SOUTHERN SKIES

Volume 6 Numbers 3 & 4 Fall/Winter 1986-87

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Journal of the Southeastern Planetarium Association

(Officers Term Expires 12/31/86)

PRESIDENT
John Hare
Bishop Planetarium
201 10th Street, West
Bradenton, FL 33505

PAST PRESIDENT
Duncan Teague
Craigmont Planetarium
3333 Covington Pike
Memphis, TN 38218

SECRETARY-TREASURER
Sue Griswold
Kelly Planetarium
1658 Sterling Road
Charlotte, NC 28209

PRESIDENT-ELECT
Jon Bell
Peninsula Planetarium
524 J. Clyde Morris Blvd.
Newport News, VA 23601

EDITOR
Thomas W. Hocking
4201 University Drive, Suite 102
Durham, NC 27707-2531
(919) 879-2640

ASSISTANT EDITOR
Kathy Summers
661 Paden Mill Trail
Lawrenceville, GA 30245

MAILING LIST/CHANGE OF ADDRESS
Sue Griswold
Kelly Planetarium
1658 Sterling Road
Charlotte, NC 28209

(Officers Term Begins 1/1/87)

PRESIDENT
Jon Bell
Peninsula Planetarium
524 J. Clyde Morris Drive
Newport News, VA 23601

PAST PRESIDENT
John Hare
Bishop Planetarium
201 10th Street, West
Bradenton, FL 33505

SECRETARY-TREASURER
Sue Griswold
Kelly Planetarium
1658 Sterling Road
Charlotte, NC 28209

PRESIDENT-ELECT
Dave Hostetter
Lafayette Natural History Museum
637 Girard Park Drive
Lafayette, LA 70503

EDITOR
Thomas W. Hocking
4201 University Drive, Suite 102
Durham, NC 27707-2531
(919) 879-2640

ASSISTANT EDITOR
Kathy Summers
661 Paden Mill Trail
Lawrenceville, GA 30245

MAILING LIST/CHANGE OF ADDRESS
Sue Griswold
Kelly Planetarium
1658 Sterling Road
Charlotte, NC 28209

SUBMISSION GUIDELINES: Articles should be typed, double-spaced, one side per sheet. Computer printout (word processor) output is acceptable. Article should be accompanied by author's name, mailing address and phone number, as well as a statement to the Editor granting or refusing permission to reprint the article in other forms. Accompanying art must be labeled.

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

Spring Issue (No. 1)	January 1	Fall Issue (No. 3)	July 1
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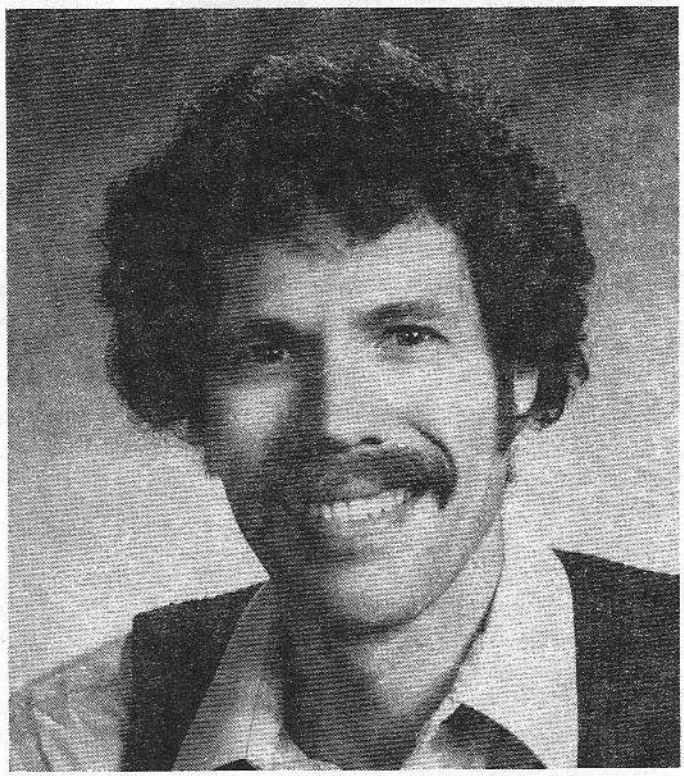
Southern skies

SOUTHEASTERN PLANETARIUM ASSOCIATION

Volume 6 Numbers 3 & 4 Fall/Winter 1986-87

A MESSAGE FROM YOUR PRESIDENT

by John Hare



What a great two weeks it was! Another fantastic SEPA get-together followed by what was one of the best International Planetarium Society (IPS) Conferences ever. At the conclusion of the SEPA Conference on Thursday morning a mad dash was made back to Bradenton. Not only did we drive straight through but had to do so without air conditioning which broke down somewhere in 95+ degree South Carolina. There was just enough time on Friday to catch up on a week's worth of mail and phone messages and make last minute preparations for IPS before flying to Tucson on Saturday.

I'll address the important issues of SEPA business in the next issue since there is nothing pressing at this time.

The theme of this year's IPS conference was "World of Astronomy" and it was certainly that. Nearly 300 delegates gathered for a week of papers, talks, tours, demonstrations, and socializing. The IPS council met on Sunday and spent the entire day in session. What had been a simple choice between 2 sites, Sweden and France, for the 1990 conference became complicated when an invitation from Dennis Simopolous and Athens, Greece was received. It was decided to postpone a decision until after the General Meeting later in the week in order to allow the general membership an opportunity to view proposals from the 3 prospective hosts. The council met again briefly following the General Meeting and decided to postpone a decision until November in order to allow the Regional Representatives an opportunity to discuss the issue with their constituents.

The proposals for each site are lengthy so I'll summarize each one:

The Swedish proposal calls for a 5-day meeting in mid-July. The host facility would be the new 8 meter A-3P located in a large museum in Borlange. Housing would be within walking distance in up to 3 first class hotels. Conference sessions would take place in the museum and planetarium.

At the conclusion of the conference delegates could choose a four-day trip commencing in Stockholm. We would visit several sites including (hopefully) the new Omnimax Theater, then board a cruise ship to Helsinki spending the next day in the Finnish capital. Delegates would rise early the next morning to view a total solar eclipse! The sun will rise after first contact.

The Paris proposal is for a mid-July conference hosted by the new Spitz Space Voyager facility at La Villette. The parent institution is the largest science museum in the world. Two possibilities for housing exist. Downtown Paris or nearby the museum in the Northeast Suburbs. Mention was made of a possible side trip to view the eclipse.

The Athens proposal is by far the most lavish but is also in very general terms. No specific dates other than Summer have been proposed.

The proposed total cost is $1250 per person (1986 dollars). This represents a heavy subsidy from the Greek Tourist Council.

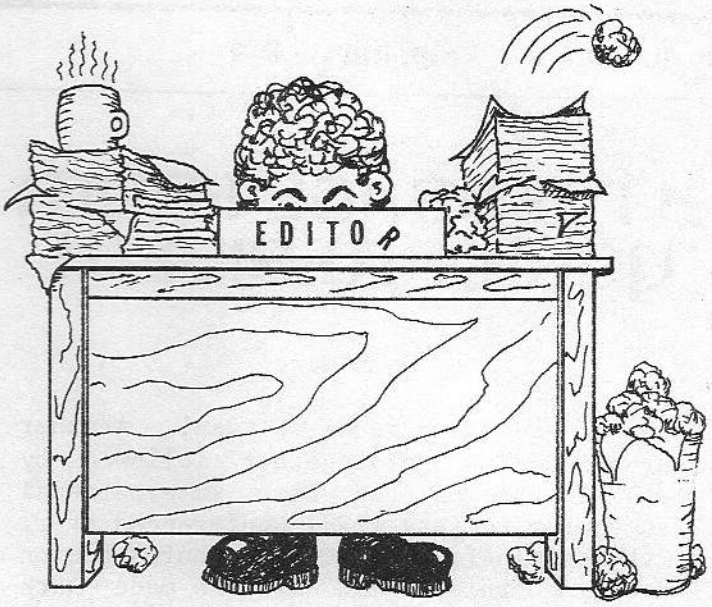
While any of these sites I'm sure would furnish us with a top notch conference, I have a strong preference for one in particular.

An IPS Conference affords the opportunity to meet and interact with colleagues from around the world. Where better could this be done than in a relatively isolated setting? Borlange, Sweden seems ideal in that regard. Both Paris and Athens with their diverse offerings, historical sites, shopping, entertainment, etc. lack the intimacy of the setting in Borlange. If the primary purpose of a professional conference is to learn and interact with others in our profession then the logical choice is Sweden. Furthermore having talked with representatives and seen the proposals from the various sites over the past two years the Swedish proposal is by far the most detailed and comprehensive.

One final thought from a personal standpoint. In my future travels I find it much more plausible that I will get to Athens or Paris than Sweden. A conference in Sweden will probably be the only opportunity I will ever have to visit this relatively obscure part of the world.

(Editor's Note: The IPS Executive Council has selected Sweden as the site for the 1990 IPS conference.)

EDITOR'S MESSAGE



After our last issue, just about anything would be an improvement, but I am truly impressed with the high caliber of this quarter's content. I have received a tremendous response to my plea for contributions, but this doesn't mean that you can rest on your laurels--NO, SIREE! Keep your colleagues informed with the latest gossip scuttlebutt happenings at your facility. Inquiring minds like mine want to know.

FOR YOUR INFORMATION:

You might have heard that the newsmagazine SPACE NEWS was about to reappear, under my Editorship. This project is on indefinite hold. When circumstances become favorable SN will be reintroduced. Until then, I can be reached at 4201 University Drive, Suite 102, Durham, NC 27707-2531, Attn: Tom Hocking. Telephone messages can be left at the Morehead Planetarium (919) 962-1247, or North Carolina Central University Physics Department (where I'm teaching Astronomy courses), (919) 683-6217 or 683-6350.

SEPA '86 BANQUET ADDRESS

PERCEPTIONS AND THE MODEST GIANT

Doris Betts
Alumni Distinguished Professor of English
University of North Carolina
June 26, 1986 Banquet Address

As you approached the Morehead Building tonight, I hope you lingered in the front rose garden where, since 1956, the sundial has been offering an uplifting thought for your consideration: "It is always morning somewhere in the world." Probably you experts stood there thinking of how this site is used as an official triangulation station or perhaps you mentally reviewed the history of shadow clocks, including the surviving sundial in Egypt which dates from 1500 B.C.

But uplifting thoughts sometimes bring out my own falling-down perversity. When I crossed the rose garden tonight, two other famous sundials with mottoes lept to mind.

The message on one of them reads:

> I am a sundial and I make a botch
> Of what is done far better by a watch.

The other motto is carved on an even more irritable instrument:

> I am a sundial. Ordinary words
> Cannot express my thoughts on birds.

Surely it is appropriate to locate a sundial hard by a planetarium, to confront even a casual passerby simultaneously with the juxtaposed chasms of time and space and man's history of studying both. Some people whistle in the Morehead rose garden as they might in a graveyard, since both remind us that we humans wither like the flowers, that all our personal distinctiveness seems like a speck swirling in space and time.

Or we joke, as I just did. Unless we're going to quote Ecclesiastes, we need to do something to reduce these chasms of time and space to more human size, to slow the hurrying tick of our own hearts, to round the heavens until they may be made to fit not only inside a planetarium dome but without overload inside this rounded, mortal skull.

Such an effort to make vastness manageable caused a local astronomer's daughter to interrupt her Sunday School teacher last week when he said, "Marriages are made in Heaven." The little girl commented with more truth than she knew, "So are thunder and lightning."

The same need to pull cosmology down to earth can be seen in the slogan for the Morehead Friends of the Planetarium: "Support your Local Universe."

Surely that is one public perception of the work you do--you made local and bearable, sometimes even understandable, the mysteries of space and time.

When my husband and I came blinking out of the current program "Visit to a Far Planet," and fell quickly all the way from Uranus down to the level of the sundial with its evidence of birds, he remarked that he could never stop feeling there was something eerie about a planetarium, that to duplicate the paths of the stars and accelerate the motions of the solar system for effect stirred vague disquiet in him, recalled the hubris of Dr. Faustus, called back all those Grade C movies about Frankenstein and mad scientists rushing in where angels fear to tread. At the heart of this particular public perception, a deep part of us may be inwardly reciting from the 1662 Prayer Book: "It is God who telleth the number of the stars; and calleth them all by names."

These sample public perceptions bring me to the theme of your meeting here--"Perceptions." To explicate mysteries, to teach, to seek the truth, is one perception the public has about your work and goals. To make each of us feel tiny and afraid may be an additional effect; to reconcile us to awe may also help us take a happy pride in space explorers. Your conference has chosen for its theme a current buzz word by choosing "Perceptions." Just as most garden-variety thinking has lately become "seminal," nowadays all wisdom, which was once REceived, is now mostly PERceived.

We have learned to allow for the observer as part of his observation. The elusive

Truth which Pilate sought turns out to be not only less absolute but less objective than we once believed. We know that sensory data gets meaningfully organized, that experience is not only apprehended but --even by scientists--discerned and interpreted. William Wordsworth acknowledged the mix almost 200 years ago when admiring the riverside above Tintern Abbey, where he loved the meadows, woods, mountains, and

> ...all that we behold
> From this green earth; of all the mighty world
> Of eye and ear--both what they half create
> And what perceive."

Several years ago I published a short novel called The Astronomer, in which a retired mill worker decided to withdraw from the irritations of ordinary human conflict by building a telescope and escaping into a cool scientific study of the stars. He wanted to be, not the star-lover in the last line of Whitman's poem, but an objective, left-brained "learned astronomer." He found, of course, that even an amateur using a homemade spyglass would soon become entangled in all the other human knowledge on which the sun and moon shine: that he needed to know the Greek myths behind the names of constellations, that a curiosity about Stonehenge would lead him to the Mayans and the Egyptians, that he couldn't spend one sidelong glance on Galileo without trying to figure out the Inquisition, and so on and so on. What he meant to be cool scientific studies which would carry him far away from earth to the moons of Jupiter, carried him also back through Genesis by way of the Big Bang, to almanac moon signs and crops planted in them, even to astrologers and Bethlehem and lunatics and Star Trek and Flash Gordon and Sputnik and meteor fragments.

My own perception of you as planetarians is like his. I see (I perceive) that your expertise by its very nature must always be exploding outward toward syntheses, and bouncing back to earth to draw relationships between many categories of knowledge, that this mix of specific and general makes your profession difficult and exciting.

On my most recent visit to the Morehead Planetarium, I studied the Sunday afternoon audience--all ages, all sizes and types, probably various levels of education. Almost nobody seated under the starlit dome had any immediate pragmatic use of what he was learning about Voyager's lonely journey; each might be said to have deserted Sunday T.V. sports and come for pure knowledge, to learn for the sake of it. Our fear of endlessness was being transformed into a community of human beings amazed and proud that other human beings had probed so deeply and gone so far. At one point when the narrator said, "The light from the star I'm showing you will take four hours to reach the earth," the little boy by me said anxiously, "Mommy, can we stay that long?"

I saw (I perceived) that in many ways you and I are in the same business. Theodore Roszak has said that "Nature composes some of her loveliest poems for the telescope and the microscope." You mix science with art and education and even add the seasoning of entertainment--so do we novelists and professors of literature. J. Robert Oppenheimer said that scientists and artists "perpetually live on the edge of mystery, being always surrounded by it." Art is sometimes called Science-in-the-flesh. Your work materializes science for today's non-experts and tomorrow's experts.

Copernicus was 19 when Columbus discovered America, and that news sent him back to read Heraclides who had suggested that the earth is a sphere. Somebody 19, somebody 12 or 6 may be sitting in your planetarium, learning through you the most vivid available news about Challenger, Stonehenge, Kohoutek's and Halley's Comets, Voyager--who knows what future discoveries you may be initiating unawares!

Were I to try to personify my own perceptions of who you are, the model would never ben Dr. Faustus nor Dr. Frankenstein, but a historical figure whose left brain and right brain synthesis also made him interested in everything, so that his knowledge kept escaping out of one category and into another. He is surely familiar to this audience; recently he has been a figure on public television in the series "Roanoke." Though he lived in England 400 years ago, he is especially honored here in North Carolina--there are trails named for him near Kitty Hawk, and a reproduction of what may be his portrait hangs in the Ft. Raleigh Museum on Roanoke Island.

Yet Thomas Harriott (1560-1621) has rarely gotten his due from history which cannot even agree on how to spell his name. It has been said that Galileo wanted to know and be known, while Harriott seemed only to want to know. Both men got their wishes. Harriott especially possessed what John Glenn said every astronaut most needed: curiosity.

Harriott lived, as you do, in a time of great change. Here are a few of his contemporaries: Galileo, Shakespeare, Francis Bacon, Edmund Spenser, Ben Johnson, Kepler, Cervantes, Capt. John Smith, El Creco, Henry Hudson, Francis Drake. He was four years older than Galileo, 11 years older than Kepler.

Like you, he was well educated. Like you, he also became an educator whose work affected students who then affected the times in which they lived; after graduating from Oxford he lived with Sir Walter Raleigh as his math teacher. Just as Raleigh was the last of the great Elizabethans, Harriott was one of the first true sons of the modern age. And as you are on the cutting edge of the great discoveries of the 20th century (not only in space but in the electronic marvels you use to portray it), Harriott was on the cutting edge then of discoveries of new worlds--indeed, he sailed over the edge and across the curve of the Atlantic to come as a surveyor with Sir Richard Grenville's expedition to study all of the New World which lay between the Neuse and the James Rivers, and to map much of it. By boat he checked the coastline from Ocracoke to Chesapeake Bay, met at least eight Algonquian-speaking tribes, and learned their language. It was he who taught English to Manteo and Wanchese who traveled back to London with the explorers, and it was he who wrote the first book about America. Perhaps, like you, Harriott was uneasy about too much popularizing of what was titled his "true report," for it was intended to be read by average British citizens, and he always meant to write later a more complex account for experts but there wasn't time.

Why wasn't there time? There is hardly time tonight for me even to list some of the many things Harriott did, and did well! His earliest known telescopic observations of the moon were made almost three weeks before Galileo presented his telescope to the Venetian Senate. He left us 200 numbered drawings of the solar surface; nobody knows how many others were lost. On the matter of fixed stars, scientists find his views more scientific and objective than Kepler's. A noted mathematician, he used his math to figure the optimum size for the mast of a ship, the maximum supportable population of the world, the gaseous yield of a burning candle. He contrived an alphabet for the Algonquian language. He trained sea captains in cartography and navigation. He studied atomic theory, suffered a brief imprisonment on charges of atheism, served Raleigh in the Tower of London (where he made, among other things, a sundial!) and recorded Raleigh's last words before he was beheaded.

Like you, Harriott affected more people than he dreamed. Keats wrote poems to him. He corresponded with the leading astronomers of the world, prepared the way Descartes, published on Halley's Comet, influenced Coleridge. Today when we use computers we remember that it was Harriott who first explored the potential of binary numeration. He studied elliptical planetary orbits, weights in water, refraction, you name it. He may have assisted Raleigh in writing his History of the World.

He did everything--except publish and claim credit. A friend wrote to him in a letter: "All these honors were your dues and many others I could mention, yet too great reservedness hath robbed you of these glories."

Besides reservedness, Harriott had some humor. In his papers is recorded the child's memory proverb, "A man of wordes and not of deedes is like a garden full of weedes." To which Harriott added: "A man of deedes and not of wordes is like a privie full of tourdes." (Perhaps he would have some smart remark to make, passing the cheerful Morehead sundial.)

Harriott died of cancer of the nose and mouth, like Freud--some say as a result of holding his brass instruments in his mouth, some say because of the tobacco he learned to appreciate in America. Though we know the inscription on his tomb, his monument was destroyed in the Great London Fire of 1666 and there is disagreement not only about the one surviving portrait but about which bones are really Harriott's. Or Hariot's. Or Heriot's. Spellers disagree.

You may think that in nominating Thomas Harriott as your exemplar, I am recommending obscurity. No, I am only recognizing that you, too, have some "reservedness," and allow other discoverers to be praised. The work of most serious scientists, artists, and teachers is more important to them than fame. Your work, like his, flourishes in unexpected places, as it did in the lives of people Harriott knew and many far ahead of him in time whom he was never to know. Like you, he was interested in almost everything. Like you, he enjoyed giving knowledge away, letting it loose in the world with the credit to take care of itself. You will not be surprised to learn that one of his biographies, Traces, was written by the late Muriel Ruykeyser, a modern poet who felt a kinship with him.

Harriott only took one trip to the new world of America, and when Francis Drake collected the expedition, many of Harriott's instruments and records were thrown overboard to lighten the ship in the shifting channels of the outer banks. You may not blast into the newest world of space even for one time, but your records and instruments are beautifully intact, and because of you thousands get to see (to perceive) planetary landscapes second-hand which no human being has ever seen first-hand.

As with Harriott, your subject matter can be scary. His epitaph said, "Most eager explorer, he studied truth," and truth will always be alarming to the timid and doctrinaire. But Harriott was luckier than Galileo who was convicted of heresy because of his truths, forced to recant so he could continue his observation of the heavens until glaucoma destroyed his sight, said to keep whispering: "BUT IT DOES MOVE!"

At a conference of this kind, naturally you spend much time exchanging ideas, sharpening the specific crafts of your work, sharing shoptalk about the sounds and pictures and brochures and attendance and budgets and daily operations of the planetarium you represent. That perception of what you do is accurate, steady, necessary, and needs nourishing. But beyond it, you must add what the rest of us perceive that you are and need you to be. You come from a long and honored line of other explorers, artists, and educators. We missed praising Harriott, but we still have time to thank you for your work in helping us learn how to live in this massive, mysterious universe, and keeping alive the dream of exploring truth even further.

Sir Isaac Newton said, "If I have seen further it is by standing on the shoulders of giants."

I hope you will perceive some of those giant shoulders as being your own.

SMALL TALK

by Richard McColman
Gibbes Planetarium

It's a love-hate relationship.

The small planetarium is a wonderful environment to achievve a warm, intimate, and personal rapport with the audience. Most of us "small-talkers" feel this to be one great advantage over the larger star theatre's super-spacious dome which literally gobbles up sound, making a P.A. system a necessity for live presentations.

However, this same intimate environment is a real menace when it comes to unwanted noise. By their very nature, many mechanical devices in our facilities generate such noise, and small domes (especially those with plaster construction) can create complex and bizarre reflection patterns, thereby making the use, for example, of five or six Ektagraphic projectors very obtrusive acoustically during both live and taped programs.

By far, the foremost noise generator in the planetarium is, in fact, the motorized slide projector. Over the years, many of us have continued to add, slowly but surely, to our battery of projectors--greatly increasing visual flexibilityt and complexity, while, at the same time, aggravating the noise problem.

There are several potential solutions. You can simply chuck the projectors altogether (no doubt an unacceptable remedy), or, on the other hand, use commercially available glass-fronted projector-stacker enclosures. Although convenient for larger theatres (especially those with tilted domes), stackers are impractical for many small domes because of their shallow maximum-projection angles. Also, due to limited space in the small theatre, many of us are forced into spacing the projectors out horizontally around the cove perimeter--again negating the value of stackers.

As a result, a variety of homemade enclosures have been constructed fromo scrap wood, metal, or even cardboard. Although these boxes may moderately reduce the sound output, sheer numbers of projectors can keep noise levels unacceptably high.

However, with just a few hours of time invested in design and construction, it IS possible to make your projectors nearly silent with custom-built enclosures.

There are four basic principles in effective projector enclosure design: blockage, absorption, baffling, and decoupling.

Blockage is, simply put, physically closing-off the sound-propagation source with the enclosure itself. A fully sealed plywood projector box, for example, will eliminate nearly all sound transmission. It also has essentially the same effect on extraneous light thrown out by the projector. Unfortunately, because of the need for image projection and in some cases, maximum possible ventilation, building a quiet box is more complicated.

Absorption is used to cut down on acoustic reflections--damping out sound inside the enclosure itself. Some designs require openings in the box for the projection beam or for airflow. Therefore, some sound will inevitably escape. Covering the interior surfaces of the box with absorption material such as foam rubber or carpet will dramatically cut sound levels which eventually exit.

Baffling is used in conjunction with absorption to pass cooling air through, while at the same time, cutting noise transmission. By constructing a "folded" air-flow path covered with foam, hot fan exhaust from a high-wattage projector can exit--keeping the interior cool, without disturbing the audience.

Decoupling must be employed anywhere a hard-plastic or metal part of the projector comes in contact with the inside of the box. Such contact causes the box itself to vibrate--transmitting noise through the solid material of the enclosure and then into the planetarium chamber. Foam rubber or sheet-rubber (old cut-up inner tube) glued to the contact surface will do the trick.

Before building your boxes, you'll need to make some careful measurements--not only of the projector, but also of other parameters such as position of the box relative to the other equipment and the projection beam angle.

You'll need to decide on ventilation requirements as well. Start out by asking yourself some questions:

--What's the lamp wattage?
--Does the projector get hot if it's placed in a small box?
--How long will the lamp be up at any time during a show?
--During setup?

Generally, anything with a 120 volt lamp rated at 300 watts or above should be vented unless the box is unusually large. Lower wattage and lower voltage lamps burn cooler. If you decide to use a ventilated design, construct the enclosure with an air tunnel which mates to the exhaust vent of the projector. Such an arrangement uses the fan of the projector itself for forced ventilation. Of course, in this case, an air inlet (a lens opening or baffled intake) should also be provided. Make the air tunnel "U-shaped" if possible, lined with absorption material to cut the exhaust noise.

Also, think about ergonomics:
--Should the box open from the top, the front, or the side?

--How much extra space is needed to change trays?
--Does it need another lid to access the controls or cables?
--Should the lids be hinged?

There are two main options available in accommodating the light beam. You can simply cut a hole, or cover the opening with glass.

If you opt to go without the glass, design the box so that the inside front is within 3/8 inch or so of the lens when focused. Also, make the hole just large enough to emit the light beam without vignetting. Both of these considerations will reduce noise output to a minimum, but it's best to cut the opening after a trial mounting of box and projector to get the hole positioned just right.

If you go the glass route, you may need to mount the glass pane 20 degrees or so off perpendicularity to the light beam. Failure to do so will occasionally create ghost images, caused by some of the light reflecting off the glass, back onto the front of the lens, and then onto the dome. Wide-angle lenses, however, have the greatest immunity to this phenomenon.

Also, although you'll probably want your enclosure as small and unobtrusive as possible, make sure to take the thickness of the absorption material into account in your design.

With the proper designs, you can turn your projectors into quiet visual aids and fully reclaim your cozy, intimate, small planetarium environment.

Oh, and as a final note, a typographical error apparently crept in during the editing processin the spring '86 "Small Talk" installment on A.C. dimmers. The abbreviation "F" should read " F" for MICROFARAD ("F" is a FARAD).

As always, questions and comments are welcome.

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

PLANETARIUM SNIGLETS

by Jon Bell

One of the hottest T.V. shows on cable these days is HBO's "Not Necessarily The News," a program that gives us a humorous look at the American way of life. One of the stars of the show is Rich Hall, who has achieved national recognition for an N.N.T.N. feature called "Sniglets."

A sniglet, according to Mr. Hall, is "any word that should be in the dictionary, but isn't." Mr. Hall's sniglets are imaginative and fun, but, sadly, do not address the needs of the planetarium community.

In our profession, there is a desperate need for the coining of new words and phrases for many planetarium phenomena that currently have no names. With this short monograph, I intend to rectify the situation. Here goes:

The burnt-out slide projector lamp that blows at the beginning of a planetarium show is called an Ektalump (ek'-tah-lump)n.

When a group of school kids spends the first twenty minutes of a show "finding" the Big Dipper in just about every part of the sky, this affliction is known as Dipperhea (dip-er-re-a) n.

Constellelation (kon-stel-e-la-shun) n. is the emotion felt by an audience member when he's finally able to recognize one of the many abstruse patterns pointed out by the lecturer.

The area or region of a planetarium theater where the greatest number of sleeping customers accumulate is called the snorzone (snore-zon) n.

When you take several shows that you've gotten from Salt Lake City and combine them to make a whole "new" show, you are using the technique of Hansenizing (han-sen-i-zing) v.n.

The technique of building great special effects out of coke bottles, tin foil, or baby food jars is called Gerberization (ger-bur-i-za-shun) n.

CODE OF ETHICS

CONSTITUTION AND BY-LAWS

of the

SOUTHEASTERN PLANETARIUM ASSOCIATION

STATEMENT OF PURPOSE

1. To promote the spread of knowledge of astronomy and related disciplines in the school curriculum and among the general public at all levels of age and interest.

2. To encourage planetarium and educational institutions in planning the development of the planetarium as an effective educational and cultural medium.

3. To seek to improve professional standards among our members, and to provide assistance to those wishing to improve their knowledge and skills in this field.

STATEMENT OF METHODS

1. To provide a forum for the exchange of ideas at an annual meeting to be held at a convenient location.

2. To issue periodic newsletters dealing with current ideas and issues within our profession.

3. To provide information and encouragement to those interested in establishing new planetariums.

RATIFICATION

This document was ratified by a majority of members of the Southeastern Planetarium Association on the 9th day of June 1977 in Atlanta, Georgia.

BY-LAWS

ARTICLE ONE

Name of Association, Situation of Offices, and Seal

Section 1. Name - Southeastern Planetarium Association Inc. (SEPA). Our name shall hereafter be called the "Association."

Section 2. The Association shall be a non-profit organization.

Section 3. Situation of Offices - The head office of the Association shall be the Gibbes Planetarium, 1519 Senate Street, Columbia, South Carolina 29201 and any other Offices designated by the President.

Section 4. Seal or Insignia - The President, Vice-president, Secretary-Treasurer, or other such officer of the Association as the Council may appoint, shall have the authority to affix the Seal of the Association to any document requiring the same.

ARTICLE TWO

Members and Dues

Section 1. Conditions of Membership - The members of the Association shall consist of:

A. Full membership is extended to persons engaged in the administration, professional, educational or technical activities at a planetarium in Kentucky, West Virginia, Virginia, North Carolina, South Carolina, Tennessee, Georgia, Florida, Louisiana, Mississippi, Alabama, and all U. S. Territories off the southeastern coast of the U. S.

B. Associate status can be granted to those persons or institutions interested in the aims of the Association but who do not fulfill the above requirements.

C. Patrons - Individuals not necessarily in the planetarium field whose interest and support is beneficial to the Association.

Section 2. Election of Members - Applications for all classes of membership shall be subject to approval by the Council. The Council shall review the membership roll annually and shall exclude institutions or individuals which no longer meet the requirements of membership.

Section 3. Dues - Annual dues shall be an amount determined by a majority vote of the membership at the Annual General Meeting.

Section 4. Privileges of Membership - All members shall be entitled to all benefits of the Association, but only those individuals described in paragraph A of Section 1 shall be entitled to vote and to hold office.

Section 5. Use of Funds - All dues and monies received by the Association shall be used to accomplish the statement of purpose and methods as set forth herein.

Section 6. Dissolution - In the event of dissolution, the residual assets of the Association shall be turned over to an organization which is exempt from federal income tax under Section 501 of the Federal Internal Revenue Code as amended from time to time, which organization appears most likely to carry out the purposes of this Association.

ARTICLE THREE

The Executive Council of the Association
Section 1.

A. Councillors - The Council shall consist of three or more persons. The President, the Vice-president, the Secretary-Treasurer, the Past President, (hereinafter referred to as the "Officers") and any other members designated by the President.

B. All members of the Council shall be elected for a two-year term ending on the 31st of December of even numbered years. The Vice-president, however, shall serve as President for the following two years. No member, except the Secretary-Treasurer, is eligible for re-election to the same position for a consecutive term.

C. The affairs of the Association shall be managed by the Council, who shall exercise all such powers of the Association not delegated to the general meeting.

D. The Council shall have power to authorize expenditures on behalf of the Association from time to time.

E. Transfer of a member of the Council out of the geographical areas designated in Article Two, Section 1, paragraph A, or transfer to an occupation not described in Article Two, paragraph A of Section 1 shall terminate that member's Council for the remainder of the term.

F. In preparing a slate of officers, the Nominating Committee shall insure that at least two planetariums are represented.

G. Meetings and Notices

(1) Immediately after the Annual General Meeting of Members in each year there shall be held a meeting of the Executive Council provided they shall constitute a quorum, without further notice, for the purpose of transacting such business as may come before the Council.

(2) Meetings of the Council shall be called by the President at his discretion, or by written request of two Council members. Meetings may be held by telephone or through the mail, if all Council Members are polled on each issue.

(3) A quorum of Council shall be three members, one of whom must be the President or Vice-president.

(4) Questions arising at any meeting of the Council shall be decided by a majority vote of those present.

H. Remuneration of Council Members - Members of the Council as such, shall not receive salary for their services.

Section 2. President - The President shall preside at all meetings of the Association and of the Council and shall have the second or casting vote in the event of a tie vote upon any resolution. The President shall represent SEPA on the Council of the International Planetarium Society, if possible. The President will appoint a representative to the IPS Council if the President is not able to serve. He shall, jointly with the Secretary-Treasurer, sign all written contracts made in the name of the Association.

Section 3. Vice-president - The Vice-president shall in the absence or demise of the President, perform the duties of the President, and when so acting he shall have all the powers and be subject to all responsibility hereby given to or imposed upon the President.

Section 4. Secretary-Treasurer

A. The Secretary-Treasurer shall attend to and record the minutes of all proceedings of the Association, shall give and service all notices of the Association and Council and shall be the custodian of all records.

B. The Secretary-Treasurer shall be responsible for the proper keeping of the books of account and such other records as may be prescribed by law and as may be required by Council; shall deposit any funds of the Association in a bank or banks approved by the Council, and shall not invest them without due authorization by the Council. The Secretary-Treasurer shall, in advance of the General Meeting, provide an audited statement of accounts for the perusal and approval of the Members of the Association.

C. The Secretary-Treasurer shall be the Custodian of the Seal of the Association.

ARTICLE FOUR

Annual Meeting

Section 1. The Annual Meeting of the Members of the Association shall be held at such place and at such time as may be fixed from time to time by resolution of the

Council; to receive the Annual report if the Council and report of the Secretary-Treasurer; to sanction, if approved, decisions and actions of the Council since the preceding Annual General Meeting; to elect members of the Council; to consider, and, if deemed fit, to sanction and confirm the repeal, amendment or re-enactment of any By-Laws; to transact such other business as may properly come before the Meeting.

Section 2. Notice of Meeting - At least thirty days notice in writing of any General Meeting, specifying the place, the date and hour of meeting, and, in case of special business, the general nature of such business, shall be given to the Members, but the non-receipt of such notice by any Member shall not invalidate the proceedings at any General Meeting.

Section 3. Quorum and Voting

A. Quorum - The presence in person of one-fourth of the voting Members shall be necessary to constitute a quorum at General Meetings.

B. Voting

(1) Each Member is entitled to one vote, subject to Section 4 of Article Two, to be cast either in person or by written proxy.

(2) The election of Members of the Council may be by acclamation unless there is more than one candidates for a particular office. In that event, a secret ballot shall be used for each such office.

(3) A simple majority of the votes cast by Members in good standing at a General Meeting shall constitute a decision of the membership of the Association except where the vote or consent of a greater proportion of the members is required by the By-Laws.

ARTICLE FIVE

Fiscal Year, Accounts and Audit

Section 1 Fiscal Year - The Fiscal Year of the Association shall end at the close of the annual conference.

Section 2. Accounts - The Council shall cause to be kept proper books of account with respect to:

A. All sums of money received, donated, or expended by the Association and the particulars in respect of which the receipts and expenditures take place.

B. All sales and purchases by the Association.

C. The assets and liabilities of the Association.

D. All other transactions affecting the financial position of the Association.

Section 3. Audit - At the end of each fiscal year the accounts of the Association shall be examined. If deemed necessary by the Council, the correctness of such accounts and of the balance sheet shall be certified by an auditor approved by the Council. Such accounts shall be presented to the Annual General Meeting of the Association for scrutiny and approval.

Section 4. All the necessary tax returns; corporate forms and any other necessary returns or information shall be filed in their proper and respective places.

ARTICLE SIX

Contracts, Checks, Drafts and Bank Accounts

Section 1. Contracts - Any and all deeds, documents, investments and writings signed for and on behalf of and in the name of the Association by the President or Vice-president and Secretary-Treasurer with the authorization of the Council, shall be binding upon the Association. Save as aforesaid or as otherwise stipulated in the By-Laws, no Officer, agent, or Member shall have any power or authority to bind the Association by any contract or engagement or to pledge its credit.

Section 2. Checks and Drafts - All checks, bills of exchange or others orders for the payment of money, notes or other evidences of indebtedness issued, accepted or endorsed in the name of the Association shall be signed by the Treasurer. Only the Treasurer or Council Member approved by the President may arrange, settle, and balance all books and accounts between the Association and its bankers and may receive all paid checks and vouchers and sign all the bank's forms of settlement of balances and release or verification slips.

Section 3. Deposits - All funds of the Association shall be deposited from time to time to the credit of the Association in such banks or trust companies as the Council may approve.

ARTICLE SEVEN

Section 1. Authority - The Council may appoint by resolution such committees as may be required from time to time.

Section 2. Terms - All Committee memberships shall terminate at the Annual Meeting. It shall be the duty of Council to reconstitute such committees as required.

ARTICLE EIGHT

Amendment. These By-Laws may be amended by a majority vote of the voting members present at any regular meeting, if the proposed amendment has been sent to every member at least thirty days prior to the meeting at which it is to be voted upon.

Adopted: June 19, 1981

Commitment to Patrons

The professional planetarian knows that his position exists because people have a need to be served. In serving the needs of people to understand our universe, the planetarian understands that he is seen as an expert and responds by maintaining the highest standards of integrity.

In fulfillment of the commitment to patrons, the planetarian:

promotes and extends public knowledge of, and appreciation for astronomy, science, the scientific process, and the planetarium profession;

shall not on the ground of race, color, creed, sex or national origin exclude any patron from participation in or deny him benefits under any program, nor grant him any discriminatory consideration or advantage;

shall not promote subjects and opinions not grounded upon scientific principles;

shall make every reasonable effort to protect patrons from conditions harmful to learning or to health and safety;

shall respect the rights, beliefs, and sensitivities of the patrons;

shall not misrepresent an institution or organization with which he is affiliated, and shall take adequate precautions to distinguish between his personal and institutional or organizational views;

shall seek opportunities to be of constructive service in civic affairs and work for the advancement of the safety, health, and well-being of the community.

Commitment to the Profession

No planetarian can perform his duties in a professional way without interacting with others in the profession. This interaction with other planetarians nurtures both the professional and the profession, providing new developments and techniques. The professional planetarian recognizes the value of working with the professional organizations and deals equitably with others in the profession.

In fulfillment of the commitment to the profession, the planetarian:

continues professional development throughout his career;

should strive to increase knowledge within the profession and share developments with colleagues;

shall accord just and equitable treatment to all members of the profession;

shall admit and accept his own errors when proven wrong and refrain from distorting or altering the facts in an attempt to justify his position;

avoids any act tending to promote his own interest at the expense of the dignity and integrity of the profession;

shall not misrepresent his personal qualifications;

shall not knowingly distort evaluations of colleagues;

shall withhold and safeguard information acquired about colleagues in the course of employment, unless disclosure serves professional purposes;

shall not refuse to participate in a professional inquiry when requested by an appropriate professional association;

shall not use coercive means or promise special treatment in order to influence professional decisions of of colleagues;

shall give credit due to others for work, contributions, discoveries, or creations;

respects the rights of other artisans and professionals to collect just compensation for the fruits of their labors;

should actively support and participate in activities and programs of professional organizations;

should establish harmonious relations with other colleagues and members of other professions, and endeavor to inform members of related professions of services provided by the planetarium profession.

Employer-Employee Relations

While maintaining his position in order to serve patrons, the planetarian is rewarded with working conditions and compensation which allow him to devote his energies to his job. The ethics of dealing with one's employer is a two-way street and corporation and institutional members of the society as well as individual members are enjoined to abide by the Code of Ethics.

In fulfillment of the employer-employee agreement, the planetarian:

shall adhere to the terms of a contract or appointment, unless these terms have been legally terminated, falsely represented, or substantially altered by unilateral action of the employing agency;

shall apply for, accept, offer, or assign a position of responsibility on the basis of professional preparation and legal qualifications without discrimination on the ground of race, color, creed, sex, or national origin;

shall not delicate assigned tasks to unqualified personnel;

shall not knowingly withhold information regarding a position from an applicant or misrepresent an assignment or conditions of employment;

shall apply for a specific position only when it is known to be vacant and shall refrain from underbidding or commenting adversely about other candidates;

shall uphold the principle of appropriate and adequate compensation for those engaged in the profession;

shall use time granted for the purpose for which it is intended;

shall not accept outside employment to the detriment of his job;

shall not use equipment, supplies, laboratory, or office facilities of his employer to carry on outside private business activities without consent.

Astrologic (a-stroh-lah-jik) n. is the long, involved explanation you give people about the fallacies of astrology--which has no real effect on their opinion.

Any skeptical reader of Worlds in Collision is known as a Veliscoffsky (vel-i-skof-ske) n.

The Hertzspring is the academic source of all those complicated, unintelligible diagrams that keep cropping up in planetarium shows.

Any obnoxious kid who gets too close to you during a planetarium show is a Perihellion (pear-i-hel-yun) n.

A Saganite (sa-gan-it) n. is a member of your audience who knows more (or professes to know more) about astronomy than you.

The sharp, crackling sound that the projector emits when the star lamp is turned on is called a Spitzel (spit-zsel) n.

An expounding universe (ex-poun-ding un-i-vers) n. is a self-explanatory cosmos.

The person who assists the laserist during a laser light show by providing planetarium special effects is known as an incandescentist (in-kan-de-sen-tist) n.

Cassegrim (cas-e-grim) adj. is the mood of a telescope operator whose primary mirror is broken.

If someone has to travel east in order to get to the men's room from the planetarium, that's called diurinal motion (di-yur-i-nal mo-shun) n.

The Buster Crabbe Nebula (bus-ter crab ne-byoo-la) n. is the ultimate destination point of radio and T.V. transmissions of all those old Flash Gordoin serials.

Any attempt to discredit the space-time theory is an Einstain (in-stan) n.

Entrophy (en-tro-fe) n. is an award presented each year to the person with the messiest universe.

And finally, the Byades (bi-a-dez) n. are concluding statements about open star clusters.

So now you know what planetarium sniglets are all about. There are two important things I should add.

First, in order for these sniglets to gain acceptance, I would urge you to use them in your everyday conversations. An example might go something like this:

"Gee, what a tough show! Right off the bat I had to replace a couple of ektalumps, and then the kids went through a major case of dipperhea. Then, just when things were settling down and a few snorzones had been established, a little perihellion came up to the console and tried to act like a Saganite! I told him I was no simple incandescentist, and sent him out to the diurinal."

The other thing that needs to be said is this: I realize that I've probably started something here I may come to regret. Already I can hear the wheels spinning in various heads as others start thinking up more sniglets. I'm afraid we haven't heard the last of this . . .

TECHNICAL STANDARDS

by Robert C. Tate
Harper Planetarium

Wouldn't it be nice if every planetarium was set up in the same wayy with compatible (if not identical) equipment, so that it would be easier to transport programs from one planetarium to another? That's the goal for setting up technical standards for planetariums.

"Technical standards" does not mean that someone is going to come around and judge your planetarium. It's not that kind of standard. Instead, technical standards are guidelines to suggest the "proper way" to set up the equipment in a planetarium so that it is compatible with other planetariums of a similar size and audience.

If a set of standards were in use, planetariums could join together to hire the world's best writers, artists, and production people to produce programs of superior quality, light years beyond anything now seen in any planetarium in the world. The

expense of such productions would be justified by the large audiences who would come to many planetariums, all of which would be able to run the shows which are designed to run on the standard set up.

Today we have no technical standards because each planetarium has evolved in keeping with its own budget, equipment, and professional direction (personnel). Setting some standards would give each of us goals toward which to move in the acquisition of new equipment and control systems.

At the present time we could easily agree on standards for projector field formats, script writing formats, and projector plug formats. Adoption of these standards in the production of new shows by planetariums and production companies now sharing or selling programs would insure that all planetariums using these programs would be set up on the industry standard.

Adoption of technical standards would be the first major advance toward improving the quality of planetarium programming since the invention of the Zeiss.

Following are suggested sample planetarium standards:

Definition: A planetarium is a theater with a domed projection screen used to study and display the environment and containing the following equipment.

1. A projector to show the relative positions of stars and solar system objects as seen from various locations on the earth at various times.

2. A set of slide projectors as specified below.

3. Additional effects projectors as specified below.

4. A sound system as described below.

Slide projector fields

Slide projectors shall be oriented in the dome to produce a center field with a left field and a right field which overlap the center field, so that the left and right fields touch at their common edge. This produces a 50% overlap of the center with the left and right fields. Projectors are to be assigned to fields in configurations as listed below depending on the total number of projectors available.

Total Projectors	Left	Center	Right
3	1	1	1
4	1	2	1
5	1	3	1
7	2	3	2
8	2	4	2
12	3	6	3

Special Effects Projectors

The standard configuration planetarium will have available the following special effects projectors.

1. A slide projector with zoom lens either mounted on an x-y platform or projected onto an x-y panning mirror to provide coverage over a major portion of the dome.

2. One or more rotating image projectors.

3. One or more distortion (ripple) projectors.

4. A projection orrery.

5. A partial-pan horizon-projector system with three projectors and wide-angle lenses in adjacent fields.

Sound System

The planetarium will be equipped with a four-track reel to reel recordere capable of running at 7 1/2 and 15 i.p.s.

Voice, music, and sound effects are to be recorded on channels one and two for stereo reproduction and control signals for dissolvers or computer control systems are to be recorded on channel four.

Script Format

Scripts are to be reproduced with the following information on each page:

1. Show title, author, or origin
2. Page number
3. Line numbers
4. Time codes
5. Event codes
6. Text

A sample page follows:

TIME	VISUALS	AUDIO
36:17	240) Shuttle EVA #1 241) Shuttle EVA #2	THEY WILL ALLOW PEOPLE FROM ALL WALKS OF LIFE ACCESS TO SPACE -- TO WORK AT TASKS BENFITTING THOSE BELOW, AND TO PREPARE FOR THE EXPLORATION OF THAT WHICH IS ABOVE.
36:30	242) Shuttle w/satellite	AS A WORKHORSE, THE SHUTTLE WILL PUT SATELLITES INTO ORBIT, AND RETRIEVE THEM FOR REPAIR IF NECESSARY. MUSIC BRIDGE: 3 seconds
36:40	243) Shuttle w/Galileo	THE SHUTTLE WILL BE A LAUNCHING PLATFORM FOR INTERPLANETARY SPACE PROBES, LIKE THE UPCOMING GALILEO MISSION TO JUPITER. MUSIC BRIDGE: 3 seconds
36:50	244) Shuttle w/satellite	AND IT WILL SERVE IN THE NATIONAL DEFENSE BY DEPLOYING AND SERVICING MILITARY SURVEILLANCE AND COMMUNICATIONS SATELLITES. MUSIC BRIDGE: 3 seconds

Projector Plug Configurations

Special effects projectors, where possible shall be wired with the following specifications.

1. 120 volt a.c. lamps, fans, and effects motors

2. All connections to the projector will be by the use of six pin Cinch-Jones type plugs with the following pin assignments:

PIN	ASSIGNMENT
1	120 v common
2	120 v fan
3	120 v effects motor
4	120 v dimmed lamp
5	system ground
6	EMPTY

Comments on these specifications are welcome.

Robert C. Tate
Harper Planetarium
3399 Collier Dr. NW
Atlanta, GA 30331

DOME OPENING EFFECT PROJECTOR

by Dave Maness
Virginia Living Museum

How often is it that one of your patrons asks, "Is this the place where the roof opens up and we look at the stars and planets?" (even though it happens to be 2:00 in the afternoon)?1 Wouldn't you just once like to say, "Yes it is" and then do it? Well, now you can with the new simpler dome opening effect (D.O.E.).

Actually, the need for this projector came from one of the many packaged programs that calls for such an effect.

In looking through the effects book and catalogues, I found a few D.O.E.'s but they often used gears, arms, metal plates, etc. all in one projector! I had to come up with something simpler, mostly because I had not metal working tools.

The design you see here uses two moving plates, a cam and a motor. It was constructed using a drill press and a bandsaw, plus a few other common tools found in any tool box, i.e. scissors, hot melt glue, a screwdriver (make mine a double).

I used the back half of a TMC projector but just about any single-slide projector (dependent upon dome size and brightness needs) would do just as well. The measurements shown are not what I planned, but with sanding, trimming, and fitting that's what they came to be. I'm sure some could be rounded out to more even numbers and work just fine.

Dave Maness
Planetarium Curator
Virginia Living Museum
524 J. Clyde Morris Boulevard
Newport News, VA 23601

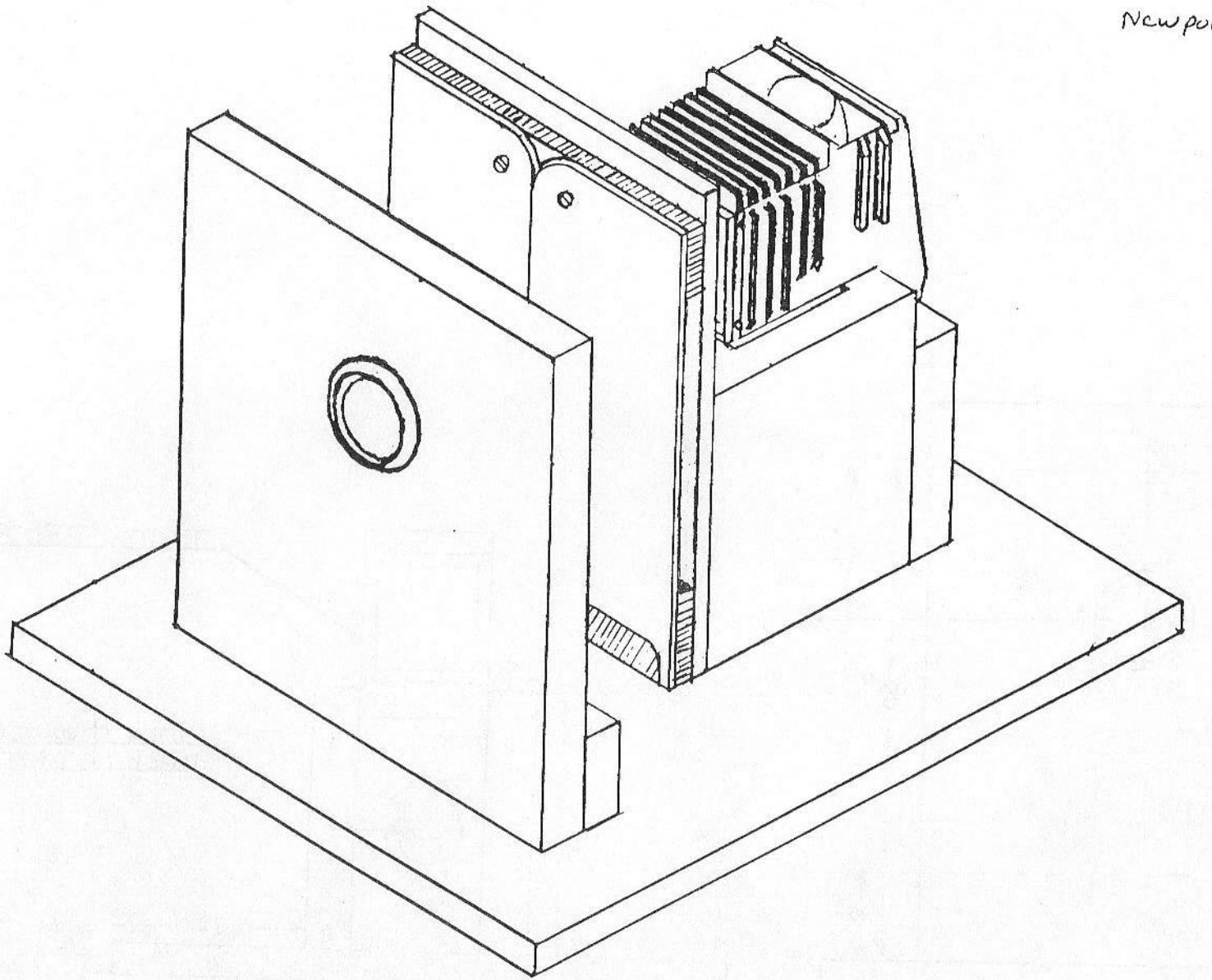
(Diagrams follow)

Dome Opening Effect

DRAWINGS BY VIRGINIA FRIEL

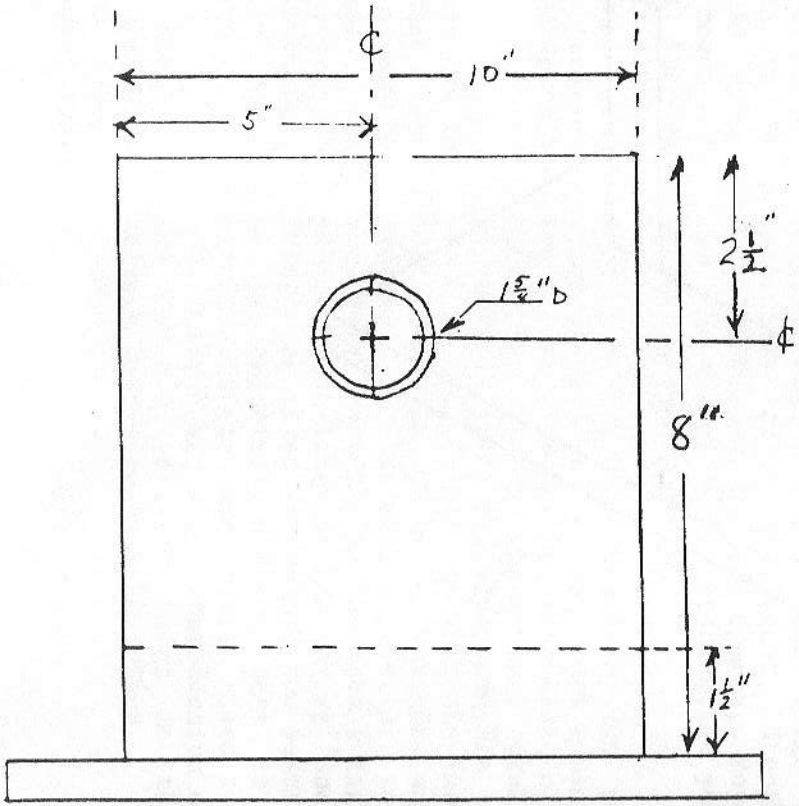
Designed by: DAVE MANESS

PENINSULA PLANETARIUM
NEWPORT NEWS, VIRGINIA

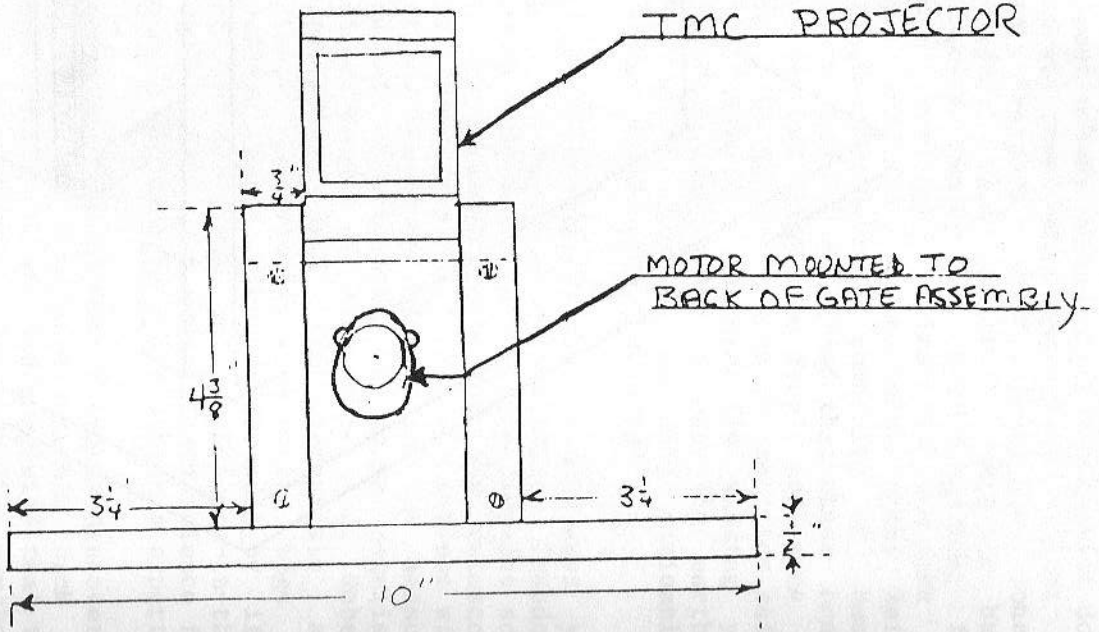


SCALE 1" = 1cm

FRONT VIEW LENS ASSEMBLY



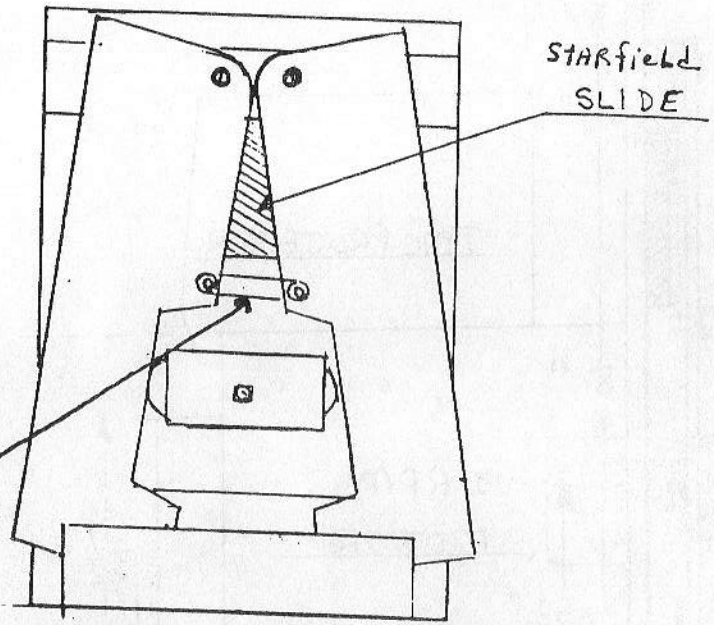
PROJECTOR & MOTOR ASSEMBLY



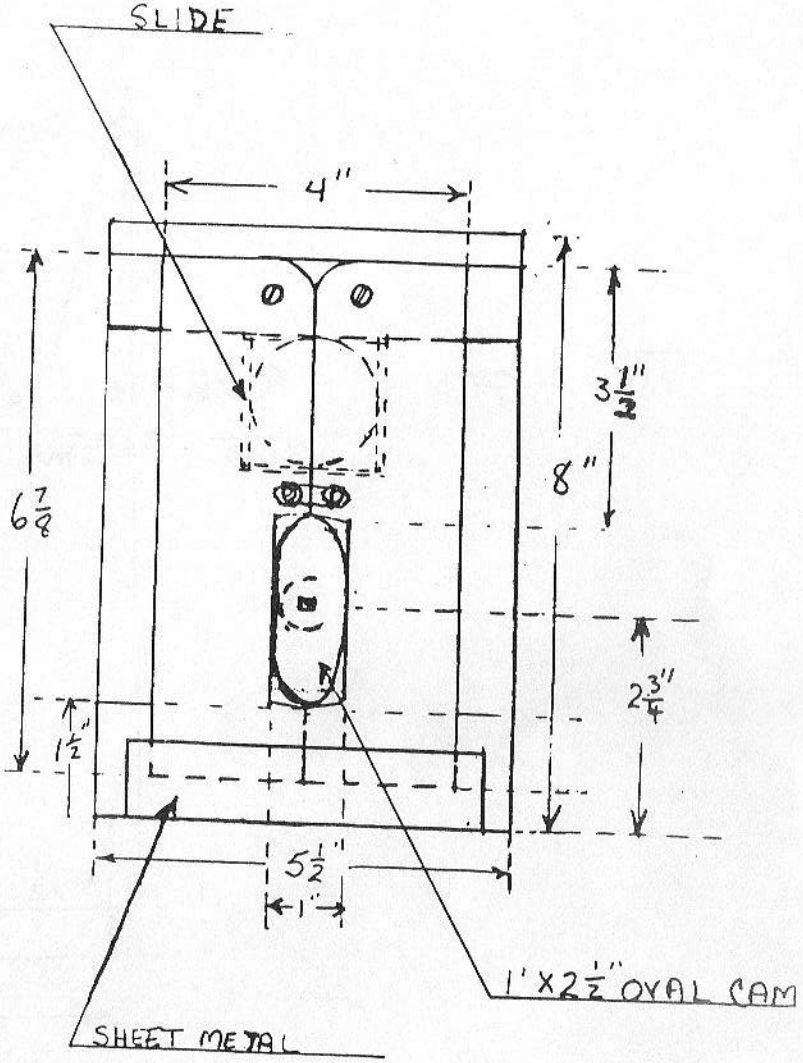
SCALE 1" = 1cm

FRONT VIEW

GATE ASSEMBLY OPEN

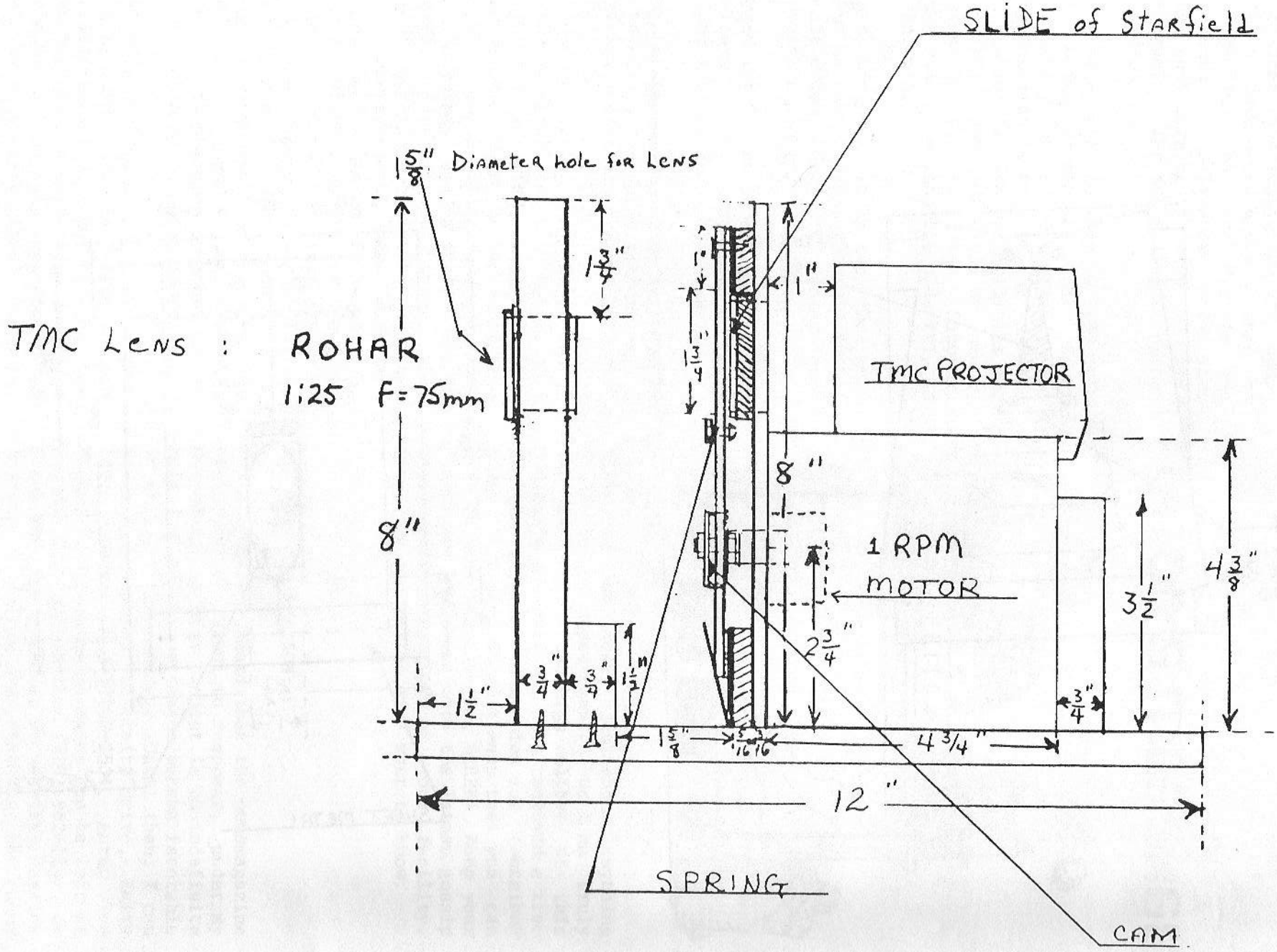


GATE ASSEMBLY CLOSED



SCALE 1" = 1cm

Side View


SLIDE of Starfield
1 5/8" Diameter hole for Lens
TMC Lens : ROHAR
1:25 F=75mm
1 3/4"
1"
1 3/4"
TMC PROJECTOR
8"
8"
1 RPM
MOTOR
2 3/4"
3 1/2"
4 3/8"
1 1/2"
3/4"
3/4"
1 1/2"
1 5/8"
5/16
4 3/4"
3/4"
12"
SPRING
CAM

Mark your calendar for the following:

The SEPA Conference Committee has determined that the most unoffensive dates to most people would be noon, June 7, 1987, through noon, June 14, 1987. This year's conference will include not only traditional SEPA activities, but also the presentation of 20 complete planetarium programs, a special conference addition concerning Space Telescope, the concurrent meeting of the IPS Executive Council and Knights in Shining Armor (a medieval dining experience).

The conference theme is "Taking Stock in your Profession." The thrust of the conference is going to be the opportunity to see what materials and equipments are available to help us do our jobs better. Much of the conference will focus on external sources: NASA, manufacturers, or those sources in the profession that provide materials, i.e. professional planetarium programs. Programs will be presented in the environment for which they were intended and created.

Arrangements have been made with the Ramada Inn close to the planetarium. One room, with one to four people per room, will be $26.00 per night. Reservation information will be forthcoming with conference information. More complete information will be coming to you in direct mail in late February or early March.

BCC Planetarium is currently in production of a new program about the Milky Way Galaxy with the working title "At Home in the Milky Way." Planetariums wishing to participate from a financial point of view in the production of this presentation are asked to contact Mike Hutton at the BCC Planetarium. So far contracts have been issued to Deborah Byrd of StarDate to write the presentation; Bill Pounds as primary artist, with John Serrie to do the soundtrack. Additional funding is needed for narrators and supplemental artwork.

MY HUMBLEST APOLOGY

Have you ever

had a baby,
had major surgery,
moved into your first house, AND
worked two jobs (one your own business)
(to pay for Items 1, 2, and 3)

all in a six-month time period?

All of the above are offered, not as excuses for I have none, but as information shared with you, my friends, as to why my life has been anything but normal since last we met.

I hope you will understand when I say I am sorry things got so out of hand that your journal ended up coming to you as late as it did.

If Council feels a change might be good for all concerned, I will yield to their wisdom. I enjoy my relationship with Southern Skies and the chances to talk to you on various occasions which come with this assignment. I see no reason for that to come to an end, as things are now under control.

I look forward to seeing all of you at SEPA, where you will have many chances to meet the soon-to-be-famous RICKY Summers. (Yes, he does have red hair. No, he does not have freckles. But in many ways he does in fact resemble a SEPA Past President many of you know.)