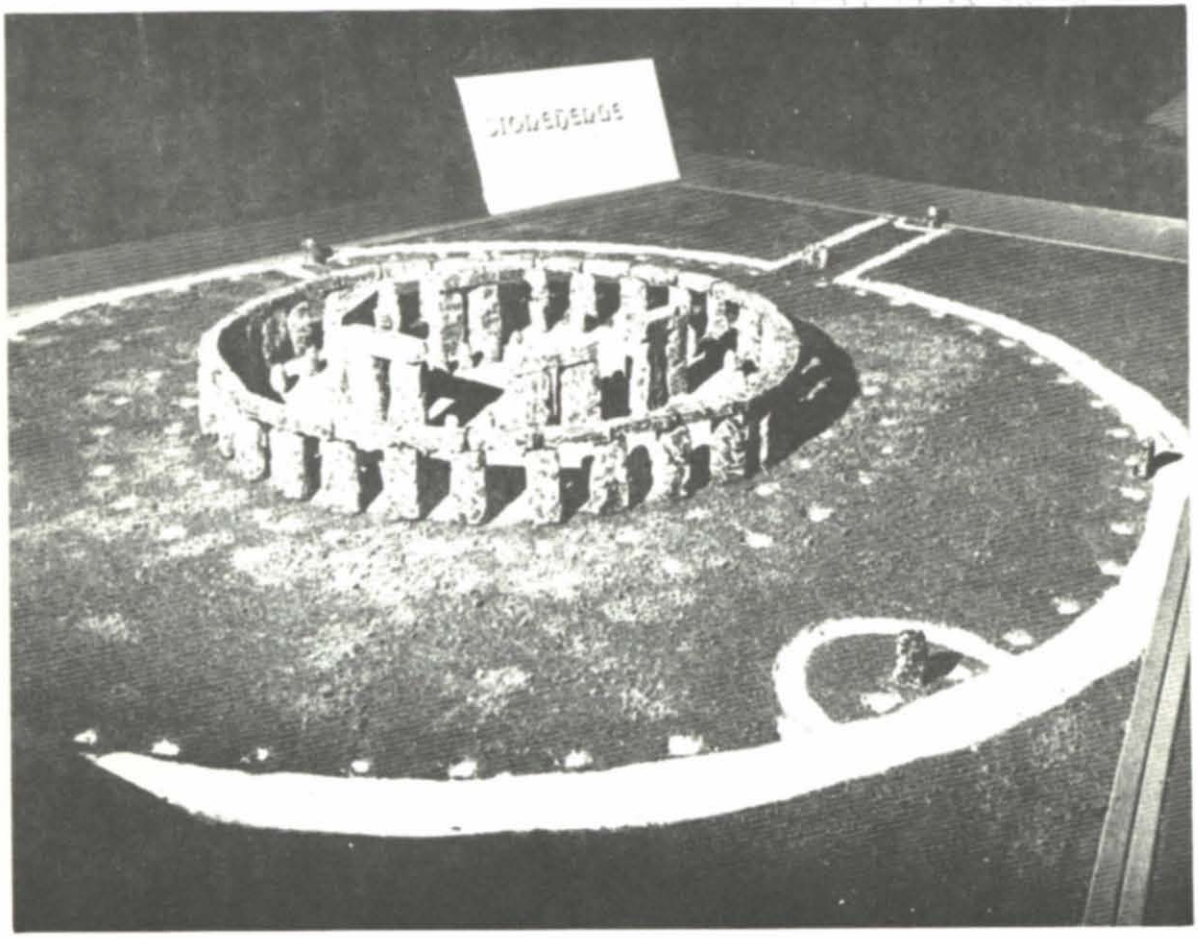
SOUTHERN SKIES



Newsletter of the Southeastern Planetarium Association

CONTENTS

IPS EXECUTIVE COUNCIL MEETING

EDITOR'S NOTE: Jim Hooks represented SEPA at the IPS Executive Council meeting as proxy for SEPA's IPS representative, Mike Ryan.

The IPS Executive Council held a meeting July 16 & 17 in Mexico City. During the meeting many items were discussed. The Executive Council worked over long hours to determine the convention site for 1984 and after extensive discussions the Alfa Cultural Center at Monterrey, Mexico, was selected. One item of business discussed was to give each affiliate representative a two-day reimbursement and 30% travel reimbursement for Executive Council meetings. It is hoped that additional funds would come from the affiliate organization and the individual's local administrative unit. An elections committee was established and I, as past president of IPS, will be chairman of that committee. I also was appointed to a one-man committee to delve into the feasibility of serving as an IPS representative to the U.S. Congress, NASA, and other organizations.

Respectively submitted,
James A. Hooks

PLEASE NOTE THAT RICHARD JOYCE, SEPA'S SECRETARY/TREASURER HAS A NEW ADDRESS: 9 BURNS DRIVE, NEWPORT NEWS, VA 23601.

Southern skies

SOUTHEASTERN PLANETARIUM ASSOCIATION

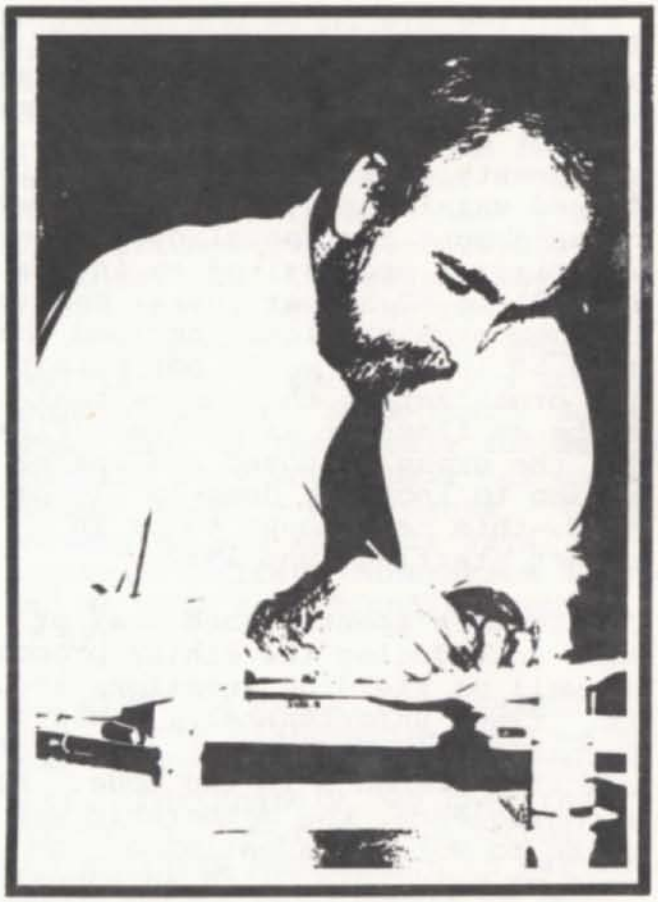
Vol. I, No. 3 August 1981

MESSAGE FROM YOUR PRESIDENT

For those of you dear members who were not able to make it out to Memphis this past June, boy did you ever miss a conference! Ray Shubinski and the entire planetarium staff did an outstanding job of putting together a fascinating schedule of events. When one considers that the Pink Palace had only a half year for planning, somehow a simple 'thank you' plaque is insufficient.

(Does Ray actually rise up out of the pit attired in Arab garb along with the star machine for every public performance of their Egypt show? Has anyone ever recorded for posterity the vocal originals of Joe Hopkins with guitar in hand?)

How anyone could have left that conference without an inspiration to go back home and try harder--especially after sitting through 5 capacity shows--is beyond me. The conference reaffirmed a conviction I have held for some time: pound for pound, the southeastern region is the most active and also has the best grasp on how to put together effective public programming, not only informative but attention-getting and entertaining at the same time. In case you haven't guessed it yet, there is a tremendous abundance of quality and talent in our neck of the woods. (It almost makes one feel sorry for the rest of the country.)



Before I forget it, much thanks should be directed to Duncan Teague and the Craigmont Planetarium for

COVER ILLUSTRATION: A miniature of Stonehenge as it may have looked about 1800 B.C. is featured on the front of this newsletter. This miniature is on display at the Bays Mountain Planetarium and was constructed by Phil Lightner and crew. If you join us next June for our annual SEPA conference, you will see this model and others on display at the Bays Mountain Planetarium.

assistance in making SEPA '81 a conference which will stand out in the memories of those fortunate enough to be there.

Now on to business. I have only one criticism of the general business meeting. When your president calls the meeting to order, it somehow seems inappropriate for half the members to utilize the whistles provided in our goody bags. (When I needed the gavel most, I discovered Jim Summers never transferred it to me.)

The levity, however, was short-lived as members gave serious consideration to the business at hand. Almost without question both proposed amendments to the SEPA constitution passed unanimously. On the matter of an amount for annual dues, there was first a proposal of an increase from $5 to $7.50 per year. However, the membership quickly decided that a $2.50 increase would not permit the organization the wherewithal to be as flexible as desired. Finally, the group proposed and passed a motion to increase dues to $10 per year, this new amount to be in effect starting June 1982.

Jim Summers spent a good deal of time introducing the ethics proposal as well as fielding questions about it. Time, unfortunately, would not permit a detailed investigation of specific elements in the code. As a consequence, the membership was asked to vote on adoption of the code on principle, with an annual review to amend as necessary. The motion passed with a number of people abstaining.

I can appreciate the decision of some members to abstain. Admittedly, the code (see the last issue of "Southern Skies") is not perfect. Even I have some personal reservations about possible connotations associated with certain phrases. Though some elements of the adopted code warrant review and clarification, I sincerely believe that we, as a professional association have taken an important step forward. I am proud that SEPA was the first regional association to adopt such a code of ethics where others wish to ignore the topic.

Mike Chesman reminded everyone that SEPA '82 will be held at Bays Mountain Park. It is entirely possible that our conference there can include a visit to the nearby World's Fair to be in operation then.

As per site selection for SEPA '83, only one offer was forthcoming (and unanimously selected). Charlie Smith from Richmond, Virginia, at the Science Museum of Virginia, offered to host the '83 conference. His facility is currently under construction. We are all looking forward to seeing the first Evans and Sutherland installation in operation. (So is Charlie.)

As I close this report (and try to get my body ready for white water rafting in Georgia) I want to report to you, the general membership, the major failure of my participation in the conference. Try as I did, I could not get Jack Fletcher to reveal the identify of Uncle Fuzzy. *sigh* I tried. Jack just isn't talking.

I trust everyone had a good summer.

Mike

IPS 1982

Dates for the IPS biannual conference to be held at the MacMillan Planetarium in Vancouver are June 26 - June 30.

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Jack K. Fletcher
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In each issue there will be a featured planetarium. The purpose of this article is for others in SEPA to learn what your planetarium is like. Because nobody is volunteering to tell us about their planetarium, I will be contacting a planetarium at random every three months. Please don't let me down when I ask you for an article about your planetarium.

Jack K. Fletcher

BAYS MOUNTAIN PLANETARIUM

By Mike Chesman
Bays Mountain Planetarium
Kingsport, Tennessee

Not many citizens can boast of owning a 3000 acre nature preserve, a museum center, and a planetarium. But the people of Kingsport, Tennessee can. For here, the city operates Bays Mountain Park.

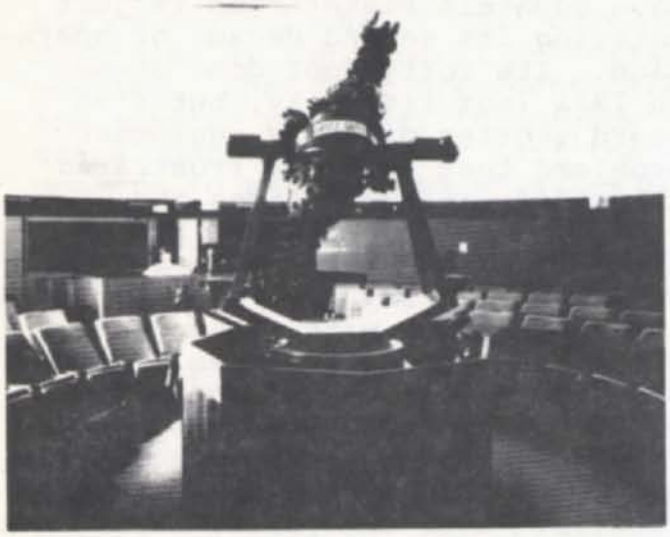
The park is located about 15 minutes from downtown Kingsport. As you enter the preserve, a mile long winding road leads you to a beautiful mountain lake, which at one time served as the city's water supply. Today that supply would last just 2 days. (The city has certainly grown.) Along the shore of this former reservoir is our nature center. It houses exhibit areas, staff offices, classrooms, laboratories, and of course, (most importantly to my thinking), the planetarium.

Bays Mountain Planetarium is just entering its second decade of operation. Its forty foot dome opened in 1971 (not literally, but I've heard stories of early equipment problems that at times frustrated the staff, and many times the threat of sending someone through the roof could have become a reality). In 1977 the city refitted the planetarium with a new projector, controls, and sound system. In short, it was like having a brand new facility. How was this miraculous event accomplished. Well, our projector was needing some major repairs. Over the years, attendance had steadily climbed. Last year the planetarium served over 25,000 visitors. But the reason may go beyond that. Let's be realistic, it sure doesn't hurt when your assistant city manager is a former planetarian and "SEPA-ite." So, a great deal of the credit for seeing that the city would hear out our request goes to Jack Gross. (Jack, as many of you know was Bays Mountain's first planetarium director as well as a founding member of SEPA.)

Our staff is small, (two people operate the planetarium) and we're open seven days a week, 364 days a year. Fortunately, we have the support of other park departments. The exhibits department in particular provides any artwork we may need in producing a show. Phil Lightner and his crew have taken good care of us and the planetarium related exhibits seen at the park are due to their efforts. We currently are displaying an 8 foot space shuttle model, a project Viking diorama, and their most recent creation, a miniature of Stonehenge as it may have looked circa 1800 B.C.

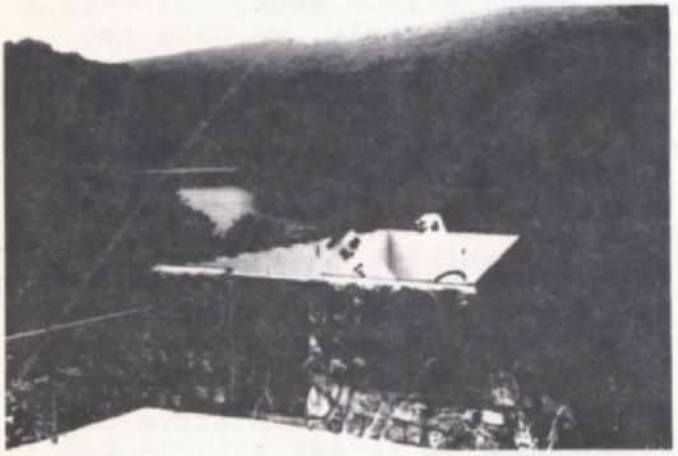
Also new to the park is an observatory. The 15 x 15 foot block and stone building houses two 10" reflecting telescopes. Here, the

staff conducts viewing sessions for the public each Fall and Spring. The structure was built by high school students under the guidance of our park maintenance staff.



Bays Mountain Theater
Photo by Mike Chesman

Our projector, a Spitz/Goto Model 12 (SG12) projects 6,000 stars. The expanded periphery controls (all manual by the way) gave us the most flexibility for the money we could afford to spend. What we wanted was the ability to present large theater quality without being concerned about "state of the art" or going "Hollywood" with 150 light show effects per program. Our system works fine for us. Five or six nice effects in a show are about our average. We keep our audiences returning by not repeating visuals "ad nauseum." (The TV series Cosmos comes to mind as a prime offender.) Every new program has its own "look." An effort is made not to reuse effects in consecutive running programs. Each year, the planetarium stages five major productions. Additional mini-programs, multi-medias, etc., are scheduled as special events so patrons who frequent the planetarium don't have to wait too long between visits.



Bays Mountain Observatory
Photo by Mike Chesman

As June of 1982 approaches, I'm sure the pace here will become more fevered. Already conference plans are well under way. We hope everyone has the opportunity to attend.

A MESSAGE FROM YOUR SECRETARY/TREASURER

Dear Mommy and Daddy,
Hi! I am doing fine, the S&PA convention was lot's of fun we did lot's of neat things. I got to meet many of the people I saw last year. I saw some new people too. They came from far away I felt like I was at a family reunion. The people that run the planetariums around here runs them real good. The fed me wine and cheese and then took me on a trip to ancient Egypt to see how the pyramids were built. It was the best show I ever saw. There was a neat magician named Ogden who did all kinds of magic right in the dome. None of his magic was fake it was all real! Can he come play in my ~~planetarium~~ planetarium? An Astronomer named Bart Bok brought my knowledge up to date on the determinate and indeterminate factors affecting interstellar gas cloud densities and their relation to stellar evolution. I can't wait to tell my classmates about the dark mini-Globules he has found. We rode a riverboat and heard a man play a guitar made out of an armadillo shell. He also played one made out of a turtle shell. He says he will come play them in my place.

The neatest part of the whole conference was getting to stay up real late listening to this man from Miami named Horkheimer. He sure does know a lot about everything! He put everyone to sleep cause by 4am there were only a few of us awake. I also stayed up late other nights going to parties, barhoping and listening to blues singers on Beal St. Thank you for sending me, maybe next year you can come to and meet all the other kids who run planetariums. They are a great bunch of people. I am sitting in the Memphis airport waiting for my plane. I won't be coming straight home as I want to answer the most often asked question "Who is Uncle Fuzzy?". I'm going to parachute into Richmond Va. and put four questions in the mayonnaise jar and then I'm going to follow the pigeon when he takes them to V.F. I hope I will be home soon. I have lots more to tell you.

Love,
Junior

SEPA CONFERENCE '81
A NEWCOMER'S PERSPECTIVE

By David C. Maness
Peninsula Nature & Science
Museum Planetarium
Newport News, Virginia

Note: This is dedicated to Jane Geoghegan and Jack Fletcher, without whose persistence, it would not have been written. There is always someone to push me into one thing or another.

I didn't want to go to Memphis, at first. I had a new show to install, workshops to prepare, and a failing special-effects system to fix. The planetarium (not to mention myself) was not in good shape. But the thing that made me really uneasy was that my director was pushing me all-the-harder to go to the conference.

I arrived on June 16, and felt like a "stranger in a strange land" upon entering the Overton Holiday Inn. This feeling lasted approximately five minutes. I met Larry Miller in the lobby, and there I felt my first sense of belonging. He proceeded to announce that his starball had dislodged and fallen to the floor of the planetarium theater. I began to suspect that I was in the right company.

My suspicions were confirmed at the wine and cheese party that evening, when I noticed that the large supply of wine ran out hours before the cheese. The timing of this seemed to correspond with the beginning of the executive council meeting.

As the meeting ended the council appeared at the balcony, all with broad smiles. In the setting of the Pink Palace the scene reminded me of the Vatican, some time ago when the election of new Pope was announced. Though Richard Joyce seemed to have the broadest smile, there was no such grand announcement. From then on I felt perfectly at ease, and things proceeded at a rapid pace.

On Wednesday, Dr. Bart Bok spoke for two hours on "The New Milky Way." He effectively commanded everyone's attention for the full period, in spite of the late activities of the night before. His energy and sense of humor far exceeded an average man of 79 years, or was that 59!

Papers were presented in the afternoon. Charlie Smith gave a progress report on the Evans and Sutherland Digistar 1 Computer Graphics planetarium projector. He was followed by Michael Bakich who talked about the use of microcomputers in the planetarium. Tony Jenzano introduced us to the new Zeiss M1015 planetarium for medium-size domes. Then Mark Petersen of Loch Ness Monster Productions told us the do's and don'ts of music usage in the planetarium, complete with recorded examples of each. Following a coffee break Charles Ferguson related his research into developing captioned programs for the deaf.

SEPA 1981, Memphis, photograph by Bill Cuno

Then, roving Rita Fairman presented an update on special programs for special people.

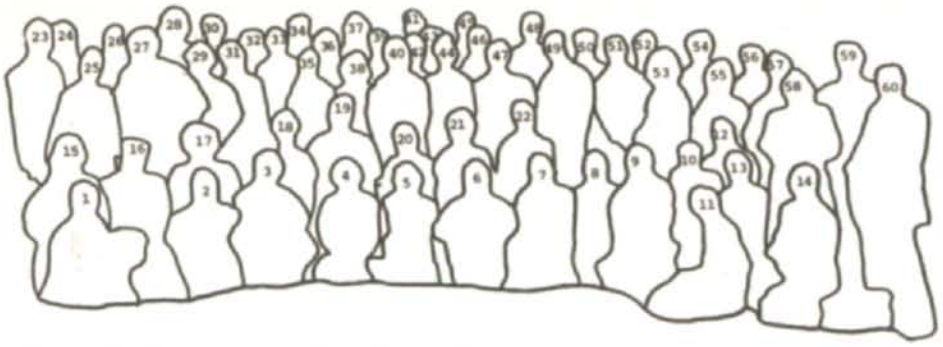
That evening we were treated (Dutch Treat) to "the best pizza you ever ate" at a place called Fat Jimmy's. It was barbeque style pizza (called a Mongolian pizza) and I have to say that it wasn't bad. If anyone has the recipe, please send it to me at 524 J. Clyde Morris Blvd., Newport News, VA, 23601.

Bart Bok with Keith and Mary Johnson at Fat Jimmy's--Photo by Katherine Becker

Later, Jack Horkheimer introduced his spectacular show "Starbound" performed in the Pink Palace planetarium. Still later in the hospitality room at the hotel, Joe Hopkins sang some of his "famous" songs, while Jack Horkheimer and others told some "veeery interesting" stories...until about five in the morning.

Thursday was, well...a long and hard day. It began with breakfast at 8 a.m., and door prizes were awarded. Larry Miller won a color star map, which I thought was quite appropriate. Later we watched "Egypt's Eternal Skies," a Pink Palace planetarium show that artfully complimented an Egypt exhibition at the Memphis Art Gallery. The afternoon was devoted to workshops on music, art, computers, and special effects. In the evening Duncan Teague was our host for some very creative productions. Included was a visit with Mike Ryan's Spacebird in another episode of "Billy's Space Dream." The workday came to an end at last, sometime after 11 p.m.

"Thank God it's Friday!" After the general business meeting Don Hall discussed creativity in the plane-



1. John Hicks
2. Keith Johnson
3. Roy Young
4. Louise Morris
5. Sue Griswold
6. James McMurtray
7. Carolyn Petersen
8. Linda Westlake
9. Jimmy Westlake
10. Ann Carol Palma
11. Sharon McGinnis
12. Frank Palma
13. Jack Dunn
14. Dave Maness
15. Scott Pohl
16. Ray Shubinski
17. Joe Tucciarone
18. Melissa Young
19. J. Wallace Jones
20. Dave Hostetter
21. Carole Rutland
22. Mike Ryan
23. Dan Spence
24. George Brown
25. Mary Johnson
26. Bill Busler
27. Bart Bok
28. Richard Scott
29. Paul McCasland
30. Charles Smith
31. Rita Fairman
32. Jim Summers
33. Jack Horkheimer
34. Jack Whidden
35. Diane Curtiss
36. Jane Geoghegan
37. Donald Walter
38. Kathy Summers
39. Mike Chesman
40. Ruth Lewis
41. Charles Ferguson
42. Mark Trotter
43. David Curott
44. Mallory Joyce
45. Paul Campbell
46. Guy Briggs
47. Larry Miller
48. Richard Joyce
49. Billy Ozmont
50. Jack Fletcher
51. Clay Dunn
52. Bob Luzenski
53. Jeri Panek
54. Joe Hopkins
55. Linda Hare
56. John Hare
57. Tom Butler
58. Katherine Becker
59. Mike Bakich
60. Tony Jenzano

Jack Horkheimer, John Hare, and Dan Spence at the Craigmont Planetarium
Photo by Richard Joyce

tarium and gave an excellent example of it in introducing "Ogden's Trial By Magic."

The afternoon paper session began with a very competent demonstration of belly dancing techniques in honor of Joe Tucciarone's birthday. It was difficult for speakers to gain the complete attention of the whole group. Next, Art Barton said something about copyrights, and Ray Shubinski spoke about seeing some comet, ah...Halley's I think, or maybe that's "Halley's."

The banquet took place that evening. We left the dock at 7:30 p.m. on board the Memphis Queen III, an old-time river boat. Except for Don Hall some of us may have felt just a bit over dressed. But seriously, it was a fantastic experience that I for one do not expect to forget. We had entertainment by Ron Hudson on guitars and later Tom Ogden on cards. The sunset was fit for framing, and I had visions of Mark Twain and Huckleberry Finn all of the way. For me, the entire experience was...indescribable.

The SEPA conference in Memphis was like having two weeks worth of work

Don Hall on board the Memphis Queen III
Photo by Richard Joyce

and play crammed into only five days. "Trekkies" might understand a quote I used on a post card I sent to my director, Jon Bell; "You would not have survived it, doctor." But I'm glad I went! It can only help me to have met such a group of fine and professional planetarians. To our host Ray Shubinski and his staff, you all did excellent work on a very difficult talk. Good luck to the hosts for 1982. This was another "tough act to follow."

Joe Hopkins and Ray Shubinski in their star theater--Photo by Katherine Becker

THE FILMING OF "COLUMBIA"

By Doug Gegen
Land Between The Lakes Planetarium
Golden Pond, Kentucky

The ultimate movie prop sitting on the ultimate stage...the space shuttle "Columbia" poised on pad 39A at the Kennedy Space Center. NASA people have said that they long for the day when the launch of the Space Shuttle seems trite; the time when nobody pays any attention to a space launch. Only then, they say, will "Columbia" and her sister ships be doing their jobs--making orbital space flight as routine as trash-compacting. Those of us fortunate enough to have been in attendance for the launch of STS-1 think that day will be a long time in coming. Not because of any technological snags which lie in wait, but rather because of the awesomeness of the event itself.

As a former Kennedy Space Center groupie, it was with a joyful heart and very few dollars that I returned to my old stomping ground to film the launch to end all launches. Sharing the experience with me were two SEPA colleagues, Don Warren and Harry Seely, both out of Dick Knapp's fine facility in Jackson, Mississippi. Harry and Don were the real experts in this venture, having much experience in the making of 35mm fisheye movie films for planetarium use. It was our job to record the launch of the shuttle as dramatically as possible by having movie cameras on the pad as "Columbia" did its thing. We were supported in the undertaking by a consortium of five planetariums nationwide which are equipped for 35mm movie projection. Whatever results we got were to be shared by these facilities, with each one contributing toward the effort. This group now calls itself "Cinema 360" after rejecting the name "Vulgar Vision" as an identifier (somewhat unfortunately, I think). Its member institutions are the Fleishmann Atmospherium in Reno, the Flandrau Planetarium in Tucson, Cernan Space Theater in Chicago, City of Jackson Planetarium, and my home base, the Land Between The Lakes Planetarium in Golden Pond, Kentucky. The largest commitment for the project came from Dick Knapp who arranged for the camera sites and supplied the wheels as well as Harry and Don. (Not necessarily in that order fellas!) Yours truly went along as supervisor of a third camera and tie-vote breaker! And so it was that three SEPA planetarians began their epic journey to the Cape!

Our plan called for the use of two remotely operated cameras on the pad in addition to the long telephoto we would be using at the press site. I had also packed my still equipment for any opportunities which might arise. In telling a story like this, it's difficult to avoid diarrhea of the typewriter.

There were many adventures and details involved in getting our cameras positioned, but I'll just say that we got right where we wanted to be based on information Don collected during the flight readiness engine tests in February. Each of the cameras could provide up to four minutes of unedited footage, and it was decided that a tight shot showing ignition and subsequent mayhem would go well with the fisheye view. We would track "Columbia" from our press site some three and a half miles from the pad.

The PR people at the Kennedy Space Center made every effort to accommodate the press and tried their best to meet the needs of anyone with credentials and that particular look which combines desperation with sincerity. We were all aware of the strict security in effect at the pad however, and were thankful for each chance to view the shuttle at close range. This priviledge was extended only to those folks with equipment mounted at the launch site and not to the press generally, so I'll toot our horn a little and say that Harry, Don, and I got as close as anybody not directly connected with the launch. There were many opportunities for everybody though, and frequent bus trips to the vicinity of pad 39A gave us all a chance for good pictures. Among these was an opportunity to film the swing-back of the service structure early on Thursday, April 9.

There are few things in this world that would cause me to jump aboard a crowded bus at one o'clock in the morning. A strip-poker game with Cheryl Ladd perhaps; the unveiling of America's newest launch vehicle, certainly. About one hundred others felt similarly motivated, and at 2 AM we found ourselves stumbling about in the darkness oogling a vehicle that we all hoped would not be long for this world.

As we arrived, the shuttle was completely shrouded in steel and plumbing. Not until an hour later was there any sign of movement. And then, very slowly, the greatest strip-tease in history began. By degrees, "Columbia" was revealed to us, and when she finally stood before us bathed in a billion lumens, it was all I could do to keep from fainting dead away so intense and unearthly was the sight. This wasn't the space shuttle, was it? That was in some big hangar somewhere with tiles falling off and mold growing in the cockpit. But this...this was the most beautiful and awe-inspiring collection of machinery I'd ever imagined, and we had film of the whole event. Later that same day we returned for sunset photos, (see the June Sky and Telescope) but everyone knew the real chance would come tomorrow morning (or so we thought!).

Because of the density of press people, it was necessary to stake out a claim along the bank of the Banana River the evening before the launch to insure an unobstructed view. We chose our site carefully and then stretched out in the company of our wooden tripods. The events of Friday, April 10 are well known, and we could all sense the embarrassment and frustration felt by NASA in the hours before the scrubbing of the mission for that day. There were many moans and groans as Hugh Harris's voice crackled over the P.A. with news of the cancellation. The next attempt could not be made until Sunday morning.

A few folks would be unable to stay because of other commitments. But most were ready to wait it out--ourselves included. The limiting factor might be the weather. Predictions for the twelfth ranged from so-so to positively bleak, and we all felt that the wait could be much longer than 48 hours. Since we were using borrowed cameras and per diem rental equipment, the outlook was more than a little discouraging. Fortunately, the weather rumors proved to be exaggerations and Sunday morning proved as good for flying as Friday had been. I found it interesting that the

weather was a consideration for reasons other than those one might suppose. In the past, clear skies had been necessary for camera tracking, and to minimize the possibility of lightning striking the spacecraft. There were still concerns of course, but now the main factor was the seeing from air to ground. Should the worst happen and an abort become necessary, the crew would need to fly the orbiter back to the paved runway at Kennedy. This would require a completely unobstructed view from what could be a very great height.

And so the whole process was repeated; an evening by the Banana River with entertainment by Max Mosquito and his 10^{14}-piece band. Discomfort gradually gave way to anticipation, though. Despite a minor problem with oxygen flow to the crew, one got the feeling that this thing was really gonna happen. Because of the terrible moisture problem two nights before, we had decided to mount the cameras an hour or so before launch, and at 6 AM we set about getting ourselves ready to record the launch of America's first space pick-up.

By 6:30, the scene was one of congestion and photographers exchanging information on shutter speeds and apertures. At about 6:50, the last hurdle was crossed as the count resumed after a built-in ten minute hold. This had been the point on Friday where the count had ground to a halt, because of the computers' refusal to recognize one another. A big "whoop" goes up as Hugh Harris announces, "T -9 and counting." We take final meter readings and then sit tight in the knowledge that we've done all we can to get what we came for. I say a silent prayer as I think about our pad cameras, hoping that the moisture has burned off our unprotected lenses. I fire off a single frame to be sure the winder on my still camera is performing as advertised. The movie camera and telephoto are in the capable hands of Don Warren and Harry is protecting our flanks with a formidable pair of burley shoulders to prevent any last minute claim jumping.

At T -5 minutes, conversation begins to dwindle and by T -3 minutes only the amplified voice of Hugh Harris can be heard: "Loxy pressurization looks good. Commander Young reporting all in readiness for launch of 'Columbia'." At T -90 seconds my thoughts return to our remote cameras which should now be recording the event. T -30 seconds and there is a hush over the crowd of onlookers. There is only the breeze as eyes focus on the base of the rocket, awaiting the first sign of flame. At T -5 seconds I fire my first picture, Don has been shooting footage for some thirty seconds already. T -3 seconds and we see a lick of flame as the orbiter's engines ignite. My heart skips a beat. An instant later, the solid rockets breathe fire and "Columbia" immediately starts her ascent. As the vehicle climbs past the service structure and we get our first real look at this firey thunderbird, I scream, "Go Columbia! Go Mama!" shooting pictures all the while. People around us are screaming, shouting, applauding and crying. It's incredibly beautiful...other worldly in fact, to watch this great white bird rise on an ever-lengthening plume of fire. The screams and shouts can hardly be heard now. The great artificial thunder of five million horsepower rolls over us, assaulting the auditory sense. I wipe the tears from my eyes and then shoot the last few frames which will document the event. As our chests pound with vibration and "Columbia" climbs out of sight on a great billow of smoke, I glance at Harry and Don with beaming eyes. They return my ear-to-ear grin, and we congratulate one another on having witnessed the greatest launch ever. As we talk with others it is obvious that the feeling is unanimous.

As for me, I feel that I have been magically transported to another

place in another time to watch something beyond the realm of the earth and its problems. I feel refreshed and renewed, with a sense that a great adventure lies ahead. For those in the southeast who would like to share in the first step of this adventure, I recommend a trip to the Jackson Planetarium. As fellow planetarians, you'd probably enjoy seeing the results we were able to bring back.

I know everyone is going to sob hysterically over what I'm about to tell you, but your omniscient wonder is long overdue for a vacation and so this column is going to be rather short. No, I'm not going to reveal my vacation plans, though some of you turkeys have been bold enough to suggest a remote sanitarium.

It's not that Uncle Fuzzy is without questions to answer, quite the contrary. There are heaps and gobs waiting for illumination. Most of them, though, I wouldn't touch with a 10 foot pole. Take, for example, the following submission:

"Is it true that a major planetarium producer is about to unveil a new star machine which will have the appearance of Miss Piggy wearing a see-through dress?"

Come on now, you should know better. That machine made its appearance in 1977 in a film called "Star Boars." (Or is that "Star Bores?") In my opinion that question is hamming it up too much!

What's that Doctor? Am I finished writing this column? Yes, of course. Why do you ask? Oh, its time for my treatment with Dr. Van Gelder's Neuro-Neutralizer! Just a sec, I'll be right with you.

Just remember, folks--keep those cards and letters coming.

Hello, bomb. How are you feeling today, bomb.

Dave, don't do that, Dave. I feel me memory going, Dave.

Twinkle, twinkle little star, how---

SEPA NOW HAS A CODE OF ETHICS...WHAT DOES THIS MEAN?

By James Summers
Fernbank Science Center
Atlanta, Georgia

On Friday, June 19, 1981, the Southeastern Planetarium Association came of age with the adoption of its first code of ethics. A long, hard road to mature responsibility for the organization still lies ahead, but the first, and perhaps most important, step has been taken, even if hesitantly.

The movement toward a code of ethics grew out of complaints from planetarians of unprofessional treatment by their employers. After study of the problem by members of a committee on professionalism, and many long and heated discussions at several SEPA meetings, it was concluded that if members of the planetarium community wish to be treated as professionals, we must first convince our employers and others that we are in fact members of a profession. We also learned

that just claiming that we are is not sufficient. Custom and law set out criteria by which professions are judged and establish standards to which they must conform. One of these is the requirement for a published code of ethics.

A code of ethics may be short or long, simple or complex, depending upon the nature of the profession. It has two primary functions. First, it tells people outside the profession what they can expect from the profession and its members. Second, it establishes standards by which we can judge our own conduct and that of the profession as a whole.

"I am an ethical person, therefore I do not need a code of ethics to tell me what to do." "We are all ethical in the planetarium community, so there is no need for a code of ethics for the profession." Unfortunately, some planetarians have seen the suggestion for the adoption of a code of ethics as somehow impuning their integrity, of implying that they are not ethical. This is not the case. In the first place, a code of ethics is not some arbitrary standard of conduct which is imposed upon us from the outside. It is a statement of what we feel to be responsible conduct for ourselves. If we are as ethical as we claim to be, then there should be no deviation between our words (the code) and our actions. The former should be derived from the latter.

Secondly, our very claims of being ethical already imply the existence of a code of ethics. This code may not be written, but its existence is no less real simply because it is only in our minds. There must be some standard by which we judge ourselves to be ethical. Unfortunately, even though we may know quite well what that standard is, unless it is written, other people may not. Therefore, we may consider ourselves to be acting in a totally appropriate and ethical manner in a given situation, whereas others may perceive just the opposite. If we wish to be judged as ethical by other people, we must communicate to them the ethical standards by which we are to be judged. A written code of ethics is the only way in which this reliably can be accomplished.

A written code offers other benefits as well. Consider the plight of a planetarian who is forced by his employer into the position of acting in what he considers to be an unethical fashion. The planetarian objects that this course of action is improper. The employer responds, "That's just your opinion." Now, this planetarian may have to do as his employer wishes in any case, but a written ethical statement from the entire profession supporting the planetarian's position should carry much more weight than one individual's opinion.

But, perhaps the most important justification for a code of ethics was presented during the discussion prior to the vote. It was pointed out that the code will serve as a guide to new people entering the profession. Unlike members of other professions who possess homogenious educational backgrounds, planetarians come from very diverse areas. Some are astronomers; others are educators; some are artists, writers, or poets; and still others have a variety of technical backgrounds. We come from many different directions, but we are moving toward a common goal. The code of ethics brings that goal into sharp focus for each of us and defines the acceptable procedures to be followed in the attempt to attain it.

Now, admittedly, the code of ethics which was adopted by the SEPA membership is far from perfect. There are many things which are included unnecessarily. Likewise, there are a number of things which need to be added. And, in any case, there are probably better ways to express much of what is contained in the code.

You can help to bring the code closer to the desired state of perfection. Review the code, which was published in Vol. I, No. 2 of "Southern Skies," make a list of problem areas you notice, suggest ways in which these problems can be corrected, and forward this information to Jim Summers, Fernbank Science Center, 156 Heaton Park Drive, Atlanta, Georgia 30307. All suggestions will be forwarded to a committee of volunteers who will review them and make recommendations for revisions to the code at the next business meeting in Kingsport.

HOW TO OBTAIN A COPYRIGHT PERMISSION IN 1500 HOURS OR LESS

By Arthur Barton
Miami Space Transit Planetarium
Miami, Florida

It can cost you fifty thousand big ones and you could wind up spending two years learning how to make small rocks out of big ones. You will, of course, have to resign your position as director of your local planetarium. And your family will have to scrape by on food stamps while you do your time. All of this can happen if you are caught and convicted of copyright infringement.

A scenario of this sort doesn't have to happen to you, for copyright permissions are fairly easy to obtain. But remember, the process is a long one and is akin to writing a novel. The following article is excerpted from my forthcoming book, A Primer for Planetarians: Adventures in The Dome Trade.

"The Ten Commandments of Copyright Permissions"

I. Gee, I couldn't have stolen that many pictures, could I?

Once you have written your magnus opus, your next task will be to select the visuals for it. So it's off to the library we go. Then, three weeks, 3,000 National Geographics, and 422 scotch and sodas later, you have chosen the most stunning pictures that a copy stand can steal. Your show will be a masterpiece. If you don't get caught that is. Remember this; if just one of the copyright holders sees your show and sees his picture in it (which of course you used without permission) you will go to jail. It boggles the mind to speculate what might happen to you if all thirty of the people whose pictures you used (without permission) were in the audience for last night's 8:30 star show. You might become as famous as the Ayatollah Khomeini.

II. I'm Making A List and Checking It Twice...

If the thought of the slammer is not to your liking, you will have to obtain copyright permissions. To go about this you will have to find the photographer and/or holder of the copyright of each picture you intend to use. Make a list of all of these and be sure to include the page number, issue date and any other pertinent information. This must be done for each picture you use. Note that many books and magazines have a special section at the back for picture credits. It is written in very small print so be sure to keep a magnifying glass handy.

When you have your list together, make up a second list and group all of the picture sources together. Put the Palomar visuals in one pile, the National Geographic stuff in another, etc., etc., then proceed to section III.

III. Reach Out and Touch Someone...

This step is a freebie... courtesy of Ma Bell. The majority of publishers do not include a phone number in their publications. So it's Directory Assistance to the rescue. Mother Bell will make every effort to help you. When you get the phone number of the person or

publisher you are looking for, be sure to ask the operator for the address. Note: some localities make a practice of not giving out customer addresses. If this happens to you simply explain that your office was recently burglarized and that you need it for your new Rolodex file. If all else fails and she will not give you the address, ask for the "Shift Supervisor." This is Ma Bell lingo which tells the operator that you are a highly placed executive in the Bell System and that she'd better not mess with you. Only Ma Bell employees are supposed to know what a "Shift Supervisor" is. If all else fails, sell your AT&T stock and continue on.

IV. If the accountant ever sees the xerox bill...

Xerox everything...TWICE. You will need a copy of each visual. One for your files and one to send along to the copyright holder with your letter of request.

V. Nobody knows the troubles I've seen

You are now ready to try to obtain your first copyright permission. If you are a nervous type, sit down at your desk and pour yourself a tall glass of liquid intestinal fortitude. Once you have calmed down, put yourself into a blue funk. Think of unemployment, suicide, and other such nasty things. Feel sorry for yourself. Then pick up the phone and dial. When you get an answer, ask for the person who can grant copyright permissions. Then tell your tale of woe. Insist yours is a nonprofit organization. Most planetariums are. Talk about your low budget and how you can't afford to pay a cent. Tell the person how much you like the picture; that the show won't be the same without it. After all, the picture was good enough for you to want to use in the first place. Be sure that you explain the context in which the visual will appear. Make sure that the context shows the picture in a good light.

If you are doing a show about flight and have a short section on an ill-fated DC-10 included therein, you can take it for granted that McDonnell-Douglas will not give you a copyright permission. If, after trying all of the above, you have not gotten the permission you seek, threaten to jump off the top of your dome; hand the phone to your secretary and have her primed to vividly and tearfully describe your perilous climb to the top of the building.

VI. Promise Her Anything...

In your program to obtain copyrights you will undoubtedly run into a copyright holder who wants money for a picture. This can be a problem, but is one that is easily solved. First, offer the person a dome credit. Failing this, offer some passes to your planetarium for the copyright holder and his family. Or...tell him you'll take him to dinner at a posh restaurant when he visits your town. Chances are, he will never take you up on it, but if he ever does show up on your doorstep you'll only be out the cost of a good dinner. You'll also get to meet an interesting person too! One young lass I spoke to fell in love with my telephone voice and gave me a permission on the condition that I take her out to dinner the next time I hit L.A. Guess where I'm going on vacation this year.

VII. Deliver The Letter The Sooner...

All copyright holders will require you to send a formal request in writing. In your letter restate what you told them over the phone and state the uses to which the visual will be put. Be sure that the words "NONPROFIT Educational Purposes" are contained in the letter. Put the xerox copy of the visual and any passes, plane tickets, etc., that you care to send into the envelope. Drop the envelope in the nearest mailbox.

VIII. PLAYING BALL WITH THE BIG BOYS: Tackling the Corporate Giants

You will have problems with the following:

1. Archives: These folks find pictures for you for a fee.

2. Photo Services: Same as above. But see if you can get the name and number of the photographer. You may get lucky if you can. We got a book and permission to use over 50 pictures by this method.

3. Companies that have recently gotten large infusions of bail-out money from the government. These can be very touchy unless you are going to show their product in an especially flattering light.

Some advice on the Good Guys:

1. Mount Palomar Observatory: Black and white photos are usually free. Color photos are $30 each. They may waive the fee if you really can't afford to pay.

2. Other observatories are generally free.

3. National Geographic: Free if the work was done by their artists or photographers. If they don't hold the rights they will do their best to help you find the person who does.

4. Astronomy magazine: Same as National Geographic.

5. Sky and Telescope magazine: Do your homework before you call. If they credit a picture to someone else, call that someone else first. Don't ask them to do your research for you. Like most magazines, they have a small, dedicated, talented, and badly overworked staff that works against severe deadline pressure.

6. Time-Life Inc: These folks make your work easy. In the back of each of their books is a list of all the picture credits. Try to contact the photographers individually. A nice lady in Virginia will help you track them down. She hates to write letters, so do your homework and have a pencil and paper handy. Time-Life also has a picture service and photos are available for $50 to $100, if all else fails.

IX. Give Credit Where Credit Is Due

So, you've gotten all of your copyright permissions and your show is legal. Be sure to give a dome credit to everyone. After all, you did promise them one. Your credit list will look impressive. It will tell your Board that you did an incredible amount of work on the show and that you weren't just sitting at the console twirling knobs in the dark all the time. Seeing names like Exxon, Time-Life and National Geographic on your dome will let the Board members know that you have contacts in very high places. You can rest assured that they will consider this when they discuss the planetarium's budget for the next fiscal year.

X. Rolling your own...

To enroll your show in the Copyright Hall of Fame, write to the Registrar of Copyrights at the Copyright Office, Library of Congress, Washington, D.C. 20059. Request Copyright Registration Forms.

THE CARE AND USE OF MAGNETIC RECORDING TAPE PART III: LOOK AFTER YOUR RECORDER AND IT WILL LOVE YOU FOREVER (WELL, ALMOST)

By Michael F. Ryan
Earth-Space Science Center Planetarium
Howey In The Hills, Florida

So far we have considered tape

storage, the historical development of tape, tape qualities and hints on purchase. Now let us take a look at the machine and offer some suggestions to prolong its life as well as the life of your tapes.

There is no getting around the fact that tape recorders require periodic maintenance, specifically the cleaning and demagnetizing of tape heads. First, let us consider the need for cleaning.

It has been said that the single most important point in tape deck maintenance is the frequent and proper cleaning of the heads. All heads should be cleaned before making any important recording. Some recorder manufacturers also recomment that heads should be cleaned at least once every 8 hours of use (record or playback). [I will freely confess that I don't live up to that recommendation, instead cleaning the heads once a week, or the equivalent of 15 hours of use.]

Why bother to clean the heads? All heads accumulate a coating whether it be dust electrostatically drawn from the air or residue from the wearing away of tape emulsion. This is true even for 'calendered' tape. Dirty heads can cause a reduction of high frequency response, can cause irregular head wear and, in some extreme cases, may cause the deck not to record at all.

There are a number of cleaning fluids on the market, but I have found the most practical and inexpensive one to use is common isopropyl, rubbing alcohol. Using a stiff cotton swab dipped in the fluid, rub the entire head surface being cautious not to scratch it. Repeat the process on each head until all discoloration and tape oxides are removed. Remember to clean all metal parts over which the tape passes: such as capstan shaft, tape guides, lifters, etc.

Caution: Never apply alcohol to the rubber pressure wheel which forces the tape against the capstan. Clean this item with a cotton swab and water.

Once the heads are clean, the next step should be the demagnetizing process (sometimes called degaussing). The reason why this is necessary follows: during long periods of playback use, the heads may become slightly magnetized. As a consequence, high frequency response will decrease, noise will develop, or in some extreme cases, noise will be permanently transferred to your valued, pre-recorded tapes.

I shudder every time I recall what a friend of mine used to do when demagnetizing recorder heads. He used a soldering iron!!!!! One can only speculate what damage was caused by the heat from such an instrument, not to mention ruining the heads by the contact of metal scratching on metal.

Please, do yourself a favor and invest in a professional head demagnetizer such as the TEAC E-1 or equivalent. Before you plug it in, remove any tape from the deck and place it at least five feet away. A head demagnetizer generates a relatively strong 60 hz field which is capable of erasing tapes!

The suggested method to follow is this:

(1) Turn off power to the deck.
(2) Turn on the demagnetizer [you may hear a slight buzzing sound which is OK] and bring the tip close to the head. Slowly move it up and down four or five times.
(3) Slowly draw it away from the head.
(4) After demagnetizing all heads, turn off the power to the demagnetizer only after it has been drawn at least 12 inches (30 cm) from the heads.

The better demagnetizers on the market have a plastic guard covering the tip of the metal probe so as to prevent head scratching in the event of accidental contact.

Since the decks we have at Howey are standing vertical instead of horizontal and have head cover plates which are not supposed to be removed, seeing what you are doing can be a bit of a problem. Rather than going into active training to become a contortionist, a flat mirror is placed on the surface in front of the machine and all preventive maintenance work is done via reflected images.

Lest you infer from the above ramblings that I have from the very start adhered to all this advice, let me set the record straight. I had to learn the hard way through a rather unpleasant experience.

Several years ago when I was just getting my feet wet in the planetarium business and had only a few canned programs, these shows would invariably run for extended weeks. After a while I began to notice that the high treble notes were missing on playback. I did everything except what I should have done. Tone controls were adjusted, speaker connection checked, and even a good, swift slap at the equipment was attempted to remedy the problem. No such luck.

Did I try demagnetizing? No way. I just naturally assumed the demonic rafter elves who periodically visit us all with perplexing situations, had once again invaded the theater. The tape continued to be used. And that was the most unforgiving mistake.

So much magnetism had built up on the heads that eventually something had to give. The magnetic field transferred itself onto the pre-recorded tape, introducing a series of popping sounds which could not be removed without erasing the program material. As I said, I learned my lesson the hard way.

Since we have mentioned the prospect of demonic rafter elves, let us expose two more gremlins that can be disasterous to pre-recorded tapes. First, the bulk eraser.

Bulk erasers are nice, I guess. The most common one I have seen is round, cylindrical in shape and black in color. They are intended to be used to erase an entire reel of tape in a matter of seconds. Presumably, the logic for their existence lies in the assumption that the erase head of a recorder, activated in the record mode, may not completely erase any signal already on the tape, leaving a faint ghost image behind. Personally, I have never found this to be true with our decks, but I will not waste space arguing the point.

Bulk erasers work. They work nicely. They work too well. The electromagnetic field they generate is so strong, a bulk eraser can literally cause a 7" reel of tape to adhere to its surface. Since the field is so strong, it extends several feet into space and can erase nearby tapes which may be unlucky enough to be sitting close by.

There is a friend of mine who has one of these killers and who is so sensitive as to its use, he will not allow it to be stored anywhere near the recording studio nor near the cabinet which is used to store tapes. There have been rumors that his bulk eraser is suspended a few inches from the top of his dome.

However, there is another enemy of pre-recorded tapes without the menacing appearance bulk erasers have. I am speaking of none other than that wonder gift to mankind: the screwdriver. You see, some manufacturers have made the assumption that we are all klutzes. They manufacturer screwdrivers on the premise that we are, each one of us, condemned to a physical law of nature which states: Every Screw When First Driven Will Invariably Slip Out Of The Grasp Of The Klutz Driving It And Fall Into Some Totally Inaccessible Crevice. So what do they do? They magnetize the tips of their products to hold on to the ever elusive screw.

One final true story should drive

the point home. Another friend of mine sent some first generation tapes in the mail along with some instruments needed by the addressee. Included was a magnetized screwdriver. Care to guess what happened to the tapes?

Next article: the mysterious 60 cycle hum.

CONSTELLATIONS: IN SEARCH OF THE PERFECT FIT

By Joe Tucciarone
Memphis Pink Palace Planetarium
Memphis, Tennessee

When you tell a group of school kids that Deneb is in the tail of Cygnus the swan and Albireo is in his head, wouldn't it be nice to be able to bring up your Cygnus constellation overlay and have his head, tail, and wings fit nicely against the stars? Or bring up your Orion overlay against the stars of Orion and see that his belt lies exactly over those three stars in a row, and his sword does lie across that faint line of stars just like you said? It can be done cheaply, easily, and by yourself.

First consider the problems in buying someone else's constellation overlays:

1. Expense. With budget cuts galore, need I say more?

2. Proper Image Size. Unless you have your constellation overlays custom made ($) for your particular constellation projectors, their images will probably not fit your stars properly.

3. Imaginary Constellations. You're writing a musical star show requiring an Elvis Presley overlay for the stars of Orion.

4. R-rated Overlays. The Andromeda constellation overlay you've just bought shows more of her womanly attributes than your school group should see. (No lie--see the the Minolta Andromeda!)

You can avoid these and many other hassles by making your own overlays which will fit your stars exactly. All you need to do this is a 35mm camera and some kodalith film.

As an example, assume that you need an overlay for the big dipper in a star show.

Step 1: Draw up some sort of a grid, such as the one shown in Figure 1.

Step 2: Photograph the grid with kodalith film, taking special care to note the exact distance from the grid artwork to the camera, as well as the focal length of the camera lens.

Step 3: After developing the film, place it in the projector which will be used to project the big dipper overlay, and project the image of the grid against the stars of the big dipper on your dome.

Step 4: On the original grid artwork, map the locations of the stars of the big dipper as they appear on the grid image on your dome, as in Figure 1.

Step 5: Lay a piece of tracing paper over the grid artwork and simply "connect the dots" as in Figure 2, or draw any figure you want over the stars you've mapped in Step 4.

Step 6: Photograph your newly drawn constellation figure with kodalith film, using the same art-to-camera distance and camera lens used in Step 2.

Step 7: After developing the film, place it in the big dipper projector from Step 3. This projector must, of course, be located in the same place on your gallery shelf or star projector and have the same focal length projection lens as in Step 3. Finally, turn on your stars, and align the overlay of the big dipper against the stars of the big dipper. You now have a custom-made big dipper overlay which will fit your stars better than any that money can buy.

You may wish to make several Xerox (or Savin) copies of the original grid artwork. Then, you can map your stars (Step 4) on a copy and not mar the original grid artwork.

Finally, I want to give credit to Vic Costanzo of the Strasenburgh Planetarium, from whom I learned this and many other useful techniques.

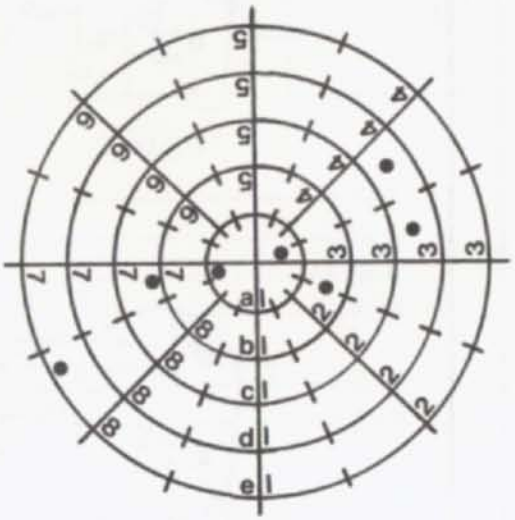


FIG. 1

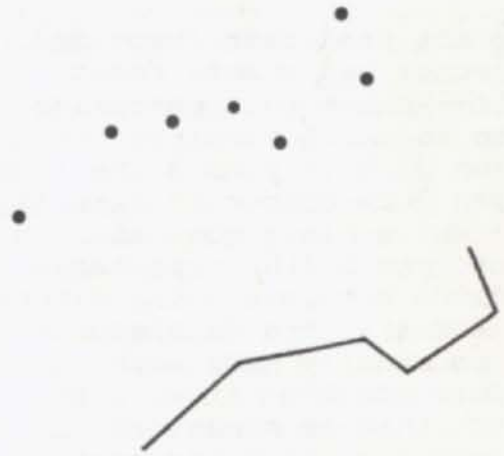


FIG. 2

7-PIN MADNESS

Or

(What Are Those Seven Holes On the Back of My Carousel For?)

By Joe Hopkins
Memphis Pink Palace Planetarium
Memphis, Tennessee

You may have noticed upon occasion that next to the "Off-Fan-Lamp" switch on the back of your Carousel projectors there is a socket with seven holes in it that normally you plug your dissolver, goombah controller, dimmer or whatever into in order to control the lamp, advance, reverse, and focus functions of your projector. There is nothing mysterious or magical about this socket and you can build controls for your Carousels by using these socket terminals that will allow you to have exactly what you want in terms of controls (and allow you to eliminate the little hand-held remote controllers taped to your console).

Perhaps the best way to start our little exercise would be to look at the socket itself (shown in Fig. 1). Pin 1 is the "Advance" pin (and also ground), pin 2 is "Reverse," pins 3 and 4 control "Focus" functions, pin 5 is common (but definitely not ground), while pins 6 and 7 allow access to the lamp. Connecting pin 1 to pin 5 momentarily will advance the projector once, while holding it down will cause the projector to advance continually until the switch is released. (See Fig. 2) Connecting pins 2 and 5 in the same manner momentarily will cause the projector to reverse (if the switch is held for approximately 1/2 - 3/4 sec.--a shorter time will cause the projector to advance); holding pins 2 and 5 together will cause the projector to reverse continuously. (See Fig. 3)

Focusing the projector (provided the projector <u>has</u> remote focus capability--check your operating manual to be sure) requires the connection of both pins 3 and 4 to pin 5; pin 3 is connected directly to pin 5 while pin 4 goes through a diode to pin 5 (the orientation of the diode determines the direction of focus)--this double connection is usually made with a double-pole, double-throw, center-off switch that is momentary in both directions (it makes contact as long as you hold it in either direction, but springs back to the off position upon release). This switch is called a DPDT center-off with Mom-Off-Mom action. (See Fig. 4)

Pins 6 and 7 allow you to connect various devices in series with the lamp to control or modify its action. Diodes, resistors, dimmers, relays, flashers and whatever else your beady little mind can devise may be connected across these two pins provided two conditions are met:

1. The ratings of the device to be connected must at least equal (preferably exceed) those of the lamp: 110 volts, 300 watts, and

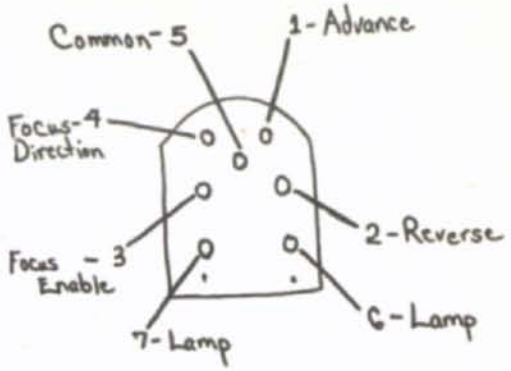


Figure 1

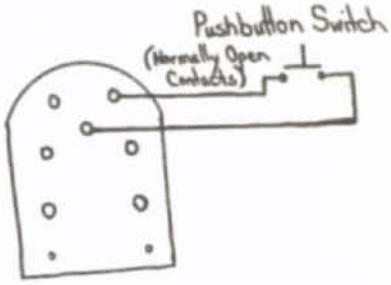


Figure 2

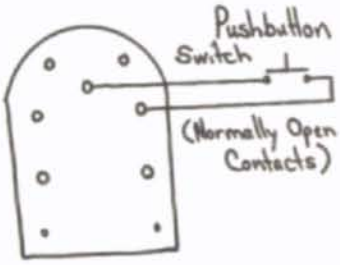


Figure 3

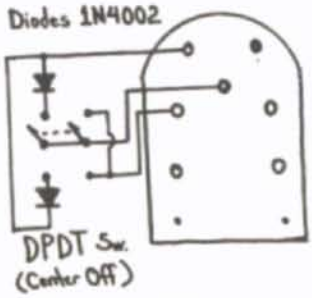


Figure 4

approximately 3 amperes for the ELH lamp, and 110 volts, 250 watts, and approximately 2.5 amps for the ENH lamp.

2. The device to be connected must not source (put in) any voltage into these pins. The 110 volt AC power for the lamp appears across these two terminals (so be careful!) and any device such as a dimmer which sources voltage to the lamp plugged in to these two pins may result in some spectacular special effects. A dimmer (such as the kind you find in the hardware store) which is designed to act upon AC already flowing in the

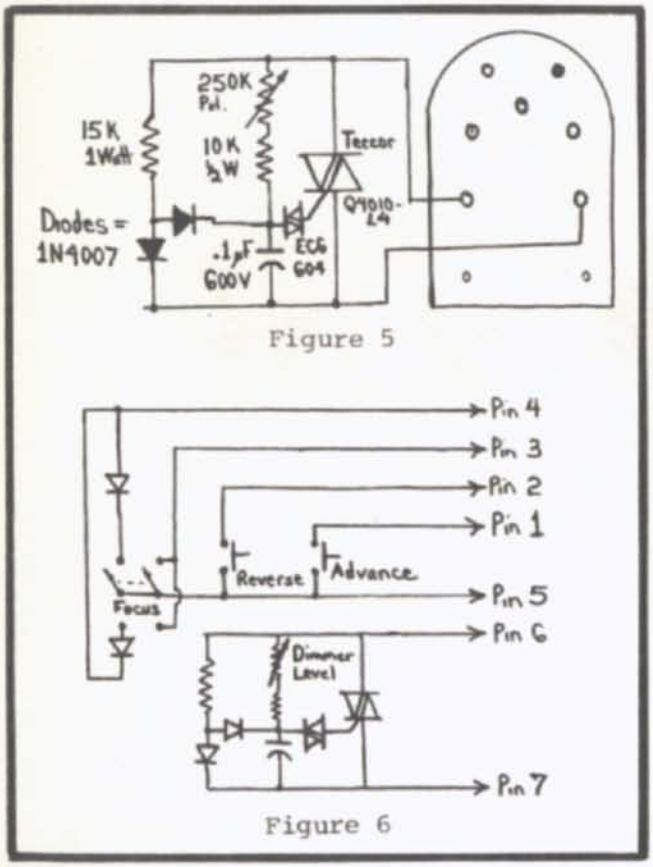


Figure 5

Figure 6

circuit will work just fine.

Hardware store dimmers often have appreciable hysteresis (they won't come on from full dark until a certain level is reached on the control and the lamp lights fairly bright and can be backed down from this level) and are difficult to modify and adapt to existing control systems; the dimmer schematic shown in Fig. 5 will provide excellent control for the lamp of a Carousel and is easy to build.

By putting the various functions together in a single enclosure you can make a quite satisfactory manual control box for a Carousel projector as long as you don't need more than about 25 feet of connecting cable between the box and the projector. (See Fig. 6) If you need longer wire runs or want more sophisticated and flexible controls, my next article will deal with 12 volt DC controls for these same functions to allow longer wire runs (up to hundreds of feet) and slicker controls.

Let me close with a word or two about wiring for the Carousel. The upper five pins of the socket may be wired with wire as small as 22AWG (American wire gauge) but the lamp pins (6 & 7) should be wired with no less than 18AWG wire and for runs of over 20 feet with 16 or 14AWG wire. I haven't said anything about color-coding of the wire on purpose because different manufacturers of 5 and 7 wire cables for Carousels often use different colored wire for the same pin (one uses yellow for pin 5 and another uses green, for example), so you'll have to consult your manufacturer's literature (or experiment) to find your color code. If you want to buy ready-made 7-pin Carousel cables, they are available but can be expensive. If you have 5-pin cables from old remote controllers handy you can add a two-pin plug underneath to control lamp functions and save some money. The male end of a non-polarized television "cheater cord" extension will work quite nicely (both pins are the same size and fit the hole spacing on the Carousel pretty well), and these are available at almost any good electronics supply house. They have the added advantage of coming with the proper size wire, although you will have to splice in extra wire if your cable is to be more than about 10 feet long.

If you analyze each function listed here you will find that no one hook-up is difficult but in total they will provide you with complete control over your Carousel's bodily functions and a good case of 7-pin madness!