



lunar AND planetary information bulletin

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First Decade... Lunar Landing 1969-1979



July 20, 1969 was a day that found many of us glued to our television screens, amazed and unbelieving...watching the first 'giant leap' for mankind. Now ten years later with the successes of Pioneer Venus, Voyager, and Viking bringing the realm of our solar system ever closer to us, we pause to celebrate this great event. These are just a few of the celebrations planned across the country.

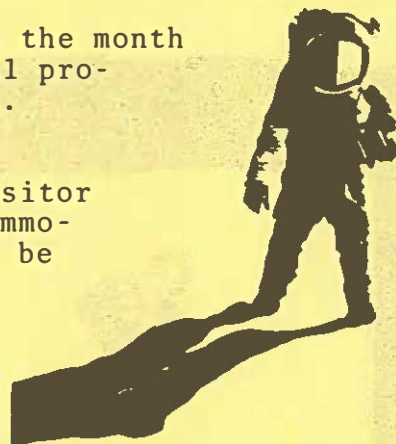
WASHINGTON, D.C.

A public ceremony will be held at the north entrance of the National Air and Space Museum (NASM) at 11:00 a.m. on July 20. The Apollo 11 crew, Armstrong, Collins, and Aldrin, will be present to comment on the space program over the past ten years. Other speakers will be Mr. Ripley, the Secretary of the Smithsonian, Dr. Lovelace and Dr. Frosch from NASA. The first Space Shuttle crew, John Young and Bob Crippen will present a model space shuttle to the Apollo 11 crew members as a token of the progress of the space program based on the work of these early space pioneers.

At the NASM, the week of July 16-24 will be marked with many special events. A replay of the real-time events of Apollo 11 will be going on throughout the week based on the actual tapes and air-to-ground communications recorded during the mission. A commemorative book "Ten Years Since Tranquillity: Reflections upon Apollo 11" edited by Richard P. Hallion and Tom D. Crouch will be available from Smithsonian Press, P.O. Box 1579, Washington, DC 20013, \$20 or \$7.95 paperback. The 221-page book contains ten essays, 60 photographs, a bibliography and index. The Museum hours are 10 am to 9 pm, seven days a week.

At NASA/Langley Research Center, Hampton, VA during the month of July, the Visitors' Center will feature a special program of lectures and showing of the Apollo 11 films. For schedule information, call 804/827-2855.

In Cleveland, Ohio, NASA/Lewis Research Center's Visitor Information Center will be open extra hours to accommodate visitors during the month of July. Hours will be Mon-Fri 9 am to 9 pm; Sat 10 am to 4 pm; and Sun 1 pm to 6 pm. There will be special displays not only commemorating the Apollo 11 and lunar discoveries, but also large (20x24') photos of Jupiter and its satellites, taken by Voyager spacecraft.



- more ..

It is anticipated to have some special commemorative lithographs available for visitors to Lewis during this period. For more information about the schedule of events at Lewis call 216/433-4000, ext. 415.

NASA/JOHNSON SPACE CENTER, Houston
Activities marking the Tenth Anniversary will begin at 9 am on July 20 at the Visitor's Center where the mural by Robert McCall and the special postal sub-station will be dedicated. One of the features of the anniversary celebration will be a special commemorative cover which will be canceled with the 10th anniversary logo right at the Visitor's Center.



Ceremonies will proceed to Building 31A, the new Lunar Sample Facility which will be dedicated by Dr. Christopher C. Kraft and then at approximately 10 am the dedication of the Saturn V Rocket and the Rocket Park at JSC will be held.

There will be continuous showings of the Apollo 11 film in Building 2 Auditorium beginning at 9:30 am on July 20. Souvenir editions of ROUNDUP (the NASA/JSC newspaper) will be available to all visitors. Site maps showing the buildings open to the public during the day will also be available. For this particular celebration, the Sample Processing Facility (Building 31A) and Building 14, the Space Shuttle Orbiter Mockup Laboratory will be open for visitors. For this day only, tours will not be arranged in advance. Visitors may sign up for tours as they arrive at the Building 2 Information Desk.

In addition to the postal "first day cover" which will be available, it is also probable that a commemorative coin will be available in Building 2 and at the EAA gift shops on site.



A special poster showing the Tenth Anniversary logo (see page one this Bulletin) designed by Paul Calle and Robert Schulman will be available in poster form from most NASA Center Education Offices and from the Government Printing Office.

PERSONNEL CHANGES

Dr. Noel W. Hinners, who has been Associate Administrator for Space Science at the National Aeronautics and Space Administration (NASA) since 1974, has been appointed to succeed astronaut Michael Collins as director of the National Air and Space Museum (NASM) in Washington, D.C. Dr. David Challinor, Smithsonian Assistant Secretary for Science, described Dr. Hinners as "eminently qualified" to head NASM and said "We look forward to the impetus his presence will give to our efforts to strengthen the Museum's research and educational programs..." Andrew J. Stofan will be Acting Associate Administrator for Space Science at NASA Headquarters.

Dr. A. Thomas Young, Director of Planetary Programs for NASA's Office of Space Science has been named Deputy Director of NASA's Ames Research Center at Moffett Field, California. Mr. Angelo "Gus" Guastaferro is the new Program Director heading up the Planetary Division of OSS. Mr. Guastaferro's most recent post was as manager of the large space systems technology program at Langley. From 1968 to 1975 he held several management positions with the Viking Project including deputy project manager (management).

Dr. Leonard J. Srnka, Staff Scientist at the Lunar and Planetary Institute since November 1975 will leave the Institute on 30 April 1979. Dr. Srnka will be joining the nation's every research effort on May 7, 1979 when he begins work in the Fusion Doubtlet III Division of the General Atomic Company, La Jolla, California.

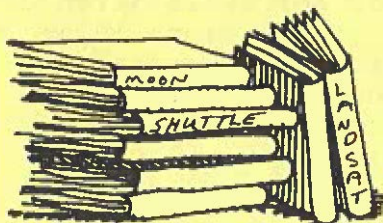
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LUNAR SAMPLE BUILDING STATUS

The new sample facility, which has been designed to make the lunar materials as safe from natural disasters as modern engineering can make it, is nearing completion. Dedication of the new laboratory has been scheduled as part of the Apollo 11 Tenth Anniversary ceremonies at the NASA/Johnson Space Center (see *feature story on the Anniversary page 1-2 this Bulletin*)

Some features of the building include two vaults, very much like bank vaults, on the second floor of the structure. One vault will hold the pristine lunar material...that which has been kept as near as possible to the condition in which it was taken from the Moon. The pristine material, which amounts to about 88% of the 844 pounds brought from the Moon, will be kept so future generations of scientists will be able to apply now unknown methods of analysis to their investigations. Material which has already been used for scientific analysis will be stored in the second vault.

Other features of the laboratory will be an area where samples can be prepared for shipment to scientists who will be working with them; and a viewing area which will allow visitors to the facility to watch scientists working on the lunar material.

NASA/JOHNSON SPACE CENTER PLANS BRIEFING FOR EDUCATORS

During the summer of 1979, between June 6 and August 20, special briefings for educators will be held each week at the Johnson Space Center. They will take place each Monday, Wednesday, and Friday at 10 am, except July 20. Topics to be covered include lunar science, Landsat activities, and Space Shuttle. Free materials will be available at each session, which will last approximately two hours.

Attendance will be limited to the first 35 to register for each session. Additional information may be obtained by calling 713/483-4241 or by writing to NASA Johnson Space Center, Attn: James D. Poindexter, Public Services Branch, Code AP4, Houston, TX 77058.

INFLATION STRIKES AGAIN

It has been found necessary to raise the mailing and handling charge assessed for Lunar and Planetary Institute publications. The previous prices of \$1.00 U.S. and \$6.00 foreign mailing no longer cover the actual costs. Beginning 1 June 1979 the charges will be:

For mailing LPI publications in the U.S. \$2.00

For foreign mailing actual cost

On all foreign orders, the requestor is asked to indicate the class of mail delivery he prefers, surface or air printed matter, when he places his order. Postage will be calculated on the actual package and a bill sent to the requestor. If a class of mail is not indicated with the order, the publication will be sent surface mail which usually entails a 6-8 week (or longer) arrival date, depending on destination. As an example, the mailing of the Abstracts of the Tenth Lunar and Planetary Science Conference cost between \$25-35 to send air printed matter; approximately \$6 to send surface.

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The American Geophysical Union has a new address and telephone number.

2000 Florida Avenue NW
Washington, DC 20009
Telephone: 202/462-6903

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It is not enough to be busy; the question is: what are we busy about?
Thoreau.

LPI FALL TOPICAL CONFERENCE SCHEDULE

Two topical conferences will be held this Fall under the auspices of the Lunar and Planetary Institute

CONFERENCE ON THE ANCIENT SUN: FOSSIL RECORD IN THE EARTH, MOON AND METEORITES
NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR) OCTOBER 16-19

The NCAR Center in Boulder, Colorado will be site of this four-day meeting, currently sponsored by the LPI and NCAR. The meeting is designed to bring together scientists from the solar physics and the lunar and planetary geoscience communities to consider the challenge of recovering the long-term history of solar behavior from natural records. Broad topical areas to be included are:

- 1 - Theories of solar variability and their consequences for changes in luminosity, particle emission, and magnetic fields.
- 2 - Records of particle emission in lunar and meteoritic materials and methods of recovering temporal information from them.
- 3 - Records of past solar behavior recoverable from terrestrial sources such as radionuclides in tree-rings and ocean sediments.

An abstract volume will be published prior to the Conference. Deadline for receipt of camera-ready abstracts is *23 July 1979*. A proceedings volume is also planned in the format similar to those of recent Proceedings of the annual Lunar and Planetary Science Conference. Deadline for receipt of manuscripts will be *6 January 1980*.

A registration fee of \$35 will be assessed all attendees except students. A portion of the funds will be used to support students who wish to attend. The student grants will be awarded on the basis of need and a statement of interest and professional goals submitted by the student to the Symposia Office at the LPI by *23 July 1979*. Students need not present papers to qualify.

CONFERENCE ON THE LUNAR HIGHLANDS CRUST
HOUSTON, TEXAS

NOVEMBER 12-14

Inasmuch as evidence of the earliest history of the Earth has been erased, and the ancient cratered terrains of Mercury and Mars have not yet been sampled, the samples of the Lunar Highlands can be said to hold the key to our understanding of early planetary crustal formation. This appears to be an appropriate time to synthesize what we know about the Lunar Highlands by integrating the sample and remote sensing data. Plans call for the meeting to emphasize five major discussion topics:

- 1 - Petrology, chemistry and chronology of Lunar Highlands Rocks.
- 2 - Regional characteristics of Highlands Rocks.
- 3 - Physical processes of Highland crust evolution; geophysical evolution of the crust and lithosphere.
- 4 - Models for the formation of the Lunar Highlands crust.
- 5 - Lunar crust in a planetary context.

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LPI TOPICAL CONFERENCE SCHEDULE (continued)

A volume of abstracts will be prepared and distributed prior to the Conference. Camera-ready contributions in the standard Lunar and Planetary Science Conference format must arrive at the LPI by 10 September. A Proceedings volume, similar to that of Mare Crisium: The View from Luna 24 (Pergamon, 1978) will be prepared. Manuscript submission deadline will be 6 January 1980.

A \$35 registration fee will be assessed all attendees except students. To encourage student participation, a portion of these fees will be dedicated to travel grants to support four to six students. Student grants will be awarded on the twin bases of need and quality of abstract(s) submitted. Each successful applicant will be expected to present a paper at this meeting.

For additional information on either of these topical conferences, contact the Conference Administrator, Ms. Pamela P. Jones, LPI, 713/486-2150 or FTS 525-3436, ext. 2150.

ELECTROCHEMISTRY APPLIED TO THE PROCESSING OF LUNAR MATERIALS..A WORKSHOP

The Electrochemical Society and the Lunar and Planetary Institute are cosponsoring a three-day workshop devoted to the adaptation of techniques in electrochemistry to the processing of lunar materials on an industrial scale in space and on the Moon. The meeting is presently planned to be held 12-14 September 1979 at the Lunar and Planetary Institute. Participation by members of the lunar and planetary community is encouraged. Many of the technical topics will be of relevance to the lunar sample research community. Your assistance is requested in bringing this workshop to the attention of colleagues in the fields of physical chemistry, chemical engineering and aerospace engineering. Electrochemical systems offer the possibility of obtaining industrial feedstocks from lunar and eventually asteroidal materials with minimum complexity and high reliability. For more information about this workshop contact either Dr. David R. Criswell (713/486-2152) or Dr. Robert D. Waldron (713/486-2158) at the LPI.

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AAS/DPS ANNUAL MEETING

The Eleventh Annual Meeting of the Division for Planetary Sciences, American Astronomical Society, will be held October 23-26, 1979 at the Holiday Inn, Clayton, Missouri. The Program Chairman, Prof. Raymond E. Arvidson, Dept. of Earth and Planetary Sciences, Washington University, St. Louis, MO 63130 has indicated that the deadline for titles of papers is 1 August with the abstract deadline being 15 August. Abstract format should follow that of the Bulletin of the American Astronomical Society. Local arrangements will be handled by Lor Campbell Gehret also at Washington University.

WORKSHOPS PROMOTE SCIENCE INTERACTION

Three workshops have been held this spring.

Workshop on Ancient Crusts of the Terrestrial Planets

Approximately 50 scientists participated in a workshop on Ancient Crusts of the Terrestrial Planets held at the Lunar and Planetary Institute on 12-14 February 1979. The workshop promoted interaction between scientists studying the ancient terrestrial rocks and those studying the old crusts of the planets of the inner solar system. A workshop volume (LPI Contribution No. 371) is now in preparation and will be ready by late summer.

Workshop on Remote Sensing of Volcanic Gases

On February 26-27, 1979, sixteen scientists met at the University of Hawaii to review the current state of knowledge of volcanic gases and to discuss the most important directions for future research, both extensions of existing activities and new directions. LPI Contribution No. 368 will contain abstracts of the talks during the workshop, along with a summary of the meeting, the program, and several bibliographies on remote sensing and volcanic gases.

Glass and Ceramics Industry in Space Based on Lunar Materials

This Workshop held at the LPI on April 14-16 was attended by representatives from the glass industry, university departments specializing in glass and ceramic products, automation and Spacelab research projects, and the Los Alamos Scientific Laboratory. They reviewed the many products that can be made from lunar materials and, in particular, analyzed the construction of a glass production facility on the Moon which could provide glass and ceramic inputs to a space power station. It was estimated that 40 people and 500 tons of equipment placed on the Moon could be used to create a glass plant with an output of 30,000 tons/year. Dr. John MacKenzie, University of California, Los Angeles and Dr. David Criswell, Lunar and Planetary Institute were co-chairmen.

 Remember the change in mailing rates for Contributions if you wish any of the above
 workshop summaries. \$2.00 U.S.; actual cost for foreign distribution. (The Ed.)

AN ACRONYM CHANGES.....LSAPT becomes LAPST

The Lunar Sample Analysis Planning Team (LSAPT) has been renamed. The Team will continue as the LUNAR AND PLANETARY SAMPLE TEAM (LAPST). The team has launched a three-year study program on the Lunar Highlands Samples. A LUNAR HIGHLANDS NEWSLETTER is being distributed by the Curator's Office at the NASA/Johnson Space Center. The study will be highlighted by a fall topical conference at the Lunar and Planetary Institute. (See Page 5 this BULLETIN for additional information)

CONFERENCE ON ASTEROIDS AND PLANET X....a summary by J. Minear

Some one hundred papers and poster talks were presented at the Conference on Asteroids and Planet X held March 6-10 in Tucson, Arizona. The Conference succeeded in bringing together a diverse and knowledgeable group working in all phases of asteroid and meteorite related work. Subjects considered at the Conference covered the breadth of asteroid and meteorite research from light-curve observations to irradiation history of chondrites.

Orbital dynamicists led off the Conference with discussions of chaotic orbits, resonance locks of Trojan and Hilda asteroids, and Monte Carlo simulations of comets and Apollo objects. Dynamical evolution of asteroid families and the reconstruction of their parent bodies from the fragmented pieces were the subject of several papers which were followed by a series of papers on observations of binary asteroids.

Regolith development and fragmentation history of asteroids was discussed by several people. Regolith production models suggest that the depth of regolith on larger asteroids exceeds that on the Moon because of higher crater flux and reduced gravity that results in more wide-spread ejecta blankets. Preliminary work on asteroid collisions suggests that low velocity impacts of comparable sized objects can produce brecciated bodies. Aqueous activity within asteroid regoliths early in their history is indicated by brecciated CI and CM chondrites (presumably produced in asteroid regoliths) that show evidence of aqueous activity.

Other topics covered at the meeting included the presentation of new spectral and photometric data on asteroids, discussions of the internal structure and thermal models, and the accretion processes in these models.

In summary, three important conclusions can be drawn from the meeting. First, a great deal of new data is being generated on asteroids and meteorites; the understanding of this data has just begun. Second, there seems to be a growing evidence that the early solar system was a very heterogeneous place. Third, the relationship between meteorites and their asteroid parent bodies is not as simple as was once illustrated with asteroid models of iron-nickel cores, metamorphosed silicate mantles and carbonaceous chondritic crusts.

The Proceedings of the Conference will be published by the University of Arizona Press. Additional contributed papers will be published in a special volume of *Icarus*. Dr. Tom Gehrels of the University of Arizona arranged the Conference and is editing the Proceedings volume.

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IN MEMORY

LEIF ANDERSSON
1943 - 1979

Dr. Andersson was a research associate at the Lunar and Planetary Laboratory, University of Arizona. His work included investigations of the lunar surface and photometry of planetary satellites. It is being proposed to name a lunar crater in his honor. If approved by the International Astronomical Union, the lunar crater De Roy X would be named Andersson Crater.

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VOYAGER NEWS RELEASE FILMS AVAILABLE

There are four 1979 NASA News Release 16 mm color films which can be purchased from:

Stock Film Laboratory Branch
Audiovisual Archives Division (GSA)
1411 S. Fern Street
Arlington, VA 22202
(Mr. Frank Stevens 703/557-1115)

The new Voyager films are:

1. NASA HQ 79-426 Voyager: Jupiter Encounters 1979
approximately 8½ minutes, \$86
A descriptive sound film about the objectives of the Voyager mission
2. NASA HQ 79-427 Jupiter Rotation
approximately 2½ minutes, \$26
A brief color film showing rotation of Jupiter as actually observed by Voyager 1.
3. NASA HQ 79-428 Voyager 1 Encounter Film
approximately 3 minutes, \$30
A computer animation film depicting the flyby of Voyager 1 at Jupiter and its Galilean satellites.
4. NASA HQ 79-429 Jupiter's Atmospheric Dynamics
approximately 2½ minutes, \$26
A color film showing the atmospheric circulation observed on Jupiter by Voyager 1 during January 1979. Made from images of Jupiter taken every 10 hours of the same longitudinal region, including the Great Red Spot.

Orders must be received in writing and be accompanied by payment. The prices given above are only approximate. Exact prices can be obtained by phone. The cost estimates given are for projection prints, not master copies or negatives. Films are printed to order. It takes about seven days to fill an order.

Two photo suppliers have made lists of the Voyager pictures available. MMI Corporation, 2950 Wyman Parkway, Baltimore, Md 21211 and Photographic Illustration Co. (PIC) P.O. Box 6699 Burbank, CA 91510. Many other dealers are offering Voyager pictures (see recent issues of Astronomy and Sky and Telescope). The recent issue of Astronomy (May 1979) has several color reproductions of the pictures along with descriptive text of the mission. The Photo/Map Library at the LPI has sets of slides and copies of the films available for loan. Please contact Ron Weber, LPI Photo/Map Library, 713/486-2172 for information about their availability.

ENCOUNTER DATES TO RED CIRCLE

Voyager 2	Jupiter	July 9, 1979
Pioneer 11	Saturn	September 1, 1979
Voyager 1	Saturn	November 12, 1980
Voyager 2	Saturn	August 27, 1981



Several new NASA publications have been released recently. Among them are:

There are 200 high-quality photographs chosen by the Viking Lander imaging team. The photos, which include mosaics, panoramas, close-ups and color, are captioned by the members of the team, often with analytic interpretive detail. An "anecdotal history" of the Viking Project, written by Prof. T. A. Mutch, Brown University and the geologist leader of the Lander imaging team, gives an inside glimpse into the ways of planetary exploration in the 1970s. Mutch tells how the Mission was planned and brought into being, with a vivid description of the eight years of planning, designing, and testing that preceded the first successful "soft" landing on Mars.

This is the official NASA history detailing the international cooperative effort of two major space-faring nations and their collaborative mission to rendezvous and dock manned space craft in Earth orbit.

This is a NASA history telling the story of the Apollo launch facilities at the Kennedy Space Center, Florida. It begins its story with the Saturn launch vehicle and continues through the last Apollo missions, 15, 16 and 17. Several charts capsulize the events of launch of this period of the U.S. space effort.

This monograph is basically devoted to spectroscopic information of the molecules of planetary interest. It has been finished posthumously by the staff of the Directorate of Applied Science at Wallops Flight Center. Dr. Mohan died in 1976 before he could finish the final proofreading of his manuscript. The publication is divided into three parts. Part I presents an introductory survey of planetary atmospheres and spectra. It also acquaints a non-specialist with the general conditions of different planets, their atmospheres and the various gaseous molecules that exist there. Part II is primarily concerned with the basic concepts underlying optical absorption and different quantitative molecular parameters that often have useful application in the study of planetary atmospheres. Part III is devoted to the important spectroscopic information and relevant data of the 12 major molecules. An exhaustive bibliography is given for details.

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ALSEP Termination Report, by James R. Bates, W. W. Lauderdale, and Harold Kernaghan. NASA-RP-1036, 162 pp. Available from the National Technical Information Service, \$6.75

This report summarizes the Apollo Lunar Surface Experiments Package (ALSEP) operations and provides background information for studies in lunar science. The report was prepared when the receipt of data from the lunar surface was terminated on September 30, 1977; it is intended as an overview of the ALSEP activities, and specific details relative to ALSEP scientific data are outside the scope of information presented here. Details regarding the placing of ALSEP stations on the lunar surface have been covered thoroughly in other publications and thus are not presented here. It is a summary report describing the ALSEP central stations and experiments, deployment, operations, performance final tests and results, status at termination, and science summary.

SOURCES FOR THE PUBLICATIONS LISTED IN THIS SECTION "New Publications"

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

National Technical Information Service
Springfield, VA 22161

Both of these agencies require pre-payment; however, the NTIS is now accepting American Express Credit Cards. For some documents, the GPO is also accepting Master Charge and Visa. Many of these documents may also be available in the GPO Book Stores which are in major cities throughout the United States. Check to see if you have a local GPO book store listed in your telephone directory.

PLEASE DO NOT ORDER THESE PUBLICATIONS FROM THE LPI. WE DO NOT DISTRIBUTE THEM. ORDERING FROM US DELAYS YOUR ORDER BECAUSE WE MUST RETURN IT TO YOU.

thanks thanks thanks thanks thanks thanks thanks thanks thanks

HOW MUCH DOES IT COST?????

The following are some excerpts from a letter by Julie Woodman, Chicago, Illinois. The letter was published in *ASTRONOMY*, May 1979, page 25.

"Why don't space advocates use comparisons that put our national space investment in terms the man on the street can comprehend? ...

"As just one example: how many people are aware that in 1978, the McDonald's hamburger people will show sales equal to or better than the NASA budget? ...

"Compared to the NASA budget:

- American spending in discotheques is about equal
- Americans spend 1½ times as much on pizza as they do on the civilian space effort. The same is true for toys, while cosmetics sales are three times as big.
- Legalized casino gambling in Nevada and Atlantic City grossed \$1.9 billion last year--nearly half as much as NASA's entire appropriation
- American teenagers could finance seven space programs each year if current estimates of their discretionary spending power are accurate.
- I'm talking about the estimated \$25 to \$40 billion for marijuana--the \$20 billion for cocaine--the \$17 billion for tobacco spent each year in this country.

"It would seem to me that our national priorities are really out of line. Who says we can't afford space?"

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C A L E N D A R

- June 6-8 Decennial Meeting of Planetary Geology
Principal Investigators, Brown University,
Rhode Island.
Contact: Dr. Thomas A. Mutch
 Dept. of Geological Sciences
 Brown University
 Providence, RI 02912
- June 24-29 Granitic Rocks and Batholiths: Penrose Con-
ference, Fairmont Hot Springs, Anaconda, MT
Convenors: Charles Vitaliano and Lee Suttner
 of Indiana University; Donald
 Hyndman, University of Montana
Contact: Lois Elms
 Penrose Conference Coordinator
 The Western Experience
 1140 Pearl Street, Suite 219
 Boulder, CO 80302
- July 16-22 Hawaii Symposium on Intraplate Volcanism and
Submarine Volcanism, Maniloha Surf Hotel,
Hilo, Hawaii
Contact: Hawaii Symposium
 Western Experience
 1140 Pearl Street, Suite 219
 Boulder, CO 80302
- July 23 DEADLINE for Abstracts for the Conference on
the Ancient Sun (See Page 5 this Bulletin)
- August 14-24 International Astronomical Union General
Assembly, Montreal, Canada
Contact: Prof. P.A. Wayman
 IAU Asst. Sec. Gen.
 Dunsink Observatory
 Castleknock Co
 Dublin, Ireland
- August 15 DEADLINE for Abstracts for the Division of
Planetary Sciences, American Astronomical
Society meeting (See Page 6 this Bulletin)
- September 3-7 Meteoritical Society, Heidelberg, West Germany
with field trips before and after
Contact: Dr. Till Kirsten
 Max Planck Institut für Kernphysik
 Box 103980
 D-6900 Heidelberg, Germany

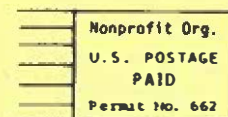
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