"A UNIVERSAL RETROFIT GIZMO FOR YOUR MINZEIVIEWPITZ SERIES 8
VENUS 512 MARK VI PLANETARIUM ATMOSPHERIUM OMNISPHERE"
An open letter to planetarium professionals:

I heard a rather negative comment directed toward our profession, in particular planetarium directors, the other day.

A friend in touch with Carl Sagan Productions said that there were some very bad feelings toward planetaria. Over 500 copies of the planetarium program "Cosmos" were distributed, yet not one institution (at the time of this writing) responded with a word of thanks.

I dismissed it with little thought. After all we're all so busy; who has time to write. Besides, the distribution is so impersonal, and the corporation does it for a tax-write off. I couldn't dismiss it completely, however, and today as our local drama and arts critic reviewed the show in the Sunday paper, it came back to haunt me. Our critic was overwhelmed - the planetarium version he felt offered a dimension missed by the TV screen, "where the TV series' window on space is severely limited by the size of the screen,---the planetarium offers an almost unlimited and mind-boggling spectacle with astonishing effects, glorious music, and a startling blend of images and moving pictures against the planetarium's sky." Perhaps someone deserves to be thanked for making this all possible.

I recalled some conversations at the recent CLPA meeting regarding the show. There were criticisms about various aspects of the show and about Carl Sagan, as well as many positive reactions.

Despite the negative comments, nearly everyone had accepted the program and was using it. This is the crux of the matter. Professional courtesy demands that when a gift is received, from whatever the source, whether a tax-write off or PR vehicle, a letter of thanks is expected. Those of us in museums should be especially attuned to this fact. Further, this courtesy is expected whether the gift is perfect or not, and well it should be. It is far too easy to nit-pick from the sidelines or busy one's self with other more important matters. However, this does not relieve us from our professional responsibilities.

The matter is deeper than this, however. The business community is judging our profession based on our professional conduct, and we are apparently receiving very low marks, myself included. If we are ever to desire corporate (or any) support in this way in the future, our actions do not indicate it. They are doing us a favor, not us doing them a favor. To suggest otherwise is to suggest that our egos are unmatchd by even Carl's. However, the situation is not irreversible and in my one case I intend to reverse it.

I expect there will be some reactions to this viewpoint, some disagreements, some who think ARCO is using us, etc. Perhaps I'm making a mountain out of a molehill. I'd be interested in hearing from you. If you agree however; if you feel the criticism is justified, you can send your thanks to:

Ben Kubasik & Atlantic Richfield  
c/o Ben Kubasik, Inc.  
30 East 42nd Street  
New York, N. Y. 10018

Respectfully submitted,  
Sheldon Schafer  
Science/Planetarium Director  
1125 W. Lake Ave.  
Peoria, IL. 61614 (309)686-7000
MICROCOMPUTING

At the 1980 GLPA conference in East Lansing, Dave Batch took the initiative to suggest the formation of a microcomputer special interest group. The group would be rather informal and serve the needs of its members to keep informed and aware of the potential and applications of microcomputer technology. After discussions with Dave, and encouragement by numerous persons, it was decided that a regular newsletter column would best serve the purposes of the interest group.

Prior to these discussions, however, Dave formulated a questionnaire that appeared in the last newsletter. He subsequently turned the returned questionnaires over to this writer for review here.

Of the ten survey forms returned thus far, an overwhelming interest was demonstrated in the potential of the microcomputer in the area of education and astronomical calculations. Appreciable interest was also shown in all other areas of microcomputer applications. Hopefully, as microcomputers become more accessible, the number of interested persons will grow.

The survey showed that interests are not only wide and varied, but so is the available computing equipment. Some individuals have no equipment whatsoever. Another has a H.P. 9845B (187K RAM), 0.5 Meg floppy disk, 4-color plotter, thermal printer and CRT.

Many of the persons responding to the questionnaire described a number of programs they had available and would be willing to share. These ranged in complexity from simple games to methods for calculating a graphic time table.

Jeanne Bishop pointed out an article from the NEA Reporter (Vol. 19, No. 7, pp. 10-12) that outlines some possibilities of computer applications:

...drill and practice
...tutoring
...simulations and games
...information retrieval
...problem solving

In addition, other applications include clerical work and auxiliary effects control. Many programs available through this column fall into these groups.

Since the computing/graphics capacity and language varies with the type of microcomputer, it is hoped to address problems and how to solve them in this column. It is not the intention to offer finished programs, but to provide needed information so each person can write programs suited to his/her conditions. Each description would contain needed equations, sufficient documentation, and examples.

Astronomical calculations are this author's strong point and as a result, he must rely on others to educate him in other areas. The author requests others to share programs with him so that they can be disseminated through this column. In this fashion, "MICROCOMPUTING" can serve us all.

Carl Wenning
ISU Planetarium
Illinois State University
Normal, IL 61761 (309)438-2496
Free prints are now available of the "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Parts 1 and 2 (first volume) and Part 3 (second volume)." They can be ordered as follows, enclosing a self-addressed mailing label only:

"Moon Treaty" Reprint Request
Committee on Commerce, Science and Transportation
United States Senate
Washington, C. D. 20510

According to Jeanne Bishop, Part 1 is a background report on U. S. policy concerning the Agreement, a history of negotiations in the U.N. from 1971 through 1979, a section by section comparative analysis with space treaties now in force and other documents, and a section on the issues and questions raised by the analysis. The issues section is particularly interesting. Part 2 is a full printing of the U. N. Agreement and other treaties and agreements which are relevant to this Agreement. Part 3, prepared by the Office of Technology Assessment is an assessment of the impact the agreement would have on the U. S. to exploit extraterrestrial energy and materials. Planetariums preparing programs or astronomy classes and seminars related to space colonization and future in space might find this information useful.

Elementary school libraries, elementary teachers and directors of outdoor education programs now have available to them a fine set of references in the area of environmental education.

Pioneering for Moderns and Survival in the Year 2000 contain a wealth of environmental lesson plans and activities related to the public school's curriculum. The lesson plans and activities can be used separately; as a unit; or as an extended adventure program.

The booklets were developed by in-service teachers in an Outdoor Environmental Studies Workshop (Bio. Sci. 451) at Michigan State University's Kellogg Biological Station, near Gull Lake. Each summer, workshop participants research an environmental theme, design a program from original lesson plans, and then test the concept activities in a day camp program for local children. The best of each summer's program is then edited and published for use by other educators.

Pioneering for Moderns (1979) involves mathematics, science, ecology, history, art, social studies, awareness, language arts and dramatics in such activities as wind power, water power, building an outrigger, tree houses, utilizing solar energy, food preservation, gardening, mini-greenhouses and much more.

Survival in the Year 2000 (1980) contains lesson plans for population growth studies (doubling time), making a solar water heater, solar cooker, model solar homes, recycling and dump mining, science fiction writing, nuclear power - how dangerous is it?, compost heap, cities of the future, food chain tag and many games related to environmental understanding.

Both booklets contain approximately 70 pages and may be ordered from:

Gull Lake Environmental Education Project
W.K. Kellogg Bird Sanctuary of
Michigan State University
12685 East C. Avenue
Augusta, MI 49012

The price of each booklet (8½x11) is $2.95 plus tax, with a $1.00 charge for mailing and handling. The total cost for the two booklets, including the mailing and handling charge is $7.14.

The Kellogg Bird Sanctuary Bookshop has a wide variety of environmental education teaching materials. Write for a catalogue.

Several slide sets from Holiday Films to be used as door prizes were received after the end of the GLFA Conference in Lansing, Michigan. Therefore, a drawing from the list of dues paying members at the Conference was held and the slide sets have been mailed to the lucky winners: John Carson, Teena Jones, Bill Stallings, and Carl Wenning.
Illinois Planetarians will be meeting Saturday, April 11, at Jeff Hunt's planetarium in Aurora at the Waubonsie Valley High School, 32 West 310 Rte 34. The group is also publishing its own Newsletter. Its Editor is Carl Wenning, Illinois State Univ. Planetarium, Normal, IL 61761.

Indiana Planetarians will also be meeting on Saturday, April 11. Hosting the meeting, which will include an afternoon workshop in planetarium script writing for elementary school programs, will be Bill Stallings. He directs the Merrillville Community Planetarium at Pierce Jr. High, 199 East 70th St., Merrillville, IN 46410.

Want to know what's going on in SEPA? Jack Fletcher of the Hummel Planetarium, Eastern Kentucky Univ., Richmond, KY is the Editor of their new Newsletter. Write to him for details.

---

PRESIDENT'S MEMO
from Lee Shapiro

Membership and membership dues came up for discussion at both the executive committee meeting and the business meeting of the 1980 GLPA Conference.

One topic of continuing confusion is the GLPA membership year. I want to remind everyone that the GLPA membership year (not IPS) runs from the start of one annual GLPA Conference to the start of the next, essentially from October 1 of one year to September 30 of the next. It is NOT a calendar year membership. This is especially important to remember for those who are unable to attend an annual meeting. The Secretary/Treasurer (Dorothy Angeloff, 1043 N. April, Mesa, AZ 85203) does and will continue to send reminder notices to those who have let their membership lapse. However, if you have not renewed your membership by January 1 of the current membership year (Oct-Sept) your name will be removed from the mailing lists.

The second topic is membership dues. It was suggested and approved at the last business meeting, that membership dues be raised to $10.00 per year effective with the Oct. 1981 - Sept. 1982 membership year (i.e. next conference). Considering that dues have stayed the same for sixteen years, the increase is actually very modest. It is necessary to cover the increased costs of producing and mailing the GLPA newsletter, the costs of increased number of TIPS booklets and the Script Bank Card File, and of course, the cost of operating GLPA.

In the GLPA area there are over 200 planetariums. When the new membership list appears: if you see that someone in a planetarium near you is not a member, encourage them to join. The more you contribute in time and effort to GLPA, the more your membership is worth. Remember the membership rate this year (Oct. 80 - Sept. 81) is still a super bargain at $5.00.

---

ANSWER TO DUANE ALLMAN'S LAST PUZZLE

#20

A. Hemo  I. Robur Carolinum  Q. Longitudes
B. Navigating  J. Fever Weed  R. Levitated
C. Isomorph  K. Ice Storm  S. Isthmus
D. Newts  L. No's  T. Nepenthe
E. Itch  M. Decomposed  U. Gothic
F. Nevus  N. Acetylene Radical  V. Seyfert's Sextet
G. Gemma Frisius  O. Fifth  W. Trilithon
H. Eclipsed  P. Appetites  X. Affects

H. Nininger Find a Falling Star Surprisingly, I found that it holds a complex system of magnetic fields—the first meteorite found with such magnetic properties. The Bondoc Meteorite has magnetic poles, negative and positive miscellaneous scattered every few inches over its surface.
1. Robert H. Allen  
   Planetarium, Cowley Hall  
   Univ. of WI-LaCrosse  
   La Crosse, WI 54601

2. Duane H. Allman  
   12805 W. Eden Trail  
   New Berlin, WI 53151

3. Robert J. Andress  
   Box 264  
   Hiram, OH 44234

4. Dorothy J. Angeloff  
   1043 N. April  
   Mesa, AZ 85203

5. F. H. Arthur  
   RR #11, Box 108  
   Muncie, IN 47302

6. D. David Batch  
   Abrams Planetarium  
   Michigan State Univ.  
   East Lansing, MI 48824

7. Hans G. Behrens  
   Adler Planetarium  
   1300 Lake Shore Dr.  
   Chicago, Ill. 60605

8. Garry F. Berkstrom  
   1109 Geddes Avenue  
   Ann Arbor, MI 48109

9. Jeanne E. Bishop  
   1721 Canterbury Road  
   Westlake, OH 44145

10. Gail E. Bouslog  
    Western High School  
    Russiaville, IN 46979

11. Raymond E. Bullock  
    Cranbrook Ins. of Science  
    500 Lone Pine Lane, Box 801  
    Bloomfield Hills, MI 48013

12. John M. Carson  
    2419 E. Tulip Dr.  
    Indianapolis, IN 46227

13. Joseph M. Chamberlain (Ed.D)  
    Adler Planetarium  
    1300 S. Lake Shore Drive  
    Chicago, Ill. 60605

14. Larry A. Ciupik  
    Adler Planetarium  
    1300 S. Lake Shore Drive  
    Chicago, Ill. 60605

15. James S. Comienski  
    Wyandotte H. S. Planetarium  
    540 Eureka Road  
    Wyandotte, MI 48192

16. Dave De Reemer  
    222 Maple Ave.  
    Waukesha, WI 53186

17. Joseph M. DeRocher  
    Cleveland Mus. of Nat. History  
    Wade Oval, University Circle  
    Cleveland, OH 44106

18. Deborah L. Edgar  
    108 Woodrow Ave.  
    St. Clairsville, OH 43950

19. Robert J. Ernst  
    1801 N. Main Street  
    Mishawaka, IN 46544

20. Dorris J. Forror  
    26728 Wolf Road  
    Bay Village, OH 44140

21. Jeff Fox  
    3737 South 7th St.  
    Terre Haute, IN 47802

22. Joe B. Fox  
    F 303 Back Bay Ct. Apt. 3C  
    Indianapolis, IN 46224

23. Robert J. Gardner  
    1249 Key St.  
    Maumee, OH 43537

24. Dan Goins  
    2240 Crestview Drive  
    Martinsville, IN 46151

25. Martin L. Goodson  
    Delta College Planetarium  
    University Center, MI 48710

26. Michelle Griffith  
    RR 27, Box 351  
    Terre Haute, IN 47802

* NEW MEMBERS
27. Don Hall  
663 East Avenue BOX 1480  
Rochester, N. Y. 14603

28. S. C. Hallock  
647 Yardnia Dr. S.  
Columbus, OH 43214

29. Paul A. Hewel  
805 Ridgewood Dr.  
Peekskill, N. Y. 10566

30. David R. Hoffman  
Reiser Planetarium  
50 35th St. S.W.  
Wyoming, MI 49508

31. Alan Holmes  
Southwest State Univ.  
Marshall, MN 56258

32. Ruth M. Howard  
1420 W. Tuttle Rd.  
Ionia, MI 48846

33. Jeffrey L. Hunt  
Waubonsie Valley H. S.  
32W310 Route 34  
Aurora, Ill. 60506

34. Eugene A. Jenneman  
J. Besser Mus. & Pln.  
491 Johnson St.  
Alpena, MI 49707

35. Clifford P. Jensen  
Morton College  
3801 South Central  
Cicero, IL. 60650

36. Teena Jones  
1720 Gilbert Ave.  
Cincinnati, OH 45202

37. Clair R. Klawitter  
330 S. 11th St.  
Quakertown, PA 18951

38. Arthur M. Klinger  
Bittersweet Planetarium  
Mishawaka, IN 46544

39. Lawrence Krumenaker  
Dept. of Astronomy  
New Mexico State Univ.  
Law Cruces, N. M. 88003

40. Robert L. Ledger  
1812 Orchid Court  
Indianapolis, IN 46219

*41. Mitchell D. Luman  
150 W. 8th Ave. Apt. B  
Columbus, OH 43201

42. Jane Mahoney  
McKinley Mus. of Sci. & Ind.  
Box 483  
Canton, OH. 44701

43. Jerry B. Mansfield  
South Vigo High School  
3737 S. 7th St.  
Terre Haute, IN 47802

44. Gary B. Mechler (Ph.D)  
Dept. of Physics & Astronomy  
Bowling Green State University  
Bowling Green, OH 43403

45. Ben H. Moore  
Physics Dept.  
St. Cloud State College  
St. Cloud, MN 56301

46. Denis Mudderman  
Moorhead State University  
Moorhead, MN 56560

47. Jim Nichols  
7862 Crossgate Lane  
Indianapolis, IN 46227

48. David E. Parker  
Tipton Planetarium  
817 S. Main St.  
Tipton, IN 46072

49. James T. Pile  
Mt. Clemens High School  
155 Cass Avenue  
Mt. Clemens, MI 48043

50. Phyllis Pitluga  
Adler Planetarium  
1300 S. Lake Shore Drive  
Chicago, IL. 60605

*51. Paula Colaric Pilkuhn  
Central Junior High School  
17248 67th Ave.  
Tinley Park, IL. 60477

52. John Richardson  
Lower Morehead School District  
555 Red Lion Road  
Huntingdon Valley, PA 19006

53. John C. Rosemergy  
2700 Colony Road  
Ann Arbor, MI 48104

* NEW MEMBERS
54. Sheldon Schafer  
Lakeview Center Planetarium  
1125 W. Lake Ave.  
Peoria, IL 61614

*55. Edward L. Schoff  
1801 South 18th St.  
Lafayette, IN 47905

56. Lee T. Shapiro (Ph. D)  
Abrams Planetarium  
Michigan State Univ.  
East Lansing, MI 48824

57. Daniel D. Smith  
J.F. Kennedy School Pln.  
609 N. Olive St.  
South Bend, IN 46628

*58. Bob Sobieralski  
5539 Nebraska Ave.  
Toledo, OH 43615

59. William Stallings  
Pierce Jr. High School  
199 E. 70th Place  
Merrillville, IN 46410

60. David S. Stobbelaar  
Shiras Planetarium  
Marquette High School  
Marquette, MI 49855

61. Robert G. Stoeckley  
1229 Somerset Lane  
Fort Wayne, IN 46005

62. Walt Tenschert  
Thomas Jefferson High School  
6560 Braddock Road  
Alexandria, VA 22312

*63. Rod Thompson  
30 Elm Dr.  
Rittman, OH 44270

64. G. Robert Thomson  
Vollbrecht Planetarium  
19100 Filmore  
Southfield, MI 48075

65. Gary E. Tomlinson  
Chaffee Planetarium  
233 Washington, S. E.  
Grand Rapids, MI 49503

66. Nancy Topolewski  
910 Diane Ave.  
Elgin, Ill. 60120

*67. Thomas Torson  
Abrams Planetarium  
Michigan State Univ.  
East Lansing, MI 48824

68. Donald E. Tuttle  
Elgin Obs. and Planetarium  
4 South Gifford St.  
Elgin, Ill. 60120

*69. Richard Vogt (Ph.D)  
4600 Sunset Avenue  
Indianapolis, IN 46219

70. Marjorie Webster  
Adler Planetarium  
1300 S. Lake Shore Drive  
Chicago, IL 60605

*71. James Wells  
19340 Porter  
Mt. Clemens, MI 48044

72. Carl J. Wenning  
College of Arts & Sciences  
Department of Physics  
Normal, IL. 61761

*73. Don Winkelmann  
P. O. Box 264  
Cadillac, MI 49601

*74. Sharon M. Wolodkin  
108 Woodrow Ave.  
St. Clairsville, OH 43950

75. Carl Wozniak  
Exhibit Museum Planetarium  
1109 Geddes  
Ann Arbor, MI 48109

* NEW MEMBERS
SCRIPTS ADDED TO THE GLPA SCRIPT BANK:

Author: Uwe Lemmer  
Stenwarte Bochum  
Castroper Str. 67  
4630 Bochum 1, W. Germany

ASTRONOMISCHE MIVERSTANDNISSE (Astronomical Misunderstandings) ........................................ 16 pp.

DER JUPITER-EFFEKT (THE JUPITER EFFECT) .................................................. 32 pp.

Author: Abrams Planetarium  
Michigan State University  
East Lansing, MI 48824

ASTROLOGY AND THE ZODIAC ................................................................. 30 pp.

COSMIC FIREWORKS ................................................................. 29 pp.

DESTINATION: MARS ................................................................. 27 pp.

DOES ANYBODY REALLY KNOW WHAT TIME IT IS? ........................................ 22 pp.

FIRE IN THE SKY ................................................................. 10 pp.

GODFATHER ................................................................. 29 pp.

HISTORY OF SCIENCE FICTION ............................................................ 21 pp.

HUMANITIES PROGRAM ............................................................... 17 pp.

INDIAN SKIES ................................................................. 28 pp.

JOURNEY THROUGH THE UNIVERSE .................................................. 16 pp.


MARTIANS ARE COMING ............................................................... 37 pp.


REFLECTIONS ................................................................. 19 pp.

STAR OF WONDER ................................................................. 34 pp.

STARDUST ................................................................. 19 pp.

SUN, STARS & SEASONS ............................................................... 16 pp.

THROUGH THE REALM OF GIANTS .................................................. 33 pp.
SCRIPT TIPS

You can breathe life into your scripts by using analogies and illustrations that your audience can relate to in their everyday lives. For example, this age in which we live has been referred to as the Age of Billions. Our national wealth is measured in terms of billions of dollars, as is the budget of the Federal Government; astronomers talk about distance in terms of billions of miles and light years. But, just how big is a billion? Consider:

If you were to be born this very second with the ability to count off the seconds of your life, without stopping for any reason whatsoever, you would be about 32 years old before you reached a billion.

Christ lived about a billion seconds, and he died about a billion minutes ago.

One billion square inches would completely cover 159.4 acres, or approximately 35 large city blocks.

One billion cubic inches, arranged side by side, and evenly placed one atop the other, would form a cube 83.3 feet on a side.

A billion pennies placed one atop the other would form a stack 956.5 miles high.

A billion dollars divided equally among each person in the United States would provide each man, woman, and child with approximately $5.

Having a billion dollars in crisp new $1 bills, even though tightly packed and neatly stacked would create quite a storage problem. They would weigh about 1,000 tons and would fill a room 60 feet long, 35 feet wide, and 20 feet high.

Or how about this little gem? If our nation's population were to substitute a pound of perch or sardines for a pound of beef once a month for a year, the energy savings from growing less feed, less processing, etc would be equal to about 150 thousand billion kilocalories, or about 100 million barrels of oil!!

In addition to analogies and illustrations, you can use mnemonic devices to help your audiences remember certain things. For example:

Oh, Be A Fine Girl. Kiss Me Now Sweetly---for the categories of the physical characteristics of stars.

My Very Educated Mother Just Served Us Pretty Noodles---for the planets in their present order from the sun.

Miriam's Enchaladas Tasted Delicious Recently. Tell Her I'm Proud---for the names of Saturn's largest moons in their order from the planet. (Mimas, Enceladus, Tethys, Dione, Rhea, Titan, Hyperion, Iapetus, and Phoebe).

I would like to make Script Tips a regular feature of the Newsletter. Send your favorites to me so we can share them on this page each issue.

....Dave Hoffman

On the facing page is a facsimile of a form devised for students to help them find information allowing them to set the planets on the Spitz machine. The page numbers this year are totally different from those furnished by Spitz. It was sent in for publication in this issue of the Newsletter by Arnie Nelson, Wausau West High School Planetarium, Wausau, WI.
<table>
<thead>
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<th>Planet</th>
<th>Almanac Page*</th>
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<th>Apparent Right Ascension hrs. min.</th>
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</table>

* The pages listed here are based on the 1981 U.S. Astronomical Almanac. Subsequent years may vary by one or two pages.
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 Planetarium Society, 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 Ms. Dorothy J. Angeloff, GLPA Secretary/Treasurer, 1043 N. April, Mesa, AZ 85203

All GLPA members in good standing receive the quarterly "Newsletter." Contributions and notices for the "Newsletter" should be sent to Dave Hoffman, Editor, Reiser Planetarium, 35th St. and Division Ave. South, Wyoming, MI 49508. Deadlines for contributions to the latest "Newsletter" fall on Feb. 21st., May 21st., August 21st., and November 21st. Contributions for the Planetarian should also be sent to Dave Hoffman.

Printed and mailed from:
Elgin Observatory and Planetarium
School District U-46
4 S. Gifford St.
Elgin, Ill. 60120
Dear Members:

Unfortunately this letter is to notify you that the people of Norwood, Ohio on June 2, 1981 for the second time rejected a millage proposal for the Norwood City Schools. This means in addition to Jim Brown's personal problem of most likely having to relocate, that we cannot plan on holding the 1981 GLPA Conference there. In view of the lateness of the hour and the apparent troubled financial situation of planetariums at least in the GLPA area (including as far as I have heard not only Norwood and Abrams, but the Reiser Pltm. (Dave Hoffman), possible reductions at Chaffee (Dave De Bruyn), and the Bay Village (Doris Forror)), it appears that we will not be able to have a regular GLPA Conference this year.

If you think you or someone you know could and would be foolhardy enough to try it for this year (even if the conference would be shorter than usual) please let me know immediately.

A more feasible proposal might be to suggest that each of the states hold a special fall meeting similar to the spring meeting. If that were done we could arrange to have the special handouts, Script Bank files, TIPS booklet, and anything else distributed there. That still leaves us with the problem of elections. Conceivably we could do a mail ballot, though our constitution states that a vote shall be at a formal Association Conference either for an election or for amendments to the constitution. We could do a mail ballot and ask membership to verify the results at the next formal Association Conference.

I am open to any and all additional suggestions, comments and problems. I would particularly welcome solutions. I will be in contact with each of you as soon as possible. I have sent this mailing to the 1982 conference hosts Carl Wenning and Sheldon Shafer.

Sincerely,

Lee

Lee T. Shapiro
NEWS NOTES:

A volunteer is needed to Chair the Education Committee.

There is interest in starting up a Computer Program Bank. Contributors should accompany their programs with a copyright release.

In the last issue of the GLPA Newsletter (vol. XV, #1) there was a listing of scripts added to the GLPA Script Bank. Among the scripts listed for the Abrams Planetarium were two which were unintentionally included. "History of Science Fiction" is a Brest Planetarium production and available from Phil Groce, Brest Planetarium, 1025 Gulf Life Dr., Jacksonville, FL 32207. "Mysterious Visitors: The Comets" is a Hansen Planetarium Production and is available from Mark Littman, Hansen Planetarium 15 South State St., Salt Lake City, UT 84111. These two scripts will not be part of the GLPA Scripts Bank. Apologies go to both Phil and Mark for this inadvertent mistake.

The Education Committee is collecting a file of activities for gifted students. If you have developed planetarium experiences for above-average children, please contribute to this new collection. The complete file will be available upon request. Cost will be five cents a page. Send your activities to Jeffrey Hunt, Waubonsie Valley H. S., 32 W. 310 Route 34, Aurora, Ill. 60504.

The Illinois Planetarians held their Spring Meeting April 11 at the Waubonsie Valley High School Planetarium (Jeff Hunt, Director) in Aurora. Brief talks were given on light pollution solutions, gifted programs, films for planetaria, astrophotography, audience surveys, and micro-computers.

Minutes of the Great Lakes Planetarium Association
Executive Committee Meeting
Norwood City Schools Planetarium
March 14, 1981

Present: Lee T. Shapiro, President; Eugene A. Jenneman, President-Elect; David Hoffman, Publications Chairperson; Gail Bouslog, Membership Chairperson and Instructional Materials Co-Chairperson; David Parker, Instructional Materials Co-Chairperson; James Brown, Conference Co-Chairperson

Absent: Dorothy Angeloff, Secretary/Treasurer (who recently wrote requesting acceptance of her resignation), Jeanne Bishop, Education Chairperson (who also recently announced plans to resign), Robert Gardner, Conference Co-Chairperson, Doris Forror, IPS Representative

Call to Order: President Lee Shapiro called the meeting to order at 9:30 a.m. at the Norwood City Schools Planetarium.

Minutes: Minutes of the October 1980 Executive Committee Meeting (unpublished but distributed) and the October 1980 General Business Meeting were approved without a reading of those minutes.

Secretary/Treasurers Report: Although Dorothy Angeloff could not make the meeting, she sent written reports to Lee Shapiro which he read. Current GLPA membership stands at 93 (though corrections and additions have raised that total to at least 117). With the two checks just issued, the balance in the GLPA checking account is $191.85 and our savings account is $1822.46. Lee Shapiro reports that the 1980 GLPA conference lost $251.07 with that loss being absorbed by Abrams Planetarium.

Standing Committee Reports:

Education: Jeanne Bishop was not present, and plans to resign as of October, 1981 due to new duties as IPS President-Elect. Dave Hoffman mentioned three TIPS booklets are due for October - "Script Writing", 

"Music", and "Poetry." People interested in becoming the new chair­person for this committee should submit their names to the executive committee. A new person will be chosen in October.

**Instructional Materials:** Gail Bouslog and David Parker report that the script bank file should be ready for the October meeting. Due to copyright problems and expenses, it was decided to continue to make the slide file available only at annual meetings.

**Membership:** Gail Bouslog. Apparent drop in membership is at least partly due to accounting methods of 1980 conference. It was decided to produce a more formal membership brochure.

**Publications:** Dave Hoffman reported that all editorial work is up-to-date. The GLPA Newsletter is on time. Some IPS publications are awaiting printing and distribution.

**IPS:** No formal report. Mention was made of the prospect of the 1984 Conference being held in Greece.

**OLD BUSINESS:**

**Honoring retirees:** No new names had been submitted to the executive committee. Therefore, at the next conference, the retirees to be honored include those mentioned at the 1980 General Business Meeting (Martha Schaefer, Duane Stanley, Art Lusty, Newton Sprague, Maxine Haarstick, Ken Perkins, Dorothy Angeloff).

**Subsidy for executive committee expenses:** The issue of the cost of being a member of the executive committee had been raised at the 1980 General Business meeting. It was proposed then that the executive committee provide a series of proposals for the membership, with such proposals to address this problem. The discussion centered on the costs of such travel, how much money was available in terms of dues, and how to implement such proposals. The question was raised as to whether such costs should be covered by membership dues, conference costs, or both. There was also discussion concerning not only do such costs effect an individuals decision to serve, but they may also effect the decision of people who might make nominations. Ideas for reimbursement seem to center on a cost based on mileage, though again there was concern about members who might reside outside the standard six GLPA states. It was decided to formalize the various proposals at the next executive committee meeting and then present them to the membership.

**NEW BUSINESS:**

**Nominations:** Gene Jenneman was directed to select a nominations committee. However, the next elections will be complicated due to various resignations. Lloyd Bodie’s resignation had already resulted in Doris Forror being elected to a special 3½ year term (until March 1984) as IPS representative. Dorothy Angeloff’s resignation brought forth the suggestion that whoever is elected as Secretary/Treasurer take office immediately upon election rather than in March, 1982. Thus only two officers would be elected at the October meeting, the President-Elect and the Secretary/Treasurer. The IPS Representative is already serving, the new Secretary/Treasurer would begin to serve in October, 1981, and the President-Elect would begin to serve at the usual date at the beginning of Spring, 1982. All three terms would end in March, 1984 except that of course the President-Elect at that time becomes the President.

**1983 Meeting:** In response to our suggestion (and that of MAPS) the Strasenburgh planetarium has issued an invitation for a joint MAPS/GLPA meeting in Rochester in early May of 1983. The Rochester Museum and Science Center will not be able to subsidize the meeting in any way except (this is a pretty good except) through free use of facilities and personnel. The registration fee must cover all their out-of-pocket expenses, with
registrants taking care of their own food and transportation bills. There was discussion of the three options that seemed to be available: 1) turn down the invitation (after having asked for it), 2) accept the invitation and hold the usual fall GLPA Conference, or 3) accept the invitation and not hold the fall, 1983 GLPA Conference. With comments of the committee members attending and written comments from some of those unable to attend, it was felt that most members could not afford two conferences during the same year. It was noted that there are two conferences thus scheduled during the same school year, 1982-83 (Oct. 1982 in Illinois and May, 1983 at Strasenburgh), but since the conferences were on opposite ends of the GLPA region, that those who institutions did subsidize their travel might be able to make special deals since there would be no conference in 1983-84, and the conferences were in separate tax years, and Strasenburgh would be a heck of a place to go, that we should accept the invitation.

1982 Meeting: A lunch visit to the Quality Inn was made including a chance to sample the food and inspect the meeting rooms. Jim Brown seemed to have a good handle on the problems involved in holding the conference, including registration procedures, scheduling, and exhibitors. He included plans for a visit to Wright Patterson Air Force Base, a speaker on gravity waves, optional tours to the Cincinnati Astronomical Society Observatory and the Old Cincinnati Observatory. George Lovi was selected as the Spitz Lecturer and the possibilities of getting Jim Loudon to talk on Voyager/Saturn were discussed. One possible problem which did arise was the fact that the Norwood School System was facing an upcoming millage vote. Though Jim Brown and his boss, David Gushurst (who sat in on the meeting for part of the time), were fairly confident that the millage would pass. There was some discussion of alternative plans. It seemed too early to concede defeat since the situation looked hopeful and it seemed too late already to ask someone else to try to host the conference. However, it was realized that if the millage did fail it would most likely be too late to find another site and GLPA would miss its first year without a conference. The Conference is scheduled for Oct. 21-24, 1981.

ADJOURNMENT: The meeting was adjourned about 4 P.M.

MICROCOMPUTING

A Sunrise-Sunset Program

One of the more interesting and useful of computer programs is that which calculates times of sunrise and sunset as a function of observer's location and date. I prepared one such program for my own computer. All that was necessary was a knowledge of the sun's motion, a few formulae from spherical astronomy, and the Astronomical Almanac for 1981. The following is a brief description of how my program works, and the logic behind it.

If an observer were on a standard meridian the sun would reach upper culmination at 12 noon daily but for the equation of time. Further, the sun would rise at approximately 12:00 noon minus its hour angle of rising expressed in hours mean solar time. Setting time would occur at approximately 12:00 noon plus the hour angle of setting expressed
in hours mean solar time. Hence the time of rising would be given by:

\[ T_{\text{rise}} = 12^h - E - H_r + L_{\text{cor}} \]

and setting by:

\[ T_{\text{set}} = 12^h - E + H_s + L_{\text{cor}} \]

where \( E \) is the equation of time expressed in hours; \( H_r \) is the hour angle of rising; \( H_s \) is the hour angle of setting; and \( L_{\text{cor}} \) is the longitude correction for an observer not located on a standard meridian. \( L_{\text{cor}} \) takes the value of minus four minutes (1/15 hour) for each degree east of a standard meridian, and plus four minutes (1/15 hour) for each degree west.

Let \( H_{r,s} = 0.06685\text{ARCCOS}(-\text{TAN}(P)\text{TAN}(D)+\text{cos}(90.085)/(\text{cos}(P)\text{cos}(D))) \)

where \( P \) is the observer's latitude and \( D \) is the sun's declination at the approximate times of rising or setting. The sun's declination is given by the Astronomical Almanac for 1981 (PgC20) as:

\[ D = \text{ARCSIN}(0.39782\text{SIN}(\text{Lam})) \]

with the following definitions:

\[ \text{Lam} = L + 1.916\text{SIN}(G) + 0.02\text{SIN}(2*G) \]
\[ G = 356.967 + 0.9856*D_n \]
\[ L = 279.575 + 0.985647*D_n \]

where \( D_n \) is the day of year plus the fraction of day from \( 0^h \) UT. For purposes of calculating the phenomena of sunrise and sunset for an entire year, let \( D_n \) run from one to three hundred sixty-five (or six).

The equation of time for 1981 is also given by the Astronomical Almanac (pg C2) as:
E (in seconds) = -104.7*SIN (L) + 596.2 *SIN (2*L) + 
4.3*SIN(3*L) - 12.7*SIN (4*L) 
-429.3*COS(L) - 2.0*COS (2*L) + 19.3*COS (3*L) 

Using these equations for 1981 it was possible to exactly duplicate the times of sunrise and sunset as given in the Astronomical Almanac for 1981. It should be noted that equations for G, L, and E change yearly and can be obtained from the Almanac. However, once these yearly corrections are made, data can be calculated for any location on the surface of the Earth.

Carl J. Wenning  
ISU Planetarium  
Physics Department  
Illinois State University  
Normal, Ill. 61761

Dear Editor:

We use the forms which follow on the next two pages for students to find information to set the planets on our Spitz Machine. The page numbers this year are totally new from the form furnished by Spitz.

Perhaps it would be helpful to other planetarium directors.

Yours,  
Arnie Nelson  
Planetarium Director  
Wausau West High School  
Wausau, Wisconsin

Dear Editor:

I've finally put together in a semi-orderly fashion a few suggestions for simple planetarium effects. They appear on Pages 9 and 10, Ed). A cheap and easy source for timer motors is any appliance store which has old washers, dryers, dishwashers, etc. in their back room.

Usually the timer motor in the back is easy to remove, and owners don't mind since the device is to be thrown out anyway.

Yours, 
Dave DeRemer, Horwitz Pln. 
Waukesha, WI. 53186
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* The pages listed here are based on the 1981 U.S. Astronomical Almanac. Subsequent years may vary by one or two pages.
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0h UT = 6 a.m. (C.S.T.) the previous day

* The pages listed here are based on the 1981 U.S. Astronomical Almanac. Subsequent years may vary by one or two pages.
A. Baby food jar projectors. Several different kinds of effects can be made by placing a small lamp inside a rotating baby food jar. I was first exposed to the idea at the Abrams planetarium. Since then I have come up with several different designs.

Materials needed: 1. small glass bottle or baby jar  
2. 110v timer motor, usually 1 or ½ rpm  
3. small wooden blocks to build a stand for the bottle  
4. 6v (GE 605) lamp and socket & wire

Bottle should be painted black first, then a design can be scratched out later

1. Northern Lights Projector

![Diagram of Northern Lights Projector]

In this case, the bottle has small circles scratched out which have colored gels over each. The colored lights reflect off aluminum foil then onto the sky. The less the foil is crumpled, the better. **All light onto the sky should be reflected off the foil therefore a black paper front should be added to what is shown.**

2. Radio Waves Projector

![Diagram of Radio Waves Projector]

lines are scratched out horizontally, a box may have to be built around the projector to keep lines only on the sky.

3. Smoke Rising Projector

![Diagram of Smoke Rising Projector]

good for campfire on horizon a few scattered wavy lines vertically produces blurred wisps of smoke which can rise from a Venus pan or volcano summit.
B. Lightning
bolts of lightning can be made in the sky easily by taking a black, or
completely opaqued slide, and cutting jagged lines through it with a blade.

C. Stormy sky or Dream scene
this one is almost too simple to mention. All that is needed is a flat
5 or 7 inch plate, with crumpled aluminum foil on top, and a motor to spin
the plate. By using different colored lights on the foil, a swirling stormy
looking sky is created.

D. Rocket, Space Shuttle, or other launch,
one single slide projector is needed to project the spacecraft on the horizon
If a rotating series of colored gels is placed in front of the image cor-
rectly, the flame under the rocket can flicker as it lifts off

motor for flame can be just about any rate, but liftoff motor driven mirror
should be about \( \frac{1}{4} \) rpm if possible.

E. Light Pollution Demo
small (HO) train streetlights can be placed on the horizon for a light
pollution effect. We use 4 with a single slide pan of a city at night in
the distance.

STREET LIGHTS CAN BE
POWERED WITH A LARGE
(6V) BATTERY, OR WITH A
TRAIN TRANSFORMER.
Many planetaria have found polarized motion effects to be a simple but dramatic and effective way to add animation to their programs. Several companies (e.g. American Polarizers) offer a variety of polarized motion patterns (e.g. radiating, rotating, and linear motion). Recently however, I've discovered that another well-known polarization effect can easily be adapted to planetarium effects with dramatic results.

When crinkled cellophane (or certain other clear plastics) is introduced between two pieces of linear polarizer, a wide range of striking colors in produced in the transmitted light. This effect can be projected by mounting the rear polarizer between the final condensing lens of the projector and the cellophane in the slide holder (both can even be mounted in or on the same slide mount). The second polarizer is then placed on the other side of the cellophane, preferably in front of the projection lens. If you rotate this front polarizer (see drawing), then the pattern of transmitted colors will change dramatically. For even more variation, you can mount the crinkled cellophane on a plexiglas disk and rotate it through the slide plane.

By overlapping layers of cellophane in the slide plane, various distinct geometric patterns of animated color can be produced. For best results, several layers may have to be built up, and rotating the orientation of the rear polarizer by 45° often greatly improves the color saturation of the effect.

By mounting various masks behind the cellophane and softening the focus of the projector, you can use this technique for a wide variety of pleasing effects: energetic quasars, flying saucers, alien planets, alien faces, aurorae, dynamic Kodalith diagrams and lettering, etc. The possibilities are endless!

There are a number of plastic materials that work well for this effect. I've found, however, that the best seems to be common "El cheapo" cellophane tape. Scotch brand "Magic" tape will not work, so save your money. The plain "bargain basement" cellophane is inexpensive, comes in a variety of widths, and seems to produce the best colors. Experiment with it and with other plastics. I think you'll be pleased with the results.

Linear polarizing materials can be obtained from (among others):


Rotatable disks of linear polarizing material, as well as the polarized motion patterns mentioned previously, can be obtained from:

American Polarizers, Inc., 141 South Seventh, St., Reading, PA. 19602

Kenneth Wilson, Morrison Pln.
Golden Gate Park, San Francisco Ca. 94118
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 Planetarium Society, 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 Ms. Dorothy J. Angeloff, GLPA Secretary/Treasurer, 1043 N. April, Mesa, AZ 85203.

All GLPA members in good standing receive the quarterly "Newsletter". Contributions and notices for the "Newsletter" should be sent to Dave Hoffman, Editor, Reiser Planetarium, 35th St., and Division Ave., South, Wyoming, MI 49508. Deadlines for contributions to the latest "Newsletter" fall on Feb. 21st., May 21st., August 21st., and November 21st. Contributions for the Planetarian should also be sent to Dave Hoffman.

Printed and mailed from:
Elgin Observatory and Planetarium
School District U-46
4 S. Gifford St.
Elgin, Ill. 60120
No autumn issue of the *GLPA Newsletter* was published this year.
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President Lee T. Shapiro called the meeting to order at 9:00 a.m. E.D.S.T. Minutes of the 1980 business meeting held at Abrams Planetarium were published in the GLPA Newsletter and approved.

The fiscal year financial report showing a balance for October 1, 1981 of $1896.14 in the Vigo County School Corporation Credit Union, and $118.31 in the Arizona Bank checking account was read and approved.

Dorothy Angeloff, resigning as secretary-treasurer effective October 1, send a letter of appreciation to GLPA which was read by Pres. Shapiro. He moved a letter of appreciation be sent to Dorothy for her services to the association as secretary-treasurer. Motion was seconded. Motion carried.

EDUCATION COMMITTEE: Lee Shapiro moved a letter of appreciation be sent to Jeanne Bishop, who has resigned as chairman of this committee, for her many years of work for GLPA. Motion was seconded and carried.

Jeff Hunt, appointed as education committee chairman by the executive committee, reported the committee will be working on a couple of Tips booklets. Computer use in the planetarium and gifted programming will be topics the committee will be working on. He requested information on these topics from other planetarium directors be sent to him. His address is Waubonsie H. S. Planetarium, 32W310 Route 34, Aurora, IL 60504.

INSTRUCTIONAL MATERIALS: David Parker reported that the script bank card file was typed by Gail Bouslog and printed by the Tipton High School Industrial Arts Department. Each GLPA member attending the conference received a complete set of the index file.

New slides in the slide bank were identified by special slide pages for the convenience of the conference attendees. Suggestions were made concerning attempts to get new slides into the bank, including door prizes and reduced registration fees. S. C. Hallock commented on some aspects of registration for this conference.

President Shapiro commented that all people who become members of GLPA but did not attend the conference will receive all special publications which have been distributed at the conference for that year. New members will not be given back issues or publications free of charge. These will be handled by Gail Bouslog.

MEMBERSHIP: Lee reported that the 1981-82 membership list will not be completed until after renewal notices have been answered. Art Lustig appealed to GLPA members to take a non-member to lunch to encourage them to join GLPA.

INTERNATIONAL PLANETARIUM SOCIETY: Doris Forror reported on the I.P.S. council meeting hosted by the Mexican Association of Planetariums. The 1982 Conference will be held July 26-30 at Vancouver, B.C. Campus dorm room rates will be: child, $7.00; youth, $11.00; adult single, $13-16.00; adult double, $22.00; Meals will also be on campus. People who register before June 26 will be eligible for a drawing for two round-trip tickets to Hawaii. An impressive video tape promoting the upcoming conference can be obtained from Robin Goldie, c/o H. R. MacMillan Planetarium, 1100 Chestnut St., Vancouver, B.C., or E. Q. Carr, Herkimer BOCES Planetarium, Gros Blvd., Herkimer, NY 13350.

Monterrey Mexico will host the 1984 I.P.S. Conference. Translation facilities will allow foreign speakers to address the conference in their native languages. A tentative side trip to the Johnson Space Center at Houston may be arranged.

-3-
The Flandrau Planetarium in Tucson, Arizona, presented a proposal to hold the 1986 conference there, possibly keeping an autumn date in mind.

E. Q. Carr will produce laser video discs of NASA photos if he receives 50 or more orders. If they are produced, they will be finished in time for the Vancouver conference.

I.P.S. Approved reimbursing the regional representatives for their housing and one-third of their transportation for attending off-conference year Council meetings. The Council suggested that regionals reimburse the representatives for one-third of their travel expenses.

OLD BUSINESS: Retirees from the planetarium field which will be honored by GLPA by receiving free life-time memberships including the GLPA Newsletter and a certificate are: Martha Schaefer, Duane Stanley, Art Lusty, Newton Sprague, Maxine Haarstick, Ken Perkins, and Dorothy Angeloff.

Options for reimbursing executive committee members who attend non-conference executive committee meetings were read:

1. A fund of $200 is currently available for travel reimbursement upon request. This option will allow no change except allowing the I.P.S. representative to also draw on this money for non-conference Council meetings.

2. Reimbursement of 10¢ per mile up to 1000 miles for all executive committee members with a form for reimbursement passed out automatically, and also one-third the cost for the I.P.S. representative to travel to Council meetings in non-conference years. The approximate cost per year would be $300-400 plus I.P.S. cost.

3. Reimbursement of 20¢ per mile up to 1000 miles for all executive committee members with a form for reimbursement passed out automatically, and also one-third the cost for the I.P.S. representative to travel to Council meetings in non-conference years. Increase dues by $5.00. The approximate cost per year would be $600-800 plus the I.P.S. representative's cost.

Institutions are encouraged to pay for the travel expenses of their employees who are on the executive committee, but for those committee members who are not reimbursed by their institutions, they will be reimbursed by GLPA. Art Lusty moved option (2). Motion seconded. After discussion, Jon Marshall moved to amend the motion to incorporate option (1) (the present $200 fund) to which a person could apply if he is coming from extra far away or incurs unusual expenses. This reimbursement from the $200 fund will be paid only on approval of the executive committee. The amendment was seconded. The amendment carried. The motion was called and carried.

A letter from Don Hall was read concerning the prospective spring 1983 joint meeting with the Middle Atlantic Planetarium Society at the Strasenburgh Planetarium. He is asking for the two regionals to make a donation to reduce registration fees. George Reed, the president-elect of MAPS, in correspondence with GLPA president-elect Eugene Jenneman, indicates they will not subsidize the meeting. Discussion followed. A motion was made and seconded that the executive committee draft a letter to Don Hall informing of our past practice of funding conferences and that we would absorb losses but that we do want to keep costs as low as possible. We don't want to put an out front subsidy but if it needs to be at the end, we will. Motion carried.

NEW BUSINESS: Election of new officers was conducted by the nominations committee chair, Eugene Jenneman. Motion for president-elect were Sheldon Shafer and Bill Stallings, and nominations for secretary-treasurer were David Parker and Gary Tomlinson. Since there were no nominations from the floor, the nominations were closed. Sheldon Shafer was elected president-elect, and David Parker was elected secretary treasurer.
A new sub-committee was proposed to survey GLPA members with the view of providing a GLPA statement of qualifications for new planetarium directors. Named to the committee were Bill Stallings, Jon Marshall, Bob Thomson and Doris Porror. A second sub-committee was proposed to review the constitution. Named to the committee were Lee Shapiro, Bob Thomson, Jon Marshall and Garry Beckstrom.

Sheldon Shafer and Carl Wenning gave a report of the next GLPA conference which will be co-hosted by the Lakeview Museum Planetarium, Peoria, and the Illinois State University Planetarium, Normal, Ill. The following speakers were announced: Dr. J. Allen Hynek, "The Planetarium & the UFO Question"; Mr. John White, "Native American Skylore"; and Mr. Philip Jose Farmer, "Science Fiction Extrapolation". Several motel bids were discussed with most people preferring the Red Roof Inn.

Dan Goins volunteered to be the curator of a file of ideas that can be used by anyone to make special effects projectors and other planetarium devices out of cheap, free and common junk. Walt Tenschert revealed that IPS is coming out with a special report that may cover that area.

**PUBLICATIONS:** Lee Shapiro moved a letter of appreciation be sent to Dave Hoffman for all of his years of service to the association as the editor of the GLPA Newsletter. Motion was seconded and carried. Dave, who was unable to attend the conference following the closing of the Reiser Planetarium, did not feel in a position to carry on as the publications chairman. The executive committee selected Carl Wenning as editor of the GLPA Newsletter and chairman of the Publications Committee. Also named to the committee were Tim Skonieczny, Bob Ernst and Art Lusty. Items for the newsletter should be sent to Carl J. Wenning, Director, Illinois State University, Normal, Ill. 61761.

Meeting adjourned at 11:35 a.m.  
Respectfully submitted,  
David E. Parker,  
Secretary-Treasurer  

**********************************************************

1981 GLPA Conference Highlights

The 17th annual meeting of the Great Lakes Planetarium Association was held at the Columbus (Ohio) Center of Science and Industry. Mr. Sandy Hallock, director of COSI's Batelle Planetarium, graciously served as host. COSI provided the setting for numerous meetings, displays, and activities. The early arrivals were treated to a visit of Ohio State University's Astronomy Department and Planetarium. Dr. Bill Protheroe presided over a tour of the facilities.

Thursday, the first full day of the conference, was a day full of activities. Welcomes, paper sessions, and a keynote address by Ohio State radio astronomer Dr. John Kraus filled the day. At the end of a busy day, conference was treated to three presentations under the stars of the Batelle Planetarium. These presentations were excerpts from: "The Stellar Thread", "Symphony of Stars", and "Planets of Doom".

Friday was also filled with activities, this time reaching farther afield. After a morning paper session and a pause for group pictures, members boarded buses for trips to the Battelle Research Labs and Perkins Observatory. First stopping for lunch, courtesy of the Battelle Memorial Institute, the group was later presented with a brief but interesting lecture demonstration dealing with fiber optics. Reboarding the buses, the group then headed for Perkins Observatory to view the facilities near Delaware, Ohio. Dr. Walter Mitchell coordinated tours of the Ohio Radio Survey Telescope, and visits to the 32-inch Schottland reflector, 16-inch Schmidt camera, measuring room, and library.
After the completion of these activities members returned to Columbus
for the traditional Spitz Banquet and Lecture. George Lovi, writer for
Sky & Telescope, served as Spitz Lecturer. Mr. Lovi lamented the fact
that so often today the voice of antiscience has gained the upper hand in
many fashionable and "educated" circles. He decried the fact that psychic
insight is deemed superior to scientific research, and explained that all
this is a sad commentary on the situation existing today. Mr. Lovi's talk
drew attention to the fact that we as astronomy educators have our future
work cut out for us.

The conference drew to a close Saturday after area meetings, a gen-
eral business meeting, and awarding of door prizes. All-in-all, the Con-
ference was quite successful with approximately 70 persons in attendance.
A warm note of thanks and appreciation goes out to Sandy Hallock, his
staff, and volunteers, for hosting this fine meeting.

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GLPA Receives "Work of Art"

Columbus conference goers were pleasantly surprised with a special
gift. Art Lusty presented the association a beautiful flag bearing the
new logo approved at the 1979 Minneapolis meeting. The flag, a product
from the creative hands of Art's daughter, is a 4-color representation of
GLPA's new emblem on a white field. The flag measures 4 ½ feet x 6 feet,
and is impressive not only for its handwork, but also the dedication
shown by one of GLPA's own to produce it.

According to Art, "we were lacking in spirit and identity without
some type of 'label'. So with my daughter's talent for making flags I
arranged with her to create a suitable banner to hang for registration,
banquet, or program so that we would not be confused with the 4-H, Bundles
for Britain, or Soap Salesmen, Inc." With the goal of providing the GLPA
with a recognizable sign Art dug into his files (with a shovel according
to him) and unearthed an original 4-color copy of the new logo first pro-
posed at the Chicago conference. "With these tools Mary Chapman, my
daughter (alias Betsy Ross Chapman), cut and stitched the only color logo
of our Association", says Art. Art also suggested that, "it would be
swell if decals, embroidered emblems, or T-shirts were available to color
our neighborhood."

According to his wishes, the flag will be kept by annual GLPA con-
ference hosts, and turned over at the end of each meeting to the next
years hosts. Co-hosts of the 1982 GLPA Conference, Sheldon Schafer and
Carl Wenning, currently have possession of the new flag.

Thanks Art and Mary, from all of us.

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NEWS NOTES:

According to one source, the Cleveland Regional Association of
Planetariums (C.R.A.P.) was planning on meeting in November at Dan Fran-
cetic's planetarium in Euclid, Ohio. No reports from that meeting as of yet.

The program distribution staff of Hanson Planetarium in Salt Lake City
reports that its revised program "The Legacy" should be ready for distri-
bution very soon. This program will be titled "To Worlds Unknown". Every-
one who completed a production agreement with Hanson Planetarium will re-
cieve a show package that includes a new complete set of slides and a full-
length production booklet, as well as the new audio tapes and film. Plan-
etariums will have the choice of copying and returning these materials or
purchasing them for a price. Contact Hanson Planetarium, 15 S. State St.,
Salt Lake City, Utah 84111, for details.
As a planetarian, I have been asked by architects and hobbists to describe the Sun's position as a function of date and time so that efficient solar collectors could be erected. I have compiled the following equations into a program that computes a table of solar radiation in BTU's per square foot per hour as a function of several variables. These equations generate a table that takes into account date, time, latitude, atmospheric absorption (minus any clouds), and the collector-sun orientation.

Data so generated can be employed to correctly orient the solar collector such that it optimizes the absorption of incident radiation. Consider the following factors. As the Earth orbits the Sun the amount of radiation falling above a given area of the Earth, the solar constant, changes. This variation is given by the following equation:

\[ \text{Io}=429\times(1+.034\times\cos(360\times\frac{N}{365})) \]

where \( N \) is the day number of the date in question.

The Earth's orbital motion also causes the Sun's apparent position among the stars to change. Only the changing solar declination has any significant effect on the radiation falling on a collector. An approximation for the Sun's declination is given by:

\[ \text{D}=23.45\times\sin\left(\frac{284+N}{365}\right) \]

Again, the Sun's altitude above the horizon determines just how much atmosphere the sunlight must pass through before reaching earth. The two are related in the following manner:

\[ S-\sin(\text{Alt})=\sin(L)\times\sin(D)+\cos(L)\times\cos(D)\times\cos(H) \]

\[ M=\sqrt{1229+(614+S)^2}-614\times S \]

where \( L \) is the latitude of the collector; \( H \) is the solar hour angle \((H=-75^\circ \text{ at 7 AM solar time, } H=0 \text{ at local noon, etc.})\); and \( M \) is the atmospheric mass. The sine of the solar altitude, \( S \), and the atmospheric mass, \( M \), work together to reduce the intensity of solar radiation incident at the Earth's surface, \( I_s \). A reduction occurs by the factor of:

\[ I_s=I_o\times0.56\times(E_1+E_2) \]

where: \( E_1=\exp(-0.65\times M) \),

\( E_2=\exp(-0.95\times M) \),

Since the radiation will normally fall obliquely on the solar collector, the orientation of the collector relative to the Sun must be taken into account also. Calling this factor \( C \) we have:

\[ C=\sin(D)\times(\sin(L)\times\cos(T)-\cos(L)\times\sin(T)\times\cos(A)) \]

\[ +\cos(D)\times\cos(H)\times\cos(L)\times\cos(T)\times\sin(L)\times\sin(T)\times\cos(A) \]

\[ +\cos(D)\times\sin(T)\times\sin(A)\times\sin(H) \]

where \( T \) equals the angular tilt of the collector above the northern horizon; and \( A \) equals the azimuthal deviation from due south (measured positive towards the east, negative towards the west.)
The radiation incident upon the surface of the collector is then given by:

\[ I_p = I_s \times C \]

(If \( I_p < 0 \) THEN \( I_p = 0 \))

Taking all these factors into account, one can compute the approximate number of BTU's theoretically accessible to a solar collector under ideal clear sky conditions. For a series of particular dates, say the 21st of each month, a daily total can be arrived at by calculating the solar flux at hourly intervals and summing. Doing this monthly for a year's time will give a sampling of BTU's available for that particular orientation of the collector for those twelve days. Keeping a running total for the colder months (October through March) will give a good indication of the collector's ability during this critical period.

By calculating a series of tables for a particular range of collector orientations and comparing them, the optimum setting can be arrived at. A set of tables can be derived that look like the one included here. For further information concerning these equations and their applications refer to "Principles of Solar Engineering", Kreith I. Kreider (McGraw-Hill, New York, 1978).

Carl J. Wenning, Director
ISU Planetarium
Illinois State University
Normal, Ill. 61761

TABLE OF SOLAR RADIATION
BTU/SQ. FT./HR. ON A FLAT SURFACE
FOR THE 21st OF EACH MONTH

LATITUDE = 41
TILT ANGLE = 61
AZIMUTH ANGLE = 0

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COLD PERIOD TOTAL (OCT. THRU APR.) = 9126

YEARLY TOTAL = 20574
Script Bank Card Index Available

GLPA members who attended the Columbus conference were the first to receive the new script bank card index. The index is composed of some two hundred 3" x 5" cards, each describing a planetarium script that has been submitted to the GLPA script bank. Each card gives title, writer, a brief synopsis of the script, a description of potential uses, and a subjective rating as to just how good the script is as given by past users. A rather cryptic code (e.g. 1977S-C-P17) also tells year of production (1977), audience the script is aimed at (Secondary, College, Public), and the number of pages in the script (17). The script bank index was meticulously put together by the tireless efforts of Gail Bouslog (script bank curator) and Dave Parker (Secretary-Treasurer).

All 1981-82 GLPA members are entitled to receive copies of the script bank card index. Since the index was distributed first at the Columbus conference, it will be distributed free of any extra charge to persons who join GLPA before September 30, 1982. According to Dave, "Our membership and fiscal year runs from October 1 to September 30, so 1980-81 memberships expired as of September 30, 1981. Last year's members must join this year to receive this year's publications."

Dave Parker will mail the card index to anyone who joins GLPA by sending the appropriate dues ($10.00) to him at the following address:

TIPTON MIDDLE SCHOOL
817 S. MAIN STREET
TIPTON, IN 46072

NEWS NOTES:

NASA is making available an audio-visual program consisting of a 12-minute tape some 140 slides that depict the mission encounters at Jupiter and Saturn. The script is narrated by actor Cliff Robertson and has a musical score, with inaudible cues. The package sells for $200.00. Contact Woodward Associates, 315 N. Swall, Beverly Hills, CA 90211 for further information.

In an effort to make available the largest number of Voyager visuals, a video disc is being produced by the Center for Aerospace Education of Madison, N.J. The disc will include the total collection of Voyager Photographs, technical diagrams, and all related Jupiter and Saturn film clips. The disc should be available now. Further information can be obtained by directing your inquiries to: The Center for Aerospace Education, Drew Univ. Madison, N.J. 07940.

Speaking of video discs, don't forget that Quint Carr is producing a video disc of the best NASA/JPL visual material. NASA has agreed to supply first generation materials of all the planetary explorers from Gemini through Voyager II. Also included will be animated films, planet zooms and rotational sequences. Anyone who saw Dan Spence's talk in Columbus had a first hand chance at seeing a short demonstration of the laser-video disc system. For further information concerning the acquisition of this video disc contact: Quint Carr, Heikimer BOCES Planetarium, Herkimer, N.Y. 13350. (The Autumn edition of the IPS Newsletter contained a description of this project.)

The Ohio section of GLPA group plans to hold its annual meeting either in late March or early April at Hiram College and possibly another site. Bob Andress will serve as host. He plans on doing some outdoor observing activities that might be useful with planetarium groups.
For the past three years the National Science Teachers Association has had an affiliated astronomy group, the Association of Astronomy Educators (AAE). The AAE publishes a lengthy newsletter twice yearly (spring and fall). The newsletter, *Astronomy Education*, contains: association news; astronomy announcements; astronomy education resources; book and material reviews; teaching tips; and current related research summaries. Currently the AAE is pursuing goals of a nationwide astronomy information hotline and an award for excellence in astronomy teaching. Membership for the calendar year are $3.00 (U.S.), $4.50 (Canada), and $5.50 (any other country), all U.S. currency. Membership can be affected by sending the appropriate dues to AAE Secretary-Treasurer: Dr. Jeanne Bishop, Westlake Schools Planetarium, Parkside Junior High, 24525 Hilliard Road, Westlake, OH 44145.

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The University of North Carolina at Chapel Hill is seeking qualified candidates for the position of Director of the Morehead Planetarium. Responsibilities include business management and supervision of a major public planetarium with a Zeiss Model VI Projector, state-wide public school programs, exhibits, and related special events. Background in astronomy or physical science, creative showmanship, planetarium management and supervision of a complex operation desirable. Applications should be received by February 1, 1982. For an application please contact the Employment Division, 111 Pettigrew Hall, the University of North Carolina at Chapel Hill, N.C. 27514. (919) 962-2991. EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER.

Application forms are now available for the 1982-84 Morehead Internship in planetarium administration and education. The program provides for a half-time, on-the-job training at the Morehead Planetarium, and a two-year course of graduate study leading to a master's degree at the University of North Carolina. The internship carries an annual $4000 stipend. Inquiries should be sent to: Morehead Intern Selection Committee, Morehead Planetarium, P. O. Box 1227, Chapel Hill, NC 27514. Application deadline is February 15, 1982.

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With the departure of Dave Hoffman from the planetarium committee both IPS and GLPA were left without editors. According to IPS Treasurer Walt Tenschert, the post of PLANETARIAN editor, has been temporarily taken over by IPS President Bill Peters. Carl Wenning is serving as the new GLPA Newsletter editor. Dave Batch, IPS Secretary, still holds the post of IPS Newsletter editor. For the time being, submissions to the PLANETARIAN can be sent to Bill Peters, Manitoba Planetarium, 190 Rupert Ave., Winnipeg, Manitoba, R3B 0Z2, Canada.

The PLANETARIAN, currently three issues behind schedule, will be back on track soon. Ron Hartman reports that type-setting has been completed for some of the PLANETARIAN issues and that they should be off the presses soon. It appears that many of the articles submitted to the PLANETARIAN were in limbo after the departure of Dave Hoffman. These articles have since fallen into the right hands and should be appearing soon.

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Mark your calendars now for the 18th annual GLPA conference. The 1982 conference will be co-hosted by Sheldon Schafer and Carl Wenning at Peoria/Normal, Illinois, October 13-16. Guest speakers will include: UFOlogist J. Allen Hynek; Archaeologist John White; Science Fiction Writer Philip Jose Farmer; and Spitz Lecturer Don Hall.
Possible Charters for GLPA Members to the 1982 IPS Meeting in Vancouver, British Columbia.

Bill Stallings of Merrillville, Indiana, is trying to help hold costs down for GLPA members who are intent on going to the 1982 International Planetarium Society meeting in Vancouver. If enough members show interest, it just might be possible to save a considerable amount on transportation costs by chartering some form of transportation. Below are 5 options for such a trip. Please check the one which you would be most likely to use, indicating also the number of persons in your party. Prices are dependent upon how many people plan to use the charter and how soon reservations can be made, so please reply as soon as possible.

____ Option #1 Air Canada from Chicago to Vancouver and back. Leave the day before the conference and come back the day after. Cost $384.00 per person round trip.

____ Option #2 Same as Option #1 except that the carrier is United. Cost $399.00 per person round trip.

____ Option #3 Amtrak from Chicago to Detroit, bus across to Windsor, Canadian National Railway to Vancouver. Six days round trip, three days going out and three days coming back. Cost $404.00 per person not including meals on the train. Meals are extra.

____ Option #4 Some combination of train out and plane back. Cost undetermined.

____ Option #5 Some combination plane out and train back. Cost undetermined.

Once you have made your selection, please return this form to:

Bill Stallings, Director
Merrillville Comm. Pltm.
Pierce Jr. High School
199 E. 70th Place
Merrillville, IN 46410

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NEWS NOTES:

Bob Elliot informed Lee Shapiro that the Script Writing TIPS booklet should be ready about the first of the year. Bob also indicated a concern for the length of the upcoming Poetry TIPS booklet. It was decided at the meeting of the GLPA Executive Committee in Columbus that the Education Committee should review that booklet before proceeding with publication. Computer use and gifted programming are also topics the committee will be working on. If the first two booklets are ready for the next annual GLPA conference, they will be distributed at that time.

Sandy Hallock, 1981 GLPA Conference Chairman, reports that everyone who ordered a group portrait photo should have it in their possession at this time. If you did order and pay for one as part of conference registration and didn't receive it contact Sandy at: Columbus Center of Science and Industry, 280 East Broad St., Columbus, Ohio 43215.

Just a reminder that IPS dues should be paid now. Send your $20.00 to Walt Tenschert, IPS Treasurer and Membership Chairman, Thomas Jefferson High School, 6560 Braddock Road, Alexandria, VA 22312.
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 Planetarium Society, and the National Science Teachers Association. Membership dues are $10 annually, payable at the time of the Autumal Equinox. General correspondence and requests for membership should be addressed to: Mr. David E. Parker, Tipton Middle School, 817 S. Main St., Tipton, Indiana 46072

All GLPA members in good standing receive the quarterly "Newsletter". Contributions and notices for the "Newsletter" should be sent to: Carl J. Wenning, IUS Planetarium, Physics Dept., Illinois State University, Normal, Ill. 61761. Deadlines for contributions to the latest "Newsletter" fall on Feb. 21st., May 21st., August 21st., and November 21st.