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lunar & planetary information bulletin

NUMBER 37 FEBRUARY 1984

The **FIFTEENTH LUNAR AND PLANETARY SCIENCE CONFERENCE** will begin Sunday March 11 at 6:00 p.m. with registration and an open house at the Lunar and Planetary Institute. The registration fee for the conference is $35.00. 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 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 491 abstracts accepted for publication in Lunar and Planetary Science XV, the Program Committee has constructed 27 sessions for a total of 333 oral presentations. In general, the sessions have been structured using the following broad topics:

Regolith studies	Cratering and shock studies
Crustal genesis	Major planet satellites
Lunar petrology	Mars
Lunar geology	Venus
Planetary physics	Solar system evolution
Isotopic studies	Asteroids and comets
Meteorite studies	Cosmic dust

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. (See Appendix to this Bulletin)

CONFERENCE HIGHLIGHTS

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. If anyone has exhibit material which is not part of the official poster session, but which they would like to display, please contact Pam Jones, at the LPI (713-486-2150) for a space allocation.

Saturday/Sunday - March 10-11

The initial meeting of people who will be involved in the new program on Mars data analysis will meet in the Berkner Room at the LPI to discuss "Volatile Evolution and Climate History of Mars."

Sunday - March 11

A Meeting of "Ganymede Mappers" chaired by Dr. Baerbel Lucchitta will be held in the Hess Room at the LPI.

There will be a Meteoritical Society Council meeting in the Hess Room at the LPI,Sunday evening 7:00 -10:00 p.m.

Monday - March 12

European Scientists Meeting chaired by Dr. Keith Runcorn, University of Newcastle-on-Tyne will convene at the LPI from 5:30 to 6:30 p.m. on Monday afternoon. Colleagues from all countries are invited to attend.

A program to discuss current status of planetary missions will be held Monday evening in the Gilruth Center Auditorium. Topics will include mission and

program status of Venus Radar Mapper (VRM) and the proposed Planetary Observer Program.

Tuesday - March 13

Tuesday evening is Chili Cook-Off/Bar-B-Q time. This much heralded event returning for the fourth time will be held on the grounds of the LPI. Paid registrants of the Conference are welcomed at the Chili Cook-Off festivities. Guests of registrants may purchase a ticket at the Conference registration desk for $10.00. Team applications are still being accepted. Prizes will be awarded based on the best tasting chili not according to absolute "Texas Standards". Rain date for the cook-off will be Wednesday, March 14.

Wednesday - March 14

The JSC Astronomer's Brownbag Lunch Club will present Bill Agosto in the Conference Room, Room 193, Building 31 at Noon. Mr. Agosto will speak on "Lunar Oxygen Sources."

Meeting to discuss possible formation of a Lunar and Planetary Science Society: See additional information in article in this BULLETIN. If the Chile Cook-off is rained out Tuesday, this meeting will be held on Tuesday.

Thursday - March 15

A special evening session to discuss "New Analytical Techniques" is tentatively scheduled.

ABSTRACTS - Lunar and Planetary Science XV

A staple-bound advance copy of abstracts will be sent before the conference to the corresponding author of an abstract selected for oral presentation. If this would result in multiple copies, only one will be sent. It is suggested that this copy be shared among the author's colleagues.

Abstracts will be distributed to conference attendees who have paid the $35.00 registration fee. For those who cannot attend the conference but wish to have the abstracts, a supply will be available after the conference at the cost of postage and handling.

Please use the order form included in this Bulletin and mail with your check to the Library/ Information Center at the LPI.

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

A Lunar and Planetary Science Society: Do We Need One? Meeting During LPSC XV

Over the last few years there have been various changes to the organizational structure for the Lunar and Planetary Science Conference and the publication of the Proceedings. In part, these changes have been forced by declining funding levels for lunar and planetary science. However, there has been little opportunity for widespread or formal input from many concerned persons who are members of the lunar and planetary community. This is because there is no formal organization to represent that community, although it has existed for about 15 years and, almost like a professional society, has its "own" annual meeting and publication. Until now there has been no pressure to formalize the community, because NASA and LPI did all the organizing.

The LPSC is now organized by a recently formed Steering Committee with representatives from the LPI, the AGU, the DPS, and the Meteoritical Society. We suggest that these do not fully represent the entire lunar and planetary science community and that additional representation to better cover the fields of solid-body planetary science is desirable. We also feel that these other societies, useful and conscientious though they are, do not adequately represent and promote the entire range of planetary interests in realms outside the conference.

We have considered the formalization of the lunar and planetary science community through the creation of a Lunar and Planetary Science Society. From a survey of about 30 people and informal approaches to many others, we determined that there is significant support for the creation of such a society. Almost all responses were to the effect that the other societies do not adequately represent lunar and planetary interests. Nevertheless, there is some reservation from those who do not favor "proliferation" of societies, and would prefer to see some form of Working Committee established by societies or other groups (e.g., LAPST). There is also some opposition from those who do not see any need for a Lunar and Planetary Society at all.

We recommend the formation of a Lunar and Planetary Science Society formally representing a common-interest community that already exists. The

purpose of this society would be the preservation and improvement of the Lunar and Planetary Science Conference by requesting and having representation on its Steering Committee; communicating information among its members; discussing and assessing publication desires for the Proceedings and how these can be met within fiscal constraints, in cooperation with LPI and publishers; and organizing support for future space missions (e.g., LPO, Lunar base, Mars sample return, asteroid sampling) of most interest to the community.

To allow broad discussion of this recommendation and of the purposes of the society, a questionnaire will be distributed at LPSC XV registration, and a meeting is scheduled early in the week of the conference (Tuesday or Wednesday depending on whether the Chile Cook-off is rained out on Tuesday or not). We want to have a useful airing of ideas and to establish the level of support for a society. If the level is high enough, a society can be formed at the meeting. Come and give your opinions, pro or con.

A further purpose of the meeting is to discuss options for the publication of the Proceedings. Information and options will be presented by LPI and AGU representatives, and the financial constraints summarized. Do you want the Proceedings to live or die? If "live", in what form? How would you finance your preference? Come to the meeting and make your opinions known, or just listen to what others have to say.

—Alan Binder, Graham Ryder, Charles Wood.

Workshop on the Early Earth: The Interval from Accretion to the Older Archean

As a contribution to NASA's current Crustal Genesis Project, a workshop on the Early Earth will be held at the Lunar and Planetary Institute in Houston April 23-25, 1984. The goal of this workshop is to review current understanding of the processes of earth formation and that of the older Archean rocks, with a view to addressing the question: What was the earth like between its formation and that of the oldest preserved rocks?; What theoretical, observational or experimental studies can be initiated at this time in order to address this question? It is hoped that the workshop will involve a range of disciplines as well as focus on recent advances in studies of planetary accretion, isotope geochemistry, thermal history modelling and Archean geology, all of which could influence our way of looking at this fascinating interval.

Because of the size of the facilities and the goals of extended discussion, attendance will be limited to 80 persons. However, a technical report summarizing results from the workshop will be published. Watch the **LPIB** for announcement of its availability.

Topical Conference on Origin of the Moon

The dates for this topical conference co-sponsored by the Lunar and Planetary Institute and the Division for Planetary Sciences of the American Astronomical Society are October 14-16, 1984 in Kona, Hawaii following the 1984 DPS meeting at that location. Conference organizers are William Hartmann, Planetary Science Institute; Roger Phillips, Southern Methodist University; and G. Jeffrey Taylor, University of New Mexico.

The program will consist of speakers who have been invited to summarize certain areas, but contributed talks will make up the bulk of the program. Tentative session topics for contributed talks include:

1. What chemical and petrologic constraints can be placed on the origin of the Moon?
2. What geophysical constraints can be placed on the origin of the Moon?
3. What dynamical constraints can be placed on the origin of the Moon?
4. When we return to the Moon, what new experiments and observations could help constrain the origin of the Moon?
5. How did the Moon form?

Abstracts for the conference will be due July 15, 1984. Proceedings of the conference will be published in book form with papers due December 15, 1984. Questions pertaining to the meeting may be directed to any of the conveners or to Pam Jones, LPI Projects Office, 713-486-2150.

Case for Mars II

THE CASE FOR MARS II, a workshop to appraise the future of manned missions to Mars will be held in Boulder, Colorado, July 10-14, 1984. The workshop is sponsored by the Mars Institute of The Planetary Society, the Boulder Center for Science and Policy, and the University of Colorado Space Interest Group. Following in the footsteps of the initial CASE FOR MARS CONFERENCE in 1981, the goal is to provide a continuing forum and contact point for the many individuals with strong interest in manned Mars missions and colonization of Mars.

This workshop conference is designed to bring together widespread work in the area and to synthesize an approach to manned exploration and colonization of the red planet. It will provide a forum for reporting on the results from the Mars Institute and other ongoing related work. The plan is to further develop and extend the ideas which were considered at the first conference with particular emphasis on establishing a self-sufficient colony on Mars.

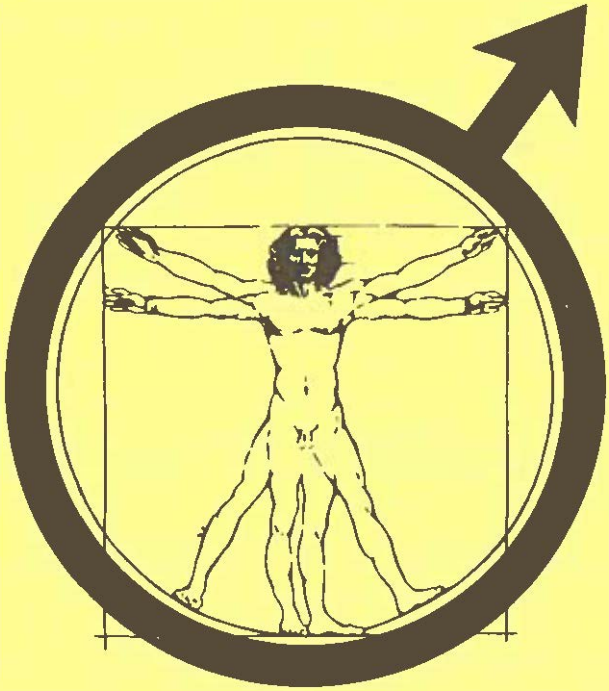
The format of the program is planned to promote discussion and development of ideas. Initial plenary sessions will be devoted to papers orienting participants to the state-of-the-art and major problems of the relevant disciplines. Participants will then break up into topical workshops to consider options and problems and to design a coherent mission strategy. Summary sessions on a daily basis will allow for interchange of ideas and concerns between workshops. Participants should come fully prepared to discuss their ideas in a congenial and informal atmosphere.

Abstracts for papers to be included in the conference presentations must be received no later than May 15, 1984. To preregister send: your name/address/phone/institute, business affiliation or school/ and $40 registration fee ($20 for students) to The Case for Mars Conference, P.O. Box 4877, Boulder CO 80306. Preregistration deadline is June 1, 1984.

For further information contact:

Helen Hart
Laboratory for Atmospheric
and Space Physics
University of Colorado
Boulder, Colorado 80309
(303) 492-8822

Carol Stoker or Tom Meyer
CASE FOR MARS
P. O. Box 4877
Boulder, Colorado 80306
(303) 494-8144



Mars Contest

The Planetary Society's *Mars Institute* announces a student contest for the best answer to the following problem: Design a Martian Base Water Supply System. Students in any high school or college are eligible. The prize is $1,000 plus a one-week all-expense paid trip to the Mars Institute annual conference to present the winning paper. Other prizes for excellent entries will be considered. A Mars bibliography and free membership in the Society will be sent to all entrants.

Criteria for selection

Completeness
Has the student adequately considered the problem and dealt with implications of solution(s)?

Innovation
Is the answer creative?

Originality
Does the answer add to present understanding of the problem?

All students wishing to enter the contest should signify their interest by writing:

The Planetary Society
Mars Institute Contest
110 South Euclid Avenue
Pasadena, CA 91101

Answers must be submitted by June 1, 1984. The winner will be selected by July 1984.

Students may consult during their work on the problem with Mars Institute Coordinator Chris McKay at (415) 965-5499.

Ninth Symposium on Antarctic Meteorites

The Ninth Symposium on Antarctic Meteorites will be held at the National Institute of Polar Research (NIPR), Japan on March 22-24, 1984. The aim of this symposium is to present the recent outcome of research on the Antarctic meteorites, in particular, the Yamato meteorites and others retrieved from Victoria Land. At the general and topical sessions presentations dealing with new data from non-Antarctic meteorites and planetary researches will be included.

All presented papers will be published as the Proceedings of this Symposium by the National Institute of Polar Research. Abstract deadline is February 25, 1984. For more information contact:

Keizo Yanai
National Institute of Polar Research
9-10, Kaga 1-chome, Itabashi-ku
Tokyo 173, Japan
Telephone: Tokyo (03) 962-4711
Cable Address: POLARSEARCH TOKYO
Telex: 2723515 (POLRSC J)

NASA Uses New Method of Designating Shuttle Missions

Instead of the familiar **STS (Space Transportation System)** with a number which has been used for the first nine Shuttle Missions, from now on, the missions will consist of a numerical prefix indicating the year in which launch is to occur, a numerical designator for the launch site ("1" for a KSC launch and "2" for a Vandenburg AFB launch), and a letter suffix which reflects the original scheduled order of launch. Mission 41-D, for example, is a 1984 launch —"4"; to occur at Kennedy Space Center —"1" and was originally manifested as the fourth mission of that fiscal year —"D". If the launch moves in the sequence, the mission designator will not change.

NASA News Release 83-142

GEOSAT Committee News

The Geosat Committee will hold an open meeting on February 27, 1984, starting at 9:00 a.m. in the Sheraton Santa Barbara, Santa Barbara, California. This meeting, which will focus on the Landsat commercialization issue, is held in conjunction with the LANDSAT-D' Launch User Symposium February 27 through March 1, 1984. Both meetings coincide with the launch of LANDSAT-D' (LS-5) on March 1. LS-5 will carry the Thematic Mapper which includes the rock/soil sensitive 2.2 micron band. The Geosat Committee was very instrumental in getting this band included on the Thematic Mapper as a part of their effort to improve satellite remote sensing for geological applications. LANDSAT-D' (LS-5)will be launched by the last Delta launch vehicle the U. S. Government will utilize before the sale of all expendable launch vehicles (ELVs).

For more information contact:

Geosat Committee, Inc.
153 Kearny Street, Suite 209
San Francisco, CA 94108
(415)981-6265
Telex: 910-372-2043 GEOSAT SFO

L-5 Society Plans Conference on Space Development

The L-5 Society is sponsoring the Third Annual Conference on Space Development at the Sheraton Palace Hotel, San Francisco, California, April 20-22, 1984.

The schedule for the meeting will include tours of NASA/Ames, an open L-5 Board Meeting, space organization displays, the Awards Banquet, and a full program of sessions on space commerce, space law, utilization of space resources, and future planetary exploration. Day care facilities and special activities for children are also planned.

Registration for the meeting is $30 for members and $50 for non-members to April 1, 1984. At the door, registration is $40 for members and $60 for non-members. The non-member fees include a year's membership in the L-5 Society. Tickets for the banquet on Saturday evening are $35.00.

For more information or to preregister contact:

Organizing Committee
3rd Annual Conference on Space Development
1275 4th Street, #242
Santa Rosa CA 95404

ECG Project News

Planetary Geology at Spring AGU 1984 - Lower Crustal Processes

At the invitation of Carle Pieters of the Program Committee, the members of ECG Project are organizing a special session on lower crustal processes at the spring meeting of the American Geophysical Union. The session will be under the joint chairmanship of Bill Phinney (JSC) and Kevin Burke (LPI). The lower crustal processes session provides the opportunity of communicating to those not involved in ECG the breadth and range of the interest of the program as well as an occasion to assess present knowledge of that curiously inaccessible environment—the lower crust.

LPI TR 83-03 Published

The technical report which presents the summary, field guide and abstracts from the ECG Field Workshop held in Ottawa, Ontario, Canada, August 11-16, 1983 has been published. The report is available from the Library/Information Center at the LPI. Check the publications order form in this BULLETIN for the postage and handling charges. REMEMBER: If you are in a government organization and can supply us with a franked label, there is no charge for LPI Technical Reports or Contributions. Because of the size of the XV LPSC abstracts, we must ask for the postage and handling fee.

NEW PUBLICATIONS

Please order the following publications from the sources indicated. The LPI is not a distribution center for these materials. In general, government documents can be ordered from the Superintendent of Documents, Government Printing Office, Washington DC 20402. Although the 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.

Spacelab: An International Short-Stay Orbiting Laboratory

Spacelab was planned and constructed to serve as a suitable host for significant scientific research and technological development. As intended by its European builders and by its American operators, this new facility will serve scientists from many nations and in many scientific disciplines and technological specialties.

Spacelab is the outgrowth of steady evolution of space technology. It enables scientists and engineers to go into space for in-orbit research with their own hands and eyes—with instruments they have designed and built.

This booklet is beautifully illustrated with many color photographs and diagrams of the Spacelab and the Space Shuttle which carried it and its crew. The text, written by experienced space writer Walter Froehlich, describes the history of Spacelab, pro-

vides detailed descriptions of the craft and the science which was performed on it, and what experiments future Spacelabs may do. This publication summarizes what Spacelab is, what it does, how it came to be, and what its users expect from it.

Available from the Superintendent of Documents, NASA EP-165, 77 pp. $7.00.

New Astronomy Catalog Available from the A. S. P.

The non-profit Astronomical Society of the Pacific has just published its 1984 Selectory of interesting astronomical materials. The catalog includes slides, prints, maps, posters, books, tapes, sky observing aids, and even a few astronomical novelty items such as T-shirts and bumper stickers.

New in this year's catalog are a slide set of the 50 greatest astronomers of the past, posters and slides of the beautiful new color photos of the Southern skies taken by the large telescopes in Australia, definitive maps of the surface of Mars, a calendar of moon phases, and several booklets to help orient the novice amateur astronomer in the heavens.

For a free copy of the illustrated catalog, please send two first class stamps with your name and address to:

Catalog
A.S.P.
1290 24th Avenue
San Francisco, CA 94122

Outside the U. S. please send four international postage payment coupons instead of the stamps.

New Publication for German-Speaking Readers

Horst W. Koehler, a German space science writer, has recently published his fifth book titled *Die Planeten - The Planets*. This book of approximately 210 pages is illustrated with almost 200 photographs (some in color), diagrams, and numerous updated tables. The initial chapters of this publication are on the Sun and the Earth-Moon system, followed by descriptions of the other planets and their known moons. Recent results from planetary fly-by and lander missions from the USA and USSR as well as earth-bound observations up to Spring 1983 are included. The book ends with an outlook on future plans for planetary exploration.

Koehler's book is written in German and was published by F. Vieweg & Sohn, Wiesbaden, Germany. It can be purchased in Germany for 32 German Marks (approximately US $12). The ISBN number is 3 528 08401 4.

(Received from author.)

Video Tape of STS-7

RICON Enterprises has produced a 30 minute video tape of the historic flight of America's first woman astronaut, entitled *Sally's Ride: The Flight of STS-7*. It tells the story of this mission through space/ground communications and it shows the story through color photography from the ground, the orbiting Space Shuttle and the SPAS spacecraft orbiting up to 1,000 feet away. This video tape is available in VHS/BETA for $30 and U-matic for $70. Contact RICON Enterprises, Inc., 5863 Village Forest Court, Dept. 36, Houston, TX 77092.

(Received from RICON.)

"Astronomers of the Past" Slide set available from the A.S.P.

A new slide set portraying 50 noted astronomers of the past is available from the Astronomical Society of the Pacific. The portraits, drawn from public and private archives, range in time from the era of Copernicus through the 20th century, and include such outstanding scientists as Hubble, Einstein, Eddington, Russell, Cannon, Herschel, Michelson, Jansky, and Shapley. For the most part, the astronomers are shown at the time they made their most significant contributions.

Selected by the History Committee of the A.S.P. chaired by Donald Osterbrock of the Lick Observatory, the slides are accompanied by a 24-page booklet including detailed captions (summarizing the life of each scientist) and an introductory bibliography for the history of astronomy.

To obtain a copy of the set, send $34.95 plus $3.00 for postage and handling to:

A.S.P.
Catalog Sales Department
1290 24th Avenue
San Francisco, CA 94122

California residents please include sales tax. Outside North America, please double the postage and handling charge.

NASM Publication Ceases

The National Air and Space Museum has announced that their publication *Air and Space* will no longer be published.

The publications written by the museum staff cover a wide range of aeronautical subjects. They are not only informative, but also useful to fulfill needs for educational material.

To obtain a list of the publications available write to:

Smithsonian Institution Museum Shops
National Air and Space Museum
P. O. Box 44083
Washington, D. C. 20066-0083

STS-7 Souvenir Booklet and Audio Cassette

The National Space Institute's Dial-A-Shuttle team brings you a 32-page booklet and audio cassette giving the highlights of the STS-7 mission and explanations of the payloads, the crew, what happened, and why. The booklet is packed with dramatic, informative photographs of the crew, the Challenger, the launch, landing, and the mission activities. The audio cassette has the actual crew voices talking to Mission Control, plus interviews with Mission Specialist Dr. Sally Ride, Commander Bob Crippen, and the other astronauts. Narration is by NSI's Executive Director, Dr. Mark Chartrand, and Bonny Lee Michaelson.

The Souvenir Booklet and Cassette are only $12.95 plus $1.50 postage and handling ($11.95 plus $1.50 postage and handling for members). Please allow 6-8 weeks for receipt of your souvenir package.

To order enclose payment in full by check or money order made out to "NSI" and send to:

National Space Institute
Spacial Orders
600 Maryland Avenue SW
Suite 203W
Washington DC 20024

CHONDRULES AND THEIR ORIGINS, a 375-page hardcover book containing 25 review papers and original research contributions, was published by the Lunar and Planetary Institute in January, 1984. The book was edited by Elbert A. King, Jr., and contains several papers that were given at an LPI topical conference on chondrules and their origins in November, 1982. Included are 120 figures, 29 tables, a thorough subject index, and an extended bibliography of 467 related papers. Books may be ordered from the LPI Publications Office, 3303 NASA Road One, Houston, TX 77058, for $33.00 (check or money orders drawn on U.S. banks only; amount includes shipping and handling). All orders to foreign destinations will be shipped via surface mail unless $15.00 is added for each book ordered to cover airmail postage costs.

The **LUNAR AND PLANETARY INFORMATION BULLETIN** is published by the Lunar and Planetary Institute. There are usually three 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 1, 1984. 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

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. Because of the high costs of postage, we will make the address change on our list but we will no longer send the current issue out to you on a straight third or first class mailing. This means you will miss receiving whatever mailing from the LPI we get from the Post Office with your change of address.

If you want to be sure that you get all of your mailings from the institute promptly, be sure to send a change of address to: Mallist, Lunar & Planetary Institute, 3303 NASA Road One, Houston, TX 77058. 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*)

CALLING LPI. . .

NUMBERS WHICH NO LONGER WORK:
COMMERCIAL: 713-488-5200 FTS: 525-3436
Please note: 713-488-5200 is no longer a part of our telecommunications system. It may sound like the number is ringing and at times it may be answered but you will incur unnecessary costs because no one at the LPI can be reached from that number. EVERYONE AT THE LPI can be dialed direct on both commercial and FTS lines. On commercial lines, dial area code 713-486 and the four-digit extension. On FTS, dial your FTS access code, 713-486 and the four-digit extension.

REMEMBER: If you use the old FTS number 525-3436 OR 713-488-5200 in most instances your call will NOT be answered. If the call is answered by someone walking through the lobby you will have wasted the call because you will have to re-dial the correct number to get your party.

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Please do use the individual extension numbers. It will save you time in the long run.

CALENDAR

February 22	ABSTRACT DEADLINE for AGU Spring Meeting
February 23-25	**Origin and Evolution of the Earth, Moon, and their Planetary Neighbors** Mainz, FRG Contact: A. Kroner Institut fur Geowissenschaften Universitat Mainz Postfach 3980 6500 Mainz 1, FRG
March 6-7	**Shuttle/Space Station Business Opportunities** Washington DC Contact: Space Business News 1401 Wilson Blvd., Suite 910 Arlington VA 22209 phone: John Ekberg, 800-424-2908 outside U.S. call 703-528-1244
March 12-16	**XVth LUNAR AND PLANETARY SCIENCE CONFERENCE** NASA/Johnson Space Center, Houston Texas Contact: Pam Jones Lunar and Planetary Institute 3303 NASA Road One Houston TX 77058 Phone: 713-486-2150
March 19	Application deadline for LPI Summer Intern Program See Bulletin no. 36 November 1983 for details.
April 16	DEADLINE for Manuscripts for the Proceedings of the XVth LPSC
April 20-22	**Third Annual Conference on Space Development** Sheraton Palace Hotel, San Francisco, California Sponsored by the L-5 Society Contact: Organizing Committee Annual Conference on Space Development 1275 4th Street #242 Santa Rosa CA 95404
April 23-25	Workshop on the Early Earth: The Interval from Accretion to the Older Archean LPI, Houston TX (attendance limited)

May 14-18	**1984 Spring Meeting of the American Geophysical Union** Cincinnati, Ohio Contact: Spring Meeting American Geophysical Union 2000 Florida Avenue Washington DC 20009
July 2-28	CNES Summer School for Space Physics Internal Geophysics and Space Toulouse, France Contact: Centre National D'Etudes Spatiales Dept. des Affaires Universitaires 18, avenue Edouard-Belin 31055 Toulouse CEDEX France
July 10-12	**96th Scientific Meeting of the Astronomical Society of the Pacific** University of California, Santa Cruz Contact: Santa Cruz Meeting A.S.P. 1290 24th Avenue San Francisco CA 94122
July 10-14	**Case for Mars II: Annual Conference of the Mars Institute** University of Colorado, Boulder Contact: Helen Hart Lab. for Atmospheric & Space Physics University of Colorado Boulder CO 80309 Phone: 303-492-8822
July 15	ABSTRACT DEADLINE: LPI Topical Conference on the Origin of the Moon
July 30-August 2	**47th Meteoritical Society Annual Meeting** University of New Mexico, Albuquerque, New Mexico Contact: Dr. Klaus Keil Institute for Meteoritics University of New Mexico Albuquerque NM 87131
October 13-16	**Topical Conference on the Origin of the Moon** Kona, Hawaii Contact: Pam Jones Lunar and Planetary Institute 3303 NASA Road One Houston TX 77058 Telephone: 713-486-2150

LUNAR AND PLANETARY BIBLIOGRAPHY

Items selected from materials received at the LPI Library/Information Center. Address of first author is included in the reference. Please contact the author of your library for reprint or copy of the article. For literature searches of the on-line Lunar and Planetary Bibliography, call the LPI 713-486-2191.

MOON, MOTION OF THE MOON, DYNAMICS

ALEKSASHIN,E.P. + NIKONOV,V.A. (P.K. SHTERNBERG STATE ASTRONOMICAL INSTITUTE, USSR): MODELING OF THE CREATION OF A UNIFIED COORDINATE SYSTEM ON THE MOON
SOVIET ASTRONOMY VOL. 27, 219-223 (1983)

AMERY,G.W. (183 CHURCH ROAD, EARLEY, READING, RG6 1HR, UK): THE LUNAR TOTAL ECLIPSE OF 1982 JANUARY 9
JOURNAL OF THE BRITISH ASTRONOMICAL ASSOCIATION VOL. 93, 167-170 (1983)

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MCSWEEN,H.Y. + JAROSEWICH,E. (DEPT. OF GEOLOGICAL SCIENCES, UNIV. OF TENNESSEE, KNOXVILLE, TN 37996): PETROGENESIS OF THE ELEPHANT MORAINE A79001 METEORITE: MULTIPLE MAGMA PULSES ON THE SHERGOTTITE PARENT BODY
GEOCHIMICA ET COSMOCHIMICA ACTA VOL. 47, 1501-1513 (1983)

MONIOT,R.K. + KRUSE,T.H. + TUNIZ,C. + SAVIN,W. + HALL,G.S. + MILAZZO,T. + PAL,D. + HERZOG,G.F. (DEPT. OF PHYSICS, RUTGERS UNIV., NEW BRUNSWICK, NJ 08903): THE 21NE PRODUCTION RATE IN STONY METEORITES ESTIMATED FROM 10BE AND OTHER RADIONUCLIDES
GEOCHIMICA ET COSMOCHIMICA ACTA VOL. 47, 1887-1895 (1983)

MORRIS,R.V. (NASA JOHNSON SPACE CENTER, MAIL CODE SN4, HOUSTON, TX 77058): FERROMAGNETIC RESONANCE AND MAGNETIC PROPERTIES OF ALHA81005
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 807-808 (1983)

MURRELL,M.T. + BURNETT,D.S. (DIV. OF GEOLOGICAL AND PLANETARY SCIENCES, CALIFORNIA INST. OF TECH., PASADENA, CA 91125): THE BEHAVIOR OF ACTINIDES, PHOSPHORUS, AND RARE EARTH ELEMENTS DURING CHONDRITE METAMORPHISM
GEOCHIMICA ET COSMOCHIMICA ACTA VOL. 47, 1999-2014 (1983)

PALME,H. + SPETTEL,B. + WECKWERTH,G. + WANKE,H. (MAX-PLANCK-INSTITUT FUR CHEMIE, SAARSTRASSE 23, 6500 MAINZ, FRG): ANTARCTIC METEORITE ALHA 81005, A PIECE FROM THE ANCIENT LUNAR CRUST
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 817-820 (1983)

OTHER OBJECTS, METEORITES (Continued)

PELLAS,P. + PERRON,C. + CROZAZ,G. + PERELYGIN,V.P. + STETSENKO,S.G. (LABORATOIRE DE MINERALOGIE DU MUSEUM ET C.N.R.S., 61 RUE BUFFON, 75005 PARIS, FRANCE): FISSION TRACK AGE AND COOLING RATE OF THE MARJALAHTI PALLASITE
EARTH AND PLANETARY SCIENCE LETTERS VOL. 64, 319-326 (1983)

PIETERS,C.M. + HAWKE,B.R. + CAFFEY,M. + MCFADDEN,L.A. (DEPT. OF GEOLOGICAL SCIENCES, BROWN UNIV., PROVIDENCE, RI 02912): POSSIBLE LUNAR SOURCE AREAS OF METEORITE ALHA81005: GEOCHEMICAL REMOTE SENSING INFORMATION
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 813-816 (1983)

RYDER,G. + OSTERTAG,R. (INSTITUT FUR MINERALOGIE, UNIVERSITAT MUNSTER, D-4400 MUNSTER, GERMANY): ALHA 81005: MOON, MARS, PETROGRAPHY, AND GIORDANO BRUNO
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 791-794 (1983)

SCOTT,E.R.D. (INST. OF METEORITICS, UNIV. OF NEW MEXICO, ALBUQUERQUE, NM 87131): IRON METEORITES AND THE NATURE OF ASTEROIDAL CORES
NATURE VOL. 304, 216-217 (1983)

SIMON,S.B. + PAPIKE,J.J. + SHEARER,C.K. (INST. FOR THE STUDY OF MINERAL DEPOSITS, SOUTH DAKOTA SCHOOL OF MINES AND TECH., RAPID CITY, SD 57701): PETROLOGY OF ALHA81005, THE FIRST LUNAR METEORITE
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 787-790 (1983)

SUTTON,S.R. + CROZAZ,G. (EARTH AND PLANETARY SCIENCES DEPT., WASHINGTON UNIV., ST. LOUIS, MO 63130): THERMOLUMINESCENCE AND NUCLEAR PARTICLE TRACKS IN ALHA-81005: EVIDENCE FOR A BRIEF TRANSIT TIME
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 809-812 (1983)

TREIMAN,A.H. + DRAKE,M.J. (LUNAR AND PLANETARY LAB., UNIV. OF ARIZONA, TUCSON AZ 85721): ORIGIN OF LUNAR METEORITE ALHA 81005: CLUES FROM THE PRESENCE OF TERRAE CLASTS AND A VERY LOW-TITANIUM MARE BASALT CLAST
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 783-786 (1983)

TUNIZ,C. + PAL,D.K. + MONIOT,R.K. + SAVIN,W. + KRUSE,T.H. + HERZOG,G.F. + EVANS,J.C. (DEPTS. PHYSICS AND CHEMISTRY, RUTGERS UNIV., NEW BRUNSWICK, NJ 08903): RECENT COSMIC RAY EXPOSURE HISTORY OF ALHA 81005
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 804-806 (1983)

VERKOUTEREN,R.M. + DENNISON,J.E. + LIPSCHUTZ,M.E. (DEPT. OF CHEMISTRY, PURDUE UNIV., WEST LAFAYETTE, IN 47907): SIDEROPHILE, LITHOPHILE AND MOBILE TRACE ELEMENTS IN THE LUNAR METEORITE ALLAN HILLS 81005
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 821-824 (1983)

WARREN,P.H. + TAYLOR,G.J. + KEIL,K. (INST. OF METEORITICS, DEPT. OF GEOLOGY, UNIV. OF NEW MEXICO, ALBUQUERQUE, NM 87131): REGOLITH BRECCIA ALLAN HILLS A81005: EVIDENCE OF LUNAR ORIGIN, AND PETROGRAPHY OF PRISTINE AND NON-PRISTINE CLASTS
GEOPHYSICAL RESEARCH LETTERS VOL. 10, 779-782 (1983)

WHILLANS,I.M. + CASSIDY,W.A. (DEPT. OF GEOLOGY AND MINERALOGY, OHIO STATE UNIV., COLUMBUS, OH 43210): CATCH A FALLING STAR: METEORITES AND OLD ICE
SCIENCE VOL. 222, 55-57 (1983)

OTHER OBJECTS, COSMIC DUST, PARTICLES, ETC.

DEPAOLO,D.J. + KYTE,F.T. + MARSHALL,B.D. + O'NEIL,J.R. + SMIT,J. (DEPT. OF EARTH AND SPACE SCIENCES, UNIV. OF CALIFORNIA, LOS ANGELES, CA 90024): RB-SR, SM-ND, K-CA, O, AND H ISOTOPIC STUDY OF CRETACEOUS-TERTIARY BOUNDARY SEDIMENTS, CARAVACA, SPAIN: EVIDENCE FOR AN OCEANIC IMPACT SITE
EARTH AND PLANETARY SCIENCE LETTERS VOL. 64, 356-373 (1983)

GANAPATHY,R. + LARIMER,J.W. (RESEARCH LAB., J.T. BAKER CHEMICAL CO., PHILLIPSBURG, NJ 08865): NICKEL-IRON SPHERULES IN TEKTITES: NON-METEORITIC IN ORIGIN
EARTH AND PLANETARY SCIENCE LETTERS VOL. 65, 223-228 (1983)

MONTANARI,A. + HAY,R.L. + ALVAREZ,W. + ASARO,F. + MICHEL,H.V. + ALVAREZ,L.W. + SMIT,J. (DEPT. OF GEOLOGY AND GEOPHYSICS, UNIV. OF CALIFORNIA, BERKELEY, CA 94720): SPHEROIDS AT THE CRETACEOUS-TERTIARY BOUNDARY ARE ALTERED IMPACT DROPLETS OF BASALTIC COMPOSITION
GEOLOGY VOL. 11, 668-671 (1983)

PAPANASTASSIOU,D.A. + WASSERBURG,G.J. + BROWNLEE,D.E. (LUNATIC ASYLUM OF THE CHARLES ARMS LAB., DIV. OF GEOLOGICAL AND PLANETARY SCIENCES, CALIFORNIA INST. OF TECH., PASADENA, CA 91125): CHEMICAL AND ISOTOPIC STUDY OF EXTRATERRESTRIAL PARTICLES FROM THE OCEAN FLOOR
EARTH AND PLANETARY SCIENCE LETTERS VOL. 64, 341-355 (1983)

TAUBES,G. THE CURIOUS CASE OF THE TEKTITES
DISCOVER JUNE 1983, 75-77 (1983)

WEISS-WRANA,K. (BEREICH EXTRATERRESTRISCHE PHYSIK, RUHR-UNIVERSITAT BOCHUM, UNIVERSITATSSTRASSE 150, NA 01/130, D-4630 BOCHUM, FRG): OPTICAL PROPERTIES OF INTERPLANETARY DUST: COMPARISON WITH LIGHT SCATTERING BY LARGER METEORITIC AND TERRESTRIAL GRAINS
ASTRONOMY AND ASTROPHYSICS VOL. 126, 240-250 (1983)

ZINNER,E. + MCKEEGAN,K.D. + WALKER,R.M. (MCDONNELL CENTER FOR THE SPACE SCIENCES, WASHINGTON UNIV., ST. LOUIS, MO 63130): LABORATORY MEASUREMENTS OF D/H RATIOS IN INTERPLANETARY DUST
NATURE VOL. 305, 119-121 (1983)

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NOTES

FIFTEENTH LUNAR AND PLANETARY SCIENCE CONFERENCE
PRELIMINARY CONFERENCE PROGRAM

Monday, March 12, 1984

DIFFERENTIATED METEORITES

8:30 a.m. Gilruth 104

Takeda H. Mori H.
Diogenites-eucrites Link as Inferred from Some New Meteorites and Lithic Clasts from Antarctica

Ikeda Y. Takeda H.
Petrology of the Yamato-7308 Howardite

Delaney J. S. O'Neill C. Prinz M.
Phosphate Minerals in Eucrites

Miyamoto M. Duke M. B. McKay D. S.
Chemical Zoning and Homogenization of Pasamonte-type Pyroxene

Treiman A. H. Drake M. J.
Basaltic Volcanism on the Eucrite Parent Body: Petrology and Phase Equilibria of ALHA80102, and the Discovery of Ferroan Troctolite

Delaney J. S. O'Neill C. Prinz M.
Two Magma Types in the Eucrite Bouvante

Strait M. M.
Three Component Mixing in Aubrite REE Abundances

Mewins R. H. Harriott T. A.
The Case for Melting in Plagioclase-POIK Mesosiderites

Malvin D. J. Zong P. Wasson J. T.
Formation of the Bellsbank-trio Iron Meteorites as Immiscible, P-rich Liquid Pockets on the Crystallizing Floor of the IIAB Core

Sellamuthu R. Goldstein J. I.
Analysis of Segregation Trends Observed in Iron Meteorites Using Measured Distribution Coefficients

Rasmussen K. L. Malvin D. J. Roy-Poulson H.
Partitioning of Co, Cu, Ga, As, and Au Between Martensite, Taenite, and Tetrataenite in the Iron Meteorite Buenaventura

Monday, March 12, 1984

LUNAR REGOLITH BRECCIAS AND EVOLUTION

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McKay D. S. Morris R. V. Wentworth S. J.
Maturity of Regolith Breccias as Revealed by Ferromagnetic and Petrographic Indices

Simon S. B. Papike J. J.
Petrology of Apollo 11 Regolith Breccias

Simon S. B. Papike J. J. Shearer C. K.
Highland Clasts in Apollo 11 Regolith Breccias

Swindle T. D. Caffee M. W. Hohenberg C. M. Hudson G. B.
Noble Gas Component Organization in 14318

Becker R. H. Wiens R. C. Pepin R. O.
Comparison of Solar Wind Gases in Two Lunar Ilmenites of Different Antiquities

Wieler R. Baur H. Signer P.
Solar Flare Implanted Ne in Lunar Soil Minerals; Confirmation by On-line Etching Experiments

Bustin R. Kotra R. K. Gibson E. K. Nace G. A.
McKay D. S.
Hydrogen Abundances in Lunar Soils

Korotev R. L.
Mare Basalt in Lower Half of Apollo 16, Station 4 Double Drive Tube (64001)

Blanchard D. P. Morris R. V.
Analysis of Individual Agglutinate Particles from Apollo Soil 61181 and Implications for Agglutinate Formation

Laul J. C. Smith M. R. Papike J. J. Simon S. B.
The Apollo 17 Drill Core (Sections 70009-70001): A Test for Indigenous Versus Transported Agglutinates

See T. H. Hörz F. Cintala M. J.
Regolith Evolution Experiments II: Modal and Chemical Analyses

Cintala M. J. Hörz F. See T. H. Cardenas F.
Thompson T. D.
Regolith Evolution Experiments I: Grain-size Evolution

De Hon R. A.
Progressive Impact Cratering

Cashore J. Woronow A.
A Monte Carlo Model of Lunar Regolith

POSTER PRESENTATION

Agosto W. N.
Electrostatic Separation and Sizing of Ilmenite in Lunar Soil Simulants and Samples

Monday, March 12, 1984

MARS VOLCANISM AND TECTONISM

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On the Reorientation of Mars by the Tharsis Rise

Hall J. L Solomon S. C. Head J. W.
Elysium Region, Mars: Tests of Lithospheric Loading Models for the Formation of Tectonic Features

Ward A. W. Spudis P. D.
Tectonic Environments of Martian Flood Lavas

Anderson R. C. Venkatakrishnan R.
A Statistical Study of Fracture Inheritance During the Volcano-Tectonic Evolution of Tharsis Region in Mars

Wood C. A.
Why Martian Lava Flows Are So Long

Zimbelman J. R.
Lava Properties for a Ridged and Channelized Flow on Ascraeus Mons, Mars

Frey H. Semeniuk A. M.
Systematic Variations in the Properties of Subkilometer Cones in Acidalia Planitia

Carroll M. R. Rutherford M. J.
Sulfur Solubility and Anhydrite Saturation in Hydrous Magmas

Scott D. H. McDonald T. F.
Gravity-Profile Studies of Some Martian Volcanoes and Impact Craters: Geologic Significance

Squyres S. W. Moosman A. C.
Numerical Simulation of Volcano-Ground Ice Interaction on Mars

Singer R. B. Cloutis E. Roush T. L. Mouginis-Mark P. J.
Hawke B. R. Christensen P. E.
Multispectral Analysis of the Kasei Vallis-Lunae Planum Region of Mars

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Morris E. C.
Geology of the Olympus Mons Region of Mars

Cattermole P. Reid C.
The Summit Calderas of Alba Patera, Mars

Chicarro A. F. Schultz P. H.
Global and Regional Ridge Patterns on Mars

Williams R. S. Morris E. C.
Geomorphic Classification of Icelandic and Martian Volcanoes

Wu S. S. C.
Planetary Elevation Reference Systems: Gravity or Tri-axiality

Monday, March 12, 1984

MAGMA GENESIS AND EVOLUTION

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Jagoutz E. Dawson J. B. Hoernes S. Spettel B. Wänke H.
Anorthosititc Oceanic Crust in the Archean Earth

Longhi J. Ashwal L. D.
A Two-stage Model for Lunar Anorthosites: An Alternative to the Magma Ocean Hypothesis

Palme H. Spettel B. Wänke H. Bischoff A. Stöffler D.
The Evolution of the Lunar Magma Ocean: Evidence from Trace Elements in Plagioclase

Herbert F.
Production of the Lunar Magma Ocean by Fractionation of the Interior

Walker D. Kiefer W.
Xenolith Digestion in Large Magma Bodies

Bass J. D. Anderson D. L.
Geophysical Tests of Two Chemical Models of the Earth's Upper Mantle

Warren P. H.
Primordial Degassing, Lithosphere Thickness, and Genesis of Komatiites

Morgan P. Ashwal L. D.
Crustal Radiogenic Heat Production and the Stability of Ancient Continental Crust

Boudreau A. E. McCallum I. S.
The Picket Pin Pt/Pd Zone, Stillwater Complex, Montana

Ryder G. Spettel B.
Towards Understanding Lunar Pristine Rocks: Pursuing Petrogenesis in Stillwater Norite I

Salpas P. A. Haskin L. A. McCallum I. S.
The Scale of Compositional Heterogeneities in Stillwater Anorthosites An-I and An-II

Barnes S. J.
The Effect of Trapped Liquid Crystallization on Cumulus Mineral Compositions in Layered Intrusions

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Morrison D. A. Maczuga D. E. Phinney W. C.
Cumulus Versus Intercumulus: Crystallization, Migration, and Interaction in a Layered Intrusion

Monday, March 12, 1984

VOLATILE EVOLUTION AND CLIMATE HISTORY OF MARS

1:30 p.m. Gilruth Gym

Invited program - titles to be announced

Monday, March 12, 1984

COSMIC DUST

1:30 p.m. Gilruth 206

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The Relative Mass Flux of Micrometeorites and the Solar Wind

Zolensky M. Mackinnon I. D. R. McKay D. S.
Towards a Complete Inventory of Stratospheric Dust Particles,, with Implications for Their Classification

Brownlee D. E. Wheelock M. M. Bradley J. P.
Point Count Analysis of Interplanetary Dust and Fine Grained Meteoritic Materials

Rietmeijer J. M. Mackinnon I. D. R.
Layered Silicates in Chondritic Porous Aggregate W7029*A: A Case of Primary Growth

Tomeoka K. Buseck P. R.
A Hydrated Interplanetary Dust Particle: Characterization by Transmission Electron Microscopy

Christoffersen R. Buseck P. R.
Mineralogy of Platelet Grains in Carbon-rich CP Interplanetary Dust Particles

Carr R. H. Wright I. P. Pillinger C. T. Brownlee D. E.
Carbon Isotopic Analysis of Individual Cosmic Dust Particles

Zinner E. McKeegan K. D.
Ion Probe Measurements of Hydrogen and Carbon Isotopes in Interplanetary Dust

Bates B. A. Brownlee D. E.
The Elemental Composition of Extraterrestrial Stony Deep Sea Spheres

Thiel K. Peters J.
Cosmic Dust from Antarctica: On the Nature of Glassy and Metallic Microspheres

de Angelis M. Fehrenbach L. Hammer C. Jehano C. Maurette M.
Search for Extraterrestrial Dust Grains in Polar Ices

Tsou P. Brownlee D. Albee A.
Experiments on Intact Capture of Hypervelocity Particles

Corso G. J.
Cosmic Dust Collection with a Tethered Satellite

Tuesday, March 13, 1983

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Cain P. M. McSween H. Y., Jr.
Interpretation of Structural Fabric in the Leoville Carbonaceous Chondrite

Scott E. R. D. Taylor G. J. Keil K.
Petrology of Metamorphosed Carbonaceous Chondrites

Peck J. A.
Origin of the Variation in Properties of CV3 Meteorite Matrix and Matrix Clasts

Housley R. M.
Scanning Electron Microscope Studies of the Vigarano CV3 Chondrite: Large Forsterite Grains

Rubin A. E. Grossman J. N. Wasson J. T.
Bulk Compositions of Chondritic Matrix Materials: Pentlandite-Merrillite Assemblages in Allende Matrix

Fegley B. Kornacki A. S.
The Origin and Mineral Chemistry of Group II Inclusions in Carbonaceous Chondrites

Davis A. M. Olsen E.
Bells--A Carbonaceous Chondrite Related to C1 and C2 Chondrites

Steele I. M. Cox R. T., Jr. Smith J. V.
Belgica 7904, An Extreme C2 from Antarctica: Petrology and Mineral Chemistry

Hyman M. Rowe M. W. Ledger E. B.
Magnetite Morphologies in the Essebi and Haripura CM Chondrites

Mackinnon I. D. R. Zolensky M. E.
Poorly Characterized Phase in C2M Carbonaceous Chondrites: Proposed Structures and Significance

Basile B. P. Middleditch B. S. Oro J.
Polycyclic Aromatic Hydrocarbons in the Murchison Meteorite

Jones C. M. Lumpkin G. R. Dziczkaniec M. Olsen J.
Xe in Etched Colloidally Separated Murray and Murchison

Duba A. Boland J. N.
High Temperature Electrical Conductivity of the Carbonaceous Chondrites Allende and Murchison

Tuesday, March 13, 1984

HIGHLAND PETROGENESIS

8:30 a.m. Gilruth Gym

Stöffler D. Bischoff A. Borchardt R. Deutsch A.
Jessberger E. K. Ostertag R. Reimold W. U. Palme H.
Wacker K. Wänke H.
The Lunar Crust in the Descartes Area near North Ray, Apollo 16. I. Petrographic and Chemical Properties

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Jessberger E. K. Ostertag R. Reimold W. U. Palme H.
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Flohr M. K. James O. B.
Petrology of Apollo 16 Dimict Breccia 61015

Lindstrom M. M.
Ultra-KREEPy Melt Rocks, REE-rich Norites and a Diverse Suite of Clasts from Apollo 16 Breccias

Spudis P. D.
Significance of Apollo 16 Impact Melts to the Geology of the Lunar Terrae

Warren P. H. Kallemeyn G. W. Wasson J. T.
Pristine Rocks (8th Foray): Genetic Distinctions Using Eu/Al and Sr/Al Ratios

Shervais J. W. Taylor L. A. Laul J. C. Smith M. R.
Petrology and Geochemistry of Pristine Highland Clasts in Consortium Breccia 14305

Lindstrom M. M.
Magnesian Anorthosites and Other Clasts from Complex Breccia 14321

Ostertag R. Palme H. Borchardt R. Stöffler D.
Modal, Textural, and Chemical Characteristics of Apollo 16 Station 11 Granulites

Goodrich C. A. Taylor G. J. Keil K.
An Apatite-rich Lithology from Lunar Meteorite ALHA81005 - An Example of Magma Mixing?

Marvin U. B. Walker D.
A Transient Heating Event in the History of a Highlands Troctolite in Apollo Soil 12033

Ryder G.
Olivine in Lunar Dunite 72415, A Rather Shallow-Origin Cumulate

Pieters C. M. Wilhelms D. E. Paquette R.
Stratigraphy at Copernicus and the Source of Olivine in the Central Peak

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MARS: EROSIONAL HISTORY

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Baker V. R. Partridge J. B.
Morphometry of Small Valley Networks on Mars

Carr M. H.
Formation of Martian Valleys as a Consequence of Large Impacts

Lucchitta B.
A Late Climatic Change on Mars

Jons H.-P.
Sedimentary Basins and Mud Flows in the Northern Lowlands of Mars

Christensen P. R.
The Origin of Regional Dust Deposits on Mars

Jakosky B. M. Christensen P. R.
Duricrusts on Mars: Evidence from Thermal, Radio, and Radar Data

Jakosky B. M. Lindner B. L.
Mars Atmospheric Photochemistry, Surface Reactions, and Climate Change

Arvidson R. Guinness E. Leff C. Presley M. Saunders R. Roth L.
Ancient Martian Cratered Terrain Materials Exposed by Deflation Northwest of the Baldet and Antoniadi Basins

Semeniuk A. M. Frey H.
Distribution of Characteristic Features Across the Boundary Scarp in Acidalia and Amazonis-Memnonia

Maxwell T. A. Barnett S. J.
Structure and Morphology of the Ancient Cratered Terrain--Smooth Plains Boundary Zone in the Eastern Hemisphere of Mars

Tanaka K. L.
Probable Lack of Very Ancient Terrain on Mars Revealed by Crater-Population Comparisons with the Moon

Scott D. H. King J. S.
Ancient Surfaces of Mars: The Basement Complex

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Use of a Planetary Boundary Layer Model for Martian Paleoclimates

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Geomorphology of Protonilus Mensae Region: Wasting Away on Mars

Schultz P. H. Gault D. E.
On the Formation of Contiguous Ramparts around Martian Impact Craters

Sharma J. P.
Planetary Structures: An Analytical Approach

Williams R. S. Morris E. C.
Geomorphic Classification of Icelandic and Martian Volcanoes

Wu S. S. C.
Planetary Elevation Reference Systems: Gravity or Tri-axiality

Winterhalter S.
Viking Orbiter Imaging Mosaic Status Report and Presentation.

Tuesday, March 13, 1984

CARBONACEOUS CHONDRITES II: REFRACTORY INCLUSIONS

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New Mineralogical Studies of Refractory Inclusions in Murchison

Wark D. A. Boynton W. V.
The Relationship Between Size and Composition of Allende CAI's

El Goresy A. Armstrong J. T. Wasserburg G. J.
Allende 5241: Anatomy of a Fremdlinge-rich CAI

Niederer F. R. Papanastassiou D. A. Wasserburg G. J.
The Absolute Isotopic Composition of Ti

Paque J. M. Stolper E.
Crystallization Experiments on a Range of Ca-Al-rich Inclusion Compositions

Morgan P. E. D. Pugar E. A.
New Compounds and Phase Relations, Implications for Refractory Inclusions in Meteorites

Kornacki A. S. Fegley B., Jr. Peck J. A.
Mineralogy and Origin of Melilite-rich, Rimmed Complex CAI's in the Allende Meteorite

Kornacki A. S.
The Mineralogy of Spinel-rich Allende Inclusions: Indicators of the Oxidation State of the Solar Nebula

Wark D. A. Brown R. D.
The Problem of the Origin of ^{16}O Anomalies in Carbonaceous Chondrites

Esat T. M. Taylor R. S.
Free Fun with Mg in Allende Group II Inclusions

Hutcheon I. D. Armstrong J. T. Wasserburg G. J.
Excess ^{41}K in Allende CAI: Confirmation of a Hint

Jungck M. H. A. Shimamura T. Lugmair G. W.
Are ^{48}Ca Anomalies Endemic or Ubiquitous in Allende CAI's?

Rajan S. Gaffey M. J.
Spectral Reflectance Characteristics of Allende White Inclusions

Sugiura N. Strangway D. W.
NRM Directions Around a Cm-size Inclusion in Allende

POSTER PRESENTATIONS

Kornacki A. S.
The Identification of Group II Inclusions by Electron Probe Microanalysis

Bunch T. E. Chang S.
CAI Rims and CM2 Uustballs: Products of Gas-Grain Interactions, Mass Transport, Grain Aggregation and Accretion in the Nebula

Tuesday, March 13, 1984

LUNAR PETROLOGY: EXPERIMENTAL AND "REAL"

1:30 GYM

Delano J. W.
Genesis Glass: In Search of the Holy Grail

Binder A.
Comments on the Bulk Composition Model of the Moon Proposed by Delano and Lindsley

Semkow K. W. Haskin L. A.
Electrochemical Behavior of Oxygen in Silicate Melts

Fujimaki H. Tatsumoto M. Aoki K.
Partition Coefficients of Hf, Zr, and REE Between Zircon, Apatite and Liquid and their Inferences to Lunar Granite Petrogenesis

Murrell M. T. Brandriss M. Woolum D. S. Burnett D. S.
Pu-REE-Y Partitioning Between Apatite and Whitlockite

McKay G. A. Wagstaff J.
Partitioning of Hafnium Between Ilmenite, Armalcolite, Pigeonite, and High-Ti Mare Basaltic Melt

Kring D. A. McKay G. A.
Chemical Gradients in Glass Adjacent to Olivine in Experimental Charges and Apollo 15 Green Glass Vitrophyres

Arndt J. Engelhardt W. v. Gonzalez-Cabeza I. Meier B.
Cooling History of Apollo 15 Green Glasses: Implications for Their Formation

Morgan J. W. Wandless G. A.
Surface-Correlated Trace Elements in 15426 Lunar Glasses

Dickinson T. Taylor G. J. Keil K. Schmitt R. A.
Smith M. R. Hughes S.
Apollo 14 Aluminous Mare Basalts and Their Link to KREEP

Shervais J. W. Taylor L. A. Laul J. C.
Very High Potassium (VHK) Basalt: A New Type of Aluminous Mare Basalt from Apollo 14

Takeda H. Mori H. Miyamoto M. Ishii T.
Mesostasis-rich Lunar and Eucritic Basalts with Reference to REE-rich Minerals

Tuesday, March 13, 1984

PHYSICS AND CHEMISTRY OF THE PLANETS

1:30 p.m. Gilruth 206

Caputo M.
Relaxation and Free Modes of a Self-Gravitating Planet

Hsui A. T.
A Preliminary Dynamic Model for Planetary Differentiation

Buser W.
The Early Evolution of the Lunar Grid System

Runcorn S. K.
Lunar Reorientations and Primeval Satellites

Hood L. L.
Generation of Transient Magnetic Fields in Hypervelocity Meteoroid Impacts with Application to Lunar Paleomagnetism

Taylor S. R.
Volatile/Refractory Element Fractionation and the Lunar Fission Hypothesis

Rasmussen K. L. Warren P. H.
An Improved Model to Constrain Global Lunar Heat Flow and Bulk-Moon Th and U Contents

Grjebine T.
The Moon as Cause of the Formation of Earth's Continents: Complimentary Elements

Turcotte D. L. Pflugrath J. C.
Was the Early Earth Completely Molten?

Lanciano P. Schubert G.
Finite Element Model for Lithospheric Thinning by a Mantle Plume

Nellis W. J. Ross M. Mitchell A. C. Holmes N. C.
Radousky H. B.
Shock-wave Studies of Giant Planet Materials

Saxena S. K. Eriksson G.
Thermochemically Mass-balanced Earth and Meteorites

Seyfert C. K.
Tectonic Evolution of the Moon and Terrestrial Planets

Taylor S. R. McLennan S. M.
Continental Crustal Bulk Composition: The Andesite Model Revisited

Wednesday, March 14, 1984

ISOTOPES I: LIGHT ISOTOPES AND MORE

8:30 a.m. Gilruth 104

McKeegan K. D. Zinner E.
On the Distribution of Excess Deuterium in Renazzo and Semarkona: An Ion Microprobe Study

Yang J. Epstein S.
Interstellar Organic Matter in Murchison Meteorite

Carr L. P. Pillinger C. T.
Nitrogen Isotopic Composition of Osbornite from the Bustee Meteorite

Clayton R. N. Mayeda T. K. Rubin A. E.
Oxygen Isotopes in Enstatite Chondrites

Navon O. Wasserburg G. J.
Self-Shielding in O_2 - A Possible Explanation for Oxygen Isotopic Anomalies in Meteorites?

Halbout J. Javoy M. Robert F.
Oxygen Isotopes in Type 3 Ordinary Chondrites

Prombo C. A. Clayton R. N.
Nitrogen Abundances and Isotopes in Co-existing Metal and Silicate

Carr R. H. Carr L. P. Wright I. P. Pillinger C. T. Grabb J.
Stable Isotope Measurements on Indarch Acid Residues

Hart R. Hogan L.
Solar Noble Gas Component in Glassy Submarine Basalts

Eugster O. Eberhardt P. Geiss J. Schwaller H.
Complex Exposure History of Basalt 12053

Eugster O.
^{235}U-^{136}Xe Dating: Early Exposure of Basalt 12053 and Reliability of the Dating Method

Wednesday, March 14, 1984

SURFACE GEOCHEMISTRY OF THE MOON AND MARS

8:30 a.m. Gilruth Gym

Potter A. E. Mendell W. Morgan T.
Lunar Luminescence and its Possible Origin from Incoherent Scattering

Hawke B. R. Lucey P.
Spectral Reflectance Studies of the Hadley-Apennine (Apollo 15) Region: Preliminary Results

Smrekar S. Pieters C. M.
Spectral Similarities of Impact Melts from Large Lunar Highland Craters

Roush T. L. Singer R. B.
Gaussian Analysis of 1 Micrometer Fe^{2+} Absorptions of Mafic Minerals

Bruckenthal E. A. Pieters C. M.
Spectral Effects of Natural Shock on Plagioclase Feldspar

Cloutis E. A. Gaffey M. J. Jackowski T. L. Reed K. L.
The Spectral Properties of Olivine-Pyroxene Mixtures

Morris R. V. Mendell W. W.
Scattering Coefficients and Optical Penetration Depths for Powders of San Carlos Olivine

Banin A. Margulies L. Chen Y.
Iron-montmorillonite: Spectral Analogy to Mars Soil

Morris R. V. Lauer H. V.
Spectral Properties of Annealed $(Fe_xAl_{1-x})_2O_3$ Gels with Applications to Mars

Smith M. O. Johnson P. E. Adams J. B.
A Strategy for Interpretation of Multispectral Reflectance Data from Planetary Surfaces: Methodology

Johnson P. E. Smith M. O. Adams J. B.
An Application of a Strategy for Interpretation of Multispectral Reflectance Data from Planetary Surfaces

Brückner J. Reedy R. C. Wänke H.
Neutron-induced Gamma Rays from Thin Targets: Simulations for Planetary Spectroscopy

Hoover R. A. Trombka J. I. Evans L. G. Senftle F. E.
Pulsed Neutron-Gamma-Ray Spectroscopy for Chemical Analysis on Remote Bodies

POSTER PRESENTATIONS

Whitford-Stark J. L.
A Preliminary Examination of Manned Lunar Base Sites from a Geological Viewpoint

Lucey P. Gaddis L. Bell J. Hawke B. R.
Near-infrared Spectral Reflectance Studies of Localized Lunar Dark Mantle Deposits

Schonfeld E.
Enhancement of Small Intensity Variations in Noisy Digital Images by Using a Least-squares Artificial Illumination Method

Wednesday, March 14, 1984

IMPACT CRATERING I: DYNAMICS AND SCALING

8:30 a.m. Gilruth 206

Holsapple K. A.
On Crater Dynamics: Comparisons of Results for Different Target and Impactor Conditions

Housen K.
Cratering Flow Fields: A General Form and the Z Model

Grieve R. A. F. Garvin J. B.
A Test of a Model for the Development of Terrestrial Simple Craters

Schmidt R. M.
Transient Crater Motions: Saturated Sand Centrifuge Experiments

Croft S. K.
Scaling of Complex Craters

Bjorkman M. D.
Feasibility of Determining Impact Conditions from Total Crater Melt

Cintala M. J. Grieve R. A. F.
Energy Partitioning During Terrestrial Impact Events: Melt Production and Scaling Laws

Schultz P. H. Gault D. E.
Effects of Projectile Deformation on Cratering Efficiency and Morphology

Zook H. A. Lange G. Grün E. Fechtig H.
Lunar Primary and Secondary Microcraters and the Micrometeoroid Flux

Austin M. G.
Impact Cratering Experiments for Ejecta Kinematics Analysis

Vickery A. M.
Size-Velocity Distribution of Large Ejecta Fragments

Melosh H. J.
A Speed Limit for Impact-Ejected Spalls

Wednesday, March 14, 1984

ISOTOPES II: CHRONOLOGIES AND ANOMALIES

1:30 p.m. Gilruth 104

Clayton D. D.
Live ^{26}Al in Today's Interstellar Medium and its Relationship to the Extinct Radioactivites and the Isotopic Anomalies in Meteorites

Hinton R. W. Scatena-Wachel D. E. Davis A. M.
An Ion-probe Search for ^{60}Fe and ^{53}Mn Effects in Meteorites

Shimamura T. Lugmair G. W.
Uranium Isotopic Abundance in Allende Residue

Koeberl C.
WC Stars as Possible Sources for Ne-E

MacElroy J. M. D. Manuel O. K.
Diffusional Fractionation of Light Nuclei in the Solar Atmosphere

Ray J.
Processes Giving Rise to Isotopic Inhomogeneities in the Early Solar Nebula

El Goresy A. Armstrong J. T. Wasserburg G. J.
A Petrographic Study of Gibeon and Santa Clara Iron Meteorites: Possible Clues to ^{107}Pd-^{107}Ag Systematics

Chen J. H. Wasserburg G. J.
The Origin of Excess ^{107}Ag in Gibeon (IVA) and Other Iron Meteorites

Unruh D. M. Tatsumoto M.
Lu-Hf Evolution of KREEP

Shih C.-Y. Bansal B. Wiesmann H. Nyquist L.
Rb-Sr Chronology and Petrogenesis of VHK Basalts

Jessberger E. K. Uehm J. Mueller N.
Ages of Jilin (H5) and the Temperature at the Separation from Its Parent Body

Compston W. Williams I. S. Meyer C.
Age and Chemistry of Zircon from Late-Stage Lunar Differentiates

Wednesday, March 14, 1984

PETROGENESIS OF ORDINARY CHONDRITES AND THEIR COMPONENTS

1:30 p.m. Gilruth Gym

Wood J. A.
Formation of Chondrules by Drag Heating in Dust-Enriched Environments

Wasson J. T. Rasmussen K. L.
Formation of Meteoritic Chondrules by Lightning

Lofgren G. E. Russell W. J. Kinnebrew Q.
Dynamic Crystallization Experiments on Chondrule Melts of Porphyritic Pyroxene Composition

Tsuchiyama A. Miyamoto M.
Metal Grains in Chondrules: An Experimental Study

Cirlin E.-H. Taylor L. A.
Glass in Chondrules: Effects of Alteration on the Apparent Distribution Coefficient K_{D1} of Fe and MG at Olivine/Glass Interfaces

Rubin A. E.
Relatively Coarse-grained Chondrule Rims in Type 3 Chondrites

Taylor G. J. Scott E. R. D. Keil K. Boynton W. V.
Hill D. H. Mayeda T. K. Clayton R. N.
Primitive Nature of Ordinary Chondrite Matrix Materials

Dodd R. T. Jarosewich E. Kuzicka A.
Fe-Ni-S Variation in L-chondrites

Bakhtiar N. Brandon W. E. Guimon R. K. Keck B. D.
Saebo K. K. Weeks K. S. Sears D. W. G.
Annealing Studies of the Thermoluminescence Sensitivity of Chondrites: Relevance to the Metamorphic and Shock/Reheating History of Meteorites

Primus T. M. Moore C. B. Gibson E. K., Jr.
Sulfur Loss from Thermally Treated Leedey (L6) Samples

PETROLOGY OF ENSTATITE CHONDRITES

Prinz M. Nehru C. E. Weisberg M. K. Delaney J. S.
Type 3 Enstatite Chondrites: A Newly Recognized Group of Unequilibrated Enstatite Chondrites (UEC's)

Rambaldi E. R. Rajan R. S. Housley R. M. Wang D.
Oxidized, Refractory and Alkali-rich Components in Qingzhen Enstatite Chondrite: Implications about Their Origin

Woolum D. S. Cochrane R. B. Joyce D. El Goresy A.
Benjamin T. M. Rogers P. S. Z. Duffy C. J. Maggiore C. J.
Trace Element PIXE Studies of Qinzhen (EH3) Metal and Sulfides

Nagahara H. El Goresy A.
Y-74370: A New Enstatite Chondrite (EH4)

POSTER PRESENTATIONS

Lofgren G. E. Kinnebrew Q. Russell W. J.
Dynamic Crystallization Experiments on Chondrule Melts of Radial Pyroxene Composition

Nehru C. E. Prinz M. Weisberg M. K. Delaney J. S.
Parsa: An Unequilibrated Enstatite Chondrite (UEC) with an Aubrite-like Impact Melt Clast

Wednesday, March 14, 1984

IMPACT CRATERING II: THE SURFACE RECORD AND EFFECTS

1:30 p.m. Gilruth 206

Hartmann W. K.
Does Saturation Cratering Exist in the Solar System?

Woronow A.
Factors Affecting Saturation Density in Computer Simulations

Tanaka K. L. Strobell M. E.
Mercury: Discrepancies Among Crater Distributions

Pike R. J. Davis P. A.
Toward a Topographic Model of Martian Craters from Photoclinometry

Young R. A.
Quantitative Effects of Sun Angle Variations on Crater Diameter Measurements and Lunar Mare Age Determinations

Ravine M. A. Grieve R. A. F. Edrington R. S. Meglis I. L.
Morphometric Analyses of Lunar Impact Craters

Clark P. E.
Using New Radar Reflectivity Maps to Characterize Features on Mercury

Harmon J. Campbell D. Head J. Bindschadler D. Shapiro I.
Mercury Radar Altimetry: A Preliminary Analysis

Spudis P. D. Strobell M. E.
New Identification of Ancient Multi-Ring Basins on Mercury and Implications for Geologic Evolution

Pike R. J. Spudis P. D.
Similar Spacing of Basin Rings on Mars, Mercury and the Moon

Stam M. Schultz P. H. McGill G. E.
Martian Impact Basins: Morphology Differences and Tectonic Provinces

Schultz P. H.
Impact-Basin Control of Volcanic and Tectonic Provinces on Mars

Bratt S. R. Solomon S. C. Head J. W. Thurber C. H.
Mantle Uplift Beneath Lunar Basins: Clues to the Understanding of Basin Formation

POSTER PRESENTATIONS

Davis P. A. McKewen A. S.
Photoclinometry: Analysis of Inherent Errors and Implications for Topographic Measurements

Shoemaker E. M. Herkenhoff K. E.
Upheaval Dome Impact Structure, Utah

Thursday, March 15, 1984

VENUS I

8:30 a.m. Gilruth 104

Bills B. G.
Venus: Gravity, Topography and Isostasy

Banerdt W. B. Saunders R. S.
The State of Stress in Venus' Lithosphere From Long Wavelength Gravity and Topography

Bowin C. Abers G. Shure L.
Gravity Field of Venus at Constant Altitude and Comparison with Earth

Sharpton V. L. Head J. W.
Regional Slope Characteristics of Global Topography: A Comparison of Venus and Earth

Davis P. A. Schaber G. G.
Venus Global Units Derived from Statistical Analysis of Pioneer Venus Radar Data

Garvin J. B. Head J. W. Pettengill G. H. Zisk S.
Venus: Global Distribution of Radar Roughness and Reflectivity and Correlations with Elevation

Campbell D. B. Harmon J. K. Mine A. A. Head J. W.
The Surface of Venus: Recent Radar Observations

Garvin J. B. Head J. W. Basilevsky A. T.
Regional Geology of the Beta-Phoebe Region on Venus

Peterfreund A. R. Head J. W. Grieve R. A. F. Campbell D. B.
Cleopatra Patera, A Circular Structure in Maxwell Montes; Volcanic or Impact

Burke K. Sengor C. Francis P.
Maxwell Montes in Ishtar: A Collisional Plateau on Venus?

Barsukov V. L.
Venera 15

POSTER PRESENTATION

Peterfreund A. R. Head J. W. Garvin J. B. Zisk S. A.
Surface Units on Venus Derived from Pioneer-Venus Altimetry, Roughness, and Reflectivity Measurements

Thursday, March 15, 1984

GANYMEDE AND BEYOND

8:30 a.m. Gilruth Gym

Bianchi R. Casacchia R. Pozio S.
Tectonics of the Grooved Terrain on Ganymede

Grimm R. E. Squyres S. W.
Spectral Analysis of Groove Spacing on Ganymede

Schenk P. M. McKinnon W. B.
Dark Halo Craters and the Thickness of Grooved Terrain on Ganymede

Allison M. L. Clifford S. M.
Ice-covered Volcanic Water Flows on Ganymede

Helfenstein P. Wilson L. Walker N.
Photometric Classification of Terrain Units on Ganymede and Implications for the Galileo Mission

Neukum G. Pozio S.
The Cratering Record of Ganymede

Horedt G. P. Neukum G.
Planetocentric Versus Heliocentric Impacts in the Jovian and Saturnian Satellite System

McKinnon W. Gurnis M.
Viscous Relaxation on Icy Satellites

Durham W. B. Kirby S. H. Heard H. C.
Flow and Fracture of H_2O Ices I_h, II, and III: Latest Experimental Results

Johnson M. L. Schwake A. Nicol M.
The Ammonia-Water Phase Diagram I: Water-rich Region at Low (<4 GPa) Pressure

Haff P. K.
Meteoroidal Bombardment of Planetary Satellites as a Source of Magnetospheric Mass in the Outer Solar System

Dermott S. F. Gierasch P. Gradie J. Sagan C.
Thompson W. R.
Origin and Depth of Titan's Hydrocarbon Ocean

Ahrens T. J. O'Keefe J. D.
Shock Vaporization and the Accretion of the Icy Satellites of Jupiter and Saturn

POSTER PRESENTATIONS

Golombek M. P.
Why Are There No Strike-Slip Faults on the Planets and Satellites?

Moore J. M. Horner V. M.
The Geomorphologic Features on Rhea

Thursday, March 15, 1984

ISOTOPES III: COSMIC RAY EFFECTS

8:30 a.m. Gilruth 206

Theis S. Englert P. Michel R. Reedy R. C. Arnold J. R.
Simulation of the Interaction of Galactic Cosmic Radiation with Matter: Longlived Cosmogenic Nuclides Produced in Different Irradiation Experiments

Michel R. Dragovitsch P. Stück R. Filges D. Cloth P.
600 MeV Proton Irradiation Experiment to Simulate the 4π Bombardment of Meteorites by Galactic Protons

Jull A. J. T. Zabel T. H. Donahue D. J. Fireman E. L.
Accelerator Measurement of Carbon-14 Ages of Antarctic Meteorites

Fireman E. L.
Carbon-14 Terrestrial Ages of Yamato and ALHA Meteorites

Englert P.
The Spatial Distribution of Spallogenic ^{53}Mn in the Keyes Chondrite

Caffee M. W. Hohenberg C. M. Swindle T. D.
Laser Extraction of Neon from Dimmitt: Preliminary Report

Murty S. V. S. Marti K.
Nitrogen and Argon Components in Cape York

Bhandari N.
Isotope and Track Production in Meteorites and Cosmic Ray Variations

Marti K. Lavielle B. Regnier S.
Cosmic Ray Exposure Ages of Iron Meteorites, Complex Irradiation and the Constancy of Cosmic Ray Flux in the Past

Nautiyal C. M. Padia J. T. Rao M. N. Venkatesan T. R.
Gas-Rich Meteorites: Solar Flare Neon and Solar Cosmic Ray Fluxes

POSTER PRESENTATION

Reedy R. C.
High-energy Cosmogenic Neutrons in Extraterrestrial Matter

Thursday, March 15, 1984

VENUS: LOCAL FEATURES AND PROCESSES

1:30 p.m. Gilruth 104

Solomon S. C. Head J. W.
Rift Structures on Venus: Implications of a Lithospheric Stretching Model

Campbell D. B. Head J. W. Harmon J. K. Hine A. A.
Volcanism and Rift Formation in Beta Regio, Venus: New Radar Results

Garvin J. B. Head J. W. Basilevsky A. T.
Venera Lander Site Geologic Characteristics from Pioneer-Venus Radar Measurements

Wilson L. Garvin J. B. Head J. W.
Characteristics of Basaltic Lava Flows on Venus

Horner V. M. Greeley R.
The Effect of Atmospheric Drag as a Function of Elevation on the Emplacement of Impact Crater Ejecta on Venus

Williams S. H. Moore J. M.
Sediment Gravity Flows on Venus

Bougan S. Greeley R. Marshall J.
Flux and Bedforms of Windblown Material on Venus

Mouginis-Mark P. Fryer P. Hussong D. Zisk S.
Venus Analogues on the Earth's Ocean Floor(?): Volcanic Terrains Seen by SeaMARC II Side Scan Sonar

Fryer P. Hussong D. M. Mouginis-Mark P.
SeaMARC II Side-Scan Sonar Images of Volcaniform Features in the Mariana Fore-Arc and Arc Regions: Potential Analogues for Venus

Thursday, March 15, 1984

CORE FORMATION

1:30 p.m. Gilruth 104

Brett R.
Siderophile Elements may not be Enriched in the Upper Mantle: Speculations on Protocore Separation

Newsom H. E.
The Abundance of Molybdenum in Lunar Samples, New Evidence for a Lunar Metal Core

Newsom H. E. Palme H.
The Depletion of Siderophile Elements in the Earth's Mantle: New Evidence from Molybdenum and Tungsten

Jones J. H. Drake M. J.
The Chemical Signature of Core Formation in the Earth's Mantle

Schmitt W. Wänke H.
Experimental Determination of Metal/Silicate-Partition Coefficients of P, Ga, Ge, and W as Function of Oxygen Fugacity

Thursday, March 15, 1984

SNC METEORITES (FROM MARS?)

1:30 p.m. Gilruth Gym

Annexstad J. O.
Displacement, Ablation, and Meteorite Concentrations at the Allan Hills Icefield, 1978-1982

Reedy R. C.
Calculated Production Rates of Noble Gases in SNC Meteorites

Pepin R. O. Becker R. H.
Galactic-Cosmic-Ray Exposure Histories of the Antarctic Shergottite EETA 79001

Bogard D. D. Johnson P. Nyquist L. E.
Cosmic Ray Exposure of SNC Achondrites and Constraints on Their Derivation from Mars

Nyquist L. E.
Semi-Empirical Model for Spallogenic He and Ne in Chondrites: Implications for Irradiation History of SNCs

Evans J. C. Reeves J. H.
Aluminum-26 Measurements on Antarctic Meteorites

Treiman A. H. Jones J. H. Drake M. J.
The SNC/Mars Connection: Geochemical Inconsistencies

Gooding J. L.
Search for "Martian (?) Weathering" Effects in Achondrites EETA79001 and ALHA77005: Complications from Antarctic Weathering

Carr R. H. Pillinger C. T.
Carbon Isotope Data for Some SNC Meteorites

TERRESTRIAL BASALTS

Canepa J. A. Moore C. B.
Fluorine, Chlorine and Sulfur Variations in an Archean Basalt Suite

Jovanovic S. Reed G. W.
Volcanogenic Trace Element Volatiles in Basalts

Goodrich C. A.
The Formation of Metallic Iron in Mafic Magmas: The Role of Carbon (Clues from Native Iron in Disko Island Basalts)

Thursday, March 15, 1984

ASTEROIDS

1:30 p.m. Gilruth 206

Grün E. Fechtig H. Zook H. A. Giese R. H.
The Interplanetary Meteoroid Flux at 1 AU

Barucci M. A. Fulchignoni M. Salvatori R.
Asteroids Photometry Simulated in the Laboratory: Phase Functions of Some Meteorites Used as Irregular Asteroid Models

Sandford S. A.
Laboratory Infrared Spectra of Meteorites and Interplanetary Dust from 2.5 to 25 Microns

King T. V. V. Gaffey M. J. McFadden L. A.
Evidence for Regolith Maturation on Asteroids

Gaffey M. J.
The S-type Asteroids and the Ordinary Chondrites: The (8)Flora Case

Bell J. F. Hawke B. R. Singer R. B. Gaffey M. J.
The Olivine Asteroids: Discovery, Mineralogy, and Relationship to Meteorites

Helin E. F. Dunbar R. S.
International Near-Earth Asteroid Search

Veeder G. J. Kowal C. Matson D. L.
The Earth-Crossing Asteroid 1983 TB

Davis D. R. Chapman C. R. Weidenschilling S. J.
Greenberg R.
Asteroid Collisional Evolution Studies

Cintala M. J. Horz F.
Catastrophic Rupture Experiments: Fragment-Size Analysis and Energy Considerations

Coradini M. Capaccioni F. Cerroni P. Flamini E.
Martelli G. Smith P. N. Woodward A. J.
Simulation of Asteroidal Fragmentation by Impacting at Hypervelocity Free Falling Targets

Matsui T. Schultz P. H.
On the Brittle-Ductile Behavior of Iron Meteorites: New Experimental Results

Friday, March 16, 1984

ORIGIN AND EVOLUTION OF PLANETS AND SATELLITES

8:30 a.m. Gilruth 104

Cameron A. G. W.
The Rapid Dissipation Phase of the Primitive Solar Nebula

Weidenschilling S. J.
Evolution of Grains in a Turbulent Solar Nebula: A Reappraisal

Stevenson D. J.
On Forming the Giant Planets Quickly (Super-Ganymedean Puffballs)

Shoemaker E. M. Wolfe R. F.
Evolution of the Uranus-Neptune Planetesimal Swarm

Weissman P. R.
Cometary Shells Around Main Sequence Stars

Harris A. W.
Some Thoughts on the Vega Particulate Shell

Smoluchowski R. Torbett M.
Three-Dimensional Dynamical Limits of the Oort Cloud

Wood C. A. Moore C. L.
Comets: A Synthesis of Physical, Chemical, and Orbital Data

Zimbelman J. R.
Planetary Impact Probabilities for Long Period Comets

Pang K. D. Nicholson P. D.
Composition and Size of Uranian Ring Particles

Weidenschilling S. J. Davis D. R.
Effects of Resonances on Orbital Evolution in a Resisting Medium

O'Keefe J. A.
Fission of Venus?

Kochemasov G. G.
The Latest Data Concerning the Hypothesis of Accretion of Primary Layered Planets of Different Compositions in the Solar System

Friday, March 16, 1984

IMPACT CRATERING III: THE SHOCKING RECORD
(K/T BOUNDARY, TEKTITES, AND VOLATILES)

8:30 a.m. Gilruth Gym

O'Keefe J. D. Ahrens T. J.
Condensation of Impact Produced Vapor

Bohor B. Foord E. Modreski P. Triplehorn D.
The K/T Boundary Clay Layer: Fallout from a Stony Asteroid Impact

DePaolo D. J. Kyte F. T.
Isotopic and Chemical Characteristics of Cretaceous-Tertiary Boundary Sediments from DSDP Site 465A

Smit J. Kyte F. T. Wasson J. T.
Quenched Magnetite in Cretaceous-Tertiary Boundary Microtektite-like Spheroids

Seebaugh W. R. Strauss A. M.
Libyan Desert Glass: Remnants of an Impact Melt Sheet

Koeberl C. Kluger F. Kiesl W. Weinke H. H.
Geochemistry of Muong-Nong Type Tektites I and II: Fluorine and Bromine Lithium, Beryllium and Boron

Koeberl C. Kluger F. Berner R. Kiesl W.
Geochemistry of Muong-Nong Type Tektites III: Selected Elemental Abundances

Ekambaram V. Grossman L. King E. A.
Chemical Studies of Volatilization Residues of Chondrites

Lingner D. W. Huston T. J. Lipschutz M. E.
Volatile/Mobile Trace Elements and Shock Effects in H4-6 Chondrites: A Progress Report

Frisch B. Ahrens T. J.
Shock-Induced Volatile Loss from a Carbonaceous Chondrite and Planetary Accretion

Matsui T.
The Formation of an Impact-generated H_2O Atmosphere and Its Implications for the Early Thermal History of the Earth

Rigden S. M. Ahrens T. J. Stolper E. M.
Liquid Silicate Densities at High Pressures: First Shock Wave Measurements

Friday, March 16, 1984

SULPHUR AND ICE VOLCANISM

8:30 a.m. Gilruth 206

Wilson L. Head J. W.
Aspects of Water Eruption on Icy Satellites

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