

SOUTHERN SKIES



A Message from Your President Duncan R. Teague, Craighorn Planetarium	1
1984 IPS Conference in Monterrey, Mexico Jeanne Bishop, IPS President	3
Uncle Fuzzy Returns!	3
Two Short Films Reviewed Mike Chesman, Bays Mountain Planetarium	4
FEATURED PLANETARIUM: I.P. Stanback Museum and Planetarium South Carolina State College Don Walter, Planetarium	5
Is There Astronomy After Sixty? Jim Manning, Morehead Planetarium	7
Why a Worm?, Part III: Is It Worth It? Jim Summers, Jim Cherry Memorial Planetarium	10
Solar Eclipse Shadow Projector Module John Hare IV, Bishop Planetarium	11
A Local Star Chart Which Isn't So Local Steve Russo, Bishop Planetarium	12
DR. STRANGE'S SEPA CIRCUITS CLINIC Bookstore Madness Joseph M. Hopkins, Bishop Planetarium	14
Adding Animation to a Standard Dissolver Joseph M. Hopkins, Bishop Planetarium	16
GADGET BOX Superbubbles for Bonzo Dave Hostetter, Lafayette Natural History Museum Planetarium and Nature Center	17
Atmospheric Distortion Effect Jim Summers, Jim Cherry Memorial Planetarium	18
Improving the All-Sky Projector Robert C. Tate, Harper Planetarium	18

Southern skies



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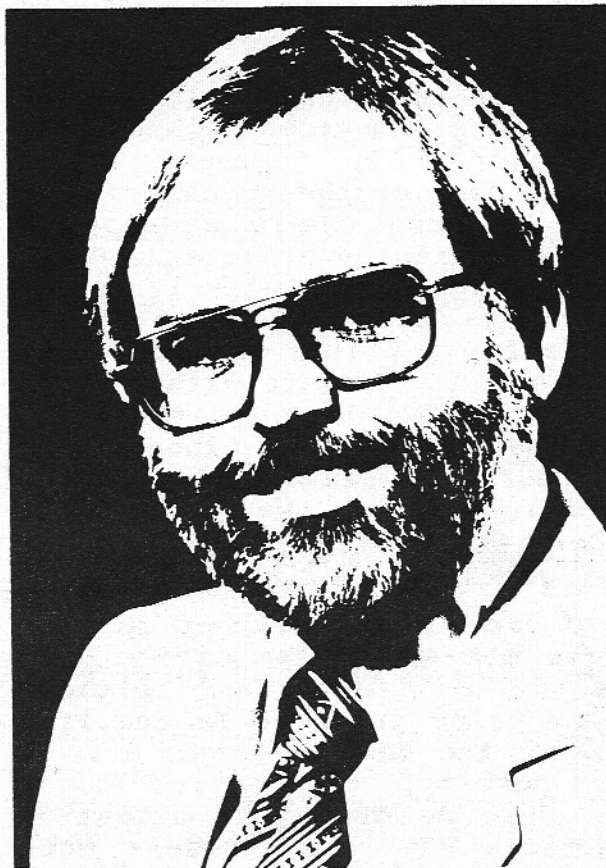
A MESSAGE FROM YOUR PRESIDENT

by Duncan Teague

You have heard of the Big Bang? Of course you have. And probably on numerous occasions you have been asked to guess how long ago the event occurred. Well, I can now reveal to you the definitive answer --indeed the exact time and date of the Big Bang. How can your "nearly humble servant" do this? Easy. I saw it, and heard it, happen.

The Big Bang took place at 8:45 a.m. CST on Saturday, April 9, 1983. There. You have it. It was at that moment that the elevator which raises Fred, the planetarium star projector, out of the floor decided to fail. Just a short distance from his full up position, Fred shuddered, as though anticipating what was to follow, and then fell to the bottom of the elevator shaft.

The audience immediately applauded. One child requested that I, "Do it again!" My life passed before my eyes. My first thought was, "Maybe they'll let me teach arithmetic." My second thought was, "Hey, am I on Candid Camera?" To imaging the mixture of feelings which gripped me, envision this scenario: You are watering the flowers in your front yard. A giant meteor streaks across the sky. "Neat," you think. Then the meteor(ite) squashes your house.



You, being both a planetarian and a home owner, are in a unique position to realize the full range of emotions that could be associated with such an event.

Now, I was once told never to admit that anything ever went wrong during a star show, so I grabbed six constellation outlines from the slide files and placed them in the appropriate carousels. Here comes Billy! Here comes Astrobird! The Space Shuttle, cricket sfx, and a nighttime pan follow in order. Soon I'm pointing out non-existent stars in a totally black sky. Of course, I'm pointing them out where

they should be, and then I'm super-imposing kodolith outlines over the empty spots just identified. And I'm getting away with it! I'm going to rename this show "The Emperor's New Stars."

When I got home, I related the shocking tale of the morning's events to my loved ones. I was consoled with, "It's only a machine."

Hey, that's right. It's only a machine. Sorta' like God's only an omnipotent being.

And now, on the lighter side, let's discuss the American Planetarium Association. In February I received a copy of the By-Laws of the APA. Included was a request by acting APA president James A. Hooks to review and to tentatively accept the by-laws and to forward \$50.00 for the first year's dues for SEPA to become an affiliate with APA. I decided it was not my privilege to authorize such an expenditure, since our 1981 dues increase was intended to fund the publication Southern Skies and the SEPA Survey.

I have asked Jack Fletcher to publish in the May issue of Southern Skies the most important portions (Yes, a value judgment is required here) of the APA by-laws; or, if space permits, the entire document. Let me draw your attention to Article XIV which covers dues for APA members. I, for one, would be reluctant to pay \$100.00 in dues, as required for Craigmont's 40-foot dome, to an organization whose stated purposes do not seem to be substantially different from those of SEPA or IPS. Article XV discusses disposal of funds upon dissolution or termination of APA. I believe a more definite plan of action is needed.

Be prepared to discuss at the August conference in Richmond, SEPA's affiliation with APA and a dues increase sufficient to fund the \$50.00 annual dues SEPA would have to pay.

Jack Fletcher has been asked to preview some films and review them

in the pages of Southern Skies. A representative of the film company has requested a mailing list of SEPA members to send out information on the films. If the SEPA Council decides in August whether to release a SEPA mailing list and under what conditions, then members will be given the opportunity to have their names deleted from such a list.

For your consideration is the choice of a 1986 IPS conference site. The two choices are the Flandrau Planetarium in Tucson, Arizona, and the Science Museum of Virginia in Richmond (SEPA Conference host this summer). Please send me a postcard prior to August 1 so that I may make SEPA's preference known to the IPS Council.

If you would be willing to answer astronomical questions received by Jason Empire, a producer of binoculars and telescopes, write and volunteer your expertise to Ms. Sharon Greger, Jason Empire, 9200 Cody, Overland Park, Kansas 66214.

Hansen Planetarium is pursuing the resolution of ambiguities in the copyright status of music used in planetarium star show sound tracks. IPS members will benefit from Hansen's efforts in this area. More power to you, Lissa Hepner.

Speaking of Hansen and copyrights, I recently got a letter from Sir Fred Hoyle's solicitors (that's lawyers, in English) accusing me of infringement on Sir Fred's (I wonder if he's related to Fred, the planetarium star projector?) copyright of the novel The Black Cloud. I purchased Hansen's star show production kit for The Black Cloud a couple of years ago. I forwarded a copy of the Hansen contract which stated they were the authorized distributor of these materials. I also requested Sir Fred's autograph. I wonder if Hansen is working in the area of copyright of printed matter as well as music?

Well, things are getting a little dull around here. Perhaps I can stir up a little excitement between now and August.

1984 IPS CONFERENCE in Monterrey, Mexico

by Jeanne Bishop
IPS President

NOTE: This is an excerpt from the IPS President's Memo to Council, March 30, 1983. The excerpt came from Duncan Teague.

Plans are progressing for the 1984 IPS Conference in Monterrey, Mexico. Planetarium Director Roberto Ortiz of the Alfa Cultural Center has the assistance of Fernando Gonzalez, an archeologist at the Alfa Center. Fernando has written Dr. Anthony Aveni, asking for guidance in selecting the topics and invited speakers on archeoastronomy and for guidance in planning extension trips by IPS members to archeological sites in southern and central Mexico. Hubert Harber of West Chester State College in Pennsylvania, hopes to organize a meaningful members' papers session or sessions with the theme of archeoastronomy, and he will work closely with the group from the Alfa Center and the two affiliate organizations that are involved with planning: AMP (The Association of Mexican Planetariums) and SWAP (The Southwestern Association of Planetariums). Roberto Ortiz will be meeting with SWAP at their next-week conference at the McDonald Observatory, Fort Davis, Texas. A tentative calendar of activities, formalization of a committee for reception and evaluation of papers and editing and production of a proceedings book, travel arrangements, and possible extension tours in Mexico, will form a basis for discussion. SWAP President Mark Wallace, SWAP IPS Rep. John Pogue, and SWAP member Bill Lawson have been involved in some initial planning and communication for 1984 conference.

Roberto says that he and the Alfa Center Director Guillermo Schmidhuber hope to be at the IPS Council meeting this summer on August 1 and 2 in Richmond. Both

send their regards to all of Council.

AMP IPS Rep. Gabriel Munoz visited the Alfa Center in late January. Gabriel and Robert had an opportunity to discuss the conference as well as promotion of IPS membership among Mexican planetarium professionals.

The 1984 Monterrey Conference is sure to be an outstanding one. Like the Vancouver Conference, considerable planning is being done early. AMP and SWAP involvement will bring additional creativity and attention to details to an already-creative and concerned planning team at the Alfa Center.

Do you have any particular suggestions for the 1984 Conference? If so, please relay them to your IPS representative, Duncan Teague.



UNCLE FUZZY RETURNS!



(Editor's Note: Now that we all know who Uncle Fuzzy was, it had been my fondest hope that he would never be heard from again. It is my sad duty to report to you that I, unfortunately, received the following article from him for publication. My apologies to the current slate of SEPA officers for allowing this to disgrace the pages of this fine publication, but he threatened to call me names if I didn't put this in. Read on at your own peril.)

Now the cat is out of the bag as to my true identity. (Did you ever wonder where that expression came from? Who was the first person to let a cat out of a bag? Moreover, what was the cat doing in the bag in the first place? Monumental questions of historical import which will remain forever rhetorical.)

I should explain that my alter-ego did his level best to suppress my existence for a considerable period during the past few months. Alas, to no avail. My superior intellect finally got the better of him and here I am in all my glory.

Why, you foolishly ask?

During the two years that I walked among you hidden in the framework of my host's puny body, I was able to ascertain from several of you that there are pools of intellect among SEPA members who claim to be sharper in wit than my exultant tremendousness. It is now time for you to prove yourselves to me. (As the expression goes: "Put up or")

Thus my liberated brilliance has now decided to set up a contest. To make it worth your while, the prize will be worth the effort: a full set of pin-registered slides, kodolith originals of any sequence my stupid host body has conjured up in the past few years. Your choice--Andromeda legend animated, Time show cave man animation sequence, etc.

Next question: What do you have to do to win?

You are all familiar with Murphy's Law and the number of corollaries, contentions and codicils associated with the original. (i.e., the chances of a tool falling and smashing beyond repair a delicate piece of apparatus is inversely proportional to the relative unimportance of said apparatus.)

However, in my extensive travels around our fine region, I have never ONCE come across any derivation of Murphy's Law constructed specifically with the planetarium in mind. This is a void which must be filled at once.

Sharpen your intellects to match your pointed heads and get to work on your own versions. Enter as many twisted laws as you see fit. The winner of the slides will be selected on the basis of wittiness,

not necessarily quantity of submissions. Who will judge? Why me, of course. No one is better suited than my supremeness.

Entries will be accepted up to July 30th, 1983. All entries will be published in the fall issue of this newsletter along with the announcement of the winner.

All such concoctions should be appropriately titled and printed on a 3 x 5 card. Send all entries to:

UNCLE FUZZY
c/o Lake County Schools Planetarium
P.O. Box 427
Howey In The Hills, FL 32737

All envelopes must be addressed to Uncle Fuzzy. Any letter received with the name of the klutzy Irishman who receives his mail at this address will be promptly discarded AND not eligible for competition. (What's the matter? No guts?)

TWO SHORT FILMS REVIEWED

by Mike Chesman
Bays Mountain Planetarium

If you're like me, you're constantly looking for new and unusual programs to vary the planetarium experience. To that end I would like to call your attention to two short films recently released by Pyramid Films.

The first, Ballet Robotique, uses no narration but sets the movements of various industrial robots to a score of popular classical music pieces. The eight-minute color film is an intriguing glimpse at the sophistication such mechanical devices possess. The film would serve as an admirable introduction to a discussion of robotics.

The second, a fourteen-minute color film and perhaps the more usable of the two is Modeling the Universe. The film is a beautifully articulate comment on the order and structure of the natural world from the immenseness of space to tiny microscopic worlds. The photography is excellent and the narration by Buckminster Fuller is full of unique observations. A segment which demonstrates the interrelatedness of various polygons is unforgettable. It was the topic most remembered by our preview audience. Another plus for the film is that it contains a good deal of Fuller's philosophies. I particularly liked the way the film opened and closed. At the beginning Fuller states that 99% of Earth's people have no grasp of science and technology. He ends by saying that the future of our planet depends on our ability to comprehend feelingly the science and technology that nature uses.

I would recommend this film to high school and college science groups.

While everyone will have their own ideas about presenting this type of material, here are some suggestions:

- A. I believe that these films are best viewed if you explain briefly what you want your audience to look for in the film. I find a five-minute introduction goes a long way in helping stimulate discussion after the film.
- B. The films would make good short subjects that compliment a science-fiction film series.
- C. More recently we have experimented with a science film series. Our experience here indicates that a variety of short films at each session works better than a lengthier film. Both of the above films are good choices.

The purchase price for these films is about standard for 16mm educational films. For example, the Buckminster Fuller film is \$225.

Unless your facility is associated with a college or high school that can make extensive use of the films, you're better off renting for special showings. The same film can be rented for \$25. The film is also available on videotape for \$170 which in my opinion is ridiculously high, regrettably, since this is a format which is becoming more and more used at our facilities.

Further information, preview privileges, and a catalog request can be forwarded to:

Pyramid Films
P.O. Box 1048
Santa Monica, CA 90406
(213) 828-7577



I.P. Stanback Museum & Planetarium
South Carolina State College
Orangeburg, South Carolina

by Don Walter
Planetarium Director

Most of you are probably thinking, "Where in the world is Orangeburg, South Carolina?" That is the same question I asked myself four years ago when I applied for this job. If you take a look at a map of our beautiful state, you will find us located halfway between Columbia, the state capital, and Charleston on the coast. In other words, right in the middle of nowhere.

Approximately 40,000 people live in Orangeburg and the immediate vicinity. Despite the size of the population and the presence of two colleges in town, sometimes Orangeburg acts like a small, rural community. As a result, promoting the planetarium has been both challenging and frustrating. ("I'm sorry, sir, but you can not hold this year's tractor pull in the space theater.") Nonetheless, Orangeburg is a beautiful town and the people are quite friendly.

The museum and planetarium are housed together on the campus of South Carolina State College. The college is a historically black school with an enrollment of close to 4,000. As such, we are one of only a few planetariums in the country located at a black college. We are also only one of three or four planetariums in South Carolina which is open to the public and the schools on a frequent basis. We held our grand opening in April of 1980 and have been going strong ever since then.

During our first year of operation I was exposed to the effects of such a "planetarium-poor" environment. I polled our audiences and discovered that over 75% of the people attending our shows had never been to a planetarium. Over the last three years we have had a chance to change that, and by now most of the people attending a program have been there before.

Our facility houses a Viewlex Series II projector, a smaller and less sophisticated version of the instrument you saw in Memphis during the 1981 conference. Our dome (Mike Ryan, forgive me) is a forty-foot, level horizon affair.

Located around the entire perimeter of the dome are sixteen projector boxes which hang down from the dome. Each box is large enough to hold two slide projectors, but it is not tall enough to accommodate a movie projector. Our sound system includes a 4-channel reel-to-reel tape deck, which allows for a variety of audio effects.

We design our programs for classes on campus as well as school groups and the general public. Although most of our shows deal with topics in science, we make a great effort to present programs of a non-scientific nature. We have been successful in developing programs for classes in history, humanities, art, music and foreign languages.

Normally we hold public programs two Sundays each month and school shows are presented throughout the year. However, from mid-May to mid-September we do not run programs for the public. That means I have four full months to prepare next year's shows and, in theory, get ahead of schedule.

The planetarium staff referred to throughout this article as "we" is, in reality, "me." Like most of you I run a one-person operation. I do have some staff support in the form of a secretary with partial release time. I am also indebted to one of the physics professors on campus who has volunteered a considerable amount of his time to build all sorts of "things." In the process he has also taught me the difference between a capacitor and a resistor.

So, if you are traveling through the middle of nowhere this summer, stop in here for a visit. Oh, and bring along a fishing pole. If they have not repaired the leaky roof by the time the next rainy season hits, I plan to stock the space theater with some bass and bluegill.

NOTE: For all you aspiring writers, send your program scripts to me NOW, so I can have the script bank in order by the time of the conference.

IS THERE ASTRONOMY AFTER SIXTY?

by Jim Manning
Morehead Planetarium
Chapel Hill, North Carolina

We planetarians are constantly conducting specific programs, classes and demonstrations for specific groups of people: school classes from nursery through college, girl scouts, boy scouts, PTA's, teacher groups, church groups, civic clubs, astronomy clubs, visiting dignitaries, handicapped groups, conventions of plastic surgeons (I made sure to point out Ophiuchus in that one!), and so on, ad infinitum. That's our job. Surely we leave no one out. Or do we? What about senior citizens?

"Pooh, pooh," you say. "We catch them in our programs for the general public, and there always seems to be a few token retirees in the 'Introduction to Astronomy' night class." But what about something planned and conducted specifically for older people?

As our society seems only recently willing to generally acknowledge, people past the big six-oh need not automatically head en masse for the back porch like lemmings to the sea, there to petrify. Life can go on, and it can even be good. Moreover, senior citizens can continue to make valuable contributions, and can continue to be interested in things . . . like, well, astronomy.

Which brings me to my point. The University of North Carolina (UNC), of which Morehead Planetarium is a part, is one of a growing number of colleges and universities recognizing the needs and interests of senior citizens through a program called Elderhostel. It is a program Morehead has participated in for the last five years, and our experience may suggest a similar course of action for you, or provide ideas, at least, for ways to serve this sometimes (perhaps often) neglected group.

What is Elderhostel? Succinctly put, it is college on a Ritz Cracker for senior citizens. Less succinctly put, it is a no-frills but meaty week on a college campus in the summertime designed to provide intellectual and social stimulation for people over 60. The "no-frills" is manifested in the accommodations: in the true spirit of hostels (originally referring to modest overnight lodgings for travelers), participants live in college dormitories. The "meat" comes in the experiences: Elderhostelers may take up to three courses taught by college faculty during their week of residence (no academic requirements, homework, tests, or grades--paradise!), plus all the social and cultural events and group adventures they can stand, including tours, hikes, lectures, exhibits, plays, concerts, parties, cookouts, and--perhaps not the least adventurous--eating in a college cafeteria!

From a modest beginning in 1975 on five New Hampshire campuses, the Elderhostel program has burgeoned to a network of more than 370 colleges and universities in all fifty states, already having served more than 35,000 people and including national TV commercials featuring actress Helen Hayes, among others.

Our involvement in the program began in 1978 when the UNC Department of Continuing Education asked us (we had to be prompted, too!) to conduct a basic short course in astronomy for each of its several weeks of Elderhostel. A variety of topics was desired, with an emphasis on Elderhostel participation. We chose the following set of subjects for the five daily hour-and-a-half sessions.

1. A) Introductory film. (NASA's "Universe" narrated by William Shatner. A bit dated by references to spacecraft missions, it remains nonetheless an excellent and well-made 30-minute introduction to quite literally the universe.)
- B) Concepts of the universe from ancient to modern.

2. A) Summer constellation-finding session in the planetarium, ripe with sky lore and basic concepts such as the celestial sphere and diurnal motion.
- B) Update and explanation of current space missions.
3. A) A look at the cosmic "zoo" of familiar and exotic space objects from planets to quasars, plus rudimentary stellar evolution and how much of the menagerie fits into evolutionary schemes.
- B) Review of summer constellations in the planetarium, including simulations of some of the aforementioned exotic objects, and discussions of summer deep sky objects and currently visible planets.
4. A) Cosmogony (referring to the solar system in particular).
- B) Cosmology (referring to the universe in general), including formation theories, implications for the future of the universe, and just a sprinkle of relativity theory.
5. A) Extraterrestrial life; the possibility of it, the search for it, the implications of it, introduced by a brief discussion of the requirements for earth-based life.

As exemplified in the course's title ("Exploring Space: the Strange and New"), we emphasized current information and theories, the latest discoveries, the unusual, the bizarre. (We're particularly good with the bizarre.)

We also emphasized class involvement. For example, the Elderhostelers located summer constellations in the planetarium using star maps, and helped to reinvent a simple H-R diagram. The class was formed into the cross-section of a star to demonstrate the basic internal forces at work and how those forces are involved in a star's aging process. Class members were given an "alien" binary

message of 120 zeros and ones to decipher as an introduction to the Arecibo message and earthling attempts at interstellar communication; they were also given four different rectangular grids in which to put the string of zeros and ones, only one of which reproduced the visual message, to illustrate the difficulty of interpreting potential messages from space.

The class was sufficiently popular to be repeated the following two summers. In 1979, we retained the basic topics but altered the theme and title ("Astronomical Perspectives, or Yes, Virginia, There Is An Infinity"), concentrating on how we view the universe and how it affects our thoughts and theories about it. In 1980 ("Astronomy: The Romance of Science"), we retained the most popular topics, such as the constellation session, cosmology, and extraterrestrial life, and added new ones like the development of the calendar and modern investigation techniques. We also added more planetarium time, concentrating on the history, aesthetics, and gol'darn thrill of astronomy. Each summer's course was conducted by members of the planetarium's education staff (consisting of assistant director, educational assistant, and two part-time planetarium interns), typically with two people sharing course duties and an occasional solo run.

The planetarium also proved to be a boon for Elderhostel extracurricular activities. Many Elderhostelers attended afternoon or evening performances of our summer public program during their week of residency, and one evening each week was reserved for a tour and observing session at the Morehead Observatory. Predictably, the most popular objects were the moon, Jupiter and its satellites, and Saturn (although we had trouble a few summers ago convincing Elderhostelers that a ringless Saturn was a rare and therefore even more special sight!). Also, the adjacent terraces were useful sites on

those nights from which to test the Elderhostelers' constellation-finding abilities in the "real" sky (you know; the one we can't control at will but put up with anyway).

Results of Elderhosteler surveys at the completion of each one-week session were always extremely positive, and the unit was well received not only by participants, but by the administrators of the program as well. In 1981, the course lay fallow while we continued with the extracurricular activities for the group. Last summer, it sprang from the ashes in a new current-events form called "Cosmic Update," continuing this summer as "Raising Your Cosmic Consciousness," concentrating on the dimensions, structure and investigation of the universe. And the benefits of the course continue to be heady.

First, survey results as well as personal words of enthusiasm and appreciation have demonstrated without a doubt that we are providing a valuable service. In this case, age is no barrier to the realms of space.

Secondly, the course has been personally as rewarding as any we have taught. Every class session we came cheek to jowl with a group of eager, uninhibited, experienced people bringing fascinating insights and penetrating questions. ("Why should we spend money on space programs and radio telescopes?" "If we can only measure relative motion in the universe, how can we be sure there isn't some object which really isn't in motion?") No subject was beyond their willingness to tackle. As instructors, we found ourselves as challenged and stimulated as we hoped our students were. Additionally, social events like the wine and cheese parties to which the Elderhostel faculty were invited provided more informal out-of-class opportunities to propound, discourse, and otherwise hobnob about astronomy.

Finally (with a perfunctory bow to Plutus), we even found the experience to be quite reasonably cost-effective. The planetarium receives \$225 for each weekly course, or seven and one-half hours of instruction, with some funds available for copying handout materials. And we don't have to advertise or handle any paperwork!

If you feel that Elderhostel may be a useful vehicle for expanding one facet of your educational effort, and if your planetarium is on a college campus, you may wish to contact your Extension or Continuing Education department to see if it's involved in the program. While the 1983 summer program is already set, you may still be able to offer a star-studded evening down at the local universe, and can certainly put in a word for next year. If you're not on but near an Elderhostel campus, you could no doubt likewise propose a stimulating field trip. The interested and curious who desire to investigate further or locate the nearest Elderhostel campus can write to the national office:

Elderhostel
100 Boylston Street
Suite 200
Boston, MA 02116

Of course, nothing prevents you from developing your own program of astronomy education for senior citizens. The most important thing to realize is that yes, Virginia, there is astronomy after 60. And whether through participation in a nationwide program or independently, planetariums can play a pivotal role in the cosmic education of this ever-growing segment of the population.

Why a Worm? Part III

Is it worth it?

by Jim Summers
Jim Cherry Memorial Planetarium
Atlanta, Georgia

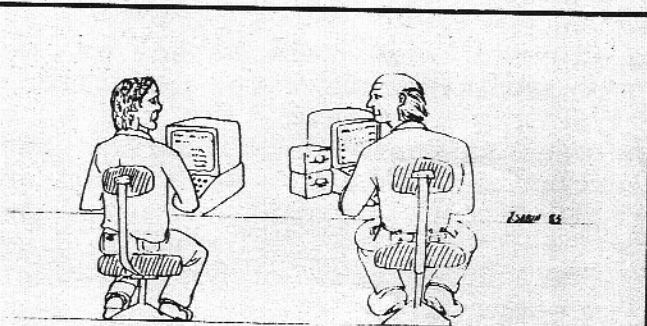
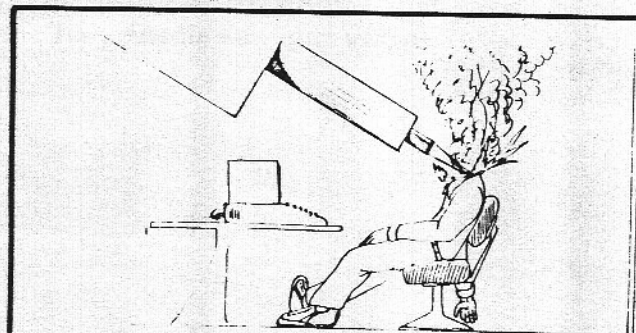
Children's programming developed as a consequence of our attempt to deal with the demands of parents of young children and the need to increase attendance. In both regards we succeeded better than we had hoped.

Special programs, those produced and presented for young children, have accounted for almost 20% of our public, non-scheduled attendance in the planetarium. These programs have been offered in the spring, at Easter; during the summer; in the fall, at Halloween; and at Christmas. Attendance has ranged from about 1,000 to almost 4,000 for the Halloween, Easter and Christmas shows, and up to 6,000 during the summer months. The additional ten to twelve thousand people who attend these programs annually has made a significant contribution to our statistics.

Initially these programs were presented free of charge. For the past year, however, economic conditions have necessitated a minimum fee of fifty cents per person, with senior citizens and children under three admitted free. This revenue, while not sufficient to pay the operating costs of the planetarium, nevertheless makes it financially worthwhile to offer such programming.

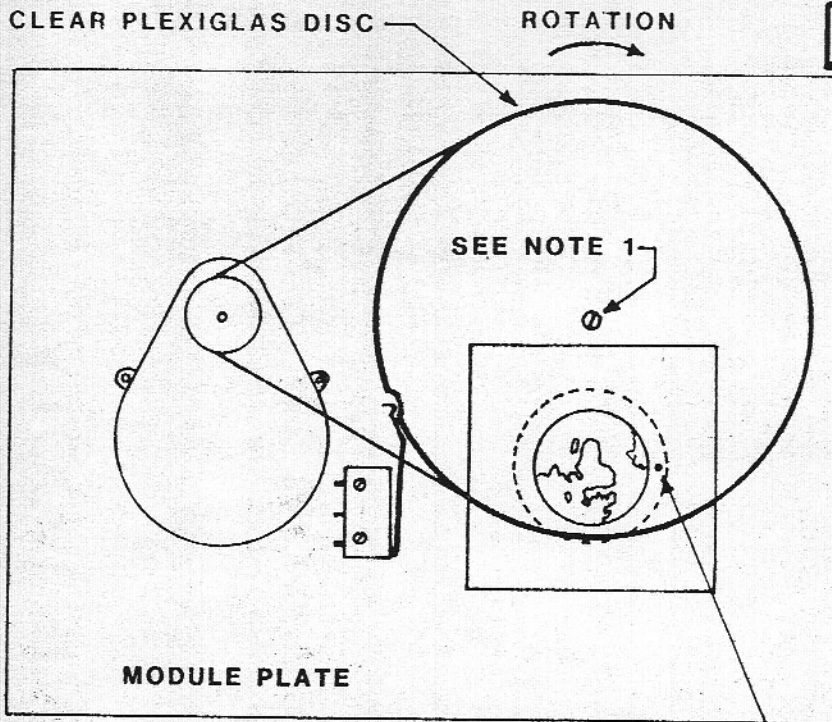
The real value for us, however, has nothing to do with the few thousand dollars generated by these programs. The real value for us has been practical and political. The practical contribution has been in calling the existence of the science center to the attention of a large segment of the population that otherwise might not be aware of us. It has been our experience that although most every student in our system visits the planetarium at least once, their parents are often totally ignorant of what we are, where we are, and what we do. For the most part, parents do not send their children to our special programs--they bring them. This means that they actually have the opportunity to discover what their tax dollars are buying. As a result, these parents, who are also voters, have constituted a large and sometimes vocal body of supporters. In the current atmosphere of taxpayer concerns about the expenditure of educational funds, every friendly voice is welcome.

But the real value is personal. Young children are the best audience you will ever have. Everything amazes and astounds them. They are thrilled and excited. They open their eyes, their ears, and sometimes their mouths. But more than that, they open their minds. Even before they are even conscious of it, they are made aware of a world above them. If our children's programming causes a single child to lift his or her vision above the confines of the earth, then perhaps it was worth all of the effort.



"Did you reattach the Solar Screen this morning?"

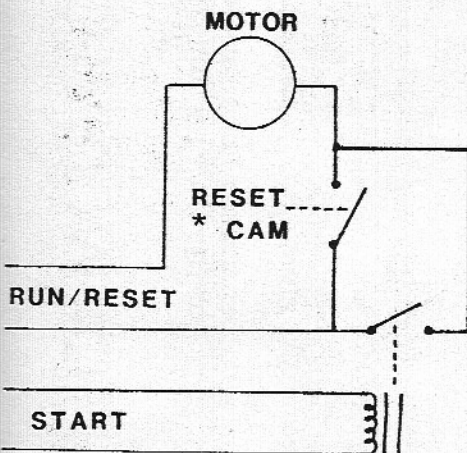
SOLAR ECLIPSE SHADOW PROJECTOR MODULE



This is a simple but highly useful special effect that will help explain the dynamics of a solar eclipse.

This projector module shows the movement of the shadow of the Moon across the surface of the Earth. To create a more realistic effect, and add to the comprehension of the effect, we use it in conjunction with 2 other projectors. We project the eclipse shadow in the front of the dome, the Sun in the rear, and a smaller left-to-right slewing Moon (Moon's back side toward the audience) slightly above the Earth. Have the slewing Moon travelling at about the same rate as the shadow traversing the Earth.

OPAQUE "SHADOW" DOT
TECHNICAL NOTES:



1. Since this effect rotates slowly, an 8-32 or 10-32 screw works fine as a shaft. Drill the clearance hole in the disc as small as possible to minimize wobble. Use a flat washer above and below the disc and a nut on either side of the module plate to hold the screw firmly in place. Tighten the screw to the point that the disc just rotates smoothly.

With a nut and washer between the disc and module, there should be enough clearance for the slide and reset micro switch arm. If not, add washers as necessary.

2. The effect, as it was originally used here, was for the "great eclipse of 1973" so we chose a view of the Earth appropriate for that particular event. The largest possible regular format (24 x 36 mm) Earth image

was used so as to make the shadow appear as small as possible and still be clearly visible. Use silicone adhesive to attach the slide to the module plate.

3. To get a sharp round disc for the shadow, a period from a set of transfer letters was used. A size of somewhere between 1/32 and 1/64" is about the smallest useable.

4. We used a 1 rpm motor with a 5 to 1 pulley reduction. Adjust your rate according to the time necessary for the effect in your show.

5. Machine a groove for the o-ring in the edge of the disc. The indentation for the reset micro switch can be filed across the entire edge without affecting the drive belt's action.

6. The reset switch should be as small as possible to allow the arm to extend under the drive belt. Use a micro series 311SM or equivalent.

See November 1981 issue of Southern Skies for basic projector into which the above module will fit.

John Hare IV
Bishop Planetarium
Bradenton, Florida

A LOCAL STAR CHART WHICH ISNT SO LOCAL

by Steve Russo
Bishop Planetarium
Bradenton, Florida



BISHOP PLANETARIUM
MAY 1983

MAY EVENING SKY

Directly over head this month will be the constellation of Leo the Lion, the bright star Regulus marking its heart, and Denebola marking its tail. East of Leo is the dim constellation of Coma Berenices, which should not go unnoticed as it contains the Coma Berenices Star Cluster. This cluster is named in honor of Bernice II of Egypt, who was the Queen of Ptolemy III, around 246 - 221 B.C. There are about 30 stars in the cluster, of which most stars are visible in a pair of good binoculars.

At a distance of about 250 light years, it is one of our nearest star clusters. The brightest members are about 50 times more luminous than our Sun, while the dimmest are about 1/3 as bright. The cluster appears to be older than the Pleiades, but younger than the Praesepe Cluster.

In front of Leo is the fairly dim constellation Cancer the Crab. This constellation is shaped like an upside down Y, and at the center of this Y is the Praesepe star cluster. Although the naked eye makes this cluster appear as a fuzzy patch of light, a small telescope or binoculars will reveal over 2500 stars. The Beehive Cluster, as it is also known, is just over 500 light years away. The brightest stars in the cluster are 70 times more luminous than our Sun. The mass of each of them is about 3 times more massive than our Sun. The mass of these stars reveals the age of the cluster: about 300 million years old. These two star clusters plus Venus, Saturn, and Jupiter make May an excellent month for observing. HAPPY STARGAZING!!!

VISIBILITY OF THE PLANETS

MERCURY: A pair of binoculars will help to locate this planet at the beginning of the month. Low in the western sky after sunset, it will be near the Pleiades.

VENUS: Still dominating the western sky at sunset, it moves from Taurus into Gemini.

JUPITER & SATURN: Saturn rising around sunset in the eastern sky is still in the vicinity of Spica, while Jupiter rises after sunset, and is near Antares. Venus will be 1 1/2 degrees north of the Moon on the 16th, and 4 degrees south of Polux on the 31st. Jupiter will be 6 degrees north of Antares on the 6th, 1 degree north of Uranus on the 16th, and 1 degree south of the Moon on the 20th. Saturn will be 2 degrees south of the Moon on the 23rd.

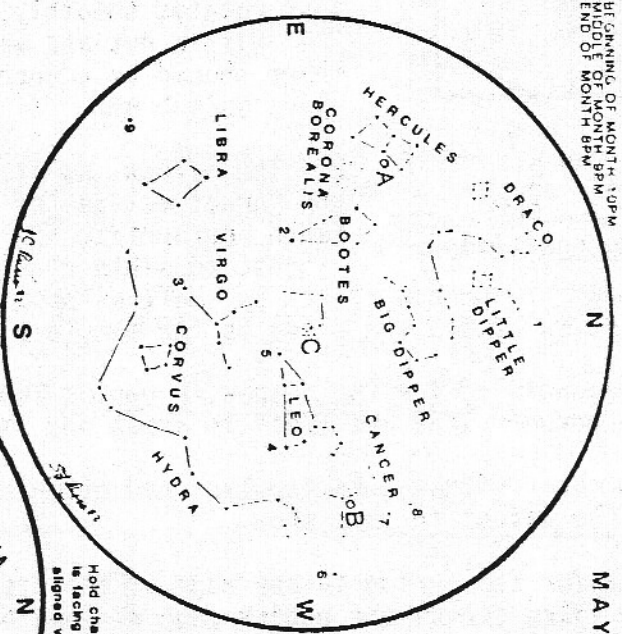
PHASES OF THE MOON

	RISE	SET
Last 1/4	May 5 2:30 A.M.	1:28 P.M.
New Moon	May 12 6:23 A.M.	7:57 P.M.
First 1/4	May 19 1:05 P.M.	2:03 A.M.
Full Moon	May 26 8:09 P.M.	6:25 A.M.

The Moon is at apogee at 252,220 miles on the 4th, and is at perigee at 229,320 miles on the 16th.

PREPARED BY STEVE L. J. RUSSO STAFF ASTRONOMER
PRODUCTION ASSISTANTS: LINDA N. HARE and JAN C. RUSSO
BISHOP PLANETARIUM 201 10th ST. WEST BRADENTON, FLA. 33505 746-4132

BEGINNING OF MONTH 10PM
MIDDLE OF MONTH 8PM
END OF MONTH 6PM



MAY EVENING SKY

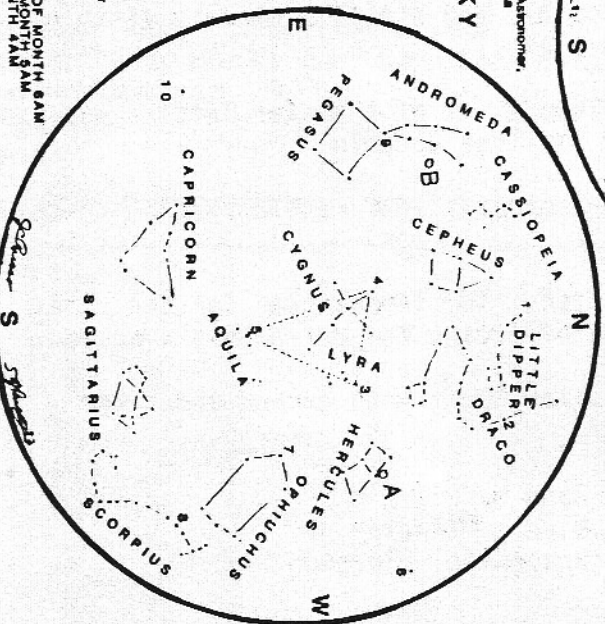
STARS

1. Polaris
 2. Arcturus
 3. Spica
 4. Regulus
 5. Denebola
 6. Procyon
 7. Pollux
 8. Castor
 9. Antares
- DEEP SKY OBJECTS
- A. Hercules Star Cluster
 - B. Praesepe Star Cluster
 - C. Coma Berenices Cluster

MAY MORNING SKY

STARS

1. Polaris
 2. Thuban
 3. Vega
 4. Deneb
 5. Altair
 6. Arcturus
 7. Rasalhague
 8. Antares
 9. Alpheratz
 10. Fomalhaut
- DEEP SKY OBJECTS
- A. Hercules Cluster
 - B. Andromeda Galaxy



BEGINNING OF MONTH 4AM
MIDDLE OF MONTH 3AM
END OF MONTH 1AM

When I first arrived here at the Bishop Planetarium in exciting Bradenton almost 2 years ago, one of the things I decided to do to get an astronomy program into full swing was to make star charts for this latitude, about 27 1/2 degrees North.

During this time, our gift counter was selling George Lovi's Edmund charts, and our bulletin board displayed Robert Victor's Abrams Calendar. Now don't get me wrong, George knows the sky better than anyone around, and Robert's calendar is an excellent piece of work. But, I wanted charts that weren't made for big northeastern cities, where one can barely see stars in the first place.

I immediately contacted the Sarasota Herald Tribune and asked them if they wanted to run a monthly astronomy column, complete with star charts. How could they say no when I would supply them with the whole article for free? They couldn't, and didn't, and the astronomy column Skylights was born.

With the help of one of the planetarium volunteers, who later became Mrs. Russo (Who says using volunteers doesn't pay off?), we spent hours of "spare" time in the planetarium and at home working on a set of star charts for our latitude.

As the news column gained popularity, I began to get calls from people telling me to sell these charts at the planetarium. Well, back to the drawing board, and in January, 1982, three months after Skylights hit the papers, the Sky Reporter was born.

It was, and still is, a scaled-down version of the news column, leaving out our starshow and observatory schedules, but containing star charts for evening and morning skies, visibility of the planets, phases of the Moon, and an evening sky summary, each month done on a different color paper.

During the first few months, it sold anywhere from 200-400 copies a month at the gift counter. The people here in Bradenton DID want to know about the sky and now they could.

Soon, another paper, the Bradenton Herald, got in on the act. They too wanted the Sky Reporter, so they got it. Unfortunately, with the Sky Reporter in two big newspapers, the sales out at the counter dropped to between 100-200 copies a month. It really didn't matter much, because these three columns gave us more publicity, and hence more people coming to shows and observing sessions. Our all-night eclipse observing in July attracted over 2,000 people, plus live TV coverage from our local CBS affiliate.

Since the start of the Sky Reporter, changes in its format and charts have been made, mostly due to reader suggestions and comments. Its popularity has also increased, and it is now in four newspapers here on the west coast of Florida, and is also in every issue of Plants & Planets published by the Lafayette Natural History Museum and Planetarium in Louisiana. And just when I thought we had reached our geographic boundaries in Lafayette, I was contacted by an astronomy group in Texas that wants to use the Sky Reporter.

If any of you have any comments or criticisms, or wish to use the Sky Reporters, feel free to contact me here at the Bishop, and we can make some arrangements. They are not the best charts around, but they are for our latitude here, below the Mason-Dixon. Judging from their popularity, and more public awareness of astronomy in the Bradenton area, the Sky Reporter, both in our form and in newspaper form, very effectively communicates astronomy with the public, and that's the main purpose of any planetarium.

Steve Russo
Bishop Planetarium
201 10th Street West
Bradenton, FL 33505
(813) 746-4132

SEPA SCRIPT BANK

If you have not done so, please consider sending some of your best scripts to:

Don Walter
Stanback Museum and Planetarium
Orangeburg, South Carolina

SEPA CONFERENCE August, 1983

The SEPA conference will be held August 2-6, 1983, at the Universe Planetarium, Science Museum of Virginia, Richmond, Virginia.

You should have received a letter and form from Charlie Smith concerning the conference. If you have not heard from Charlie give him a call. (804) 257-1013



DR. STRANGE'S SEPA
CIRCUITS CLINIC, etc.

BOOKSTORE MADNESS

by Joseph M. Hopkins
Bishop Planetarium
Bradenton, Florida

In our previous jaunt into the mysterious world of circuit design and construction I promised to give you some hints for books and materials to aid you in your quest for a working circuit. There is a veritable plethora of literature available for budding and experienced circuit designers. Some are very helpful; a surprising amount are not worth the paper they are printed on (sic). The bibliography which follows is not intended to be all-inclusive of the good (an impossible task). It does, however, represent the most dog-eared (in some cases I'm on my 3rd or 4th copy) units in my library and should serve as a good foundation for yours. I will divide the list into two parts: circuit collections (and data books), and general how-to volumes.

For the circuit collection and data category I have selected a sample of works representing a fairly broad range of technology. As you begin to explore the bookstores to build up your own library you will discover many other selections of a similar nature. By all means, examine them! If you find the exact circuit you need in a book, the \$15.00 or \$20.00 price for even an expensive book will be worth it for that one circuit alone! Also, don't be afraid if you don't understand all or even most of what's in a book when you first pick it up--that's what learning is all about!

Ready? Let's go!

CIRCUIT COLLECTIONS AND DATA BOOKS

Active Filter Cookbook by Dan Lancaster (Howard W. Sams Publishing): A super, easy-to-understand treatment of all types of active filters which are the building blocks of tone decoders, audio crossovers, color organs, etc. Less than \$15.00.

CMOS Cookbook and TTL Cookbook both by Don Lancaster (Howard W. Sams Publishing): These two volumes serve not only as an introduction and expose of the two major types of digital integrated circuits--they also are handy reference works filled with good circuit ideas. A must for any circuit designer. Less than \$15.00 each.

Engineer's Notebook II by Forrest Mims (Tandy-Radio Shack Publishing): A bargain book with both digital and linear circuits using the integrated circuit chips which are available at Radio Shack. Easy to understand and well-written with many applications to the planetarium. About \$30.00

IC Op-Amp Cookbook or IC Timer Cookbook both by Walter Jung (Howard W. Sams Publishing): These serve as complete guides to the use of the two other major circuit building blocks: op-amps and timers. Less than \$15.00 each.

Linear Data Book and TTL Data Book (National Semiconductor): Data books provide pin identification, specifications and do's and don't's for the handling and use of linear and TTL integrated circuits. Less than \$10.00 each.

Modern Electronic Circuits Manual by John Markus (McGraw-Hill Publishing): A super book of over 3,000 circuits that you can steal and use as-is (or modify to suit your needs). With its predecessors, Guidebook of Electronic Circuits and Electronic Circuits Manual, it provides a total of over 10,000 circuits. Expensive at over \$75.00 per volume, but worth it! (I buy every new one as soon as it comes out.)

GENERAL HOW-TO

CRC Handbook of Chemistry and Physics by Robert Weast (CRC Press): Need to know the electrical resistance of cotton or how much current a 4AWG silver wire will carry? All this and much, much more is included in this compendium of chemical and physics tables of measurements and characteristics. About \$75.00.

Electronic Techniques by Robert Villanucci and others (Prentice-Hall Publishing): A good (college text) treatment of electronic shop practices and procedures for fabricating all types of electronics. About \$25.00.

Introduction to Electric Circuits by Herbert Jackson (Prentice-Hall Publishing): A college-level text introducing DC and AC circuits, magnetism, motors, etc. in an easy-to-understand style. About \$30.00.

Sound System Engineering by Don Davis (Howard W. Sams Publishing): An outstanding treatment of sound system design and installation with a firm grounding in the proper mathematics and procedures. Don't let the math throw you (even if you don't know calculus). This book is a winner. About \$35.00.

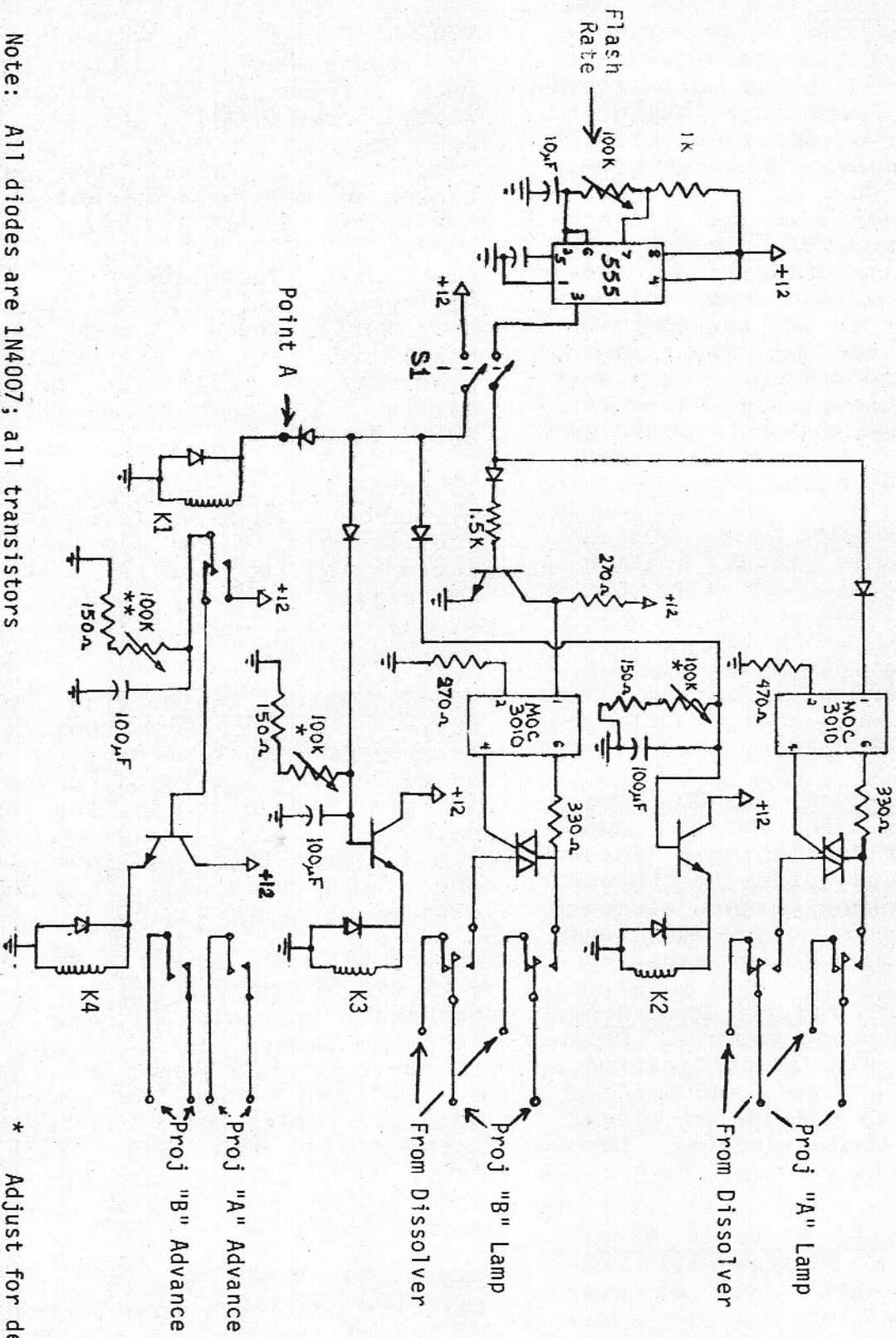
As you can see, books to assist you with circuit design and the general technical operation of your facility can amount to a goodly sum. (To date, I have spent some \$3,000 of my own money on technical manuals). Yet, the \$3.00 Engineers Notebook II from Radio Shack has many, many useful circuits in it and can get you started at a very modest cost.

The next time you're in your favorite bookstore look through the technical section and see what you can find.

In my next article on circuit design and fabrication we'll cover prototyping and fabrication techniques (or how to avoid burnt fingers and blown fuses). Till then, may your Dirac holes chase each other merrily!

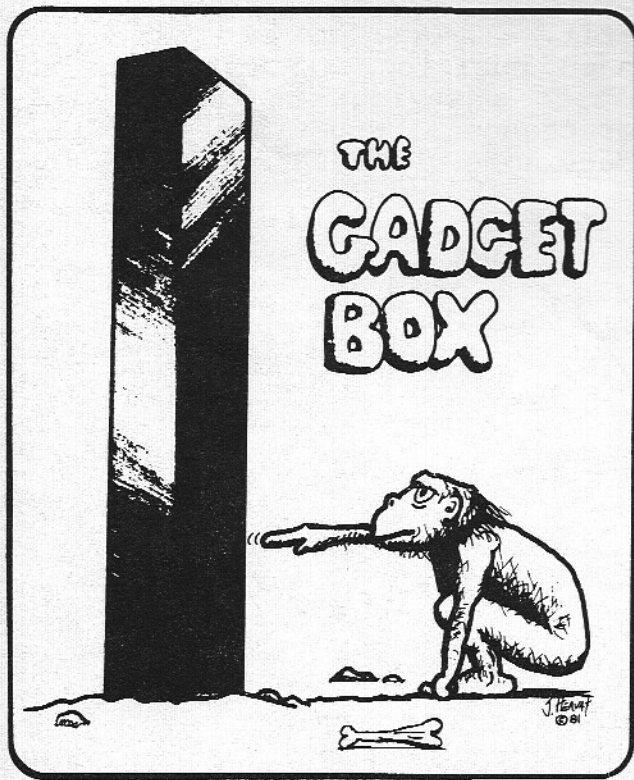
ADDING ANIMATION TO A STANDARD DISSOLVER

This circuit will allow you to add the dramatics of animation to your Kodak, Spindler & Sauppe', Columbia Scientific, or other standard 2-projector dissolver. If you do not desire automatic advance after flashing eliminate the circuit below Point A.



Note: All diodes are 1N4007; all transistors are 2N2222; K1 is Guardian 1345; K2, K3, & K4 are Guardian 1365.

- * Adjust for desired switching time back to dissolver after animation.
- ** Adjust for proper advance pulse length.



SUPERBUBBLES FOR BONZO

by Dave Hostetter
Lafayette Natural History Museum
Planetarium and Nature Center
Lafayette, Louisiana

Those of you familiar with Jack Horkheimer's "Starbound" will remember the Cygnus Superbubble effect near the end of the program. The production notes suggest an effect using Hexidoscopes, mirror balls or mylar tubes, but there is another alternative that is easy and takes far less room in your projection area. About all you

need are a slide mount, opaque, and some polarizer!

Start by getting a slide mount with glass covers (we use Gepe mounts), and simply cover the inside of one glass with cellophane tape, put on at random angles. Next, take the other half of the mount, and paint a ring onto that glass using photographic opaque--you want a clear ring with the rest of the glass opaque. We insured against cracked opaque by covering most of it with a layer of silver tape.

Sandwich a piece of polarizing material (obtainable from Edmund Scientific, among other places) and a light blue gel between the two sides of the slide mount, and you're almost done. Place the slide in any single shot projector so that the light goes from the bulb through the image, then the polarizer, then the tape; when you rotate a polarizing wheel in front of the projector, the superbubble image will burble with an impressive array of colors! To get a soft "nebular" image, simply defocus the projector.

Incidentally, the image itself can also be made using kodalith film. We started with quite a broad ring and used opaque to change its size and shape until we got a nice effect, with an angular size on the dome almost equal to the superbubble's angular size in real-life. The effect is completed simply by rolling the star machine into position so that the superbubble effect comes on in the proper part of Cygnus.

EXTERNAL POLARIZING
WHEEL

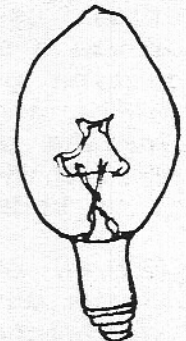
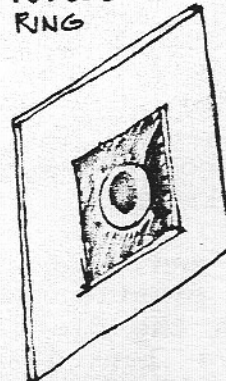
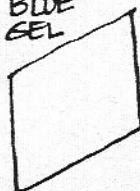
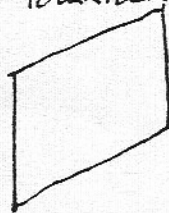
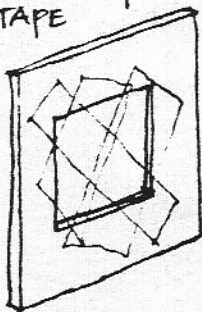
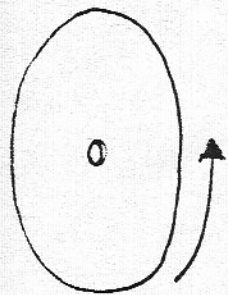
SLIDE MOUNT COVERED
WITH CELLOPHANE
TAPE

POLARIZER

BLUE
GEL

SLIDE MOUNT OPAQUED
ON INNER SURFACE TO
PRODUCE
RING

PROJECTOR BULB



A POLARIZED SUPERBUBBLE

The most critical part of the effect is using the correct cellophane tape--some of it works and some of it doesn't. Look for the cheaper styles that you would expect to turn yellow with age (the stuff we used looks distinctly tan on the roll).

Of course, the superbubble is not the only thing this method can be used for; it might work for planetary nebulae, diffuse nebulae, and so on--anything in which you need an active, colorful and localized effect. We have also used it for auroras as seen from space and a semi-whizzo Christmas Star, so it is a very versatile technique.

Atmospheric Distortion Effect

by Jim Summers

Jim Cherry Memorial Planetarium

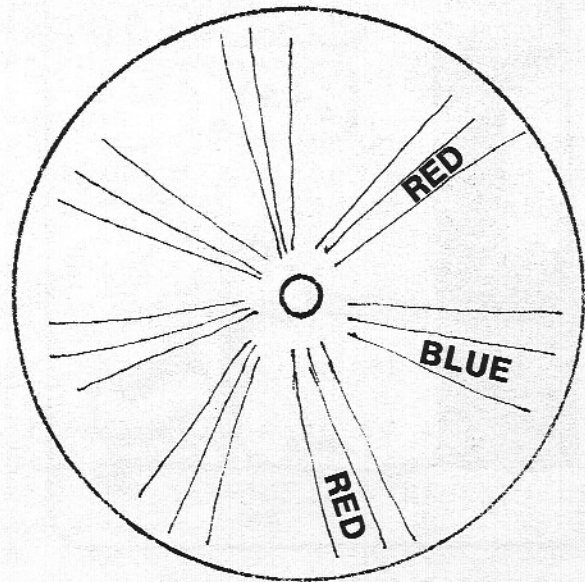
We are all familiar with the atmospheric distortions encountered when viewing bright objects near the horizon. How do you reproduce this effect in the planetarium?

For our UFO program this summer we needed to demonstrate how and why Venus is often reported. The distortions and shifts in position were easily produced by a common plexiglass distortion wheel placed in front of the projector. Color variations proved to be more difficult, but a solution was found.

Rather than risk damaging the distortion wheel itself, several circles of the same size were cut from a sheet of clear plastic. After much experimentation, the best material used for applying the color was a set of Stabilo overhead projection pens (96P). These are permanent and suitable for writing or drawing on anything. They are great for adding color to small areas on kodolith slides.

A pattern of red and blue lines was drawn onto the plastic overlay and sandwiched with the distortion wheel. The colors looked quite realistic, plus there was an added

benefit. The image not only changed position and color, there was also a raying effect with the color changes. Experimentation may produce some very dramatic effects.



IMPROVING THE ALL-SKY PROJECTOR

by Robert C. Tate
Harper Planetarium
Atlanta, Georgia

One of the high points of last year's SEPA Conference was the demonstration Phil Groce gave of the All-Sky projector he has built. For those who missed the demonstration, I will describe it for you. The All-Sky projector is a slide projector equipped with a fish-eye lens capable of 180 degree projection. When pointed at the zenith, this lens will completely fill the dome with one image. Phil projected slides he had photographed through this lens of street scenes and a balloon race, with remarkable beauty.

Fish-eye lenses are known for the distortion they put into pictures, but when a scene is both photographed and projected through the same lens and onto a dome, all the distortion is removed. Telephone poles in Phil's slides were projected perpendicular to the horizon, just as seen outside. Phil also demonstrated some star scenes which

showed the All-Sky could be used as a star projector in situations where a super-accurate or moving sky is not needed, such as in light shows.

I first saw Phil's All-Sky projector a year before the SEPA conference and immediately went home to build one for myself. This was easy since Phil has researched the best fish-eye lens to use, and has found the Minolta, 17.5 mm focal length lens to be the best available. This lens sells for about \$600.00 from discount camera dealers.

Phil removed the lens housing from a Bell and Howell Cube projector and mounted the lens above the slide plane which is parallel to the horizon and close enough to the top of the projector for the lens to focus on the slide. An extra condenser lens was added to concentrate more light into the one-inch diameter image on the slide.

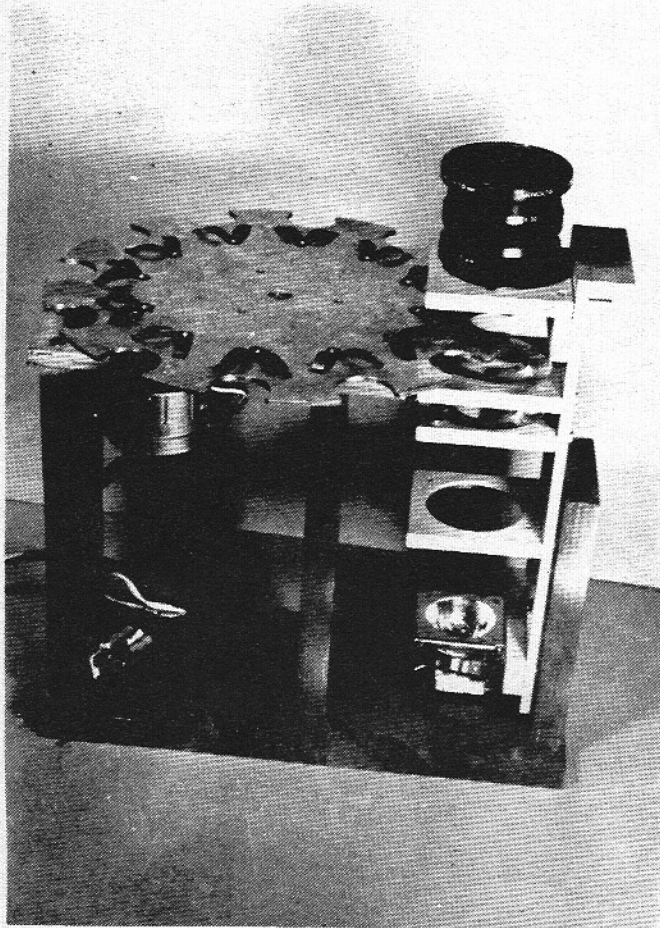


Figure 1: All-Sky projector with slide plate in place

This system served well for a year in my planetarium while I continued to think of new uses for the projector. In an article to follow I will describe techniques for making horizon scenes, constellation outlines, and other uses of the All-Sky projector.

Constellation outlines and horizon scenes require precise positioning under the lens every time. The Bell and Howell Cube projector doesn't allow this to happen, however. About 1/16 inch of play exists between the slide and the slide gate to keep the slide from binding. This translates to about 10 degrees of uncertainty in the position of the image in the dome. A more accurate slide-change mechanism had to be built.

The mounting of optics also needed some work. Adding an additional condenser was easy enough, but didn't allow much adjustment in the position of the condensers and did not allow room for heat absorbing glass which is necessary even though the cube has a mirror which removes some heat.

It was decided to rebuild the entire projector to allow complete control over the light system. At the same time a twelve-slot Geneva movement was designed to change slides with accuracies of ± 0.001 inch. The pictures in this article show the components before mounting in a light-tight box with fan cooling.

The optical system consists of an optical bench in which the condensers can be adjusted in position relative to the lamp and slide for optimum performance.

The fish-eye lens is mounted on a moving plate and controlled by a spring-loaded-screw mechanism to allow easy focusing while always keeping the lens parallel to the slide. This is a vast improvement over the older three-point-mount (similar to a telescope mirror mount) which moved the image around the dome as it was being focused.

Condenser lenses and heat-absorbing glass are the same used in the Kodak Ektagraphic B-2 projectors, which should guarantee availability if replacements are ever needed. The projection bulb is an ELH as in the Ektagraphic, though an ENG could be used if it doesn't burn the slides. Colling configurations are still being tried to find the best fan and air-flow combination.

The Geneva movement gives positive positioning of twelve slides. More would be nice, but only about 18 or 20 slides would fit in the old cube configuration and the sacrifice of quantity for quality is justified. The Geneva movement consists of a drive wheel which, in one motion, unlocks the slide wheel, moves the new slide into position, and locks the slide wheel in place. Though simple in design, the Geneva wheel must be machined to high precision so its construction was done by a local machine shop.

The slides are mounted on a plate attached to the Geneva movement so entire plates of twelve slides can be changed between shows without disturbing each slide's individual position.

Once a slide is centered, it is glued to the slide plate with silicone or Duco to prevent any movement.

Three of these projectors are being installed in the Harper and Northside planetariums in Atlanta, and in the planetarium at the Cincinnati Museum of Natural History. Whole sky scenes add a new dimension to the planetarium and solve production problems easier than other techniques.

Optical systems and Geneva movements can be made available to other planetariums wishing to add this exciting projector to their store of special effects. Contact me for details.



Figure 2: All-Sky projector with slide plate removed to show Geneva movement (slotted, scalloped wheel)

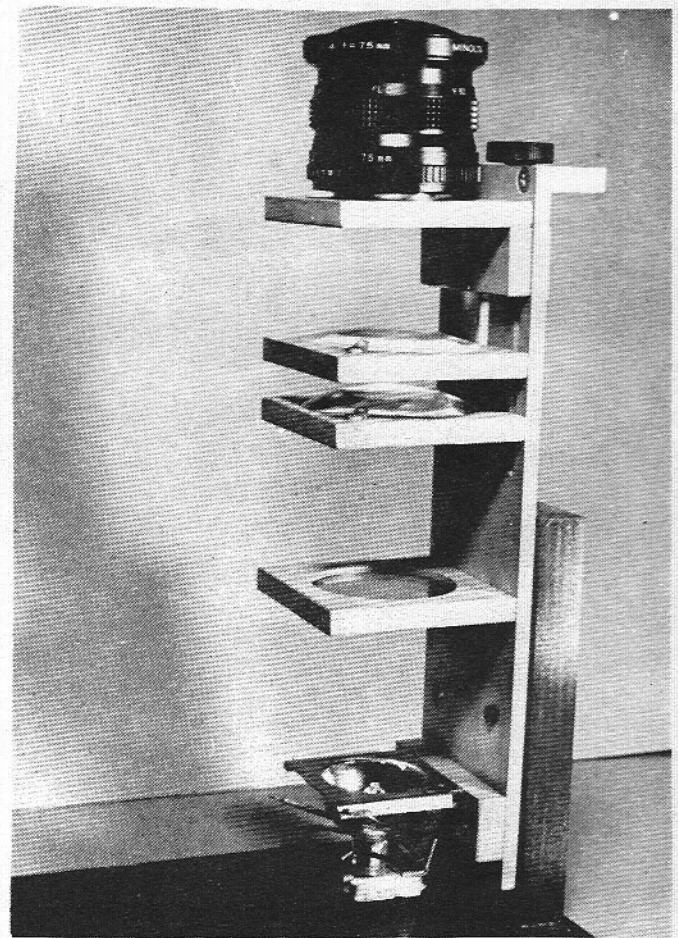


Figure 3: Optical train showing fish-eye lens, pair of condensers, heat absorbing glass and lamp.