

# SOUTHERN SKIES

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Articles should be submitted in one of the following formats:

- 1) mailed on a Macintosh disk (400 or 800k)  
 (preferable)
- 2) mailed as double-spaced typed or printed copy on paper

Articles submitted on disk should be accompanied by a printed copy that notes italics, boldface, accent marks, and any other formatting instructions. On the disk have two files—the formatted file, and a text-only file. If you use any special fonts please include them by including a copy of your system file.

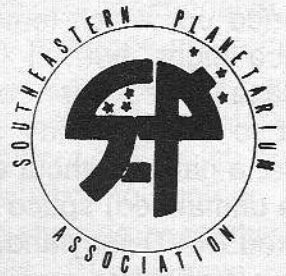
All articles should be accompanied by author's name, mailing address, and telephone number, as well as a statement to the Editor granting or refusing permission to reprint the article in other forms. Accompanying art must be labeled.

**DEADLINES:** Submit all copy and artwork to the Editor in accordance with the following deadlines:

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# Southern Skies



Volume 8

Number 1

Winter 1988

## A MESSAGE FROM YOUR PRESIDENT

Finally - just when you thought it was safe to go back to the mailbox - da DAH! SOUTHERN SKIES returns! Welcome back, SKIES, we've all missed you!

And for a brand new issue, we have a brand new Editor. She is Linda Hare from Bishop Planetarium in Bradenton, Florida, and I think she's off to a perfectly mah-velous start. Welcome Linda, and thanks for taking on this tough task.

By now you've probably all recovered from Comet Bradfield's apparition (or, Halley's Comet Strikes Back), Christmas Shows, lots of questions about new telescopes, and seemingly endless requests from people to locate stars that they've purchased - or do we ever really fully recover from these things? And suddenly I have found myself faced with a situation that I hadn't expected (not unlike the Spanish Inquisition). It happened just a little while ago, when I was talking to a group of high school students about the moon.


As it turned out, I had just looked up the dates for the last Apollo mission - Apollo 17 (Cernan, Evans and Schmitt) - which launched on December 7, 1972, and returned to earth on the 19th of that month - and it suddenly struck me that it's been over 15 years since we've set foot on the moon. In other words, I was asking these kids to remember something that they had never personally witnessed! I was floored. For all these

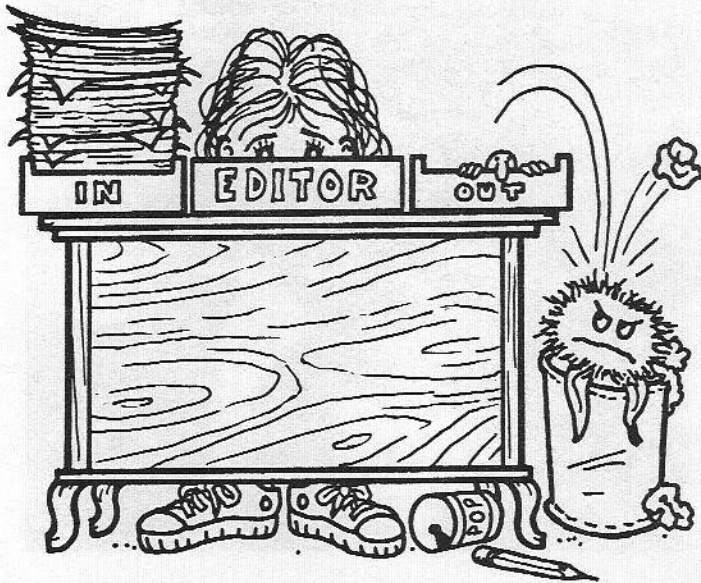


teenagers know, we could have made the whole thing up, like some kind of Star Trek movie.

And now that I think about it some more, I believe this represents one of the few instances in which technology has receded instead of advanced; for while we know how to go to the moon, we currently lack the machinery to do it. It's as if Columbus had returned to Europe after his discoveries, only to find that everybody had dismantled the shipyards. Now what would have been the consequence of that?

And so there's this great void which had opened up, which leaves all of us talking about space flight, but... I had this same feeling of unease last summer during the SEPA conference visit to the Kennedy Space Center. Here we were, a nation without any manned (and precious little unmanned) space exploration, and the place looked like Disneyland. All those people, milling about the Center, waiting in line for the Imax film, or the soft custard ice-cream, or the gift shop checkout. It's really sad, especially when all these folk really wanted was to see a good old-fashioned launching.

And so we hang on, waiting for the void to be filled, which someday, it probably will be. Space is too challenging for us not to reconquer it. But meanwhile, the movies and the amusement parks beckon. And the planetariums. 



Hi,

Got a call a while back from the illustrious President of SEPA asking if I would be willing to try my hand at editing "Southern Skies".


As those who know me will readily attest, I have a habit of jumping into things "ass over tin cup". Without thinking first...I said yes.

I want to thank Tom Hocking for his part in affecting a smooth transition.

If you have articles you would like printed,

ideas of things you would like to see, suggestions of any kind, any news to share, or just want to say "Howdy", PLEASE get in touch.

If the journal is going to continue to be a publication we as SEPA members can be proud of, it has got to be a joint effort. Since I do have a fantastic lot of people out there to draw on (and trust me, I will be getting in touch with each and every one of you), I am confident that all will go smoothly...go smoothly...go smoothly...

I hope you all will get as excited about Southern Skies as I am, and become actively involved. 

## 1988 SEPA CONFERENCE ANNOUNCEMENT

The 1988 SEPA meeting will be a business meeting and "social event" [from minutes of 1986 business meeting] during the 1988 International Planetarium Society conference held in Richmond, Virginia, the week of June 27-July 2. SEPA's special function will be a dinner/business meeting on Friday, July 1. SEPA members should be prepared to pay an extra \$30.00 (\$15.00 for SEPA membership dues, \$15.00 for dinner) when they send in their IPS conference money.

There will be no separate mailing for SEPA members; all information will be included in the IPS packet. You may make a separate check for SEPA, if you wish, for a registration fee of \$30.00, or you may include it in your IPS registration fee.

Send all inquiries to Ken Wilson, at Universe Planetarium. He and the Universe staff are in charge of the IPS conference; Jane Hastings of Jefferson Planetarium in Richmond and Jon Bell, SEPA president, are working on the SEPA part.

This will be an expensive conference. Please help us think of someone who might be persuaded to underwrite the SEPA dinner. Or at least part of it. Some friend of SEPA?

# SEPA ASTRONOMY EDUCATION GOALS

by Dave Hostetter

Lafayette Natural History Museum and Planetarium

In 1985, the Great Lakes Planetarium Association released a set of goals for astronomy education intended for a K - 12 curriculum. During the 1986 SEPA meeting, I was asked to form a committee to review the GLPA goals statement and make recommendations about it to the SEPA membership. Besides myself, the Astronomy Education Goals Committee consisted of Mike Chesman, Jane Hastings, and Frank Palma.

The resulting SEPA Astronomy Education Goals are based strongly on the GLPA report, with some modifications suggested by committee members. They are presented here for your review so that they can be discussed during the next conference business meeting.

I believe that the committee members have developed a Goals Statement that is suitable for acceptance, but revisions are still possible. Following the Goals Statement is a listing of revisions suggested by committee members that, for various reasons, did not get included in the final version.

## REVISED GOALS FOR ASTRONOMY EDUCATION IN A K - 12 CURRICULUM

Since astronomy is one of the basic sciences, students should be introduced to astronomy as both a body of knowledge and a process for learning about the universe. Through the study of astronomy, students should acquire the appropriate attitudes, process skills, and basic knowledge important to the scientifically literate citizen. It is the position of the Southeastern Planetarium Association that the following goals should be met by students completing a K-12 curriculum.

The student should understand the following:

### A. Visual objects and phenomena

1. The Sun
2. The Moon
3. Planets
4. Stars, specifically including locating and recognizing the North Star
5. Meteors
6. Eclipse
7. Comets

### B. Relationships between time concepts and astronomy

1. That the measurement of time is based on motions of the earth and moon
2. That the sun's direction in the sky at sunrise or sunset changes with the seasons because of the orientation of the earth's axis in space
3. That the weather changes with the seasons because of the changing angle of the sun above the horizon and the varying length of daylight
4. That the constellations change seasonally and may be used as a calendar

### C. Current knowledge of the solar system

1. That the sun is a star at the center of the solar system, orbited by the planets and minor bodies
2. How the moon orbits the earth, causing the phases of the moon
3. What relative positions of the sun, earth, and moon occur during eclipses
4. What the planets are named and their order from the sun
5. What the major physical characteristics of the planets are, and how these characteristics are acquired
6. That in addition to the sun and planets, the solar system encompasses other bodies such as moons, asteroids, comets, and meteoroids

- D. Current understanding of the nature of stars
1. That stars vary in size, temperature, brightness, color, and mass
  2. How stars form
  3. How various types of stars evolve into their end-states, including phenomena such as white dwarfs, pulsars, supernovae, and black holes
  4. That the sun is of the same basic nature as other stars
- E. Current knowledge of the structure of the universe
1. That gravity influences the existence and motion of all objects in the universe
  2. That galaxies are large systems of stars held together by gravity, and that billions of galaxies are found in the universe
  3. That the sun is only one of the billions of stars that constitute the Milky Way Galaxy
  4. That the recession of galaxies in all directions is one of many pieces of evidence leading astronomers to conclude that the universe is expanding
  5. How galaxies form and evolve
  6. How the universe began and is evolving
  7. How life began on Earth
  8. What requirements are needed for life to occur elsewhere in the universe
- F. Methods and tools of astronomers
1. How the scientific method is used as a means of rational inquiry about natural phenomena and forms the basis of science itself
  2. That the universe is studied mainly through the electromagnetic spectrum
  3. That different types of telescopes are used to study the various parts of the spectrum
  4. How the usefulness of telescopes is enhanced by the use of cameras, spectroscopes, photometers, and other devices

- G. Spaceflight
1. That spacecraft have brought a revolution in astronomy by allowing observations that can only be made outside the atmosphere and at other planets
  2. That basic requirements for spaceflight include energy, propulsion, orbits, communication, and life support for piloted flights
  3. That spaceflight provides a wide variety of benefits to modern civilization
- H. Astronomy and culture
1. How astronomy and astrology differ
  2. How astronomy affects our understanding humanity's place in the universe

#### OTHER SUGGESTED REVISIONS

##### Section A

1. Include atmospheric events such as auroras, rainbows, halos, etc.
2. Omit Section A entirely and include those concepts in Section C.

##### Section B

1. Include the origin of the days of the week and the development of the calendar.

##### Section C

1. All suggested revisions were used

##### Section D

1. Note that the sun is fairly average in terms of mass, but more luminous than the vast majority of stars in the solar neighborhood

##### Section E

1. Statement E-3 may be too simplistic.

##### Section F

1. Include a statement concerning math skills or the use of math
2. The statement about the scientific method may not be necessary

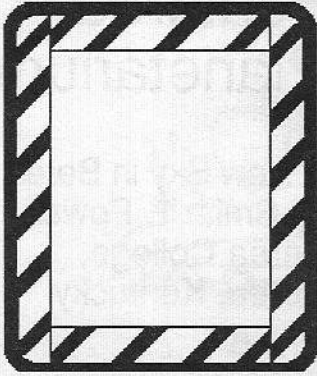
##### Section G

1. All suggested revisions were used.

##### Section H

1. Mention of astrology is unnecessary and possibly counterproductive.





## Slate of Candidates Selected

by John Hare  
Bishop Planetarium  
Bradenton, Florida

A Nominating Committee was appointed at the 1987 SEPA conference by President Jon Bell. The Committee, consisting of Chairman, John Hare, Paul Campbell, Carole Groce, and Mike Hutton, completed their task and selected the following slate of candidates.

President-Elect: Mike Chesman, Lee Golden, and Bob Tate

Secretary-Treasurer: Sue Griswold

The paragraphs below were furnished by the candidates.

### **Mike Chesman Planetarium Coordinator Bays Mountain Park Kingsport, TN**

Mike Chesman is Planetarium Co-ordinator for Bays Mountain Park in Kingsport, TN. Before taking this position in 1975, he had been employed on the staff of the Andrus Planetarium in Yonkers, NY.

Mike's formal training includes a B.A. in chemistry but like many of us he came into the planetarium field because of other interests. Mike feels his strongest skills lie in production, although as director he has implemented many new programs and activities for the Bays Mountain facility. As a SEPA member he has always been eager to assist the organization, willing to serve on committees and looking for ways to aid the planetarium community. Most recently, he and associates formed "Starlore Productions", a non-business with the goal of distributing original planetarium productions at no cost.

He was a co-host of the 1982 SEPA conference and looks forward to this opportunity to serve Southeastern planetariums.

### **Lee Golden Director, Daytona Planetarium Daytona Beach, FL**

Lee Golden has been involved in the planetarium field since 1970. Lee began his career as a part-time student assistant at the Buehler Planetarium at Broward Community College in Fort Lauderdale, Florida. Lee graduated from the University of Florida in 1976 with a Bachelor of Science degree in Astronomy education. He then went on to become Planetarium Director at the Mark Smith Planetarium in Macon, Georgia. In 1980, Lee became the Physical Science Curator at the Jacksonville Museum of Arts and Sciences and Brest Planetarium in Jacksonville, Florida. Lee is currently the Director of the Daytona Planetarium in Daytona Beach, Florida. Lee is also the current keeper of the SEPA script bank and will soon be publishing a listing of all available scripts in an up-coming issue of our journal. Lee is totally committed to the educational value of our profession and is working with the Florida Teachers Certification office to establish a teaching certificate for planetarium educators in his home state.

Lee feels he is fully qualified to run for the office of President-Elect and would look forward to serving our organization.

### **Bob Tate Director, Harper Planetarium Atlanta, GA**

Bob Tate has been director of the Harper Planetarium for the Atlanta Board of Education for the past fifteen years. He has a Bachelor's Degree in Physics and a Master's in Astronomy and is a certified science teacher in Georgia.

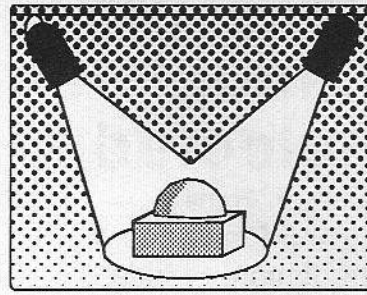
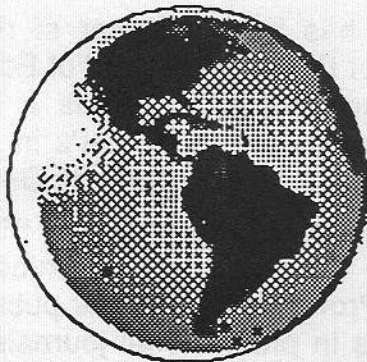
Long an active member of SEPA, Bob co-authored the "Code of Ethics for the Planetarium Profession", and has published over twenty articles in professional journals on many aspects of planetarium and astronomy education.

His special interests are in developing the planetarium profession and the technical design of planetarium equipment. Bob is a past officer of SEPA, having served as Secretary-Treasurer. He has also served on many SEPA and IPS committees.

**Sue Smith Griswold**  
**Coordinator of Astronomy and**  
**Physical Science**  
**Discovery Place/Nature Museum**  
**Charlotte, NC**

Sue has been Curator of the Kelly Planetarium at the Charlotte Nature Museum for seven years. From 1972-1979 she was Director of the Settlemire Planetarium in Rock Hill, South Carolina. Sue has a degree in Astronomy and Physics from Valdosta State College in Valdosta, Georgia, and is currently enrolled in a Masters program in Science Education at the University of North Carolina-Charlotte. Sue has served as Secretary-Treasurer of SEPA since 1985 and is a member of National Science Teachers Association, International Planetarium Society, Southeastern Museums Council, and North Carolina Museums Council. Along with directing the astronomy program at the Nature Museum, additional duties as Discovery Place's Physical Scientist include all program and exhibit activities in Chemistry, Physics, and Computer Science.

"I would be honored to be selected to serve a 3rd term as SEPA's Secretary-Treasurer."



## Featured Planetarium

A New Sky in Berea  
by Smith T. Powell  
Berea College,  
Berea, Kentucky

"Welcome to the Berea College Planetarium and to the prettiest sky inside America." That is the way we begin our planetarium show at Berea. While it does take a bit of chutzpah to make such a claim, the statement does reflect our pride in our new planetarium and our pleasure in the quality of the sky produced.

Berea College was founded in 1855 as a Christian school on land given by the famous Kentucky abolitionist, Cassius Marcellus Clay. The school was built on principles of "...anti-slavery, anti-caste, anti-rum, anti-sin" and some would say, anti-fun. But we have always managed to have fun at Berea, and in particular, we are having fun with our new planetarium.

The school is built on a ridge that separates the foothills of the Cumberlands from the rolling plains of the Bluegrass. It was founded there because the mountaineers did not support slavery. Its position has played a role in its continuing evolution. Today it is dedicated to providing a good liberal arts education to students of modest means of all races, primarily from southern Appalachia. That means that eighty percent of our students come from the southern Appalachian region, five percent from foreign countries, and the remainder from the rest of the United States. All students must meet a means test. That is, unlike most schools, Berea does not admit students if their family incomes exceed some limit. In this way we try to encourage students to attend college who otherwise might not attend because of their modest economic backgrounds.



Berea College is also unique in that it has a labor program as a part of its overall educational program. All students work a minimum of ten hours per week for the college. A few student work in the famous craft industries of the college. Most work as secretaries, janitors, graders, teaching assistants, and as planetarium operators for less than minimum wages. On the other hand, there are no tuition charges at Berea, so that, in effect, each student receives a "scholarship" of over \$7,000 per year. The modest income from the labor program helps each student defray room and board as well as the other expenses which accompany college enrollment.

There are 1,500 students enrolled at Berea College. They can select their majors from over twenty different programs offered at the college. The science programs, biology, chemistry, physics, and geology, have been particularly successful over the years. The Charles Martin Hall Science Building was built in two phases. The first phase was completed in 1928 and the second phase was completed in 1954. In 1972 a 16-inch Boller and Chivens telescope was placed in the renovated observatory atop the Science Building.

In 1984 we began a six-million dollar renovation of the Science Building to upgrade the utility services of the building, to meet the changed needs of the science programs, to modernize the equipment, to beautify the building, and to provide for new programs. The planetarium represented the addition of a new program. Accordingly, a thirty-five foot square addition was placed at the back of the building to house the planetarium. An office, a laboratory for the astronomy class and for advanced physics classes, and some storage space were provided at the basement level of the addition. The addition blended into the Georgian architecture of the original Science Building.

The renovation provided an entrance lobby to the building which is graced by a stained-glass window representing nature—the subject matter of the natural sciences. As one enters the lobby one walks under a Foucault pendulum and a grid. The grid serves to protect the pendulum and the public and to show the motion of the pendulum.

The pendulum was manufactured and installed by the California Academy of Sciences. The supporting cable is about thirty-seven feet long, so the period of the pendulum's swing is a little over six seconds. At Berea's latitude the plane of the pendulum's swing appears to rotate with a period of a little over thirty-nine hours.

When groups visit our planetarium we generally begin our presentation by explaining the motions of the Foucault pendulum. We place a penny under the pendulum to mark its direction of swing with reference to the grid. After the planetarium show, the group returns to the Foucault pendulum to observe the extent of the Foucault pendulum's apparent rotation.

In the hallway by the planetarium we have a number of pictures of astronomical interest and a Geochron clock display. This display shows the time and date everywhere on Earth as well as the position of the terminator and the Sun's position. The display is most appreciated by those who are in the building every day who can observe the changes in the Sun's position and the associated changes in the shape of the terminator.

We have a thirty-foot Astro-Tec dome and a Minolta MS-10 projector. Our fifty-one seats were manufactured by American Seating and have an arm tablet. They are placed in a uni-directional arrangement as we use the planetarium as a classroom. In particular, the astronomy class meets in the planetarium. We have a lecture table and a small blackboard at the front of the room. Storage space for demonstration equipment is provided behind the blackboard.

The floor is carpeted. The walls are carpeted up to the spring line. Above that point we have sprayed the walls with an accoustical material and painted it black. The paint did compromise the accoustical properties of the walls somewhat, but not sufficiently to outweigh the need to blacken the walls behind the dome.

Projection boxes are clamped to the dome framework at the front of the boxes. The rear of the boxes are suspended by chains from the dome framework. The boxes were built in-house according to a design supplied by Kosuke Sasaki. Special effects, slide projectors, a TV

projector, and room lights are housed in the projection boxes. The slide projectors and the special effects are controlled from a MediaTech console that is attached to the projector console.

Behind the consoles we have two racks which house our audio equipment, a VHS tape player, and a video disc player. An Apple computer controls the video disc player. We have incorporated movies and slides from the video disc into our presentations. The operator merely has to strike the space bar at the proper cue to initiate the video disc sequence. The TV image is projected onto the dome by an ESP Aquastar 400. The image is twenty feet across the diagonal and is corrected for keystone and other distortions.

Of course, the major component of the planetarium is the Minolta MS-10 projector. This new model utilizes the latest NASA computer tapes which give the position and magnitude of the stars. Over six thousand stars are projected to give a crisp, bright, and realistic star field. The lunar image is also particularly nice because it is produced with a photograph of the Moon rather than with a drawing. We really do think we have the prettiest sky inside America!

Since we opened in November, 1985, we have had five different shows. We produced two of the shows: one on the Voyager mission to the outer planets and one on the Sun. We obviously opened at the right time as the Comet Halley show was our big draw. In order to accommodate the crowds we had to have four public shows each weekend during the Comet Halley excitement, but since that time two public shows each weekend have been sufficient. We have had over fourteen thousand visitors to the planetarium since our opening.

School children represent over half of our audience. Although our community is not large (with a population of about eight thousand), we draw from the whole of eastern Kentucky. As the distance traveled by some of the groups is large they are eager to visit other campus attractions in order to fill their field trip time. Accordingly, many of the groups visit our Geology Museum and our Appalachian Museum. We charge five dollars per group for school shows and one dollar per person

for other groups not associated with Berea College. Berea College groups and personnel are admitted without charge. The modest charge is in keeping with Berea College's commitment to be of service to the region.

As with many of you, we have a modest operation. We have an annual budget of five hundred dollars plus gate receipts. It is, therefore, difficult for us to purchase new shows, new special effects, and other equipment. All of our slide projectors are currently on loan from the college's audio visual department. We have no full-time staff. That is, I serve as planetarium director in addition to teaching full-time in the physics department. I am also actively involved with the observatory. We have a technician in the science building who divides his time among all the science departments. Consequently, he is available only sparingly for work in the planetarium.

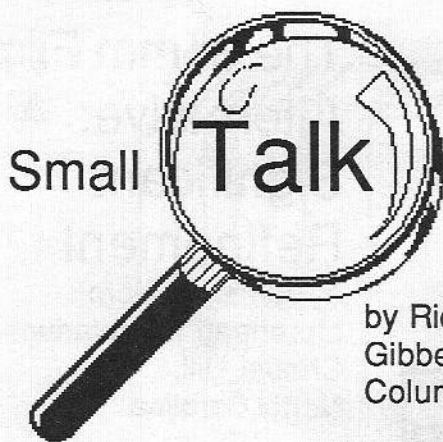
As part of the college's labor program I have five or so students who work part-time in the planetarium. They also work as graders, lab assistants, and technicians for the physics department. It would be impossible to give these shows without their help. They have also helped produce our two in-house shows. In addition to being invaluable to our program, the work experience is valuable to the students. They learn how to operate complex and valuable equipment, they learn some astronomy and physics, they exercise responsibility, and they develop communication skills in their dealings with the public.

We have enjoyed our new planetarium and we are very proud of it.



## PLANETARIUM SNIGLET

The **GAUCHE LIMIT** - extent to which you can go in telling off-color anecdotes about the constellations before your audience disintegrates. Or you do.



by Richard McColman  
Gibbes Planetarium  
Columbia, SC

A couple of years ago, we visited another small planetarium, and during the show we were struck by the presence of a red glow filling one whole side of the dome — obviously generated by lighting on the control console.

Many planetariums have some kind of lamp fixture mounted above the console for the convenience of the operator or lecturer. Although very sparing and meticulous lighting (especially for show scripts) is necessary and perfectly acceptable if not overdone, "front-lighting" the control panels with enough illumination to see knobs or read labels will almost invariably bounce too much light onto a 30-foot or smaller dome. And while red filtration will reduce this dome-fogging effect, it also cuts down the visibility of the console controls. Increasing the light output to compensate for this essentially creates the same problem as before.

Although most modern factory-built console panels feature "back-lit" labeling (thereby virtually eliminating the problem of scattered light), a lot of small domes possess older vintage consoles with, in many cases, homemade add-ons — wood, plastic, or metal panels littered with jumbles of electrical controls. In such facilities it can be tough to run shows without operator screw-ups.

This is a real problem for small domes, mandating a painful choice between the operator fumbling around in the dark (often grabbing the wrong knob or switch), or clouding the starfield — destroying the illusion of the simulated night sky setting.

Faced with exactly the same scenario, we at

Gibbes decided to make our own back-lit console panels. In such a layout, rear-illuminated labels on the panel "glow" with sufficient intensity to be easily read in the dark, but since the only control lighting is that which shines through the small letters on the labels, only a tiny amount of light is scattered from the console. Of course, in this arrangement, a light source is located within the console (behind the panel itself). As a result, only a small amount of controlled front-illumination is needed — for the show script.

In our situation, we wanted to avoid the difficult and time-consuming task of cutting numerous small rectangular holes in each panel for film or plastic labels. The alternative we came up with works very nicely, looks fairly sharp, and is easy and time-efficient to construct. If you're interested in building your own, here's how:

First, the old control panels (metal, plastic, etc.) will be replaced with new panels cut from quarter-inch-thick translucent (white) plexiglass. Cut the plexi to the same external dimensions as the older panel(s), then configure the control layout with switches, pots, etc. arranged 38mm apart (we'll see why later) in horizontal rows, with the rows themselves vertically spaced some 2 1/2 to 3 inches apart. (This spacing is necessary because the labels will eventually be placed between the rows.)

After cutting and drilling, the panel(s) will need to be spray-painted black on the back or "inside" surface of each. However, before the paint is actually applied, mask 5/8-inch-wide strips with tape above or below each row of control holes. Now, paint the panel(s) with several coats, until the plexi will no longer transmit light. (Note: Don't paint the front panel surfaces.) Once the paint is dry, the tape strips are removed, revealing white "windows," which are in effect, tiny lightboxes — great for back-lit control labels.

The labels themselves are actually produced with strips of 35mm Kodalith film (with the sprocket holes trimmed away). For a professional looking job, after laying the film labels over the light windows, cut out strips of clear plexi a little wider than the films and mount these over the Kodalith with small machine screws and nuts (attached through holes drilled into the clear plexi

strips and white translucent acrylic panel). In this arrangement, the film is actually "sandwiched" between the two plexi layers.

The horizontal spacing of the switch (or pot) holes now becomes obvious — 35mm film frames are shot in the camera with a 38mm spacing, which includes the separation between frames. Of course, you will need to shoot the names for the controls in sequence from presstype originals that you compose.

To wind things up, mount the controls in the panel, install a low wattage bulb (7 1/2 watts or less) behind the panel position inside the console along with a dimmer, and affix the new panel to the opening previously occupied by the old one.

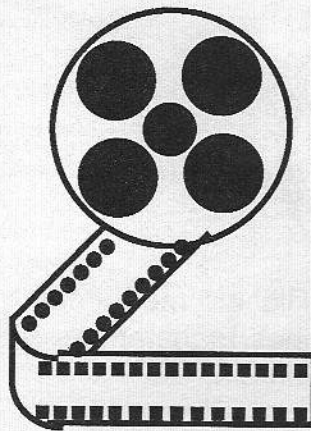
The result is a console which, not only doesn't scatter light around the dome, but is also very easy to operate, with switches and knobs readily identifiable in the dark. And since you shoot your own professional-looking labels, any later reassignments of controls can be done with an accompanying reshoot.

As a final note — we've found that luminous tape (the kind that's used in photographic darkroom applications and is available from most professional camera stores) is ideal for highlighting some console controls which aren't easily labeled with the back-lit method. Although you can't practically do legible "writing" with this tape, cutting out various shapes to produce icons helps "in-the-dark" console control immensely. And with only an occasional slide on the dome, the tape will be kept "charged" during a show.

For all small-dome folks out there who have anything (and we mean anything) new and interesting going on, or any ideas, even if the contribution is just a paragraph or two, please send it to us. The same goes for large-planetarium people who can contribute good ideas to the small-talkers. Quite a lot of interest in such a "clearing house" approach was expressed at the small-dome meeting in Cocoa.

As always, send Small Talk contributions to:

Richard McColman (803) 799-2810  
Gibbes Planetarium  
1112 Bull St.  
Columbia, SC 29201



## The 35mm Film Alternative: A Significant Refinement

by James A. Horn  
Morehead Planetarium  
Chapel Hill,  
North Carolina

### The Desire:

In 1985, Morehead Planetarium had the desire to take advantage of the success of the Cinema 360° film "The Space Shuttle: An American Adventure". This success credits a small group of dedicated individuals headed by Jackson, Mississippi, Planetarium director Richard Knapp. What Morehead lacked was the technological ability to show films. With a traditional 68' diameter overhead dome, whose center was dominated by a Zeiss Model VI Planetarium, with circular seating, and no elevator, the situation could not have been more dismal. It was obvious that what had become the standard for such installations, the Radian System projector using an 8mm fisheye lens in a center room location, would not be possible. Our desire was also not connected to any source of funding. There were no capital dollars available to complete a film installation. Some such installations had been subsidized by the Gannett Foundation, whose generous gifts had funded the completion of the film as well. Gannett, however, had no properties in North Carolina and, as such, had little to gain from an association with Morehead. With regret, they declined help. This left us in the situation of having to have whatever costs were incurred be recoupable in that same year.

### The Alternative:

Our first reaction was to consider renting a projection system. To our surprise, renting a 35mm projector is very expensive. Initial rates of \$5,000 for setup plus \$500 to \$1,000 per month were common. This clearly gave us concern

about our ability to break even on the project. After exhausting these possibilities we contacted local vendors of film projectors to explore the purchase of more near standard 35mm projector installations. The difference between purchasing such a system and rental was surprisingly small. The logic then was if we can acquire a system and pay for it with the showing of the Shuttle film, even if we don't use it again, it will have been worth it, and our audiences will have had the experience of seeing this fine film.

What we wanted to achieve was at least a large, impressive image that would, as closely as possible, mimic the all-dome fish-eye projection we had seen. We settled on a rebuilt Century projector with a new Eprad 4500 watt lamphouse. These would sit on a heavily modified pedestal to achieve a tilt angle of 36°, and the entire mess would be located in the cove area of the dome. We had a perfect location because our control room, almost entirely vacated by automation, was available. The only equipment remaining in the control room was the sound system, and we needed access to that anyway.

The real difficulty was finding a suitable lens. We wanted a very large image, but achieving focus on the constantly curving and converging dome as seen from the cove would be difficult. The compromise was a Scheider 1.2 inch focal length primary lens (the shortest commercially available for 35mm) and an attached Buhl Optical Company virtual image doubler. The resultant focal length was .79 inch and the image achieved was 110° horizontal and 100° vertical flat field. It's hard to describe, but it covered almost half the dome. The lens cost \$390. The total purchase of projector, lamphouse, pedestal, lens, etc., was just under \$15,000. In September of 1985, we opened "The Space Shuttle: An American Adventure" to enthusiastic, if not huge, audiences. On January 6, 1986, we crossed a threshold I had been waiting for. Just five months after starting to show films we recouped the entire cost of the equipment installation, Cinema 360° membership, and printing costs on the Shuttle Film; all this while the films represented less than 15% of our overall business. We continued to run the film until June while the profits rolled in.

### **The Refinement:**

We had already been considering what to do next and had decided on offering "To Fly" if a reasonable contract could be negotiated. We completed the negotiations in June and opened "To Fly" while holding the Shuttle film for school show audiences in the fall. Our half-dome projection concept worked very well for "To Fly." This I-Max film translated well, and the audiences liked the film. The lens system, however, continued to disappoint. The image was fuzzy. During the fall, I stumbled across a possible lens replacement and acquired it on loan. It was an Isco 654335 .83 inch focal length 70mm flat field lens with extraordinary depth of field. The improvement in our projected image was substantial. There was a small size reduction, less than 5°, but the increase in clarity was well worth the trade off. I have contacted Isco to find out if this lens is still available, and it is, at a cost of a mere \$18,000 per copy. This, of course, would more than double the cost of such an installation, but it improves the projection to the extent that it should be considered a part of any subsequent proposal. It removes the objection of poor image quality from consideration in this 35mm system.

### **The Logic:**

The decision to use an alternative 35mm technology was born purely out of a sense of expedience. We had no real idea of whether the system would provide an adequate alternative to the traditional all-dome approach. Having used it, however, had evoked some interesting logic. We originally recognized the limited amount of product available for 35mm of any kind. There are very few films with any educational value of more than regional interest that can be purchased. What is interesting is how little of the product is ideally suited to the 8mm focal length, all-dome concept. Only the Shuttle film is specifically designed for this format, and it is heavily cut with flat field footage. Almost all of the other products are I-Max and Omni-Max down prints. What we expected in evaluating these offerings is that I-Max would translate well to flat field projection. What we also discovered, however, is that Omni-Max films are often shot to

translate to I-Max, and, as such, are generally taken with lenses 1.0 inch in focal length or greater. They also translate surprisingly well to a wide-angle flat field. This, coupled with the increased image clarity of the Isco lens, provides an excellent experience.

Other major considerations are Planetarium design and Planetarium philosophy. There has been somewhat of a shift back to a more traditional design for Planetariums, returning us to the overhead dome concept. These designs are reflected in new facilities such as Champaign, Illinois, and Jacksonville, Florida. Both facilities, however, want the diversification of product offering films can bring. This alternative technology allows for an installation that is far less invasive, not to mention less expensive, than the all-dome, center room design. On Planetarium philosophy, Dr. Lee Shapiro, the Director of Morehead Planetarium, feels strongly that, given the choice of experiences he would have for his audiences, he would prefer that they see a Planetarium show primarily, with offerings like films being an adjunct. This feeling is shared by many who consider the Planetarium experience to be unique and regret it being relegated to "second fiddle". We at Morehead have set our scheduling and price structure to give precedence to the Planetarium show, and this has produced relative percentages in attendance that we are pleased with.

Finally, we have the question of how much product will continue to be available in 35mm. Educational media is moving from 35mm and 16mm to video at an incredible rate. The I-Max/Omni-Max consortium is less and less willing to allow its members to market down printed films because of their own growing number of theaters. All of these factors combine to question the large scale financial and philosophical commitment to wide-angle 35mm film in the design of a Planetarium. There may literally not be films for us to show.

Do all these considerations mean that a new format, or a new lens is the answer? Of course not. All of the objectives met in our own design were by accident. It simply represents an alternative to 35mm all-dome projection. We

cannot ignore that 35mm all-dome projection is impressive. Is it so impressive that it transcends the arguments of logic about distortion, clarity, design philosophy, and future product availability? Possibly! But for those of us who are limited by some of these constraints, a new 35mm projection format is at least one answer.

### Cost of installation 1985

Rebuilt Century Projector	\$4,400
Lamphouse and lamp	6,493
Pedestal, rewind bench, splicer	910
Sound interface	300
Projector venting	350
Projector Lens and expander	390
Installation @225 per day	550
Physical Plant	300
Contingencies	500
Total	<u>\$14,193.</u>

Cinema 360° Membership	\$1,200
Film Printing @950 ea.	1,900
Shipping and Contingency	500
Total	<u>\$3,600</u>

### Attendance and Revenue Figures

#### for Films 1985-86

Film Attendance, School Shows:	7,407
Total Attendance, School Shows:	61,808
Percentage Film Attendance, School Shows:	11%

Film Attendance, All Shows:	16,928
Total Attendance, All Shows:	126,743
Percentage Film Attendance, All Shows:	13%

Total Revenue, Films:	\$37,316
Total Revenue, All Shows:	\$234,709
Percentage Film Revenue:	15%

### 1986-87

Film Attendance, School Shows: 5,351  
Total Attendance, School Shows: 40,484  
Percentage Film Attendance,  
School Shows: 13%

Film Attendance, All Shows: 14,989  
Total Attendance, All Shows: 84,938  
Percentage Film Attendance,  
All Shows: 18%

Total Revenue, Films: \$25,921  
Total Revenue, All Shows: \$192,094  
Percentage Film Revenue: 13%

### 1987-88 To Date

Film Attendance, School Shows: 39  
Total Attendance, School Shows: 321  
Percentage Film Attendance,  
School Shows: 12%

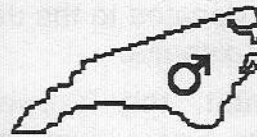
Film Attendance, All Shows: 4,847  
Total Attendance, All Shows: 15,900  
Percentage Film Attendance,  
All Shows: 30%

Total Revenue, Films: \$8,709  
Total Revenue, All Shows: \$36,821  
Percentage Film Revenue: 24%



## MARS COMES TO CHARLOTTE

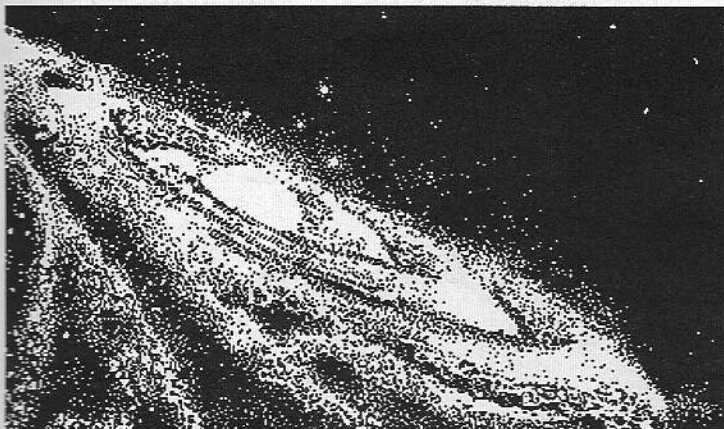
by Sue Griswold  
Kelley Planetarium  
Charlotte, North Carolina



In 1983, when the National Air and Space Museum in Washington, D.C. made plans to dismantle a 3 part exhibit called "Flight Over Mars" they issued a call for museums interested in obtaining the exhibit. The Charlotte Nature Museum responded. Thus began a series of adventures and misadventures involving removal of walls and doors, military vehicles large and small, and the biggest snowstorm in Washington's recent history.

The exhibit had been removed from the Air & Space Museum and stored at the Garber Restoration & Storage Facility in Silver Springs, Maryland (a fascinating museum in its own right). With only sketchy information available as to the size of the exhibit, Planetarium Director, Sue Griswold and husband John set out for Washington in the museum van, oblivious to the fact that a giant snowstorm was headed that way -- twenty-four inches in 24 hours. Slipping and sliding through the snow, they made their way to the Garber Facility and saw the exhibit. It was huge -- and heavy. It definitely would not fit in the van. Several weeks later, a special mission was flown by the North Carolina Air National Guard to pick up the exhibit and deliver it to the Nature Museum.

The exhibit is composed of two wheels, 6 ft. in diameter and 4ft. across the rim. They are covered with plaster that has been carefully sculpted to show surface features on Mars detailed by the Viking orbiters. Using hundreds of photographs, artisans at the Air and Space Museum spent months creating the surface to precise detail. Motorized, these wheels slowly turn while the viewer looks through a lensed viewport to get the sensation of flying over the surface of Mars. Large, lighted map panels display the region of Mars that is depicted in the



viewport. The Nature Museum's two exhibits feature the Valles Marineris region and the North Pole of Mars. A third unit was donated to the Jet Propulsion Lab in Pasadena, California.

To install this free exhibit, the hallway entrance and exit leading to the planetarium had to be removed. And the planetarium director vacated office and audio production space to house the exhibit.

Was it worth it? In the 3 1/2 years since installation this exhibit has been used by over 200,000 visitors. Judging from the ooh's and ah's heard daily from viewers, it continues to be a great exhibit to support programming in the Kelly Planetarium.

Like to visit? The Kelly Planetarium is located at the Charlotte Nature Museum, 1658 Sterling Road in Charlotte, N.C. For brochures and further information, contact Sue Griswold at (704) 372-6261.



## TAKE 'ER TO WARP VI, SCOTTY!

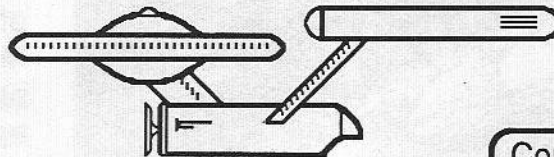
by George Hastings

### Answers:

- |                        |                   |
|------------------------|-------------------|
| A. telescope           | N. ionosphere     |
| B. aurora              | O. ion tail       |
| C. vernal equinox      | P. libration      |
| D. Balmer lines        | Q. limb darkening |
| E. bolometer           | R. mean solar day |
| F. deferent            | S. meteor         |
| G. diffraction grating | T. parallax       |
| H. ellipse             | U. refraction     |
| I. Europa              | V. Roche limit    |
| J. gibbous moon        | W. star           |
| K. planet              | X. Phobos         |
| L. Sirius              | Y. Deimos         |
| M. Io                  | Z. sunspot        |

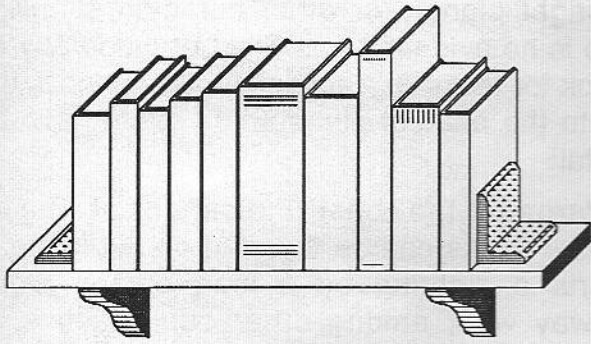
### Questions:

- \_\_\_\_\_ 1. What's that on the street?
- \_\_\_\_\_ 2. What the enemy shoots his arrows with.
- \_\_\_\_\_ 3. Rows of B-1's.
- \_\_\_\_\_ 4. Go ahead, we don't mind being insulted!
- \_\_\_\_\_ 5. Free at last, free at last!
- \_\_\_\_\_ 6. RAID!
- \_\_\_\_\_ 7. Astromonocle unit
- \_\_\_\_\_ 8. I'm really on the ball!
- \_\_\_\_\_ 9. That boy's a real smart-mouth!
- \_\_\_\_\_ 10.  $3/6 = 1/2$
- \_\_\_\_\_ 11. Sound made by an Italian lion
- \_\_\_\_\_ 12. Job description for Italian cowboy
- \_\_\_\_\_ 13. Ernest bangs on all the windows!
- \_\_\_\_\_ 14. Summer phenomenon
- \_\_\_\_\_ 15. Opposite of the minimum amount
- \_\_\_\_\_ 16. Automatically counts spares and strikes
- \_\_\_\_\_ 17. Kid's stash
- \_\_\_\_\_ 18. Proper astronomical attitude
- \_\_\_\_\_ 19. 75 right out of 100 gives you a C
- \_\_\_\_\_ 20. This one's got more beef!
- \_\_\_\_\_ 21. You should do this before you go on a skywatching expedition
- \_\_\_\_\_ 22. An alternate view
- \_\_\_\_\_ 23. I'll pay later!
- \_\_\_\_\_ 24. You walk on them
- \_\_\_\_\_ 25. Temperature = 95°, Humidity = 98%
- \_\_\_\_\_ 26. That's why the dog is howling!



Correct Matchings  
are located on  
page 21





## Reviews

### Communion, by Whitley Strieber

reviewed by Dave Hostetter  
Curator of the Planetarium  
Lafayette Natural History Museum  
and Planetarium  
Lafayette, LA

Communion, a recently released UFO bestseller, is such an unusual book that it's hard to know where to begin for a review.

In a nutshell, Strieber claims to have been abducted by the crew of a UFO - not just once, but several times. In fact, if you include the times he believes he has been contacted without actual abduction, Strieber claims in excess of a dozen experiences (it's hard to be sure of the exact number because the time sense of the book is badly garbled).

Strieber's two major claims in Communion involve the alleged events of October 4, and December 26, 1985. His disjointed memories during the weeks following the latter date caused him to seek the help of UFO investigator Budd Hopkins, who recommended him to psychiatrist Dr. Donald Klein.

The results of hypnosis sessions convinced Strieber that on October 4 his country cabin had been invaded by a short, bald, hooded figure with big eyes who used a metal device to induce visions of the explosive end of Earth, the symbolic death of his son, and the death of his father some years previously.

Strieber also came to believe that on the night

of December 26, 1985, he was abducted and taken aboard a UFO, where he was subjected to a series of bizarre medical tests reminiscent of the claims of other alleged abductees. On both dates, he was imprinted with false memories that held with some degree of success until he was hypnotized.

All in all, it's a pretty unusual story. How much of it are we to believe? Strieber appears to believe these events really happened, and Communion is a bestseller on the "non-fiction" list. The cover and almost every other page proclaim it "A True Story".

Arguing in Strieber's favor are the reputations of Klein and Hopkins, who would seem to have much to lose by participating in a hoax: Klein is a noted psychiatrist with long listings since 1972 in Who's Who in America; Hopkins is an abstract artist listed in the 1977 Contemporary Artists and 1982 Who's Who. In addition, there are confirming reports from Strieber's family and friends who were in the cabin the night the visitation allegedly occurred. To his credit, Strieber considers the possibility of insanity or delusion; he also passed a polygraph test, the text of which is listed in an appendix.

This support is not without weakness, however. Klein's statement about his examination of Strieber does not address the big question: does he really believe that Strieber was actually abducted by visitors and forcibly given a medical exam aboard their vehicle? And Hopkins' own writings make him appear to be a "true believer," ready to believe nearly anything he is told by alleged abductees. Other problems are that the reports from Strieber's family and friends are uncomfortably vague, and that polygraph tests can be beaten. Also, there are a number of serious questions about the helpfulness of hypnosis in UFO investigations.

As usual with "abductee" reports, objective (or physical) evidence and truly independent corroborating reports are missing. For instance, Strieber claims the visitors abducted him from a moving train at age five, along with his sister and late father. Surely his sister's memories of that train ride would be of interest, but they are conspicuously missing. And did no one else on

that train see the visitor's vehicle sucking Strieber's family into the sky? All we have is Strieber's word for it.

Another item that decreases the plausibility of Communion is that Strieber is the author of such horror/occult novels as The Wolfen and Black Magic, and obviously has the imagination to concoct the story in Communion. Perhaps we should remember that The Amityville Horror was originally labeled non-fiction, too.

One of the visions allegedly induced by Strieber's visitor of October 4 is that of his father's death. The problem is that the sequence of events in the vision is radically different from what actually happened; Strieber's hypnotic "recollection" is grossly inaccurate. Yet rather than question the validity of other memories recalled under hypnosis, Strieber and Hopkins simply wonder why the visitors would induce such errors!

Strieber's other visitations are evidenced by frankly incredible events that he expects the reader to take seriously. For instance, he claims that on the night of March 15, 1986, he awoke to find three little guys in blue coveralls standing beside his bed; beside them was a fourth visitor wearing what looked like a cardboard blue double-breasted suit with a white hanky in the pocket! On another date, both Strieber and his wife allegedly held a conversation with a voice that came out of their stereo.

Who, you ask, are these visitors? Strieber offers several possible explanations in addition to the standard "aliens" idea. He suggests that they may be fairies, or disguised as fairies; that they may be from another time or dimension (whatever that means); or that they may be something from our subconscious come to life. Perhaps, he speculates, they are the dead, and we are a "larval form."

As the saying goes, it's good to be open-minded, but not to the point that your brains fall out. The basic weakness of Communion is that Strieber seems willing to accept nearly any wild story or coincidence as evidence for his ideas. The book is splattered with garden-variety UFO reports of the types that normally turn out to

be bright planets or other common stimuli, but there is no evidence that Strieber made any effort to look for these explanations. My hunch is that a visit to the nearest planetarium might have been helpful!

Perhaps the best indication of the way Strieber thinks can be found in the Epilogue. He reports a sighting by a man driving along a highway who, among other qualifications, is a brilliant perceptual psychologist with eyes sharp enough to reveal the moons of Jupiter. The UFO looked very much like an advertising plane, was lighted like a plane, flew like a plane, and (most importantly) was identified as an advertising plane by independent observers. But don't be confused - it was really "a device of unknown origin and purpose" disguised by some illusion to look like an advertising plane! It's hard to take such thinking seriously.

Despite its credulous tone, Communion is an interesting story, and its spectacular claims have helped make it a bestseller. I recommend that you read it because you may well get questions about it from planetarium visitors. Just remember that you can't necessarily believe everything you read.



## Where is Everybody?

A review of "Teaching Space"

by Jane Geoghegan Hastings

Richmond, Virginia

In 1950, Enrico Fermi posed a question that has stirred debates ever since: Where is everybody? Considering factors that would later be incorporated in the famous Drake equation, he concluded that we should have been visited by extraterrestrial civilizations long ago and many times over. Yet we haven't. Thus was born the famous "Fermi Paradox": If life is so prevalent in the galaxy, then why haven't we met anybody else?

Michael Hart and others argue that interstellar travel is feasible and advanced civilization would fill the galaxy in a few million years. Since that time frame is short in the age of the galaxy and

we have no evidence of visitations, then there must be no extraterrestrials.

Others have developed ideas of why we have not been visited. These range from a quarantine of our solar system to the idea that all technological civilizations develop the atomic bomb and destroy themselves. Still others have concluded that interstellar flight is not possible or always judged not to be worth the effort.

What is your solution to the Fermi Paradox?

---

The above article was shortened from one which appeared in the October 1987 issue of "Teaching Space", a newsletter for educators whose subscription rate of \$9.00 covers 5 issues. This issue has 12 pages of articles, resources, lesson plans, worksheets, and class activities.

Frankly, I'm impressed. I usually have to read a lot of stuff to glean something useful. But in this issue, almost every feature is useful to me either as basic information or as activities and reprints for teachers. The reading level appears to be "general public" with activities aimed at elementary and upper grades (more emphasis this particular issue on jr. & sr. high activities).

According to the reprint information, this newsletter is #9 in the series, and evolved from the Midwest Space Development Conference goal of providing classroom material for educators. The organization is non-profit and, yes, photocopying for education use is permitted (encouraged!).

Here's what this particular issue contains:

An excellent straightforward overview of "The History and Philosophy of SETI", with an accompanying informational article about the Planetary Society.

A short positional query about the "Nemesis Theory" of the disturbance of our solar system's Oort cloud of comets by a black star (Nemesis) which orbits our sun.

A short article on the Drake Equation, with Shklovskii and Sagan's figures plugged in.

A Lesson Plan/Quiz on Titan.

A Lab Activity which simulates, in a simple way, using the Wolf Trap apparatus flown on the Viking mission to Mars to determine the existence of life.

Classroom Activity to make decisions in the eventuality of an alien contact for earthlings.

I'm giving you a sketch of each; in my opinion, they are creative activities and attention-grabbing articles. I'm pleased to have found this and delighted to pass it on to SEPA people. Here's the address:

Teaching Space  
P.O. Box 19270  
Cincinnati, OH 45219

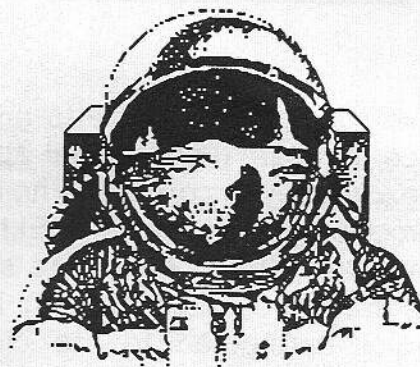
(\$9.00 for 5 issues sent bi-monthly)

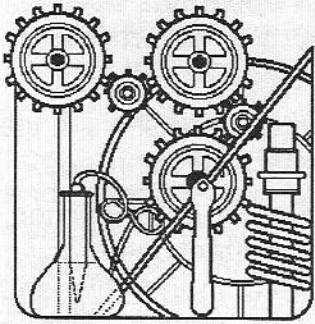
I almost forgot! They give out money for our good ideas.

Awards for best space-related course outlines, lesson plans, and/or classroom activity guides: 1st place, \$200; 2nd place, \$50; 3rd place, \$25. Entries must be received by February 29, 1988.

For more information and contest rules, write or call:

Dennis Coombs  
Teaching Space  
P.O. Box 19270  
Cincinnati, OH 45219  
(513) 397-2989

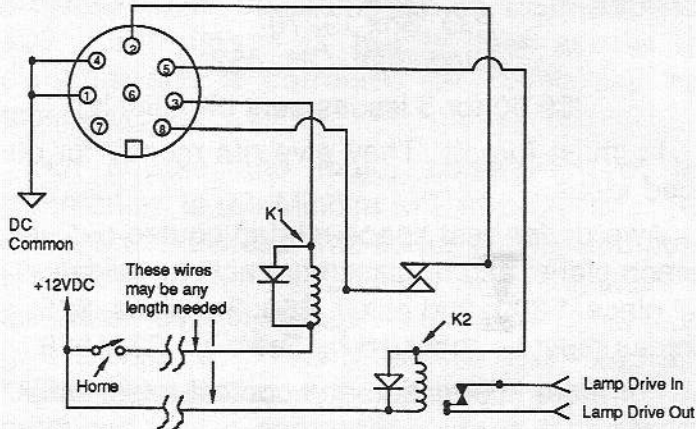




# Doctor Strange's SEPA Circuits Clinic

by Joe Hopkins  
Bishop Planetarium  
Bradenton, FL

## Ektagraphic III Homing Circuit

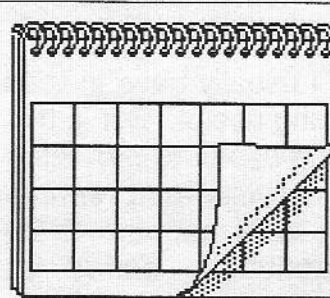


- Special-Application Receptacle Pins:**
- 1 & 3 — Switch opens at tray position "zero"
  - 4 & 5 — Switch closes when no slide is in gate
  - 7 & 8 — 25 Volt, 500 mill-Ampere supply - be careful in using
  - 6 & 8 — Forward tray cycle
  - 2 & 8 — Reverse tray cycle
  - Shell — The metal shell (when plugged in) is at earth ground

The above circuit is applicable to any control system since it uses the "special-application receptacle" exclusively to control the homing (and optional lamp stand-by) of any Ektagraphic III-series projector. When the home switch (or computer-controlled contact closure) is closed each projector connected to the circuit will reverse to the zero position and then stop. The optional lamp stand-by through relay K2 is handy for panoramas where some sections are blank or for instances where a slide is missing or doesn't

drop.

The lamp drive which is broken by K2 can be the 82 Volt AC lamp current, but it is far better to break the DC drive for the lamp dimmer—you are using low-voltage DC drive by this time, aren't you? Both K1 and K2 can be any 12VDC SPDT relay (Radio Shack sells some which will work), but if you use a DPDT relay for K1 you have an extra set of contacts to send a signal back to your system to tell it when each projector reaches the "home" position. Kodak sells the mating cable with the 8-pin DIN plug (you can make a 5-pin 180° plug work, minus some functions) as part number 205339 for \$5.00 each. Enjoy!



## Calendar

- Jan. 16.....3rd Annual Astronomy Day - Columbus, GA
- Jan. 16-17.....Astronomy Weekend - Louisville, KY
- Feb. 18-21.....Winter Star Party - Spanish Harbor Key, FL
- Apr. 1.....**Deadline for Southern Skies submissions**
- Apr. 5-7.....NASA conference on lunar bases - Houston, TX
- Apr. 7-9.....SWAP - Corpus Christi, TX
- Apr. 23.....Astronomy Day
- Jun. 27-Jul. 2 IPS/SEPA - Richmond, VA
- July 27-30.....International Astronomical Union - Williamstown, MS
- Oct. 6-8.....GPPA Conference - LaCrosse, Wisconsin



## **Planetarium Internship and Teaching Assistantship**

The Morehead Planetarium, in cooperation with the Department of Physics and Astronomy, is offering a unique Internship opportunity designed to provide experience in the areas of Planetarium operation, show production, and education.

The Intern will receive on-the-job training at the Morehead Planetarium and will undertake Teaching Assistant duties for undergraduate Astronomy laboratory sessions. In addition, the Intern will enroll in a two year course of study, leading to a Master's or other advanced degree, at the Graduate School of the University of North Carolina at Chapel Hill. A stipend of \$10,000 a year will be paid to the Intern. The program is two years in duration (August, 1988, to July, 1990). The Intern will be responsible for his or her own tuition and fees (tuition information is available from the Graduate School).

The Morehead Planetarium is part of the state-affiliated University of North Carolina at Chapel Hill. The Star Theater houses a Carl Zeiss Model VI planetarium projector under a 68 foot dome with concentric seating for 330. An R. A. Gray Media Control System runs the Zeiss instrument and a battery of auxiliary devices, including carousel projectors, zoom slew projectors, panorama systems, and various special effects. The Planetarium produces a variety of public, school, and special programs for 75,000 to 100,000 patrons each year.

Candidates should have a strong desire to pursue planetarium work as a career, and a sound background in descriptive astronomy.

Previous planetarium experience is helpful, but is not required.

The Application deadline is February 15, 1988. For application information contact:

Intern Selection Committee  
Morehead Planetarium  
CB# 3480, Morehead Planetarium Bldg.  
University of North Carolina  
Chapel Hill, NC 27599-3480

Equal Opportunity/Affirmative Action Employer

## **ASTRONOMER/PLANETARIAN**

The DeKalb County (GA) School System's Fernbank Science Center in suburban Atlanta seeks a highly motivated education-oriented individual to fill a position as instructor of astronomy. Fernbank operates a 500-seat (Zeiss) planetarium with 70-ft dome and an observatory with a 36-inch reflecting telescope. Individual should have strong academic and/or experiential background in astronomy. Experience in a large planetarium is highly desirable. Bachelor's degree required. Master's degree will be required within three years. Responsibilities include instruction to all ages K through Adult, planetarium program production, written and oral interaction with the press and public, and supervision of high school student research. There are limited opportunities for personal research in astronomy and education. This is a 12-month position. Salary is dependent upon experience and academic degrees; excellent benefits included. Some night and weekend work required. Inquiries/resumes to:

Ms. Mary A. Hiers, Director  
Fernbank Science Center  
156 Heaton Park Drive  
N.E., Atlanta, GA 30307  
(404) 378-4311.

Closing date: February 10, 1988. Position open immediately. DeKalb County Schools is an equal opportunity employer.

## Planetarium Producer

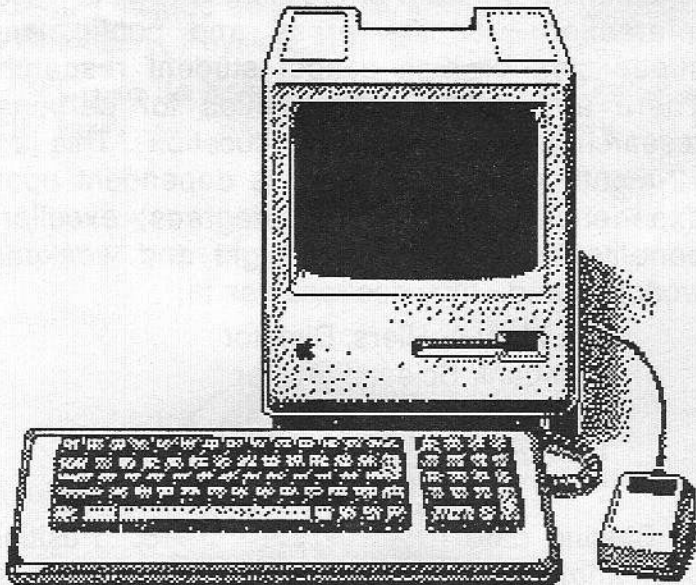
The Children's Museum in Indianapolis is seeking applicants for the position of Planetarium Producer.

The museum is undertaking a multi-million dollar expansion which will include an Evans and Southerland Digistar in a 40 foot dome. The Planetarium is scheduled to open in late fall of 1988.

They are looking for someone with a degree in astronomy, science education, or related areas of study, and a minimum of 2 years experience in the planetarium field.

Applicants should send resume to:

Sharon K. Parker  
Planetarium Director  
The Children's Museum  
P.O. Box 3000  
Indianapolis, IN 46206



## Announcements

During 1988-89, the V.M. Slipher Committee of the National Academy of Sciences will have a modest amount of funds to award for projects that enhance the public's understanding of astronomy. Preferences will be given to projects requiring seed money for programs that will continue beyond the funding period. Applications must be postmarked by May 23, 1988. If you are interested in submitting a proposal please write to:

Dennis Schatz, Chairman  
V.M. Slipher Committee  
Pacific Science Center  
200 Second Avenue North  
Seattle, Washington 98109

## ASTRONOMY DAY APRIL 23, 1988

Astronomy clubs, science museums, astronomy departments, planetariums, etc, wishing a free booklet of suggestions for hosting local events, should send a request on institutional stationery (in North America include \$2.00 for postage and packaging; Institutions in foreign countries should request mailing instructions and fee information) to:

Gary E. Tomlinson  
Astronomy Day Coordinator  
Astronomical League  
c/o Chaffee Planetarium  
54 Jefferson Avenue S.E.  
Grand Rapids, MI 49503  
(616) 456-3985

The booklets will be mailed around February,

1988. Individuals wanting more information about local events should contact their local astronomy institutions.

## FROM GLPA

The Great Lakes Planetarium Association (GLPA) has just published "Astronomical Poems". This booklet, edited by April Whitt from the Adler Planetarium in Chicago, contains 277 astronomical poems, jingles, and proverbs. Included is a table of contents, an author index, an index of titles, and an index of first lines.

This publication is available without charge to current (1987-1988) members of GLPA. After September, 1988, this publication is available only to GLPA members at an additional charge of \$7.00. Only members of GLPA can receive GLPA publications. Membership in GLPA is open to anyone however. For information on how to join GLPA, contact:

David E. Parker  
Tipton Planetarium  
817 South Main Street  
Tipton, IN 46072

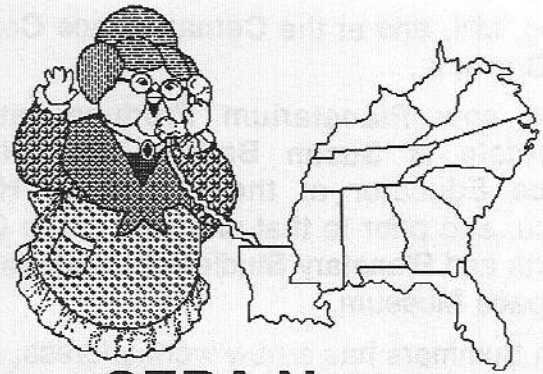
Current GLPA dues are \$13.00 per year.

## TAKE 'ER TO WARP VI, SCOTTY!

by George Hastings

### "Correct Matchings"

1. W	8. N	15. Y	21. K
2. X	9. H	16. E	22. F
3. D	10. U	17. Z	23. M
4. J	11. B	18. L	24. T
5. P	12. I	19. G	25. R
6. V	13. C	20. S	26. O
7. A	14. Q		



## SEPA News

### AND BABY MAKES THREE

Joe and Carol Hopkins are the proud adoptive parents of Michael James Hopkins, born November 10, 1987. Michael weighed 7 1/2 pounds and was 22 inches long at birth. Joe is frequently heard saying to Michael, "Can you say switching-module?"

### FLASH FROM LAFAYETTE

Dave Hostetter is now sharing his new digs (207 Woodland Circle, New Iberia, La 70560) with three lovely ladies. No, Dave is not trying to do "Three's Company" one better. The Ladies in Dave's life are the new Mrs. Hostetter (Carla), and Daughters Caroline and Cora. Congrats to Dave, Carla, and girls.

### PLANETARIANS ON THE MOVE

Tom Schroeder is the new Artist at Morehead in Chapel Hill. Tom has previously been at Abrams in East Lansing, and at the Adler in Chicago.

Bishop Planetarium has a new Technician/Specialist. Jay Boisseau comes to Florida via the Richland College Planetarium in Dallas, Texas.

Fort Lauderdale has a new Director. David Menke was formerly the Director of the Copernican Science Center in Bridgeport, CT, and prior to that was with the Griffith Observatory in Los Angeles.

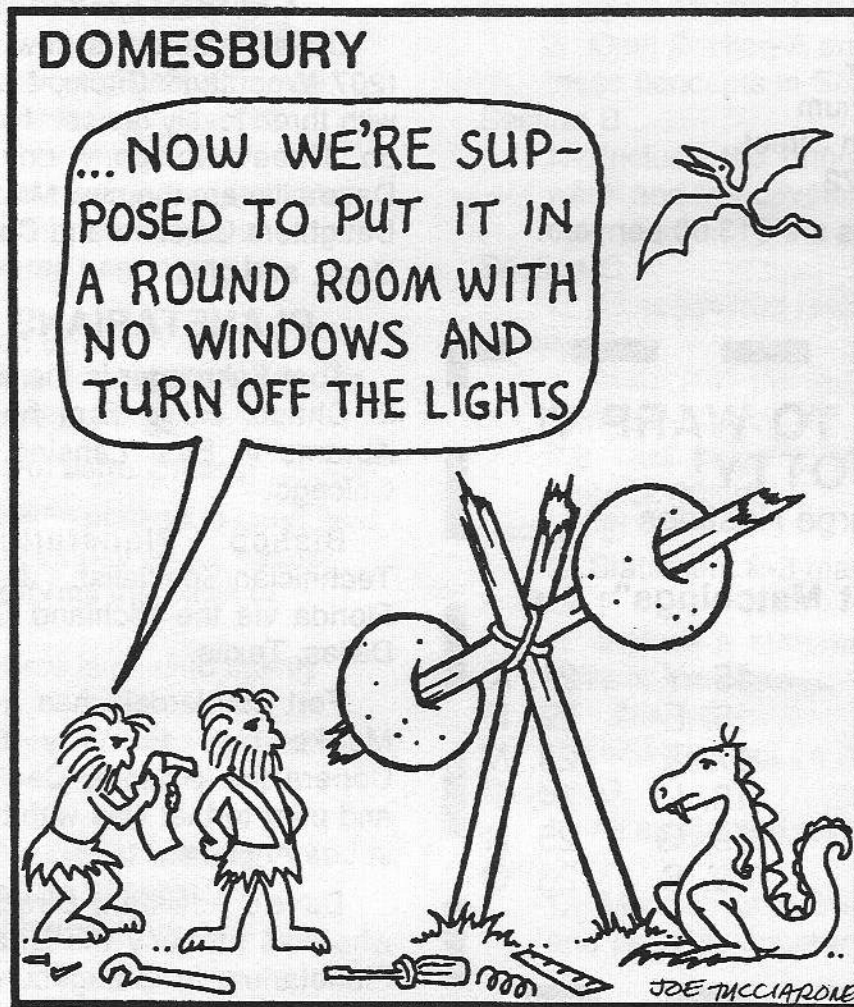
Dave's Assistant Director is Gary M. Lazich who was formerly the Director of the Stamback Planetarium in Orangeburg, SC, and previously held positions at the Paluchi Planetarium in

Hibbing, MN, and at the Cernan Space Center in River Grove, IL.

The new Planetarium Producer at Fort Lauderdale is Susan Barnett; formerly the Science Educator at the New York Hall of Science, and prior to that she was at the Center for Earth and Planetary Studies at the National Air and Space Museum.

Jim Summers has a new work address. Jim is now Director of the Fulton Planetarium in Atlanta.

Congratulations to everyone on their new positions, welcome to SEPA to all you newcomers, and wouldn't y'all like to have something published in the next issue of Southern Skies? It could be arranged.





# GIBBERISH

## (OR LINDA GOOFED AND HAD EXTRA PAGES LEFT OVER)

Before I jumped into this job, I had absolutely no idea what an editor did or was supposed to do.

As of now, I still am not sure what an editor does or is supposed to do, but I do know that it is quite possible for an editor to get ulcers while doing whatever it is that an editor does or is supposed to do.

I have been given a lot of helpful suggestions and ideas of what some folks would like to see in Southern Skies. I will list some of them here, and would like to hear your thoughts on these as well as anything else you would like to see, or not see, in your journal.

We would like to continue to have a "Featured Planetarium" in each issue. If you would like to have your facility featured, let me hear from you.

Joe Hopkins has offered to continue with "Dr. Strange...". If you have any suggestions for Joe or the Doctor, let him hear from you.

Richard McColman will be continuing with "Small Talk". Again, if you have something for Richard, write to him.

We would like to continue the "Reviews" column, so if you have come across any books, magazines, computer software, or scripts that you would like to share, please send them along.

Some of the columns we are thinking about for upcoming issues are: Helpful Hints (for an example see below), Letters to the Editor, Regional Roundup, and Featured Planetarian (or Staff).

PLEASE!!!! If Southern Skies crosses your mind even fleetingly, jot down the thought and put it in the mail. I will be forever grateful.

Our first "HELPFUL HINT" - from Joe Hopkins: If you have ever looked for an inexpensive slip-ring package, one can very easily be made from a rotary switch. By using a shorting type switch (make - before - break), wire all of the contacts together and take out the detent ball which makes the switch click from one position to another. This gives you a freely rotating slip-ring assembly with one input and one output. Since most rotary switches are available with more than one switch section, it is easy to make as much as a five level slip-ring. The Centralab PA1000 is a single section switch; the PA1004 is a two section switch; the PA1008 is a 3 section switch; the PA1014 is a four section switch; and the PA1016 is a 5 section switch.

The next time you would like to rotate a lamp and are wondering how to get power to the lamp without having the wires twist around and break off, remember this little trick!

FROM THE EDITOR: I would like to thank Mark Callen for all of his help and his endless patience with me. I keep telling Mark that I am trying to teach him a lesson - never, but never take a job with the word "Assistant" in front of the job description.

Thanks Mark, and please keep hangin in there!!!

*Linda*

—Notes —