GLPA Newsletter

1971

3 issues — 20 pages
EDUCATIONAL VALUE OF TRAVEL TIME

By Gerry Muhl
Strasenburgh Planetarium, Rochester, N.Y.

In planning a visit to a planetarium, teachers often overlook the hour (or more) traveling time necessary in getting to and returning from the planetarium. This time should be considered as a potential learning experience and should be treated in the same manner.

Once a teacher is convinced that the school bus ride can in itself have positive pedagogical implications, and this is no small hurdle to overcome, the next step would be the creation of objectives that the bus ride can meet. Finally, the writing of activities themselves can begin. Rather than approach the problem within the confines of a single discipline it would seem that an interdisciplinary approach would be more practical. Objectives could include the communicative arts with the students instructed to notice various methods of outdoor advertising; a lesson in urban geography and land usage; the social sciences; architecture; agriculture; ecology; or geology to name a few.

In regard to astronomy and the Space Sciences a number of activities suitable for different grade levels immediately come to mind. The following is a list of some activities that I suggest to teachers using the Strasenburgh Planetarium in Rochester, New York:

1. While on the bus, have the students determine which direction the bus is heading by observing the changing position of the sun.

2. Divide the bus into two sections and have one side ask the other side prepared questions. Keep score.


4. While on the bus, have the students map the route the bus is taking in getting to the Planetarium.

5. Imagine the bus as a space craft. Have the students prepare short reports, to be given on the bus, listing items they would need if they were heading into outer space. A portable tape recorder might add to the realism.

6. Gather various pictures of the earth, of space, and of the moon. Have the students decide where each picture was made and the reason for their decision.

7. As a project in class have the students construct a scale model of the solar system using the distance from your school building to the planetarium as the
scale distance from Pluto to the Sun. Using maps of your projected route plot where each planet would appear in the country. On the bus have the students name the planet they are nearing by observing various predetermined landmarks.

3. Be creative.

This list is by no means definitive. More activities could readily be created by those planning planetarium visits.

Some practical points to consider in planning the bus ride as part of the learning experience must also be mentioned. The use of pencils or hard point pens should be discouraged for safety reasons. In their place soft point felt tip pens could be substituted. Secondly, be sure to plan well in advance with the school district transportation officer to determine what route the bus will take on the "field trip" and be ready to suggest alternate routes. Finally, make the trip yourself in advance so that you will be qualified to point out various noteworthy sights.

Planning for the bus ride would involve more effort on the part of the teacher; the results, however, would be manifold. It is clear that if maximum results are to be gleaned from a field trip experience, every aspect must be considered.

THE REAL MOON ILLUSION

By George Lovi
Viewlex Inc.

One of the most shopworn of astronomical phenomena is the classic "moon illusion" whereby the moon appears larger near the horizon than when higher in the sky. A number of psychological explanations have been advanced for this, some better than others. For what it's worth, it seems to me that a major reason is a perceptive process whereby an object at a given distance appears smaller when one has to look up at it. For example, I recall that as a youngster living near a rapid transit elevated line, I was mystified at how much smaller trains appeared when seen from the street than from a station platform - even though they may have been further from me in the latter instance.

Nevertheless, this is not the real moon illusion. The real illusion is the moon's apparent size in the sky - anywhere in the sky - versus how large it appears to us. Referring to books, we find that the moon's apparent diameter is 1/2°. Now let's look at the pointer stars in the Big Dipper, Dubhe and Merak. Referring to a catalogue, we find that they are 5-1/3° apart. This means that more than ten full moons could be lined up in that space. No? Now go out some full moon night and, looking up at the Big Dipper, try to imagine ten full moons between Dubhe and Merak. Incredible! Maybe three or four, but not ten.

The fact is, that when comparing the moon's size with constellations, it is utterly impossible to reconcile it as being only half a degree across. Therefore, the moon's apparent size in the sky should never be used to estimate angular distances. Incidentally, all planetarium projectors show the sun and moon a degree or more in diameter; otherwise they would seem ridiculously small.

Here is the real moon illusion - an illusion far more incredible than the horizon version.
AN OBITUARY

On Wednesday, April 14, 1971, Armand N. Spitz succumbed to a prolonged illness at his home near Washington, D.C. He was 69 years old.

Born in Philadelphia, Dr. Spitz attended the Universities of Pennsylvania and Cincinnati, and was awarded a Doctor of Science degree from Otterbein College, of Westerville, Ohio, in 1956.

As Director of Education of the Franklin Institute and lecturer at the Fels Planetarium, Armand Spitz became fascinated with the potential of the planetarium as an educational and motivational device. At that time, planetariums were all located in large cities. Determined to bring the beauty of the planetarium to more people, he conceived and built his first small planetarium, and in 1947 founded Spitz Laboratories. Today, because of the vision, vitality, and human warmth of Armand Spitz, hundreds of planetariums located in schools, colleges, and museums throughout the world are visited by millions of people each year.

Throughout his life, Armand Spitz was passionately concerned with education, and was particularly active in teaching children and adults about the beauty of man and the universe. He was Associate Editor of The Monthly Sky Map and Popular Astronomy, and also authored several articles and books on education and astronomy, as well as meteorology.

In 1956, he was appointed Coordinator of Visual Satellite Observations for the Smithsonian Astrophysical Observatory, and served as consultant to that Institute through 1961. He was also a consultant to the National Science Foundation.

Dr. Spitz is survived by his wife, the former Grace Scholz; a daughter, Mrs. Edward G. Rice; a son, Lawrence, and one grandchild.

Several friends of Armand and Grace Spitz have considered various ways in which individuals might manifest their feelings at this time. Accordingly, the Armand N. Spitz Memorial Fund has been established. It is temporarily being administered by a committee chaired by Von Del Chamberlain of Michigan State University. A memorial book listing contributions will be maintained and a copy eventually transmitted to the family of Armand N. Spitz at a later date. A permanent committee, in consultation with Mrs. Sptiz, will decide on the use of the fund.

NEWS NOTES

THE 1971 CONVENTION OF THE GREAT LAKES PLANETARIUM ASSOCIATION will be held October 7th, 8th, and 9th at the Mount Clemens High School, Mount Clemens, Michigan. An excellent program is planned under chairmanship of host Jim Pike. There will be a field trip to the Bendix Systems plant in Ann Arbor, (where spacecraft electronics are made) and one to the University of Michigan Observatories on Thursday, the 7th, with seminars and demonstrations scheduled for Friday and Saturday. Although the list of speakers is only partially complete at the present time, Dr. Allen Hynek, who is chairman of the Department of Astronomy at Northwestern University and Air Force consultant on unidentified flying objects, will give the Armand Spitz Lecture. Also, Dr. Barnett Rossenbarg will speak on life in the universe. One of the scheduled seminars will be devoted to sharing materials and ideas appropriate for a high school astronomy course. It is hoped that members will submit papers. Any suggestions, ideas, or contributions should be sent to Jim Pike, Mount Clemens High School, Mount Clemens, Michigan 48043
THE CONSTITUTIONAL COMMITTEE, appointed at the C.A.P.E. convention last fall, met at Baton Rouge, Louisiana on March 27th and 28th, at the invitation of the Department of Physics and Astronomy at Louisiana State University. Present were acting chairman Paul Engle, Jack Howarth, James Hooks, Rich Calvird, Sig Weiser, and VonDel Chamberlain. The Committee met in four sessions and worked hard to draft a first copy of by-laws for a society of planetarium educators. The tentative series of by-laws will be further reviewed and revised by the committee, and then submitted to the delegates of C.A.P.E for ratification.

THE MINNAERT MEMORIAL CONFERENCE ON EDUCATION AND THE HISTORY OF MODERN ASTRONOMY will be held from August 30th through September 1, 1971 at the American Museum-Hayden Planetarium in New York City. This affair is being jointly sponsored by the American Astronomical Society and the New York Academy of Sciences, and will feature internationally renowned astronomers discussing their historic discoveries. There will also be presentations on "The Education and Employment of Astronomers in the U.S.," "University Level Astronomy Education for Non-Science Concentrators," and "Personal Accountings of the Development of Modern Astronomy," to name a few. Further information can be obtained from the conference chairman, Dr. Richard Berendzen, Department of Astronomy, Boston University, 725 Commonwealth Avenue, Boston, Massachusetts 02215.

THE SPITZ McGRAW-HILL SUMMER INSTITUTES IN PLANETARIUM EDUCATION will hold two series of two institutes apiece, one series on the East Coast at their Chadds Ford, Pennsylvania laboratories, and the second in Los Angeles. These institutes are designed to provide new and experienced planetarium teachers with intensive study in the methods of effective planetarium educational use. Each series consists of two independent one-week courses, which may be taken separately or together. The first week generally stresses use of the planetarium on the elementary level; the second week, use on the secondary and college level. Cost is $75 per week, with food, travel, and lodging the responsibility of the participant. Contact Michael Bennett, Director of Education, Spitz Laboratories, Chadds Ford, Pennsylvania 19317.

THE PLANETARIUM ASSOCIATION OF CANADA will hold its 1971 conference in late August. Included on the program, which will be held at the Centennial Planetarium of the Manitoba Museum of Man and Nature, will be the first Omnitheatre production, "The Beginning and End of the world." Inquiries should be sent to Donald D. Davis, Planetarium Director, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg 2, Manitoba, Canada.

THE 2ND ANNUAL GREAT LAKES ASTRONOMY SYMPOSIUM was held in Toledo, Ohio on May 15th. This one day event is sponsored by the Adams Astronomical Society of Rogers High School in Toledo, and features presentations delivered by professional astronomers who are there to "rub elbows" with amateurs from Toledo and surrounding regions. Your editor and two of his colleagues were fortunate to attend this event for the first time, and were greatly impressed to say the least. The addresses delivered by such notables as Dr. Peter Van de Kamp and Grote Reber were both intellectually stimulating and amusing, and the Ritter Observatory and Planetarium proved to be a fascinating place to visit. Your editor and his colleagues were in unanimous agreement that it was one of the most stimulating sessions they had ever attended. A great deal of credit for the success of the symposium must go to Robert Gardner, a G.L.P.A. member and sponsor of the astronomy club at Rogers High. It is obvious that he is highly respected by his students, and thereby is able to get the student response and enthusiasm necessary to pull off such an elaborate symposium. There were over 100 people there; many more should try to make it next year.

THE FOURTH ISSUE OF THE PROJECTOR will appear a bit later this year. At a meeting of the G.L.P.A. Publications Committee, it was decided that volume of material and finances warranted publication of at least one more issue. Eventually, it is hoped that the Projector will be absorbed in a new international trade journal. The co-chairman of the
C.A.P.E. Publication Committee, Frank Jettner, is actively engaged in promoting birth of the larger journal.

THE PUBLICATION "ASTRONOMY" - The curriculum used in the West Lake, Ohio Junior High School, is available on request from Robert Elliott, Phillips Planetarium, Wisconsin State University, Eau Claire, Wisconsin 54701. The curriculum was developed by Mrs. Jeanne Bishop, who has long been active in planetarium work and the C.L.P.A., and contains a great deal of material appropriate to planetarium presentation. There is no charge for the 24 page booklet.

POSITIONS AND PERSONNEL

THE JESSE BESSER PLANETARIUM of the Besser Museum in Alpena, Michigan announced a vacancy in the position of Planetarium Coordinator. The responsibilities of this job include planetarium curriculum development and lecturing to a county-wide school system, preparation of public programs, and design of space-oriented exhibits. Secretarial, technical and part-time lecturing personnel are available. The facility includes a Spitz A3P projector under a 30 foot dome. Salary is negotiable depending on background and experience. Requirements include a bachelors degree in astronomy or a related field and strong interest in the educational potential of the planetarium. Send resume to Cynthia Murphy, Jesse Besser Museum, 491 Johnson Street, Alpena, Michigan.

MR. VALENTINO M. GONZALES, 122 Charles Street, Wilkes Barre, Pennsylvania 18702, is interested in obtaining employment in a planetarium. Mr. Gonzales was director of a Spitz planetarium and small observatory at Florida State University for 3 1/2 years while a student at the University, and since then has completed 8 years as a navigator with the Air Force. Contact Mr. Gonzales at the above address for further information.

RICHARD A. PALERMO, 16 Westwood Road, Storrs, Connecticut, would like to be considered as a candidate for a planetarium lecturing position. He was graduated from the University of Maine last June and recently completed a four month tour of duty with the Army National Guard. He majored in history with a double minor in mathematics and physics. He is an amateur astronomer and photographer. He was a student lecturer at the University of Maine Planetarium and is very interested in a planetarium career.

DONALD D. DAVIS, formerly director of the Dow Planetarium in Montreal, is now director of the Centennial Planetarium of the Manitoba Museum of Man and Nature, Winnipeg, Manitoba, Canada.

DON STARKEY, who for many years was associated with the Fort Worth Childrens Museum and its Charlie Noble Planetarium, is now director of the planetarium at the Oregon Museum of Science and Industry, Portland.

AN IDEA

By Dorothy E. Beetle

For those with access to rocks and minerals, you might put up an exhibit of earth rocks and minerals similar to those found on the moon. After reading current issues of Sky and Telescope, Science, and NASA - Apollo Lunar Sample Information, I searched through our museum collections for terrestrial material of similar composition. We have an extensive collection at the museum which was bequeathed to us upon our opening, so I was able to find examples of all the main rock and mineral types.

The display is divided into 2 groups, the darker rocks of the basalt lava plains and the lighter anorthosites of the highlands. Photographs from lunar missions pinpoint specific areas. The planetarium program is concurrently presenting Moon Rocks -
How They Change, a discussion with a slides of the formation of the regolith by meteor strikes and mass wasting and some mention of transitory lunar phenomena. This letter is based on information presented at the CAPE meeting last fall - after Green, Middlehurst, Wilkens, Moore and Stein. - from the "Constellation," Newsletter of the Middle Atlantic Planetarium Society.

THE GREAT LAKES PLANETARIUM ASSOCIATION offers membership opportunities to all individuals in any way connected with the operation of planetariums. The only pre-requisite for membership is a sincere interest in and sympathy for the objectives of the Association and payment of annual dues. Annual membership dues are $5 per individual, to be paid annually at the time of the autumnal equinox. General correspondence and membership application should be submitted to Mrs. Maxine Haarstick, Planetarium of the Minneapolis Public Library, 300 Nicollet Mall, Minneapolis, Minnesota 55401. Contributions to the Projector, official G.L.P.A. journal, should be submitted to Mr. John Christian, Robert T. Longway Planetarium, 1310 E. Kearsley Street, Flint, Michigan 48503. Contributions and notices for the quarterly "Newsletter" should be sent to David L. DeBruyn, editor, Roger B. Chaffee Planetarium, 233 Washington, S.E., Grand Rapids, Michigan 49502. Deadlines for contributions to the latest "Newsletter" fall at the beginnings of the four seasons.
No summer issue of the *GLPA Newsletter* was published this year.
GREAT LAKES PLANETARIUM ASSOCIATION

SEVENTH ANNUAL CONVENTION, OCTOBER 7th, 8th, 9th, 1971
MOUNT CLEMENS, MICHIGAN

PROGRAM

Thursday, October 7th

9:30 A.M. - Meet at Bendix Aerospace Division, 3300 Plymouth Road, Ann Arbor, for tour of facilities, followed by complimentary lunch.

2:00 P.M. - Tour of radio and optical telescopes at Peach Mountain Observatory of the University of Michigan.

8:00 P.M. - Social Hour at Clinton Gables Motel, 100 N. River Road, Mount Clemens. Registration desk open.

Friday, October 8th

8:15 A.M. - Registration and coffee hour at Mt. Clemens High School

9:00 A.M. - Opening Session

10:30 A.M. - Concurrent Planetarium Programs, Mount Clemens High School Planetarium and Chippewa Valley High School Planetarium

12 noon - Luncheon; Speaker, Dr. Richard Teske, Professor of Astronomy, University of Michigan

2:00 P.M. - Concurrent Seminars

1. "High School Astronomy," - a sharing of information on essentials of a 1 and 2 semester high school course. Also, Mr. Robert Gardner of Toledo, Ohio will discuss a two year astronomy sequence. There will be a review of texts, and discussion of special projects and exercises for high school classes and clubs. Participants are urged to bring distribution copies of effective exercises and activities.

2. Presentations by planetarium manufacturers: Educational use of planetarium and related products at various grade levels.

4:00 P.M. - Committee Meetings
5:00 P.M. - Executive Board Meeting

6:00 P.M. - Cocktail Hour - Cash Bar - Holiday Inn

7:00 P.M. - Banquet and Armand Spitz Lecture; Speaker, Dr. J. Allen Hynek, Northwestern University; Subject, "Beyond the Planetarium Sky"

Saturday, October 9th

9:00 A.M. - Business Meeting, Mt. Clemens High School

10:00 A.M. - Concurrent Seminars


2. Presentations by planetarium manufacturers: "Educational use of the planetarium and related products at various grade levels."

3. Detroit Observational and Astrophotographic Association

12 Noon - Luncheon; Speaker, Dr. Barnett Rossenborg, Michigan State University; Subject, "Intelligent Life in the Universe."

2:00 P.M. - Concurrent Seminars


3:30 P.M. - Closing Session - Discussion of results of survey conducted at last year's C.A.P.E. convention, and latest information on services and organization of International Society of Planetarium Educators.

IMPORTANT NOTES

1. Any persons needing transportation to Ann Arbor or Mount Clemens from Detroit Metropolitan Airport should notify Jim Pike at once at Mount Clemens High School, 155 Cass Avenue, Mount Clemens, Michigan 48043. Call area code 313-465-1201. Transportation from Detroit Metro to Ann Arbor is scheduled to leave from the airport at 9 A.M. Thursday.

   If you have not entered reservations at the motel of your choice for duration of your stay, it may now be difficult. Look into this matter at once.

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He who watches the stars across
   The World's wide rim
Needs no consoling creed to succor him.

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NEWS NOTES

WE WERE PLEASED TO HEAR recently that Maxine Haarstick's husband Wallace is now on his way to recovery from the massive stroke which he suffered on May 17th. He suffered 50% vision loss, and some paralysis of the limbs, but is sharp in mind and voice, which we are all glad to know. Under Maxine's fine and dedicated guidance, we hope he will be coming along fine in the weeks to come. As for Maxine herself, she divides her time as much as possible toward a dedication to both her husband's recovery and her planetarium duties. In her own words from a recent communication, "I suspect that my broom will be functioning better for our next communication. You can't get a good witch down."

THE PUBLICATIONS COMMITTEE OF CAPE, which will bring about the eventual evolution of an international journal, is still very much alive and slowly but surely moving forward, under the guidance of Frank Jettner. Larry Gilchrist of the Centennial Planetarium, Calgary, Alberta, has been nominated for the position of executive editor, and John Christian is being asked to assume the duties of editor. The executive editor will have the overall administrative responsibilities for the journal, including financial matters, advertising, content and layout, and distribution. The editor will be responsible for obtaining articles, initial editing and selection, promotion and publicity. Still to be named is an associate editor for the journal, who will receive and edit news from contributing editors, and supervise subscription and circulation.

THE INTERNATIONAL SOCIETY OF PLANETARIUM EDUCATORS was the title adopted by the constitutional committee for the new international association. This is an outgrowth of last year's C.A.P.E. convention. As indicated in an earlier "Newsletter," a set of by-laws, including the above proposed name, was adopted by the committee in a March meeting, and now is undergoing necessary revision prior to being submitted for adoption by members of the Society. Other highlights of the proposed document include numerous membership divisions, two year terms for officers, a governing council, general meetings every two years, and a dues structure ranging from $11 to $15 annually. Details on joining I.S.P.E. will be available at our annual convention.

THE TOTAL ECLIPSE OF JULY 10, 1972 is now less than a year away. The Greek line cruise ship TSS OLYMPIA will sail from New York City to the North Atlantic and into the path of totality. The idea of eclipse watching from a floating hotel is the brainchild of Dr. Phil Sigler, and Dr. Fred Hess, professor at New York State Maritime College and lecturer at the Hayden Planetarium, will be scientific director of the cruise. Total time at sea will be one week, with visits to Quebec City and Sydney, Nova Scotia. Cost will be from $395 to $495 per person. For further information, call area code 201-567-7199 or write Eclipse Cruises Inc., Box 1972, Englewood, New Jersey 07631.

THIS IS A COMBINED SUMMER SOLSTICE-AUTUMNAL EQUINOX EDITION of the "Newsletter" for the simple reason that there was not enough material for a summer issue. What is the matter with the membership? Maybe it is just the slower pace that prevails in the summer, or is it that nobody is doing anything worthy of publication. I find that a bit hard to believe. Please, in order to make the "Newsletter" worth the effort to print and mail, there should be things of real value in it. Whether submitting features, planetarium scripts or hints, or news items, please type them double spaced the way you want them to appear in the publication. Your editor would like to hear from you.

THE PLANETARIUM OF THE VANDERBILT MUSEUM, Centerport, New York, 11721 is presenting the opportunity for an interested person to work in a major planetarium, while learning all facets, educational, technical, and administrative, of planetarium operation. This person will work out of the planetarium's education office and conduct at least 35 school programs each month. The work will be about 30 hours, with pay, based upon
a $20.00 per program fee. All applicants must have a bachelor's degree, some background in astronomy, a desire to work with children and an interest in planetarium education. For further information, contact Mark Levine, director of education.

POSITIONS AND PERSONNEL

POSITION WANTED - College graduate with seven years experience in the Planetarium field in both public and school programming is seeking a position with any planetarium. He is also technically oriented. For resume, write to Herbert J. Schwartz, 1839 East 24th Street, Brooklyn, New York 11229.

BENTON COMMUNITY SCHOOL CORPORATION, Box 512, Fowler, Indiana 47944, is seeking to employ a qualified person as Planetarium Director in the school system. Such a person would have duties in teaching basic astronomy and advanced astronomy courses at the secondary level, as well as presenting units of instruction to supplement the elementary astronomy program. A Spitz Planetarium is available. Contact William L. Bird, Curriculum Director.

THOMAS L. KONVOLINKA has been director of the planetarium for the Southwest Butler County School District, Harmony, Pennsylvania for the past several years. He is now seeking a planetarium position in Michigan. His last known address was 125 Chestnut Street, Zelienope, Pennsylvania 16063.

CAPT. HAROLD G. CORWIN, JR., CMR Box 3311, Edwards Air Force Base, California 93523, is seeking a professional position in the planetarium field. His qualifications and background in astronomy are quite impressive, and he seeks to find a place where an observatory and computer facility are also available. He has writing ability and experience, having published articles in the Griffith Observer, and also professional journals. He is looking for a salary of from ten to twelve thousand dollars.

AN INTERESTING NOTE

One of the greatest joys of a grade school program is a good question and answer period after the session. Most operators have found, however, that children on their first visit are quite reluctant to ask questions. This is particularly true if they are from a school some distance away. It is quite understandable; they see (but mostly hear) this rather imposing (to them) figure in front of the chamber and see all sorts of strange things. It is really expecting too much to get them to "open up" under the circumstances.

I have found an excellent device which has never failed me. Just as sunrise is about half over and just before the sun appears, have a rooster crow. It never fails to get a good healthy laugh and lets the children know you are human too. Try it once and I'm certain you will use it often. We found it good from two through six and adults.

P.S. Don't expect too much from high school students.

George W. Girard
Planetarium Director
Marquette, Michigan
REVIEW OF ELEMENTARY SPACE SCIENCE BOOKS


This is a series of work books in science, each with a section on space science. The entire series is excellent and the sections in space science are outstanding. Each has a section of things for the student to investigate. Answers to questions can be placed in the book so that it becomes the property of the student. There are teachers editions with suggested methods and suggested answers for the varying questions.


This volume is an excellent intermediate grade book dealing with aerospace from the Wright Brothers up to space stations. The text of the book is very good with excellent illustrations. One of the most outstanding features of this volume are the experiments that are found in each section of the book. The experiments are simple to do and can be done with material found at home.

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"PRECESSION of the EQUINOXES"

One fine morning in the middle of the Precession of the Equinoxes - And that very next morning, when there was nothing left of the Equinoxes because the Precession had preceded according to PRECEDENT.

Rudyard Kipling
ELEMENTARY ASTRONOMY AT BIG SPRING, TEXAS

By Gary Carlson, Planetarium Director

The Big Spring Independent School District has an enrollment of about 7100 students in grades one through twelve. In November of 1967, a Spitz A3P Planetarium was installed in the High School building. The planetarium has 78 undirectional theater style seats.

The fall of 1968 was the first year that the planetarium was used on a regularly scheduled basis. During the first year, the major concern was initiating a program in astronomy for the elementary schools. The type of program envisioned would be built around concepts taught in the classroom and coordinated with planetarium visits. During the year, available material was reviewed and the best material for our purpose was chosen.

In the fall of 1969 a pilot program was developed using Robert H. Duke's material entitled "Tracking the Stars." This material was chosen because it stressed methods by which students could be taught how to reach an understanding of the motions of the sky and the patterns that this develops. This material primarily stresses the use of naked-eye observation, or those understandings of the motions of the earth that can be seen from their own backyard.

A pilot program was developed to determine whether or not the teachers could use the material, which grade level would best respond to the material, and what type of inservice should be offered before the program went into effect. We chose three schools for the pilot program and involved grades four, five, and six. In each case, the material was the same, including the planetarium programs. The only difference in the schools and the grade levels was the method of presentation of the classroom teachers.

The materials involved included the "Tracking the Stars" student text and workbooks, the filmstrips, and teacher's guide. To the above, we added overhead transparencies of the workbook, reference books, movies from NASA about space exploration, slides on space exploration, records and other media material that the teachers could use in the classroom. Since all of this material was and is shared by all schools, the cost of the program is reasonable.

I have mentioned that the sixth grade was chosen as the grade level for this unit. It was the teachers involved with the pilot program that decided on this age level. At this session they also helped write the test that is made available to any teacher who wishes to use it. Currently, all teachers use the same test, deleting and adding questions as they wish. We use our test and not the one provided by Mr. Duke because his seemed to center more on memory work rather than the basic concepts.
that we are trying to present.

The highlight of our program is the night visit of all sixth graders to our observatory. Currently our observatory is located on the High School tennis courts, and we use portable telescopes only. We have designed our program around "Tracking the Stars," stressing the importance of actual observation. This goal of allowing all of the sixth graders the opportunity of looking through the telescopes compliments our planetarium program and provides a suitable climax for the unit.

The instruments that we use are two six-inch reflectors, one three-inch refractor and an eight-inch Celestron. Since the unit of study discusses the types of telescopes, the night session helps the students in understanding how they work by actually using the different types of instruments. As part of the inservice program we take the teachers on an evening field trip to the "dark sky" observatory which is located about ten miles from the lights of the city. At this session the teachers become familiar with the telescopes and gain a confidence in themselves that can only be gained by working with equipment. Also having viewed the celestial wonders that "Tracking the Stars" discusses, it allows the teachers the opportunity of teaching from a first person position. After having found constellations outside, after having looked at a nebula or star cluster through a telescope, or after having located the Andromeda Galaxy with a pair of field glasses, the enthusiasm that this teacher has for the unit is just great. It is worth mentioning that only about one in ten of our teachers have had any formal training in astronomy or space science. It is only through the program developed around the planetarium that the basic knowledge of astronomy and the concepts involved can come alive. The installation of our planetarium and the program that has been developed around it has served as the starting point for a rewarding and exciting program in astronomy for our school district.

The classroom teacher spends from four to six weeks on "Tracking the Stars" material. Most teachers coordinate it with their text material in astronomy. The planetarium teacher introduces the material to the students in their classroom. An outline of the material is presented to the students, with an explanation of what the students will be doing during the astronomy unit. The students are encouraged to ask questions that they have always wondered about, while the planetarium teacher is in their classroom. The major reasons why the planetarium teacher visits the classroom first is so that the students will accept him as a teacher and it gives the teachers a chance of answering any questions that might interfere with or at least detract from the material to be presented.

After the classroom visit by the planetarium teacher, the classroom teacher begins the unit at his own speed. Some start immediately, others wait until the next day. The first chapter in "Tracking the Stars" is entitled "Exploring Space." It is at this time that NASA movies such as "A Mission for Mariner" and "Pinpoint for Science" are shown. After the movies, the classroom teacher continues with the filmstrip provided with the material. So far about three to four class periods have been spent on this material. Part one of the filmstrip discusses telescopes, the major satellites and space probes. As the filmstrip talks about the Mariner probes, a set of slides from a Mariner series is shown.

The most important question asked in the first chapter is "How do we explore space?" Usually in the discussion that follows, a list of methods that each individual can use is established. Leading the list is direct observation and taking advantage of the trip to the observatory. At this time to help create interest in actual observation, a list of objects visible in the evening sky such as planets, a crescent moon, meteors, and telescopic objects is made available to the students. During the first planetarium program, these are pointed out with hints on how to find them.
The second chapter is concerned with the view from earth. How many stars can you see with or without a telescope? How do the nearby stars shape space as we see it? Are there any signposts in the sky that make identifying the stars easier? These are the types of discussion questions that help get the students involved in this chapter.

When the classroom teacher has completed this chapter, the first planetarium visit is made. This program stresses the importance of observation. The students discover in the planetarium that the stars are different. They can have different colors, look like pinpoints, are of different brightness or magnitude, and that the sky appears to be bowl shaped. Also they discover how planets can be distinguished from stars. Favorite constellations of the students that are currently visible are pointed out in their position for a set time that evening. Most of our students find it easy to relate the planetarium sky to the out-of-doors if they have a dark area to view from.

The third chapter discusses the relationship between the poles and the equator. The students begin to realize that because of the motion of the earth, the sky changes position. The important concept being developed in this chapter and at the planetarium is that your position on the earth will not only determine your view from earth but the motions of the sky as well.

The second planetarium program studies the circumpolar constellations. The students discover that the latitude of the observer is equal to the altitude of the pole star. The students determine which constellation from Big Spring does not go below the horizon - our latitude is 32 degrees north. Since the text describes five constellations that do not set, we have a good discussion as to why the only constellation for us that does not set is the Little Dipper.

After the students complete their study of "Stars Around Polaris," which is chapter four in their text, they know the five classical circumpolar constellations, how the pole and equator can be found in the sky and the location of the four cardinal points by the use of Polaris. From the planetarium programs the students usually realize the geometric shapes of the celestial dome. Suddenly they become aware that the horizon is a circle with each of the cardinal points 90 degrees from each other. After they become aware of this relationship, they are challenged to find other such relationships. Soon we have the zenith 90 degrees above the horizon and the points of the celestial meridian established.

The fourth planetarium program cements the information discovered on the first three visits. The motions of the stars are finalized and the dividing of the constellations into groups according to their position is accomplished. Important constellations of each group are learned.

The last two planetarium programs tackle the problem of the ecliptic and why it is important. A study of the Zodiac constellations is included in this chapter. One of the most important concepts developed here is that the 23 1/2 degrees of the ecliptic above or below the equator is related to the tilt of the earth on its axis. In the last program, students see the change of altitude of the sun above the southern horizon for Big Spring during the year. The students also count the number of daylight hours for several of the days throughout the year. With the planetarium instrument, we compare our seasonal changes with that of other cities all over the world. With this procedure the students discover why it is hot in July but yet we are closer to the sun in January.

The most important part of any program such as this is the evaluation. Since all students take basically the same test, we tabulate the test questions to find which questions were missed the most, and then we try to find out why. With this information we try to improve the program every year.
The students involved appear to be retaining the major concepts as they enter junior high. The program has not been in effect long enough to test for results when they enter high school.

Some of our best reaction has been from the teachers using the material. They like the material for the following reasons:

1. The teacher's guide is fairly complete and gives the inexperienced teacher a step by step program to follow. However, the material is so set up that the experienced teacher can start with Duke's material and go as far as he wishes.

2. The material covers a broad range and almost every student finds something that really appeals to him as an individual.

3. Librarians report that the astronomy unit creates a heavy run on the astronomy section of the library. Because of this increased interest, more astronomy books are being ordered.

4. Many of the teachers appreciate the program because it helps bring alive a unit that was difficult for them to teach before.

5. The most common comment received from the teachers is "I was scared stiff before I started the unit but once I got into it I enjoyed it very much and it was a fun unit to teach." This is what the experienced teachers tell the newcomers during inservice training, too.

Our program is not all roses. We still have several problems to solve. Most of our problems center around the size of the groups that are brought to the planetarium and the observatory. This coming year we hope to be working with smaller groups. A problem that is mentioned about Duke's material is that the reading is not always easy for the students to comprehend. Also some of the diagrams are not as accurate as they should be.

The overall evaluation of our program has been very favorable. The teachers look forward to the unit and so do the students. This program is giving our students a strong introduction to basic astronomical concepts and this is what education is all about.

WILL SCIENCE TEACHERS BE HELD ACCOUNTABLE?

by Dr. Carlton (Kip) Knight, II  
Assistant Professor of Science Education  
University of Delaware

Educational accountability has become an increasingly popular concept not only with the general public but also within the educational community. Faced with dissatisfied parents, increasing costs, and limited revenues, public school officials are viewing accountability or performance contracting as a management system whereby the expenditure of tax monies can be justified by demonstrated student achievement. Community financial support will, hopefully, increase if the resulting effect of expenditures for instruction can be well documented. In a recent poll among members of the National School Boards Association, two-thirds of the membership reacted favorably toward performance contracting. If this is indicative of future policy, accountability may well be on the educational horizon.

Will elementary and secondary science teachers be held accountable along with our brethren in reading and mathematics? Why not! Can we justify our existence? What
does the community gain by spending tax monies on science teachers' salaries, facilities, and equipment? How, specifically, do our students profit from their association with us? Has achievement improved? Have attitudes changed? What behavioral modifications have occurred? Can we verify accomplishments with evidence? Could another person, regardless of academic training, or even a machine, accomplish the same student gains more effectively and efficiently? If so, the community may have little choice but to accept the more productive alternatives.

Accountability, however, does not always mean large corporate performance contracts similar to those in Gary, Indiana and the Cherry Creek Schools in Denver, Colorado. Internal performance contracting, whereby a teacher or teachers within a school contract to produce specified gains in achievement, attitudes, and behaviors, etc., within a given subject for a particular group of students, is becoming increasingly popular. A teacher may well obtain additional financial renumeration if his students exceed the levels specified in the contract. He would, however, receive reduced payment if the students failed to achieve the projected gains.

Science teachers, within the foreseeable future, may be held accountable. Could you, if requested, develop a performance contract for your science class? Your job security may someday depend on it.

NEWS NOTES

The G.L.P.A. fall convention, held on October 7th, 8th, and 9th in Mount Clemens, Michigan, was attended by about 60 persons, and in the opinion of the editor, was perhaps the most fruitful and rewarding of G.L.P.A. conventions held so far. There was a variety of activities, including interesting tours of the Bendix Aerospace and University of Michigan astronomy facilities on the opening day, an enlightening 2nd grade planetarium program presented by Jim Pike, and several excellent speakers. Dr. J. Allen Hynek gave the Armand Spitz lecture, discussing current developments in research astronomy and reminiscing a bit about his relationship with the late Armand Spitz. The other major addresses dealt with prospects of complex materials and life forms possibly existing elsewhere in the universe. They were delivered by Dr. Richard Teske of the University of Michigan, Department of Astronomy, and Dr. Barnett Rossenburg of Michigan State. There were also informative seminars on teaching high school astronomy, and such things as "Project Viking," and the "Sierra Elementary Astronomy Series." Most impressive were two audio-visual presentations, "When Man Looks Upward," and "Empires of the Sun," presented by the Detroit Observational and Astrophotographic Association. All in all, it was a very enriching experience with lots of variety for all interests. The local convention committee is to be highly commended for its efforts.

NEW OFFICERS of G.L.P.A. assume their duties at precisely 7 A.M. E.S.T. on the morning of March 20th. This is the time when the sun reaches zero hours Right Ascension, marking the astronomical beginning of spring in the northern hemisphere and autumn down under. It is also the time decreed by the G.L.P.A. constitution for the bi-annual transfer of officers. Don Tuttle assumes the president's chair, and John Soroka, who was designated president-elect at the fall convention, begins his duties. David Batch officially becomes secretary-treasurer, though he has been acting in this capacity unofficially since the first of the year. Maxine Haarstick was excused from her duties early due to an illness in the family. Good luck to the incoming officers, and thanks to the outgoing ones for their faithful service. The mailing address for President Tuttle is as follows: Elgin Observatory and Planetarium, Elgin Public Schools, 4 South Gifford Street, Elgin, Illinois, 60120. The new secretary's mailing address appears in the box at the conclusion of this publication.
AT THE FALL CONVENTION OF G.L.P.A., the membership voted to become an affiliate of the International Society of Planetarium Educators. Our members are therefore now eligible to join that organization. Privileges of membership include receipt of Society mailings, in particular "The Planetarian," the quarterly journal which will make its first appearance in the spring. The G.L.P.A. Secretary reports that about 50 applications for I.S.P.E. membership have been received so far from G.L.P.A. members. Dues are $10 yearly, and should be sent, together with a completed application form, to David Batch, c/o Abrams Planetarium, Michigan State University, East Lansing, Michigan 48823. Applications are available from Mr. Batch, and checks should be made payable to Great Lakes Planetarium Association. Non-members of G.L.P.A. are eligible to join I.S.P.E., but dues for these individuals will be $15 yearly.

THE PLANETARIAN, new official journal of I.S.P.E. will make its initial appearance this spring. It will be mailed to all persons who have become members of I.S.P.E. through their regional associations. Larry Gilchrist of the Calgary Centennial Planetarium is serving as Editor in Chief, with assistance from numerous others, including members of the G.L.P.A. Publications Committee (Jettner, Christian, DeBruyn, Bean, et al). All contributions to The Planetarian should be sent to the "Newsletter" editor, Dave DeBruyn, who is serving as contributing regional editor for the journal. Only articles of acceptable professional character can be forwarded for inclusion, while others will be published in the "G.L.P.A. Newsletter." The "Newsletter" format is being expanded with this issue, and The Projector will be discontinued in favor of the new publication setup.

THE NEWSLETTER EDITOR now has a bigger job than ever to perform, and needs your help. Articles on all manner of things relating to planetarium work are welcomed, both for possible forwarding to The Planetarian, and for publication in forthcoming issues of the "Newsletter." In particular, we need more articles dealing with technical tricks, and effective program outlines would be appreciated. The "Newsletter" can remain a valuable publication only so long as there are worthwhile contributions. Notice that none of the features of the current issue are from G.L.P.A. members. The editor had to rely on sources outside the Association for material. Please help with forthcoming issues. Also, committees, where are your reports of current activities?

I.S.P.E. CONVENTIONS, according to organizational structure, are to be held every two years. Though a definite date and time for this year's convention has not been completely firmed up as yet, indications are that it will be held in the San Francisco-Oakland area immediately after Christmas. Specifics, including a tentative program of high-light events, will be published in the next "Newsletter," providing the necessary decisions and arrangements have been made. The G.L.P.A. will hold a fall convention as usual during October. Announcements of details will be forthcoming in the "Vernal Equinox" edition, following the spring executive committee meeting.

THE EXECUTIVE COMMITTEE of G.L.P.A. will meet on Saturday, March 25th in Elgin, Illinois. Plans will be formulated for the next convention and future endeavors of the Association. Individual members of the executive committee will be contacted as to details.

SPITZ/McGRAW-HILL 1972 SUMMER INSTITUTE IN PLANETARIUM EDUCATION will be held at Spitz Laboratories, Chadds Ford, Pennsylvania this year July 31st through August 4th and August 7th through the 11th. These institutes are designed to provide new and experienced planetarium teachers with intensive study in the methods of effective planetarium educational use. The first institute stresses use of the planetarium at the elementary level; the second is concerned primarily with its use at the secondary and college level. Academic credit is available. For a descriptive brochure and further information, write to Michael A. Bennett, Director of Education, Spitz/McGraw-Hill, Chadds Ford, Pennsylvania 19317.
A SHORT COURSE IN ASTRONOMY FOR SECONDARY SCHOOL TEACHERS AND SUPERVISORS will be held August 14th through the 25th at the American Museum-Hayden Planetarium, New York City. Modern advances in astronomy will be emphasized with some practical procedures for the teaching of astronomy in school classrooms and planetariums. Brochure and enrollment forms are available from Dr. Mark R. Chartrand III, American Museum-Hayden Planetarium, 81st Street and Central Park West, New York, N.Y. 10024. Final Applications must be received by March 10th.

POSITIONS AND PERSONNEL

PLANETARIUM POSITION WANTED: Will receive M.A.T. degree in planetarium teaching from Michigan State University in June. Two years experience teaching as a graduate assistant, in addition to background in commercial photography. Also experienced in telescope construction and use, as well as teaching with telescopes. Contact Robert Miller, Abrams Planetarium, Michigan State University, East Lansing, Michigan 48823.

A CLEARING HOUSE FOR JOB OPENINGS, primarily for new Ph.D.'s and other recent graduates in astronomy has been established at the Executive Office of the American Astronomical Society. Available academic, governmental, and industrial job opportunities will be listed in a Quarterly Opportunities Register. This register is distributed to interested persons upon request. To register an opening or request for a professional position, get in touch with Mr. H.M. Gurin, Executive Officer, American Astronomical Society, 211 FitzRandolph Road, Princeton, New Jersey 08540. Telephone 609-452-3819.

LOOKING FOR A POSITION - Paul L. Tebbe, 4066 Lindell Blvd., St. Louis, Missouri 63108 has worked full-time in the position of astronomer at the McDonnell Planetarium in St. Louis. He has a masters degree in astronomy from Georgetown University and has taught courses in astronomy and high school math and physics. He has also worked with high school astronomy clubs and has done research work in photometry, including several days at Kitt Peak.

POSITION WANTED IN PLANETARIUM SCIENCE - Two years experience as assistant lecturer, Shiras Planetarium, Marquette, Michigan. Background includes B.S. in geography. Resume sent on request. Contact John C. Kronquist, 2002 Wetton Avenue, Marquette, Michigan 49855.

In spite of our attempts to make teaching into a science, in spite of our attempts to invent teacherproof materials, and even in spite of our attempts to create "relevant new curricula" one simple fact makes all of this ambition quite unnecessary. It is as follows: When a student perceives a teacher to be an authentic, warm, and curious person, the student learns. When the student does not perceive the teacher as such a person, the student does not learn. There is almost no way to get around this fact, although technological people such as ourselves try very hard to. We believe in experts and expertise, and we tend not to trust any activity that does not involve a complex technique. And yet, increasing the complexity of the act of teaching has not really made much difference for there is always that simple fact that teaching is the art of being human and of communicating that human'ness to others. Why is this so difficult for us to accept? Why do we trust our machines, our equations, and our formulas more than we trust our humanity? Why do we think that a curriculum can do something that a person cannot? Our failure to place affection and empathy at the center of the education process says something very grave about us, and I do not think it will be of much value for us to persevere unless we can learn to love our technology less and ourselves more.

Neil Postman
New York University
THE GREAT LAKES PLANETARIUM ASSOCIATION offers membership opportunities to all individuals in any way connected with the operation of planetariums, regardless of geographical location. G.L.P.A. is an affiliate of the International Society of Planetarium Educators, and the National Science Teachers Association. Membership dues are $5 annually, payable at the time of the autumnal equinox. General correspondence and requests for membership should be addressed to Mr. David Batch, G.L.P.A. Secretary/treasurer, c/o Abrams Planetarium, Michigan State University, East Lansing, Michigan 48823. Submission of $10 additional payment with G.L.P.A. membership dues and completion of an appropriate application form entitles G.L.P.A. members to full privileges of the International Society of Planetarium Educators, including receipt of that organization's official journal, The Planetarian.

All G.L.P.A. members in good standing receive the quarterly "Newsletter." Contributions and notices for the "Newsletter" should be sent to David L. DeBruyn, Editor, Roger B. Chaffee Planetarium, 233 Washington, S.E., Grand Rapids, Michigan 49502. Deadlines for contributions to the latest "Newsletter" fall at the beginnings of the four seasons.

NEWS FLASH - Information just received indicated that there has been a change in the editorial structure of The Planetarian. At the request of Mr. Larry Gilchrist, he has been relieved of the job as executive editor, and Mr. Frank Jettner is assuming the responsibility, at least temporarily. Mr. Gilchrist will continue to remain active in the endeavor however, serving as chairman of the I.S.P.E. publications committee. All of this will necessitate some delay in publication of the first issue of The Planetarian, but it will hopefully appear late this spring.

"It is better to remain silent and be thought a fool, than to speak out and remove all doubt."