTER
At Baltimore’s Inner Harbor
A Day in the Life of a Planetarian

- The third graders got off the bus at 9:55 A.M. This was their first trip to my planetarium; they'd never been here before. They entered the high school and were immediately met by a gruff-looking security guard who said loudly, "Come on! Move quickly and quietly!" He ushered them into the auditorium, which was already filled with 1000 high school students. The mood was chaotic, as there are only 700 seats in the auditorium, so students were sitting on the stage, on the floor. It was very noisy. Some of the 3rd graders started crying. One said "I didn't know you had police in your school! What have we done wrong?" Another said, "I thought we were going to look at the ceiling!" Most said, "What's happening? Are we going to be OK?"

On this particular day, every public school in the state of Virginia had been mandated to have a "tornado drill;" a practice of emergency procedures in case a tornado is approaching. The drill began simultaneously, statewide, at 9:45 collapse. About a half-hour after it began, the drill ended and the third graders finally did get to go to the planetarium to look at the ceiling! Why were we put in the auditorium was a mystery. If it had been a real tornado, the students could have watched the ceiling of the auditorium collapse.

- I called a local bookstore, asking for a book called Astronomy: A Self-Teaching Guide. The clerk said: "According to our computer listing, it is in the store. Would you like to wait while I go look and see if it is really here?" "Yes," I said. After a time, he came back on the phone and said he couldn't find it. He said, "I went right to the 'New Age/Astrology' section of the store and the book just wasn't there!"

A Telescope Story

My planetarium is located in a public high school in Richmond, Virginia. Last summer, a parent contributed a telescope to a principal at the school. It was a 60 mm refractor, still in its box, which looked like it had never been opened. I'm sure you can picture the box: 30 in. X 10 in. X 8 in. Inside was the telescope, a 5 X 24 mm finderscope, and parts to a wobbly three-legged stand. Also included was a 3x Barlow lens, 12.5 mm and 4 mm eyepieces, And a 1.5 X erecting eyepiece. There were pictures printed on the side of the box: wonderfully clear, highly magnified views of planets, the moon, and nebulae that no one would ever see through that telescope.

Since I am the astronomy person, it was passed on to me. I accepted it, but didn't really want it because I don't have a storage room. Where would I put it? I already trip over a terrestrial 'scope that someone donated about 15 years ago. The telescope might be useful if it was assembled, but I really didn't want to spend the time doing that. So I put the box in a corner, thinking I would find a use for it sooner or later.

The school year began, with the telescope box in the corner. I started teaching my astronomy class of talented and gifted high school students. One of the things I did was to give an assignment: a project worth 5% of their grade. I had made this assignment each time I taught the class. I wanted the requirements to be simple, so that they could use their creative minds to the fullest. The first year, the requirements read: "Do a project about astronomy on which you spend 10 hours. When you turn in your project on (date), you will also turn in a piece of paper telling me how you spent your 10 hours."

This is the seventh time I have taught this one-semester class. I have added a set of ancillary conditions to accompany this original assignment. These conditions have been added piecemeal because of situations that arose as each new group of "smart" students has attempted to do the least amount of work for the most amount of credit. Here are the ancillary conditions:

1) Students must sign a piece of paper that reads: "I understand that (date) is a deadline."
2) You cannot, on your accounting of 10 hours of time spent, list time noted as, for example: "5 hours- thinking of a project."
3) If two or three of you do a project together, each student must turn in a paper with his accounting of his ten hours.
4) If you intend to spend your hours thinking of a completely new theory of something - how the universe was formed, for example - you must use at least five of your hours in learning the usual theory of how the universe was formed and indicate your source(s) for learning of the usual theory.
5) Watching all the episodes of Star Trek and cross-referencing characters as to which episodes they appeared is not really Astronomy. Try something else.
6) I cannot stop you from doing your project on astrology. But I wish you wouldn't.
7) If you cannot think of anything, read a book on something in astronomy. I have some really interesting ones you might like to check out from me. (Note: no student has ever checked out one of my books.)

Once a month, during the semester, I asked if anyone had come up with any ideas for his project. Most of the students had a general idea of what they wanted to do. Billy just couldn't come up with an idea. Then I had an idea for a project he could do that would take just about 10 hours; I had to sell him on it. I said, "How would you like it if I lent you a telescope to look at the sky at home?" He thought that would be neat. 'There's only one catch," I said. "The telescope is in this box and needs to be put together,' I pointed to the box in the corner. He shied away from that idea until I reminded him that putting the telescope together would count in the 10 required hours. 'Besides,' I said, 'maybe your project could be about what it's like to put a telescope together and use it to look at the sky. You could tell all the difficult and/or easy things you found out about assembling a telescope.' He bought the idea. 'Yes!' I thought. 'I will get the telescope put together, then I can lend it out to people!'

The day for the presentation of the projects arrived. Billy came into the room. He had no telescope with him. "Where is it?" I asked. "Oh, I couldn't get a ride today, so I couldn't bring it. But I have my report ready, about the problems of assembling it, and what you can see with it, and stuff."

"That's right," I thought; "he doesn't need the 'scope to give his report."

Billy's report was very good; he experienced all the foibles that most telescope assemblers have endured. The instructions weren't very clear. It was impossible to keep anything in the field of view. The Barlow lens mostly magnified vibrations; the telescope wouldn't focus very well. "And," Billy said, "when I finally did get Jupiter and Saturn in the field of view, they didn't look anything like the pictures on the box!" "Ummm-h-mm," I thought, 'his is a lesson of frustration which explains why the school acquired that telescope in the first place. At least I will have a telescope in the corner in..."
Creating a new planetarium for the next century was easy. It only took the best of the world's most advanced multimedia technology.

Whether it is the drama of space exploration, the mysteries of quasars and black holes or the magic of the night sky, Minolta planetariums have the greatest audience impact. Long recognized for its advanced optical and mechanical craftsmanship, Minolta is now the world leader in integrating the latest imaging and presentation technologies. Today, Minolta offers full-dome laser projected graphics, all-sky computer imagery, giant-screen motion pictures, and the most accurate and realistic recreation of the night sky. By pioneering the integration of these "cyber-dome" technologies, Minolta has redefined the planetarium for the 21st Century. If you are planning a new space theatre or updating an existing facility, please contact your nearest Minolta representative today.

ONLY FROM THE MIND OF MINOLTA
We Take You There

E&S StarRider®
Evans & Sutherland's StarRider products let you create programs that engulf audiences in full-color, 3D, virtual worlds. The world's first real-time, interactive, digital theater system for planetariums, science centers, and entertainment venues, StarRider is the ultimate experience your programs will never be the same.

E&S offers a complete line of StarRider systems at a variety of price points so you can choose the system that is right for you. And, StarRider can grow with your theater—it's completely upgradeable. From cost-effective linear playback to real-time, fully interactive configurations, Evans & Sutherland can provide you with a system that will make your production come to life.

To see more of what StarRider can do, visit our web site at www.es.com.