GLPA Newsletter

1983

4 issues — 60 pages
The new Zeiss M1015 Modular Planetarium Projector
Zeiss M1015 System Nears Completion

The all-new, medium-sized, M1015 modular planetarium system, under manufacture by Carl Zeiss of West Germany, is developing on schedule according to Anthony Jenzano, former director of the UNC Morehead Planetarium. The scheduled target date, for initial world-wide distribution is early 1984.

The front cover shows the northern image projectors and star ball, and is the first photo to be officially released by the Zeiss home office in Oberkochen. Although the photo doesn't show it, the projector is deep blue, with black struts, and brass gearing.

Realistic teaching and performance features of the main instrument will include polar, diurnal, annual, precession, and azimuth motions; stars down to magnitude 6, in steps of 0.1; sun, moon and planets, all with respective scientific and aesthetic characteristics; two brightness-adjustable Milky Way projectors; zodiac, meridian, equator, and ecliptic systems; and appropriate dials and scales graduated and calibrated to meet modern space education course demands. The instrument is designed for highest spacial accuracy on domes from 10 to 15 meters, or down to 8 meters by special order.

A total automation system, and a multitude of ancillaries, which are fully compatible with the main instrument, are offered as initial options or as separate, subsequent add-on acquisitions.

In addition to new installations, the Zeiss M1015 system will have upgrade replacement potential for about a third of some 1000 planetariums presently located in the United States and Canada alone, according to Jenzano.

For further information contact: A. F. Jenzano, Planetarium Counselor, 37 Oakwood Drive, Chapel Hill, NC 27514.

NEWS Notes

Mark your calendars and make plans now to attend the joint meeting of the Great Lakes Planetarium Association and the Middle Atlantic Planetarium Society in Rochester, NY, May 20-23, 1983. Don Hall of the Strasenburgh Planetarium will serve as host. Additional information will be sent out very shortly to all members of GLPA. Don't forget, first call for papers was presented in this newsletter last quarter. Paper proposals must be in Gary Tomlinson's hands by April 1, 1983, if they are to be considered. See the last edition of this newsletter for details.

Dr. Frank Drake, the Goldwin Smith Professor of Astronomy at Cornell University, has accepted an invitation to deliver the Margaret Noble/Armand Spitz Lecture at the joint MAPS/GLPA meeting. Dr. Drake is widely known for his beliefs that life exists elsewhere in the universe, and is a leading authority on methods for the detection of extraterrestrial intelligent signals. His pioneering efforts, beginning with Project Ozma in 1960, are widely recognized and highly respected. As of this mailing, the Noble/Spitz lecture is scheduled for Sunday evening, May 22, at 8:30 P.M. The talk will be delivered in the Eisenhart Auditorium of the Rochester Museum and Science Center.

According to Jack Dunn, Secretary of the International Planetarium Society, the membership dues for 1983 are $34. The increase, from $20, was mandated by the increased production costs for the PLANETARIAN, and for at least two other publications that will be distributed this year. The two are the "Special Effects Handbook" and the "IPS Directory". If you have not paid your dues as of yet, you can forward them to: Walt Tenscheit, Thomas Jefferson High School, 6560 Braddock Road, Alexandria, VA 22312.

The Rocky Mountain Planetarium Association will be meeting April 29th & 30th at Gates Planetarium in Denver. The South East Planetarium Association will be meeting in Richmond, Va. next August.
The Michigan Section of GLPA met during the autumn conference in Ill. Several interesting ideas were formulated over a breakfast meeting. One was to produce a planetarium program on the subject of light. Diane Trainqu of Waverly and Dave Batch of Abrams are investigating this possibility, as well as looking into funding for production and distribution. The next fall meeting of the Michigan section will be hosted by Diane and Dave around mid-October 1983. This will be a working meeting to get ideas on content, to refine ideas, and to assign committees. Bring your ideas.

The every-other-year thing is on! The Michigan GLPA Campout/Non-Campout will be on July 16-17, 1983. This year, arrangements have been made for cabins for those who don't want to camp out. Cost of the cabins is $13 per night, for up to 4 persons. For more than 4 people per cabin, add $3 per additional person. Camping is available nearby. Details on the campground in the next newsletter. People going on this outing, which will be in Glen Arbor, MI, will have a chance to visit the Lamphier Observatory. There is a $1.50 charge per person for the Observatory Tour. Please make reservations for housing with Sue Pocklington, Program Coordinator, the Leelanau Experience, Glen Arbor, MI 49636. Also, inform Dave Batch at Abrams or Gary Tomlinson at Chaffee if you are attending. The event will be called off if not enough people are interested.

The Illinois section of GLPA will be meeting at the Elgin Observatory and Planetarium. Don Tuttle and Nancy Franklin will serve as host and hostess. The tentative date is October 15th. If there are any serious objections to that date, please contact Don Tuttle at the Observatory.

Mark Littman reports that Hansen Planetarium is working on several grant-funded planetarium programs for general distribution. These include: "Dawn of Astronomy", (due out this spring); "Colonies in Space"; and a program dealing with Halley's comet. Will and Lee Kyesi, from the Bishop Museum in Honolulu, are currently working with the Lawrence Hall of Science in San Francisco, CA, to create and produce a planetarium program, for general distribution, on the subject of Polynesian astronomy. No release date has been set as of yet.

The MAPS newsletter CONSTELLATION reports that, if you're looking for a good source of art sketches on astronomy related topics, you can try: ASTRONOMY ILLUSTRATED By Bonneau and Smith, Kendall-Hunt Pub. Co., 2460 Kerper Blvd., Dubuque, IA 52001. The artwork can be easily used for overhead transparencies, post-ups, kodaliths, etc. Supposedly, all artwork is copyright free.

The Illinois State University Physics Department, in conjunction with the National Aeronautics and Space Administration, will be presenting an AEROSPACE EDUCATION INSTITUTE, June 13-24, 1983. The course can be taken for graduate/undergraduate credit, or credit free. The course is aimed at in-service teachers who wish to integrate aerospace topics into their current science curriculum. Participants will experience small aircraft flight, helicopter flight, and troup transport (C-138) flight. For further information contact: Janet Shook, College of Continuing Education, Illinois State University, Normal, IL 61761.

Air & Space, the National Air & Space Museum's free magazine for educators, has room on its circulation list for more subscribers. Interested individuals should send requests for the publication To: Air & Space, Room P-700, Educational Services Division, National Air and Space Museum, Smithsonian Institution, Washington, D. C. 20560

Over worked, under paid, and plain exhausted? Take advantage of GLPA resources. GLPA currently has about three dozen taped programs, over 3,000 slides, and several hundred scripts. Be certain to look over these items at the joint GLPA/MAPS conference in May. They will be available for your leisurely inspection.
Abrams Planetarium is making available a reproducible SPRING 1983 SKYWATCHER'S PACKET. Designed to promote outdoor sky observation during April and May 1983, this activity-oriented packet includes the Abrams Planetarium Sky Calendar and evening star maps for April and May, and self-instructional guides.

The SPRING 1983 SKYWATCHER'S PACKET can be used by science classes at elementary through college levels, by astronomy clubs and planetariums, by individuals interested in becoming familiar with the sky, and by groups sponsoring activities for Astronomy Day. International Astronomy Day is Saturday, April 23, 1983. Many organizations are planning to set up astronomical exhibits in parks and shopping malls, and to hold public sky viewing sessions to commemorate the event.

The Abrams SPRING 1983 SKYWATCHER'S PACKET is especially appropriate to reprint and hand out for the occasion. To obtain a copy of the SPRING 1983 SKYWATCHER'S PACKET, send $1 and a self-addressed, stamped envelope (with 37¢ postage) to: SPRING SKYWATCHING, Abrams Planetarium, Michigan State University, East Lansing, Michigan 48824.

Last year, the Michigan Earth Science Teachers Association voted to devote some of their resources and guidance to earth science teachers on a national basis by sponsoring the formation of the National Earth Science Teachers Association. Through casual solicitation and word of mouth, mostly at the National Science Teachers Association conference in Chicago, NESTA already has nearly 50 charter members from all over the country. Members receive copies of "Michigan Earth Scientist," a quarterly publication. Members of NESTA are eligible for a variety of activities including field trips, and special presentations. A founding meeting has been arranged to take place at the NSTA meeting in Dallas, at 8:00 a.m., Saturday, April 9, 1983. Founders will meet in room E408, at the convention center. If you will not be in Dallas, but still wish to become a charter member, send your name, address, and annual membership dues ($5) to: NESTA. c/o Department of Geology, Michigan State University, East Lansing, MI 48824.

The Association of Astronomy Educators will sponsor two sessions at the Dallas NSTA meeting. The theme of the sessions will be "Teaching Astronomy through Activities." Meeting times and dates are as follows: elementary/middle school level, 8:00-8:50 a.m. Room E404, and high school/college level 1:30-2:20 p.m., Room E404. Both meetings will be held on Sunday, April 10, in the Convention Center. Members of AAE receive bi-annual issues of Astronomy Education, and reduced NSTA convention rates. Annual membership dues are $5 within the U. S., and $6.50 in Canada, and $7.50 elsewhere. For further information or membership write: Jeanne Bishop, Parkside Jr. High School, 24525 Hilliard Road, Westlake, OH 44145

Don't be surprised if, at the GLPA/MAFS meeting, you receive a questionnaire concerning the quality of the conference. Beginning last year, MAPS began an effort to ascertain the conference process. At the past conference, hosted by Owens Science Center in Lindham, MD, a 16 point evaluation form was distributed to all registrants. The results of the survey made a strong comment on the value and working of the conference. A series of statements regarding advanced publicity, sessions, conference site, etc., was selected for evaluation. Room was also provided on the form for general written comments. These comments and evaluations should be invaluable to future conference hosts. Perhaps GLPA should also consider such a process. Should you have any comments or suggestions for such a survey, feel free to share them with the membership through this medium.

(EDITOR'S NOTE: One point that was made clear in the above mentioned Lindham survey is that the quality of any production depends heavily upon the contributions made by the membership. An inspection of other regional newsletters shows that the GLPA Newsletter has the least involvement of its membership. As editor of the GLPA Newsletter, I request that contributions, be they articles, comments, pictures, or what have you, be made to this publication for future use.)
The following song entitled "The Family of the Sun", can be used to teach children more about the planets. It is sung to the tune of "The Farmer in the Dell". The words come from "Exploring the Planets" gallery of the National Air and Space Museum, Smithsonian Institution, Washington, DC.

THE FAMILY OF THE SUN

The family of the Sun,
The family of the Sun,
Here are nine planets in
The family of the Sun.

Mercury is hot
And Mercury is small
Mercury has no atmosphere.
It's just a rocky ball.

The family of the Sun,
The family of the Sun,
Here's another planet in
The family of the Sun.

Venus has thick clouds
That hide what is below.
The air is foul, the ground is hot,
It rotates very "slow."

(Repeat Refrain)

We love the Earth, our home,
Its oceans and its tree.
We eat its food, we breathe its air,
So no pollution, please.

(Repeat Refrain)

Mars is very red,
It's also dry and cold.
Some day you might visit Mars
If you are really bold.

(Repeat refrain)

Great Jupiter is big,
We've studied it a lot.
We found that it has 16 moons
And a big red spot.

(Repeat Refrain)

Saturn has great rings.
We wondered what they were.
Now we know they're icy rocks
Which we saw as a blue.

The family of the Sun,
The family of the Sun,
Here are two more planets in
The family of the Sun.

Uranus and Neptune
We don't know much about.
Maybe you will study them
And then we'll all find out.

(Repeat Refrain)

Pluto's last in line.
It's farthest from the Sun.
It's small and cold and icy too.
To land there won't be fun.

The family of the Sun,
The family of the Sun,
There are nine planets and
Now our journey's done.

(Repeat refrain)

* Every 248 years, Pluto's orbit brings it inside Neptune's orbit for a period of 20 years. From 1979 to 1999, Neptune will be farthest from the Sun.

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NEWS NOTES

The Planetarium Association of Canada will hold its annual meeting August 8-12, 1983, at Winnipeg, Manitoba. The theme of P.A.C. '83 is, "The Nature of the Planetarium." In order to achieve an entirely new kind of conference expression, the conferees will meet at a luxury resort in the Manitoba wilderness. One day's worth of activities will take place within the confines of the hosting institution - the Manitoba Planetarium. For further information contact Mr. Ed Barket, 1983 PAC Conference Chairman, Manitoba Planetarium, 190 Rupert Ave., Winnipeg, Manitoba, CANADA R3B ON2.
Tim Skoniczny of Detroit suggests that students can build a simple camera mount for short duration astrophotography of constellations. The tangent arm drive can be built at low cost and can be employed in a variety of student projects. Exact specifications should be observed. By turning the wing nut and screw assembly one-quarter turn every 15 seconds a sidereal rate can be maintained. The "phi" in the diagram is the same as the observer's latitude. The two eyelets can be used to aim the mount towards the North Star. The mount should be leveled before use. The actual camera mount should allow the camera to be aimed in any direction.
Archaeoastronomy is an inherently interesting field of study. I myself have dabbled in the workings of "Woodhenge", an ancient site at Cohokia, just outside of St. Louis. When I first approached the remnants of that great ring a few years ago, I was intrigued by the possibilities of an American Stonehenge. How does one determine whether or not astronomical alignments actually occur given the remains of an ancient monument? With my interest in spherical astronomy it wasn't long before I discovered the techniques employed by the professional archaeoastronomers.

The problem of discovering the existence of even solar alignments is not as straightforward as it might at first appear. An inexperienced novice might look for current day solar alignments based upon the equation:

\[ \cos (A\phi) = \sin (D) / \cos (P) \]

which gives the rising azimuth \((A\phi)\) of the sun based solely upon the sun's declination \((D)\) and the observer's latitude \((P)\). (Setting azimuth is equal to 360 - \(A\phi\).)

This relationship is suitable for determining the azimuth of the sun's center given a zenith distance of 90 degrees. It does not take into account the sun's semi-diameter, refraction, or the altitude of the true horizon. These must be taken into account if one is working with a "real life" situation such as a possible archaeoastronomical site.

Only after first going to such a site, after determining the azimuths of arrangements that might indicate lines of sight, and altitudes of the horizon along those lines, can one determine whether or not actual solar or lunar alignments did in fact exist. Only by employing these data can one determine at what declination the observer was sighting along.

Comparing these calculated declinations with the known declinations of the sun or moon during the time frame of the monument one can determine if true alignments did indeed exist.

Mathematically, the problem boils down to, "Given the sighting azimuth, and altitude of the horizon along the line of sight, determine the declination of a body rising at that spot along the horizon." This declination is given by:

\[ D = \arcsin (\sin (P) \cdot \sin (H) + \cos (P) \cdot \cos (H) \cdot \cos (A\phi)) \]

where \(P\) is latitude of observation, \(A\phi\) is azimuth of sighting, and \(H\) is the corrected altitude of the horizon. The value of \(H\) is a combination of observed altitude \((A\phi)\), refraction \((R)\), and semi-diameter \((S)\) of the lunar or solar disk.

\[ H = A\phi - R - S \]

For all practical purposes the best value of \(S\) is 0.267 degrees. Using this value we calculate the point where the sun's or moon's upper limb reaches the horizon. The value \(R\) takes on is only approximate. From the altitude of the true horizon one can take value for \(R\) from the following table:

<table>
<thead>
<tr>
<th>(A\phi^\circ)</th>
<th>(R^\circ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.58</td>
</tr>
<tr>
<td>2</td>
<td>0.30</td>
</tr>
<tr>
<td>4</td>
<td>0.19</td>
</tr>
<tr>
<td>7</td>
<td>0.13</td>
</tr>
<tr>
<td>10</td>
<td>0.09</td>
</tr>
<tr>
<td>15</td>
<td>0.05</td>
</tr>
</tbody>
</table>

After making a series of observations and calculations, one is ready.
to look for all the important solar and/or lunar alignments. What declinations are of importance? Obviously those where the sun is located on the solstices and equinoxes, and those where the moon comes to its major and minor, northern and southern standstills. Declinations corresponding to these times are approximately ± 23.5 degrees, 0 degrees, ± 28.6 degrees, and ± 18.3 degrees. (Over great periods of time these values must be adjusted for changes in the obliquity of the ecliptic and the inclination of the moon's orbit to the ecliptic.) A search can also be made for bright star alignments, but the declinations of the stars must be precessed back to the date when the monument was used to make the actual observations.

By no means does this short treatise make anyone an archaeoastronomer. In a similar fashion, a single chance alignment doesn't make an archaeological site an astronomical observatory. These equations and advice serve only to inform. Perhaps they can be used to test an interesting supposition, or to check known astronomical alignments just for the fun of it. Who knows? You might discover something the "pros" overlooked!!

Answers to Astro-Gram #25

Asomiv Jupiter, The Largest Planet Ninety years after Lagrange's theoretical work, Kirkwood showed that it applied perfectly to Jupiter and the asteroids. Those places between Mars where no asteroids would be found because of Jupiter's perturbations have been known as "Kirkwood's Gaps" ever since.

A. Acetaldehyde  K. Towards  U. Evaporate
B. Swoops        L. Ebb Tides   V. Subdwarf
C. Isidorus      M. Red Shift   W. Thais
D. Moon Shot     N. Tektite     X. Pinwheel
E. Occident      O. Hooker      Y. Lowdown
F. Venusberg     P. Elektra     Z. Acre
G. Jansky        Q. Lawrence    Z1. Nekkar
H. Unwrap        R. Apogees     Z2. Enfant
I. Pyrenees      S. Ratios      Z3. Terrible
J. Iapetus       T. Ghost of Jupiter

NEWS NOTES

Jim Hooks, past president of the International Planetarium Society, if forming the American Planetarium Association as an organization to promote the Planetarium community within the United States. This will be an institutional organization. APA came into being, on an interim basis, at the IPS meeting in Vancouver. Jim was elected President Protem, and Doris Forror as Secretary/Treasurer Protem. The APA formal organizational meeting will take place in Richmond, Va. next August.

The Great Plains Planetarium Association will hold its annual meeting October 27-29, 1983, in Hastings, Nebraska. Mitch Luman, of the J.M. McDonald Planetarium, will serve as host. GPFA President, Katherine Becker, has suggested that the agenda include a special discussion of the problems planetarians face and what can be done to alleviate them. For instance, can planetarians get Sylvania to periodically manufacture a quantity of colored Lumiline bulbs for the planetarium world? (This sort of thing might be a useful addition to any conference - conference hosts take note!) For further information contact: Mitch Luman at the Hastings Museum, 1330 N. Burlington, Hastings, NB 68901.
The Center of Aerospace Education Development has just established a new line of schoolroom workbooks. Topics extend to such diverse topics as: Aerospace Coloring Book (two volumes), The Space Shuttle Activities Book, and others dealing with famous aviators. Each is filled with a plethora of classroom activities that teach mathematics, spelling, motor skills, and many other things. For instance, in the book dealing with Charles Lindbergh, we came across "MATH FUN".

Break the math code and find Robert Goddard’s nickname:

4 21 16 32 13 4 21 16 7 6 32 7 6 14 10 16 4 7 44

\begin{align*}
a &= 19 - 6 = \quad & b &= 24 / 4 = \quad & c &= 33 \\
f &= 16 + 16 = \quad & h &= 7 \times 3 = \quad & e &= 8 \times 2 = \quad & + 64 \\
k &= 100 / 10 = \quad & t &= 1 \times 1 \times 4 = \quad & r &= (43 - 1) / 6 = \quad & + 97 \\
& & & & & + 100 \\
& & & & & 21 / &
\end{align*}

Besides having a tremendous educational value the booklets have an aesthetic and historical value. Each is beautifully illustrated with planes, rockets, the Shuttle, and other items of interest. These are all blacklines and can be used in a variety of planetarium settings. Each tells the story of a famed aviator, or tells of the role of each different type of aircraft.

The Center for Aerospace Education Development has a wide variety of materials for use in the aerospace curriculum. For a brochure describing these items write: The Center for Aerospace Education Development, National Headquarters, Civil Air Patrol, Maxwell AFB, AL 36112

BLACKGROUND (CONT.) Carl Wenning; ISU Planetarium

By now, everyone is probably familiar with the 3P-D photographic process for eliminating unwanted backgrounds from slides. The method was first described by LeRon Cobia of Abrams Planetarium nearly ten years ago. ("Background," PLANETARIAN, Vol. 2, No. 2, June 21, 1973) Slides with "backgrounds" could be achieved through a four-step process. 1) Project the image on a white surface. 2) Paint with black paint or ink only the portion of the projected image which you desire to be reproduced on the dome. 3) Photograph the resultant black image with a high-contrast, high-contrast, high-density film. 4) Double mount the original slide and litho transparency.

Planetariums from coast to coast, and around the world, have been using this method to opaque slides for years. Now a new, more efficient film has come to the fore that should allow for cleaner, and much quicker results. It’s Kodak’s Precision Line Film LPD4. The film has a moderately high contrast, and is suitable for direct duplicating - just like a contact print!

The process is four-step. 1) Start with an image you wish to project, such as a galaxy with plenty of black around the image. 2) Mount image in a pin-registered GEPE (or similar) mount with the emulsion side up. Cut a piece of LPD4 film and mount it over the image - emulsion to emulsion. Snap mount closed. 3) Expose mount to white light from your projection stand. Make sure that your image is between the light source and the LPD4. 4) Develop the LPD4 film and remount it on the image. Hand opaque any additional background objects such as stars that you do not want projected.

As you can see, LPD4 will never fully replace 3P-D, especially if you are attempting to, say, take a particular object out of a complex setting. But LPD4 can help with those opaquing jobs when the object lies in a dark field, and more importantly, where an object gradually fades into a dark background. The 3P-D process leaves an objectionable vignette, whereas LPD4 gradually darkens from the object into the depths of the background.
ASTRO-GRAM 26
by DUANE ALLMAN

Using the DEFINITIONS below, try to fill in the WORDS column. Transfer the letters from these WORDS to the proper numbered square in the diagram. Work back and forth from the diagram to the WORDS column until both are completed. The first letters of the answers in the WORDS column will spell out the author and title of the work contained in the diagram.

<table>
<thead>
<tr>
<th>DEFINITIONS</th>
<th>WORDS</th>
<th>DEFINITIONS</th>
<th>WORDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Meteorite</td>
<td>91 100 64 28 41 16 3 109</td>
<td>O. A Moon Child</td>
<td>129 163 182 114 149 17</td>
</tr>
<tr>
<td>B. Genuine; Lawful</td>
<td>76 128 58 110 42 173 7 27</td>
<td>P. Chances</td>
<td>53 112 136 75</td>
</tr>
<tr>
<td>C. Paroxysm</td>
<td>11 49 33</td>
<td>Q. English Name for Ursa Major (Two Words)</td>
<td>26 84 81 144 130 45 101 116</td>
</tr>
<tr>
<td>D. NGC 2237-9, The Nebula</td>
<td>12 56 46 24 81 95 34</td>
<td>R. A Globular Cluster in the Small Magellanic Cloud (Two Words)</td>
<td>151 178 185 67</td>
</tr>
<tr>
<td>E. Lunar Crater (56°E, 53°W)</td>
<td>87 32 46 4 14 115 63 73</td>
<td>S. Supported</td>
<td>147 70 54 118 166 98 181 31</td>
</tr>
<tr>
<td>F. A Star of Small Mass</td>
<td>18 78 78 113 142 177 40 8</td>
<td>T. Discharge</td>
<td>88 146 172 36 186</td>
</tr>
<tr>
<td>G. Forming into a Spiral Shape</td>
<td>19 69 126 55 83 35 5</td>
<td>U. A Conic Section</td>
<td>79 65 119 105 19 188 158 95</td>
</tr>
<tr>
<td>H. Large Asteroid, #130; Daughter of Agamemnon</td>
<td>57 23 74 9 120</td>
<td>V. Observatory in Tanakami, Japan</td>
<td>106 146 182 117 71 176 60</td>
</tr>
<tr>
<td>I. From Sundown to Sunup</td>
<td>174 131 86 102 50 111 15 68</td>
<td>W. Time Period used in Physics (Compd. Word)</td>
<td>93 167 30 184 127 66 141 185</td>
</tr>
<tr>
<td>J. At the Present Time</td>
<td>86 137 25 107 44 7 123 153</td>
<td>X. Impermeable to the Atmosphere</td>
<td>125 94 103 156 139 51 161 180</td>
</tr>
<tr>
<td>K. The Star Delta Ophiuchi</td>
<td>185 13 132</td>
<td>Y. Eolian Deposit Found on the Earth</td>
<td>152 72 183 124 96 169 134 104</td>
</tr>
<tr>
<td>L. Ingot; Implant</td>
<td>43 22 143 159 103 121 171 52</td>
<td>Z. Constellation (Two Words)</td>
<td>178 164 70 154 140 92 82 122</td>
</tr>
<tr>
<td>M. Crush; Upset</td>
<td>5 29 97 135 47 37 179 148</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 16 A 17 O 18 F 19 H 20 R | 21 G 22 M 23 I 24 D 25 K | 26 Q 27 B 28 A 29 N 30 V 31 R 32 E 33 G |
| 34 D 35 H 36 S 37 N | 38 F 39 Y 40 G 41 A | 42 B 43 M 44 K 45 Q 46 D 47 N 48 E 49 C |
| 50 J 51 W 52 M 53 P 54 R 55 H | 56 D 57 I | 58 B 59 F 60 U 61 O 62 G 63 E 64 A 65 T |
| 66 V 67 Q 68 J 69 H 70 Z 71 U 72 X 73 E 74 I | 75 P 76 B 77 Y 78 G 79 T 80 K | 81 D 82 Z |
| 83 H 84 Q 85 R | 86 J 87 E 88 S 89 B 90 M 91 A 92 Z 93 V 94 W | 95 T 96 X 97 N 98 R 99 D |
| 100 A 101 Q 102 J 103 M | 104 X 105 T 106 U | 107 K 108 W 109 A 110 B 111 J 112 P 113 G | 114 Q 115 E |
| 116 Q 117 U 118 R 119 T | 120 I 121 M 122 Z 123 K | 124 X 125 W 126 H 127 V 128 B 129 O 130 Q 131 J 132 L |
| 133 Y 134 X 135 N 136 P 137 K | 138 T 139 W 140 Z 141 V 142 G 143 M 144 Q | 145 U 146 S 147 R 148 N 149 O |
| 150 Y 151 Q 152 X 153 K 154 Z | 155 V 156 W 157 F 158 T 159 M 160 B | 161 W 162 U 163 O 164 Z 165 L 166 R |
| 184 V 185 Q 186 S |
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 Autumnal 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, ISU Planetarium, Physics Dept., Illinois State University, Normal, Ill. 61761. Deadlines for contributions to the latest "Newsletter" fall on Feb. 15th, May 15th, August 15th and November 15th.

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Elgin Observatory and Planetarium
School District U-46
4. S. Gifford St.
Elgin, Ill. 60120
ATTENTION NEWS EDITOR/DIRECTOR

FROM: J. M. MCDONALD PLANETARIUM
Mitch Luman
1330 N. Burlington Ave.
Hastings, NE 68901
402-463-7126

June 10, 1983

MOON ROCK COLLIDES WITH PLANETARIUM

(Hastings, NE) The J. M. McDonald Planetarium has been struck by a fragment of the Earth's nearest neighbor in space, the moon! A meteor, believed to have originated on the moon, collided with the planetarium this past Thursday (June 9). According to Mitch Luman, director of the planetarium, the space rock was the most distinguished visitor to drop in on the facility since its inception.

The dull grey moon rock, a breccia, weighed in at forty-nine and three-quarters pounds. Measuring the size of a loaf of bread, the unearthly rock came crashing down through the roof, and dealt the structure of the building a thunderous blow. Planetarium officials have named the rock "Big M" in honor of the facility's Minolta Star Projector. The projector was decapitated by the impact.

Mr. Luman described the fall: "We had just started our afternoon sky show. While introducing the evening sky, there was a deafening crash. Debris showered down upon our heads. Some members of the audience began to panic, fearing the worst. Sunlight streaming through a gaping hole in the ceiling illuminated the surroundings enough to show the meteorite rolling down the isle, still smoking, in open defiance of the no smoking sign on the door."

The planetarium staff is working to repair the damage caused by the meteor, and hope to make part of their facility into a shrine commemorating the ill-fated event. The Hasting Planetarium is the only sky theater to have been so "honored" by a falling star.
Preparing Effective Materials to Enhance Planetarium Public Relations: Part 1

By Mitch Luman, Director, J. M. McDonald Planetarium, Hastings, NE 68901

While reading the media release on the front cover, did you find yourself drinking it in with enthusiasm and feeling a bit starved for information? From this one example you can see how attractive news releases can be, and how they can be used to draw radio, TV, and newspaper reporters to your door. No, a meteor did not drop in on the J. M. McDonald Planetarium last week. This media release only serves as an example of what I'd call an effectively written article designed to garner additional coverage for a newsworthy event -- should such an event ever happen. Preparing materials to enhance public relations is a critical part of every planetarium director's job. Doing the job well can make all the difference.

At one time or another, all of us have used the tools of public relations to our advantage. Whether it be a simple thank-you to our audience, or a full blown press kit, it all adds up to PR. While we all hope that the PR surrounding our planetarium is positive, there are available channels to make our PR even better. Effective PR has a way of making both you and your planetarium look good.

If you've ever griped hard on a pen and wrestled hours with just four paragraphs, then this article is for you. If you're a decorated veteran in the area of PR, this series is for you too. In part one, we'll look at the ways you can effectively employ the media release in PR surrounding your planetarium. Part two will show you how to focus and sharpen your skills and write really terrific stuff.

The most effective tool of PR is the media release. By using the media release, planetaria can make use of cheap, informative and readily accepted promotion. Unless you have someone in your institution already writing media releases for you, you the director, should be writing your planetarium's PR. Media releases are simple, formatted bulletins which inform members of the news media about newsworthy items. Before we submerge ourselves into the specifics involving media releases, we'll first answer some important questions.

To whom should a media release be sent? All your media PR should be disseminated through the mail to members of the local media in your community. Your media organizations are your local television stations, radio stations and newspapers. A telephone book will come in handy for obtaining addresses, but it's a good idea to give each place a call and get in touch with their news person. They're always more than happy to talk with you and you should get to know these people on a personal basis. Tell them who you are and what you plan to do. You may also want to contact your local community calendar, your local Chamber of Commerce and area college and school newspapers. The vast number of news hungry editors out there never fails to astound me. People around here will literally kill for news during slack news weeks.

For what events should media releases be sent? Obviously, sky-shows at the planetarium are the most likely prospect. Editors of entertainment sections of newspapers just love to get as much "local angle" as they can get their hands on. Don't limit yourself however to just show information. Last year, for instance, I shot off a dozen items to the media, only five of which were for new shows. The balance announced items such as meteor showers, bright planets, space shuttle launches, National Astronomy Day, the first day of summer, Daylight Savings Time, and so on. Again, if an editor is looking for a story, a blurb with local angle is going to get a lot more mileage than a national wire service item.

When should a media release be sent? Although this seems like a question of U.S. Postal Service efficiency, it is more complicated than just that. My media contacts like to have at least a five working day notice of items submitted for publication or airing. This is the only fair way of going about it. If they like it, they'll use it. Give them a few days to
get their act together. If they use it, they'll usually rewrite it. No matter how well your copy is done, everyone has their own opinion on how something should be worded. Later, I'll explain how you can prevent your release from ending up completely butchered. For now, however, let me just remind you to give your media person enough time to read your item and get back to you for further information. Good media people will always call you for further information. Don't send your releases out too early though, your news may get buried under someone's desk and not turn up until next year.

With any luck, your release will end up in the hands of one of two kinds of individuals. These two characters are the News Editor of a newspaper or the News Editor of a TV or radio station. Although their jobs are essentially the same, finding stories, they are dealing with different media. Newspaper editors deal with the written word, while radio and TV people express themselves in a spoken manner. It is impossible to write for both the ear and the eye at the same time. Technically, you should have two types of releases. I only send out one type of media release. I skew mine toward the written word. The radio and TV people in my locality get my "press release" and usually contact me for more information. The Newspaper people will take my news and put it in an article, as is. Radio people have a habit of calling you and nailing you to the wall right then and there. About the time they get your release, I don't have to tell you to be prepared. On the phone interviews are tough. I usually ask the interviewer if I can visit the studio. You'll be prepared and you'll sound a lot better. Occasionally, newspapers like to get black and white photo's that they can use for publication. They may ask you for a picture or they may send out a photographer. Anyone serious about sending photographs along with their PR should get in touch with the newspaper directly.

Part two of this series will delve more deeply in the art of actually writing media releases. In part two I'll discuss headlines, slug lines, format and the construction of the release body. In no time at all, you'll be writing valuable and effective PR for your planetarium and as an added bonus, you'll become your communities astronomy authority.

JOINT MEETING OF THE MAPS/GLPA CONFERENCE HELD AT ROCHESTER, NY.

152 members of MAPS and GLPA gathered in Rochester for the May 20-23 Conference. MAPS outnumbered GLPA 2 to 1 but we must remember the geographic location of Rochester.

Paper sessions were held at the new Strong Museum, Rochester's Memorial Art Gallery, the Eastman House and at the Rochester Museum and Science Center, of which the Strasenburgh Planetarium is a part. There was opportunity to peruse the museum exhibits in all cases and it was easy to be impressed with the cultural environment within Rochester. The paper sessions presented variety, the conference lunches were excellent, the planetarium sessions amusing and the Strathallan's whirlpool and sauna relaxing. The latter assumes, of course, that you wore one who got the chance to stay at the designated conference hotel. The Strathallan back up unit, some 15 minutes drive away was not quite as spacious and luxurious. Aside from the Town House crowd, the only grumbling that could be heard was from those walking (or running) to wherever the rest of the group was reported to be. The pitch was a bit higher during the rain.

Seven members of GLPA participated in the paper session. Gary Tomlinson chaired the session in which Phyllis Pitluga, Gene Jenneman and Elizabeth Waselick presented papers. Shaldon Schafer was there with an interesting selection of stuffed animals he uses to teach constellations. Another highlight of the paper session was Jeanne Bishop with the equally impressive paper title: An Activity to Understand Stochastic Self-propagating Star Formation. Unfortunately I arrived Rochester Saturday morning and was at that time running the 14 mile dash from Strasenburgh to the site of the paper session. Jeanne's presentation was missed. Sam Storch, in the same session, told the group about BTP.

(Continued on Page 10)
Two booklets from the Great Lakes Planetarium Association were distributed to GLPA conferees at the recent MAPS-GLPA meeting in Rochester, NY.

The booklets, TIPS ON WRITING SCRIPTS and TIPS ON HELPING THE HANDICAPPED IN THE PLANETARIUM, are a production of GLPA's education, publication and membership committees.

The script writing booklet was written by Dave Hoffman, past Editor of the GLPA Newsletter and IPS Planetarian. Hoffman has collected tidbits from Planetarium script writers throughout the country. All offer their own perspective on the contents of a good script.

The programs for handicapped booklet is a result of a SEMINAR IN PLANETARIUM PROGRAMMING FOR EXCEPTIONAL CHILDREN held during 1981 at the University of Kentucky. The booklet was compiled by Gail Bouslog, Director of the Western High School Planetarium, Russiavelle, Indiana.

GLPA members in attendance at the Rochester meeting will receive the publication via mail after paying their 1983-84 membership dues. Remember, as a result of a decision at the 1983 Peoria/Normal conference, dues for 1983-84 are $13 per year if paid after the joint MAPS-GLPA conference.

Mark Sonntag, formerly of Hansen and Fiske Planetaria, has moved to greener pastures. He has accepted the directorship of the Aldrin Planetarium in West Palm Beach, Florida. Ken Wilson, of Morrison Planetarium, has moved to the Science Museum of Virginia which is installing the first Digistar planetarium. The new planetarium is slated to begin operation soon. Lee Simon, also of Morrison, has announced that he is stepping down as director and will become staff astronomer. Jim Wiley is no longer with Laser Systems Development Corp. Jack Spoehr is no longer with Spitz Space Systems; he has moved over to IMAX.

The Illinois State University Planetarium is coordinating a 12-day trip to Mexico beginning November 22, 1983. Cities included on the tour are: Mexico City, Palenque, Uxmal, Merida, and Cozumel. Archaeological sites include: Teotihuacan, Palenque, Uxmal, Chichen Itza. The trip is a logical extension of Hansen Planetarium’s "Skywatchers of Ancient Mexico." A variety of lectures presented by several well known historians, anthropologists, and mathematicians, will precede the departure. The tour is guaranteed to "go." A minimum number of tour participants is not required. For further information, contact Carl Wenning at (309) 438-2496.

Visions of Einstein is a new 50-slide program dealing with the latest discoveries of the orbiting x-ray satellite known as "Einstein." The Einstein Observatory gave scientists their first opportunity to see actual focused pictures of x-ray objects, and in so doing opened a new window on the universe. An accompanying text explains in detail the new discoveries made by one of astronomy’s newest "eyes in the sky". The package is available for only $36. For further information contact: Roberta A. Diemer, Smithsonian Slide Series, Smithsonian Institution, Washington DC. 20560.

The Center for Aerospace Education of Drew University has announced the release of SPACE DISC 3 - APOLLO ON THE MOON and SPACE DISC 3 - SHUTTLE TEST FLIGHTS. These are the latest in a series of six instructional laser disc. Disc 2 highlights the six manned lunar landing missions - Apollos 11-17, with a collection of 9,865 still images and 117 movie clips. Disc 3 traces the development of the Space Shuttle, and contains 3,386 still images, including diagrams, relevant text and photographs of the design, manufacture, assembly and testing of various Shuttle components. Both discs are supported with user guides.

The other three videodiscs in the SPACE DISC series are THE SPACE AGE; ASTRONOMY, and GEO SCIENCE, and should be released soon. The first disc - THE VOYAGER ENCOUNTERS is being remixed and should be re-released early in 1983.
If you are interested in these discs, you can get more information by writing to: Ben Casados, Video Vision Associates, Ltd., 19400 Beach Blvd., Suite 5B, Huntington Beach, CA 92646

The Astronomical Society of the Pacific has just published a new consumer guide to selecting a first telescope. It is written in plain English for the nonscientist and contains the following information: telescope ratings, mountings requirements, major telescope manufacturers, resource organization lists, reading lists and a list of questions to ask before making any telescope purchase. To obtain a copy of the packet, you are invited to send a donation of $2.00 (to cover printing, mailing and handling) with your name and address to: ASP, Telescope Guide Department, 1290 24th Avenue, San Francisco, CA 94122

Stan Coffield of MAPS suggests the use of FREON T-P35 solvent for cleaning slip rings. A blend of FREON TF solvent and isopropyl alcohol, T-P35 is designed for cleaning circuit boards, relays, switches, servo mechanisms and instruments. T-P35 is produced by Miller-Stephenson, Danbury, Connecticut 06810. A small sample is available through the manufacturer.

The Charles Edison Fund has prepared seven manuals dealing with simple projects for youth. All seven booklets focus on selected areas of Thomas Alva Edison's work. Contents include areas of energy, environment, electricity and magnetism, as well as nuclear experiments. The activities are designed for children with inquiring minds. All projects and exercises are excellent. For your free set write: Charles Edison Fund, 101 South Harrison Street, East Orange, New Jersey 07018. Include one dollar, check or money order only, to cover postage and handling.

The Thomas Alva Edison Foundation and the Max McGraw Foundation are once again co-sponsoring a scholarship program which, this year, will be open to all high school students with an interest in science and engineering. The purpose of the program is to give recognition to outstanding students by awarding twelve scholarships to those who most nearly demonstrate the inventive genius of both Edison and McGraw. Two of the twelve finalists will be selected to receive $5,000 scholarships and an all-expense paid trip to the International Birthday Celebration Symposium in Berlin, Germany, May 9-10, 1984 as guests of the General Electric Company. For further information send a self-addressed, stamped envelope with your request to the editor of this newsletter.

Since the last GLPA meeting in October, all GLPA members are now members of Support Services Alliance. SSA is a membership organization for people who are self-employed or work in small groups. Members gain access to a growing list of group contracts and publications. Following are some of the benefits available which may be of interest to GLPA members through SSA.

PRINTING: SSA's printer has agreed to give his best price on printing to SSA members. For a quote, send camera ready copy or copy with accurate layouts, paper stock requirements, and type sizes to Dick Finfgeld, M & D Printing, 616 Second St, Henry, Ill. 61537. Send samples of printed material if you have them.

HERTZ: Effective February 1, 1983, SSA members will receive 7% discount on published daily rates with unlimited mileage. Now when you rent you also get a gift. Discount and gifts not available on tour packages. Write SSA if you don't have the SSA/Hertz Identification Card.

EXPANDED METROPONE: Now you can call almost all cities in the United States on MetroPone, instead of just major metropolitan areas. This means that the SSA MetroPone contract can save you more on your long distance calls. For information write to Vince Amrod, c/o the SSA office and give your number.
Nominees for SSA Board of Directors

The Board of Directors shall consist of 7 or 9 members. Insofar as it can be arranged, the Board shall include representation from: (a) dues paying association members of SSA, (b) dues paying individual members of SSA, (c) suppliers of services to SSA members, and (d) government agencies which cooperate with SSA.

Please send in your suggestions for directors in any or all of the four categories mentioned in the quoted SSA bylaw. Feel free to nominate yourself. Directors will meet at least twice a year in the SSA office. At this time there is no money available to reimburse Directors for travel or other expenses they incur.

If you are interested in more information on SSA and what is available to you through GLPA's membership, write or call Sheldon Schafer, Laeview Museum Planetarium, 1125 W. Lake, Peoria, Ill 61614.

If you are interested in more information on any of the particular benefits described above, write to Support Services Alliance, Inc. 1457 Broadway, Suite 712, New York, NY 10036.

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The Aviation Distributors and Manufacturers Association (ADMA) has printed an Educational Materials Directory containing a listing of teaching aids available on a free or nominal basis. The materials are listed under three headings: Booklets; Videotape/Film/Slide Programs; Wall Charts and Posters. The directory is free and may be obtained by writing ADMA Headquarters, 1900 Arch St., Philadelphia, PA 19103

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The American Chemical Society is pleased to announce it now has sufficient grant funds for the production and worldwide distribution of a show on Halley's Comet.

The producer/distributor will be the Hansen Planetarium. Cosponsors thus far are Bushnell Optical Division of Bausch & Lomb, The Planetary Society, American Association for the Advancement of Science, and the American Astronomical Society.

We anticipate distribution to public planetariums will begin in May, 1984, and to school planetariums the following August.

Many thanks to all of you who wrote supporting the project. Frank Bigger, Special Assistant for Public Relations Projects.

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In case you missed it, there was an interesting article on planetariums in the December 1982 issue of The Futurist magazine. Author Louis Brill describes how planetariums, "the playhouse of the stars," may hit the big time. He argues that for years planetariums hosted only students of astronomy. Now they are being transformed into theatrical environments that offer more flash than Star Wars, more computerized special effects than video arcades, and more 'realism' than the best 3-D movies.

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If you want to see how modern astrologers ply their trade, request a natal horoscope from the American Astrological Association. For only a few dollars they'll let you know about upcoming opportunities, lucky numbers, good and bad days, important events, and the like. Should you be producing a planetarium program dealing with astrology, you can gain valuable insight into the modern process through AAA. For your horoscope, and to get involved in the process, write: American Astrological Association, 401 Market Ave., North, Canton, Ohio 44750.

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Stasiuk Enterprises of Portland, Oregon, is now producing commercial planetarium programs. Their latest programs include: "Voyage to a Green Planet," "The ET's: Where Are They?", and "Planets, Comets, and the Night Sky." Should you be interested in their productions and did not receive an advertisement from them recently, they can be contacted at: 3150 NE 30th Ave., Portland, Oregon, 97212. Telephone: (503) 284-6887.
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The following song entitled "The Family of the Sun", can be used to teach children more about the planets. It is sung to the tune of "The Farmer in the Dell". The words come from "Exploring the Planets" gallery of the National Air and Space Museum, Smithsonian Institution, Washington, DC.

THE FAMILY OF THE SUN

The family of the Sun,
The family of the Sun,
Here are nine planets in
The family of the Sun.

Mercury is hot
And Mercury is small
Mercury has no atmosphere.
It's just a rocky ball.

The family of the Sun,
The family of the Sun,
Here's another planet in
The family of the Sun.

Venus has thick clouds
That hide what is below.
The air is foul, the ground is hot,
It rotates very "slow."

(Repeat Refrain)

We love the Earth, our home,
Its oceans and its tree.
We eat its food, we breathe its air,
So no pollution, please.

(Repeat Refrain)

Mars is very red,
It's also dry and cold.
Some day you might visit Mars
If you are really bold.

(Repeat refrain)

* Every 248 years, Pluto's orbit brings it inside Neptune's orbit for a period of 20 years. From 1979 to 1999, Neptune will be farthest from the Sun.

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NEWS NOTES

The Planetarium Association of Canada will hold its annual meeting August 8-12, 1983, at Winnipeg, Manitoba. The theme of P.A.C. '83 is, "The Nature of the Planetarium." In order to achieve an entirely new kind of conference expression, the conferees will meet at a luxury resort in the Manitoba wilderness. One day's worth of activities will take place within the confines of the hosting institution - the Manitoba Planetarium. For further information contact Mr. Ed Barket, 1983 PAC Conference Chairman, Manitoba Planetarium, 190 Rupert Ave., Winnipeg, Manitoba, CANADA R3B ON2.
Last quarter I discussed the rudimentary methods employed by archaeoastronomers to investigate sites for possible astronomical alignments. One element of that discussion mentioned the precession of star positions. The following equations will allow you to calculate the coordinates of a star as a function of time over great intervals.

In order to run the program, you will need to know the initial epoch and coordinates for the star on that date (say 1950.0). A knowledge of the star’s proper motion will also be invaluable. The Bright Star Catalog or other atlas should have all necessary information.

Calculate the desired dates (initial epoch, final epoch) in tropical centuries as measured from 1900.0 initial epoch, \( t \), is given by:
\[
t = 1900 + T_0 + T\text{ where } T_0 \text{ and } T \text{ are given by: } T_0 = \frac{(JD)_0 - 2415020.313}{36524.2199}
\]
and
\[
T = \frac{(JD) - (JD)_0}{36524.2199}. \quad (JD \text{ equals Julian Date - see GLPA Newsletter, Vernal Equinox 1982.})
\]
Next calculate the values of \( x \), \( y \), and \( z \).
\[
x = (2304.7250 + 1.396*T_0)*T + 0.7396*T**2 + 0.0118*T**3
\]
\[
y = (2004.682 - 0.853*T_0)*T - 0.426*T**2 - 0.042*T**3
\]
\[
z = x + 0.791*T**2
\]
(Divide the values for \( x \), \( y \), and \( z \) by 3,600 to convert to decimal degrees.)

Rigorous formulae for the reductions of positions from one epoch to another are easily deduced from spherical trigonometry. If we take \( \text{RA}, \text{D} \) and \( \text{RA}, \text{D} \) to be right ascension and declination for the initial and final epochs respectively, we have:
\[
A = \cos (\text{D}) \sin (\text{RA} + x)
\]
\[
B = \cos (y) \cos (\text{D}) \cos (\text{RA} + x) - \sin (y) \sin (\text{D})
\]
\[
C = \sin (y) \cos (\text{D}) \cos (\text{RA} + x) + \cos (y) \sin (\text{D})
\]
The final \( \text{RA} \) and \( \text{D} \) are then given by:
\[
\text{TAN} (\text{RA}-z) = A/B \text{ and } \sin (\text{D}) = C
\]
A few "tricks" must now be applied to determine the correct quadrant of \( \text{RA} \), and an accurate value for \( \text{D} \). Let \( R = (\text{RA}-z) = \text{ATN}(A/B) \) then:
\[
\text{if } (A \geq 0) \text{ and } (B \geq 0) \text{ the } R = R;
\]
\[
\text{if } (A \geq 0) \text{ and } (B < 0) \text{ then } R = R + 180;
\]
\[
\text{if } (A < 0) \text{ and } (B < 0) \text{ then } R = R + 180;
\]
\[
\text{if } (A < 0) \text{ and } (B \geq 0) \text{ then } R = R + 360.
\]
Now \( \text{RA} = R = z \)

Divide the decimal degree value of \( \text{RA} \) by 15 to express it as decimal hours.
If the star is close to the celestial pole (say ABS(Dp) > 75), D can be most accurately found from the equation:

\[ \cos(D) = \text{SQR}(A^2 + B^2) \]

Before making the reduction from RA9, D9, to RA,D calculate the effect due to the star's proper motion. All equations are valid for "positive" or "negative" dates.

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

Answers to Astro-Gram #26

Alfred Tennyson Locksley Hall Many a night from yonder ivied casement, ere I went to rest; Did I look on great Orion sloping slowly to the west. Many a night I saw the Pleiads, rising thro' the mellow shade, Glitter like a swarm of fire-flies tangled in a silver braid.

A. Airstone  J. Nowadays  S. Sided
B. Legitimate  K. Yedprior  T. Lightning
C. Fit  L. Sow  U. Ellipse
D. Rosette  M. Overwhelm  V. Yamamoto
E. Endymion  N. Negative  W. Half-Life
F. Dwarf  O. Libran  X. Airtight
G. Twisting  P. Odds  Y. Loess
H. Elektra  Q. Charlie's Wain  Z. Leo Minor
I. Night  R. Kron Three

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

Once again I'm making my quarterly plea for contributions to the GLPA Newsletter. I'm certain that you get tired of hearing it, and I get tired of searching for new ways to say it. If you have something you'd like to brag about, complain about, compliment, or have problems and solutions you'd like to share, submit an article for publication. It's not all that difficult, and would certainly make my job as editor easier.

Carl J. Wenning

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MAPS/GLPA (Continued)

A real highlight of the conference, for this member, was the Sunday evening organ concert on the mighty Wurlitzer theatre organ. Unfortunately not everyone in attendance was as avid a connoisseur of such music. The conversation and noise levels sometimes almost drowned out the music and that is not easy with such an organ under the control of a master keyboard artist. The organ concert preceded the Spitz/Noble address given by Dr. Frank Drake. His appraisal of the possibility of extra terrestrial life and the only feasible methods for finding it were expertly presented and enjoyed by all.

The group photo (which will surely be printed in a future issue) was most unusual. How often are we willing to remove panels at the top of the dome and shoot straight down at the conferees resting almost horizontal in the tilt back seats? You have to see it to appreciate it.

We all want to thank Don Hall and his staff for a good conference complete with the anticipated wizardry within the planetarium chamber. It was very thoughtful of Don to arrange the Rochester Lilac Festival at the same time.

Donald Tuttle, Dir.
Observatory and Pltm.
Elgin, Illinois
Using the DEFINITIONS below, try to fill in the WORDS column. Transfer the letters from these WORDS to the proper numbered square in the diagram. Work back and forth from the diagram to the WORDS column until both are completed. The first letters of the answers in the WORDS column will spell out the author and title of the work contained in the diagram.

<table>
<thead>
<tr>
<th>DEFINITIONS</th>
<th>WORDS</th>
<th>DEFINITIONS</th>
<th>WORDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. 1901 Nova (1882m, 210s) (Two Words)</td>
<td>71 46 128 108 81 118</td>
<td>L. Variable Nebula,</td>
<td>59 20 73 89 48 158 121</td>
</tr>
<tr>
<td>B. Reference Date or Time Used in Astronomy</td>
<td>26 14 173 62 152</td>
<td>M. Swiftness</td>
<td>122 106 39 146 166</td>
</tr>
<tr>
<td>C. In a Cardinal Direction</td>
<td>55 66 144 107 42 23 99 125</td>
<td>N. Lunar Crater (2305, 790%)</td>
<td>145 18 174 77 86 151 43 126</td>
</tr>
<tr>
<td>D. Type of Common Star (Two Words)</td>
<td>10 47 95 110 70 160 137 17</td>
<td>O. An Optical Phenomenon with the Setting Sun (Three Words)</td>
<td>97 27 129 44 139 176 154</td>
</tr>
<tr>
<td>E. He predicted the Meson in 1935</td>
<td>75 5 113 127 34 149</td>
<td>P. One who robs travelers</td>
<td>63 38 49 82 46 133 108 32</td>
</tr>
<tr>
<td>F. Vital, Bold Challenging</td>
<td>33 150 73 64 104 123 88</td>
<td>Q. Beyond in Space</td>
<td>167 159</td>
</tr>
<tr>
<td>G. Its Chemical Name means &quot;Violet&quot;</td>
<td>11 84 94 124 140 114 52 29</td>
<td>R. Noontime</td>
<td>61 101 51 171 35</td>
</tr>
<tr>
<td>H. Spectre, Huge Shadowy Optical Effect</td>
<td>74 153 37 182</td>
<td>S. Constellation, The Driver of Asterion and Chara</td>
<td>60 36 135 165 93 115</td>
</tr>
<tr>
<td>I. Lunar Scarp (2295, 89w) (Two Words)</td>
<td>90 120 147 30 67 49 132</td>
<td>T. &quot;Meaning Midnight&quot;, Meaning Midnight</td>
<td>116 102 130 76 9 142</td>
</tr>
<tr>
<td>J. Asteroid #994</td>
<td>134 41 8 78 157 111 24 56</td>
<td>U. Orientation of a Space Vehicle</td>
<td>109 16 58 164</td>
</tr>
<tr>
<td>K. Stellar Explosion seen in 1954 (1722m, 2795) (Two Words)</td>
<td>32 58 175 119</td>
<td>V. Element with the Same Atomic Number</td>
<td>82 12 26 96 136 112 45 170</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W. A Rare Earth, Element #71</td>
<td>87 168 103 156 131 143 69</td>
</tr>
</tbody>
</table>

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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 Autumnal 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, ISU Planetarium, Physics Dept., Illinois State University, Normal, Ill. 61761. Deadlines for contributions to the latest "Newsletter" fall on Feb. 15th, May 15th, August 15th and November 15th.
FROM THE EDITOR: As you can easily see, this edition of the GLPA Newsletter is crammed full of interesting and important information. One thing that should not be overlooked, however, is the ballot for election of new officers and the approval/rejection of the new GLPA By-Laws. Because the number of members attending the annual GLPA business meeting in Rochester was small, a decision was made to include a ballot in this Newsletter so that everyone would have a chance to vote on these important issues. The ballot, found at the end of this Newsletter, contains information concerning each candidate, and a proposal to adopt new By-Laws. Please consider the candidates and issues carefully. Sign, date, and return your ballot to GLPA Secretary/Treasurer, David E. Parker, promptly. Ballots received after Monday, October 3, 1983, will be considered invalid. More complete mailing information will be found on the ballot itself.

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INSIDE FRONT COVER: This unusual photograph shows a bird's eye view of the Star Theatre of the Strasenburgh Planetarium of the Rochester Museum and Science Center. At the center of the room is the Zeiss Model VI planetarium projector, surrounded by a ring of red and blue house lights. Seated in the theatre are members of the Middle Atlantic Planetarium Society and the Great Lakes Planetarium Association who held a joint meeting in Rochester, May 20-23.

The photograph was taken using the new super fine grain Kodak VR 100 color negative film, using a Canon AE-1 with a 20 mm wide angle lens. Exposure was at f/6.3, at 1/30th of a second. Lighting was accomplished by a Vivitar 285 flash serving as the master with seven additional slave units. Photo by Carl Dziedziech and Allan Schollnick.
PREPARING EFFECTIVE MATERIALS TO ENHANCE PLANETARIUM PUBLIC RELATIONS:
PART 2

Mitch Luman, Director
J. M McDonald Planetarium

Part one of this series examined ways to effectively employ the media release in PR surrounding your planetarium. Part two will discuss the construction of the media release in detail. Custom media releases to enhance you and your facility can’t be found in Hansen Planetarium show production materials. A certain amount of work is required in order to write one. Lacking the proper knowledge you may not have used this valuable tool in the past. To write a media release requires no more than simple knowledge of the written word, a little persistance and a format in which to relay the information. With the adherance to a few generally accepted rules and the desire to increase the effectiveness of your PR, you too can find yourself writing really terrific stuff.

Writing eye grabbing prose is a great technique, but it doesn’t get you in the evening paper. How you look on paper is equally important to what you say. Media releases should always be type-written, on good quality business size 8½ x 11 inch paper. Plain white bond is fine, but you’ll look light years better if you can get your hands on some of your institution’s letterhead stationery. At the J. M. McDonald Planetarium, we type our releases on plain white bond and then transfer them onto letterhead using a plain paper copier. The end product is a really sharp looking item. No one uses carbons anymore. Try to send out as original looking copies as possible. Set your typewriter margins to allow for an ample inch and a quarter spacing on both sides of the paper. If you use a pica machine, your margins will be around 12 and 77. Elite machines work equally well and have the advantage of squeezing more characters per inch of paper. Just keep your margins at an inch and a quarter. A wide margin is the trademark of a good media release. Four other equally important elements of a well written media release are the source, the instructions, the headline and the body.

The source is the part of the release that informs the reader of the article’s origin. The source should always include your planetarium’s name, the contact (your name), your return address, your telephone number and the date. The source is always placed in the upper right hand corner of the release. It is always single-spaced, flush left with just right of the center of the page. A typical source might read:

FROM:  J.M. MCDONALD PLANETARIUM
      Mitch Luman
      1330 North Burlington Ave.
      Hastings, NE 68901
      402-463-7126

      September 21, 1983

The instruction portion of the release is found above the left hand margin of the page. Often times the instructions are refered to as “slug lines”. The instructions will route your news item to the appropriate media person. The instructions will also tell the media when you wish the information to be published or aired. Slug lines are typed in all caps, underlined and double-spaced flush with the left margin of the page. The last slug line is usually even with the last line of the source material. The most widely used slug lines are the attention line and the release line. The attention line puts your release in the hands of the proper authority. In dealing with a newspaper this person will be the News Editor. When working with radio and TV stations your most obvious contact will probably be the News Director. The release line follows the attention line. It usually specifies that your item is for immediate release. Typical slug lines might read:

ATTENTION: NEWS EDITOR

FOR IMMEDIATE RELEASE
The headline is your release title. It is typed in the center of the page, all caps, three spaces below the slug lines and the source. The headline should be short, concise and tell what your release is about. A good headline can sell your release. Try to pick something that might catch someone's eye. Be inventive, but keep it credible. A typical planetarium headline might read:

 Locally Produced Show Is

Planetarium's Fall Feature

As you might expect, the body is the most important part of the release. In the body, you tell your story. The body should begin three spaces below the headline. It should be double-spaced and include five-space indentations at the beginning of each paragraph. The body is typed in upper and lower case letters. The body should be accurate, informative and to the point. Stick to the facts. Don't be too wordy. Start your first paragraph with your most important information. When a reader starts going through your release you'll want to have your most valuable information near the top of the page. This is known as writing in "pyramid style". By placing your key information at the top, you can circumvent a space conscious editor from deleting important things from your release. Editors usually start chopping from the bottom-up.

Your body can usually be about four or five paragraphs in length. Get the facts out in your first paragraph, add additional information in the second, supply background items in the third and save your last paragraph for a few blurbs about your planetarium. The place for your address is in the last paragraph, the place for your showtimes, for instance, would be near the top. Whenever possible, may I suggest that you use your own name in the release at least once. By saying such things as "according to so-and-so, Planetarium Director", your text will take on a more authoritative rapport with the reader. By using your name throughout the body, you can call attention to the most relevent portions of your release. Always try to present yourself as the authority. You may quote yourself as often as necessary in order to get your point across.

Try to keep your media releases to no more than one page, two at the most. A single page is all that you'll normally need to get the information you want to tell out in the open. Remember, stick to the facts. Should you require an additional page, type the words "(more)" at the bottom right of page one. At the top left of page two, type the words "Page 2" and continue where you left off. Page two should begin with a complete sentence, better still if it begins with a complete paragraph. Never divide a word between two pages. The second page is always on plain white bond. At the end of your release be sure to leave at least one and a half inches of margin at the bottom. Type the symbols # # # below the last line of your body to identify the end of the release. This is standard. Check for spelling errors, accuracy in dates, times, names and grammar. The key to writing good releases is to keep your body short, but full of information. Find your style and try to keep improving on it. Remember, your goal is to become your community's astronomy authority.

For more information on the art of PR, a good reference source is indispensable. I recommend the Public Relations and Publicity Style Book, 2nd edition, Ayer Press, Philadelphia, 1971. I found a copy of this fine guide to PR gathering dust at our local public library. Show materials furnished by the Hansen Planetarium, Salt Lake City, Utah, may also be of some help. Sample media releases may be located in both sources.
CALL TO ORDER--The meeting was called to order by President Eugene A. Jenneman at 3:50 p.m.

A letter of greeting was read from Maxine Haarstick, Minneapolis, who was unable to attend the conference.

MINUTES--A motion was made and seconded to approve the minutes of the annual business meeting held in Peoria, Illinois, as they were published in the Newsletter.

TREASURER'S REPORT--David Parker read the treasurer's report as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 1, 1982 checking account balance</td>
<td>$1204.67</td>
</tr>
<tr>
<td>Oct. 1, 1982 credit union balance</td>
<td>1515.32</td>
</tr>
<tr>
<td>Oct. 1, 1982 TOTAL BALANCE</td>
<td>2719.99</td>
</tr>
</tbody>
</table>

Checking Account:
Receipts: $1169.34
Disbursements: 1238.86
May 17, 1983 checking account balance 1135.15

Credit Union:
Dividends 72.32
May 17, 1983 credit union balance 1587.64
May 17, 1983 TOTAL BALANCE 2722.79

Don Tuttle pointed out that the Newsletter printing bills for the last three issues have not been sent out yet, but will be due soon.

MEMBERSHIP--The current membership stands at 157.

INSTRUCTIONAL MATERIALS--Jerry Mansfield reported that everything is running alright, but he would like to get more submissions from the membership.

EDUCATION--Jeff Hunt sent a report that two more TIPS booklets have been finished for this conference. They are "Helping the Handicapped in the Planetarium", edited by Gail Bouslog and Dave Parker, and "TIPS on Scriptwriting" by David Hoffman. The poetry booklet will be typed in final form this summer. Gary Tomlinson is preparing a bibliography of planetarium and astronomy related articles to be published in printed form and possibly on computer diskettes.

CONFERENCE PLANNING--No written invitations for the fall 1984 conference have been received. Invitations must be submitted in writing and should be submitted soon for that conference.

NOMINATION--Sheldon Schafer reported the slate of nominees for:

President-Elect --Jim Seevers
              --Gary Tomlinson
Secretary/Treasurer --David E. Parker
IPS Representative --Doris Forror
              --David Hoffman

There being no nominations from the floor, a motion was made and seconded to close the nominations. Motion carried. The Nominating Committee recommended, due to the low number of members present for the conference, that a ballot be conducted by mail in September. The officers elected will take office on the vernal equinox, 1984.
INTERNATIONAL PLANETARIUM SOCIETY--I.P.S. President Jeanne Bishop reported the "Planetarian" is on schedule and the next one will contain a new IPS Brochure. The I.P.S. script bank has not been reactivated and will be discussed at the next council meeting, August 2-3, 1983, at Richmond, VA. I.P.S. members are invited to attend.

The 1984 I.P.S. conference planning in Monterrey is on schedule SWAP will handle the paper sessions. The dues increase from $20 to $34 was necessary mainly because the printing could no longer be done as it had been done in the past. The next "Planetarian" should be out early and the Special Report--I.P.S. Planetarium Directory--should be out by the end of June. Each year there will be at least one special report from I.P.S.

Joe Hopkins, Bishop Planetarium, Brandenton, Florida, extended an invitation to attend the SEPA conference, June 19-23, 1984, at his facility, which includes 50' dome, Spitz STP, and computer utilization. The 1983 SEPA conference will be held at The Universe Theatre, Virginia Science Museum, Richmond, VA, August 2-7.

OLD BUSINESS--Gene Jenneman read the revised by-laws of the association to the members and solicited their comments and suggestions. The final form of the by-laws will be published and sent to every member for approval.

Gene also brought some information about the liability of the association and the officers in case of an accident at a conference. Some recommendations may be forthcoming in the future.

It was suggested by Diane Trainque that the treasurer should be bonded. The feasibility of doing that will be investigated by Sheldon Schafer.

NEW BUSINESS--It was announced that Jon U. Bell, Director of the Peninsula Planetarium, Newport News, VA, is looking for 1960's vintage Spitz Style bench seats. Phone (804) 595-1900.

Sheldon announced Support Services Alliance has a travel service and medical plans available. Details will be coming in the next Newsletter.

A request was made to return conference evaluation forms to Gary Tomlinson.

President Gene A. Jenneman thanked the executive committee members for their hard work and support. He also thanked the many members who have made contributions to the association.

A hearty round of applause was an expression of gratitude from the membership for Gene's leadership as GLPA president.

A motion was made by Jeanne Bishop and seconded by Gary Tomlinson to send a letter of support and appreciation to Maxine Haarstick.

The meeting was adjourned at 5:05 p.m.

Respectfully, submitted,
David E. Parker,
GLPA Secretary/Treasurer
FINANCIAL:

The dues increase was determined by an estimate of what would be minimal to keep I.P.S. in the black. Walt reports only one negative reaction and renewals running as usual. Charles Hagar is looking for corporate sponsors of Spitz Lecture Fund and for special projects. Jeanne Bishop wants to appoint a two person "watchdog" committee to work with Walt on short and long-range predictions of expenses. At the 1982 Council meeting I proposed Jon Marshall's recommendation that there be some reimbursement from the treasury for representatives and officers. The resolution was passed and now, for council meetings, the four officers receive two-thirds of their transportation and two nights room expenses. The affiliate representatives receive one-third of their transportation and two nights room expense. Council suggested that the individual affiliates pick up another third of their Rep's transportation.

PUBLICATIONS:

The Planetarium costs $2000 per issue without postage. Cost per member is about $4. It is mailed 3rd class in late Feb., May, Aug., and Nov. Jordan Marche' (Fleischman Planetarium, Univ. of Nev., Reno) is soliciting articles. Deadlines are equinoxes and solstices. Affiliate news to Jack Dunn (Univ. of Neb., Lincoln, NE) and News Notes to John Wharton (Oklahoma City) with deadlines mid Jan., Apr., July, and Oct.

John Wharton is doing yet another update on the Planetarium Directory (Would all you people please stay in one place for a while!) My major concern with the initial printout from John Cotton of the so-called revised Directory was missing a lot of foreign listings that were on earlier lists. As an International organization, our Directory ought to reflect that fact.

CONFERENCES:

The 1984 Conference in Monterrey, Mexico is being planned by the Alpha Center staff with assistance from the Association of Mexican Planetariums and S.W.A.P. At least a sub-theme of the conference will be archeoastronomy with possible extension tours in Mexico. Sounds exciting!

The 1986 Conference is a choice between Flandrau in Tucson and The Science Museum of Virginia in Richmond.

PROFESSIONAL:

Informal ties are being initiated with other associations in related astronomy and educational and research fields throughout the world to expand the I.P.S. resource base.
The tighter copyright regulations have caused I.P.S. to carefully re-examine the script bank and resource file. Charles Hagar and Jeanne are working on this problem.

Dennis Simopoulos has developed an outstanding set of criteria for the Awards Committee to follow for future committee member selection and recipient selections.

Eileen Starr of Eastern Washington University is trying for a grant to produce a set of 12 programs that have been used successfully in several planetariums in Washington. The title of this group is, "Humanities and the Stars: Interpreting the Astronomy and Mythology of Other Cultures". These programs were prepared with smaller planetariums with few special effects in mind. If funds are forthcoming, the cost for the entire package would be $360 or $30 for one program. Sounds good; keep your fingers crossed.

A MESSAGE FROM THE PRESIDENT:

Jeanne has asked me to tell you that her President's Memo to Council is not closed to the membership. If you would like to receive a copy also of this usually-quarterly letter, just send your name and address to Jeanne Bishop, 1721 Canterbury Road, Westlake, OH 44145 and she will mail you a copy when she sends each of us on the council one.

If you have any questions, suggestions or comments on any of the topics discussed here or about anything regarding I.P.S. please write me: 28728 Wolf Road., Bay Village, OH 44140.

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

VOX POPULI

Due to the raging demand for room to present "news" in the GLPA Newsletter, the following space has been reserved specifically for use by those who have submitted news items of interest:
NEWS NOTES:

Dan Goins, director of the Martinsville High School Planetarium, informs us that he will be hosting this year's Indiana Planetarium Workshop. The workshop will be held October 27-28 in Martinsville, IN. The themes for this year's workshop will be "Do-it-yourself special effects or modification of existing equipment." and "Computer software demo-exchange - Apple and TRS." The workshop will include a trip to Link Observatory of the Indiana University, which features a 36-inch reflector. Special accommodations are being arranged. For further information contact Dan at Martinsville, H.S., 1360 East Gray St., Martinsville, IN 46151. Tele: 342-5571  P.S. "Aliens" are welcome to attend!

The Illinois Planetarians will be holding their annual get-together on Saturday, October 15, in Elgin, Ill. Don Tuttle and Nancy Franklin will serve as hosts. Any interested planetarian is invited to attend, and to submit a paper. Participants will have a chance to see the old Elgin Observatory where the Elgin National Watch Company used to keep time by nightly observations of star transits. Anyone interested in contributing a paper should contact Don and Nancy at: District U-46, Observatory and Planetarium, 4 South Gifford St, Elgin, Ill. 60120, or telephone them at: (312) 888-5324 between 8:00 a.m. and 3:30 p.m. If you are outside Illinois you have not received the special mailing complete with response card. Please notify Don or Nancy so they can send you the final agenda.

The Executive Committee will be meeting at Chicago's Adler Planetarium on October 22, 1983. Anyone who has any business that ought to be brought before the committee should contact GLPA President Gene Jenneman immediately.

A variety of special short films are available for integration into longer programs. The films, dealing with the Voyager I and II encounter with Saturn, and the Uranus and Neptune encounter of 1986 and 1989, have very dark backgrounds, eliminating a need for a projected frame. These films are available from the company that printed them for NASA/JPL: Foto-Kem, 2800 West Olive, Burbank, CA 91505, ATTN: Reg Dunn, Tele phone: (213) 846-3101. As of March, (1983) the film prices (plus shipping, etc.) were:

<table>
<thead>
<tr>
<th>Film Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Voyager I: Saturn Encounter</td>
<td>$34.05</td>
</tr>
<tr>
<td>Voyager II: Saturn Encounter</td>
<td>26.26</td>
</tr>
<tr>
<td>Preview of Coming Attractions</td>
<td>12.86</td>
</tr>
</tbody>
</table>

Planning is underway for the fourth year of the NSTA/NASA Space Shuttle Student Involvement Program. Many previous winners experiments have flown on the Shuttle. Here's how you can get involved:

Students can prepare a proposal, not to exceed 1,000 words describing an experiment, in accordance with the 1983-84 Rules Booklet.

Teachers can request official rules booklets, entry forms and experiment guides from:
ELIGIBILITY: Any student in U.S. Schools, grades 9-12.

DEADLINE: Proposals must be received by your Regional Director no later than February 1, 1984. Regional Directors names and address can be found in the official Rules Booklet.

Last year 200 regional winners were selected from 3,000 entrants. The regional winners and their teacher/advisors were awarded an all-expense paid trip to a NASA Space Center for a three-day symposium where they presented their papers and met with astronauts, scientists, and engineers. Individual projects will be selected from this group to ride upon the Shuttle.

A discount of 20% is available to planetarium directors for meteorite purchases from: Robert Haag, 2990 E. Michigan Drive, P. O. Box 27527, Tucson, AZ 85726. Telephone: (602) 882-8804.

For a 25-page information packet dealing with the May 30, 1984, annual eclipse, send a large (9" X 12") self-addressed, stamped envelope (with 88¢ postage) to: Fred Espenak, CODE 693.1, NASA Goddard Space Flight Center, Greenbelt, MD 20771.

This year's annual gathering of the Great Plains Planetarium Association will convene in Hastings, Nebraska at the Hastings Museum - J.M. McDonald Planetarium. The conference is slated for Thursday, Friday and Saturday, October 27th, 28th and 29th. Conference highlights will include three paper sessions, two panel discussions, two original sky-shows, a film screening and door prizes. Registration for the conference will be $10.00 for G.P.P.A. members, $15.00 for non-members of the region. Conference housing is available.

Registration for the Great Plains Conference closes October 1st. For an information and registration packet write, Mitch Luman, 1983 G.P.P.A. Conference, J. M. McDonald Planetarium, 1330 North Burlington Ave., Hastings, NE, 68901.

Lock Ness Productions, in conjunction with Cosmic Craft, have been awarded a grant to produce a planetarium program celebrating NASA's 25 years in space exploration. The program, entitled, "All Systems Go!" commemorates the past quarter century of hopes, dreams, and aspirations that led us to explore space "for the benefit of all mankind." The show premiered at the SEPA meeting in Richmond, VA., August 1. More information will follow.
NEWS NOTES (CONT.)

Media Tech of Bradenton, Florida, announces a new group of programs for sale (in addition to their "Planetrol" control programs). For information, contact: Joe Hopkins, Bishop Planetarium, 201 10 Street West, Bradenton, FL 33505.

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

The long-promised planetarium at the Science Museum of Virginia has opened with a (big) bang - over 6,000 people saw opening day shows and nearly twice as many participated in outdoor activities on 23 April. Known as the Universe Planetarium/Space Theater, the new $6.2 million facility features a Digistar 1 (the world's first computer graphics planetarium projector); an Omnimax movie projector; Omni-Q sound with 108 speakers and total power of 17,000 watts; and an MC-10 automation system. The facility is being billed as the state-of-the-art Planetarium.

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

Answers to Astro-Gram #27

Henry Gibson  The Thumbnail  Did you ever stop to figure why the thumbnail is so hard? Well, it hasn't got much choice, what with all that skin to guard. It may look fat and pudgy, but its heart is good and true. It's prettier than a toenail and easier to chew.

A. HS Sagittarii  I. Straight Wall  Q. Ultra
B. Epoch  J. Otthild  R. Midday
C. Northward  K. Nova Ophiuchi  S. Bootes
D. Red Dwarf  L. Tuttles  T. Noon
E. Yukawa  M. Haste  U. Attitude
F. Gutty  N. Eichstadt  V. Isotope
G. Iodine  O. The Green Flash  W. Lutetium
H. Brocken  P. Highwayman

**************************
In the summer of 1983 edition of this Newsletter I discussed how to get planetary, lunar, and solar positions for the period from AD 150 to AD 2000. What if one chooses to investigate sky activity on a historical basis? A similar approach to last year's methods can be applied to Tuckerman's "Planetary, Lunar, and Solar Positions." (American Philosophical Society, Philadelphia, 1964). This work comes in two volumes: Vol I, 601 B.C. to A.D. 1, and Vol II, A.D. 2 to A.D. 1649.

Unlike the calculations based upon astrologer's tables, calculations based on Tuckerman's work are simple and straightforward. This latter work expressed positions in terms of celestial latitude and longitude. These values can be converted to more useful right ascension and declination using the following method. The declination (D) is related to celestial latitude (B) and longitude (L) by the following relationship:

\[
D = \text{ASN} \left[ \sin(B) \cdot \cos(E) + \cos(B) \cdot \sin(E) \cdot \sin(L) \right]
\]

where \(E\) is the obliquity of the ecliptic on the date in question. The obliquity can be adequately described over time as:

\[
E = 23^\circ 45.23 - 0^\circ 01.301 \cdot T - 0^\circ 00.000164 \cdot T^2 + 0.000000503 \cdot T^3
\]

where \(T\) is the number of Julian centuries after 1900.0 (\(T\) is negative for dates prior to 1900).

Calculating the right ascension (RA) of an object is only a little more complicated. The relationship for RA is:

\[
RA = \text{ATN} \left[ \left( \cos(E) \cdot \sin(L) - \tan(B) \cdot \sin(E) \right) / \cos(L) \right]
\]

The unfortunate fact about this equation is that it yields values for RA in a range from +90 to -90 degrees. Furthermore, the quadrant isn't specified. One can easily circumvent this problem by using the following trick. Let \(X = \cos(E) \cdot \sin(L) - \tan(B) \cdot \sin(E)\) and \(Y = \cos(L)\).

Now each of these values is positive or negative depending upon quadrant. A truth table for these functions is as follows:

<table>
<thead>
<tr>
<th>&quot;X&quot;</th>
<th>&quot;Y&quot;</th>
<th>QUADRANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td>1</td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>-</td>
<td>+</td>
<td>3</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

Hence, as a function of quadrant, the sign of \(X\) and \(Y\) are uniquely expressed. With this table it's easy to develop test equations that allow one to find the correct quadrant for RA. Let \(A\) be an auxiliary value defined by:

\[
A = \text{ATN} (X/Y)
\]

then:

- If \(X \geq 0\) and \(Y \geq 0\) then \(RA = A\) (first quadrant)
- If \(X \geq 0\) and \(Y < 0\) then \(RA = A + 180\) (second quadrant)
- If \(X < 0\) and \(Y < 0\) then \(RA = A + 180\) (third quadrant)
- If \(X < 0\) and \(Y \geq 0\) then \(RA = A + 360\) (fourth quadrant)

The value of RA, expressed in degrees, can be converted to hours by dividing by 15.
BY-LAWS OF THE
GREAT LAKES PLANETARIUM ASSOCIATION

ARTICLE I

NAME

Section 1. The name of this organization shall be the Great Lakes Planetarium Association.

ARTICLE II

PURPOSES AND ACTIVITIES

Section 1. The Great Lakes Planetarium Association is incorporated under the laws of the State of Michigan, as a non-profit organization, organized and operated for educational purposes within the meaning of Section 501 (c) (3) of the Internal Revenue Code, for the following purposes:

A. To promote professional communication between members of the planetarium profession.

B. To strive to improve the quality of planetarium programming and activities by providing educational opportunities to its members.

C. To promote a public awareness of the value of planetaria as educational institutions.

D. To solicit and receive grants, contributions, and other property, to enter into contracts, to engage needed personnel and services, and to transfer, hold and invest such real property as may be required to carry out the purposes of this association.

Section 2 Activities shall be restricted as follows:

A. No part of the money or other property received by the Association from any source, including its operations, shall be used directly or indirectly for the benefit of, or shall be distributable to the Officers, Members of the Committees, or other private persons; except that this Association shall be authorized to pay reasonable compensation for services rendered and to make payments necessary for the furtherance of the purposes set forth in this Article.

B. No substantial part of the activities of this Association shall be lobbying, or otherwise attempting to influence legislation, and this Association shall not participate in
BY-LAWS: GREAT LAKES PLANETARIUM ASSOCIATION

ARTICLE II - Section 2. -- Continued.

any political campaign on behalf of, or against, any candidate for public office.

ARTICLE III

MEMBERSHIP

Section 1. Membership in this Corporation shall be open to all individuals interested in the purposes of the Association and its activities, upon payment of dues.

Section 2. Membership shall be in the following classes:

A. Individual Membership shall be those persons actively engaged in planetarium work, or otherwise interested in the planetarium field.

B. Student Membership shall be those persons currently enrolled full-time in a secondary school, college, or university.

C. Honorary Membership

Section 3. Annual Membership in the Association shall be for one (1) year from October 1st through September 30th of the following year.

Section 4. The Membership attending an Annual Meeting may vote to confer Honorary Membership upon someone recommended for such recognition by the Executive Committee. Such person must fulfill the qualifications set forth for such Membership by the Executive Committee. An Honorary Member shall have full Membership privileges for life, and shall pay no dues.

Section 5. All Members shall have the right to vote.

Section 6. Membership Dues shall be established by the Executive Committee, with the approval of the Membership, at the Annual Meeting of the Association.

ARTICLE IV

MEETING OF MEMBERS

Section 1. The Annual Meeting of the Members of the Association for such business as may properly come before it, shall be held once each calendar year.
Section 2. The purpose of the Annual Meeting shall be to:

A. Hear the reports of the President, Secretary/Treasurer, Committee Chairperson, and the International Planetarium Society Representative.

B. Elect Officers.

C. Elect to Honorary Membership those persons recommended by the Executive Committee,

D. Conduct other appropriate business.

Section 3. The Association shall hold a Conference for its Members at least once each calendar year, at which the Annual Meeting shall be held.

Section 4. The Conference shall rotate among planetarium of the active Membership. The time and place of the Conference shall be determined by the Executive Committee, on the basis of invitations received from potential host institutions.

Section 5. Invitations from potential Conference hosts must be made in writing to the President of the Association by the chief governing body and/or executive officer of the institution extending the invitation.

Section 6. All Members in good standing shall have the right to vote at the Annual Meeting.

Section 7. Two-thirds of the Members registered at the Annual Conference shall constitute a quorum at the Annual Meeting.

Section 8. Votes shall be cast only by Members of the Association in attendance at the Annual Meeting. There shall be no voting by proxy.

Section 9. Whenever an issue shall arise requiring a prompt vote of the Membership, at a time other than the Annual Meeting, the Executive Committee may direct the Secretary/Treasurer to conduct a mail ballot vote.

ARTICLE V

EXECUTIVE COMMITTEE

Section 1. Management of the Association shall be vested in the Executive Committee, consisting of four (4) Officers of the Association, and five (5) standing Committee Chairpersons. All Members of the Executive Committee must be Members in good standing of the Association.
Section 2. There shall be a minimum of two (2) Executive Committee Meetings per year, although an Executive Committee Meeting shall be called, at any time, upon written request of any five (5) Executive Committee Members.

Section 3. A minimum of one (1) month notice shall be given, in writing, for any Executive Committee Meeting.

Section 4. A quorum shall consist of a majority of the Executive Committee Membership.

Section 5. Vacancies on the Executive Committee may be filled in accordance with Article VI, Section 6 and 7, or Article VIII, Section 7 of these By-Laws.

ARTICLE VI

OFFICERS

Section 1. Eligibility: Any Individual Member in good standing may be eligible to hold office.

Section 2. The Officers of the Association shall be: President, President-Elect, Secretary/Treasurer, and International Planetarium Society Representative.

Section 3. The Officers shall be elected at the Annual Meeting of the Association and shall serve two year (2) terms. The President-Elect shall become President at the conclusion of his/her term as President-Elect.

Section 4. The Officers of the Association shall assume the responsibilities of their office at the Vernal Equinox in the year following their election.

Section 5. In the event of a vacancy in the office of President, the President-Elect shall become President.

Section 6. In the event of a vacancy in the office of President-Elect, Secretary/Treasurer or International Planetarium Society Representative, the President may appoint a temporary replacement to serve until the next Annual Meeting, with the approval of the Executive Committee.

Section 7. Elected offices, temporarily filled by the President, shall be considered vacant at the next Annual Meeting of the Association. The office shall then be filled by a nominee duly elected by the Membership. The person elected shall immediately assume the office to which they were elected, and serve the remainder of the term for that office, plus one additional full term.
Section 8. Any officer may be removed from office by a two-thirds vote of the Members registered at an Annual Conference during the Annual Meeting.

Section 9. Duties:

A. The President shall:

1. Call and preside at all Meetings of the Executive Committee, and all other meetings of the Association.

2. Represent the Association at all times, unless another representative is designated by the President.

3. Appoint all Committee Chairpersons.

4. Prepare a written agenda for all Meetings.

5. Serve as an ex-official member of all Committees, except the Nominating Committee.

B. The President-Elect shall:

1. President at any Meeting at which the President is unable to be present.

2. Serve as Chairperson of the Nominating Committee.

3. Perform such other duties as may be assigned by the President and/or the Executive Committee.

C. The Secretary/Treasurer shall:

1. Record all Minutes of all Meetings.

2. Mail a copy of the Minutes to each Member of the Board of Directors within three (3) weeks after the Meeting.

3. Prepare and present Minutes from the previous Annual Meeting at the Annual Meeting.

4. Be responsible for all receipts and disbursements of the Association.

5. Prepare financial statements for all Meetings of the Executive Committee and the Association, and at other times as required by the Executive Committee.

6. Perform such other duties as may be required by the President or the Executive Committee.
7. Be responsible for an audit conducted as approved by the Executive Committee.

ARTICLE VII

COMMITTEES

Section 1. The Standing Committees of the Association shall be:

A. Membership
B. Publications
C. Education
D. Instructional Materials
E. Conference Planning
F. Nominations

Section 2. Each Committee Chairperson (except Nominations) shall be appointed by the President and must be a Member in good standing of the Association.

Section 3. Each Committee Chairperson shall serve a two-year (2) term concurrent with the term of the President. No Committee Chairperson may serve more than two (2) consecutive terms without approval of the Membership at an Annual Meeting.

Section 4. The duties of each Standing Committee shall be defined by the President.

Section 5. Each Committee Chairperson may appoint from the Membership, Committee Members to assist in carrying out the duties of the Committee.

Section 6. The Nomination Committee shall be chaired by the President-Elect, who will select a Committee of no less than three (3), nor more than five (5) Members who shall come from at least three (3) states within the Great Lakes Area.

The Committee shall:

A. Prepare a slate of officers to be voted on by the Membership at the appropriate Annual Meeting.
B. Announce that Slate of Officers in the Newsletter immediately preceding the Annual Meeting.
C. When necessary, nominate candidates to fill vacancies in accordance with Article VI, Section 7 of these By-Laws.

Section 7. In the event of a vacancy in a Standing Committee Chairperson position, the President shall appoint a new Chairperson to complete the unfinished term.

Section 8. Other Committees or Sub-Committees, may be appointed by the President as needed. The term of the Committee shall run concurrent with that of the President.

ARTICLE VIII

ASSOCIATION FINANCES

Section 1. The fiscal year of the Association shall run from October 1st through September 30th.

Section 2. All funds of the Association, not otherwise employed, shall be deposited in such banks, or other financial institutions, as the Executive Committee may determine. Any withdrawals of funds must be made and checks must be signed by the persons designated by the Executive Committee.

Section 3. No loans or advances shall be contracted on behalf of the Association and no notes or indebtedness shall be issued in its name, unless and except as authorized by the Executive Committee with approval of the Membership at an Annual Meeting.

Section 4. The President and/or other Executive Committee Members, subject to the approval of the Executive Committee, may enter into any contract or execute and deliver any instrument in the name and on behalf of the Association, and such authorization may be general or confined to specific instances.

ARTICLE IX

COMPENSATION AND REIMBURSEMENTS

Section 1. The Executive Committee shall serve without salary, but shall be eligible for reimbursement for expenses involved in the execution of their duties as outlined and approved by the Association Membership.

Section 2. The Executive Committee shall provide reimbursement to the Chairperson of the various state and multi-state workshops within the Great Lakes Planetarium Association, for expenses incurred by the workshop for which receipts are provided and to the extent authorized by the Association Membership.
BY-LAWS: GREAT LAKES PLANETARIUM ASSOCIATION

ARTICLE X

AMENDMENTS

Section 1. These By-Laws may be amended by majority vote of the Executive Committee provided written notice of the proposed amendment(s) have been sent to all Executive Committee Members at least fifteen (15) days before the vote.

Section 2. Any amendment made by the Executive Committee is subject to the approval of the General Membership with written notice of the amendment being published in the Newsletter preceding the Annual Meeting by at least twenty (20) days.

ARTICLE XI

ASSOCIATIONS AND AFFILIATIONS

Section 1. The Executive Committee may affiliate the Association with any other professional organization whose goals and purposes are relevant to those of the Great Lakes Planetarium Association, with the approval of the Membership at the Annual Meeting.

Section 2. The Executive Committee shall, upon approval of the Membership, pay such annual dues or fees established by the affiliate organization to maintain its membership.

ARTICLE XII

DISSOLUTION

Section 1. Upon dissolution of the Association, no Members shall be entitled to any distribution or division of its remaining money or property; or the proceeds thereof, and the balance of all the money and other property received by the Association from any source, including its operations, after payment of all debts and obligations of the Association shall be distributed to the Armand Spitz Fund of the International Planetarium Society; or other non-profit organization as deemed appropriate by the Executive Committee.
INSTRUCTIONS: Look over the "autobiographies" of all the candidates for office, and the proposal to adopt new BY-LAWS for the Great Lakes Planetarium Association. Mark your choices with an "X" in the appropriate box. Sign, date, and return your ballot immediately to: David E. Parker, GLPA Sec/Treas, Tipton Planetarium, 817 S. Main Street, Tipton, Indiana 46072. All ballots must be received by October 3, 1978. Ballots received after this deadline will be considered invalid. NOTE THAT THE BALLOT EXTENDS ONTO THE BACK OF SHEET.

OFFICE: PRESIDENT-ELECT (two candidates)

Gary Tomlinson: Currently the Assistant Director/Education Director at the Roger B. Chaffee Planetarium in Grand Rapids, Michigan. He has taught an astronomy course for Grand Rapids Junior College, as well as teacher workshops for Western Michigan University. His training was obtained from Yorkeoff High School Planetarium, Ball State University Planetarium, and Abrams Planetarium. In addition to receiving a Bachelor’s degree from Ball State and a Masters from Michigan State University, he attended West Virginia University. He is interested in Astronomy Education at all levels as evidenced by his attendance at numerous seminars and workshops in both Education and Astronomy/Planetarium Education and as evidenced by membership in the Council for Elementary Science International, National Science Teachers Association, Society of College Science Teachers, Astronomical Society of the Pacific, and Association of Astronomy Educators. In addition to IPS and most of the Planetarium regional associations, he is a member of The Planetary Society, the National Space Institute, and Association of Multi-Image. Mr. Tomlinson has been associated with a Volunteer Fire Dept. and an Emergency Medical Service and initiated an Astronomy Day for Michigan and chaired the event in Grand Rapids. Subsequently, his event was awarded the Edmund Award. He is currently National Astronomy Day Coordinator. He is a life member of Sigma Pi Sigma and Sigma Zeta (National Physics and Science Honor Societies) and is a "Hoosier Scholar."

Jim Seavers: Graduated from Illinois State University with a B.S. in 1968. Majored in Mathematics, Minored in physics and teaching. Taught math at high school level in 1968-69, and subsequently joined the staff of Chicago's Adler Planetarium as assistant astronomer, where he has remained since 1970. His current duties entail teaching about construction of telescopes and sky observing, as well as probing space by computer. From 1970-1977 co-authored numerous sky shows with Lee Simon for presentation at Adler. From 1977-80 was exhibit coordinator, creating such exhibits as: "Craters on the Moon," "Moon Rocks," "Comet Mural," and "Man the Navigator." Since 1980 Mr. Seavers has been part of the planetarium's Education Department. During this time span he has also served as Library Administrator, and optical shop instructor. He has authored two books, and prepared an article on amateur astronomy for Compton's Encyclopedia that will appear this year. In 1982 he served as interim planetarium director for the Merrilville (IN) Schools. Among all these duties he has also found time to teach Astronomy for Purdue University, and serve as a board member for the Chicago Society of Space Studies.
OFFICE: SECRETARY/TREASURER (one candidate)

David E. Parker: Received B.S. and M.A. degrees from Ball State University in 1970 and 1971. After being a graduate assistant at the BSU Planetarium for two years, started teaching at the Taylor High School Planetarium at Kokomo, Indiana, in 1970. Since 1973 has been the planetarium director at the Tipton Community Schools, Tipton, Indiana. Has been a member of GLPA and IPS since 1974, serving as GLPA slide bank curator and co-chairman of the Instructional Materials Committee from 1979 to 1982, and as GLPA Secretary/Treasurer since 1981.

OFFICE: INTERNATIONAL PLANETARIUM SOCIETY REPRESENTATIVE (one candidate)

David Hoffman: At present director of the Muskegan (Michigan) Community College Planetarium where he teaches classes in Astronomy. For nine years before that, was full-time director of Reiser Planetarium in Wyoming, Michigan. Before that, wrote programs for Viewlex. Served as past editor of the GLPA Newsletter and the IPS Planatarian. Has enjoyed serving both GLPA and IPS, and with your support, would like to do so again.

BY-LAWS

Shall these proposed by-laws (as appearing in the Autumn Equinox 1983 GLPA Newsletter) be adopted by the Great Lakes Planetarium Association thereby replacing the current by-laws of the Association?

[ ] Yes, I favor adoption of the proposed by-laws.

[ ] No, I reject adoption of the proposed by-laws.

(Signature)

(Date)
Using the definitions, fill in the words. Then transfer the letters from these words to the corresponding numbered squares. The solution to the lower portion of this puzzle is a quote from an astronomy-related book. The first letters of the words, taken in sequence, provide the author and the title of the work quoted. (Solution next month.)

**ASTRO-GRAM #28**

by DUANE ALLMAN

<table>
<thead>
<tr>
<th>Definitions</th>
<th>Words</th>
<th>Definitions</th>
<th>Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Full Name of the Astronomer who Discovered the Period-Luminosity Law in 1912 (Two Words)</td>
<td>160 95 213 147 55 136 49 25</td>
<td>N. 1974 Musical Composition by Bedrosian (Two Words)</td>
<td>28 105 74 182 55 203 178 158</td>
</tr>
<tr>
<td>B. Robert, Physicist and Rocket Pioneer</td>
<td>108 66 188 173 11 126 200</td>
<td>O. See Word 7 (Two Words)</td>
<td>119 193 176 59 208 13 74 176 10</td>
</tr>
<tr>
<td>C. Uninhibited, Flattered</td>
<td>92 47 93 59 47</td>
<td>P. Rather Long Unit of Time</td>
<td>191 135 160 209 208</td>
</tr>
<tr>
<td>D. Guiding Beliefs, Distinguishing Character</td>
<td>130 101 12 23 97</td>
<td>Q. Circle Used in Phases of Orbit</td>
<td>117 164 34 111 46 183 174</td>
</tr>
<tr>
<td>E. Horizontal Constellation with no Named Stars</td>
<td>12 48 146 99 36 177 116</td>
<td>R. Asteroid #7672: An Egyptian Goddess</td>
<td>70 179 108 134 176 148 172 11</td>
</tr>
<tr>
<td>G. Continuous Sequences or Ranges of Energy</td>
<td>3 97 146 43 115 46 167</td>
<td>T. With Word 0, &quot;The Reaction Principle&quot;</td>
<td>51 64 157 55 38 128 196 25</td>
</tr>
<tr>
<td>H. Inert Metallic Element</td>
<td>71 106 138 139 183 36 38 112</td>
<td>U. Site of Mysterious 1908 Explosion in Russia</td>
<td>127 116 62 185 135 204</td>
</tr>
<tr>
<td>I. _____ Moon, Full Moon Near the Autumnal Equinox</td>
<td>18 186 206 37 20 96 155</td>
<td>V. ___________ SHAPLEY, Astronomer</td>
<td>3 159 98 169 118 195</td>
</tr>
<tr>
<td>J. The Effect, Due to Doppler Shift of the Sun</td>
<td>56 99 122 141 24 41 161 107</td>
<td>W. ___________ Exit a Space Ship</td>
<td>211 103 17 116 191 191</td>
</tr>
<tr>
<td>K. Diagram Showing a Complicated Process (Two Words)</td>
<td>34 76 178 29 107 32 19 125</td>
<td>X. ___________ Biological Alteration Individual or Strain</td>
<td>209 11 44 117 130 129 149 194</td>
</tr>
<tr>
<td>L. Circulation or Movement Toward a Center</td>
<td>196</td>
<td>Y. Asteroid #670</td>
<td>137 192 42 36 53 198 156 118</td>
</tr>
<tr>
<td>M. The Bending of Folding Back at a Surface</td>
<td>77 64 152 177 102 34</td>
<td>Z. M. 99, NGC 3582 in Ursa Major (Two Words)</td>
<td>201 2 96 18 78 125 212 194</td>
</tr>
<tr>
<td></td>
<td>16 42 216 133 140 110 4 190</td>
<td>Z. A Well Known Collection of Sound Charts Used in Astronomy, Especially by Amateurs (Three Words)</td>
<td>136 106 27 151 164 187 43 54</td>
</tr>
<tr>
<td></td>
<td>87 70</td>
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23
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 Autumnal Equinox. General correspondence and requests for membership should be addressed to: Mr. David E. Parker, Tipton Middle School, 617 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, ISU Planetarium, Physics Dept., Illinois State University, Normal, Ill. 61761. Deadlines for contributions to the latest "Newsletter" fall on Feb. 15th, May 15th, August 15th and November 15th.
A LETTER FROM THE PRESIDENT'S DESK

I am pleased to report that GLPA has as its 1984 conference site - our first ever in Wisconsin - Milwaukee, Wisconsin. Gary Sampson at the Wauwatosa High School Planetarium will act as our conference host. Dave DeRemer at the Waukesha Planetarium and Jon Harmon at the University of Wisconsin - Milwaukee - Planetarium will act as co-hosts.

I am especially pleased that we will be taking the conference to a high school. The past several conferences have been at "museum" facilities and it is time to give our members in the classroom education environment equal time.

I encourage you to plan to participate in this conference via a paper presentation, handout, etc. This conference will not be a joint conference with another planetarium group as was the Rochester meeting, so there will be more time available to the members to participate. We also plan to provide time for people to tour the Milwaukee area. There's plenty to do and see.

Milwaukee is of course noted for its large production of a special golden-colored liquid. There will be a call for papers dealing with special effects you can produce in the planetarium either with the liquid or with the empty containers. (Michigan residents are exempt from submitting these papers due to the 10¢ deposit/refund law on all containers of this nature.) Perhaps one of the producers of this liquid can be persuaded to give a prize for the best effect.

Conference dates are October 25 - 27, 1984, plan now to attend. You will of course receive more formal information as the conference date draws near.

Your suggestions are welcome and needed in helping the conference planners to produce a quality convention for you.

Some of you who were at Rochester may recall that there was some discussion of GLPA going as a group to one of the shuttle launches in the Spring of 1984. At the October 22 Executive meeting, the Executive Committee decided not to attempt to organize a formal conference trip to a launch. The possibility of last minute changes in launch dates, etc., would make it difficult to organize and arrange. (Perhaps in a few years we will be able to arrange for a conference aboard the shuttle. Maybe we can get a group rate on get-away special containers.)

Also some of you who were at Rochester may have noticed that the by-laws printed in the past GLPA Newsletter for your approval were the preliminary set rather than the revised set based on the recommendation of the membership in Rochester. So the new by-laws you just passed via the mail vote have already been revised by the Executive Committee in October 83 to reflect the wishes of the membership as expressed at the Rochester meeting. The revisions are relatively minor but important none-the-less. (The revisions are noted in the minutes of the Executive Committee Meeting of October 1983.)

I would like to express, on behalf of the membership, sincere appreciation to Jeff Hunt and Carl Wenning, who have contributed a great deal of time and effort as education chairman and publication chairman. Both have expressed the desire to leave their respective positions. GLPA succeeds as an organization because of the dedication of people like Jeff and Carl, who give of their limited time to make a meaningful contribution to continuing the work of the organization. If you have a desire and the commitment necessary to do the same for GLPA, please let the executive committee know.

Finally, I wish to extend congratulations to the newly elected officers of GLPA, President-elect Gary Tomlinson, Secretary-Treasurer Dave Parker and IPS Representative Dave Hoffman. Each of these individuals have made valuable contributions to GLPA in the past and will continue to do so in the future.

Eugene Jenneman, President
Great Lakes Planetarium Association
ILLINOIS PLANETARIANS MEET IN ELGIN

On Saturday, October 15, ten Illinois planetarians convened at Elgin, Illinois, for their annual get-together. The site chosen for the meeting was the old Elgin National Watch Company's Observatory—the Midwest's WWV for many years. Hosting the meeting were Don Tuttle and Nancy Franklin. The Observatory, outfitted with its Spitz A3 planetarium in 1963, serves as the focus for astronomy education for the Elgin School District U-46.

Conference participants, who began the meeting over coffee and doughnuts, had a chance to mill about the Observatory inspecting a rather ancient, but well maintained, meridian transit telescope, and a host of antique time keeping and radio equipment. Conference also had a chance to observe an elementary gifted workshop that was in session at this time. Don's program for the gifted and talented students has been ongoing for 18 years and is recognized widely for its quality and strength within the state of Illinois. Over the years nearly 1500 students have participated in a program that meets weekly.

The formal beginning of the planetarium meeting began with a warm welcome by Don and a brief overview of the activities that the 26,000 students participate in annually at the planetarium. Don was certain to point out that he presented planetarium lessons—not shows or programs. Most attendees thought that this was a matter of semantics, but before the day was out it was clear that Don is dedicated to learning experiences within the planetarium in a way few other planetarians are.

The first presentation of the day was given by two sixth graders who gave a presentation dealing with the constellations of all four seasons. The students, Amy Tejes and Tony Macaluso, very professionally adjusted the stars to show the skies of each of the four seasons. They traded off, each correcting any mistakes made by the other, and then adding any details they thought necessary.

After this sky lecture, Don presented a medley of program segments from the Elgin school schedule. Program excerpts were from "Footsteps," "The Star of Bethlehem," "Mythology," and "Stonehenge." The Mythology program contained unique and original art that has been prepared by artists of all ages. The Stonehenge program segment featured a beautiful model of Stonehenge produced by Nancy Franklin that was projected in silhouette very effectively with a grain of wheat lamp. The realistic effects was employed to make a set of sky observations as would be seen from within that great stone circle.

After an appetizing lunch at the famed Milk Pail Restaurant, conference returned to the U-46 planetarium for an afternoon of paper sessions. Carl Wenning from Normal was first up. His presentation dealt with a new children's planetarium program entitled "Mr. Moon and Co.," a lesson based upon "Frank and Ernest" type cartoons where the planets talk with one another and tell about themselves. Steve Bishop of River Grove then took over to talk about the new $1.1 million Cernan Space Center currently under construction on the campus of Triton College. Don Tuttle presented a short discussion on solid state relays, and showed a dissolve unit he and an engineer friend put together for less than $30! Sheldon Schafer, told of efforts to influence the State Board of Education's "Science Literacy Task Force" as it formulates standards against which school districts can chart their progress in science education. The group unanimously adopted an initial set of guidelines that Sheldon had formulated, and recommend its acceptance. Jeff Hunt of Aurora displayed and discussed the new Celestron "Super C-8." Mel Stephenson of Rockford then concluded the session. He told about the success he has had with fund raising for a public planetarium in Rockford, Ill. He has met with considerable success, and hopes ultimately to raise $100,000 for a new facility to replace the current planetarium. The planetarium, which is currently housed in the Rockford Public Library, is operated entirely by volunteers.

The meeting closed with an agreement that the group would again meet in 1984, on Saturday, April 28, at the New Cernan Space Center in River Grove. Conference will get a closer look at the new facility which is due to open just a few weeks later.
Planetarium Tragedy Has Happy Ending

by Steven Bishop, Cernan Earth and Space Center

The original Cernan Earth and Space Center opened in 1974 with 30-foot hyperhemispheric dome, a Spitz 512 planetarium instrument and 60 seats. Attendance grew steadily as the years passed, especially after the introduction of 35mm “Cinema-360” wrap-around motion pictures and laser light shows. Over 70,000 persons attended programs annually in recent years, with as many as 60 programs presented weekly.

All this came to an abrupt end in February, 1982. Structural deterioration, which began soon after the building was completed, reached such proportions that college officials decided to close the facility to avoid any hazard to the public. Apparently caused by unstable fill material beneath the building, the deterioration produced cracked walls and floor, broken pipes and loose plaster. All but two of the planetarium’s fourteen staff were laid off.

The college appealed to the Illinois State Legislature for assistance. In September, 1982, the Legislature and Governor approved $1.1 million in construction funds. Because of the advanced state of deterioration, it was decided to construct a new facility rather than attempt to renovate the old one.

Ground was broken for the new Cernan Earth and Space Center in April, 1983. The new facility has the same floor area (11,000 sq. ft.) and houses the same programs (astronomy, geography, physical science) as the old building, but incorporates some improvements. The new planetarium is a 44-foot dome tilted at 25 degrees seating 100 persons. Planetarium public areas have been separated from college classrooms to minimize traffic flow conflicts. A large room has been placed beneath the planetarium to accommodate the Cinema-360 motion picture projector, sound system, and workshop. This room is on public view to persons waiting to enter the planetarium. Provisions have been made to allow for the possible installation of an Omnimax projector at some time in the future.

While the closure of our former facility was a tragedy, we look forward to resuming operation in the bigger and better planetarium that has arisen, like a Phoenix, from ashes.

GREAT PLAINS PLANETARIUM ASSOCIATION MEETS

The Great Plains Planetarium Association met October 27-29, 1983 in Hastings, NB. Mitch Luman, director of the J.M. McDonald Planetarium, served as host. The conference site was the Hastings Museum; one of the Midwest’s finest.

Presentations at the conference were entertaining and informative. One presentation, by Carolyn Pehrenback of the Pittsburg, Kansas Planetarium, dealt with a planetarium unit for an integrated reading and science teaching curriculum. Carolyn showed how to use basic science lessons as a foundation for teaching reading by the Language Experience Approach. Her paper will undoubtedly become a “classic” as far as planetarium education goes. Hopefully, we will all see the results published in the IPS Planetarian before long.

Theodore Stalek of Kansas State University presented a lecture demonstration entitled, “The New Fabric of Space.” The display featured a “three dimensional table top” that easily and clearly demonstrates the effects of gravity, and allows objects to interact with one another in a manner determined by their masses. Demonstrations included orbital motion, energy transfer, coupled motion, birth of a star, and a host of other gravitational effects. The paper, with illustrations and guidelines for building a $30 space fabric demonstration, will appear shortly in the Physics Teacher.

Another very noteworthy aspect of the conference was the presence of three planetarium manufacturer representatives: Ron Grant from Spitz Space Systems, Jim Nakashita from Goto, and Jeri Panek from Evans and Sutherland. All three corporations were major contributors to the conference. In addition, Ron Grant of Spitz took part in a panel discussion entitled, “The Planetarian As A Customer,” a highly informative and helpful bull session.
The three days of the conference went by without a hitch. The lectures were fewer in number, but as good as any this planetarium has ever seen. The planetarium programs given by Mitch Luman were short but quite good. Everything ran smoothly, and is a tribute to the hard job Mitch did preparing the conference. The three days went by all too quickly, as it often does when one enjoys himself—and learns something besides. This is one planetarian who hopes to attend the GPPA conference next year.

Carl Wenning, ISU Planetarian

MINUTES OF THE GLPA EXECUTIVE COMMITTEE MEETING (ABRIDGED)
OCTOBER 22, 1983, THE ADLER PLANETARIUM
CHICAGO, ILLINOIS

CALL TO ORDER-- The meeting was called to order at 9:52 A.M. E.S.T. by President Eugene A. Jennisman. Jim Seegers of the Adler Planetarium extended a hearty welcome to the committee. Rolls, coffee, and tea were furnished by the planetarium.

TREASURER'S REPORT--David Parker distributed copies of the conference financial statement from Don Hall and the fiscal year financial report.

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Details of receipts and reimbursements were reviewed. A motion was made and seconded to accept the report. Motion carried.

PUBLICATIONS--Carl Wenning, Newsletter editor, submitted his resignation. He has served as editor and chairman of the Publications Committee since October 1981, but due to the increasing number of outstanding and important commitments, he is resigning from these GLPA responsibilities effective no later than the Spring Equinox. He will assist the new editor with the first issue, if that is desired.

Carl reports that the Newsletter is running smoothly—all editions have been on time. He applauded Don Tuttle and Nancy Franklin for their outstanding work in assembling the finished Newsletter—typing, printing, labelling, stapling, mailing, etc. Even though members seem to be satisfied with the Newsletter, Carl says there is plenty of room for improvement. Not many newsworthy items are being contributed by the members. He suggested a meeting of all past editors to help iron out some of the problems.

It was suggested that members be encouraged to telephone the editor with newsworthy items. People will talk when they won't write. The suggestion was made to designate state or area workshop hosts as newsletter reporters to gather and forward newsy items. A motion was made by Sheldon Schafer and seconded by Jeff Hunt to designate state workshop hosts as newsletter reporters and give the Newsletter editor a telephone budget of $50 per issue telephone budget on a trial basis through the Spring Equinox issue. Motion passed.

EDUCATION--Jeff Hunt reported that Gail had typed and printed the poetry booklet and it would be ready for distribution at the next conference. Gary Tomlinson has been working on a planetarium and astronomy related bibliography resource booklet which may be published in printed form and also on computer diskette.

Jeff said he is committed to the poetry booklet and to the resources booklet, but would like to resign as Education Committee Chairman effective at the Spring Equinox.

Discussion was held concerning the donation of institutional services to GLPA. Gene emphasized the need for the Executive Committee and the members to be aware of the value of services, whether it was a cost actually incurred or a donated service, for future planning of projected costs. In the future, all donated services will be delineated to reflect the real cost of operating the association.
MINUTES (CONT.)

INTERNATIONAL PLANETARIUM SOCIETY--Sheldon attended the IPS Council meeting in Richmond, VA., August 2. There is now a new category of memberships--institutional. A world-wide planetarium survey will be implemented. The laser disk project will be terminated in six months if $7000 funding disks are not received. Money paid by IPS members for laser disks will be refunded.

A Crisis Action Team (CAT) was formed, headed by Mike Ryan, to provide support to planetariums that may be facing a crisis. Jeanne Bishop, IPS President, proposed members write articles for journals in support of planetarium education. She has a list of journals that would be suitable for planetarium articles. Digistar will produce three or four segments of their effects on video for IPS members. A resource list of planetarium training programs will be completed.

Ron Hartman was nominated for a special service award for his years of service as publications chairman.

OLD BUSINESS--

GLPA ELECTIONS--Sheldon Schafer, chairman of the nominating committee, and David Parker, reported the results of the recent election by mail-ballot:

President Elect - Gary Tomlinson
Secretary/Treas. - David E. Parker
IPS Representative - Dave Hoffman
By-Laws - Approved

Inadvertently, the set of by-laws published in the Newsletter did not contain the final revisions as read at the annual business meeting in Rochester. The changes to be made are:

Article III Section 6 - Add: The student membership rate shall be one-half the individual membership rate.

Article IV Section 4 - Change Planetarium to Planetaria.

Section 9 - Delete the word prompt.

Article V Section 1 - Include: Immediate past president.

Section 4 - Add: Two of whom shall be elected officers.

Article VI Section 9-B-1 Change President at to Preside at.

Section 9-C-2 Change Board of Directors to Executive Committee.

Article VIII Section 4 - Change Executive Committee Members in first line to read committee members.

Article IX Section 2 - Change Association Membership to Executive Committee.

Article XI Section 1 - Delete; with the approval of the membership at the final meeting.

Section 2 - Delete: upon approval of the membership.

Sheldon made a motion to accept these changes of the newly adopted by-laws to properly reflect the desires of the committee and the membership. Seconded by David Parker. Motion carried.
1984 CONFERENCE--Gary Sampson of Wauwatosa West High School and David DeRemer of Waukesha High School, both in the Milwaukee area, were present to give a presentation extolling the virtues of their high schools and the Milwaukee area. They are inviting GLPA to hold their 1984 conference in their area. Six to eight motels will be bidding on housing for the conference. The planetarium at the University of Wisconsin-Milwaukee, John Harmon, Director, will be willing to assist with the conference if it's operation has not been curtailed. Dates for the conference will be October 24-27. A motion was made and seconded to accept the invitation subject to the receipt of a formal letter of invitation from the host schools. Motion seconded and carried.

The date of the spring Executive Committee was set for April 14, 1984, at Wauwatosa West High School, 9:30 A.M.

AMERICAN PLANETARIUM ASSOCIATION--Sheldon attended the meeting in Richmond in August. He tried to persuade Jim Hooks to try to make APA less a formal organization and more like a fraternal service group, providing services to its members, such as buying power, discounts, and letterhead support. It would not have a constitution or by-laws and would be more of a brochure organization. SEPA was accepting of that premise. APA changed its name to the United States Planetarium Association. GLPA will pay its $50 dues when Jim Hooks feels things are rolling well enough to warrant payment. All members of GLPA will be eligible to receive benefits of SEPA because GLPA is a member; however, individuals not in a member organization may join under "institutional membership" for $5.00.

NEW BUSINESS

Discussion was held concerning the openings of Newsletter editor and Education Committee Chairman. Several individuals were suggested. The openings will be announced in the Winter Newsletter if no one is found before then.

Sheldon presented a copy of "Proposed Objectives for Astronomy Instruction in a K-12 Curriculum" which he prepared for the Illinois State Board of Education Science Literacy Task Force.

A copy of "Principles of Ethics of the Planetarium Profession", recently adopted by SEPA, was passed around and discussed.

Discussion was held concerning certification of planetarium personnel.

The meeting was adjourned at 3:15 P.M. with Gene's promise to call Sheldon precisely on the Vernal Equinox (March 20, 1984, 5:25:22 A.M., E.S.T.) to transfer the presidential reins of GLPA.

Respectfully Submitted:
David E. Parker, Secretary/Treasurer

FLASH ≠ FLASH ≠ FLASH

Lee Shapiro, former director of Abrams Planetarium and currently director at Chapel Hill, says that the Christmas Star that usually shines over the UNC Morehead Planetarium during the Christmas season will not be taken out of storage this year because of complaints that it is a religious symbol. The 8-foot-tall star has been used for years to advertise the planetarium's annual "Star of Bethlehem" program. Last year, for the first time, a University of North Carolina law school professor said that religious symbols should not adorn public buildings. The religious content of the program was also questioned, but Dr. Shapiro said that the show would continue because it does not contain a religious message.
Two vacancies will occur on the Executive Committee of GLPA effective at the spring equinox. These are the chairmanship of the Education Committee being vacated by Jeff Hunt of Aurora, IL and Publications Committee being vacated by Carl Wenning of Normal, IL. In accord with the By-Laws of this organization (Article, VII, Section 3), both of these individuals will have completed their terms at that time. Committee Chairpersons serve at the pleasure of the President and must be members in good standing with the Association. Traditionally, the Editorship of the GLPA Newsletter is the main duty of the Publications Chairperson. Hence, a new editor of this publication must be found immediately if the Newsletter is to remain current and on time. If you are interested in filling either of the two Chairs on the Executive Committee, contact Sheldon Schafer at Lakeview Museum Planetarium, 1125 W. Lake St., Peoria, IL. 61614 or call him at (309) 686-7000. If you would like more information pertaining to the duties of either of these positions, contact Jeff Hunt (Education Committee) at Waubonsie Valley H. S., 2590 Route 34, Aurora, IL. (312) 851-7900 or Carl Wenning (Publications Committee) ISU Planetarium, Illinois State University, Normal, IL. (309) 438-2496 or 8758.

At the recent Executive Committee Meeting in Chicago, Sheldon Schafer brought forward "Proposed Objective's for Astronomy Instruction in a K-12 Curriculum". This is a list of educational objectives that he prepared for the State of Illinois' Board of Education Science Literacy Task Force. A member of the Task Force indicated to him that the endorsement of a professional organization would lend support to the adoption of such objectives. The GLPA Executive Committee voted to adopt these preliminary objectives. In an earlier move, the planetarian's of Illinois gave the preliminary set of objectives the stamp of approval at a state meeting in Elgin. The GLPA Education Committee will work on a final set of objectives for consideration with input invited from the membership at large. Gail Bouslog noted that the Indiana Department of Public Instruction has already adopted standards for astronomy education. Anyone willing to contribute to the production of a model set of objective standards for astronomy education should contact Jeff Hunt or Sheldon Schafer. It should be noted that recent discussions with the Illinois State Board of Education show that the Board may be ready and willing to experiment with a series of astronomy related Chautauqua-type short courses for teachers of elementary science. This seems like an ideal chance to work hand-in-hand with teachers in curriculum development. Planetarians are encouraged to contact Carl Wenning immediately if they are willing to participate (with pay) in the presentation of such short courses.

In August, 1980, the membership of SEPA approved adoption of a document entitled "Principles of Ethics of the Planetarium Profession". The ethics of the profession, as seen by the SEPA conference, fall into three general categories: Commitment to Patrons, Commitment to the Profession, and Employer-Employee Relations. Each section begins with a preamble and then lists specific points that describe the principles that each planetarian should attempt to uphold in his dealings with patrons, employer and other planetarians. The GLPA Executive Committee is now looking at this document for possible enhancement and for later presentation to the membership for consideration. If you like to receive a copy of the "Principles of Ethics of the Planetarium Profession," send a self-addressed, stamped business envelope to the editor of this Newsletter.

An item of discussion at the GLPA Executive Committee meeting in Chicago, certification of planetarium educators is once again in the news. Certification would imply a certain amount of education, astronomy background, and planetarium experience from a variety of sources. Certification would constitute the endorsement of a professional organization, and might prove to be of assistance in securing and maintaining a position in the planetarium profession. The GLPA Executive Committee has requested that Gail Bouslog of the Western School District (Russiaville, IN) and Sheldon Schafer of the Lakeview Museum (Peoria, IL) to prepare a list of qualifications required to receive certification. If you have anything to contribute with regards to certification criteria, please contact Gail or
Sheldon. The issue will be a subject for discussion at the next Executive Committee meeting scheduled for April 14, 1984.

If you haven't paid your GLPA dues for 1983-84, you might want to do so now. As of September 30th approximately one-half of all GLPA members had not paid their dues. The dues are currently $13.00 per year. To remain in good standing, remit the required amount to David E. Parker, GLPA Sec/Treas, Tipton Planetarium, 817 S. Main St., Tipton, IN 46072.

Dues for the NSTA affiliated Association of Astronomy Educators are due. The fee is $5.00, payable to Robert Allen, Physics Dept.-Cowley Hall, University of Wisconsin-LaCrosse, LaCrosse, WI 54601.

The U.S. Air Force Academy in Colorado Springs, CO will host the spring meeting of the Rocky Mountain Planetarium Association (RMPA). The dates for this event are April 27-28, 1984. RMPA has an active membership of approximately 60 planetarians spread over a nine-state area. The Great Plains Planetarium Association will be meeting in Waterloo, Iowa next October. Alinda Campbell of the Grout Museum of History and Science will serve as hostess. Bruce Dietrich and his Reading (PA) School District Planetarium will host the May 1984 Mid-Atlantic Planetarium Society Conference. The dates are May 3, 4, and 5. Gary Sampson of Wauwatosa West High School and Dave DeRemer of Waukesha High School (both near Milwaukee, WI) have invited GLPA to hold the 1984 Conference in their area. Dates for the conference will be October 24-27. The International Planetarium Society conference will be held July 2-5, 1984 in Monterrey, Mexico. Special add-on trips to the Yucatan and Mexico City for 4 days and 3 nights may also be possible. Costs will be approximately $200 and $160 respectively. Special charter flights may be arranged at a 10 to 30 percent savings. The 1986 conference is currently scheduled for the Planerdale Planetarium, Tucson, AZ. A move to Richmond, VA may be a possibility in the wake of recent events occurring there. See the latest edition of the IPS Planetarian for details.

Spitz Space Systems, Inc. will offer a one-week Summer Institute in Planetarium Education August 6-10, 1984. The Institute will provide a foundation for the effective educational and motivational use of planetarium by identifying those concepts best taught in a planetarium. Students will be provided demonstrations in the use of the planetarium as a multi-media classroom. Instruction will also be provided in those principles of descriptive astronomy which are most applicable in the planetarium. The Institute will be directed by Dr. George Reed, Professor of Astronomy at West Chester University. Guest instructors will attend on a daily basis. Graduate credit will be available from West Chester University. Space is limited and early application is suggested. For more information write to:

1984 PLANETARIUM SUMMER INSTITUTE, SPITZ SPACE SYSTEMS, INC. ROUTE ONE, CHADDS FORD, PA 19317

Spitz Space Systems, Inc. recently sponsored a paper at the SEPA Conference in Richmond, VA which was presented by Patt Olmstead, a planetarium science teacher from New Castle, Delaware. The paper in entitled "Project Starwalk: Educational Success Through Partnerships", and deals with the Department of Education's grant of $500,000.00 awarded to "Project Starwalk". The Project shows that students participating in the planetarium program received scores three to six times higher than normal expectations versus those students not involved in a planetarium program. The group which conducted the validation study was the University of Delaware's Center for Educational Leadership and Evaluation. Spitz's objective in sponsoring Ms. Olmstead's paper at the SEPA Conference is to help strengthen the position of the planetarium within the educational community. Readers can utilize the information to enhance their present program or to provide proof to some recalcitrant board member of the effectiveness of teaching with the planetarium. If you desire further details, please feel free to contact Ron Grant at Spitz of Ms. Olmstead at: Project Starwalk, McCullough Planetarium, Chase Avenue, New Castle, DE 19720. (302) 429-4013.
Estes Industries of Penrose, Co is announcing that they are ready and willing to present a free, hands-on workshop for convention or conferences. The basic workshop requires a time period of 1½ to 2 hours for a talk, demonstrations, and actual construction of a model rocket by each teacher participant. In addition to keeping the model rocket which he or she builds, Estes furnishes each teacher with a teacher's guide on proven ways to utilize model rocketry as an extremely effective teaching aid, all supplies needed to build the rocket, three engines for flying the rocket, electrical igniters for the engines, recovery wadding for flying the rocket, a list of educational publications, information on discounts available to schools, and a current Estes Catalog. There is no charge for these supplies. Estes would like to provide an opportunity for each teacher to make the first flight right at the convention. This requires a suitable launch site (baseball diamond-sized or larger) and a thirty minute time period set aside at least two hours after the basic workshop. (This allows time for the glue to dry). The launch is not essential, but has proven very popular with the participants as well as being a good crowd-pleaser if everyone is invited out to see it. Each workshop would consist of 50 or more teachers, but exceptions are possible. There is no charge for these workshops. The only limitation is how many Estes can provide under each year's budget. If you would like to have Estes present one of these workshops, please write to: Robert L. Cannon, Mgr. Educational Services, Estes Industries, Penrose, CO 81240. Tel (303) 372-6565.

Anyone who has read through the most recent issue of the IPS Planetarian will know that Mark Littman has stepped down as director of Hanson Planetarium. The grant funded program dealing with Halley's Comet has not been endangered, however. The Science Museum of Virginia will be the producer-distribute. As with previous shows, production materials will be loaned for duplication at no charge, or may be purchased outright. The program, retitled "Comet Halley: Once in a Lifetime", will be 45 minutes in length. Release date is anticipated to be August, 1984. The creation of this program and its worldwide distribution are being made possible by very generous grants from the American Chemical Society, Bausch & Lomb, The Planetary Society, AAAS, and AAS. You may send your requests for production materials to Frank Bigger, ACS, 115 Sixteenth St., NW, Washington, DC 20036.

The Strasenburgh Planetarium announces that the sixth annual Planetarium Production Techniques Seminar is now scheduled from July 17-20, 1984 in Rochester, NY. The seminar will consist of several three-hour small group sessions dealing with such subjects as art/photography, audio production, etc. A six hour session will deal with the art of creating special effects. A special Pre-Seminar session will offer nine hours of instruction for new or relatively inexperienced planetarian's, people in art, audio, and effects. For more information contact: Don Hall, Rochester Museum and Science Center, 657 East Avenue, Box 1480, Rochester, NY 14603. Tel:(716) 271-4320.

Don Hall of Strasenburgh Planetarium would like to inform us that they have a new 20-minute minishow available, dealing with Halley's Comet. The Return of Halley's Comet begins with a look at comets in history covering both superstition and fact. It then goes on to tell the story of Edmund Halley. The show concludes with a description of what astronomers will be doing to record the 1985-86 series of events. The complete package sells for $290. For further information, contact Don at the address given above.

Terry E. Schmidt of Tersch Enterprises is about to sell his 1,000,000th slide. The institution or individual who purchases the 1,000,000th slide will receive a large 18 pound meteorite. The specimen, "worthy of any museum", is valued at approximately $4000. The winner will be notified by phone and the meteorite sent the same day. If you've been thinking about buying more Tersch slides, now might be the time to do it. To obtain a slide list, contact Tersch at P. O. Box 1059, Colorado Springs, CO. 80901. Tel: (303) 597-3603.
OMNIMUSIC of Port Washington, NY has prepared 26 albums of excellent background music that can be used in any of your planetarium productions. An annual "blanket" license gives you unlimited use of the complete library for a one year period. In addition, you will receive a complete set of albums free, as well as any new releases that become available during the term of your agreement. Educational institutions must pay $750 for the first year. For those producers who don't use enough music to justify an annual license, OMNIMUSIC may be used and licensed on an individual, per drop basis. Discover OMNIMUSIC. Write them requesting a sample record and an OMNIMUSIC brochure that details the vast array of music available for your use. Contact Sylvia Martin at OMNIMUSIC, 52 Main St., Port Washington, NY 11050 Tel: (516) 883-0121. Be sure to inform her that you heard about OMNIMUSIC through the OLPF Newsletter.

The Grand Rapids Public Museum and the Roger Chaffee Planetarium have come up with a delightful memento of Halley's Comet's next swing through the skies of earth—comet pills. The idea was born 73 years ago during the comet's last appearance on its regular orbit through the solar system. Cyanide gas had been discovered in the comet's tail, and enterprising salesmen traded on fear and superstition by hawking comet pills guaranteed to protect the gullible from any and all evil effects. There are no evil effects, of course, and the Museum is selling the comet pills as a reminder of bygone days. The comet pills are actually a healthful snack of yogurt covered sunflower seeds. Each two ounce jar is attractively packaged and bears a distinctive label filled with all sorts of Halley's comet lore—fact and fiction. If you are interested in obtaining a sample of this unique product, contact Gary Tomlinson, Grand Rapids Public Museum, 54 Jefferson Ave., S.E., Grand Rapids, MI. 49503. Tel. (616) 456-3985.

H.G. Wells, The First Men In the Moon. Vaster grew the earth and vaster, swallowing up the stars, and the silvery translucent starlit veil of cloud it wore spread out to catch me. At last the world seemed no longer a sphere, but flat, and then concave. It was no longer a planet in the sky, but the world of man.

A. Henrietta Leavitt
B. Goddard
C. Waved
D. Ethos
E. Lacerta
F. Leopard
G. Spectra
H. Tantalum
I. Harvest
J. Evershed
K. Flow Chart
L. Inflow
M. Reflection
N. Star's End
O. Third Law
P. Month
Q. Epicycle
R. Nephthys
S. Involute
T. Newton's
U. Tunguska
V. Harlow
W. Egress
X. Mutant
Y. Ottegebe
Z. Owl Nebula
Zl Norton’s Star Atlas
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 Autumnal 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, ISU Planetarium, Physics Dept., Illinois State University, Normal, Ill. 61761. Deadlines for contributions to the latest "Newsletter" fall on Feb. 15th, May 15th, August 15th and November 15th.