

President's Message

Greetings all. I hope you're all well and looking forward to the conference coming up shortly. According to my Member's Guidebook, SEPA had its beginning in 1970 when a group of eighteen planetarians gathered in June. Jim Hooks was acting President; Jack Groce, acting Vice President; and Jane Geohegen [Hastings], acting Secretary Treasurer. I could say that we're in our 30th anniversary year. That's unofficial, since we weren't incorporated until May 1978.

If you don't have a Member's Guidebook it's likely because you haven't submitted your information. Contact Mike Chesman for details. According to Mike, several members will receive their copies at the conference, if not before. Thanks for submitting. I'm looking forward to the additional pages.

Getting back to our conference... during the past year, you have each done some amazing things, come up with new ideas, new programs, and new ways of doing things. No doubt you are writing up notes and preparing visuals to be presented at the paper sessions. If you don't think that a paper session is the best place to present, then consider putting together a poster paper. This is a format that several other groups, including GLPA, have used with success and one that we will offer for this conference. It is just a few short weeks until we come together to share experiences and make that knowledge grow and evolve. As they say, when we get together we are greater than the sum of our parts.

As many past SEPA presidents have done, I have gone back to look over past issues of Southern Skies. What a wealth of information it is! Granted, the reviews of astronomy computer programs of the 1980s are not much use these days. Still it is a storehouse of historical information about our organization at the very least.

Many of the articles are clever, entertaining, and as valuable today (like Dr. Strange's SEPA Circuits Clinic) as when they were written. I re-read unforgettable banquet addresses like Von Del Chamberlain's Through the Eyes of the Comet (August 84) written as they were given several years ago. I even found an article about how to

edit Dawn of Astronomy down to under 45 minutes in the same issue. I wish I had found it back around 1993. It would have saved me a lot of time. It was also interesting to see that many of the same problems we face today were addressed, like how to keep the attendance numbers up after a big event like Halley's comet.

Many of you have contributed regular articles to Southern Skies like the Book Review feature by Patrick McQuillan, Small Talk by Elizabeth Wasiluk, Digital Cosmos by former planetarian Erich Landstrom, and Featured Planetariums by Kelly Quinn.

We can't thank you enough for giving up some of your valuable time for those. Please keep up the good work and keep these articles coming, folks. There is also plenty of room in Southern Skies for articles on a variety of relevant topics. Many of you would like to see your names in print, but for some reason haven't sent any submissions. Please put your fears aside and put your words on paper.

I am certainly glad that I kept my past issues of Southern Skies. I hope you have done the same. For those of you who haven't or are new to SEPA, maybe in the future we can make them available to members as an archive on disc or something for a small duplication charge (if they aren't already). I will look into this possibility.

Along the way, I came across our Code of Ethics (Fall/Winter 1986-1987 Volume 6, numbers 3 & 4) adopted June 19, 1981 along with the Bylaws. By the way, these are also available on our Website at <<http://www.sepadomes.org>>. It is good to read them over every now and then. As the times change so do the needs of the Association and its members.

As I write this we're considering the total document and possible changes or the rewording of certain sections. There may be an article in this issue outlining proposed changes for your vote during the business meeting at the conference. If

David C. Maness
President
Peninsula Planetarium
Newport News, Virginia



not, then we either ran out of time or have decided that there are no changes needed at this time.

As I write this, I am watching the shuttle Endeavor dock with the International Space Station. The shuttle's first tests were in 1977 with its first flight into space in 1981 two years too late to help Skylab. During that time period SEPA became an entity.

Now, after 20 years of service, the space shuttle is at last doing the job it was designed to do. It is bringing a group of people together to work on a space station that is itself a product of international cooperation. In a similar way, we in SEPA will join together for another great meeting, this time in Richmond, Kentucky.

Like I mentioned last time, this is a joint conference with our friends to the north in the Great Lakes Planetarium Association region. Many of them have become SEPA members during this period, and many of you will want to join GLPA as well. We have differences and similarities, but perhaps the most interesting interactions will come from our differences, and through these we

can learn from each other.

These interactions began a while ago, when the idea of doing a joint conference first surfaced. Jack Fletcher came forward and graciously offered his facility for its close proximity to both regions. This will be the second time SEPA has visited Richmond, Kentucky. The last was nearly 11 years ago, shortly after the grand opening of the Hummel Planetarium. At that time, Jon Bell and I used one of the museum vehicles to drive the distance, picking up a few planetarians along the way in Richmond, Virginia.

The two of us took turns driving through the night, while our passengers made conversation or slept as well as they could along the way. I remember a heated pun competition on the van ride primarily between Jon Bell and Ken Wilson. I also remember that Jane Hastings stayed up late into the night to help keep me awake while I drove through the Appalachians on my shift at the wheel. We arrived safe and sound early the next morning. All we needed was a little nap and then we were ready for what turned out to be a great

IPS Report

John Hare
IPS Representative

The vote for the conference site for the 2004 IPS conference will be conducted via e mail with the deadline coming shortly after the SEPA/GLPA conference. I'll be available at the conference to discuss the pros and cons of the sites and hear your feedback in person. E mail me at <jlhare@aol.com> if you won't be at the conference. Please review the information on the contenders for the conference site and let me know which you prefer.

Chabot Space & Science Center
Oakland, California

Monday Thursday meeting proposed in mid July with optional attendance at the Astronomical Society of the Pacific's Universe 2004 Expo the preceding Saturday and Sunday. Proposed accommodations will be at the Oakland Marriott City Center at \$162/night.

Melbourne Planetarium
Melbourne, Australia
Dates: July 12 - 15
Round trip airfare: ~\$1500.

Pre conference tour: Tasmania, including its planetarium and observatory. The approximate cost will be AUD\$600.

Post conference tour: the Sydney Observatory, Wollongong Planetarium, Canberra Planetarium, the Parkes Radio Telescope, and the Siding Spring Mountain Observatory. The tour will end in Sydney. The approximate cost will be AUD\$750.

L'Hemispheric, Valencia, Spain

Dates: late June/early July

Pre conference tour: Madrid Planetarium, the NASA tracking station, and Pamplona Planetarium.

Post conference tour: the Granada Planetarium and the optical and radio observatories in Sierra Nevada. There will be an optional extended trip to the Canary Islands and to the observatories at La Palma.

Further details on all three sites are available in the December 2000 issue of The Planetarian.

I Need All the Help I Can Get

Two associate editor positions are vacant, and I'm looking for some dependable folks to take over these positions.

Erich Landstrom left Aldrin Planetarium in February to pursue other interests, and his position as Digital Cosmos associate editor is unfilled. I'm still trying to find out the disposition of two software packages I sent him to review and forward to Jack Fletcher to serve as door prizes at the Richmond conference.

The Featured Vendor column has been a no show in this journal for quite some time. I'm looking for someone to take over that column to publicize the equipment manufacturers, software developers, and automation designers who help us make the magic inside our star theatres.

If I approach you at the conference, please consider giving some of your time and talent to your professional association to make our journal better.

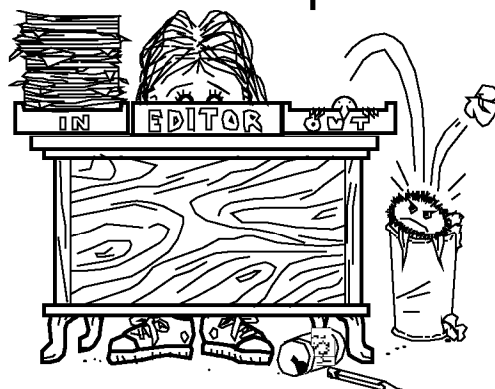
I'm also seeking volunteers to compile news from the planetariums within the state in which they reside. Many states are missing from our News from SEPA States.

So much for the Southern Skies editor. Now I'm speaking to you as Treasurer. Many contacted Jack Fletcher to complain about not receiving mailings about the conference. If you'd paid your dues on time...

Jack is unfamiliar with the database shared by all conference hosts, and he inadvertently sent out information only to those who had paid their dues by the time of the initial mailing. All the SEPA members, including those who had not yet paid, were in the database, but labels were printed only for those who paid their dues by March 15.

Some things are easily overlooked, but there's a final reminder included with this issue of Southern Skies. I hope I see you

Duncan R. Teague
Secretary/Treasurer
Southern Skies Editor
Craigmont Planetarium
Memphis, Tennessee



Mike Cutrera

Send your \$25.00 check made payable to SEPA to the following address:
Craigmont Planetarium, 3333 Covington Pike, Memphis, TN 38128 3902

Name		
Planetarium		
Organization		
Address		
City		
State	Zip	
Area	Voice	
Area	Fax	
Position		
E-mail address		

Small Talk

Elizabeth Wasiluk
Small Talk Editor
Berkeley County Plan-
etarium



Sometimes things have a way of working themselves out. You may have remembered my musings about wanting to be closer to my mom and being torn about my job here at Berkeley County planetarium. The situation rectified itself, though not in the manner I had intended. Mom passed away on Jan. 21, 2001. I had been getting better and had a particularly wonderful day before she had died. The nurses at the nursing home say she went peacefully and quietly in minutes, perhaps having a massive coronary. Not only will I miss her but also my many trips to Niagara Falls, New York, especially at Easter with all the ethnic foods. I spent one Easter here and found it rather bland. No one seems to do anything special. But I'll be happy not to feel compelled to go to western New York for every holiday, and it will ease the worry about funds.

While I was in Western New York for the funeral, technicians came and put new connections into the planetarium to access the Internet. Unlike the old one, this one seems to work. I needed to procure a 70 foot long cord, since they put it far away from where the computer sits, and the video projector best projects away from the star projector.

One of the first Web sites I accessed was NEAR. I wanted to see the pictures of the spacecraft coming in for a landing. Alas, the computer I was using has such a small hard drive that the computer techni-

cian could not put a graphics program on it, and all the pictures were just grey bars. What a letdown!

I do several planetarium programs that are open for

the general public and to be used by teachers to get staff development credit, since our regular programs are by reservation only. I don't do regularly scheduled planetarium programs as many of you do. One program was on getting a student payload into space. Many people ask about this, so I thought I would get all my information together for a planetarium program. If you need info on this topic, check out the Web site at the end of the article.

The other was on the Chandra X ray telescope, which hasn't gotten as much publicity as the Hubble Space Telescope. This is too bad, because, like Hubble, it is investigating the forefront of astronomy and seeing where the human eye can't see.

I learned much fascinating information from a workshop I attended last summer at the Wright Center for Innovative Science Education at Tufts University in Medford, Massachusetts, and from just putting together the program and looking at the Web site.

For example, did you know that Chandra was placed in space by the first woman space shuttle commander, Eileen Collins? Did you know the command center for the telescope is in Cambridge, Massachusetts, and it's the first one not to be located at a NASA Center?

I had a video to show about the history of exploring space by x rays, narrated by Nichelle Nichols who was commander Uhura in Star Trek. She was well picked since this was the name of one of the first x ray probes in the universe as well.

With the new Internet connection to my video player in the planetarium, I had hoped to show the Eros Web site to planetarium visitors who came for my solar system program, but not knowing that I didn't have a screen saver, I was perplexed when I went to switch the video projector to computer mode and the screen was blue. Oh well, I had better luck on March 27th when I showed my introductory class the SOHO Web site and a live image of the Sun. Check out those sunspots! They archive their Web site and you can go back and check out that day's image for yourself. I got out the Sunspotters and sure enough,

Betty Wasiluk has been in outer space ever since she finally got her Internet connection. This fetching likeness was created by former Intro to Astronomy student Ian Shickle.



I could see the same sunspots as the Web site was showing.

One of the things I like about the SOHO Web site is that you can download a screensaver that actually goes onto the SOHO Web site when you aren't using your computer and gets the latest image of the Sun for display on your screen. A pretty neat gizmo.

At Chandra's Web site, my favorite part was where you can send e-mail cards with Chandra images on them and witty sayings. I can hardly wait until I get e-mail!

For those of you not going to the June 21st eclipse, you can get a live Webcast to show in your facility. See if you can log onto the Web site to get information. (I list it at the end of this article.)

My students in my introductory astronomy class wish to go to either the Air & Space Museum and/or the Science Museum in Baltimore, and having the Internet handy saves phone calls to find out stuff. Hats off to Rick Merzouk, our new computer guy for getting this all straightened out for me.

Following is a summary of my favorite Web sites so far:

SOHO : <<http://sohowww.nascom.nasa.gov>>

Chandra: <<http://chandra.harvard.edu>>

Eros: <<http://near.jhuapl.edu>>

Student Payloads Website: <www.wff.nasa.gov/sem>

Live Eclipse Website: <www.museumclipse.org>

Happy surfing to you, until I hopefully see you in Richmond, Kentucky for the joint SEPA/GLPA conference.

Small Talk
continued

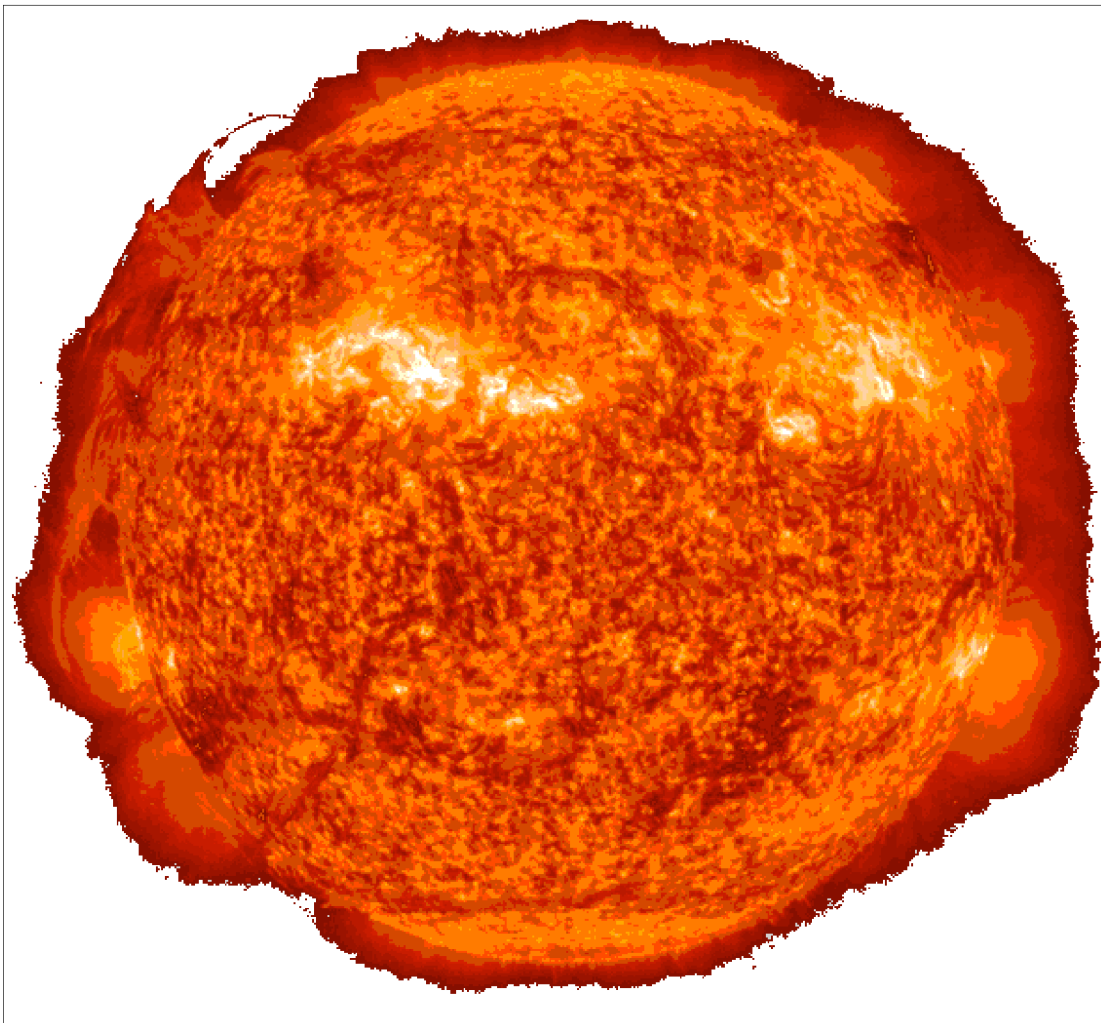


Image from the SOHO site: EIT 304Å image details many solar features and some elongated prominences. Prominences are huge clouds of relatively cool dense plasma suspended in the Sun's hot, thin corona. Emission in this spectral line shows the upper chromosphere at a temperature of about 60,000° K. Every feature in the image traces magnetic field structure. The hottest areas appear almost white, while the darker red areas indicate cooler temperatures. Taken December 5, 1998.

Book Review

World Without End

Patrick McQuillan
Book Review Editor
Alexander Brest
Planetarium
Jacksonville, Florida



Do we live on the best of all possible worlds? John Lewis, Professor of Planetary Sciences at the University of Arizona Tucson, puts this age old question to the test in *Worlds Without End*.

I have to admit that I misread the cover notes of the book. When I first picked it up, I had assumed that it was a book on current ideas of planet formation, and how the new extra solar planets are putting a slight kink into these ideas. In part, that's what *Worlds Without End* is. But it is also much more.

The author does vividly describe the formation of our solar system. He goes into great detail about the chemical and physical properties of the accretion disk, step by step, taking the reader through the processes of planet formation right up to the present day.

After explaining the solar system we have, he starts to tinker with reality by asking what if questions. What would the Earth be like if it were 10 times more massive than it is, or $\frac{1}{10}$ th the mass, and everything else stayed the same? What if, instead of a G type star, our Sun were an O, F, or K type star? Lewis plays with the parameters of the planets we know, and he tries to come up with many, if not most, of the types of environments we can expect to find elsewhere in the Universe.

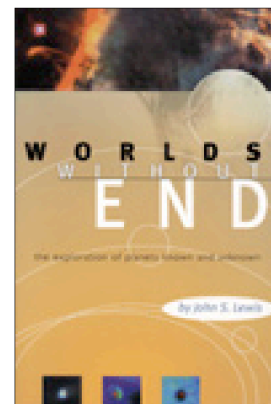
Throughout the book, Lewis is searching for places where life might somehow exist. He considers almost every location: Very Earth like planets, gas giants, satellites, and even brown dwarves. He even examines star systems with two or more stars and planets ejected into interstellar space.

Not surprisingly, Lewis dismisses many environments. A planet around an O or B type star would not have enough time to become biologically interesting before its

parent star died. The habitable zone around the lowest mass stars is so narrow that any planet there would be tidally locked at best, or ripped apart by the star's gravity at worst.

Throughout the book, the author straddles the thin line between being too general and too technical. I found the book to be stimulating rather than challenging. His writing style is very well polished, each thought logically leading to the next. Even the flow between chapters was almost seamless.

In essence, *Worlds Without End* is a thought experiment. It is a scientifically grounded flight of fancy. The author tries to answer the question of just how Earth like a planet must be in order to be considered Earthlike. I found his conclusions to be both thought provoking and entertaining.



Worlds Without End—The Exploration of Planets Known and Unknown
by John S. Lewis
Perseus Books,
©1998
240 pages, \$13.00
ISBN: 0-7382-0170-7

Reviewed by
Jeff Potter,
Ritter Planetarium
Toledo, Ohio



Right: Planets can be as different as relatives

Book Review

Off the Planet

If you read your Southern Skies journal from cover to cover and you should; you are paying for it, and it has lots of good info you'll recall that in the Winter 2001 issue I reviewed the book *Dragonfly* by Bryan Burroughs.

This book details the Shuttle/Mir missions. While the entire book is very interesting and held my attention, I was most interested in the portrayal of astronaut Jerry Linenger. He came across as arrogant, a loner, at times scared, frustrated and wishing to leave at once. Granted, he did a fine job during his stay on Mir, and he worked under the most dreadful of conditions. So it isn't surprising that he does not seem to support the program with one hundred percent enthusiasm.

I knew that Dr. Linenger had written his own book about his stay on the Mir Space Station. After *Dragonfly* it was next on my list of must reads. I was and was not disappointed after reading *Off the Planet*.

I was not disappointed in learning more details about conditions on Mir. The fire, the near collision with the Progress resupply ship, the communications problems, and just life in space were all fascinating topics about which to read. The section on how astronauts use the bathroom is very well done.

It seems as though Dr. Linenger read *Dragonfly* (©1998) and decided he needed to write his own book (©2000) so that he could make himself look better. In this book he's almost a superhero.

Dr. Linenger goes out of his way to beat the reader on the head with the knowledge that as an astronaut, he most definitely has the Right Stuff. Time and time again he reminds readers of his educational background, how his many degrees and past life experiences made him the guy to hold the crew together.

In relating the details of the near fatal fire on Mir, Dr. Linenger attempts to convince the reader that he was never in fear of losing his life. He never panicked, and he was the sole calming voice that allowed the crew to survive. Well it may be true that he did not panic. Panic on the part of any astronaut in that situation would have led to death.

I would have had more respect for the author if he would have just admitted, Hey, I was scared. I didn't know if we would survive, if we would all be able to leave and return to Earth, or if I would see my family again. But only briefly. Then we got to work trying to put out the fire and were too busy to think about being scared. I know that even if I were the best trained person for the job, I would still be scared in that situation.

During the one EVA during his stay on Mir, Dr. Linenger came across in *Dragonfly* as being unprepared and downright scared while outside Mir. In *Off the Planet*, the EVA was a joyous occasion where Dr. Linenger was leading the way and helping his Russian partner complete all the easy tasks. Certainly there are two different versions of what should be an easy to relate story.

In *Dragonfly* there was mention of a rumor that Dr. Linenger got into a fist fight with his Russian EVA partner while outside the Mir space station. In *Off the Planet* Dr. Linenger mentions this rumor and denies that anything of the sort ever occurred or came close to occurring. But in the other book, several Russian Cosmonauts and ground controllers mention that something happened.

Anyway, this really is a good book. It is easy to read, and the topic is enjoyable. I may have been a bit biased before reading the book in that I sort of expected that attitude from him. But if you get past the boasting and self-inflation, you will enjoy learning how people live and work in space.

Patrick McQuillan
Book Review Editor
Alexander Brest
Planetarium
Jacksonville, Florida



Off the Planet: Surviving Five Perilous Months Aboard the Space Station Mir by Jerry M. Linenger
McGraw Hill
Professional Book Group
© February, 2000
259 pages
ISBN 00713612X

Reviewed by
Patrick McQuillan



Digital Cosmos

The Dynamic Sun



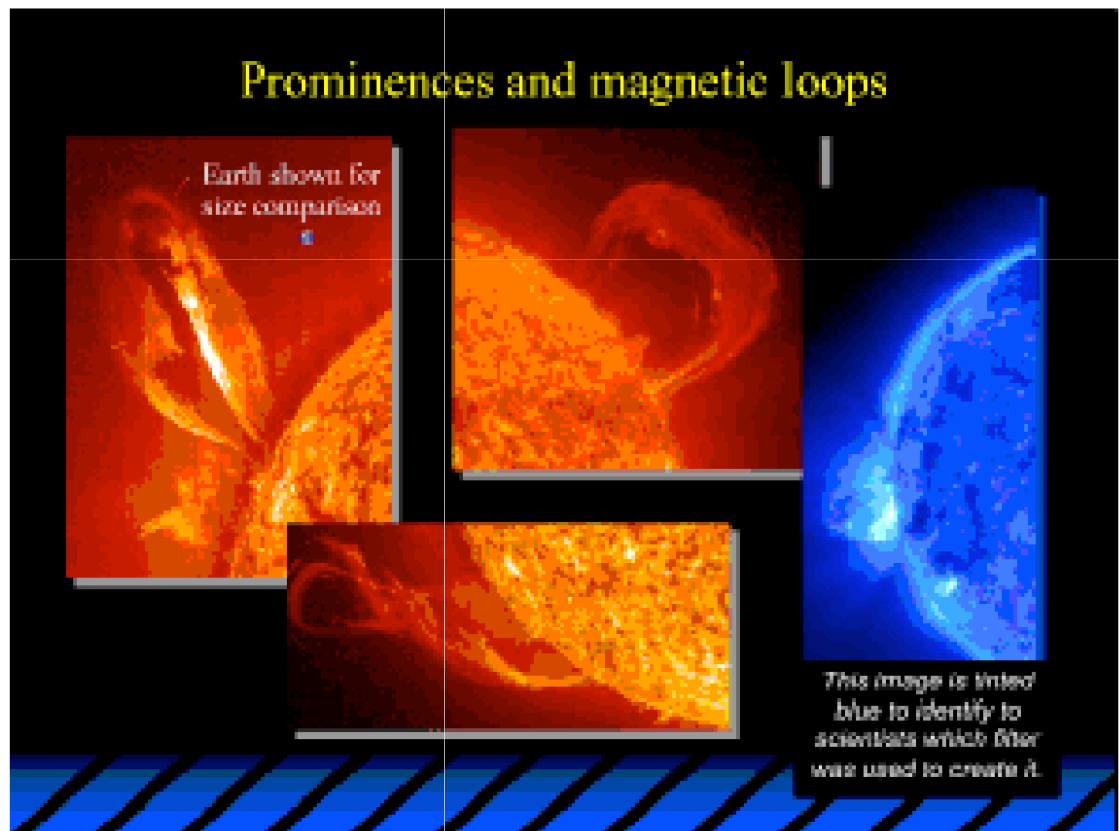
The Dynamic Sun is a multimedia presentation for Windows™ and Power Mac users. This CD ROM was created by the Solar and Heliospheric Observatory (SOHO) a mission of international cooperation between NASA and the European Space Agency.

The interactive program takes the form

of an Adobe® Acrobat Reader® file, and it includes three versions of its presentation high school, middle school, and elementary school. A teacher's version is also included to help make applications in the classroom. The software contains a plethora of movie clips and images taken from the SOHO spacecraft. Other features include a portfolio that gives facts about SOHO and explains SOHO's program, a slide show, an interactive poster Storms from the Sun, SOHO's frequently asked questions, and a glossary of terms.

A miniature Sun icon located in the lower left hand corner of the screen leads to additional pages of information. A red dashed line around pictures or graphs represents links to Web pages that can be accessed from the software if the computer is connected to the Internet. A small yellow page after a question will show the answer to a posed question. A red rhombus returns the viewer to the main menu.

Thumbnails in a frame to the left of the main presentation allow a preview of slides to come in the presentation. These



This black and white screen capture cannot do justice to the beautiful imagery typical of SOHO's CD ROM The Dynamic Sun

thumbnails enable the viewer to skip or return to any portion of the presentation with ease. The thumbnails can also be hidden to provide a larger viewing area for the show.

The Dynamic Sun is very factual and imparts its information in multiple ways. The main points of interest are the slide shows in three different versions according to grade level. Each includes a variety of information both written in text and shown in QuickTime™ movies.

The teacher's guides are very helpful in working up lesson plans for classes. They are also provided on the same grade levels as the slide shows. The teacher's guides present ideas for classroom lessons and give sample questions to ask students. The guides also provide links to Web pages with additional useful information.

The QuickTime™ movie clips are the most interesting features in the presentations. They show actual footage of the solar wind, eclipses, and prominences. These movies provide dynamic footage that can help teach lessons, which otherwise might be left out of the curriculum. Although the clips may look technical, they present easy to understand concepts.

The only drawback of The Dynamic Sun is its lack of sound. The viewer can become quiet bored with the monotonous silence.

This software will not be able to keep the attention of nine and ten year olds who have been raised in the age of technology. Other than this one drawback, The Dynamic Sun is a great informational tool and resource for educators.

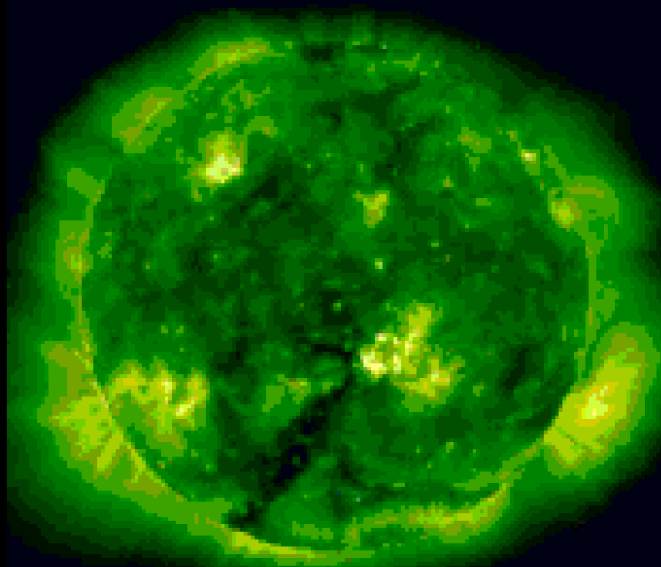
The Dynamic Sun
continued



Reviewed by
Amanda Dawn Campbell
Sophomore Intern
Craigmont Planetarium
Memphis, Tennessee

Solar flares from an active region

This May 1998 event captures the dynamics of a solar storm building up then blasting solar flares twice over a 4-day period. Flares are small but intense explosions on the Sun that propel high-energy protons (seen as white flecks by the spacecraft) into space.



Click on the image to play the video

150076-02 4013525

QuickTime™ movies are the most interesting feature of SOHO's CD ROM The Dynamic Sun

2001: A Mars Odyssey

Kelly Quirn
Bishop Planetarium
Bradenton, Florida

Every so often, you get the chance to be a part of something big.

Mars Odyssey leapt off the launch pad atop a Delta 2 rocket from Kennedy Space Center at 11:02 A.M. Saturday, April 7, 2001.

As part of Arizona State University's and the Jet Propulsion Laboratory's joint 2001 Mars Odyssey Educator Conference, I joined team scientists, educators, and outreach personnel in sending their baby on its way.

On April 6th proceedings began with a live video feed linking Sir Arthur C. Clarke with the Mars Odyssey Educator crew (the 2001 connection, of course). Sir Arthur admitted that the title 2001: A Space

Odyssey hadn't actually been his idea, but he was pleased with the association nonetheless.

Then a group of 80 teachers and informal science educators had the unique opportunity to hear from principle scientists and engineers on the project, from Chief Engineer Lynn Lowry to Lead Scientist Dr. Jim Garvin as well as having the three investigative instruments introduced and explained by their figurative parents.

Dr. Jim Garvin wowed us with his vision of the future of Mars exploration and made a strong case for the Earth and Mars connection, suggesting that one of the best tools we have for understanding the complexities of our own Earth's ecosystem is

the records we find on our planetary neighbors, of which Mars appears most promising. Citing recent discoveries and findings from Mars Global Surveyor, Dr. Garvin explained our recent paradigm shift regarding Mars. Our old view of Mars suggested a desolate arctic desert with hundreds of places where water once was, but no current processes existed. Conversely, our new picture of Mars provides more questions than answers with evidence suggesting to many scientists that Mars may still have an active water cycle

or a cycle of some type that causes flows and features in a way that acts like we expect water to act. These new questions increase the complexity of



Launch of the 2001 Mars Odyssey spacecraft by Delta 2 rocket from Kennedy Space Center

where and how to explore Mars. Although we are all used to saying that Mars is about half the size of Earth, we often fail to remember that because so much of the Earth is covered by water, the land area of the Earth and Mars are equivalent. Can you imagine trying to explore and explain all of the processes and conditions that exist on Earth with nothing but partial data describing a few conditions for four spots on the planet? That is exactly the position Mars scientists are finding themselves in and the reason for 2001 Mars Odyssey. Using the instruments aboard Odyssey, scientists hope to find more evidence for a possible Martian water cycle and pinpoint areas that show special promise for future lander missions. NASA/JPL's new Mars exploration targets three areas: Martian Hydrosphere, Biosphere, and Geosphere. Water links all three, therefore, scientists hope that by locating places where water (or something that acts like water) is or was, they will find valuable clues to understanding Mars.

Dr. Bill Boynton introduced us to the Gamma Ray Spectrometer (GRS). This amazing instrument will allow scientists to quantitatively determine elemental abundances of the Martian surface, and, thus, to characterize the geology of Mars by recording the intensity of gamma rays reflected off the Martian surface and sorting them by energy. Galactic cosmic rays provide the initial charge; the GRS then measures the occurrence of gamma rays specific to certain elements across the surface of Mars. Over time, a profile of element abundance will allow scientists to track the distribution of water over the Martian surface (by measuring hydrogen), characterize the climate of Mars by studying seasonal changes in the polar ice caps, and search for evidence of past seas or oceans based on salt deposits on the Martian surface.

Dr. Bill Feldman continued to explain the science behind the GRS and the accompanying Neutron Spectrometer. Galactic cosmic rays generate

neutrons when they interact with atoms. By measuring gamma rays produced by these collisions, scientists are able to compute isotopic differences in elemental occurrences—much like astronomers use a spectroscope to study Balmer lines in the Sun's atmosphere. Dr. Feldman explained the use of Galactic Cosmic Rays as a case of "you use what's available" (while bouncing around like a highly charged neutron himself—what an enthusiastic investigator!).

Dr. Badwahr Gautam, Principle Investigator for the Mars Radiation Environment Experiment (MARIE), is already hard at work trying to figure out how best to protect future Mars-bound astronauts from dangerous levels of radiation both in transit to and after landing on Mars. MARIE is designed to measure the charge, intensity, and mass (isotope) of radiation astronauts will be exposed to when they travel to Mars both from solar radiation and from extra-solar galactic cosmic rays. Dr. Gautam is setting baselines with this experiment because as yet, no guidelines for acceptable radiation levels for a Mars mission exist. The challenge is to figure out the least amount of shielding and what type of shielding is necessary to keep the crew safe and free from high-risk exposure. When you consider the need to measure the rate at which the radiation is absorbed, the varying intensity of the radiation, and the difficulty in accurately measuring biological exposure—which is not uniform at any rate (different organs have different sensitivities to different types and intensities of radiation)—you begin to experience Dr. Gautam's Herculean task. The MARIE



Mapping chemical elements and minerals, looking for water, and analyzing the radiation environment are the three goals of the Mars Odyssey Mission.

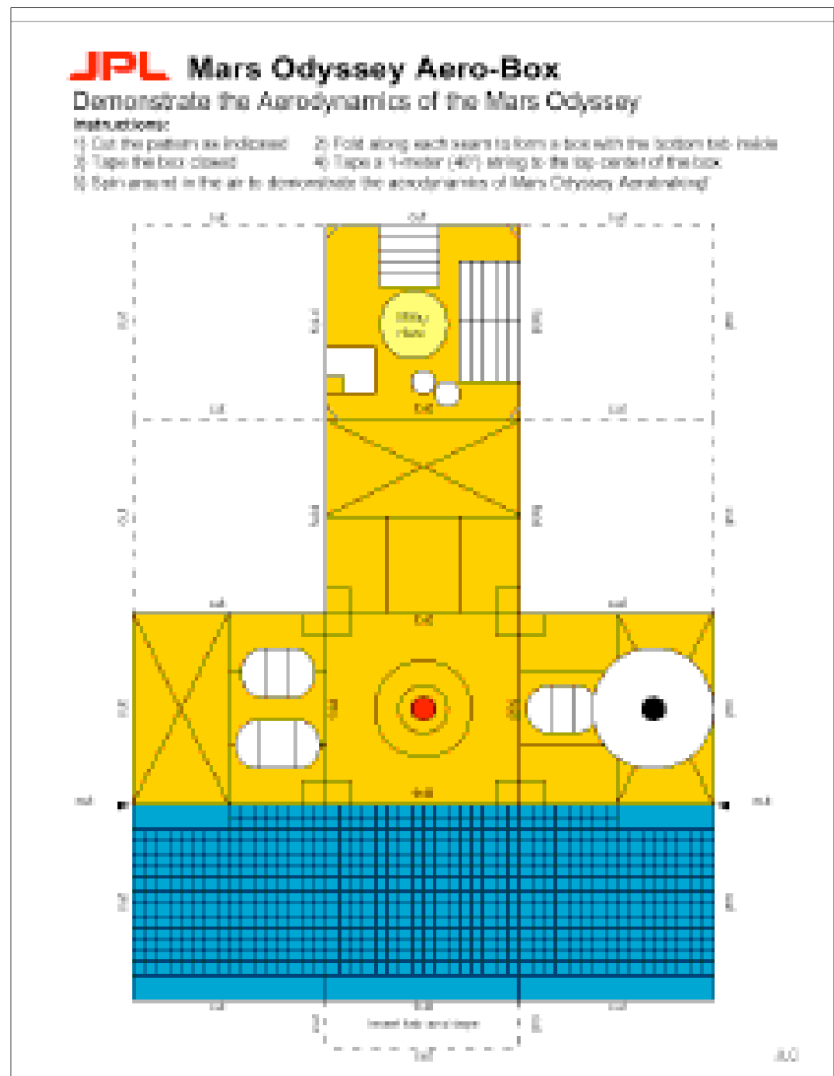
instrument will provide a start in solving some of these complex problems.

Dr. Phil Christensen, Principle Investigator for the Thermal Emission Imaging System (THEMIS), is a geologist who can't wait to go kick over a few rocks on Mars. Until then, he's going to be busy mapping the mineralogy and morphology of the Martian surface with THEMIS high resolution camera and thermal infrared imaging spectrometer. By overlaying high resolution camera pictures with infrared imaging, Christensen and his team hope to get a better picture of what rocks and minerals are present on Mars, what processes might have formed them, and how the geology of Mars might have worked in the past. They plan to look carefully for minerals like hematite, which might indicate an ancient lake or ocean bed on Mars. Likely sites include Sinus Media and Aram Chaos. The team also plans to look for areas that might be hot springs by looking for thermal signatures of these features. Extensive field testing on Earth has yielded promising results; scientists are expecting a lot of useful data from THEMIS.

Chief Engineer Lynn Lowry gave us a mission briefing and a behind the scenes glimpse of the little things that have the potential to sidetrack a mission to Mars. From the need to change out resistors throughout the spacecraft, to a water leak in the building in which the spacecraft was being housed at KSC (discovered by the JPL webmaster Ron Balke), we got the real story of how Odyssey made it to the launch pad. As if spacecraft problems alone were not enough to give the team sleepless nights, other factors also created

havoc. A dicey situation in Saudi Arabia prevented confirmation of the safety of the ground team stationed in that country, so Lynn Lowry had to arrange for a ground station in the Sultanate of Oman at the last minute. The Omanis were happy to help and glad to assure the safety of the ground team on the condition that the Sultan himself could join the team on launch day. Then labor disputes in Canberra, Australia threatened to cancel the launch. Small wonder, as Lynn said, that some are convinced that JPL stands for Just Plain Lucky.

On launch day we all waited with baited breath as the last seconds of the count down ticked by. As the rocket engines lit and Mars Odyssey leapt skyward, I had the privilege of standing next to some of the mission scientists who had poured their heart and soul into the instruments about to head to Mars. I heard Phil Christensen's account of climbing to the top of the gantry tower to remove the protective



JPL will give you an Adobe® Acrobat Reader® file with a cut and fold model of the 2001 Mars Odyssey spacecraft at <mars.jpl.nasa.gov/odyssey/funzone.htm>

IDA Press Release Promotes SEPA's Saving the Night

BISHOP PLANETARIUM WINS AWARD

For Immediate Release, April 12, 2001

IDA PR 2001-02

International Dark-Sky Association, Tucson, Arizona..

George Fleenor and the Bishop Planetarium in Bradenton, Florida won Executive Director's Awards at the annual conference of the International Dark-Sky Association. George Fleenor, Director of the Bishop Planetarium, accepted these awards for exceptional service in helping raise public awareness about the problems of light pollution locally and on an international level.

A planetarium is an excellent facility to show the effects of light pollution. Millions of people visit planetariums around the world on a yearly basis. For this reason, the Southeastern Planetarium Association (SEPA) produced a program designed to be added to the beginning or the end of any planetarium star show. The program, approximately 11-minutes in length, is an excellent way to help promote proper lighting techniques, in addition to educating the general public on the topic of light pollution.

The show is entitled "Saving the Night," and it was written and narrated by the internationally famous astronomer and author, David Levy. Miramar recording artist, Jonn Serrie, produced the soundtrack. The show features original artwork provided by Edwin William Faughn of Memphis' Sharpe Planetarium. The International Dark Sky Association (IDA) provided additional visuals from their slide archives.

The students of Memphis Craigmont High School Planetarium, under the leadership of Duncan Teague, burned the CD-ROMs for the show. The show has now been distributed to 210 planetariums in 11 different countries including all of the Southeastern United States, the home region. In addition, SEPA has made the CD-ROM of this program available to IDA who is now helping distribute this important program.

The International Dark-Sky Association works with communities, businesses, and professional lighting experts to develop strategies that both reduce the light pollution that hinders observations from optical telescopes and save energy for businesses and communities. It has been conservatively estimated that proper lighting -- which eliminates light directed skyward that contributes nothing to safety -- could result in savings of nearly two billion dollars yearly for the United States as a whole.

IDA's work is performed almost entirely by volunteers. Founded in 1988 as a nonprofit educational organization, the International Dark-Sky Association promotes quality outdoor lighting to control glare, to conserve energy, and to preserve the beauty of our night skies.

For additional information, visit IDA's web site at www.darksky.org.

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e-mail: BobGent@aol.com
(703) 751-6805 Washington DC IDA Office
(520) 293-3198 IDA Main Office in Tucson, Arizona

Spitz Milky Way: Some Problems and Solutions

John Hare
President
ASH Enterprises International, Inc.

An alarming number of discrepancies exist with the Milky Way on Spitz installed/maintained projectors of most models and vintages. Problems include transparencies rotated out of the correct position, reversed or upside down, in the wrong location, and entire sets being shifted one or more positions. The problems are easily corrected.

Note in Figure 1 the correct sequence and orientation of the 18 cells. Figure 1 depicts a mirror image of the Milky Way as it is viewed from the exterior of the starball and is most easily seen with the star lamp on. Note the position of the teapot in Sagittarius in relation to cell #1. Increasing transparency numbers go north from that point. (The sequence and orientation can be confirmed by comparing a mirror image of figure 1 with the Milky Way chart in Norton's Star Atlas showing galactic coordinates.)

Note also that there is a fine line on the ends of the transparencies. An imaginary line connecting these marks corresponds to the galactic equator, and it is useful in confirming the correct alignment when you are installing/reorienting transparencies. You'll find it easier to match the pattern of the cell rather than trying to read the small number on the transparency. Once you've compared your Milky Way to the correct sequence and orientation, should any corrections be necessary, follow these steps.

The transparencies are held in place with a small snap ring. Make sure the cell that you are working on is facing up. Remove the snap ring using a small flat blade screwdriver. Be sure to hold your finger over the cell as the snap ring is pried up.

Remove the neutral density filter and the kodolith transparency. This is most easily done by placing some masking tape on the end of a pencil with the sticky side out. Clean all components as needed. Reinstall the transparency in the correct orientation. Reinstall the neutral density filter and then the snap ring.

Additional problems can result when neutral density filters are missing or of the wrong density. Most Spitz Milky Way sets use a 0.7 filter. You may find this grade too dense if you are in a 40 foot dome or larger

and/or if you are blessed with especially dark skies. I have found 0.6 to be a good one to use as the Milky Way's prominence can be overcome by the use of some blue cove lighting.

Another problem can be caused by the condition of the lens itself. Plastic lenses are utilized which are subject to deterioration from the high UV output of the star lamp. Look at the surface of the lens on the interior of the starball. The lens surface should be clear and polished. If the surface looks as though someone has buffed it with sandpaper or shows cracks (a flashlight shone from the outside helps) then it needs to be replaced.

The average life of a Milky Way lens is usually measured in a decade or more, but heavy usage can shorten this period. If the lens itself needs to be replaced, remove the old lens by pressing on it from the inside with your thumb or finger. After installing the transparency and filter, the new lens should be glued in place using Duco brand cement.

Place a small amount of cement on the stepped flange. Rotate the lens after inserting it into the opening in order to distribute the cement. You will have a few minutes to rotate the lens into the correct orientation before the cement sets.

Replacement parts are available as follows:

Spitz sells the transparency set for about \$5.00; part #524402. This includes all 18 transparencies on 1 kodolith sheet. You will need to punch out the individual transparencies or carefully cut them with scissors.

Milky Way plastic lenses are about \$0.25 each; part #595008. You will need to paint the outside edges of the lenses which should be done prior to installation. Flat black model paint works well.

Neutral density material is readily available at most camera shops, dark room suppliers, Edmund Scientific, and many other sources.

Complete Milky Way sets, assembled and ready to install, are available from Ash Enterprises for \$110.00.

Figure 1: Orientation and Sequence
of Spitz Milky Way Transparencies



National Teachers Enhancement Network

Forwarded by
Dave Maness
Peninsula Planetarium
Newport News, Virginia

Created by Montana State University with help from the National Science Foundation, the National Teachers Enhancement Network (NTEN) is designed for secondary science teachers, providing quality courses to enhance knowledge and teaching skills. Participants establish working relationships with science faculty and peers on a national level. Montana State University has accreditation from Northwest Association of Schools and Colleges. Courses can lead to a Master of Science in Science Education Degree. For additional information, contact the coordinator of the NTEN program at the following e mail or Web site:

Contact: Kelly Boyce, NTEN Coordinator, <kboyce@montana.edu> or (800) 282 6062
Web site: <<http://btc.montana.edu/nten>>

Summer 2001 Courses:

Terrestrial Ecology of Plains and Prairies June 18 July 27, 2001

We continue quantitative methods used in BIOL 516 (see prerequisites at the NTEN web site) in mountain systems to analyze grasslands. Students will prepare plant keys for major grass and flower species for their students, quantitatively compare two grassland communities, and design classroom activities, appropriate for their region, that illustrate selected ecological principles.

Credit: Biology 513 01, 1 graduate semester credit.
Cost: Tuition is \$150, and there is a \$35 charge for materials (includes shipping).
URL: <http://btc.montana.edu/nten/sum01_cours/bio513.shtm>

Biology of Riparian Zones and Wetlands June 18 July 27, 2001

We continue ecological methods learned in BIOL 516 (see prerequisites at the NTEN web site) to analyze plant communities along streams (riparian areas) and in wetlands, to observe or infer uses of such areas by birds and animals, and to document any human impacts on the areas. Individual projects will include preparation of keys to the major riparian and wetland plants encountered, brief descriptions of riparian and wetland systems near the student's home, quantitative comparison of two riparian and wetland systems, and developing plans for classroom activities.

Credit: Biology 519 01, 2 graduate semester credits.
Cost: Tuition is \$300, and there is a \$35 charge for materials (includes shipping).
URL: <http://btc.montana.edu/nten/sum01_cours/bio519.shtm>

Hydrology of Streams and Lakes June 18 July 27, 2001

We will study the hydrology of streams and lakes in the mountains and plains. Streams: Drainage basin analysis Stream hydraulics Slope Channel plan Channel cross section Channel types Lakes: Geologic origin Evaporation Ground water recharge/ discharge Applications in the K 12 science classroom will be emphasized (habits of a scientific mind).

Credit: ESCI 519 01 (Earth Science), 3 graduate semester credits.

Cost: Tuition is \$450, and there is no charge for materials.

URL: <http://btc.montana.edu/nten/sum01_cours/esci519.shtm>

Statistics for Teachers

June 11 July 13, 2001

This course will focus on the stochastic concepts that arise in mathematics and science education, including the probabilistic underpinnings of statistics, measures of central tendency, variability, correlation, distributions, sampling, simulation, and experimental design. This course will also focus on the issues of teaching statistics concepts at the pre college level, including methods and materials.

Credit: MATH 518 01, 2 graduate semester credits.

Cost: Tuition is \$300 and should be paid to NTEN at the time of registration.

The text will cost approximately \$85 plus shipping, and can be purchased from MBS Direct (see contact information listed at the NTEN web site). Special Computer Equipment: You will be on your own to have a TI 92, TI 83, or equivalent graphing calculator.

URL: <http://btc.montana.edu/nten/sum01_cours/math518.shtm>

Applications of Statistics in Mathematics Classrooms

July 9 August 10, 2001

Exploratory data analysis including experiments, surveys, measures of association, and inferential statistics. Issues relating to the methods, materials, and teaching of statistics at the pre college level will be discussed as well.

Credit: MATH 519 01, 2 graduate semester credits.

Cost: Tuition is \$300 and should be paid to NTEN at the time of registration.

The text will cost approximately \$85 plus shipping, and can be purchased from MBS Direct (see contact information listed at the NTEN web site). Special Computer Requirement: You will be on your own to have a TI 92, TI 83, or equivalent graphing calculator.

URL: <http://btc.montana.edu/nten/sum01_cours/math519.shtm>

Studying the Universe with Space Observatories

June 4 July 27, 2001

Recent space missions have increased our ability to explore and understand the structure and evolution of our universe. This course will provide the conceptual framework and scientific background needed to understand and interpret the results of space missions related to galactic and extragalactic space science. We will make heavy use of Internet and WWW based resources in astronomy. Students will gain skills in using electronic image manipulation and analysis software that they will use in completing homework assignments and also in creating lesson plans for their own classrooms. This course will stress NRC science content and education standards for the 9-12 grade levels.

Credit: Physics 580 01, 3 graduate semester credits.

Cost: Tuition is \$450 and should be paid to NTEN at the time of registration.

The text will cost approximately \$65 plus shipping, and can be purchased from MBS Direct (see contact information listed at the NTEN Web site).

URL: <http://btc.montana.edu/nten/sum01_cours/phys580.shtm>

Additional Information: NTEN courses use a personal computer and direct Internet access to connect participants from across the country. Instructors and students work through the material together, discussing topics by using a computer network that allows for private messages and group discussions. Required equipment: MAC OS 7.1 or better OR Windows version 95 or better; Internet access via a local Internet provider or through your school or work place (TCP/IP compatible). Telecommunica

News from SEPA States

George Fleanor
Bishop Planetarium
Bradenton, Florida

Astronaut Memorial Planetarium and Observatory, Cocoa

Mark Howard reports that the Astronaut Memorial Planetarium and Observatory is currently running The Planet Safari, Planet of the Dinosaurs, Great Barrier Reef, Antarctica and Africa's Elephant Kingdom. U2, Pink Floyd and Led Zepelin round out their evening laser shows. The Planet Safari opened in January. It's a new show written and illustrated by our in house artist/producer, Joe Tucciarone. The musical score is by Mark Mercury. The show features lots of laser animation and a quirky alien tour guide. This show replaces our outdated solar system show and includes the latest information on each of the planets, including asteroids, comets and KBOs.

Two new staff joined our team in January. Sue Morin is our new receptionist and Dave Doucha is a show operator/lecturer.

We participated in the Brevard County teacher inservice day in February with 90 participants our largest turnout to date. We welcomed teachers from several disciplines and the day long program was well received with demonstrations of our Planetarium Theater, Iwerks Movie Theater, and Starlab portable planetarium.

Jon Serrie returned in March with special guest astronaut Story Musgrave. The two performed together on stage to sold out audiences on March 9th - 10th. Accompanied by Jon's live music, Dr. Musgrave presented slides from his extensive library of images taken on his many space shuttle missions.

Our facility was pleased to host the Spring FLORPLAN meeting on April 21st. In production currently is a new patriotic laser show Star Spangled Spectacular. American history, folklore, and patriotism will be highlighted in a unique blend of lasers, video computer animation, slides and DIGISTAR that will truly make one proud to be an American. This show is targeted at our family audience and will run as a matinee beginning in June.

Alexander Brest Planetarium, Jacksonville

Patrick McQuillen reports the Zeiss technicians came, saw, prayed, gutted, and replaced, and they were pleased with what they saw. Yes, finally we have had our Zeiss Jena RFP star machine overhauled to have all the problems taken out. The work was difficult and time consuming. For twenty one days the staff of the planetarium and the Zeiss technicians worked from early in the morning until late at night. The entire planetarium instrument was taken apart and rebuilt.

This was difficult due to the fact that several of the key original components are no longer produced: you know, important things like motors and star lamp sockets. Zeiss developed a plan to replace these parts, and the final product is very well done. Joe Hopkins Engineering worked in parallel with Zeiss to complete the repair work. Zeiss was responsible for all the hardware on the instrument itself, and JHE was responsible for the electronics and connections to the control console. We need only to have JHE finish a few last items, and the projector will be back to almost like new condition.

It is nice to be able to have precession at today's date, to have all functions work reliably every show, and to be able to make use of these functions in shows. Those who attended the 1999 SEPA meeting here in Jacksonville may remember the preview of the Explorers show that Ken Miller presented where the North Star did not stay in place in the north during the find the North Star live demo part of the show. (Precession was set 3000 years in the future due to slipping damage.) Well it stays in place every day now and only moves if we choose to move it. Yeah!

Our current public astronomy program is Bear Tales and Other Grizzly Stories. It is a fun family oriented star show that has gotten good response from visitors. Concurrently we also run The Sky Tonight, our live tour of the current night sky.

This summer we will be having an exhibit of large robotic dinosaurs from one of the large robotic dinosaur companies, so as a tie in we are running a dinosaur program. And unlike what usually happens at an institution when the planetarium

show matches the traveling exhibit, the planetarium staff suggested the dinosaur program. There were several reasons for this. One it makes a good tie in for promotional purposes. Second, we suggested that we could run one so we were not directed to run one. This allows us to pick one and also concurrently run astronomy programs. Along with the dinosaur program we will be running What's UP? (a live tour of the night sky with current space news information) and The Explorers of Mauna Kea from the Bishop Museum in Hawaii.

We are also running laser shows daily and during the weekend evenings. Our current offerings include Laser Metallica and Pink Floyd: Dark Side of the Moon on Friday and Saturday nights. During the day, when we need to run more family oriented shows, we're running Laser Beatles. Laser Beatles is sponsored by one of the local Volkswagon car dealers. They parked one of their very flashily painted new Beetles at our front entrance. And it's been fun to say hope you enjoyed the show. Blah Blah Volkswagon is the sponsor for our Beatles show. Volkswagon Beetles. You get it? Usually everyone groans at that point. But it's fun.

We hold a special event weekend each year in conjunction with the local science fiction fan clubs. The event is called Star Date Weekend. It has been very popular. This was its 9th year. The local fan clubs present sci fi oriented trivia games with prizes such as Trek Jeopardy and Who Wants to Be a Trekker? There is a costume contest for all visitors who come in costume. We try to orient our planetarium programs so that they contribute to the sci fi theme also. Our live sky tour becomes The Stars of Star Trek. In this program we point out places that are mentioned in various episodes and inform visitors about the facts that relate to those places.

This year we had two special guests. We rented a costume for the weekend that allowed us to have a nine foot tall green alien character running around all weekend. This was a great hit with kids of all ages. It also made for good PR as folks drove by the museum and saw a huge green alien advertising the event.

Our second guest was even more special. We learned that one of the actors from the movie The Wizard of Oz lived not too far away from Jacksonville. Due to his close proximity he was more than willing to stop by and sign autographs. So for the

weekend all visitors got to meet and greet with Mr. Meinheart Raabe, the actor who played the Munchkin Coroner. It was great. He had on a reproduction of his costume. We got a great photo of Mr. Raabe, the planetarium staff, and the 9 foot alien. We are hoping for a bigger event next year.

Summer camps are just around the corner. The planetarium staff hosts several weeklong camps with a space theme. This year we are planning Astronomy Camp and Space Robots Camp. Astronomy camp will be your standard introduction to astronomy and the space program. Space Robots camp will focus on how robots are used to explore the universe.

Recently we added a few new items to our small astronomy exhibit area. As part of the Star Station One™ network we have a 1/144th scale model of the complete International Space Station in an exhibit case. It did not come with a scale model of the space shuttle. So after many hours of fitting, gluing, and painting, I added a 1/144th scale shuttle from a plastic model kit. It really has helped visitors visualize how large the ISS will be.

Also with the Star Station One™ program we hung our 1/50th scale ISS model above the entrance to the Planetarium. This model only has the components that are actually in orbit. We add new pieces to it each mission. This allows visitors to see the current progress on ISS and compare it to the finished ISS in the 1/144th scale case.

I also built and installed a 1/144th scale model of MIR in the case next to the 1/144th scale ISS. This helps visitors see how much larger the ISS will be when finished. The MIR model came from a plastic model kit available at any hobby shop. It was produced in conjunction with the movie Armageddon. It is titled Russian Space Center. If you leave off all the extra parts of the station that were in the movie, you can build a rather accurate version of MIR. Plus for us the scale matched our ISS model.

Bishop Planetarium, Bradenton

George Fleenor reports: As usual we are staying pretty busy. Our grant with Time Warner Communications finally came through and we are in the process of installing our fiber optic communications in the museum facility. The grant is providing 14 locations throughout the facility, each with video feeds and returns, 2 pairs of audio cable and Cat 5 communication cables. These home run feeds

George Fleenor
Bishop Planetarium
Bradenton, Florida

George Fleenor
Bishop Planetarium
Bradenton, Florida

are patched into our audio/ video rack located in our sound/ video production room. From this area we will be able to select and distribute audio/ video/ computer produced programming from any of the 14 locations. Two of these locations include the planetarium and observatory. Any source material generated from the South Florida Museum Bishop Planetarium will have a direct feed to the local school system s television studio or the Counties Government access station, in addition to Time Warner. Provisions are also being made to allow news media broadcast trucks the availability of direct patches externally. This plug and go system will make us more accessible with exceptional quality. We hope to be able to use the new system to expand our educational market via local broadcasting, in addition to Internet broadcasting. We are also installing a cable modem for our recently installed proxy server allowing us greater flexibility and faster access to the Internet.

On a different note, we encountered some bad luck the last week of 2000. Our audio playback system uses 3 Fostex ADAT tape machines. Each of these machines has been a diligent workhorse but we could see that they were slowly reaching the point of death. Without in house servicing available, this sped up their life span. Not one but all three decks died at the same time leaving us without the availability to run any pre programmed shows. We had to make a quick recovery and decided to go with Fostex D 108 hard drives as our new audio sources. However, the fix is not that easy. We run laser shows, and in order to use these hard drives we have to encode and decode our laser imaging. We had hoped that we could at least use our old Fostex decks for this purpose but the electronics were too far gone. On top of buying 2 Fostex D 108s we had to purchase 2 Alesis XT ADATs. Of course we had to purchase additional automation controls for the new system from East Coast Control. Special thanks to Drew Foster of East Coast Control and former Planetarium Technician Greg Hughes (flown in from South Carolina) for all their help in our recovery. Each time we upgrade in our theater it is like opening Pandora s Box. Fortunately Drew and Greg are both former employees of our facility and together we were able to defeat any little gremlins as they showed their ugly little faces. A few, I must admit, did have us going but all appears to be OK for now.

Currently we are running The New Cosmos from the Henry Buhl, Jr. Planetarium, daily at 1 P.M., seven days a week. The Explorers of Mauna Kea from Bishop Museum Planetarium (South) is presented at 4:00 P.M. daily through May. Due to the technical difficulties with our sound system we were unable to open our new matinee laser show A Space Odyssey, featuring the music of Jonn Serrie. Hopefully by the time you read this it will be presented daily at 2:30 P.M. and will run through May.

Our Saturday morning family star show for May features Loonies Moon and Larry Cat in Space will be presented in June. Sol and Company from the Morehead Planetarium opened successfully in February, and we plan to run it again for the month of July.

Our nighttime Skies Over South Florida continues to feature Saving the Night followed by a live tour of the evening sky. The Tonite Show, the observatory/ telescope program, follows at 8:30 P.M., weather permitting.

On the light pollution front: I am once again working with our City Council to produce a lighting ordinance. I attended the IDA conference March 8 11 in Tucson, Arizona. SEPA member Ken Moore met me there, and we started our weekend off sitting in on a public observing session at Kitt Peak. When we got to the summit, we found traces of snow. How could I resist tossing one to (at) Ken? During the conference IDA asked me to chair the Informal Education in Science Centers and Planetaria Work Group. How could I say no? Our goal will be to develop informal educational tools to help promote proper lighting and dark skies. Get ready. I might be calling you for input. Find us on the Web at <www.sfmbo.org>

Buehler Planetarium & Science Center,
Davie

Susan J. Barnett reports: During the spring, the Buehler Planetarium is running A Dozen Universes and The Little Star That Could. Weekday public shows include The People, Astrology: Fact or Fiction, Magellan: Report from Venus, and The Voyager Encounters. We are installing Ancient Horizons. In addition, we are producing new shows about Twenty Years of the Space Shuttle and Solar Spectacular. For the summer, Galaxies will keep our presenters on their toes.

Calusa Nature Center and Planetarium, Fort Myers

Jill Evans reports that Jon Frantz and John Hare have been to the dome, and things are fantastic! We have a brand new console and a newly automated star projector. I have learned programming with the new system and programed the Saving the Night program with only a few problems! I m ready for bigger shows!

We are having a series of concerts in the dome, and we are attracting a lot of people who wouldn t have normally visited us, but are now very excited to see more of what we can do. It s been a big fund raiser and audience attraction, we hope to do about one a month.

The Museum of Arts and Sciences, Daytona Beach

Roger Hoefler reports: The Museum of Arts and Sciences Planetarium premiered Explorers of Mauna Kea February 6 as our public show. The audience really seems to enjoy the audience participation sections. So far, in two months we have only lost 2 of the mirrors, and no group of any size has managed to get all the reflections in the target at the same time. I do a live

segment featuring the night sky from Daytona Beach after the credits, and have been adding in recent photos, discoveries and news from Mauna Kea utilizing our computer video/ data interface to display recent photos.

The Poinciana Planetarium, Boynton Beach

Dr. David H. Menke, Director reports: With just eight weeks of school left the Poinciana Planetarium has spearheaded trips to Kennedy Space Center and to MOSI s Challenger Center in Tampa.

The Poinciana Planetarium gives four astronomy sessions/lessons a day to students of Poinciana Elementary School, grades K 5, ranging from the history of astronomy to astronautics to archeo astronomy.

We give shows to students and their parents on select weeknights throughout the year. The December 2000 show was on the solar eclipse. The January show was on the visible planets of Jupiter, Saturn, and Venus.

The Poinciana Planetarium is open Monday Friday, 8 A.M. 3 P.M. during the academic year. Shows are for its students

News from SEPA States
continued

George Fleenor
Bishop Planetarium
Bradenton, Florida

Bradley Observatory, Decatur

Bradley Observatory is a teaching and research facility located on the campus of Agnes Scott College, a private liberal arts college for women. The observatory has just been completely renovated to celebrate its 50th anniversary, including the installation of a new Zeiss ZKP 3 projector in a 70 seat unidirectional planetarium.

Chris DePree, Assistant Professor of Physics and Astronomy is the Director of the Observatory. Amy Lovell, Assistant Professor of Physics and Astronomy, joined the college as a tenure track faculty member this year. We hope you will come visit our new facility soon. Monthly programs are presented throughout the academic year.

Recent events: On April 6, Dr. John Morse (CASA) delivered a lecture entitled The NASA Long Range Strategic Plan. On May 5, the Atlanta Astronomy Expo was held at the observatory; for details see the www site of the Atlanta Astronomy Club. The last lecture of the academic year entitled Art and Astronomy, delivered by Professors Donna Sadler (Art) and Chris DePree (Physics and Astronomy), occurred

May 11.

Jim Cherry Memorial Planetarium, Atlanta

Reported by David Dundee: Two Egyptian shows are running now: Stars of the Pharaohs and the children s show Of Stars and Pyramids. For 6th & 7th grade, we have been running Explorers of Mauna Kea. Ed Albin just came back from the Lunar and Planetary Conference in Houston. April Whitt just came back from the conference in Sri Lanka. We are beginning our search for a fourth astronomer to join our happy little band since Rick Williamon s retirement. We are having continued fun testing our remote use of the 36 inch telescope. I am working on a new show for next spring called Ancient Islamic Astronomy. This summer we will have two shows running on Native American Sky Mythology: Georgia Before Columbus, and for children, Campfires in the Sky. We will be running two NASA funded programs this summer: Spacestation Fernbank and SEMAA.

Georgia Southern University Planetarium, Statesboro

Becky Lowder reported a busy spring

Jim Greenhouse
& Carole Helper
Mark Smith Planetarium
Macon, Georgia

Jim Greenhouse
& Carole Helper
Mark Smith Planetarium
Macon, Georgia

semester at Georgia Southern University Planetarium. On April 7th, Astronomy and Space Day 2001 brought NASA lunar and meteorite samples to the public. Many hands on activities, exhibits, safe telescopic solar observing, and star and planetarium shows were presented throughout the day, along with the launch of the 2001 Mars Odyssey live on the dome via NASA TV. Physics majors, members of the Statesboro Astronomy Club, and astronomers Dr. Ben Zellner and Dr. Clayton Heller enjoyed sharing their knowledge and fascination of astronomy with the public all day. The planetarium will undergo servicing the beginning of May, preparing for the summer presentations of Explorers of Mauna Kea for the Georgia Southern science campers. June 21 will bring a solar eclipse workshop at the Georgia Southern Museum and live coverage of the eclipse via the Web at the planetarium for the public. Public evenings and educational school shows will begin again with the fall semester at

the university.

Mark Smith Planetarium, Macon

Jim and Carole are celebrating the arrival of their new Barco projector. The planetarium was closed for 10 days in May to install the projector and for general maintenance.

Lunar Odyssey is the current planetarium feature. On June 22, the day after Mars closest approach to the Earth, there will be an evening event featuring The Mars Show and several other red planet related activities and telescopic viewing.

On July 20, every museum's favorite money making exhibit, robotic dinosaurs, will arrive again at the museum. The planetarium will be showing The Great Dinosaur Caper from Toronto, Canada by way of the Virginia Living Museum. Jim will host two sleepover events at the museum during the exhibit: one will be during the Perseid meteor shower on August 11 and another one will be on the first day of fall, September 22.

Freeport McMoran Planetarium and Observatory, Kenner

In the planetarium we are currently showing several in house productions including Dark Sky Astronomy arranged by Walter Sarrat, a member of our local astronomy club Pontchartrain Astronomy Society. The presentation was produced to help people understand views of the night sky that are lost due to light pollution. It continues to be well received because of some spectacular astrophotography taken by the society members. We are also getting underway with a series of lectures entitled Explorations in Space and Science, which, as the name implies, will cover many different aspects of astronomy and space science.

Still no word on the planetarium; I am trying to get as much drama out of this as possible.

I want to also announce to those of you who are not aware that Mark Trotter has left the Louisiana Nature and Science Center Planetarium after being its curator for 14 years. He has taken employment outside of the planetarium community. I am sure all of those who know Mark will miss his unique sense of humor and the ever present video camera at SEPA conferences. I want to express my gratitude to Mark for getting me started in the planetarium field. Good luck, Mark!

St. Charles Parish Library Planetarium, Luling

Spring has sprung here in the deep, Deep South. That means we now have to mow the lawn every other week. Good news. The Planetarium has re opened. In late February, the troops evacuated our theater, and we once again can run shows. Our first offering was StarDate: Ancient Horizons. Sadly due to our being closed for almost four months, the public has not come back... yet. I'm sure once their routine again includes a planetarium visit now and again, our numbers will increase. Our equipment, albeit old, did spring to life from its slumber. It was good to see the stars once again.

Lafayette Natural History Museum Planetarium, Lafayette

Construction on our building project continues on schedule. Most of the interior structure is complete, and the external columns supporting the old building's walls have been removed. Work is beginning on the roof, and I hope to see construction start on the rooftop observatory soon. We still expect construction to be complete in mid December, with a grand opening in the spring of 2002.

Very soon the museum will select a firm to design, build, and install the new facility's exhibits on the environment, culture,

astronomy, and space. We will most likely open the building with an assortment of traveling exhibits.

Negotiations are underway regarding some property out of town for a additional, rural, (relatively) dark sky observatory. We're still in the finger crossing phase with that.

Also in the finger crossing phase the planetarium staff has been asked to work with a committee to develop a lighting ordinance for Lafayette City and Parish.

With the planetarium closed for refurbishing, programming has been fairly slow. Planetarium staff and volunteers are doing public star parties and sidewalk astronomy about once or twice a month at local libraries and businesses, and occasional programs in the schools. We scheduled our Astronomy Day solar viewing and star party in March because of a conflict with other activities on the actual Astronomy Day, and were rewarded with a beautiful

day and evening for observations. Staff also participated as judges in the regional Science Olympiad here in Lafayette.

Telescope classes have been extraordinarily successful this year. Normally we have about a half dozen telescopes signed up for our post Christmas class, but this year we had 45! By the end of April, we will have done four classes to meet the demand and clear the waiting list.

By summer we expect to receive a planetarium program in French developed by Centre National d'Etudes Spatiales (CNES) and Association des Planetariums de Langue Française (APLF). We expect to use it primarily for language classes, the many French tour groups that visit the Lafayette area, and as part of our annual celebration of Fête de la Science (the French national festival of science) in October. This will be one of our first experiments with foreign language programs, and we hope it will be only the first of many such efforts.

News from SEPA States
continued

Michael Sandras
Freeport-McMoran Planetarium
Kenner, Louisiana

Stanback Planetarium, Orangeburg

Jim Brown reports they have been out of commission since January because there are no working emergency lights in the facility. He's got the Buildings and Grounds folks working on it, but until there are emergency lights again, we're not doing any shows.

We're still progressing on our radio telescope here. The equipment is on order and should be operational sometime this summer. The equipment will be set up in a glass room off the lobby where it will serve as both a work room and an exhibit.

Jim also has some advice on operating systems. Those using SPICE automation software and planning to upgrade their computer systems should take note. Windows 2000 is not DOS compatible.

In order to make my new Gateway computer work, I've had to reformat the hard drive, create two partitions formatted under FAT32, and install Windows 95 on the D drive and Windows 2000 on the C drive. On boot up, you are asked which OS you want to boot to, and to run Win 95 (and SPICE under DOS), you select Windows 95. The dual boot is a feature under Windows 2000.

Roper Mountain/ Hooper Planetarium, Greenville

Doug Gegan tells me the big news at Roper Mountain is the construction of a

new building near the observatory. This will include a new classroom in support of evening activities, and a large clean workshop, which I've needed for 15 years! There will be offices and a conference area on the level above me.

The building is scheduled for completion by September. Otherwise, we've finished our program on the history of Greenville for 5th grade, and I'm now concentrating on plans for spring observing, and Astronomy Day.

Settlemyre Planetarium, Rock Hill

We here at the Settlemyre are gearing up for our summer camps and shows. Our ongoing commitment to the South Carolina Junior Scholars program is again preventing us from attending SEPA, but maybe next year.

We will be showing Planet Patrol as our summer show for kids and beginning production on our fall line up for weekend programming soon. We also have just completed an upgrade to our auditorium's A/V system with the installation of a three gun video projector and DVD player. Oh the things a planetarian is required to do just because everyone thinks we can do anything! That's it from South Carolina. Best wishes for a great joint conference.

Glenn Dantzer
Settlemyre Planetarium
Rock Hill, South Carolina

Dave Maness
Virginia Living Museum
Planetarium
Newport News, Virginia

Chesapeake Planetarium, Chesapeake

Dr. Robert Hitt is doing lots of school programs. He recently came back from a trip to South America where he visited several of the Mayan ruins. I'm hoping he can put together an article about that trip soon. He is also starting work on his third book. This one will be a basic stargazing book for middle school age children. The first two were volumes 1 and 2 of a Groliers encyclopedia called Outer Space for Children. He expects to be in Africa for the eclipse; then it is on to a visit to China. That's the way to get a life, Bob.

Virginia Living Museum Planetarium, Newport News

I was very pleased with the response to our version of Follow the Drinking Gourd. It ran successfully through late winter and early spring. Attendance was nearly double over the same time last year. I hope it continues. That program gave way to a resurrection of Carl Sagan's Cosmos to commemorate 20 years since it aired.

Our first quarter evening event February 2nd was a big success. The theme was Groundhog Day. Our second on April 20 was also well attended. The theme was Earth Day. Our planetarium program was Lifetide, and the guest speaker from NASA gave us an enlightening talk about the importance of water vapor on Earth. As always we included some children's free tree give aways, exhibit displays, and children's activities. Unfortunately the observatory wasn't open for night time observations due to clouds. Our summer program will be about Mars. What else would it be?

Fund raising continues for a new museum building. Work on the first section of additional trails is complete. The second section is under construction. We are still waiting for the city to begin installing the new turning lane and traffic control light which they now say will commence right in the middle of our busiest period.

Please visit our Web site at <<http://www.valivingmuseum.org>>.

Planetarium at the Edge of the Universe and Starlab Mathematics & Science Center Richmond

Both George and Jane Hastings are back into a heavy schedule of school programs. Jane is seriously contemplating retirement this year. We wish her all the best in whatever she chooses to do.

Hopkins Planetarium & MegaDome Theatre, Roanoke

Leslie Bochenski and I commiserated about Virginia budget woes thanks to a governor who is doing everything he can to be sure that his promised car tax reduction and elimination proceeds unhindered by support to non state agencies. The hit they took caused the lay offs of all part time staff. She will be moving on to greener pastures at the Buzz Aldrin Planetarium in West Palm Beach, Florida by mid May. Mark Hodges will become exhibits and planetarium manager when she leaves. He may have one or two staff who work in the planetarium part of their time along with a few volunteers.

In the Mega Dome they are showing Africa: The Serengeti and Ring of Fire. In June the film will be Lost Worlds: Life in Balance.

The planetarium will have regular Saturday morning children's programs, a seasonal star show, and a general public program.

Ethyl Imax Dome Planetarium, Richmond

Eric Mellenbrink tells me that the governor's budget didn't effect the Science Museum of Virginia in Richmond as much as other facilities. They will remain closed on Mondays for the time being however due to soft attendance. Staff hours and pay had been reduced by 10 percent.

In the planetarium they are running Stardate: Native Skies, a joint production of the Ethyl Imax Dome and Planetarium and the MacDonald Observatory in Austin, Texas. The show was written and narrated by Sandy Wood. These are same people who produce the Stardate radio program. In September the new program will be about the Sun.

In the Ethyl IMAX Dome they will be showing Elephants through April 27 and T Rex: Back to the Cretaceous through June 8. Other films include Super Speedway which runs April September 14 and Journey Into Amazing Caves from June 9 October 19.

Journey Into the Living Cell and Night Sky continue as the planetarium programs through February 28. On March 1, they open Native Skies, their second production in cooperation with the McDonnell Observatory and the producers of Stardate on Public Radio. Native Skies contains various Native American sky legends and

Windows on the Wild: A Biodiversity Primer

[WOW! is a magazine targeted toward middle school students. WOW! (Windows on the Wild) is published by the World Wildlife Fund. The WWF is an affiliated group of the National Science Teachers Association. Since SEPA is also affiliated with NSTA, our two organizations exchange publications, and Southern Skies occasionally publishes reviews of the material WWF sends us. A teacher's guide accompanies the magazine to help educators make the best use of this publication in classroom situations. I asked end users of these publications to review them for us. Please see the related review on page 32.]

WOW! can be either a good motivator for projects to which a student may be assigned or a good resource for students in need of tutoring on the topic of biodiversity. Many aspects of the magazine are positive, but there is room for improvement. The reading level is no more challenging than a literary work aimed at the average middle school student. WOW! is not going to intimidate anyone because of its vocabulary. I expected an educational magazine to be more demanding in terms of its content. I enjoy discovering a few new words that require thinking skills to

figure out their meaning from the context in which they are written or that send me to a dictionary to learn a new concept.

The Ask Dr. B questions are extensive. They drag, almost to the point of being boring. This section could have been limited perhaps to one page front and back.

The Life Stories are very classy. I enjoyed reading about another person's career and experiences being in the wild and being able to handle the complexities of biodiversity.

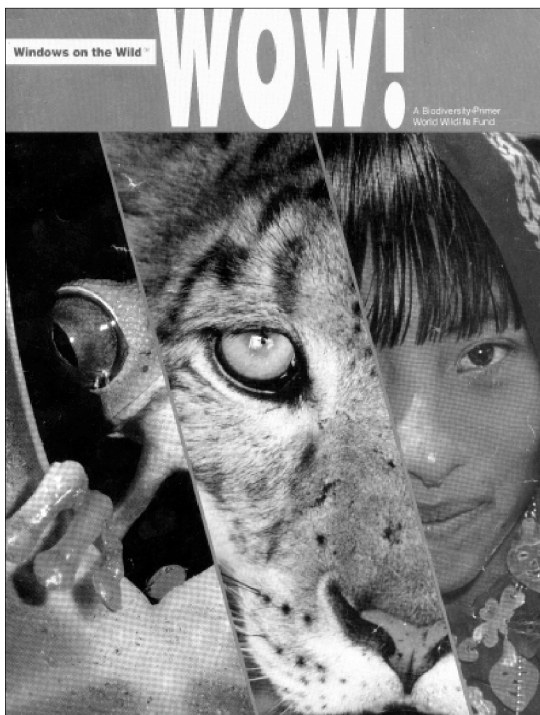
The section Natural Inquirer was extremely funny. It's a good way to get a young student's attention to weird and interesting facts. I have seen several other magazines of this type relate true and sometimes gross facts, but none of the others ever achieved the balance of interest and accuracy WOW! has.

The magazine includes excellent pictures and photographs. Brief but detailed explanations appear near each image.

I would recommend WOW! to any student looking for inspiration from the world of biodiversity (or any student who's secretly a nerd and has run out of reading materials). The magazine has a simple but good mix of categories in this seemingly narrow subject area. The reading level is more elementary than middle school.

WOW! is a thoroughly enjoyable magazine, and I would strongly recommend it to any student looking for a new genre of reading material.

Traci Sherman
Honors English Student
Craigmont Middle School



THE DEADLINE FOR THE NEXT ISSUE OF SOUTHERN SKIES IS JULY 1. SEND SUBMISSIONS ON A 3.5 DISK OR VIA EMAIL ATTACHED FILE TO DTEAGUE2@MIDSOUTH.RR.COM OR TEAGUED1@K12TN.NET

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The Space Telescope Science Institute (STScI) provides slides of Hubble images to individuals within regional affiliates who arrange to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

Below you'll find a brief description of all 40 images distributed in 1996. Numbers next to the descriptions are shortened versions of STScI press release numbers, e.g., 21a refers to PR 96 21a.

The entire set of 40 slides is \$50, including postage and handling. Send your check or purchase order to the address at left.

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| <p>01.a Hubble's deepest ever view of the universe, revealing 1,500+ extremely faint galaxies in various stages of their development</p> <p>01.b Sample galaxies from the same Hubble deep field</p> <p>02 The inner region of a warped dust disk around Beta Pictoris once hidden because of the star's glare</p> <p>03 An image of the Egg Nebula taken by WFPC2; it shows the emergence of mysterious searchlight beams from behind a dying star</p> <p>04 The first direct image of a star other than the Sun: Betelgeuse.</p> <p>05 In more detail than has ever been seen before, the process a star like the Sun goes through when it dies</p> <p>09.a In clear, detailed pictures the first ever images of Pluto's surface; four views</p> <p>09.b Pluto surface map</p> <p>10 Gravitational lens effect captures image of primeval galaxy</p> <p>11 Images of globular cluster Mayall II, consisting of 300,000 old stars, in orbit around the Andromeda galaxy</p> <p>13.a The Helix Nebula, NGC 7293 showing collision of gases near a dying star</p> <p>13.b Helix Nebula detail with cometary knots surrounding the dying star</p> <p>14 A view of Comet Hyakutake that focuses on the near nucleus region of the comet</p> <p>15 Three layers of Uranus's atmosphere</p> | <p>taken with infrared filters; both clear and hazy layers created by a mixture of gases</p> <p>16 Image taken of Saturn where its rings appear edge on because of the position of the Earth in Saturn's orbital plane</p> <p>17 A view of several star generations found in the central region of the Whirlpool Galaxy</p> <p>18.a A rare view of Saturn's rings seen just after the Sun had set below the ring plane</p> <p>18.b A series of 10 images of several small moons orbiting Saturn</p> <p>21.a NGC 1365, a barred spiral galaxy located in the Fornax cluster</p> <p>21.b NGC 4639, a spiral galaxy located in the Virgo cluster</p> <p>22.a The Crab Nebula and a detail of the pulsar in its center</p> <p>22.b Sequence of three images showing changes in the Crab Nebula pulsar</p> <p>23.a Huge, billowing pair of gas and dust clouds in Eta Carinae</p> <p>23.b Expansion of Eta Carinae debris</p> <p>25 Hubble's 100,000th exposure captures an image of a distant quasar</p> <p>27 A vast nebula, NGC 604, which is known for a great starbirth region</p> <p>29.a 18 gigantic star clusters which may be building blocks for a new galaxy</p> <p>29.b Blue sub galactic clumps which may be galaxies under construction</p> <p>30 Jupiter's moon Io passing above turbulent clouds</p> <p>31 Clusters of stars and a fishhook shaped cloud of gases found in NGC 2366, a giant star forming region</p> <p>32 Changes in Jupiter's auroral emissions</p> <p>33 Views of weather on opposite hemispheres of Neptune</p> <p>34 A Martian dust storm around the edge of the north polar cap</p> <p>35.a A survey of quasar host galaxies</p> <p>35.b A quasar caught in the act of colliding with its companion galaxy</p> <p>36.a Supersonic comet like objects in the Cartwheel Galaxy</p> <p>36.b Cartwheel Galaxy composite image</p> <p>36.c Cartwheel Galaxy illustration</p> |
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HST's Greatest Hits of '97

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The entire set of 39 slides is \$48.75, including postage and handling. Send a check or purchase order to the address

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| <p>01 Central supermassive black holes in galaxies NGC 3377, NGC 3379, and NGC 4486B:</p> <p>03 SN1987A Fireball: One tenth light year long dumbbell structure expanding at six million miles per hour in supernova 1987A</p> <p>08 Changes in the nucleus of Comet Hale Bopp as it moves closer to the sun beginning in September 1995</p> <p>09.a Transition from spring and summer in Mars's northern hemisphere; photo taken shortly before opposition</p> <p>09.b Three photos of Mars taken six hours apart with 90° difference between images; photos taken shortly before opposition</p> <p>11 The Egg nebula in which stars are born and die violently; photo shows jets of gas being blasted into space</p> <p>12 A supermassive black hole located in galaxy M84</p> <p>13 NICMOS captures region of the Orion nebula filled with action as a center for the birth of new stars</p> <p>14 Supernova 1987A: different colors represent different elements in the ring</p> <p>15.a A view of Mars's cloud cover</p> <p>15.b Seasonal changes in Mars's north polar ice cap</p> <p>15.c Four views of Mars rotated 90° between images during summer in Mars's northern hemisphere</p> <p>16 The Cone Nebula: six baby sun like</p> | <p>stars surround their mother</p> <p>17 A collision between two spiral galaxies in the heart of galaxy Arp 220</p> <p>18 Fireworks near a black hole in the core of Seyfert galaxy NGC 4151</p> <p>19 STIS reveals an invisible high speed collision around a supernova</p> <p>20 Hubble pinpoints the optical counterparts of a gamma ray burst in a distant galaxy</p> <p>21 Hubble captures a volcanic eruption plume from Jupiter's moon Io</p> <p>22 A gamma ray burst blazes from a titanic explosion in deep space</p> <p>23 Hubble's look at Mars shows a canyon dust storm, cloudy conditions for Pathfinder's landing in July 1997</p> <p>24.a Dissipation of a large dust storm on Mars</p> <p>24.b Hubble shows dust and water ice clouds exhibit substantial daily variations</p> <p>25 Powerful telescopes discover the largest galaxy in the universe</p> <p>26 Hubble separates components in the Mira binary star system</p> <p>27 Hubble reveals huge crater on the surface of the asteroid Vesta.</p> <p>28 Hubble finds a bare black hole pouring out light.</p> <p>29 Hubble shows blobs of gas formed by some nova outbursts.</p> <p>30 Hubble keeps track of a fading gamma ray burst.</p> <p>31 Mars at the beginning of autumn in the Martian northern hemisphere.</p> <p>32 Hubble sees a neutron star alone in space.</p> <p>33 Hubble identifies what might be the most luminous star known.</p> <p>34.a Hubble reveals stellar fireworks accompanying galaxy collisions.</p> <p>34.b Detailed images of colliding galaxies.</p> <p>35 Hubble shows images of a blue straggler star.</p> <p>36.a Hubble tracks clouds on Uranus.</p> <p>36.b Hubble spots northern hemispheric clouds on Uranus.</p> <p>37 Hubble shows infrared view of moon, ring, and clouds of Jupiter.</p> <p>38.a Hubble sees supersonic exhaust</p> |
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01	COBE's infrared view of the Universe: three maps of the full sky seen in infrared light	20	Four of NASA's proposed designs for the Next Generation Space Telescope (NGST)
02	Distant supernovae: light sources determine universe's expansion rate	21	Galaxy NGC 4314: bright ring of starbirth around the galaxy's core
03	Beta Pictoris: disk indicates planets, possible brown dwarf companion	22	NGC7052: galaxy with 300 million solar mass black hole in its center
04	Jupiter aurorae: a curtain of light extends several hundred miles beyond Jupiter's limb	25	N81 in the Small Magellanic Cloud: a celestial maternity ward
05	Saturn's aurorae: curtains of light extend 1,000 miles above cloud tops	26.a	Galaxy Cluster MS1054-03321: thousands of galaxies 8 billion light years from Earth
08	Supernova 1987A: a collision between the expanding blast wave and circumstellar ring	26.b	Supernova 1996CL: a March 1996 exploding star in galaxy cluster MS1054-0321
10	Serendipitous asteroids: HST images show curved trails of asteroids	27	Distant galaxy clusters: left, in Virgo; upper right, in Andromeda; lower right, in Taurus
11.a	Planetary nebula NGC 7027: a brief stage in the evolution of a medium mass star	28	NGC7742: a small Seyfert 2 active galaxy probably powered by a black hole in its core
11.b	Cotton Candy Nebula and Silkworm Nebula: phases of stellar burnout	29	Saturn: pastel yellows, browns, and greys distinguish cloud differences
12	Star birth in barred spiral galaxy NGC 1808 possibly due to interaction with NGC 1792	30	Sagittarius Star Cloud: HST peers into the heart of the Milky Way
14.a	Centaurus A: nearest active galaxy to Earth shows turbulent firestorm of starbirth	31	NGC7635, the Bubble Nebula: an expanding shell of glowing gas surrounding a hot star
14.b	Centaurus A: tilted disk of gas at galaxy's core surrounds suspected black hole	32.a	Infrared views: left: faintest galaxies ever seen; right: objects 12 billion light years away
15	Stingray Nebula: Henize 1357, the youngest known planetary nebula	32.b	Deep field galaxy: left: visible light areas of starbirth; right, infrared disk structure
16	NGC 1818: globular cluster of over 20,000 stars in the Large Magellanic Cloud	34	Neptune: a look at the eighth planet's stormy disposition
17.a	GRB 971214: gamma ray burst is most energetic event in the universe	35	Uranus, August 8, 1998: its four major rings and 10 of its 17 known satellites; false color
17.b	GRB 971214: gamma ray burst; comparison of Keck Telescope and HST views	36	NGC6210 planetary nebula described as looking like a turtle swallowing a sea shell
18	Saturn: details of the clouds and hazes in atmosphere of ringed planet	37	Quasar PG1115+080 and gravitational lens effect
19	Possible first extrasolar planet ever	38	Nebula M1-67 around star WR124: gas ejected into space at 100,000 mph
		39	NGC3132: southern hemisphere's Eight Burst or Southern Ring Nebula
		41.a	HST deep field south: thousands of

JPL '98 Slides

NASA JPL has sent us the following slides for the Galileo Mission and others. Slides are \$1.25 each.

P 35036B	Launch of Galileo on STS 34 Atlantis	P 47935	Io Glowing in the Dark
P 35213	Deployment of Galileo and IUS	P 47961	Ganymede s Nippur Sulcus
P 37218	Venus Colorized Clouds	P 47970	Ganymede Color Global
P 37327	Moon: Western Hemisphere	P 47971	Io in front of Jupiter
P 37539	Infrared Image of Low Clouds on Venus	P 47972	Changing Volcanoes on Io
P 37593	Earth: Ross Ice Shelf, Antarctica	P 48035	Stereo View of Ganymede s Galileo Region
P 37630	Global Images of Earth	P 48040	Natural and False Color Views of Europa
P 40449	Gaspra: Highest Resolution Mosaic	P 48063	Thunderheads on Jupiter
P 41383	Gaspra Approach Sequence	P 48112	Ganymede Uruk Sulcus High Resolution Mosaic Shown in Context
P 41432	Moon: North Pole	P 48113	Ganymede Galileo Regio High Resolution Mosaic Shown in Context
P 41474	Earth: Northeast Africa and the Arabian Peninsula	P 48114	Jupiter s Great Red Spot
P 41493	Earth: False Color Mosaic of the Andes	P 48122	Two views of Jupiter s Great Red Spot
P 41508	Earth: Moon Conjunction	P 48127	Ridges on Europa
P 42501A	South Polar Projection of Earth	P 48145	Io: Volcanically Active Regions
P 42964	Asteroid Ida: Five Frames Mosaic	P 48188	The Main of Ring of Jupiter
P 44130	Asteroid Ida: Limb at Closest Approach	P 48231	Callisto Crater Chain at High Resolution Shown in Context
P 44131	Ida and Dactyl: Enhanced Color	P 48236	Europa: Ice Floes
P 44297	High Resolution View of Dactyl	P 48293	Callisto: Scarp Mosaic
P 44520	Asteroid Ida Rotation Sequence	P 48294	False Color Mosaic of Jupiter s Belt Zone Boundary
P 44542	Comet Shoemaker Levy 9 Fragment W Impact on Jupiter	P 48299	Asgard Scarp Mosaic
P 47058	Ganymede: Comparison of Voyager and Galileo Resolution	P 48445	True Color Mosaic of Jupiter s Belt Zone Boundary
P 47065	Ganymede: Mixture of Terrains and Large Impact Crater in Unuk Sulcus Region	P 48496	Color Global Mosaic of Io
P 47162	Full Disk Views of Io (Natural and Enhanced Color)	P 48526	Europa Ice Rafts
P 47179	Three Views of Io	P 48527	Closeup of Europa s Surface
P 47182	Jupiter s Great Red Spot	P 48532	Mosaic of Europa s Ridges, Craters
P 47183	Dark Bands on Europa	P 48584	Io s Sodium Cloud
P 47194	Live volcano on Io	P 48698	E4 True and False Color Hot Spot Mosaic
P 47196	False Color Great Red Spot	P 48700	Jupiter Equatorial Region
P 47903	NIMS Ganymede Surface Map	P 48952	Jupiter s White Ovals, True and False Color
P 47905	Five Color Views of Io	P 48954	Ancient Impact Basin on Europa
P 47906	Europa In Color	P 48956	Active Volcanic Plumes On Io
		P 48439A	The Mars 98 Lander
		P 48440A	The Mars 98 Lander
		P 48494A	The Mars 98 Orbiter/Lander
		P 48495A	The Mars 98 Orbiter/Lander
		P 48567	Dr. Peter Tsou holds Aerogel
		P 48589	Stardust Spacecraft
		P 48691	Deep Space 1 Spacecraft

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| <p>01 M57 Ring Nebula: the sharpest view yet of this planetary nebula</p> <p>02 Combined deep view of infrared and visible light galaxies</p> <p>03 HD 141569: stellar dust rings of a star in the constellation Libra</p> <p>04 SNH1987A: self destruction of a massive star in Large Magellanic Cloud</p> <p>05.a Six images of a young stellar disk found in the constellation Taurus</p> <p>05.b Four images featuring disks around various young stars in Taurus</p> <p>06 NGC 1316: silhouette of dark clouds against a glowing nucleus of an elliptical galaxy</p> <p>07 Mars: visible, infrared light images; evidence of water bearing minerals</p> <p>08 Proxima Centauri: a detailed image of the Sun's nearest stellar neighbor</p> <p>09 GRB990123: fading visible light fireball in a gamma ray burster</p> <p>10 Six images showcasing different views of spiral galaxies</p> <p>12 Tarantula Nebula: multiple generations of stars in the brilliant cluster of Hodge 301</p> <p>13 Jupiter: images of the volatile moon Io sweeping across Jupiter's face</p> <p>14 Copernicus: the 58 mile wide (93 km) impact crater on the Moon</p> <p>16 NGC4650A: a polar ring galaxy</p> <p>18 Rings, arcs, and crosses as seen in</p> | <p>Hubble's top ten gravitational lens effect images</p> <p>19 NGC4603: magnificent spiral galaxy associated with Centaurus cluster</p> <p>20 NGC3603: various stages of the life cycle of stars in a giant galactic nebula</p> <p>21 AB Aurigae: a swirling disk of dust and gas surrounding a developing star</p> <p>22 Mars: a colossal polar cyclone</p> <p>23 N159: a turbulent cauldron of starbirth in Large Magellanic Cloud</p> <p>25 NGC4414: magnificent details in the dusty spiral galaxy</p> <p>26 NGC6093: a stellar swarm in a dense globular cluster</p> <p>27 Mars: the red planet at opposition during April-May, 1999</p> <p>28 MS1054-03: galaxy collisions in distant clusters</p> <p>29 Jupiter: an ancient storm in its atmosphere (The Great Red Spot)</p> <p>30 Giant star clusters near the galactic center</p> <p>31 HCG 87: a minuet of four galaxies</p> <p>32 HE2 104: small, bright nebula embedded in the center of a larger nebula</p> <p>33.a R136 in 30 Doradus: a grand view of the birth of stars</p> <p>33.b R136 in 30 Doradus: two detailed views of a highly active region of star birth</p> <p>34.a NGC1365: a barred spiral galaxy reveals a bulge in its center</p> <p>34.b Eight different views of the central bulges of spiral galaxies</p> <p>35 HH32: a magnificent example of a Herbig Haro object</p> <p>36 NGC2261: Hubble's variable nebula illuminated by R Monocerotis (R Mon)</p> <p>37 NGC2346: a butterfly shaped nebula</p> <p>38 NGC2440: planetary nebula ejected from a dying star</p> <p>39 OH231.8+4.2: the rotten egg nebula</p> <p>40 M32: hot blue stars deep inside a dwarf elliptical galaxy</p> |
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JPL '99 Slides

JPL 19 12	NASA/ JPL	P 48045CC	Ready for transport
JPL 25125	Model of Sojourner	P 48154Bc	Pathfinder mated to rock et
JPL 27089AC	Cassini arrival and orbit	P 48155Ac	Launch 12/ 4/ 96, 2: 11 a.m.
JPL 27089BC	Cassini interplanetary trajectory	P 48155Bc	Petal closing at KSC
JPL 27748	Thermal vacuum testing	P 48156	Full stack mated to booster
JPL 28046BC	High gain antenna	P 48313BC	Cassini in the space center
JPL 28162AC	Cassini assembly	P 48505AC	Huygens probe
MGS 001	Scientists assemble MGS	P 48505BC	Huygens probe
MGS 002	Scientists assemble MGS	P 48565	Titan IV launch
MGS 003	MGS configuration	P 48597	Cassini ready for shipment
MGS 004	MGS orbit around Mars	P 48630	Saturn tour trajectory
MGS 005	Launch of MGS	P 48664	Cruise stage at KSC
P 23062	Saturnian clouds	P 48702	Pathfinder on Mars
P 23209	The Saturn System	P 48707	Cruise stage, spacecraft
P 23925	Saturn ring spokes	P 48753	E.D.L. sequence
P 41101	Huygens descent profile	P 48824	Sojourner and Pathfinder
P 42810AAC	Huygens, exploded view	P 48827	The airbags by Sojourner
P 42810AC	Huygens probe interior	P 48841	Sojourner touchdown
P 43538	Saturn: Rings and Moons	P 48842	APXS studies Barnacle Bill
P 43560	Mars global view	P 48845	Twin Peaks
P 43836	Scientists home countries	P 48847	The rock Yogi
P 43862	Pathfinder landing	P 48866	Barnacle Bill mosaic
P 43966AC	Spacecraft, country flags	P 48871	Rover s APXS at work
P 44233	Mars landing area	P 48877	Wedge and Flattop
P 44293Ac	Cruise stage	P 48878	Near Barnacle Bill
P 45424	Hugens probe release	P 48889	Barnacle Bill and Yogi
P 45893AC	Saturn, Titan s landscape	P 48891	360 b&w panorama
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NASA JPL has sent us the following slides for the Mars Pathfinder and Cassini/Huygens missions. Slides are \$1.25 each

wow! An Educator's Guide:

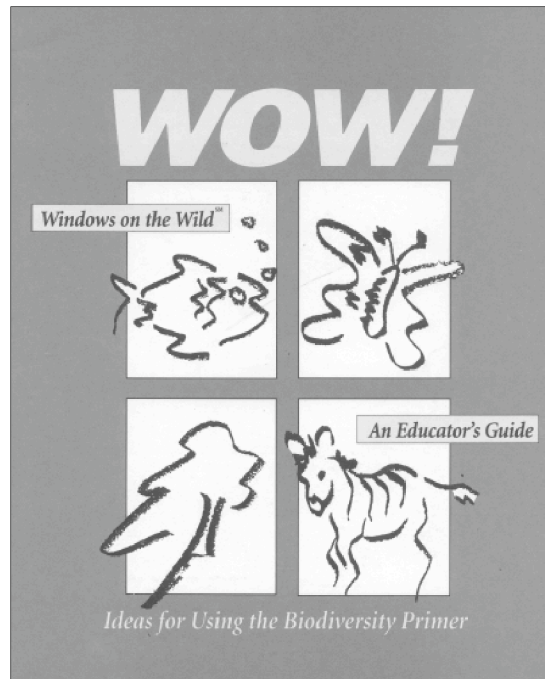
Ideas for Using the Biodiversity Primer

Reviewed by
Elona Charbonnet
Honors Science Teacher
Craigmont Middle School

When the World Wildlife Fund does something, they do it right, and this guide for using the middle school magazine

WOW! is no exception. The magazine is itself described as a biodiversity primer, a colorful way to help students appreciate the amazing diversity of life on Earth and to help them learn about the causes and consequences of biodiversity loss.

The guide provides suggestions for using the magazine to classroom teachers and also educators in nonformal settings such as nature centers, zoos, or botanical gardens. The guide more than succeeds in this endeavor. This one publication contains enough appealing, age appropriate, easy to use, and scientifically sound material to last a teacher all one school year. Especially intriguing is the activity called Tabloid Take Off in which students explore supermarket tabloids, the newspaper, and an article from the student primer called The Natural Inquirer. What an engaging way to expose students to the problem of sensationalism! Check out this magazine and the accompanying guide for an excellent supplement to student classroom learning.



Paul Campbell Fellowship Award Nomination Form

Nominees must have been a member of SEPA for at least ten years, and they must display qualities in each of five areas, as represented by the five pointed, star shaped award: integrity, friendship, service, knowledge, and vision.

Please submit this form to any SEPA Council member.

Nominee s name:

Qualifications:

Southern Skies

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SPRING 2001

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Small Talk

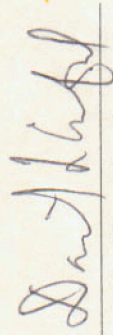
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Executive Director's Award

Presented To

Southeast Planetarium Assoc.

In recognition of their enthusiastic efforts in
the pursuit of the promotion of Dark Skies



David L. Crawford
Executive Director



Donald R. Davis
President