LUNAR AND PLANETARY SCIENCE
CONFERENCE XIII
15-19 March 1982

The THIRTEENTH LUNAR AND PLANETARY SCIENCE CONFERENCE will begin Sunday March 14 at 6:00 p.m. with registration and an open house at the Lunar and Planetary Institute. A shuttle bus will run between NASA area hotels and the LPI from 5:45 to 9:30 p.m. Registration will continue throughout the conference on the newly constructed 2nd floor of the Gilruth Center at the Johnson Space Center. All conference activities, technical sessions, exhibits, poster sessions, etc., unless otherwise listed, will be at the Gilruth Center.

From a total of 458 abstracts accepted for publication in *Lunar and Planetary Science XIII*, the Program Committee has constructed twenty-five sessions for a total of 299 oral presentations. Session topics are:

- Lunar and asteroid regoliths
- Early evolution of the crust of the terrestrial planets
- Lunar petrology
- Lunar geology
- Planetary physics
- Origin and history of meteorites
- Isotopic anomalies in the early solar system materials
- Irradiation effects
- Meteorite chronology
- Cratering and shock studies
- Major planet satellites
- Mars
- Venus

The preliminary program included in this issue reflects plans for the conference as they exist early in February. Minor changes may yet occur before the Conference itself. Indexes to the speakers and to the authors of papers in the oral technical sessions will be found following the daily schedules. (See Appendix to this Bulletin)
Some CONFERENCE HIGHLIGHTS this year include:

Posters entered in the Technical Poster Session will be on display each day of the Conference in the Gilruth Center. A preliminary list of the poster exhibits now scheduled is included in the program.

Monday evening's special session will convene in the Gilruth Center auditorium at 8:00 p.m. This session will be a presentation of the activities of the NASA Solar System Exploration Committee, chaired by Noel W. Hinners. Sufficient time will be allowed for reaction from the planetology community. This session will be open to conference attendees only.

Tuesday evening is Chili Cook-Off/Bar-B-Q time. This much heralded event returning for the second time will be held on the grounds of the LPI. Tickets will be available at the Registration desk and will be approximately $10-12 for the entire evening. In case of bad weather, the cook-off will be Wednesday evening. Team applications are still being accepted. Prizes will be awarded this year based on the best tasting chili not according to absolute "Texas Standards".

Wednesday afternoon will be devoted to a special plenary session titled "NEW OPPORTUNITIES FOR EARTH AND PLANETARY RESEARCH IN THE MID 1980'S". Topics to be discussed include future directions for NASA programs, recent advances in remote sensing, Landsat D, the Space Telescope, and the Long Duration Exposure Facility. Members of the panel include: Jesse Moore and Mark Settle, NASA Headquarters; Charles Elachi and Alex Goetz, JPL; Vince Salomonson, Goddard SFC, John Caldwell, SUNY, and William Kinard, Langley. The session will convene in the Gilruth Center auditorium at 1:30 p.m.

The JSC Astronomer's Brownbag Lunch Club will present Bill Agosto discussing Lunar Mining in the Building 31 Conference Room (Room 193) on Wednesday, March 17, at noon.

"Prospects for Man on Mars in the Twenty-First Century" will be the topic of a special session to be held on Wednesday evening. (Time and Place will be announced later. Call 713-486-2135 for information). The topic will be organized by a group from the Laboratory on Atmospheric and Space Physics, University of Colorado, where a three-day colloquium called "The Case for Mars" was held in May 1981. The panelists would include Christopher McKay, Penelope Boston, and Thomas Meyer from UC-LASP, Humboldt Mandel, Karl Henize, and James Oberg from NASA-JSC.

Summaries of the main topics discussed at the Conference will be published in the June issue of Geotimes.

Advance sets of Abstracts will NOT be mailed out this year. Abstracts will be available at the Conference and by mail for as long as the limited supply lasts. L&PS XIII will be $3.00 U.S.; Foreign $35.00 air mail and $6.00 surface. If you wish to keep your set of conference abstracts complete, send your check or money order made out to the Lunar and Planetary Institute, to the Library/Information Center, LPI. Orders will be handled on a first in-first out basis. An order blank is included with this Bulletin.
VENUS CONFERENCE REPORTS NEW DISCOVERIES

Dramatic new finds about Venus, the Earth's twin planet, were reported at the First International Conference on the Venus Environment, held in Palo Alto, CA, November 2-6, 1981. The conference was jointly sponsored by the University of Arizona and NASA.

These include: evidence for two major, currently active volcanic areas on the planet; the probability that these areas are the principal vents for the planet's internal heat; quantified findings that Venus has a thicker crust than Earth and is a "one plate" planet with little plate tectonics; and complete, self-consistent models of Venus' cloud system and greenhouse effect. Considerable progress has also been made in understanding over-all atmosphere circulation (with implications for Earth); and there is strong new evidence for former Venusian oceans on the scale of the Earth's oceans.

Several hundred scientists from the U. S. and other countries attended the recent Venus conference. Much of the new information comes from data returned by the six Pioneer spacecraft and their 30 experiments. The Pioneers are managed by NASA's Ames Research Center, Mountain View, CA.

Much of the significance of Venus findings in general lies in the fact that the Earth and Venus appear to be almost identical copies of each other. Scientists believe the Earth would become a virtual Venus if you stopped its rotation, removed the Moon, and moved our planet slightly closer to the Sun. Therefore, studies of Venus provide a variety of insights into Earth mechanisms.

New Venus discoveries included:

1. Apparently there are two major volcanic regions on Venus: Beta Regio and the Scorpion Tail of Aphrodite Terra, largest continent-like upland region on the planet. There is evidence for continuous and current volcanic activity at both places.

2. Detailed analysis of Venus' global topography, and detailed comparisons with global crustal-density (derived from gravity data), show that Venus apparently has a thicker crust than Earth and is a "one plate planet." Substantial evidence indicates that its crust is not broken into many continent-bearing plates, floating on the liquid interior, as the Earth's crust is.

3. Because of its thick, planet-wrapping crust, most of Venus' interior heat appears to come out in its two volcanic regions, unlike Earth. Earth vents its heat at many points, especially at the constantly-expanding mid-ocean ridges. Concentration of Venus' lightning over just two volcanic regions suggests fairly frequent current volcanic activity in both places.

4. Though Venus' continents appear not to drift around on crustal plates as Earth's do, crustal density measurements suggest local uplifting of large regions. This is probably due to up-flowing convection plumes, resulting from circulation of interior magma. The most prominent of these are Aphrodite Terra and Ishtar Terra. Vertical motion of the crust also is suggested by the several deep rift valleys, one the lowest point of the planet, at the Scorpion Tail of Aphrodite.

5. Beta Regio, a region larger than the Hawaii-Midway chain, appears to be a huge double-shield volcanic construct, and is apparently the most active region on the planet. This is shown by variations in crustal density, apparent old lava flows, and the region's 20,000 foot height and huge size. Beta is believed to sit over a powerful, upflowing convective plume, deep in Venus' interior magma.

6. The new topography data show other smaller volcanos and one crustal rift 1500 km long.

7. Venus' clouds are "upside down". There's a smog layer on top, 15 km deep, and Earth-like condensation clouds (made of sulfuric acid droplets) below 57 km, extending down to 48 km. These condensation clouds are patchy and vary in density. They produce drizzle but seldom hard rain, and in general are only ten percent as thick as comparable Earth clouds. Scientists also have now charted and quantified the basic cycle of chemical reactions in the clouds.

8. Unlike Earth, which absorbs most solar heat on its surface, Venus absorbs most solar heat in its clouds. In the cloud layer is a single convective circulation cell which carries heat from equator to pole. Earth has three linked major circulation cells transporting heat between equator and poles.

9. Venus' cloud region is also a shell of high-speed winds which englobes the planet. Above this wind layer, the atmosphere is almost dead calm. There are two explanations for these high-speed winds on a planet with no rotation. Both propose wave (eddy)-pumping of the enormous momentum of the planet's dense
lower atmosphere to higher altitudes where the momentum remains. One of these proposed mechanisms involves large horizontal eddies; the other, tidal effects as the lighted hemisphere moves slowly around the planet. Weather theoreticians agree that: wave pumping mechanisms are critical to understanding Earth's weather, are not well understood on any planet, and have been brought into prominence by recent Venus work.

10. Venus appears to have had an ocean and lost it to space. During the solar system's early history (when scientists believe the Sun was 30 percent less hot), Venus' atmosphere and environment could have been Earthlike. Strong evidence for this lost water remains today in the definitive measurement of the ratio of deuterium to hydrogen. (There is 100 times as much deuterium relative to hydrogen on Venus as on Earth. This measurement was found for the first time in the Pioneer data during the recent Venus Conference). With water abundant, the planet may perhaps have sustained life during the early years of the solar system's history. When the runaway greenhouse effect began, it wiped out most existing phenomena on the planet and replaced them with today's furnace-like environment.

NASA Press Release 82-1, Jan. 20, 1982

NASA COMBINES OFFICES AND NAMES NEW HEAD

NASA has completed plans for the combination of its Office of Space Science and Office of Space and Terrestrial Applications. The new organization was effective on December 3, 1981. The new Office of Space Science and Applications will retain the programs and responsibilities of the two program offices with the exception of the Technology Utilization Program, which is transferred to the Government/Industry Affairs Division of the Office of External Relations.

Dr. Burton I. Edelson, senior vice president of COMSAT General Corp. has been named NASA Associate Administrator for Space Science and Applications, effective February 14.

Edelson will be responsible for all of NASA's Space Science and Applications programs, as well as the activities of the Jet Propulsion Laboratory at Pasadena, California, and the Goddard Space Flight Center, Greenbelt, Maryland.

Edelson joined the Communications Satellite Corp. in 1967 as assistant director for COMSAT Laboratories and in 1973 was named director of COMSAT Laboratories.

In March 1979 he was elected vice president of COMSAT, and he assumed his present position in September 1980. Prior to joining COMSAT, he served as an engineering officer in the U.S. Navy with assignments on the staff of the National Aeronautics and Space Council at the White House and in the Office of Naval Research.

A graduate of the U.S. Naval Academy, Edelson earned his master's and doctorate degrees from Yale University.

He is a Fellow of the Institute of Electrical and Electronics Engineers and of the American Institute of Aeronautics and Astronautics. He is a member of several U.S. government advisory committees and recently served on the NASA Transition Team for the Reagan Administration.

NASA Press Releases 81-182, 82-7

COMMITTEE ON COMPARATIVE PLANETOLOGY

The International Union of Geological Sciences (IUGS) has formed an Advisory Committee on Comparative Planetology. The committee advises the IUGS on research initiatives in planetary studies and provides IUGS representation on other scientific organizations with interests in geoscience. Major goals are to stimulate research in comparative planetology and promote communication of these research results to the general geoscience community. Particular emphasis is being placed on the application of planetary studies to problems in terrestrial geology. To achieve these goals, the committee is interested in co-sponsoring symposia within the framework of existing national and international meetings on interplanetary comparisons in such subject areas as crustal evolution, impact and volcanic processes, early Pre-Cambrian geology. For further information, interested parties and organizations should contact Dr. James W. Head, Dept. of Geological Sciences, Brown University, Providence, RI 02912, or Dr. Richard A. F. Grieve, Earth Physics Branch, Dept. of Energy, Mines and Resources, Ottawa, Canada K1A OY3.
THE LUNAR AND PLANETARY INSTITUTE
SUMMER INTERN PROGRAM
FOR UNDERGRADUATES
JUNE 14 - AUGUST 20, 1982

The Lunar and Planetary Institute offers selected undergraduates an opportunity to participate actively in lunar and planetary research with scientists at the Institute and at the NASA Johnson Space Center. The ten-week program begins June 14 and ends August 20, 1982, although these dates can be adjusted somewhat to fit individual schedules. The weekly remuneration will be $225, and assistance with travel costs.

POTENTIAL AREAS OF RESEARCH
Cosmic dust characterization, meteorite fall statistics, meteorites and their origins, planetary regolith studies, Mars soil analog chemistry, trace element partitioning studies, volcano morphology characterization, planetary volcanism and thermal histories, volcanism at subduction zones, thermal and mechanical modelling of planetary interiors, fluid inclusion studies, experimental petrology, petrology and geochemistry of Precambrian rocks, remote sensing data processing, data base management systems, planetary impact cratering processes, image processing, photogeology, studies of continental rift valleys, and special library science. Each project will be coordinated by an LPI or JSC scientist.

ELIGIBILITY AND SELECTION CRITERIA
Undergraduates, including class of 1982 graduates, are eligible and will be considered for appointment without regard for race, creed, color, sex, national origin, age, handicap status or other non-merit factor. Selection is based upon the following criteria: (1) Scholarship, curriculum and experience, (2) career objectives and scientific interests, and (3) match of interests of applicant with available research projects. Notification of selection will be made by April 19, 1982.

APPLICATION DEADLINE IS MARCH 22, 1982

Please send a brief biographical sketch, a description of academic goals, career plans and scientific interests, and a summary of why you wish to participate in the intern program. Application forms may be requested from Mrs. Pam Jones at the LPI. In addition, arrange for the sending of official transcripts and three letters of recommendation covering academic achievement, career potential and character. Send these materials to:

SUMMER INTERN PROGRAM
The Lunar & Planetary Institute
3303 NASA Road 1
Houston, TX 77058

Questions concerning the program should be directed to Mrs. Pam Jones, (713)486-2150.

LIBRARY NEEDS METEORITICS 1980
In some mysterious way, the bound volume of Meteoritics for 1980 has disappeared from the Library at the Lunar and Planetary Institute. If anyone would be interested in donating this volume or a piece of it to us we would greatly appreciate it. Call Laura at 713-486-2134 and let us know about your generosity.

McGETCHIN VOLCANO FUND: OPPORTUNITY FOR SUMMER STUDY
The McGetchin Volcano Fund is supported by friends of Tom McGetchin to: (1) allow special projects in volcanology to be pursued by undergraduate or graduate students not involved in Ph.D. thesis research and (2) encourage characteristic enthusiasm to be developed by active (field) participation in research. Planetary scientists actively involved in volcanology are encouraged to suggest this opportunity to potential applicants.

Applications are invited for this year’s program of summer study. Applicants should submit or have sent (a) a brief description of the project; (b) a letter of evaluation of, and concurrence with the project, by a supervising sponsor from a research institution (e.g., faculty); (c) two letters of technical or scholastic reference; and (d) an up-to-date academic transcript and resume.

The project description should include such information as approach, significance, location, duration, and itemized budget of the support requested. The research relation between the student and sponsor should be
defined. Topics in volcanology are non-restrictive but should emphasize participation. The proposal should be limited to no more than four pages. A report discussing the outcome or direction of the project will be required at the end of the project. Funding limitation for each project this summer is likely to be between $500 and $1000.

The above application material should be sent by March 15, 1982 to:

McGetchin Volcano Fund
Lunar and Planetary Institute
3303 NASA Road One
Houston TX 77058

Announcement of awards will be made by April 30, 1982.

Three students received awards in 1981 for field work in volcanology. Anticipated funds available for 1982 will allow a similar number of participants. Private contributions to the fund will be gratefully received and will allow the program to be continued in the future.

WRAP-UP — PLANETARY RIFTING CONFERENCE

The most recent LPI Topical Conference, "Processes of Planetary Rifting" cosponsored by the LPI, American Geophysical Union, NASA, and the National Science Foundation, was held at the Christian Brothers' Retreat House, St. Helena, California, on 3-5 December 1981. Sixty-two papers were presented by the seventy attendees to the conference in seven formal sessions:

1. Speculation as to the origins and development of rifts
2. Rifts on other planets
3. Tectonics
4. Geology
5. Chemistry of the lithosphere
6. Physics of the lithosphere
7. Resources associated with rifting

Sessions continued late into the evening on all three days of the conference, and concluded with an informal debate on "our state of ignorance and its remedy." Central in the content of the conference was the discussion of active and passive mechanisms of rifting, active being defined as rifting in response to asthenospheric upwelling, and passive rifting as a response to lithospheric tensional stresses resulting from plate interactions. The main consensus in the final debate was in the need for more theoretical studies, more experimental studies, and more data. Even the value of the active and passive models was questioned in view of the complex response of the continental lithosphere to tectonic processes.

This conference was convened by Brian H. Baker, Center for Volcanology, University of Oregon, and Paul Morgan, LPI, as a preliminary step in developing an LPI project on the study of continental rifts. Abstracts of papers presented to the conference have been published as LPI Contribution No. 457. It is available from the LPI, Library/Information Center, for $3.00 U.S., Foreign air mail $9.50, surface $4.50. Orders should be accompanied by check. The Proceedings of the conference will appear as a special issue of Tectonophysics in December 1982.

NEW PUBLICATIONS

NASA PUBLICATIONS

The following publications are available from the Superintendent of Documents, Government Printing Office, Washington DC 20402. Although this agency requires prepayment on all orders, they will accept Mastercard or VISA credit cards. Just include the account number and expiration date on your order to them. Some of the publications may be available from the GPO bookstores which are found in major cities around the U.S. Check your city directory for a local listing.

Several of the GPO publications are being offered by other distributors at widely varying prices. It pays to shop and compare.

PLEASE do not send orders for these publications to the LPI. We are not a distribution center for SOD documents and this will only delay your order.
Voyager at Saturn Posters

This set of two colorful posters measuring 11 x 17 inches depict photos obtained by Voyager 1 as it swept through the Saturn system in November 1980. The Planet & Rings represents a close-up view of Saturn, as well as four smaller shots taken under the rings, closing in, and looking back. The Satellites shows the Saturn system and focuses on the satellites Mimas, Dione, and Tethys. Each poster contains descriptive text on the reverse.

Beautifully printed on glossy paper, these two posters are perfect for the classroom or for your favorite space buff.

Order no. S/N033-000-00827-9 $3.25.

OTHER PUBLICATIONS OF INTEREST

Guide to obtaining information from the USGS 1981

Compiled by Paul F. Clarke, Helen E. Hodgson and Gary W. North this informative booklet tells what kinds of data are available from the USGS in the form of maps, publications, data sets, etc. It is available free from the USGS Publications Distribution Branch, Denver Federal Center, Denver CO 80225, or 1200 South Eads Street, Arlington VA 22202. Ask for Circular 777.

New from the Astronomical Society of the Pacific

The A.S.P. in its continuing efforts to increase public understanding of astronomy, has compiled two new lists and is making them available free for the cost of mailing.

Index to NASA's Astronomy Books includes some of the most interesting and useful books on astronomy which have been published by NASA during the last two decades. Among the books listed are non-technical descriptions of the most recent missions to Mars, Jupiter and Saturn, and summaries of conferences concerning the search for extra-terrestrial life and the building of space habitats. Specific addresses and phone numbers for ordering the publications are included. To receive a copy of this index, send two first-class stamps with your name, address, and zip code and ask for NASA Index.

Index to Astronomy in Scientific American is a complete subject index to astronomy articles which appeared in SA magazine between 1960 and 1981. These non-technical articles were written by prominent scientists actively engaged in the research they were describing. To obtain a copy of this index send a long, self-addressed envelope with at least two first class stamps on it.

In addition to these indexes, the A.S.P. has a number of other items such as bumper stickers, t-shirts, and educational materials available. To obtain a listing of other Society activities, include a request for their catalog with your request for other indexes. Include at least one extra stamp with your request.

The address of A.S.P. is:

Astronomical Society of the Pacific
1290 24th Avenue
San Francisco CA 94122

SPACE SHUTTLE GUIDEBOOK

The National Space Institute (NSI) is proud to announce a space shuttle guidebook—an exact reproduction of the original NASA press document issued before the first flight of space shuttle Columbia.

Republished for its members by NSI, the nearly 300-page volume contains a comprehensive overview of the entire space shuttle transportation system, from its development history to flight crew training.

Written in a manner for both the lay public and the space aficionado, this invaluable reference described the space shuttle propulsion system, crew accommodations and equipment, the orbiter structure and systems, and the missions operations and support required from launch to landing of the shuttle orbiter.

This superb reference book is liberally illustrated with photos, tables and detailed charts depicting the inner workings of the versatile space shuttle. The NSI guide is appendixed with a special glossary of terms, acronyms, and abbreviations used in each shuttle mission, and is des-
SURFACE OF MARS

"The facts about Mars have turned out to be almost as bizarre as the fiction," planetary geologist Michael Carr says in THE SURFACE OF MARS, a book published early in 1982 by Yale University Press.

Carr, an expert on martian geology and leader of the Viking Orbiter Imaging Team, has summarized interpretations of 60,000 photographs and other data collected by Mariner and Viking spacecraft between 1970 and 1980.

The Viking mission, the latest episode in Mars exploration, has in the last five years returned an enormous amount of new information about the planet which confirms its surprisingly diverse geology and evolutionary history. Carr's new book is the first work to summarize the Viking results and integrate them into a coherent story. It is expected to be the definitive work on Mars for many years to come. Several recent maps of the planet are included and over 150 Viking pictures are reproduced in large format, some being published for the first time.

The book SURFACE OF MARS by Michael H. Carr may be ordered from Yale University Press, 92A Yale Station, New Haven, CT 06520 for $45.00 or contact your local book seller.

From Yale University Press News Release

VOLCANOES OF THE WORLD

A regional directory, gazetteer, and chronology of volcanism during the last 10,000 years compiled by T. Simkin, L. Siebert, L. McClelland, and D. Bridge of the National Museum of Natural History and C. Newhall, Dartmouth College and J. H. Latter, DSIR, New Zealand, features comprehensive and up-to-date data tables of known volcanism over the past 10,000 years. It will be an invaluable source of information for scientists, historians, and students interested in the history and effects of volcanoes. This book is the result of 10 years of work and draws heavily from the reports of many SEAN correspondents. The authors state that one of their main objectives for the book is to stimulate responses from people who know individual volcanoes better than they can and from people in different disciplines who are also interested in the effects of volcanism during the last 10,000 years. They solicit any help that can be given by you the reader to increasing the information in their data bases.

The book is available from Academic Press, 111 Fifth Avenue, New York NY 10003, or your book seller. Price is $19.75.

COATTAILS OF GOD—THE ULTIMATE SPACE FLIGHT

In this new book, author Robert M. Powers says "Let us not apologize for loving the stars, for having read and dreamed, plotted and calculated, for having manufactured and flown these pieces of our dreams which have shown us such fantastic reality. Let us build more, go on now, planet to planet, moon to moon, asteroid to asteroid until we try for the great long distance between this sun of ours and some other one and see what the hell is out there."

Robert Powers, award-winning science writer whose Shuttle—The World's First Spaceship sold 83,000 copies, now imagines the trip of the future our first interstellar flight. His Planetary Encounters and Shuttle prepared us for travel within our solar system. The COATTAILS OF GOD readsies us now for the ultimate grand adventure! On the basis of our present knowledge, technological capacity and the prospects of future development, he envisions the Starship Agamemnon. The Starship is a shining cylinder in which generations of star travelers journey, living and dying in a contained environment designed for human comfort, programmed from launch to landing on a planet circling Epsilon Eridania star located in the sky 10 degrees south of the celestial equator.

The 400-page book is available from Warner Books, 75 Rockefeller Plaza, New York NY 10019 or your local bookstore for $17.95.

Publishers Press Release
TWELFTH LUNAR & PLANETARY SCIENCE CONFERENCE PROCEEDINGS

This two-volume set of papers presented to the 12th Lunar and Planetary Science Conference in March 1981 is now published. Theories and reports collected from data of remote sensing studies of the planets are presented along with interpretations of Viking data, analysis of recent planetary and meteorite samples, and theories for the origin of the moon and other terrestrial planets.

Contents: Volume One consists of reports on the Moon, under the subject headings: Pristine Rocks, Breccias, Regolith, Surface Geology, Structure and Evolution. Volume Two consists of reports on the Planets, Asteroids, and Satellites, under the subject headings: Meteorites, Mars and Venus, Experimental and Theoretical Studies. 883 illustrations, approximately 4,000 literature references are contained in this 1823 page publication.

Available from Pergamon Press, Fairview Park, Elmsford NY 10523 for $175.00.

THE PLANETS: A DECADE OF DISCOVERY

In the past few years we have seen most of the planets in our solar system in true close-up for the first time. This explosion of scientific knowledge, the result of a series of spectacular space missions, now enables us to understand much that has puzzled man for centuries.

Traditionally, books on the planets have been written by astronomers, but this Pelican Original comes from a geologist, Peter Francis, whose down-to-earth explanations of the geography, geology and meteorology of each of the planets transforms what were once obscure discs of light into real new worlds.

After a brief review of the solar system, the book begins with the Moon, since this is our nearest neighbor in space, and the one about which most is known. It is not concerned solely with the Apollo missions, but starts by discussing what was known of the Moon before them. This is important because it enables the reader to review the scientific results of the Apollo landings in a much broader perspective. The Moon also provides an ideal starting point for the main function of the book, a review of each of the planets and their attendant satellites. The last chapter attempts to draw all the threads together, to show how all the planets can be considered as a family of related individuals to establish what elements of common history they may have shared, and how they evolved.

The handy paper-back book is liberally illustrated with figures and photos from various planetary exploration missions and contains a good list of supplementary readings and an index. At this time the book is only available through Penguin Books Ltd, Harmondsworth, Middlesex, England for £3.95 (approximately $8.00 U.S.)

PLANETARY SCIENCE: A LUNAR PERSPECTIVE

This new book by Stuart Ross Taylor is a continuation of the story begun in Lunar Science: A Post-Apollo View. For a full description of the scope and content of this excellent book, see advertisement elsewhere in this Bulletin. Page 31

OTHER OBJECTS, DUST, PARTICLES, ETC.


NOTE TO OUR READERS: PLEASE let us know when you move. Each change of address which we get through the postal service costs us $.25-.80 in return postage costs PLUS the postage to send the mailing to you at the new address. It also costs you because you do not get your mailings from the Institute promptly. It often takes the postal service 60-90 days to return an item to us with the address correction. Do yourself and us a service. Remember the LPI Mailing List when you move. Thanks. (ye editor).

The LUNAR AND PLANETARY INFORMATION BULLETIN is published by the Lunar and Planetary Institute. There are usually four issues per year. It is distributed free on request to lunar and planetary scientists, educators, students, and their institutions.

The next issue will be in May. Copy deadline is April 11, 1982. If you have any announcements which you would like to have printed in the BULLETIN, please send them to the Editor. We reserve the right to select and edit copy.

Editor: Frances B. Waranius, Lunar and Planetary Institute 3303 NASA Road One, Houston, TX 77058 Phone: 713/486-2135
February 19-20

Seventh Symposium on Antarctic Meteorites,
National Institute of Polar Research, Tokyo, Japan
Contact: Dr. Takesi Nagata, Director
National Institute of Polar Research
9-10 Kaga I-Chome
Itabashi-Ku
Tokyo 173 Japan

MARCH 15-19

XIII LUNAR AND PLANETARY SCIENCE CONFERENCE
Houston, Texas
Contact: Projects Office
Lunar and Planetary Institute
3303 NASA Road One
Houston TX 77058
Telephone: 713/486-2150

April 1

DEADLINE Manuscripts for Continental Rift
Workshop Proceedings Papers
Contact: Publications Office
LPI
Telephone: 713/486-2161

April 21-23

NASA Planetary Atmospheres Principal Investigators
Fourth Annual Meeting, University of Michigan, Ann Arbor
Contact: Dr. S. K. Atreya
Dept. Atmospheric & Oceanic Science
Space Research Building
University of Michigan
Ann Arbor MI 48109

May 11-15

Saturn Conference,
Tucson, Arizona
Contact: M. S. Matthews
University of Arizona
Lunar and Planetary Laboratory
Tucson AZ 85721
Telephone: 602/626-2902

May 17-June 3

24th Plenary Meeting of COSPAR, Ottawa,
Ontario, Canada
Contact: T.W. McGrath, Executive Member,
Local Organizing Committee
XXIV COSPAR Conference Secretariat
National Research Council
Ottawa, Ontario K1A OR6, Canada
May 31-June 4  American Geophysical Union Spring Meeting, Philadelphia, Pennsylvania
Contact: American Geophysical Union
2000 Florida Avenue NW
Washington DC 20009

August 17-26  XVIII General Assembly of the International Astronomical Union, University of Patras, Greece
Contact: Organizing Committee
XVIII General Assembly IAU
University of Patras
Patras, Greece

Contact: J. T. Gleave
Special Courses Division
University of Leeds
Leeds LS2 9JT United Kingdom

August 30-Sept. 2  International Conference on Planetary Rings (I.A.U. Colloquium no. 75), Toulouse, France
Contact: Centre National d'Etudes Spatiales
Dept. des Affaires Universitaires
18, avenue Edouard-Belin
31055 Toulouse CEDEX France

August 31-Sept. 2  International Conference on Very Large Baseline Interferometry Techniques, Toulouse, France
Contact: Centre National d'Etudes Spatiales
Dept. des Affaires Universitaires
18, avenue Edouard-Belin
31055 Toulouse CEDEX France

August 31-Sept. 2  First International Eclogite Conference, Clermont-Ferrand, France
Contact: F.I.E.C.
Museum National d'Histoire Naturelle
Laboratoire de Mineralogie
61 Rue de Buffon
75005 Paris France

September 8-11  Third International Kimberlite Conference, Clermont-Ferrand, France
Contact: T.I.K.C
Laboratoire de Tectonophysique
Universite de Nantes
2 Rue de la Houssiniere
44072 Nantes CEDEX, France
September 13-16
45th Annual Meeting of the Meteoritical Society, St. Louis, Missouri
Contact: Prof. Ghislaine Crozaz
Washington University
Box 1105
St. Louis, MO 63130

October 1982
Conference on Planetary Volatiles
schedule still tentative. Final dates and place in next Bulletin
Contact: Ms. Pam Jones
Lunar & Planetary Institute
3303 NASA Road One
Houston TX 77058
Telephone: 713/486-2150

October 18-21
Geological Society of America Annual Meeting, New Orleans, LA
Contact: GSA Headquarters
3300 Penrose Place
Boulder CO 80301
Telephone: 303/447-2020

October 19-22
Division for Planetary Sciences, American Astronomical Society, Boulder, CO
Contact: L. Esposito or R. West
University of Colorado
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On the distribution of In in Allende chondrules, inclusions, and matrix

Tomeoka K., Buseck P. R.
An unusual Fe- and O-rich layered material in chondrules and aggregates of carbonaceous chondrites

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Smith M. R., Schmitt R. A.
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Fluid inclusions in diogenite ALHA-77256

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Origin of mesosiderites during asteroidal accretion

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Daode W., Malvin D. J., Wasson J. T.
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The effects of P, C, and S on trace element partitioning during solidification in the Fe-Ni system

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Deuterium enrichments in primitive meteorites

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Effect of impact gardening on the depth distribution of regolith materials

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The size distribution of clasts in the ABEE E-chondrite and other meteorite breccias

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Trace element data on enstatite chondrite components and the Qingzhen enstatite chondrite

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Microchondrules: Their occurrence in new kinds of Type 3 chondrites and their bearing on the origin of chondrules

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New evidence of relict grains in chondrules of highly unequilibrated ordinary chondrites

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The abundance and distribution of moderately volatile elements in Semarkona chondrules

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Oxygen isotopic compositions of chondrules in unequilibrated chondrites: Further petrological interpretations

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Precipitate distribution in reduced olivine

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