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Journal of the Southeastern Planetarium Association

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Send contributions to *Southern Skies* to:

Kathy Summers
661 Paden Mill Trail
Lawrenceville, GA 30244
(404) 995-1263 - evening
(404) 727-6334 - daytime

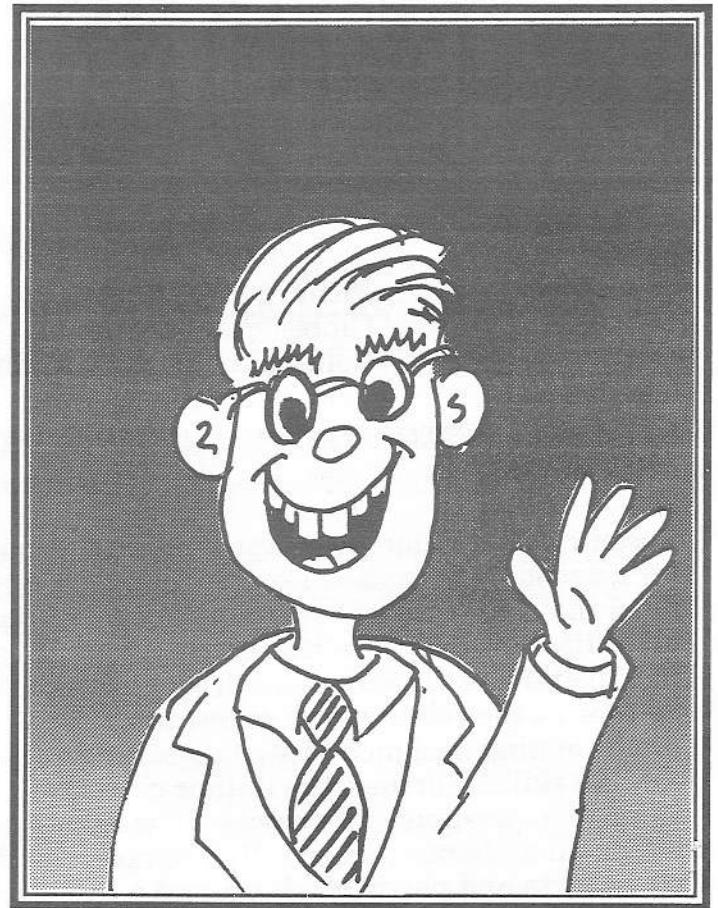
A Message From The President

Bob Tate
Harper Planetarium
Atlanta, Georgia

Another year is upon us, and that brings change. Somewhere about the third or fourth of January, it dawned on me that I was now the new president of SEPA! I promptly hummed "Hail to the Chief" to myself as I went about some petty task in the display area of my planetarium.

With that bit of official recognition out of the way, it is time to take up the duties left me by Dave Hostetter. Like Dave, I have the happy task of helping to sponsor a SEPA conference during my first year as president. Fortunately, there are many SEPA people in Atlanta, so the task will fall on many of my friends and I won't have to do it all myself. Elsewhere in this issue is a description of the 1991 SEPA Conference to be held this June in Atlanta. This will be the official twentieth anniversary conference for SEPA, so we will spend a little time looking back, and a lot of time looking to the future. The conference will deal with the technology of the planetarium, as well as the "people" aspect of our profession, so there will be something for everyone. Atlanta is a great vacation area, with lots of family attractions. We are already planning activities for family members who don't want to sit through another talk about ways to opaque slides.

Now to other matters. Do you realize how special planetarium people are? Every time I start another job around the planetarium, it occurs to me that there are people I know who can do the job better than I. I know experts at recording and mixing audio and video tapes, experts at designing and constructing electronic circuits, experts at photography and dark room work, and expert writers and educators. Unfortunately, all these experts don't work in my planetarium. In their place is little ol' me, and surprisingly, the job gets done. When I get in a real bind, I might have to call on my expert friends for help, but usually, if it gets done in my dome, I do it.



I know it's the same way in your dome. Your boss daily gets a bargain by having you running things in your planetarium. If you were paid at the going industry rates for the services you provide, you would be living on easy street!

I have a couple of goals for my time as president of SEPA. My first goal is to involve more planetariums in SEPA. There are about 155-160 planetariums in SEPA, and I would like for all of them to feel that SEPA has something to offer them, and they have something to share with us.

My second goal is to encourage the construction of new planetariums in SEPA. There are many large population areas in SEPA which could support a community planetarium. We need to identify these areas and encourage the folks there to build themselves a planetarium. Until next time, keep up the good work!



Richard McColman
Gibbes Planetarium
Columbia, South Carolina

SHOULD WE STOP DOING AUDIOVISUAL PROGRAMS?

Recently, an opinion piece appeared in a popular astronomy magazine reproaching planetariums that fail to do live star-and-constellation identification shows. In the article, the author (a planetarium director himself) decries what he sees as the relative lack of live interactive programming designed to teach audiences observing skills. Further, the author cites the value of a question-and-answer show format, hands-on audience participation complete with star charts and paper sundials, and a friendly planetarian who welcomes audiences with a smile, as elements of a valuable starshow. Certainly, many planetariums and their visitors could benefit from such advice. A number of facilities have indeed fallen short in the area of live night-sky programming and it should be the responsibility of us all to provide a warm, homey environment for people in our communities to use as a resource for astronomy information.

While making such valid points, though, the author of the article continues by chiding those planetariums that run audiovisually-based starshows, asserting that in doing so, such institutions somehow succeed in short-changing their audiences. This last lamentation strikes **this writer** as constituting an exercise in faulty logic. It apparently hangs upon the outdated philosophy that planetariums (and educational institutions in general for that matter) must always conform to an unwavering and monolithic program standard, lest they fall toward some imagined snakepit of promoting public ignorance of astronomy.

No doubt, many planetarians, upon reading this dissertation, have found it to be rather extremist and inflammatory in tone, with the author claiming that the theaters in question "are among the living dead," that they have a "funeral-parlor ambience," and that multimedia starshows are nothing more than "mindless spectacle." While these criticisms may have limited substance in selected situations, it appears that, in offering condemnations, the author prefers to paint with too wide a brush.

Indeed, the author may well be confusing the whole medium or genre of the audiovisual starshow with specific problems seen in certain productions. *Small Talk* readers are certainly familiar with my own appeals for the need to raise show production standards. But while many "canned" shows, in fact, suffer from being too long, and from lack of innovation and excitement, this state of affairs, to my mind, is no reason to justify a blanket indictment of the entire show genre. Such criticism is analogous to saying that because there are many mediocre films and television shows, movies and TV should be banned altogether. Or that, due to the variable quality-control found among telescope manufacturers, the production of all scopes should be stopped.

It is rash for any of us to make such broad generalizations regarding entire show categories. For instance, despite the author's assertions that live lecturers are necessarily superior to canned shows, my own experiences make it difficult for me to draw such a conclusion. I have, in fact, been rather "underwhelmed," if you will, by many live planetarium programs. The quality of this type of show is directly proportional to such variables as the vocal enthusiasm, personality and public speaking skills of the operator, along with whether the lecturer is performing his (or her) first, third, or ump-teenth presentation of the day. Having seen quite a number of lack-luster live night-sky presentations, the concept of automatic live-show superiority is pretty doubtful--for me at least. It takes a special individual to hold the audience spellbound for the entirety of a show. Through practice and perseverance, some of us have developed truly artistic and charismatic live presentation styles, but numerous planetarians find it difficult to capture and maintain a truly dramatic and energetic live delivery on a consistent basis.

No doubt, most of us have already encountered the arguments espoused by the author. It is interesting, therefore, to contemplate the motivation of those who, in our media age, continue to propound such a philosophy. I have often wondered just how often such pronouncements are the result of a thoughtful reasoning process--or on the other hand, a psychological rationalization based upon some actual or perceived audiovisual "self-inadequacy" of the philosopher. (In all fairness, one might make equally valid musings regarding the motivations of some canned-show-only devotees.)

The author also seems to have problems with the topic areas of many shows. He declares, "all this planetarium wizardry is of very questionable value. In trying to offer realistic views of interstellar travel or the death of a star, we desert a more important reality--the night sky, which is beautiful unto itself."

A more important reality? I find this to be a highly questionable assessment. Such a view represents an obsolete and detrimental perspective in terms of both science and education. It is similar to saying something like, "There's no need in sending Voyager, Galileo, and Magellan out to the planets . . . all we need to know about the cosmos can be gleaned from our limited Earth-based viewpoint." Given the modern science and education alternatives, it is more than reasonable for planetarians to balk at this type of "if God had meant us to fly, he would have given us wings" attitude. Would the author also have us use only certain designs of telescopes for observing, or have us confine ourselves to observing a limited set of objects?

There is so much more that audiences can learn and enjoy about the universe than that which can be covered using only live, and night-sky planetarium programs. Creatively produced multimedia programs can greatly enhance the educational experiences of the audience by catapulting visitors into worlds and environments whose grandeur and mystery cannot be adequately explored through a live presentation alone. In the same way that the ambience of the night-sky cannot be fully appreciated without actually experiencing it, the desolation of Mars, the vast magnificence of the galaxies, and the enigmatic power of a black hole are best related by "going there."

Good educational techniques do not always follow a set formula--devoid of diversity. Innovative classroom teachers recognize the need to hold the attention of students in order to impart understanding and knowledge. Part of the impetus of learning in classes like physics or chemistry revolves around the emotional responses of students when they see the often sensational results of a laboratory experiment. There's nothing like a spectacular (but hopefully controlled) explosion or similar event, for example, to rivet the attention of an otherwise ambivalent pupil during a science lesson. The supposedly unnecessary "razzle-dazzle" of multimedia special effects serve just such an ancillary purpose, along with the primary informational function as a close-up simulation of cosmic phenomena. A creative teacher stuffs lots of "fun" items into the proverbial "bag of tricks." Lately, this educational potpourri includes video and educational computer games. (I assume that, according to the traditionalist's formula, these ingredients--along with PBS and The Discovery Channel, are taboo as well.)

Additionally, let me say that I detect a certain astronomical and educational elitism in the author's ideology. This is evidenced by his characterization of his ideal night-sky interpreter as "someone who really knows something about the sky." Implied in this is the assertion that the staffs of theaters that run canned shows are astronomically illiterate. Am I simply over-reacting to an imprudently worded phrase?

Perhaps. But as alluded to earlier, there is much more that can be learned in astronomy than that which is gathered via direct personal observation. Although reading astronomy books and watching canned planetarium productions may not "qualify" one to enter the exclusive realm of "real observers," does this mean that the armchair non-observer-type **must be** inferior in intellectual prowess and understanding to the astronomy club member? In the realm of astronomical research, are Einstein, Hawking, or Oppenheimer less valuable contributors than Herschel, Hubble, or Shapley?

Although we often don't like facing the fact, it is a **given** that many potential planetarium visitors will **never** become night-sky devotees. Is it therefore appropriate to neglect these

astronomical "couch potatoes," by in essence saying, "If you aren't willing to meet us on our terms, we're content to let you wallow in your own ignorance"?

It is shortsighted to assume that each and every planetarium visitor must be able to instantly recognize the locations of M42 or NGC-4565, in order to possess adequate "astronomical literacy." If given a choice, I would much prefer audiences to go away understanding the structure and processes that make nebulae and galaxies what they are--and the **why** of the cosmos, rather than merely the viewed-from-Earth **what**. Whether some of us wish to recognize it or not, **it is possible** (but not necessarily desirable) for non-observer types to gain an understanding and sense of wonder about the universe in which we live. I, for one, have no desire to cut these people off from learning, simply because they're not "turned on" by recognizing dim constellations or viewing (what are to them) fuzzy blobs in a Nagler eyepiece.

In conclusion, I think it is appropriate to say that rather than working to destroy certain types of planetarium programs, we should all endeavor to diversify and improve the quality of our offerings. While live night-sky interpretation is important, it should not be used as an excuse to avoid appealing to, and educating an even wider audience. Educational experiences can take many forms--hands-on interaction, live lecture, question-and-answer, and even audiovisual presentations. All have their strengths--but none have a guarantee of immunity from poor execution. It is important to keep this in perspective when evaluating planetarium programming.

In the article, the author states, "No doubt witnessing the birth of a galaxy, sailing through a black hole, or visiting another planet through planetarium magic can be exciting." The question is then pondered, "... will these experiences lead anyone to appreciate the true splendor of the night sky?"

I think the answer can be a resounding "yes."

SHOULD PLANETARIUMS CONTINUE TO EXIST?

*Macon, Georgia says "YES"
to a "new...old planetarium"*

Phil Groce
The Museum of Arts and Sciences
Macon, Georgia

In 1987, The Museum of Arts & Sciences in Macon, Georgia began an analysis of the need and costs of a new planetarium. Twenty-six years ago its Mark Smith Planetarium (a 40' dome installation) was the largest in the state of Georgia and the second largest in the southeast. For a quarter of a century it served more than 700,000 students and visitors as a window to the universe. During these twenty-six years men have walked on the moon, Viking Spacecraft have landed on Mars, and Voyager Spacecraft have presented startling views of Jupiter, Saturn, Uranus and Neptune. Calculators and computers have become every day household items, and phonograph records have been replaced with compact discs. Throughout this technological explosion, the Mark Smith Planetarium remained virtually unchanged. After a quarter of a century of heavy usage, the planetarium was not only outdated but worn to a frazzle. Both the staff and boards of trustees and directors of the Museum of Arts & Sciences wondered if the planetarium had become a dinosaur needing extinction.

The Mark Smith Planetarium was born out of a recognition of the need for stronger school and public education in the space sciences. That need is even stronger today. The boards of trustees and directors and the staff, recognizing this urgent need, began a two year-\$400,000 renovation. The goal was to make the planetarium a space theater that would lead the residents of Middle Georgia into the 21st century. Original estimates of the renovation approached one million dollars....a price the community could not afford. By purchasing and restoring a used star projector and doing nearly all of the design work and construction in-house, the museum's staff were able to cut the direct costs in half. The 1987 budget and the revised 1989-90 budget are included for your amusement.

Renovation Costs Estimate (1987)

New Star Projector	\$430,000
New Dome	\$65,000
New Computer Control	\$75,000
New Projection Gallery	\$25,000
New Carpeting	\$7,000
New Seating	\$26,000
New Special Effects	\$80,000
New Sound System	\$25,000
New Cove Lighting	\$8,000
New Video System	\$50,000
New LASER system	\$45,000
TOTAL	\$836,000

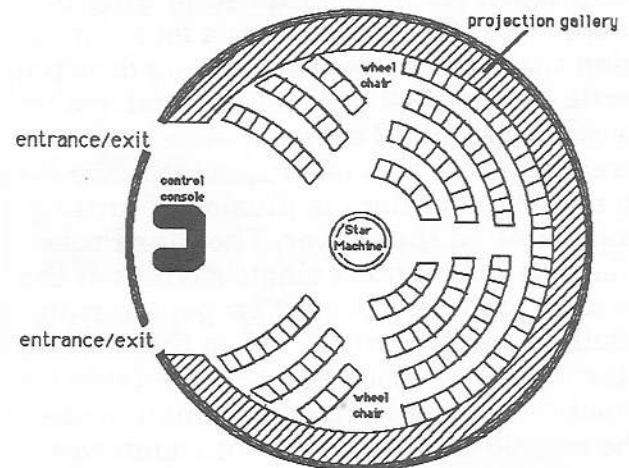
Actual Renovation Costs (1989-90)

Used Star Projector	\$200,000
Repair of Dome	\$3,000
New Computer Control	\$20,000
New Projection Gallery	\$16,000
New Carpeting	\$6,000
New Seating	\$19,000
New Special Effects	\$60,000
New Sound System	\$15,000
New Cove Lighting	\$2,000
New Video System	\$30,000
New LASER system	\$16,000
TOTAL	\$387,000

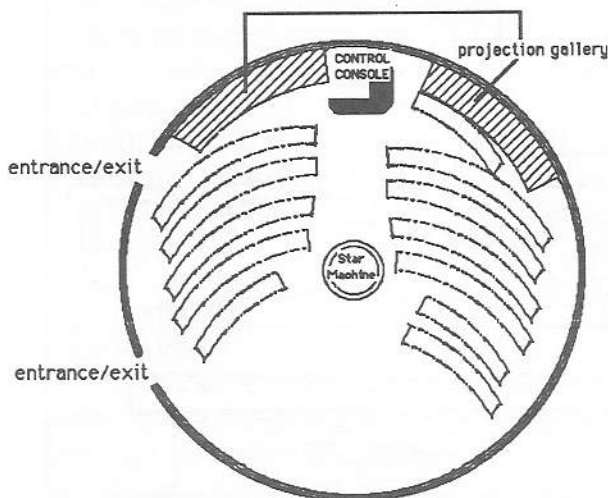
After careful study, it was determined that every component of the planetarium, except the dome needed to be replaced. The dome, however required extensive repair and re-painting. The planetarium was gutted of several miles of old electrical wires and new electrical raceways were run that would allow computer control. A new gallery, housing more than 100 special effect projectors, was constructed around the planetarium theater.

The control console and the seating were repositioned to make maximum use of the theater floor space. New carpeting and new individual seats were installed to replace the old badly frayed bench seats.

1989-1990 PLANETARIUM RENOVATION



1987 EXISTING PLANETARIUM DESIGN



A new dynamic 3200 watt-14 speaker surround-sound system was installed capable of reproducing the power of a space shuttle launch or the terror of a thunderclap.

To insure the reliability and consistency of planetarium performances, a computer control system was installed. This system not only precisely controls the planetarium's auxiliary projectors, it also controls the planetarium's cove light system.

Using computer images, Laser Discs and video tape players as image sources, The New Mark Smith Planetarium features the world's only three projector video panorama system. This video panorama surrounds the audience and greatly enhances the versatility of the planetarium. The video system also boasts a satellite dish capable of bringing live images of scientific events from around the world, including Soviet and American space launches, NASA press conferences and scientific symposiums. The planetarium has a computer controlled multi-colored LASER graphics system that project and animate LASER images among the stars.

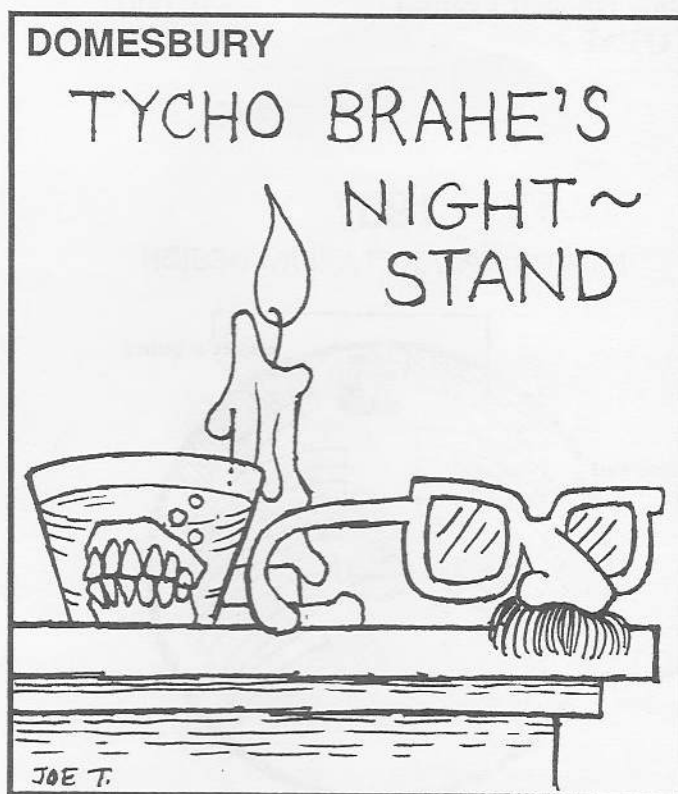
The single greatest addition to the New Mark Smith Planetarium is the MS-10 Star Projector made by Minolta Corporation of America. This machine produces three times the number of stars as the old planetarium star projector and it is the only planetarium in the state that has stars that twinkle. Scintillation of stars and steady light of planets is one way for students learn planet identification without a telescope. The MS-10 possesses a fourth axis of rotation that can change the viewing direction of North, South, East or West for comfortable study of the sky. A 12 carousel slide projector panorama system also participates in this azimuth motion, creating the illusion of turning the room around the viewer. The Star Projector was also the greatest single savings of the renovation project. When a new planetarium was built in Jacksonville, Florida their 17 year old star machine, which had been suitable for a 40-foot dome, was deemed too small to use for the new 60-foot dome. Our Museum was able to purchase this out-of-use, well conditioned machine, for less than \$15,000. After careful analysis, Minolta Corporation agreed to update and rebuild the star machine to new technology standards for less than half the cost of a new machine, saving over \$200,000. This renovated MS-10 Star Projector creates one of the brightest and most realistic planetarium night skies in the Southeast and should function another 20 years.

The the New Mark Smith Planetarium will complete its first year of continuous operation in January, 1991. It has already set a new attendance record and received rave reviews from teachers and visitors.

Today, many older planetariums are feeling their age and some are suffering from a severe lack financial support. Many will either find new life through renovation or be closed down.

We hope that the renovation of The New Mark Smith Planetarium will inspire other communities to support their planetarium.

Whether it is simply a look at the night sky or a journey to another world, a planetarium visit can provide a cosmic perspective that will both guide and challenge our students and their parents. The New Mark Smith Planetarium will remind visitors that we are more than citizens of the United States or Britain or Germany, that we are all children riding on one planet and that we are part of a much larger universe. Hopefully, this planetarium will communicate that we have more than a right to explore the universe, we have an obligation. And, perhaps, some of our visitors will take the time to explore the universe on their own with nothing more than their planetarium experience to guide them.



NEW ILLUSTRATIONS FOR OLD MYTHS

Edward F. Albin
Jim Cherry Memorial Planetarium
Fernbank Science Center
Atlanta, Georgia

Visual considerations are an important concern whenever producing a planetarium program. Visuals, narration, and music all contribute to the success of a star show. Often, however, new works of art must be generated to convey certain segments of the program. When producing a recent planetarium show (entitled "Birth of the Cosmos"), we found this to be the case. Creation myths from around the world were discussed. Locating suitable illustrations proved difficult, so we decided to produce several new pieces of art. What follows are technical suggestions about producing new artwork for the planetarium and a look at a few examples used in a recent program.

Many planetariums are fortunate to have at least one staff artist. This person can plan an important role in show production. In most instances, needed visuals can be found in storage files, photographed from books, or simply purchased from a variety of sources. However, every producer has experienced the frustration of not being able to locate that needed illustration. That is when the planetarium artist comes into play. The artist can nicely create a new piece of art for a specific scene, thus filling a gap that may have been covered with an inadequate visual, or even worse, not represented at all.

Over the years we have found a few techniques which make the difficult task of creating and displaying artwork in the unusual domed environment more appealing. Questions such as that type of paint to use, what kind of base paper or board works best, and which colors are effective have all been addressed. All our artists agree that when producing artwork for the planetarium, they strive for a final product that might easily be hung proudly in one's home.

Canson-Mi-Teintes black paper and black poster board are the preferred base paper for

our artwork. The paper format is used when developing new panoramas. This material comes in large rolls and can be cut to size. When producing new art flats, the stiff black poster paper is used. We have found that sheets that are 9x12 inches have dimensions which are not only slide compatible but also store well. Obviously, the paper's original black background makes later masking and opaquing much easier.

Gouache, an opaque watercolor paint, is well suited to cover black paper. The easiest way to determine if a specific color will work under your dome is to conduct a few simple experiments. First, paint a series of color swatches on black poster board. Be sure to incorporate all colors considered for use. Next, photograph the color board. Use several exposure settings and vary the light intensity to see what works best. Then, place these test slides in a projector, using similar conditions that might be encountered during a program. Great differences can occur between the coloration of the original art and its projected photograph. For example, some shades of blue will appear black and therefore invisible in the planetarium.

Although the segment of the program concerning creation mythology from around the world occupies less than ten minutes of show time, numerous new visuals had to be completed. About two dozen illustrations were required. For most of the six individual myths, two or three new art flats were generated; however, we decided that the Chinese creation story could best be dealt with by developing a series of visuals for use in a dissolve sequence. The mythology section of the show provides a nice transition between a tour of the autumn sky and the evolution of the universe following the Big Bang.

Greek mythology tells of a vast darkness without form existing long ago. This void was regarded as a great hovering black-winged bird. We chose to illustrate the black-winged bird as flying with wings fully spread (Fig. 1). Within the wings are found clouds of chaos, with some hit of stars and galaxies. The Greeks also believed that from this bird of the night there came an egg. Out of the egg flew the golden-winged Eros or Love. Ouranous and Gaia; that is, Heaven and Earth, were thought to have been derived from the two broken halves of the

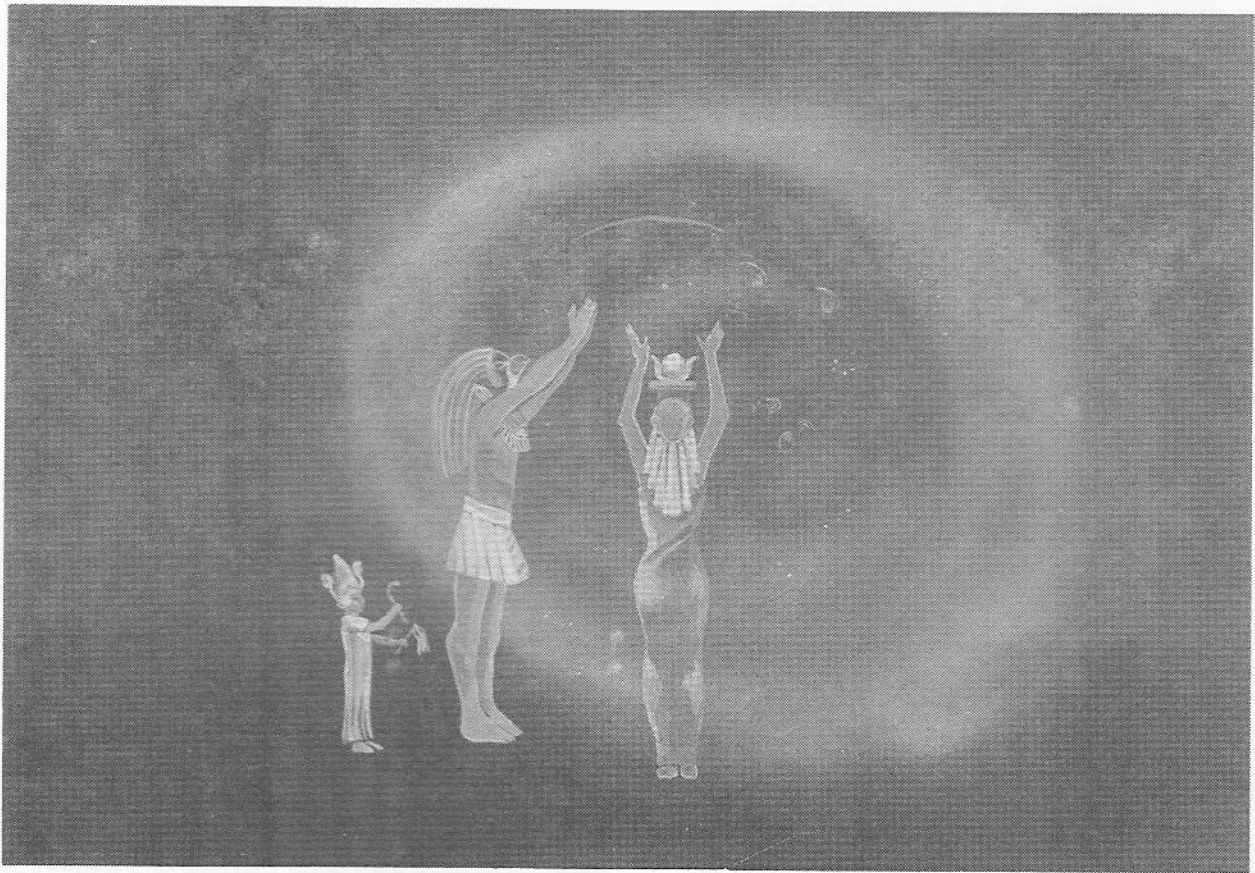


Fig. 1 (see opposite page)
The Greek black-winged bird of creation.

Fig. 2 (see opposite page)
Egyptian priest, pharaoh, and god
struggling to keep chaos at bay.

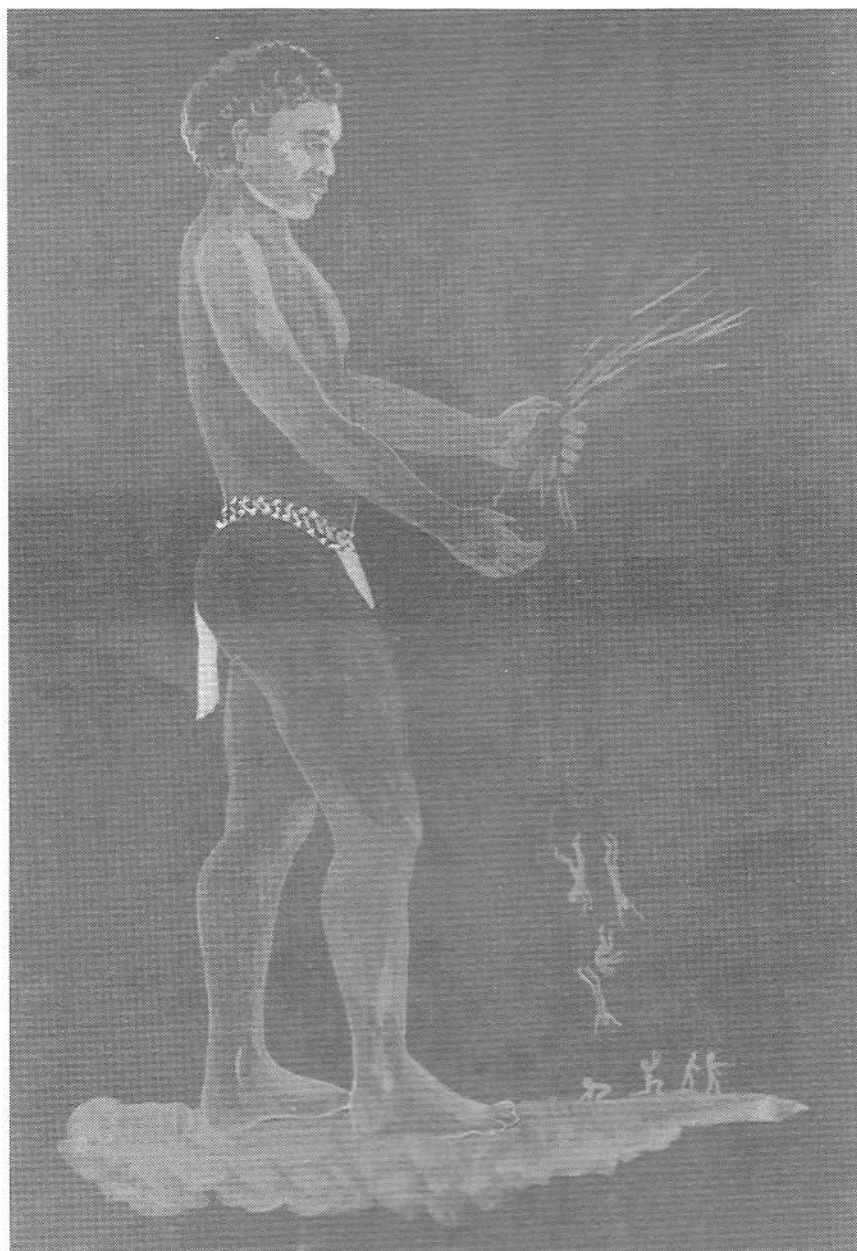


Fig. 3 (above)
The Zulu sky god, Unkulunkulu,
creating people from tall blades of grass.

egg shell. Another piece of artwork shows the broken egg shell. One half of the shell contains the Sun and Moon, and within the other is found the Earth.

Again, two new illustrations were created to convey the Egyptian concept of creation. According to the ancient Egyptians, chaos existed first. Powerful forces were thought to have pushed the chaotic state to the edges of the world. Our first art flat shows a priest and pharaoh assisting the gods in their ongoing battle to keep chaos at bay (Fig. 2). The second piece of art depicts in a pyramidal fashion the hierarchy of Egyptian gods, with Ra at the top and Geb and Nut at the pyramid's base. Ra, the sun god, was believed to have emerged from the sea. Shu, the god of the air, and Tefut, goddess of moisture, were created by Ra. As they joined together, the earth god Geb and the sky goddess Nut came forth.

The Chinese story of genesis is just as fascinating. A series of visuals were produced for a dissolve sequence to display the following myth. At the beginning of time there was only darkness. The planet was a huge egg, filled with chaos. Yet a giant name Panku slept within. When Panku awoke, he abruptly cracked the egg with an ax. The lighter materials drifted upward to make the sky while the heavier contents sank down forming the earth. For thousands of years the sky and earth tried to recombine. Panku struggled to push them apart. Unfortunately, upon completing the task, the weary giant laid down and died. Panku's body then went through an amazing metamorphosis. His hair became the stars while his left eye became the Sun and the other the Moon. His limbs transformed into the mountains. It is even said that the tiny fleas crawling over his body were the ancestors of man.

Traveling to the continent of Africa, we learn of the Zulu creation myth. Their sky god, Unkulunkulu, came mysteriously from the void. One of the sky god's first acts was to make people. Our new illustration shows people being brought forth from tall blades of grass (Fig. 3). As told by Zulus, Unkulunkulu was a compassionate god, for he provided people a place in the sky after death. Another art flat shows how the stars were believed to be the eyes of the dead watching over the world below.

The Cherokee Indians of North American also told a story of how the world came into being. Our first illustration shows that in the beginning all living creatures dwelled above in the sky vault. Far below was a vast ocean. The sky vault was very crowded with people and animals. A water beetle and buzzard would solve this problem. Visual number two depicts a water beetle which dived below the ocean and brought up some mud. This mud began to grow, later becoming an island of land called earth. But, the land was very flat, soft, and wet. The third picture is that of the buzzard. He flew down, flapping his wings against the ground. Valleys formed where his wings touched the earth, and when the wings pulled up, the mountains were made. Apparently this is why Cherokee country is so mountainous to this day, at least according to the myth. Finally, when the land was ready, animals and people descended to earth.

Of course, when producing new artwork, one should always strive to create the intended scene as accurately as possible. That means doing a little research before getting the paint brush wet. For instance, since we dwelt with mythology from around the world, we had to pay particular close attention to clothing fashion, skin tone, appropriate symbolism, and other technical factors. Even when following tight guidelines, the artist still has a fair amount of room for originality. As computer graphic capabilities increase, perhaps the need for the planetarium artist will diminish. Today, however, the best way to make new visuals, especially those for the planetarium chamber, is the old fashion method of placing paint on paper. It is fair to say that without the artist, the modern planetarium could not adequately take the audience on voyages of space and time that they so desire.

(Illustrations by Mozelle Funderburk, staff artist at Fernbank Science Center.)

FIELD OF REVIEW

Dave Hostetter
Lafayette Planetarium
Baton Rouge, Louisiana

Space Places, by Roger Ressmeyer
Collins Publishers, Inc., San Francisco, Calif.,
1990, ISBN 0-00-215732-2
208 pages, hardback, \$45.00

Many of you may have seen an article about his book in the December, 1990, issue of "Sky and Telescope." Take my word for it, as nice as it was, that article didn't do the book justice.

The pictures in *Space Places* are just outstanding. The book itself is large, measuring some 10" by 14", and a large number of the images fill almost an entire page - or both pages. The reproductions in my copy were excellent, and the result is a beautiful book to put our where people will see it.

Most of the pictures are bordered by an inch or so of blank page, allowing the reader to handle the book without getting fingerprints on the pictures themselves. Many of the borders contain text, ranging from picture captions to quotes from an assortment of astronomers, astronauts, and other interesting people, living or dead.

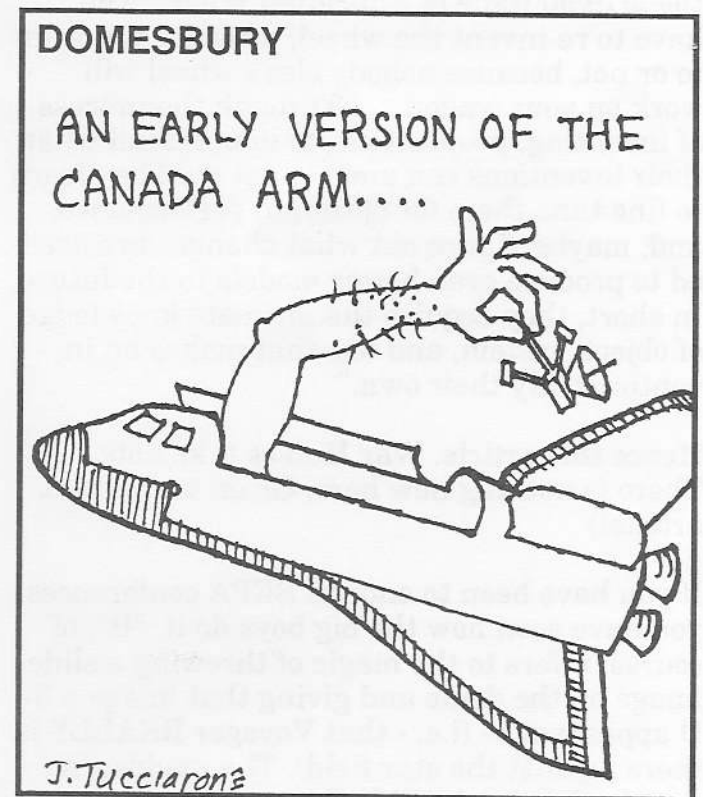
While most of the pictures were taken by Ressmeyer himself, some come from well-known observatories and space flights. Most are unique in one way or another - this is not just another compilation of reread NASA photos that you can find in a dozen other sources (although there are a number you will recognize). One of my favorites is a picture of the ecosystem beneath the Arecibo radio telescope--I hadn't ever thought about what it might be like behind the facility.

One feature of the book that I think will be of particular interest to those of us "in the business" is that many of the photos include well known professional and amateur astronomers. If you have ever wondered what Roger Angel, John Dobson, Don Machholz, Jay Pasachoff, or a lot of others look like, there's a chance that you'll find them here. I think these photos add a lot to the book.

Another strong point is that space pictures are not confined to the US space program. There are a number of images from the Soviet Union, People's Republic of China, and Japan, most of which I had never seen before.

There are, of course, a few reasons to complain, but certainly not many. The very technique of spreading pictures spectacularly across two pages means that part of the image will be lost in the binding. Worse are pictures that spread only a couple of inches onto the second page; that adds little to the appearance of the book, while spoiling a picture in the process. Also, it would have been nice to have a planetarium or two in the collection. Overall, however, the book is a find effort.

Incidentally, *Space Places* is not just a book of interest to professional or serious amateur astronomers, but is pretty enough to be appreciated by nearly anyone (translation: my two-year-old boy went nuts when he saw it, and after only ten minutes could say "observatory"). I strongly recommend it.



Masking Slides on a Miniscule Budget

Mike Ryan
Lake County Schools Planetarium
Howey-in-the-Hills, Florida

(Preface: I can hear the War Horses now: "Why are you reinventing the wheel? The wheel of slide masking was taken care of eons ago." In case you might be wondering why this dinosaur author with 15 years at the same theater is bothering with an article on a topic long discussed, it occurred to me - as I was sitting in front of the slide sorting table working on the 300 visuals Mark Peterson included in his "Voyager Encounters" program that:

1] There several new people in the planetarium field who have not seen the wheel invented as we did saw it a decade or more back. How many personnel changes have happened in planetariums with new blood? And how many of the neophytes are not familiar with basic slide masking techniques?

2] To borrow a phrase from Joanne Yatvin in the 9/19/90 issue of Education Week, "You have to re-invent the wheel, whether you want to or not, because nobody else's wheel will work on your wagon . . . Through the process of inventing, people learn to understand what their inventions can and cannot do. They learn to fine tune them for optimum performance, and, maybe, figure out what changes are needed to produce even better models in the future. In short, they acquire the intimate knowledge of object, system, and use that makes an invention truly their own."

Hence this article. War Horses take note. There is nothing new here. Go on to the next article!)

If you have been to enough SEPA conferences, you have seen how the big boys do it. "It", of course, refers to the magic of throwing a slide image on the dome and giving that image a 3-D appearance - (i.e. - that Voyager REALLY is there against the star field). The maddening gray background inside the rectangular slide frame (which looks black on the slide but manages to be seen when projected) is nowhere to be seen.

The big boys will tell you that the secret is easy. Merely double photograph your image, making one dup 1-1 1/2 f/stops brighter than the other. Then sandwich both in a pin-registered mount. However, before you run home from one of those conferences and adapt your newly-found knowledge in your school system darkroom which has a relatively inexpensive, manual 35 mm camera on the copy stand, there is one caution. The big boys have a special copy stand camera which cost them over five grand. This camera makes absolutely certain that slide images are registered from one frame to the next inside the camera. Your lowly Pentax MX does not have that feature. Without the in-camera registration, the two dups could be a fraction of a millimeter off in pin alignment and, when you sandwich the two in a mount, there can be a shift from one slide image to another, rendering the sandwiching method useless.

So what is the lowly small theater supposed to do? Never in your wildest dreams will a five thousand dollar camera make its way into your facility. There are several answers. All require work, but all are effective.

I. Kodak Opaque (which now costs an arm and a leg):

Question: What is the most frequent image shape on the slides you need to mask? (If your answer was anything other than 'a circle', three lashes with a wet noodle for fuzzy thinking and immediate employment at a star theater in Florida that has gone through an amazing number of director changes in the past year.) When I started to mask circular slides, I did it by hand - a thin brush and a bottle of red Kodak opaque.

The results were terrible. If I slipped and got some of the opaque in the image, the projector was merciless. Any minute infraction was magnified many times over and gave the audience the impression that I attacked the slide with a 4" paint brush. Only later did I learn that my slip of the brush was curable, had I applied the opaque to the base side of the film - not the emulsion side. All I had to do was rinse out the brush and with the bristles slightly damp wash the mistake away, dry, and try again.

[Speaking of Kodak opaque, have you priced a one-ounce bottle recently. The stuff, Cat # 146 4296, now runs about \$12.80. At that price I longingly looked over 4 bottles of black opaque a local photo shop was trying to unload for a few bucks each, but resisted the impulse. Working on a back-lit light table, black opaque is very hard to see and mistakes are more prone to happen.]

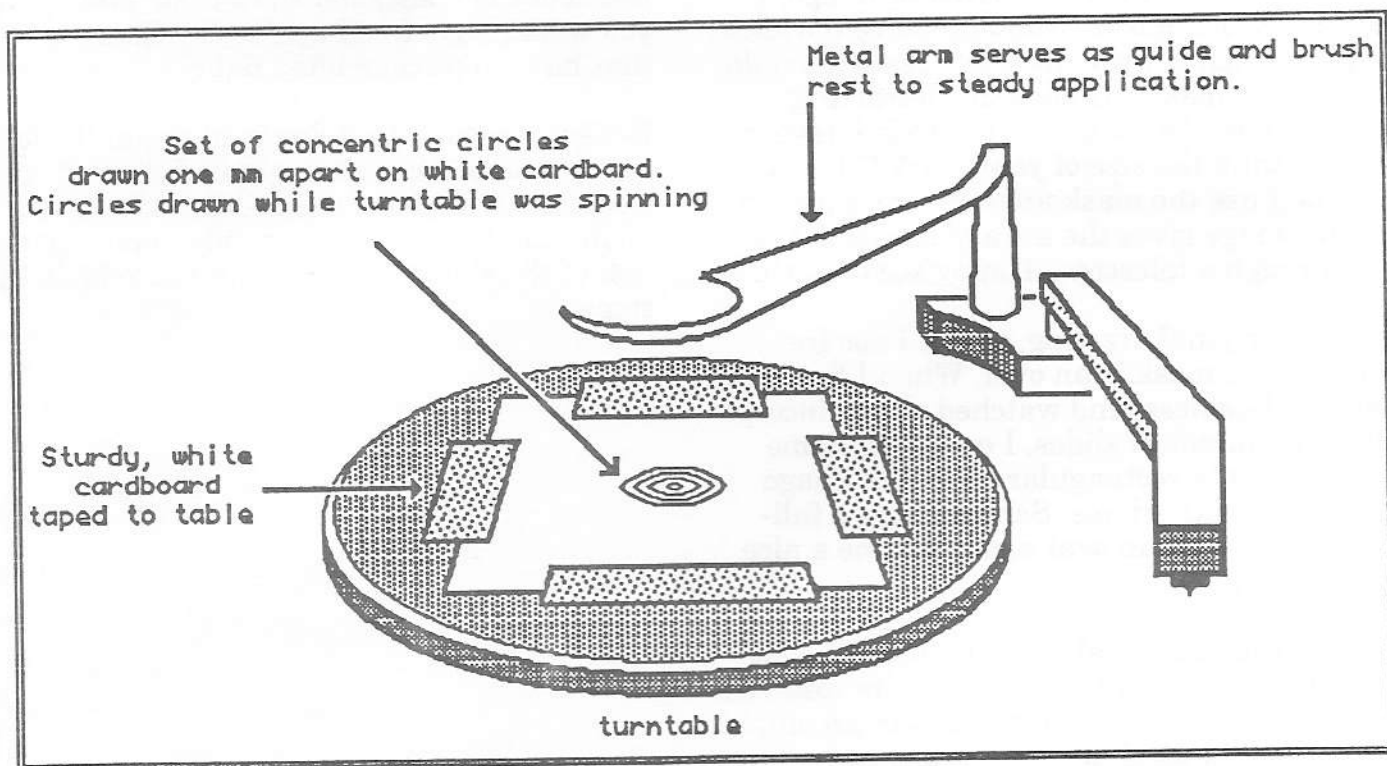
However, that was in the good old days when you could easily tell the difference between the base side and the emulsion side. The base side was always the glossy side. Have you looked carefully at any of the recent emulsions lately? Both sides look glossy! It takes a real talent to hold a slide against a dark background while reflecting a ceiling light on the slide to tell the difference. A trained eye can actually spot ridges on the emulsion side.

The simple answer, of course, is never to apply opaque to the slide itself. Rather, apply the opaque to the glass window on Wess Mounts. (Of course, this assumes that you have a budget generous enough to BUY Wess mounts. For the war horses who disobeyed my first paragraph instructions, and are reading this

article anyhow: believe it or not, there are a bunch of planetarians who consider Wess Mounts an unattainable luxury! In what may seem a contradiction in terms, my own facility now sports a new \$10,000 sound system, but I don't have the budget for Wess.)

Even if your brush has stayed a millimeter outside the image of Jupiter, the projected image still leaves something to be desired. The human hand/brush combination cannot paint a good circle. Holding your breath while applying the opaque improves steadiness somewhat, but usually results in a face as red as the opaque itself.

Back in the latter '70's, planetarians attending the first SEPA conference in Cocoa were treated to a unique workshop on circular image opaquing. The technique involved centering the slide on a turntable and, once taped in place, gradually applying the opaque to the spinning image. At Howey I have incorporated this method, using the 78 rpm speed on a white card permanently attached to the turntable. Beforehand, I had to hacksaw off the center spindle. Concentric black circles drawn on the card help align the image. (See drawing.)



Even I have grown sloppy with advanced age. The turntable has seen little use of late. Instead, I have been relying on:

II The Kodalith Mask:

At the beginning of the year, after I mix up a new batch of darkroom chemicals to process B & W Kodalith, I will photograph a number of rolls to be used as masks. A long time ago, I drew a large, circular image with a pen compass, filled it in with India ink and used it on the copy stand. India ink, however, tends to yield a glossy image which shines on the stand and, consequently, can fog the film and darken areas within what should be a clear circle. To solve that problem I took the original drawing to a good copier, one that does not bleed out solid black areas.

The black copy now serves as the original for photography. (This process I also use for images and graphics created on the Macintosh computer and ImageWriter printer. Copying machine duplicates wind up being blacker than the original, ribbon versions.)

Now, as I am working on show preparation, every time I come across a circular image, I tear apart the plastic frame, remove the slide, and sandwich it with one of my readily available circular masks. (I hear the detracting screams already. "What if the circle image is smaller than the size of your mask?" The answer is: I use the mask anyway. Once projected, the image gives the aura of seeing the object through a telescope. Happy accident time.)

Another original drawing, which I use frequently as a mask is an oval. When I first got into this business, and watched shows incorporating hundreds of slides, I quickly became bored with the rectangular format of image projection on the dome. Sandwiching a full-frame slide with an oval mask became a nice alternative.

Finding the exact oval to fit the slide format turned out to be a trial and error process. Because of the various eccentricities in an ellipse, the oval could wind up being either too skinny or too fat. Finally, I found one most pleasing to the rectangular area of a slide, and I generated an India ink oval which, to my way of

thinking, was perfect. A copier duplicate was made and a number of these masks are ready whenever I need them.

For example, In Peterson's "Voyager Encounter" show, there are a number of diagrams illustrating magnetic fields surrounding a planet. Projected along with an oval mask, the image is quite striking.

No matter which method you incorporate, it process takes time. Ultimately, the day may come when we may be able to put the opaque back on the shelf and the masks in a filing cabinet. Someday, I hope, the producers of planetarium shows will take pity on us little guys - the one man or woman installation who, because of a busy schedule can only devote a few minutes a day to necessary masking. When that day comes, we will have a program delivered to us with double images (the process discussed back at the beginning) requiring no masking at all. Personally, I would be willing to pay more for a show if it can be delivered to me in that fashion.

If you were to figure out on an average, how many hours you devote to masking alone, based on your salary, you can easily see the worth of the additional show cost: TIME that you would have freed up for the six other tasks that have to be completed today.

Believe it or not, that day is at hand. If you buy a program from Astronaut Hall at Brevard Community College, the slides come to you double shot. Now if we can only persuade the rest of the show producers out there to do the same.

SEPA 1991

ATLANTA, GEORGIA

June 11-June 15

Come and enjoy SEPA's 20th Anniversary conference in Atlanta!

The conference will begin at Fernbank Science Center Tuesday evening with refreshments, registration, welcome, and the planetarium show "How the Earth Will Die." (Do we know how to start a meeting or what?)

During the next three days conferees will get a chance to see programs in three other planetariums as well: Fulton Planetarium, Harper Planetarium and Northside Planetarium.

We are planning an evening journey to Stone Mountain for the Laser Show, a tour of the Vista-scope Movie Studio and demo, video shoot out, Minolta portable infinity projector (well, one star field actually), art workshop for planetarium artists . . .

and much more!

The conference hotel is the Decatur Holiday Inn and Convention Center.

Reservation and registration information, as well as a more complete itinerary will be arriving soon by mail.

Call for papers for

**SEPA 1991
Atlanta, Georgia**

Deadline for receipt of papers: MAY 1

Send papers to:

David Dundee
Fernbank Science Center
156 Heaton Park Drive
Atlanta, GA 30307
(404) 378-4311

SPECIAL NEWS FLASH

PLANETARIUM ARTISTS!

We will have a planetarium art workshop led by the Fernbank Science Center Art Department staff.

VENDORS!

Exhibition space has been arranged at Fernbank. Specific time will be included during the scheduled program activities for conferees to view vendor exhibits.

All vendors who register for the conference and donate a minimum of \$100 to help defray conference costs will be given a 15-minute slot during one of the paper sessions to inform conferees about their products.