Some Planetarium Programs

of 1972-73

Edited By

June LoGuirato
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SOME PLANETARIUM PROGRAMS
OF 1972-73

Edited by
June LoGuirato

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INTERNATIONAL SOCIETY OF PLANETARIUM EDUCATORS

SPECIAL REPORT NO. 5
"Some Planetarium Programs of 1972-73"

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ABOUT THE EDITOR

June L. LoGuirato received her bachelor's degree in mathematics from Virginia Polytechnic Institute and State University and her master's degree in astronomy from George-town University. Although most of her research work has involved astronomical spectroscopy, she is also interested in disseminating astronomical information to the public.

Recently Editor LoGuirato has contributed short items to a number of popular magazines including *Sky and Telescope* and *Modern Astronomy*. She is affiliated with the National Capital Astronomers, Smithsonian Associates, Astronomical League, Astronomical Society of the Pacific, Pi Mu Epsilon, and Phi Kappa Phi.
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The ISPE Editorial Board is pleased to present this unusual work by June LoGuirato. In addition to a useful listing of planetarium topics and numerous quotations illustrating how these topics have been developed by various institutions, her report contains a unique analysis of program note writing. Those required to construct short descriptions of their programs for schedules, advertisements, and the like, should find many ideas herein. Students and newer members of the planetarium community will welcome the descriptions of resource materials and the planetarium cross reference.

Final typing of the manuscript for publication was carried out in the ISPE Executive Editor's office. Thus, any typographical errors surviving the proof reading are his responsibility. ISPE also assumes responsibility for the cover, title page, copyright information, advertising, this preface, all information concerning ISPE and its publications, and all other items that may normally be considered publisher's prerogatives.

The Editorial Board wishes to thank all planetariums who participated in the preparation of this report. Each institution listed in the planetarium cross reference has given us written permission to use its original material.

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Frank C. Jettner
ISPE Executive Editor

Albany, New York, U.S.A.
December 15, 1973
I. INTRODUCTION

1. Using This Booklet

Some Planetarium Programs of 1972-73 provides both a source of ideas for planetarium programming and a manual for writers of program notes. While neither original nor comprehensive, the booklet contains a useful cross section of current program topics. One hundred and five program notes and titles from twenty-nine planetariums have been included in the body of the text. The table of contents, prepared by analyzing approximately three hundred and twenty-five current program notes and titles, can be used as an outline for program scheduling.

Because of the wide range of skills within the planetarium community, some readers will find certain sections of this booklet boring while others will find the same material quite baffling. The student or novice planetarium operator may find that the astronomical terminology used in the planetarium notes is hard to understand. Lacking extensive training in planetarium operation, these beginners may also wonder how certain effects described in the program notes could ever be produced with their small planetarium projectors. Fortunately, these novices need not be baffled for long.

Astronomical vocabulary can be built through discussions with teachers or professors of earth science, astronomy, physics, space science, and planetarium education. Many planetarium educators, science teachers, and teaching astronomers belong to amateur astronomy clubs. Local newspapers often carry notices about these clubs and announce a club’s special trips to a neighborhood planetarium. Local societies within the United States can also be located with the aid of the Astronomical League (3) and "Here and There with Amateurs" (4).

Canadians should contact the Royal Astronomical Society of Canada (5) while planetarium educators in Britain can make inquiry through the British Astronomical Association (6). Sky and Telescope (7) contains information about amateur societies in other countries, and the newly formed International Union of Amateur Astronomers (8) may also be of assistance.

Novices should seek the aid of the reference librarian at their local public or school library. These librarians can guide the beginner to the more elementary textbooks, periodicals, encyclopedia articles, dictionaries, handbooks, etc., concerning astronomy. Some high school texts on earth science and physics contain references to astronomy. Bibliography of Science Courses of Study and Textbooks, Grades K-12 (9) published by the National Science Teachers Association is a lengthy listing of such elementary texts.

The bookstore at a local planetarium or museum may sell elementary books on astronomy, but many of these small bookstores don’t have current catalogues. Herbert Luft includes numerous astronomical books in his free price list (10). Scientific and educational magazines contain advertisements for many levels of astronomical textbooks, handbooks, ephemerides, etc. The beginner may find a magazine’s advertisements more informative than its more complex textual material.

More advanced members of the planetarium community can use Ake Wallenquist’s Dictionary of Astronomical Terms (11). Comparison of Wallenquist’s technical definitions with the definitions found in standard dictionaries can be helpful in program writing.

An extensive compilation of books and other teaching resources for astronomy education recently appeared in the American Journal of Physics (12). Unfortunately, this important article which is now distributed as a Resource Letter by the American Association of Physics Teachers contains out-dated and incorrect planetarium information (13).

A.A.P.T. Resource Letters are usually lengthy lists of references while Scientific American Offprints (14) contain written articles on specific scientific topics. These intermediate and advanced references should prove to be particularly worthwhile for college level personnel.

Education in and History of Modern Astronomy (15) contains a series of papers presented at the International Conference on Education in and History of Modern Astronomy, 1971. Edited by Dr. Berendzen, this advanced book includes many references and readable analyses of the astronomical material available for various grade levels.
The American Astronomical Society can supply more up-to-date information on its Task Group on Education in Astronomy (16).

"Astronomy Education Materials" (17) should be of great value to planetarium educators outside the United States of America. This advanced publication by the International Astronomical Union's Commission for the Teaching of Astronomy lists a number of different teaching materials available in various languages. "Astronomy Education Materials" contains tables of the following groups of materials: books; atlases, catalogues, encyclopedias, and dictionaries; magazines, journals, and yearbooks; lecture notes, exercises, and examination problems; films; and filmstrips, photographs, and slides.

With the aid of these references and some individual effort, the beginner will begin to talk like a pro and to read this booklet with greater understanding. However, acquisition of a good astronomical vocabulary is only part of the training needed for planetarium education. A vocabulary must be organized to express coherent concepts, and these concepts presented with the aid of planetarium equipment.

A series of articles on the "Principles of Planetarium Operation" is now appearing in The Planetarian (See advertisement on the inside back cover (18)). This journal, the official publication of the International Society of Planetarium Educators (ISPE), also contains regular features on the technical aspects of planetarium operation and on the latest astronomical developments.

A Bibliography of Planetarium Education, 1960 - May, 1973 (19) is a valuable guide to recent articles in a number of magazines. Articles describing the technical operation of a planetarium, past programs, educational approach to programming, and older program outlines are included in this lengthy bibliography.

O. Richard Norton's The Planetarium and the Atmospherium (20) includes valuable historical information. Planetaria and Their Uses for Education (21) contains forty papers from the 1958 Cranbrook Institute of Science's Symposium on Planetarium Education.

College departments of planetarium education can suggest other guides to the current literature (22). Science News recently published a special issue devoted to astronomy (23). The Griffith Observer (24) is a worthwhile elementary magazine, and many enjoy Natural History (25). However these magazines may not suit the needs of a particular individual. Experienced planetarium educators examine or buy a single issue of any magazine before acquiring a long term subscription.


Large technical libraries subscribe to the more advanced abstract journals. Among these are: Astronomy and Astrophysics Abstracts (27), Meteorological and Geoastrophysical Abstracts (28), and Science Citation Index (29). Astronomische Jahresbericht (30), a former journal that listed abstracts of important astronomical articles, was printed in German.

Information on program production is often exchanged at conventions of planetarium educators. Notices of upcoming meetings are published in The Planetarian. This ISPE journal also includes planetarium news notes from around the world. Information on regional planetarium associations in the United States and Canada can be obtained from ISPE. Regional Contributing Editors for all associations are listed quarterly in The Planetarian. (See information on inside front cover.)

For more data on individual planetariums, consult the planetarium cross reference in this booklet, "Planetarium Notes" (31) or ISPE's more complete Catalog of North American Planetaria (32). Planetariums of the World (33) should be consulted by planetarium educators residing outside North America.

Planetarium manufacturers sell or distribute many items of interest. The "Planetarium Director's Handbook" (34) is published by Spitz Space Systems, Inc. This leaflet describes concepts in astronomy and offers teaching ideas.

Requests for more information about particular brands of planetarium equipment should be addressed to the individual manufacturer or distributor. Such companies include: Farquhar Transparent Globes, Inc. (35), Goto Optical Co. (36), Planetariums Unlimited, Inc. (37), Spitz Space Systems, Inc. (38), Carl Zeiss, Inc. (39), and Carl Zeiss Jena (40).

So much for the basic references. The beginner may find the above list a bit overwhelming at first, but the intermediate or advanced planetarium educator is already
acquainted with much of this material. At this point, higher level planetarium educators may well ask if this report can be of value to them. After all, who needs another list telling which planetarium gave what particular programs?

The editor can answer the first of these questions but not the second. *Some Planetarium Programs of 1972-73* does not contain a comprehensive list of the programs given by any particular planetarium. It does contain a representative sample of current program notes and titles from both large and small institutions.

At least forty per cent of the programs submitted by each contributing planetarium had to be omitted, primarily to avoid unnecessary duplication. As the planetarium cross reference indicates, certain institutions initially contributed a larger number of program notes.

Several of the larger planetariums print separate brochures on school programs and individual public programs. The LOUISIANA ARTS AND SCIENCE CENTER PLANETARIUM, ROGER B. CHAFFEE PLANETARIUM, J. M. McDONALD PLANETARIUM, RALPH MUELLER PLANETARIUM, KIRKPATRICK PLANETARIUM, H. C. KENDALL PLANETARIUM, FELS PLANETARIUM, SAN ANTONIO COLLEGE PLANETARIUM, and HANSEN PLANETARIUM sent three or more different brochures. The editor received at least two separate publications from W. A. GAYLE PLANETARIUM, GRIFFITH OBSERVATORY AND PLANETARIUM, ADLER PLANETARIUM, MOREHEAD PLANETARIUM, NOBLE PLANETARIUM, and MANITOBA MUSEUM OF MAN AND NATURE PLANETARIUM.

Many smaller planetariums cannot afford to produce large program brochures, and these small installations advertise their programs by program title alone. Program titles were included in this booklet to acknowledge the contributions of these smaller institutions, to lend variety, and to increase the number of potential sources a planetarium educator might contact.

Directors of smaller planetariums who may be at the intermediate level of planetarium education must compensate for their lack of budget by an increase in their resourcefulness. This booklet can be of assistance since it includes references to unique programs and suggestions for a few entirely new themes. The program notes on standard topics should also be compared and evaluated. One of the biggest challenges in planetarium programming is to present a hackneyed subject in a new and interesting way.

Addresses have been included in the planetarium cross reference to facilitate further exchange of information about programming. Some planetariums may still be able to furnish detailed information on their individual programs and program schedules for 1972 and 1973. Many planetariums listed in *A Catalogue of North American Planetaria* (32) produced or are producing programs similar to those described here.

*Some Planetarium Programs of 1972-73* was also designed to be a manual for program note writers. Its editor considers the program notes themselves to be both program abstracts containing the basic show theme and advertisements designed to entice the general public or the school teacher, hence the school group, to see an upcoming program. Unfortunately, some of these abstract-advertisements are flawed by bad grammar, vague wording, or structural incoherence. Many of the worst program notes are prepared to advertise children's programs—with good reason.

Programs for young people are usually designed in one of two ways. A show can be carefully written so that the young audience is introduced to new vocabulary and new ideas in an entertaining fashion. Children's programs can also consist of a short formal presentation followed by numerous questions from the young audience—questions answered with the aid of the planetarium.

Describing either type of program in one or two paragraphs is very difficult. However, the LOUISIANA ARTS AND SCIENCE CENTER PLANETARIUM and the ALEXANDER F. MORRISON PLANETARIUM overcame this problem.

"Look Up in the Sky"
"A program for preschoolers"

"The following facts will be explored and developed in the sky show:
1. The sun gives us daylight.
2. There are millions of stars in the sky, but we can see only a few thousand without a telescope.
3. A telescope makes things look closer and larger.
4. The stars are really large; they look small because they are far away.
5. The stars are hot balls of fire.
6. The sun is a star.
7. The sun is the closest star to earth.
8. The sun gives us heat and light.
9. Groups of stars are called constellations.
10. The sun belongs to a family in the sky. We call it the solar system.
11. The solar system is the sun and nine planets.
12. Most planets have satellites.
13. The moon is a satellite of the planet, Earth.

LOUISIANA ARTS AND SCIENCE CENTER PLANETARIUM (41).

The above presentation is not a formal para-
graph but rather a program outline. Astro-
nomical terms are defined and astronomical
concepts are considered in logical order. It is
interesting to compare this outline with the
LOUISIANA ARTS AND SCIENCE CENTER PLAN-
ETARIUM's program note "Look Up in the
Sky" (Section IV, Part 1, page 11).

The ALEXANDER F. MORRISON PLANETARIUM pre-

tested an audience participation show enti-

tled "You Asked for It" (42). Well in ad-
vance of this program, the potential audi-

tence received a card containing the following
message.

"The Academy Projector enables us to show
the appearance of the sky at any time -- past,
present and future -- as seen from any loca-
tion on Earth's surface. The apparent mo-
tions of the sun, moon, stars and planets
can be duplicated with precision. Auxili-
ary projectors enable us to explain many
other astronomical phenomena. What would you
like to see?" (42)

When these inquiry cards were completed
and returned, audience questions were tab-
ulated and evaluated in terms of relevance
and ease of production. A loosely struc-
tured program based upon these audience ques-
tions was then designed.

Presentations such as "You Asked for It"
(42) are of particular value for younger audi-
ces. The sense of audience partici-
pation can be enhanced by announcing the
name of the individual who asked a parti-
cular question, just before this question is
answered with the aid of the planetarium.

If audience participation programs are to
be educationally sound, the school teacher,
scout leader, etc., should receive a copy of
the inquiry card well in advance. The plan-
etarium educator can still answer random
questions from the young audience, but pro-
grams based solely on random questions are
often illogical and confusing.

Since smaller planetarium projectors cannot
produce the full range of astronomical and
atmospheric effects, children's random ques-
tions may go unanswered and the young audi-
ence may be disappointed. By including de-
tailed information on the planetarium's
capacities along with a copy of the inquiry

card, such disappointments can be minimized.

Planetarium educators at the intermediate
and advanced levels will notice that the pro-
gram notes quoted in the body of this booklet
follow more conventional patterns. These
program notes illustrate the three basic ways
in which the style of a program note can be
varied. Yet it can be just as important to
vary the vocabulary within the program note.

The editor grew tired of reading about
"exciting sky show spectaculars." Each of
the overworked words in quotation marks can
be replaced by a suitable synonym. A thesau-
rus, an index to words that are identical or
almost identical in meaning, is of great
assistance in writing program notes or pro-
grams (43). Other writing aids including
handbooks on writing, unabridged dictionaries,
and rhyming dictionaries can be located with
the assistance of a reference librarian or
English teacher.

The style of a program note can be varied
in three basic ways--variation in length,
variation in point of view, and variation in
method of presentation. Some Planetarium
Programs of 1972-73 contains examples of all
styles of program notes except for notes over
one paragraph in length. Few institutions can
afford to print such lengthy program notes.

Section II, Part 4 includes examples of
both long and short program notes. The five
program notes in this section describe much
of the same material, but the variable length
of each presentation adds distinction to every
individual note.

Potential audience members are more likely
to read a brochure containing paragraphs of
varied length. However, there is a definite
difference in composing short and long program
notes.

In short program notes, every word is im-
portant. Short notes must be concise.

In the longer program notes, every sentence
must be justified. Coherence is important,
but the planetarium educator must not reveal
everything about the upcoming program. It may
be wise to end the longer program notes with
a question or intriguing statement. Doesn't
that seem logical for an advertisement?

Variation in point of view is easy to ac-
complish since the planetarium audience can
be addressed in three different manners. For
example:

The planetarium audience will be taken on a
flight to the moon.

(Audience addressed in third person
impersonal.)

You will be taken on a flight to the moon.

(Audience addressed in second person.)

We will be taken on a flight to the moon.

(Audience addressed in first person.)
"Bridges of Light" by FERNBANK SCIENCE CENTER PLANETARIUM (Section VI, page 13-14) is an example of a program note written in the third person impersonal. GRIFFITH OBSERVATORY AND PLANETARIUM's "Celestial Mythology" (Section X, Part 1, page 16) illustrates the use of the second person, while "South for the Winter" by ADLER PLANETARIUM (Section IV, Part 3, page 12) is an example of the first person style.

Planetarium educators should remember that in formal English a writer cannot change point of view in mid-sentence or mid-paragraph.

Faulty: We will journey to the moon and you will explore its craters.
Revised: We will journey to the moon and we will explore its craters.

Faulty: The planetarium audience can see the wonders of the universe. We will be thrilled by the spectacle.
Revised: The planetarium audience can see the wonders of the universe. The viewer will be thrilled by the spectacle.

Another means of varying program note style is to vary the method of presentation. The planetarium educator can use a question and answer approach, a scientific approach, or an historical approach.

The use of questions and answers is the most common method of presentation employed in program note writing. "Year of the Stars" by ROCK CREEK NATURE CENTER (Section III, Part 4, page 9) is a good example.

In this program note, two questions are asked. Then the note indicates that these and other questions will be answered in the upcoming planetarium program.

The scientific approach is illustrated by FERNBANK SCIENCE CENTER PLANETARIUM's "The Restless Heavens" (Section III, Part 4, page 9). This program note enumerates scientific facts about the earth. The note also implies that these facts will be fully explored in the future planetarium show.

Outlining the history of a subject is a third method of presentation. "The Invisible Universe" by the AMERICAN MUSEUM-HAYDEN PLANETARIUM (Section VI, page 14) exemplifies this approach.

This program note includes a brief history of radio astronomy. Then the note implies that this subject will be examined in depth in the planetarium presentation.

Planetarium educators should try to vary their program notes by utilizing the various styles discussed and illustrated in this booklet. Trial and error will enable the program note writer to find the style which suits his individual needs. The best style of writing, the style an individual writer feels most comfortable with, may not be illustrated in the booklet.

Advanced planetarium educators can also use this report to plan better planetarium booklets. The editor encountered difficulty in compiling a bibliography since many program brochures don't contain all the necessary bibliographic information: clearly discernible title on the cover page, name of publisher, place of publication, year of publication, and page numbers.

The title of a planetarium brochure should be presented in the boldest type style on the booklet cover.

Faulty: xyz planetarium, PROGRAM SCHEDULE
Revised: PROGRAM SCHEDULE FOR XYZ PLANETARIUM
Revised: XYZ PLANETARIUM PROGRAM SCHEDULE

It is best to place the title at the top of the cover page. Titles which include dates can be separated with the main title on the top of the page and the date at the bottom. For example:

XYZ PLANETARIUM AUTUMN, 1973

The booklet's publisher can also be included at the bottom of the cover page. For example:

1972 SKY SHOW SCHEDULE XYZ PLANETARIUM Anytown Park Commission

All titles should be written in grammatically correct form.

Faulty: XYZ PLANETARIUM; 1972; PROGRAM
Revised: 1972 PROGRAM SCHEDULE FOR XYZ PLANETARIUM
Revised: XYZ PLANETARIUM SCHOOL PROGRAMS FOR 1972

The editor found that many creatively designed brochures lacked important details like year of publication and page numbers. It is disconcerting to know the exact days on which a program was presented yet be ignorant of the year of presentation. By including year of publication within a program brochure, the planetarium educator can help
to eliminate undesired repetition of programs or program notes.

The value of page numbers is illustrated by the planetarium cross reference in this booklet. Separate program notes can be referred to by page number and easily located.

Planetarium educators should check their own brochures for the presence of these mundane yet important details. Brochure writers may also note that Some Planetarium Programs of 1972-73 contains samples of: a title page, copyright information, a preface, a table of contents, and a planetarium cross reference which is a partial index and an address list. The unconventional bibliography should not be used as an example. Kate Turabian in A Manual for Writers of Term Papers, Theses and Dissertations (44) gives examples of correct bibliographic form.

Remember that scissors can be of great value in designing the layout for a booklet. Section II, Part 4 was designed by typing all Christmas program notes on one sheet. Then this sheet was cut up into individual paragraphs and the paragraphs rearranged until a suitable format was developed.

Some Planetarium Programs of 1972-73 has one major flaw. Like other manuals of style and booklets of ideas, this booklet requires an effort on the part of its readership. If the individual planetarium educator does not use the references, attempt to write program notes in various styles, or evaluate his own brochures for completeness and originality, then this booklet will rot on the library shelf. The individual who makes an effort to utilize this booklet will notice improvement in his astronomical vocabulary, his understanding of planetarium work, his ability to locate new programming ideas, or his ability to write and design program brochures.

2 Preparing This Report

The program notes in this booklet were compiled by requesting the program schedules from the fifty most active planetariums listed in "Planetarium Notes" (31). Twenty-nine planetariums replied, sending program notes and titles in the form of circulars, letters, booklets, and single typed sheets.

The editor's collection of program notes is probably representative of the current state of affairs within the planetarium community. A few planetariums can produce and distribute monthly circulars containing notes which are several hundred words in length; others find it difficult to produce a yearly listing of dates and program titles.

All program notes and titles in this collection were classified by subject matter. An outline was drawn up from this initial classification and the individual program notes and titles coded so that they could be easily located.

A copy of the initial outline plus the first five hundred words of the booklet were sent to Mr. Frank Jettner, Executive Editor of the ISPE. When he expressed interest in the prospectus, the first draft of Some Planetarium Programs of 1972-73 was written and edited. Quotations from the original program notes were arranged and the editor wrote the introduction, bibliography, and cross reference list. The initial outline was revised to form the present table of contents.

After some alteration of the first draft, letters of notification were sent to each planetarium whose program notes and titles were included in this draft. The notification letters included clippings of all quoted materials and planetarium information.

Only materials approved by the contributing planetariums were used in the current booklet. The twenty-nine contributors have stated that all materials quoted from their brochures are totally original or are original composites of information found in a large number of readily available sources.

The designation / sic / indicates a misspelling or British spelling in the quoted material. If more than one set of quotation marks occur within a single paragraph, this quotation was either assembled from several different paragraphs in the original source or assembled by reordering the sentences in a single paragraph of the original reference.

In order to fit quotations into this report format, a word, phrase, or sentence occasionally had to be omitted from or added to the original material. Omissions are indicated by three spaced periods (...) while additions appear in parentheses.

Planetarium names appear in capital letters in the body of the text. In the unconventional bibliography and the planetarium cross reference, a program brochure's place of origin is capitalized. Planetariums are traditionally listed in the alphabetic order of the city and state (Canadian province) in which they are located.

Because of lack of information in the source material, quotation from individual planetariums could not be footnoted. The unconventional bibliography contains some information traditionally found in footnotes.

The scientific method of referencing was adopted. This method which indicates refer-
ences by a number in parentheses was applied to traditional references, quotations, and addresses. In the body of the text, references do not run in consecutive order, and the name of a planetarium may appear with several different reference numbers since some planetariums contributed more than one brochure. This unconventional reference system is difficult to explain but fairly easy to use.

There is a slight variation between addresses given in the planetarium cross reference and those given in A Catalog of North American Planetaria (32). Addresses printed in the planetarium brochures were considered more correct.

Although references were checked with care, the editor cannot be responsible for the current availability of all materials nor for the correctness of every address. A large number of references have been included so that if one item is unavailable or unsuitable, another can be substituted in its place.

Because of space limitations, this report is not a comprehensive list of resources available to the planetarium community. Many items of merit had to be omitted; and inclusion of a particular company, organization, magazine, or book does not necessarily constitute an unqualified endorsement by the editor or the ISPE.

III Acknowledgments

The aid of all twenty-nine contributing planetariums is gratefully acknowledged. Their names frequently occur throughout Some Planetarium Programs of 1972-73 since their program notes made this booklet possible.

The editor also thanks Dr. Berenice Lamberton, Mr. Michael LoGuirato, and Dr. James Q. Gant of the National Capital Astronomers for their advice and encouragement. Mrs. Brenda Corbin, Librarian, U.S. Naval Observatory, supplied bibliographic information on a number of references.

Mr. Frank Jettner's advice and guidance have proven to be invaluable. Many references were added as a result of his suggestions.

Publication of the ISPE Special Report was carried out by Mr. Jettner's office in the Department of Astronomy and Space Science, the State University of New York at Albany. The body of the manuscript was typed on their IBM Selectric II typewriter. Printing was accomplished in the SUNYA Printing Shop.

The editor thanks the International Society of Planetarium Educators and Dr. J. U. Gunter for underwriting part of the mailing costs.

II Holiday Celebrations in the Planetarium

1 Easter

"'Easter Story' - A traditional presentation combining the arrival of Spring in the northern hemisphere with the pagentry / sic _/ surrounding the celebration of Easter." ROBERT T. LONGWAY PLANETARIUM (45)

"'Easter the Awakening' - The all-time favorite program, rich in pageantry and tempered with man's scriptural view of his universe." MOREHEAD PLANETARIUM (46)

For those desiring a more secular approach, a celebration on the first day of spring including a program on the vernal equinox and the seasons can be presented. In 1972 or 1973, no planetarium celebrated the appearance of Sirius on the eastern horizon just before the sun, thereby missing an opportu-
trology and the science fiction universe. For more information on the two latter programs by the RALPH MUELLER PLANETARIUM see Section X, Part 2 Astrology and Section XI, Astronomy and the Fine Arts.

4 Christmas

Programs about the Christmas star and current Christmas skies were the most popular single planetarium feature in 1972 and 1973. Planetariums can alternate a program on the Christmas star with a multi-media presentation. For more information see Section II, Part 5 New Year's Eve.

"Festivals of the Winter Sky" - Why is Christmas celebrated in December, when most biblical scholars agree that the Nativity took place in the spring? This program explains the reasons for this discrepancy and the significance of the December 25 date. Saturnalia, the winter solstice, the new year, and calendar changes are discussed, as well as the spectacular winter sky .... CHARLES HAYDEN PLANETARIUM (50)

"Silent Night, Holy Night" ... Our traditional program concerning the Star of Bethlehem." CALGARY CENTENNIAL PLANETARIUM (51)

"Stars of Christmas" - The Star which is associated historically with the birth of Jesus, has become a symbol of the Christmas season. Yet no one knows the nature of that star. We look back in history and reconstruct the astronomical happenings of 2000 years ago. Each event is evaluated to determine if one might have been the star referred to in the Bible and followed by the Wise Men." AMERICAN MUSEUM-HAYDEN PLANETARIUM (52)

"The blazing Christmas star is depicted above Bethlehem in the Traditional Star of Bethlehem show." FLEISCHMANN ATMOSPHERIUM-PLANETARIUM (53)

"Star of Wonder" - What was the Christmas Star? What happened to the Star of Wonder? In this traditional Christmas show we explain and demonstrate some of the things astronomers suggest may have been the 'Star of Bethlehem' which has long since disappeared from our skies." SAN ANTONIO COLLEGE PLANETARIUM (54)

5 New Year's Eve

Planetarium audiences can happily discover that a light festival is an appropriate way to ring in the new year.

"Light Festival Returns" - Rainbow Jam Light Artists and a company of professional musicians join forces for a new series of light show concerts ... Spend an evening of your holiday season at this unique event as the Planetarium dome erupts in ever-changing color and design to the accompaniment of quality music. ... "There will be two performances on New Year's Eve." HANSEN PLANETARIUM (55)

The KENDALL PLANETARIUM scheduled a multimedia special to run concurrently with its traditional Christmas program.

"A Technicolor Fantasy" ... a fantasy program full of colors, sound and fun. A unique planetarium multi-media special." H. C. KENDALL PLANETARIUM (56)

For more information on Christmas programs see Section II, part 4.

III The Solar System

1 General Information

Programs on the solar system are often presented for young children experiencing their first formal contact with astronomy. Planetarium programs of this type are of great value to the elementary or junior high school teacher who wants to present more than dry facts and figures about the sun's family.

"The Sun's Family" ... The sun is at the centre of a whole family of heavenly bodies which include planets, moons, comets, meteoroids, and asteroids. ... Our solar system as we know it today is composed of one star, nine planets, 32 moons, several comets, and untold billions of asteroids and meteoroids. Included in the program are data about sizes, temperatures, number of moons per planet, and other important facts. We make a brief visit to Venus, Mars and the vicinity of Jupiter and Saturn; then return
to earth from our grand tour in time to watch a meteor shower sunrise." MANITOBA MUSEUM OF MAN AND NATURE PLANETARIUM (58)

" 'All about Planets' - An introduction to the family of the Sun emphasizing how to find the planets, how they move, and recent discoveries about them." MOREHEAD PLANETARIUM (46)

" 'The Sun's Family' ... About five billion years ago, the Sun and its system of planets began to form out of cosmic material. One of these planets - Earth - received the proper amount of solar energy to nurture life. We'll investigate the nature of the Sun and then visit several planets to see how they are alike and how they differ. We'll learn why all the planets revolve around the Sun in the same direction and how planets differ from stars." FELS PLANETARIUM (59)

For further programs on Copernicus and the solar system see Section X, Part 3 Historical Figures and Accomplishments.

2 The Sun

" 'Secrets of the Golden Disk' ... Spinning slowly in the vastness of space, a yellow dwarf star pours forth its life-supporting energy. And from a tiny satellite almost ninety-three million miles away, we watch a golden disk move majestically across the sky, a definitive portrait of the most important member of our solar system, the sun." W. A. GAYLE PLANETARIUM (60)

" 'A Star Called Sun' ... Our sun ... is a rather mediocre star that appears to be the biggest, brightest, and warmest only because it is the closest. We observe this raging inferno from close-up, demonstrating the proton-proton cycle that accounts for vast amounts of hydrogen being converted to helium and energy every second. Such anomalies as sunspots, solar flares, and prominences are shown, as are their effects on earth's atmosphere." MANITOBA MUSEUM OF MAN AND NATURE PLANETARIUM (58)

3 The Earth as a Planet

" 'The Blue Planet' ... An astronomer's view of the earth, its weather, and seasons, and its uniqueness in the solar system." BURKE BAKER PLANETARIUM (61)

" 'Spaceship Earth' - Earth is planet number three, a small world, yet very likely the only one in the solar system that supports life. We explore Earth as a planet - its motions and their effects, resources of this planet and the delicate balances among them that must be maintained in order for life to survive." AMERICAN MUSEUM-HAYDEN PLANETARIUM (52)

With the aid of auxiliary projectors atmospheric effects such as rainbows, lightning, and auroras can be presented. Because of our increasing knowledge of the magnetosphere, a program on new insights into solar-terrestrial relations including the causes of the auroras can be considered.

4 Terrestrial Motions

" 'The Restless Heavens' ... The apparent calmness of the westward flowing night sky hides the many motions of the mother planet. From a privileged seat among the stars, the audience will observe the earth's spinning upon its axis and the moon's monthly journey around the earth, as well as the effect of the earth's motion in its orbit around the sun. Finally the audience will explore the lesser known motions of the toplike wobble of the earth's axis and the rotation of the entire Milky Way galaxy of which the earth is a part." FERNBANK SCIENCE CENTER PLANETARIUM (62)

" 'Year of the Stars' ... We say that earth orbits the sun once each year, but how can we prove it? Have you ever watched it go around? If not, join us as we condense 12 months into one program and mark the signs of yearly motion. We guarantee you won't age a year this time around!" ROCK CREEK NATURE CENTER (57)

5 Time and the Calendar

" 'It's About Time' ... Time is a familiar dimension which dominates our lives and yet, finally, is as mysterious as the infinite depths of space. After investigating the strange units of time on the imaginary planet of Idris, we will see how the people on the planet Earth developed their day, month, and year. Finally, after considering the cosmic year, we will probe some of the mysterious time alternations caused by travel at speeds close to that of light." ADLER PLANETARIUM (63)

" 'Firmament of Time' ... We live on a clock, for Earth moves through space to give us the day and year as fundamental units of time. In the sky we find the astronomical origin of the week, month and seasons. From the primitive sundial to the latest atomic clock, Man has been anxious to keep in time with the cosmos. In this program, we review some of his accomplishments along the way toward this goal." FELS PLANETARIUM (59)

6 The Seasons

The ROGER B. CHAFFEE PLANETARIUM offered "Reasons for the Seasons" for elementary school students (64).

" 'Reasons for the Seasons' ... Why is the
7 The Moon

"'Our Neighbor World' — Since the Apollo 11 mission when astronauts walked on the Moon, we've learned much about our neighbor world. But there are still many unanswered questions that perplex us. We explore man's knowledge of the Moon,..." AMERICAN MUSEUM-HAYDEN PLANETARIUM (52)

"'Where the Wind Sleeps'... The moon is a world with no clouds, no trees, no soft breezes, no snows of winter, no mantle of grass. Why then has man been so fascinated with the Queen of the Night?" NOBLE PLANETARIUM (65)

"'New Discoveries from the Moon' — It is only natural that man... now reaches out for other worlds. The moon, the nearest of all celestial objects, was obviously destined to be the first goal in space exploration. The astronauts who went there returned with fabulous stories and treasures -- not of gold, or of exotic beasts -- but of the secrets of creation. The experiments they performed, the rocks they brought back, are helping us piece together the puzzle of the moon's formation. In this presentation you will learn of the Apollo discoveries, the still unsolved problems, the origin of the moon, and future plans for the construction of a permanent lunar colony." GRIFFITH OBSERVATORY AND PLANETARIUM (66)

"'Craters of the Moon'... Travel across the lunar landscape and discover how the ancient craters on the moon were formed." BURKE BAKER PLANETARIUM (61)

For more programs on the moon and lunar exploration, see Section VIII, Part I With Apollo to the Moon.

8 Eclipses

"'Celestial Hide and Seek'... A total eclipse of the sun is the most awe-inspiring event that nature can produce. Through a fortunate circumstance, the sun and the moon are so spaced from the earth that their apparent size in the sky is nearly identical, giving rise to the events that surround a solar eclipse. This year four eclipses will occur, two of the sun and two of the moon. The audience will journey from the Antarctic to Canada and back home again to Fernbank to witness this year's celestial spectaculums." FERNBANK SCIENCE CENTER PLANETARIUM (62)

"'Eclipses Here and There'... A total eclipse of the sun will be seen over a path leading across the Atlantic, Africa, and the Indian Ocean on June 30. Eclipses occur more frequently on some of the other planets than they do on the earth." BISHOP PLANETARIUM (67)

During the summer of 1973, the J. M. MCDONALD PLANETARIUM presented a popular public show on "The Solar Blackout" (68). This program explained the causes of solar eclipses and the phenomena which combined to make the June 30th total eclipse one of the longest in history.

"'When the Dragon Eats the Sun'... Any event which threatened the great sun god was looked upon with utmost horror in ancient times. Thus, eclipses of the sun were once regarded as awful supernatural acts. Total solar eclipses remain the most awesome spectacles in nature, but fear has now given way to curiosity and scientific intrigue. Unfortunately, because their zone of visibility is so restricted, most people never see one." "This planetarium show affords a second-best but dramatic alternative. Visitors are transported to eastern Canada, where a total solar eclipse occurs on July 10th this very summer..." ROGER B. CHAPPEE PLANETARIUM (69)

9 Mars

"'Destination Mars'... Twin nuclear spaceships will take us to Mars for a simulated landing on this mysterious planet. With the help of Mariner photographs already beamed to Earth, we will explore both old and new mysteries of the famous red planet — the 'canals', color changes, ice caps, and the two strange little moons -- and consider evidence for and against the existence of life on Mars..." ADLER PLANETARIUM (63)

"'A Mission for Mariner' — Mars, the fourth planet in the solar system has been observed since the ... (beginning) ... of history. Why has this interest prevailed through the centuries? Now, with space probes aiding man in the exploration of this unique planet, many
mysteries are being uncovered while many new ones are being created. Travel 186 million miles through space and explore this Red Planet." ROBERT T. LONGWAY PLANETARIUM (45)

For more programs about Mars, see Section VIII, Part 2 Interplanetary Space Travel.

10 Asteroids, Comets, and Meteors

Interest in the Red Planet will increase as the launch date (1976) for the Viking lander grows nearer and nearer; however, Pioneer 10 has just completed its historic passage through the asteroid belt and information from this craft may soon be incorporated into new programs on the asteroids and other vagabonds in space.

"'Vagabonds of Space' - Amazing odysseys of the minor members of the Sun's family, and some good tips for observing the fall meteor showers." MOREHEAD PLANETARIUM (46)

"'Vagabonds in Space' - Any child of the comic science fiction era knows that the solar system has many objects wandering in uncharted paths. We recall Flash Gordon on his spaceship, dodging and weaving through the asteroid belt; or Buck Rogers being shipwrecked on hurling chunks of rock. ... right now, an unmanned spacecraft, Pioneer 10, is in the midst of this region." "But what are asteroids? Where did they come from? Are they just chunks of rock, or do they carry a special interest for science?" MCLAUGHLIN PLANETARIUM (70)

11 Jupiter and the Outer Planets

"'The Star That Failed' ... In this new program we will explore the Jovian planet, journeying with the Pioneer Spacecraft on an imaginary trip through Jupiter's upper atmosphere to probe the secrets of the giant Red Spot, the planet's twelve moons, and the mysterious radio signals that emanate from this strange world." BUHL PLANETARIUM AND INSTITUTE OF POPULAR SCIENCE (71)

"'The Forgotten Planets' - Deep in the cold reaches of our solar system exist one-third of the Sun's family. Rarely ever viewed, these planets remain a mystery today. However, as our technology increases, the shrouds of the mysteries are slowly falling away. This presentation offers a current look at the most recent information regarding Uranus, Neptune, and Pluto." ROBERT T. LONGWAY PLANETARIUM (45)

"'The Search for Planet 'X' ' - At many times in history, astronomers have searched for a new planet - a 'planet X.' And in every case, the planet was found. But each discovery has resulted in a surprise of some kind. These surprises have changed the course of scientific thinking." MANITOBA MUSEUM OF MAN AND NATURE PLANETARIUM (72)

Another search for a planet X, a planet beyond Pluto is now taking place and what it will reveal is uncertain; but planetary audiences will want to know about this latest astronomical development and future space probes of the outer planets. For further programs on Jupiter, see Section VIII, Part 2 Interplanetary Space Travel.

IV Constellations

1 General Survey of the Sky

"' When the Stars Come Out' - The Zeiss Planetarium Projector is the nucleus of the plot around which this special sky show has been created to help primary children understand a planetarium. Through song and verse, children are led to an appreciation of the day and night sky. Young viewers experience a sunset to learn about constellations, meteors and the planets of the Solar System. ..." BUHL PLANETARIUM AND INSTITUTE OF POPULAR SCIENCE (71)

The J. M. MCDONALD PLANETARIUM presented a fall, 1972 program on "Stars and Planets in Review." This program explained the differences between stars and planets. (73)

"'Look Up in the Sky' - A brand new sky show, full of rhymes, songs, and visuals, introduces the preschool youngsters to the wonders of the nighttime sky." LOUISIANA ARTS AND SCIENCE CENTER PLANETARIUM (74)

"'The Sky Tonight' - The visible wonders of the heavens are introduced to the student, just as he might see them outside his home on a clear evening. Several prominent constellations are described, along with the representative myths about their origin. The moon and naked eye planets are shown in their current positions, and the student is made aware that the sun and stars move in a regular fashion because of the rotation of the earth." ROGER B. CHAFFEE PLANETARIUM (75)
Programs containing general information on the constellations are widely shown to school groups. Another approach is to introduce youngsters to the constellations which are currently visible.

2 Seasonal Constellations

"Spring Constellations" - Lions and bears are only part of the heavenly menagerie seen as we go 'star gazing' in May. MOREHEAD PLANETARIUM (46)

"Stars and Stories of Spring" ... Orion, the Hunter, stalks his prey in the fading light of the setting sun. To the north, the Great Bear is finally waking from his winter sleep. And in the east Hydra, the Water Serpent, comes slithering up over the horizon. Take your place on the grandstand as the stars of spring pass in review." W. A. GAYLE PLANETARIUM (60)

In the spring of 1973, the FELS PLANETARIUM presented a constellation show "Leo and His Friends" (76).

"Camper's Special" ... A close look at the summer sky as seen from Oregon, the camper's paradise." H. C. KENDALL PLANETARIUM (77)

"Fall Constellations" - 'The Royal Family' in all its splendor leads the celestial parade across our 'backyard sky'." MOREHEAD PLANETARIUM (46)

"All in the Family" ... In the winter sky one can easily identify a great number six formed of stars. Since each of the stars are members of our galactic family they share many characteristics, but their personalities, one discovers, are all different." H. C. KENDALL PLANETARIUM (77)

"Stars of Winter" ... An opportunity to learn the names of some of the stars and constellations in the winter sky. The show includes discussion of some peculiar stars that appear in the sky at wintertime." BISHOP PLANETARIUM (67)

Other references to seasonal constellations can be found in Section II Holiday Celebrations in the Planetarium.

The effects of light pollution could be stressed in a program contrasting city skies and country skies. The urban dweller would learn the importance of preserving dark skies and be introduced to salient facts about the few bright objects still observable downtown.

3 Changes with Time and Terrestrial Location

"South for the Winter" ... Escape Chicago's winter with us as we wing past the equator and on to the South Pacific, comparing our own stars and seasons with those south of the equator. Continuing our journey southward, we arrive at a weather station at the South Pole to glimpse the Midnight Sun and a rare solar eclipse. We will then venture thousands of years into the future to witness the complete reversal of our seasonal constellations." ADLER PLANETARIUM (63)

"From the North Pole to the South Seas" - An imaginary trip from Baton Rouge to the North Pole and from there south of the Equator to the South Seas to see the star-lit sky down under. A sky-show filled with customs of people from north to south, and how the heavenly bodies influenced their lore." LOUISIANA ARTS AND SCIENCE CENTER PLANETARIUM (78)

"Under the Southern Sky" - Someone once remarked that most astronomers live in the northern hemisphere, while most of the important and spectacular celestial objects are found in southern skies. During the last few years an attempt has been made to remedy this situation. A number of new observatories have recently been constructed or are under construction south of the equator. Already some very important discoveries have been made which have changed our ideas about stars, galaxies, and the universe as a whole. Come with us as we journey south to see the southern cross, the Clouds of Magellan, the aurora australis and a host of other sky spectacles." GRIFFITH OBSERVATORY AND PLANETARIUM (66)

Other planetarium programs about our ever-changing skies emphasize the effects of precession and of individual stellar movements on constellation shapes and locations. For more programs on terrestrial motions see Section III, Part 4 Terrestrial Motions.
V The Stellar System

1 Deep Space Wonders

"The Realm of the Nebulae" - beyond our solar system, beyond our galaxy, to the very edge of the universe..." ALEXANDER F. MORRISON PLANETARIUM (42)

"Realm of the Galaxies" - The sun is but one insignificant star among billions of other stars in the Milky Way Galaxy. The sky-show examines the shape and composition of our galaxy and beyond, earth and sky, sun and planets, and stars, beyond the Milky Way to the realm of the galaxies." LOUISIANA ARTS AND SCIENCE CENTER PLANETARIUM (70)

"Those Incredible Stars"... Black stars, solid stars, invisible stars, exploding stars -- all unknown until recently, which may hold the key to understanding the birth, life, and death of the universe." HANSEN PLANETARIUM (79)

"Deep Sky Wonders" - If we could travel far beyond our solar system into deep space we would eventually encounter a host of wondrous objects such as colorful clouds of dust and gas, star clusters, multiple stars, supernovae, and pulsars. Beyond our own Milky Way Galaxy there are numerous other galaxies of all shapes and sizes as well as the mysterious quasars. In this show we will take you on a tour of deep space to see many of these astronomical objects. ... In addition, we shall also learn which of the deep sky wonders can be seen by the amateur with a relatively small telescope." GRIFFITH OBSERVATORY AND PLANETARIUM (80)

"To the Edge of (the) Universe"...

Throughout our galaxy are phenomena of incredible beauty -- nebulae and star groups of all descriptions. Beyond the Milky Way are billions of other galaxies, in a vast array we are now beginning to comprehend. What is our place in this Universe?" PELS PLANETARIUM (76)

Programs about related groups of deep space objects -- pulsars and novae, the varying variables, and stars and double stars -- can also be presented. NORTH MUSEUM AND PLANETARIUM gave separate programs on "The Stars," "Nebulae and Clusters," "The Milky Way," and "The Universe" (81). A special program on the Messier objects would be useful for amateur observers.

2 Stellar Evolution

"One Hundred Billion Stars" - What are stars, where did they come from and where will they go? Explore the mysteries of these seemingly small objects in the night sky and the realm in which they belong -- the Galaxy." ROBERT T. LONGWAY PLANETARIUM (45)

"Stars in the Making"... The program traces the development of stars from their beginnings through the very final stages of their existence. Included are descriptions and demonstrations of the methods used by scientists to identify, classify and investigate stars, thereby gaining valuable knowledge concerning stellar evolution. The investigations of life processes of stars include a discussion of nuclear energy and encompass the study of such interesting objects as nebulae, star quasars, variable stars, and pulsars. ..." MANITOBA MUSEUM OF MAN AND NATURE PLANETARIUM (58)

VI Astronomical Instruments and Observing Methods

"Celestial Signatures" - Among the essential tools of astronomical research are the techniques for deciphering light itself. Discussion will contain this puzzling phenomenon and how the astronomer has 'fingerprinted' the stars." ROBERT T. LONGWAY PLANETARIUM (45)

"Bridges of Light"... Most of the information gained about the planets, stars, and galaxies has come in the form of light. This light bridges the vast distances between celestial objects and finally filters down through the earth's atmosphere. Astronomers have become super-detectives, unraveling the clues carried by this light to form man's present understandings about the universe in which he lives. In this presentation, the audience will pursue the progress of astronomers through the ages, beginning with the first naked-eye observations and ending with a look at the sophisticated instruments now being
used to probe the unknown." FERNBANK SCIENCE CENTER PLANETARIUM (62)

" 'The Invisible Universe' - Until the 1930's man's knowledge of the universe came through the study of light --light produced by stars and reflected by planets and satellites. Then came radio astronomy which revealed a universe that had never been 'seen. We look at radio astronomy to find how it works and how the technique reveals additional information about our Galaxy and the universe." AMERICAN MUSEUM-HAYDEN PLANETARIUM (52)

With the increased number of observations in the infrared and at shorter wavelengths, programs on the infrared sky and the short wavelength universe (new revelations from ultraviolet, gamma, and X-ray astronomy) can be produced.

" 'Skylab' - In the spring of 1973, NASA plans to initiate its Skylab program. The Planetarium program of the same title discusses the goals set for this manned space laboratory, and explains how scientists expect to gain additional information about the Sun, the Earth, and Man himself. This presentation also highlights the joint US-USSR mission planned for 1975." CHARLES HAYDEN PLANETARIUM (50)

Though Americans may not travel to the moon again in the next decade, Skylab will allow increased surveillance of mother earth. The W. A. GAYLE PLANETARIUM has already presented a program on one of the phenomena being investigated by Skylab.

" 'Intruders from the Cosmos' ... Join us for a trip to Skylab and a lively examination of Cosmic Rays, the men who study them, and the problems faced." W. A. GAYLE PLANETARIUM (82)

VII NAVIGATION

" 'A Star to Steer Her By' ... All the early centers of civilization - Egypt, Mesopotamia, India, China - were surrounded by vast deserts and oceans. ... Fortunately, men of those ages discovered a means of finding their way across the trackless wastes of sand and water. " 'They 'steered by the stars'." "In the October Planetarium Show, the basic principles of celestial navigation will be portrayed in the stars." LAKEVIEW CENTER PLANETARIUM (47)

" 'Polynesian Skies' ... A show now famous at Bishop Museum treats of the navigational methods thought to have been used by the early Polynesian seafarers." BISHOP PLANETARIUM (67)

" 'Time and Navigation' ... (describes) how the positions of celestial bodies can be used as a basis for timekeeping and navigation." "The concepts of the celestial sphere, right ascension and declination, and altitude and azimuth are developed ... Time zones are discussed and illustrated, and the student observes the celestial sphere and its fundamental coordinates from several different positions on the Earth's surface." ROGER B. CHAFFEE PLANETARIUM (75)

" 'Charting the Universe' - The intriguing story of how man, past and present, used the stars to chart his course in the seas of earth and the limitless universe. The sky-show combines the past, present, and future of navigating by the stars." LOUISIANA ARTS AND SCIENCE CENTER PLANETARIUM (78)

For more programs about time, see Section III, Part 5 Time and the Calendar.
VIII Space Travel

1 With Apollo to the Moon

"Seven Voyages of Apollo" ... A realistic voyage to the moon will set us down at Tranquility Base and other Apollo landing sites. As we view the incredible lunar landscapes, we will survey the latest scientific finding about our natural satellite. Departure for earth will take us past the far side of the moon for a look at this strange region that may someday become a haven for radio astronomers." ADLER PLANETARIUM (63)

"One Giant Step for Mankind!" - This program is entirely devoted to man's closest neighbor in space, the Moon. Special audio and visual effects compliment man's first landing on the Moon." ROBERT T. LONGWAY PLANETARIUM (45)

"To the Moon!" ... For ages Man has looked up at the Moon and wondered about it. Now we have been there. How do we go to the Moon and why are we interested in exploring this natural satellite of the Earth? What can we learn about the Moon from Earth-bound observations and what have we learned from the Apollo missions? How do satellites stay in orbit and how do we keep track of them? These are but a few of the questions to be answered as we journey to the Moon." FELS PLANETARIUM (59)

Continued research on the lunar rocks will undoubtedly change our concepts of lunar and terrestrial evolution. For more programs on the moon, see Section III, Part 7 The Moon.

2 Interplanetary

"Space Travel" - Rockets, earth satellites, manned and unmanned spacecraft are the topics of this special sky show which has been designed to help primary children understand space travel. How does a rocket work? What keeps a satellite in orbit? What planets have our spacecraft visited and what have they found there? These are some of the questions answered in this special program ..." BUHL PLANETARIUM AND INSTITUTE OF POPULAR SCIENCE (71)

"Martian Invasion" ... For centuries man has invaded the sanctuary of the planet Mars with his telescopes. Strange features were observed that set the stage for the popular theory of intelligent life on the red planet which culminated in the Orson Welles's /sic/ production of War of the Worlds in 1938. Little was learned about Mars until the advent of the space age. The Mariner spacecraft sent to Mars in the 1960's suddenly gave us a new and exciting picture of the red planet. In recent months the Mariner 9 Mars Orbiter gave us our first prolonged view of a world of great volcanos, canyons, and ice caps revitalizing again the idea of life on Mars. 'Martian Invasion' is the exciting story of man's exploration of Mars ending with a dramatic look into the future to a manned landing on its ruddy surface." FLEISCHMANN ATMOSPHERIUM-PLANETARIUM (53)

For more programs on Mars, see Section III, Part 9 Mars.

"By Jupiter!" ... One of the most ambitious space projects of the decade is worth separate treatment. Pioneer 10 completes its two-year journey to swing close by the planet Jupiter. With a boost by the tremendous gravitational pull of that giant world, the vehicle will be hurled completely out of the solar system into interstellar space." BISHOP PLANETARIUM (67)

"Journey to Jupiter" ... On an imaginary voyage aboard the spacecraft 'Pioneer F' one will experience the perils of deep space travel. Over two years after the launch the craft will approach the giant planet to provide a view never before possible from earth." H. C. KENDALL PLANETARIUM (77)


The FLEISCHMANN ATMOSPHERIUM-PLANETARIUM presented a program in which a " ... futuristic spaceship lands on the rugged landscape of a satellite of Saturn. (53)" As a result of the recent discovery of water-ice on Titan, a trip to the solar system's largest moon should be planned by other planetariums.
IX LIFE IN THE UNIVERSE

"'Are We Alone?' ... Are we alone in the universe? This question was believed unanswerable only a few decades ago. It is still a controversial subject, but evidence is gathering that suggests that we are not the only inhabitants of the vast cosmos." "The subject of life outside the earth is explored through various channels in this Planetarium show. ..." ROGER B. CHAFFEE PLANETARIUM (64)

"'UFO's: Fact or Fantasy' ... What are flying saucers: Intelligent visitors from another planet or star system -- a figment of someone's overactive imagination -- an unusual astronomical event -- a secret project of the U.S. government -- a clever hoax by persons of questionable character or pranksters -- or a natural atmospheric phenomena? This month's show at the planetarium will explore some of these possibilities and review some past history of UFO sightings and what they could be." SAN ANTONIO COLLEGE PLANETARIUM (83)

"'The Search for Extraterrestrial Life' ... After a brief discussion of the development of life on Earth, we then investigate the probability of these conditions existing within our solar system. The investigation then leads to a discussion of life elsewhere as we search our galaxy and the universe for evidence. ..." MANITOBA MUSEUM OF MAN AND NATURE PLANETARIUM (58)

X HISTORY OF ASTRONOMY

1 Sky Myths

"'The Feather Moon' ... deals with those stories, myths, and legends which have been handed down by the First Americans."
KIRKPATRICK PLANETARIUM (84)

"'Celestial Mythology' -- In this planetarium program you will hear the stories of the constellations and see the constellation outlines in the star-filled sky. You will learn about ancient myths and legends told in Greece, Rome, Babylon, and Egypt. You will study the origins of the zodiac and the motions of the sun, moon, and planets through it. The program will be highlighted with stories and anecdotes illustrating the superstitions held regarding eclipses and comets. Finally, you will see a magnificent display of the northern lights (aurora borealis) and hear of the Norse myths which the Vikings used to explain this phenomenon."
GRiffITH OBSERVATORY AND PLANETARIUM (80)

"'From Where the Sun Now Stands' ... A unique and beautiful star program about the astrology and astronomy" RALPH MUELLER PLANETARIUM (48)

"'The Astronomy of Astrology' -- An adventure into the mysterious basis for casting horoscopes ... for believers and skeptics alike."
MOREHEAD PLANETARIUM (46)

3 Historical Figures and Accomplishments

In 1973 many planetariums commemorated the 500th anniversary of the birth of Copernicus.

"'Copernicus -- Revolution in Thought' ... A true revolution in the ideas of the nature of the universe was brought about by the proposal of Copernicus that the earth was not the center of the solar system. The planetarium observes an appropriate celebration of the five-hundredth anniversary of the birth of this great man." BISHOP PLANETARIUM (67)

"'Captives of the Sun' ... Why are the Earth and other planets held captive in orbits around the sun, instead of flying off into space? What can we know of the planets today? The latest views of our solar system will unfold, as we celebrate the 500th birthday of Nicolaus Copernicus -- who first pushed men from their earth-centered universe into a true 'solar' system. ..." ADLER PLANETARIUM (85)

For further programs about our solar system,
see Section III, Part 1 General Information on the Solar System.

"'Ad Astra Per Aspera' - Why do astronomers travel to the very ends of the earth to experience a fleeting glimpse of an eclipse, to investigate a meteorite fall, or to view a different part of the sky? What surprises, successes, and disappointments have resulted? 'Ad Astra Per Aspera' (Through Rugged Ways to the Stars) reveals ... some of the exciting ... (adventures) ... in the history of astronomy." CHARLES HAYDEN PLANETARIUM (50)

"'Voices from the Sky' - famous astronomers from ancient to modern times discuss their discoveries." RALPH MUELLER PLANETARIUM (86)

"'Night of the Plumed Serpent' ... Two thousand years before Christ's birth a mysterious civilization prospered in the jungles of southern Mexico. It is worth a trip to the Yucatan to discover the methods and motives of their remarkably accurate observations." H. C. KENDALL PLANETARIUM (77)

"'Stonehenge and Ancient Astronomy' - Astronomical events had a fundamental importance to ancient man. He considered the sun, moon, and planets to be gods with supernatural powers. The positions and movements of these astronomical bodies were therefore extremely significant to our ancestors. In this planetarium program we shall journey back in time 5000 years to ancient Egypt, where we shall discover how all the great monuments, pyramids, temples, and tombs were aligned with the stars. In addition, unusual astronomical events such as eclipses of the sun or moon were terrifying, unless priests or sages had predicted them beforehand. On the Salisbury Plain of England is an ancient stone monument called Stonehenge which can be used as a giant computer to predict eclipses. In this show we shall journey to neolithic Britain to explore the wisdom of early man." GRIFFITH OBSERVATORY AND PLANETARIUM (80)

Some planetarium personnel may feel that a program concerning the theories of Immanuel Velikovsky should appear under Section X, Part 1 Sky Myths; however, this man and his ideas are currently being reevaluated by the academic community (87).

While Velikovsky's ideas remain controversial, the response to "Worlds in Collision; the Theories of Immanuel Velikovsky," presented by NOBLE PLANETARIUM in the fall of 1972, is now a matter of public record.

"... our program was the first planetarium program ever presented on these theories." "... Due to the great public interest and demand, our program on 'Worlds in Collision; the Theories of Immanuel Velikovsky' was held over and ran an unprecedented four months. ... Our audiences were, for the most part, extremely enthusiastic about this program which outlined the highly controversial theories advanced by Dr. Velikovsky in 1950 with the publication of his first book. ... The British Broadcasting Company even included our planetarium in the documentary being done on Dr. Velikovsky." NOBLE PLANETARIUM (88)

Today a program about the significant accomplishments of America's women astronomers seems particularly appropriate.

XI Astronomy and the Fine Arts

Many teachers and professors have encountered the problem of getting the non-scientist interested in astronomy. Planetariums are ideally suited to bridge the gap between the arts and sciences because they can present programs which combine astronomy and the fine arts.

Many of the mythological characters for whom the planets, satellites, and asteroids were named were portrayed by famous artists particularly during the Renaissance. Planetarium programs on mythology (Section X, Part 1 Sky Myths) and the solar system (Section III The Solar System) can be complemented by a display of copies of famous paintings.

"'Shakespeare's View of the Universe' - Today, astronomers know that the universe is comprised of billions of galaxies. And in one galaxy there is a small star -- just an average star amongst the countless billions that make up the cosmos -- yet to man an all important star that he calls Sun. About this star revolve several planets and one of these, the third closest to the Sun, man calls Earth. But that is twentieth century astronomy. In
Shakespeare's time the universe was viewed by most people quite differently. This month's show deals with how Shakespeare viewed the universe through his plays." SAN ANTONIO COLLEGE PLANETARIUM (83)

Biblical writers also described their universe.

" 'The Bible and The Heavens' - The sky as it looked to authors of the Old Testament." KIRKPATRICK PLANETARIUM (89)

" 'God's Gallery' ... Using the Bible as a guidebook, we tour the museum of the universe to view the great works of the Grand Master." NOBLE PLANETARIUM (65)

So have the writers of science fiction.

" 'Spectrum: The Science Fiction Universe' - a look at science fiction literature and films, showing how man has viewed ... space travel, life on other worlds, ..." and the universe. RALPH MUELLER PLANETARIUM (86)

A few planetariums have already presented programs based on individual works of science fiction. The HANSEN PLANETARIUM obtained Arthur C. Clarke's permission to adapt his short story 'Transit of Earth.'

" 'Transit of Earth' ... Although the characters in 'Transit of Earth' are fictitious, all the information on Mars ... is scientifically accurate. Even the transit of Earth across the face of the Sun as seen from Mars will actually take place in 1984, on the precise day and at exactly the times given." "Join us, then, as we travel fifty million miles through space and eleven years into the future with the first manned expedition to Mars to observe that rare spectacle - a transit of Earth." HANSEN PLANETARIUM (90)

Since "Star Trek" is being revived as a cartoon series, there would be great interest in a school program on " 'Star Trek': Facts and Fantasies." This type of show would consider some of the scientific facts presented in this popular science fiction feature and some scientific fantasies included to suit TV production needs.

" 'Starlight Waltzes' ... Vienna under starlight by the calmly flowing Danube; can one picture a more romantic setting to spend an evening? The planetarium will offer this opportunity, as it presents the story of the great waltz king, Johann Strauss. ..." FERNBANK SCIENCE CENTER PLANETARIUM (62)

Many planetarium directors feature classical music in their programs, but consider a program devoted primarily to music to be unscientific. Fortunately, many asteroid discoverers loved classical music; and asteroids were named for characters in opera, for composers, and for musical works. A program concerning music commemorated in the asteroids seems overdue.
This unconventional bibliography contains some information traditionally found in footnotes. The editor's current address appears as reference number one while the I.S.P.E.'s "Information for Contributors" is reference number two. Hopefully, more planetarium directors will recognize that their program brochures on school programs and individual public programs. W. A. GAYLE PLANETARIUM, GRIFFITH PLANETARIUM, ADLER PLANETARIUM, LOUISIANA ARTS AND SCIENCE CENTER PLANETARIUM, ROGER B. CHAFFEE PLANETARIUM, J. M. MCDONALD PLANETARIUM, RALPH MUELLER PLANETARIUM, KIRKPATRICK PLANETARIUM, H. C. KENDALL PLANETARIUM, FELS PLANETARIUM, NOBLE PLANETARIUM, SAN ANTONIO COLLEGE PLANETARIUM, HANSEN PLANETARIUM, and MANITOBA MUSEUM OF MAN AND NATURE PLANETARIUM have two or more different references included in this bibliography.

To facilitate the use of the planetarium cross reference, the state (Canadian province) of publication for the planetarium brochures is given in capital letters.

1. June LoGuirato, 12200 Chapel Road, Clifton, Virginia 22024, United States of America (U.S.A.).


3. For information on the Astronomical League contact: Mrs. Wilma A. Cherup, Executive Secretary of the Astronomical League, 4 Klopfer St., Pittsburgh, Pennsylvania 15209, U.S.A. and/or Mr. Ralph K. Dakin, Editor of the Astronomical League Reflector, 720 Pittsford-Victor Road, Pittsford, New York 14534, U.S.A.


5. Royal Astronomical Society of Canada, 252 College St., Toronto 130, Ontario, Canada. More information on this society is found in their annual publication The Observer's Handbook.

BIBLIOGRAPHY


7. Sky and Telescope is published monthly by Sky Publishing Corporation, 49-50-51 Bay State Road, Cambridge, Massachusetts 02138, U.S.A.

8. For more information on the International Union of Amateur Astronomers contact: Mr. Kenneth E. Chilton, 57 Currie St., Hamilton 57, Ontario, Canada.


13. Resource Letter EMAA-1 can be ordered from: Mr. Arnold Strassenburg, Executive Officer, American Association of Physics Teachers, Drawer AW, Stony Brook, New York 11790, U.S.A.


16. For further information on the American Astronomical Society and its Task Group on Education in Astronomy contact:
Mr. H. M. Gurin, Executive Officer,
American Astronomical Society, 211 Fitz-Randolph Road, Princeton, New Jersey 08540, U.S.A. and/or Dr. Gerrit L. Verschuur, Acting Coordinator, AAS Task Group of Education, Fiske Planetarium, Dept. of Astro-Geophysics, Univ. of Colorado, Boulder, Colorado 80302 U.S.A.

17. Muller, Edith A., private communication, February 17, 1973. For more information on "Astronomy Education Materials," contact Dr. Edith A. Muller, Former President of IAU Commission 46 - Teaching of Astronomy, Observatoire de Geneve, 1290 Sauverney (GE), Switzerland.

18. Jettner, Frank C., and Chamberlain, Von Del, co-editors, "Principles of Planetarium Operation." The Planetarian, Vol. 1, #1 to date. This series of articles is really a textbook printed in serial form.


24. For further information on the Griffith Observer contact: Griffith Observatory, P.O. Box 27787, Los Angeles, California 90027, U.S.A.

25. For further information on Natural History contact: The American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024, U.S.A.


29. The Science Citation Index. Philadelphia: Institute for Scientific Information, 1963 to date.


34. For further information on the "Planetarium Director's Handbook," edited by Michael A. Bennett, write to Educational Services Division, Spitz Space Systems, Inc., Chadds Ford, Pa. 19317 U.S.A.

35. Farquhar Transparent Globes, 5007 Warrington Ave., Philadelphia, Pennsylvania 19143, U.S.A.


37. Planetariums Unlimited, Viewlex, Inc., Holbrook, New York 11741, U.S.A. Minolta planetariums are now distributed by Planetariums Unlimited, Inc.


39. Carl Zeiss, Inc., 444 Fifth Avenue, New York, N.Y. 10018, U.S.A.

41. "Louisiana Arts and Science Center Planetarium Study Guide." Baton Rouge, LOUISIANA: Louisiana Arts and Science Center Planetarium, 1972.


47. "A Star to Steer Her By". Peoria, ILLINOIS: Lakeview Center Planetarium, Lakeview Center for the Arts and Sciences, October, 1972. Program circular for October, 1972 program.


55. "The Star of Bethlehem". Salt Lake City, UTAH: Hansen Planetarium, December, 1972. Primarily described Christmas program but contained information on public programs from 12-72 to 6-3-73.


59. "Teacher's Guide to the Franklin Institute, 1972-73". Philadelphia, PENNSYLVANIA: Fels Planetarium, Franklin Institute, 1972. This reference included only school program notes. Program notes featured in ISPE SPECIAL REPORT #5 are not representative of the total activities of the Fels Planetarium. Selections represent about one-half of what is done in their school programs and include only one public program title.


69. "When the Dragon Eats the Sun". Grand Rapids, MICHIGAN: Roger B. Chaffee Planetarium, Grand Rapids Public Museum, June, 1972. Included public program notes from 6-8-72 to 8-13-72 and titles from school programs.


72. "1972 Planetarium Program". Winnipeg, MANITOBA, CANADA: Manitoba Museum of Man and Nature Planetarium, 1972. This reference included program notes on public programs from 4-30-72 to 1-7-73. Program notes featured in ISPE SPECIAL REPORT #5 represent only a fraction of the total programming at the Manitoba Museum of Man and Nature Planetarium. Only one public program note has been included.


75. "Roger B. Chaffee Planetarium Educational Services". Grand Rapids, MICHIGAN: Roger B. Chaffee Planetarium, Grand Rapids Public Museum. Included program notes for entire school program on pp. 4-8.

76. "Program Bulletin No. 2 for Junior and Senior High School". Philadelphia, PENNSYLVANIA: Fels Planetarium, Franklin Institute, 1972. This reference included school program notes and titles of public programs (10-3-72 to 6-28-73) which were suitable for students in grades 7-12. Program notes featured in ISPE SPECIAL REPORT #5 are not representative of the total activities of the Fels Planetarium. Selections represent about one-half of what is done in their school programs and include only one public program title.


84. "The Kirkpatrick Planetarium Presents". Oklahoma City, OKLAHOMA: Kirkpatrick Planetarium, Oklahoma Science and Arts Foundation, Inc.


89. "Kirkpatrick Planetarium". Oklahoma City, OKLAHOMA: Kirkpatrick Planetarium, Oklahoma Science and Arts Foundation, Inc. Descriptive brochure on planetarium including permanent repertoire.

This list does not contain all the programs produced by a particular planetarium in 1972 or 1973. It is only a cross reference to programs mentioned in this booklet. Referenced planetariums may still be able to supply information about their schedules and programs. Many other planetariums produced or are producing programs similar to those described in this booklet.

Planetariums are listed in the alphabetical order of the city and state (Canadian province) in which they are located. For more information on the planetariums themselves consult "Planetarium Notes" (31) or the I.S.P.E.’s more complete A Catalog of North American Planetaria (32).

W. A. Gayle Planetarium
1010 Forest Ave.
Montgomery (36106) ALABAMA

Griffith Observatory and Planetarium
P.O. Box 27787, Los Feliz Station
Los Angeles (90027) CALIFORNIA

Alexander F. Morrison Planetarium
California Academy of Science
Golden Gate Park
San Francisco (94118) CALIFORNIA
Programs "You Asked For It", page 4; "The Realm of the Nebulae", page 13.

Rock Creek Nature Center
National Capital Parks - West
Box 8758 N.W. (20011) WASHINGTON, D.C.
Programs "The Sun's Family", page 8; "Year of the Stars", page 9.

Fernbank Science Center Planetarium
156 Heaton Park Dr., N.E.
Atlanta (30307) GEORGIA
Programs "The Restless Heavens", page 9; "Celestial Hide and Seek", page 10; "Bridges of Light", pages 13-14; "Starlight Waltzes", page 18.

Bishop Planetarium
Berenice P. Bishop Museum
P.O. Box 6037
Honolulu (96819) HAWAII
Programs "Eclipses Here and There", page 10; "Stars of Winter", page 12; "Polynesian Skies", page 14; "By Jupiter!", page 15; "Copernicus - Revolution in Thought", page 16.

Adler Planetarium
1300 S. Lake Shore Dr.
Chicago (60605) ILLINOIS
Programs "It's About Time", page 9; "Destination Mars", page 10; "South For The Winter", page 12; "Seven Voyages of Apollo", page 15; "Captives of the Sun", page 16.

Lakeview Center Planetarium
Lakeview Center for the Arts & Sciences
1123 W. Lake St.
Peoria (61614) ILLINOIS
Programs Columbus Day program, page 7; "A Star to Steer Her By", page 14.

Louisiana Arts & Science Center Planetarium
502 North Blvd.
Baton Rouge (70802) LOUISIANA
Programs "Look Up in the Sky", pages 3-4, 11; "From the North Pole to the South Seas", page 12; "Realm of the Galaxies", page 13; "Charting the Universe", page 14.

Charles Hayden Planetarium
Boston Museum of Science
Science Park, Boston (02114) MASSACHUSETTS
Programs "Festivals of the Winter Sky", page 8; "Skylab", page 14; "Ad Astra Per Aspera", page 17.

Robert T. Longway Planetarium
923 E. Kearsley St.
Flint (48502) MICHIGAN

Roger B. Chaffee Planetarium
Grand Rapids Public Museum
233 Washington, S.E.
Grand Rapids (49502) MICHIGAN
Programs "Reasons for the Seasons", pages 9-10; "When the Dragon Eats the Sun", page 10; "The Sky Tonight", page 11; "Time and Navigation", page 14; "Are We Alone!", page 16.
J. M. McDonald Planetarium
Hastings Museum
1330 N. Burlington Ave.
Hastings (68901) NEBRASKA

Ralph Mueller Planetarium
University of Nebraska State Museum
Lincoln (68508) NEBRASKA

Fleischmann Atmospherium-Planetarium
University of Nevada
Reno (89507) NEVADA
Programs "Star of Bethlehem", page 8; "Martian Invasion", page 15; A Journey to Titan, page 15.

American Museum-Hayden Planetarium
81st St. at Central Park West
New York (10024) NEW YORK

Morehead Planetarium
University of North Carolina
Chapel Hill (27514) NORTH CAROLINA
Programs "Easter the Awakening", page 7; "All About Planets", page 9; "Vagabonds of Space", page 11; "Spring Constellations", page 12; "Fall Constellations", page 12; "The Astronomy of Astrology", page 16.

Kirkpatrick Planetarium
Oklahoma Science & Arts Foundation, Inc.
3000 Pershing Blvd., Fair Park
Oklahoma City (73107) OKLAHOMA
Programs "The Feather Moon", page 16; "The Bible and the Heavens", page 18.

H. C. Kendall Planetarium
Oregon Museum of Science & Industry
4015 S.W. Canyon Rd.
Portland (97221) OREGON
Programs "A Technicolor Fantasy", page 8; "Camper's Special", page 12; "All in the Family", page 12; "Journey to Jupiter", page 15; "Night of the Plumed Serpent", page 17.

North Museum and Planetarium
Franklin and Marshall College
Lancaster (17604) PENNSYLVANIA

Fels Planetarium
Franklin Institute
20th St. at Benjamin Franklin Pkwy.
Philadelphia (19103) PENNSYLVANIA
Programs "The Sun's Family", page 9; "Firmament of Time", page 9; "Leo and His Friends", page 12; "To the Edge of the Universe", page 13; "To The Moon!", page 15.

Buhl Planetarium and Institute of Popular Science
Allegheny Square
Pittsburgh (15212) PENNSYLVANIA

Noble Planetarium
Fort Worth Museum of Science & Industry
1501 Montgomery St.
Fort Worth (76107) TEXAS
Programs "Where the Wind Sleeps", page 10; "Worlds In Collision: The Theories of Immanuel Velikovsky", page 17; "God's Gallery", page 18.

Burke Baker Planetarium
Hermann Park, P.O. Box 8175
Houston (77004) TEXAS
Programs "The Blue Planet", page 9; "Craters of the Moon", page 10.

San Antonio College Planetarium
San Antonio College
1300 San Pedro Ave.
San Antonio (78284) TEXAS
Programs "Star of Wonder", page 8; "UFO's: Fact or Fantasy", page 16; "Shakespeare's View of the Universe", pages 17-18.

Hansen Planetarium
15 S. State St.
Salt Lake City (84111) UTAH
Programs "Light Festival Returns", page 8; "Those Incredible Stars", page 13; "From Where The Sun Now Stands", page 16; "Transit of Earth", page 18.

Manitoba Museum of Man and Nature Planetarium
190 Rupert Ave.
Winnipeg (R3B 0N2) MANITOBA, CANADA

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