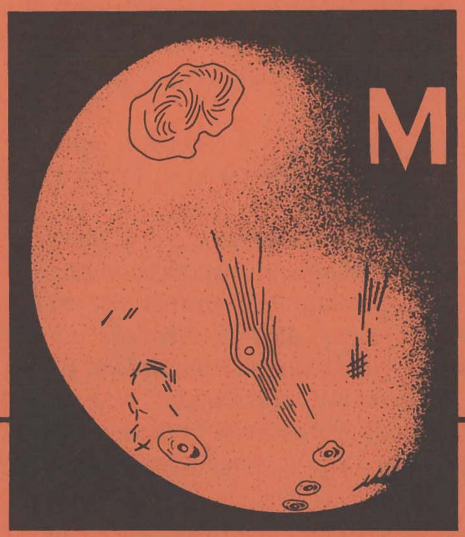


MEVTV

Newsletter

Number 2

November 1987

WORKSHOP ON "THE NATURE AND COMPOSITION OF SURFACE UNITS ON MARS" DECEMBER 4-5, 1987

—Jim Zimbelman

The first workshop of the MEVTV Study Project will be held on Friday and Saturday, December 4 and 5, at the Clarion Inn hotel in Napa, California. The location and the dates were chosen to allow participants to attend both the workshop and the Fall meeting of the American Geophysical Union (December 7 to 12) in San Francisco. The workshop is intended to provide a forum for the discussion of issues related to the compositional and physical makeup of the martian surface. Since this will be the first technical meeting for the MEVTV Study Group, the discussion sessions will include tutorial presentations to provide everyone with an understanding of the present state of knowledge for the topic under discussion.

The workshop has been subdivided into four broad topics related to the study of surface units on Mars. The SNC meteorites will be discussed first, emphasizing what constraints these meteorites may provide on the composition of Mars. Remote sensing observations will be discussed next, including measurements obtained from the Viking landers and orbiters as well as from Earth-based instruments. The third topic concentrates on photogeological interpretations of Mars, which provide the framework for understanding the distribution and relative sequence of geologic materials exposed on the martian surface. The final topic covers the interaction of surface materials with the atmosphere and other volatiles on Mars. Each topic will be introduced by a summary of recent results and associated hypotheses.

In response to a call for abstracts, forty three contributed papers were received at LPI as of September 27, at which time the Program Committee set up the workshop program. As an experiment to foster discussion at the workshop, all of the contributed papers will be presented as posters. This is intended to provide ample time for discussion during the various workshop sessions while still allowing individual researchers to have data and interpretations readily available for examination by all in attendance at the workshop. The titles of the contributed papers are listed below; the diversity of topics covered in the abstracts illustrates the broad spectrum of interests represented by the MEVTV Study Group.

The final announcement for the workshop will include additional information on the meeting site, logistics, registration, and housing. Contact the LPI Projects Office (713-486-2150) if you are interested in receiving this information but you have not received earlier announcements for the workshop.

Preliminary Program

Friday, December 4

8:30 a.m.

SNC Meteorites and Implications for the Composition of Mars

Chairmen: J. Longhi and E. Stolper

Tutorial: J. Longhi

1:30 p.m.

Remote Sensing of the Martian Surface
Chairmen: J. Adams and R. Greeley
Tutorial: J. Adams, R. Singer, R. Arvidson

5:00–7:30 p.m.

Poster Presentations of Contributed Papers
Wine Tasting and Hors d'oeuvres

Saturday, December 5

8:30 a.m.

Photogeological Inferences on Martian Surface Composition
Chairmen: J. Guest and J. Adams
Tutorial: R. Greeley

1:30 p.m.

Volatiles and Surface-Atmosphere Interactions
Chairmen: F. Fanale and S. Clifford
Tutorial: F. Fanale

5:00 p.m.

End of meeting

PAPERS CONTRIBUTED TO THE MEVTV WORKSHOP ON "THE NATURE AND COMPOSITION OF SURFACE UNITS ON MARS"

Adams, J.B., Smith, M.O., Arvidson, R.E., Dale-Bannister, M., Guinness, E.A., and Singer, R., *Surface Composition of Mars: A Viking Multispectral View*

Arvidson, R.E., Dale-Bannister, M.A., Guiness, E.A., Adams, J., Smith, M., Christensen, P.R., and Singer, R., *Nature and Distribution of Surficial Deposits in Chryse Planitia and Vicinity, Mars*

Bell, J.F., and McCord, T.B., *Mars: Near-Infrared Comparative Spectroscopy During the 1986 Opposition*

Blaney, D.L., Walsh, P.A., and McCord, T.B., *Mars: Spectral Signatures Seen and Unseen*

Boslough, M.B., *Selective Weathering of Shocked Minerals and Chondritic Enrichment of the Martian Fines*

Brakenridge, G.R., *Intercrater Plains Deposits and the Origin of Martian Valleys*

Burns, R. G., *Sulfide mineralization: Its role in chemical weathering on Mars*

Clark, B.C., *Elemental Composition of the Martian Surface*

Clifford, .M., and Duxbury, E., *Sub-kilometer Rampart Craters in the Equatorial Region of Mars: Possible Implications for the State and Distribution of Regolith H_2O*

Coyne, L.M., Banin, A., Orenberg, J.G., Carle, G.C., Chang, S., and Scattergood, T.W., *Chemical and Spectroscopic Characterization of a Suite of Mars Soil Analogs*

Davis, P.A., and Tanaka, K.L., *Small Martian Volcanoes*

DeHon, R.A., *Progress in Determining the Thickness and Distribution of Volcanic Materials on Mars*

De Hon, R. A., *The martian sedimentary record*

Englert, P., Reedy, R.C., Drake, D.M., Feldman, W.C., Squyres, S.W., Evans, L.G., and Boynton, W.V., *Gamma-Ray/Neutron Spectroscopy from the Mars Observer*

Francis, P.W., *Variability in Spectral Signatures of Terrestrial Volcanic Rocks and Implications for Volcanology on Mars*

Gooding, J.L., *Aqueous Alteration in S-N-C Meteorites and Implications for Weathering Products on Mars*

Grant, J.A., and Schultz, P.H., *Distribution and Timing of Thick Transient Air-Fall Deposits in Electris: Implications for the Nature of the Upland Plains*

Guest, J.E., Hughes, J.W., and Duncan, A.M., *Lava Flow-Field Morphology: A Case Study from Mount Etna, Sicily*

Kieffer, H.H., *How Dirty is Mars' North Polar Cap, and Why Isn't It Black?*

King, E.A., *Some probable Characteristics of the Martian Regolith*

Longhi, J., and Pan, V., *What SNC Meteorites Tell Us About Martian Magmatism*

Lucchitta, B.K., *Surface Units on Mars: The Assemblage in the Valles Marineris*

MacKinnon, D.J., Tanaka, K.L., and Winchell, P.J., *Morphologic Contrasts between Nirgal and Auqakuh Valles, Mars: Evidence of Different Crustal Properties*

Ceraunius Tholus volcano (516A24)

Masursky, H.D., Dial, A.L., Strobel, M.E., and Applebee, D.J., *Geology of Six Possible Martian Landing Sites*

McFadden, L.A., *Spectral Reflectance of SNC meteorites: Relationship to Martian Surface Composition*

McGill, G.E., *Constraints on the Origin of Fractured Terrane, Northern Martian Plains*

Moore, H.J., Jakosky, B.M., and Christensen, P.R., *Viking Landers and Remote Sensing*

Mouginis-Mark, P., and Wilson, L., *Volcano Evolution on Mars*

Postawko, S.E., Fanale, F.P., and Zent, A.P., *Episodic vs. Epochal Weathering at the Surface-Atmosphere Interface on Mars*

Prinn, R.G., and Fegley, B., *Chemical Interactions Between the Present-day Martian Atmosphere and Surface Minerals*

Robinson, M.S., and Tanaka, K.L., *Stratigraphy of the Kasei Valles Region, Mars*

Roth, L.E., and Saunders, R.S., *Topography of Large Craters on Mars: Implications for the Highlands Resurfacing History*

Roush, T.L., Roush, E.A., Singer, R.B., and Lucey P. G., *Preliminary Analysis of Recent 2.2-4.2 m Telescopic Observations of Elysium, Mars: Implications for Crystallinity and Hydration State of Surface Materials*

Rutherford, M.J., Heine, B., and Johnson, M., *Origin of SNC Kaersutitic Amphibole: Experimental Data*

Schultz, P.H., *Early Cratering Rates and the Nature of the Martian Cratered Uplands*

Scott, D.H., and Tanaka, K.L., *Documenting Volcano-Tectonic Episodes in Mars' Stratigraphic Record*

Shuyen, C., and Zhongliang, W., *An Introduction to the Historical Records about Mars*

Singer, R.B., *Surface Composition of Mars from Earth-Based Observations*

Thompson, T.W., *Mars Earth-Based Radar: 1986 Results and 1988-1990 Opportunities*

Treiman, A.H., *Crystal Fractionation in the SNC Meteorites: Implications for Surface Units on Mars*

Walsh, P.A., Blaney, D.L., and McCord, T.B., *Martian Surface Analogs: Laboratory Spectral Studies in the Mid Infrared*

Wilhelms, D.E., and Baldwin, R.J., *Ridged Plains and Gullied Terrain in the Martian Uplands*

Woronow, A., *Variation in the Thickness of Ejecta Cover on Mars with Increasing Crater Density*

Zent, A. P., *Coadsorption of H_2O and CO_2 on the Martian Surface*

Zimbelman, J.R., *High Resolution Viking Orbiter Images: A Useful Data Source for Testing the Viability of Geomorphic Processes Attributed to Martian Landforms*

Ridged plains in Sinai Planum (608A43)

PLANNING FOR FUTURE MEVTV MEETINGS

—Sean Solomon
Chairman, MEVTV Steering Committee

All of us on the Steering Committee hope that the December Workshop on "The Nature and Composition of Surface Units on Mars" will provide a model for the level of scientific exchange and stimulation that will characterize future MEVTV meetings. We would like to hold one major MEVTV Workshop in 1988 and one in 1989, as well as one or two smaller working group meetings called each year to discuss a more focused topic. We also hope to utilize national meetings (AGU, GSA, LPSC) to organize special sessions on themes appropriate to the Project.

An extended discussion of future meeting topics occupied a major portion of the Steering Committee meeting on 27 September at the LPI. It was decided that the topic of the next major MEVTV Workshop should be the evolution of volcanic styles and mantle outgassing on Mars. Several recent studies have led to the suggestion that, both globally and at individual large constructs, explosive volcanic eruptions have been more important early in the geological evolution of Mars than during its more recent history. If this variation is due to a secular

change in the volatile content of mantle-derived magmas, as some simple physical models of eruption conditions suggest, then the record of evolving volcanic styles on Mars may offer important clues to the outgassing history of the planet. A meeting on this topic, central to the themes of the MEVTV Project, should be scientifically both exciting and timely. A planning committee for the Workshop on this topic, probably to be held next fall, is currently being formed.

A second important topic for a future MEVTV meeting is the earliest volcanic and tectonic history on Mars. Included within this theme are the formation of the hemispherical dichotomy in elevation and terrain types, the role of large impacts in localizing subsurface heating and outgassing, and the state of stress in the martian lithosphere before the development of the Tharsis and Elysium volcanic provinces. Herb Frey (NASA Goddard) is chairing a MEVTV Working Group on this topic. The goals of the Working Group are

. . . the record of evolving volcanic styles on Mars may offer important clues to the outgassing history of the planet.

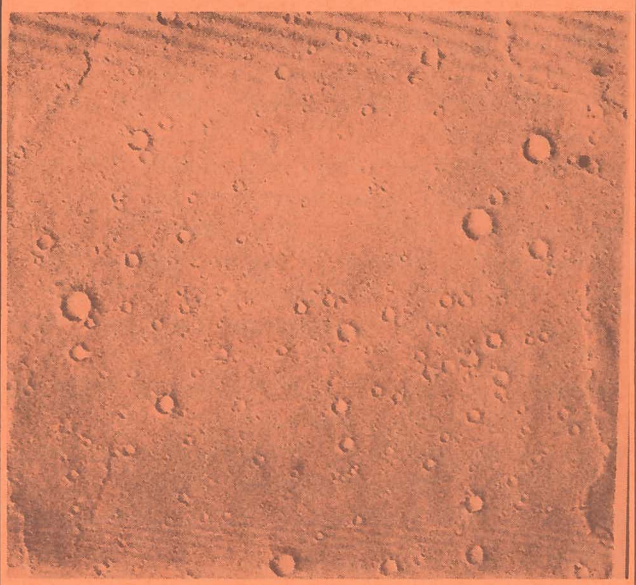
to define the important scientific issues concerning the earliest tectonic and volcanic evolution of Mars that can be addressed with existing data and theory, and to stimulate work on those topics among the MEVTV community. It is expected that the Working Group may organize small discussion meetings or special sessions at national conferences, possibly leading to a larger workshop in 1989 or later.

Several additional topics for future meetings were identified at the MEVTV PI meeting in March. These include the origin and development of Tharsis and Elysium, the formation and evolution of large rift structures, martian polar wander, and changes in the lithospheric state of stress and tectonic style with time. This list is not exhaustive, and further suggestions from the community are welcome.

If you think that a planning effort for a future workshop for interdisciplinary work should be initiated, do not be shy about making such a suggestion or volunteering to lead the effort. The Steering Committee looks forward to hearing of your ideas concerning the direction of future MEVTV meetings.

MEETING IN MOSCOW CELEBRATES SPACE ACHIEVEMENTS

The Soviet Union hosted a meeting in early October to celebrate the thirtieth anniversary of the Sputnik 1 launch, which occurred on October 4, 1957. The meeting was attended by scientists and administrators from around the world, including a delegation representing NASA and the United States. A member of the U. S. delegation, who asked to remain anonymous, indicated that the meeting concentrated on the celebration of achievements in space rather than on detailed scientific or technical presentations. When asked if there were any new revelations concerning future plans, the delegate said that essentially all of the information presented during the public sessions had been reported previously at other meetings or in periodicals.



Viking Lander 1 site (dot) from 315 km altitude (452B11)

MECA WORKSHOP: "DUST ON MARS, III" SEPTEMBER 21-23, 1988

Preliminary arrangements have been made for the third MECA (Mars: Evolution of its Climate and Atmosphere) workshop on the subject of dust on Mars. The workshop will be held at the Stanley Hotel in Estes Park, Colorado. The next mailing for the workshop will be sent out in early April, 1988. There will be a call for abstracts, due July 15, 1988, included in the April announcement. To preserve this as an interactive workshop rather than a formal conference, the number of oral presentations will be limited. Depending upon the number of abstracts received, this may require the program committee to assign some abstracts to a poster session. If you are interested in being included in the next mailing, please contact either LeBecca Turner at the LPI Projects Office (713-486-2158) or Steve Lee, the workshop organizer, at the University of Colorado (303-492-5348).

MARS REPRINTS/PREPRINTS AVAILABLE THROUGH THE LPI

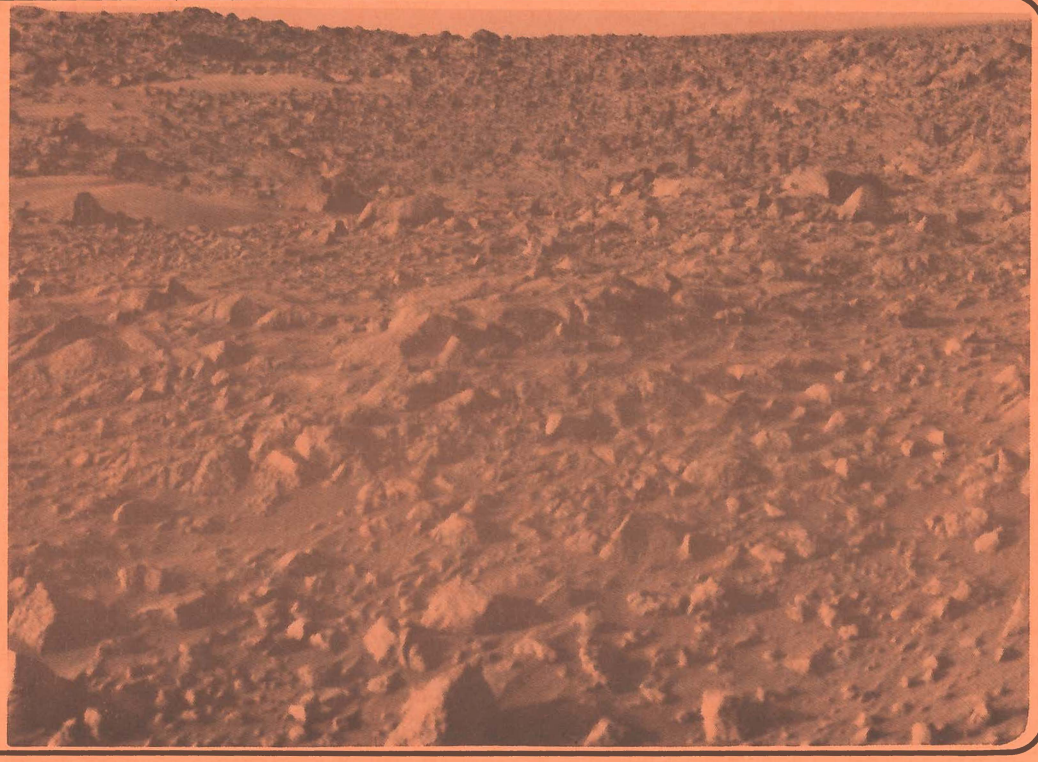
A Mars preprint/reprint distribution service, started during the MECA Study Project, will be continued as part of the MEVTV Study Project. Any paper whose scope is encompassed by the research objectives of the MEVTV Study Project, and whose authorship includes at least one member of the Study Group, is a candidate for distribution. Preprints (one unstapled copy) should be submitted in their final form. All duplication will then be provided by the LPI. Reprints should be supplied in quantity (preferably at least 20 copies) by the author. As new papers are received, their titles will be added to the list of available publications. Requests for copies should be addressed to the Editor.

Current Holdings: (R) - reprint, (P) - preprint

Clifford, S.M. (1987) Polar basal melting on Mars, *J. Geophys. Res. 92,* 9135-9152. (R)

Greeley, R., and P. D. Spudis (1981) Volcanism on Mars, *Rev. Geophys. Space Phys. 19,* 13-41. (R)

Greeley, R. (1987) Release of juvenile water on Mars: Estimated amounts and timing associated with volcanism, *Science 236,* 1653-1654. (R)



Viking Lander 1 site (12A010)

Mouginis-Mark, P.J., L. Wilson, and J.R. Zimbelman (1987) Polygenic eruptions on Alba Patera, Mars: Evidence of channel erosion on pyroclastic flows, submitted to *Bulletin of Volcanology*. (P)

Theilig, E., and R. Greeley (1986) Lava Flows on Mars: Analysis of small surface features and comparisons with terrestrial analogs, *Proc. 17th Lunar Planet. Sci. Conf.*, in *J. Geophys. Res. 91*, E193-E206. (R)

Wilson, L., and P.J. Mouginis-Mark (1987) Alba Patera, Mars: Volcanic input to the atmosphere, submitted to *Nature*. (P)

PARTICIPATION IN MEVTV

An invitation is extended to join the MEVTV Study Group. If you are conducting research which you consider relevant to the goals of MEVTV but are funded via other sources and would like to join the Study Group, please let us know. Simply write to the Steering Committee through the LPI Projects Office outlining the nature of the relevant research so that your name will be added to the mailing list. Please include your electronic mail addresses with your letter.

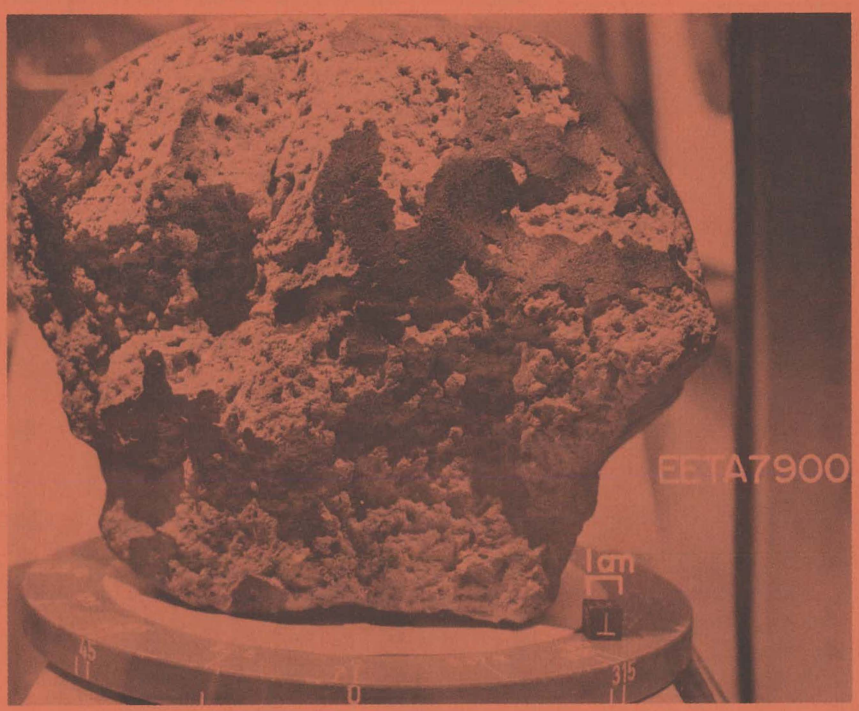
MEVTV ELECTRONIC MAIL LIST

In order to expedite the exchange of information among the participants in the MEVTV Study Group, a list of electronic mail addresses is being compiled at the LPI. The list presently contains twenty eight names, representing a variety of computer networks. Several nodes now exist which facilitate the transmittal of mail between networks. Along with the list of mail addresses, LPI can provide a list of examples showing how to communicate between various networks. If you would like to be included on the MEVTV electronic mail list, simply send a message to Jim Zimbelman containing your mail addresses. The following examples show how to send a message to LPI via three separate networks.

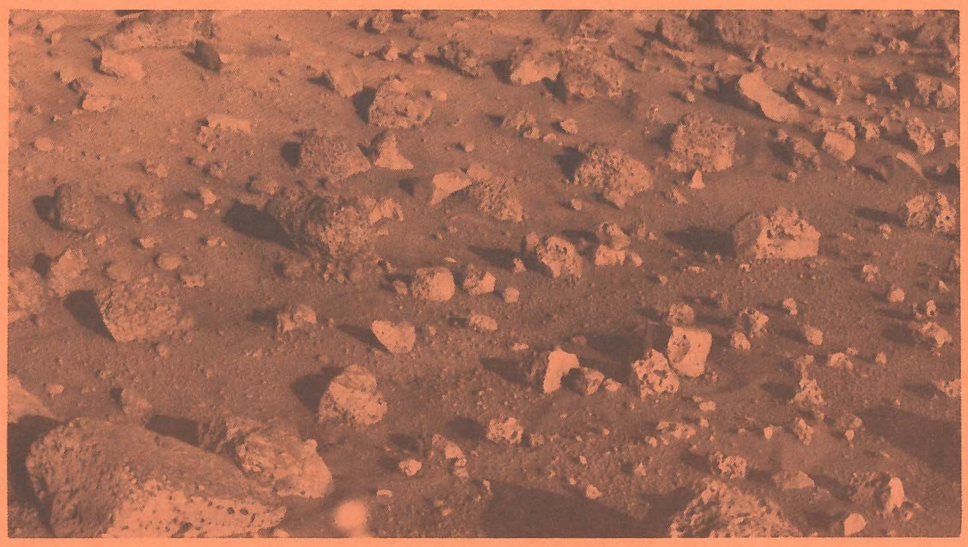
From: SPAN—
To: LPI:: ZIMBLEMAN

From: BITNET—
To: ZIMBLEMAN%LPI.SPAN%VLSI.JPL.NASA.GOV@WISCVM.WISE.EDU

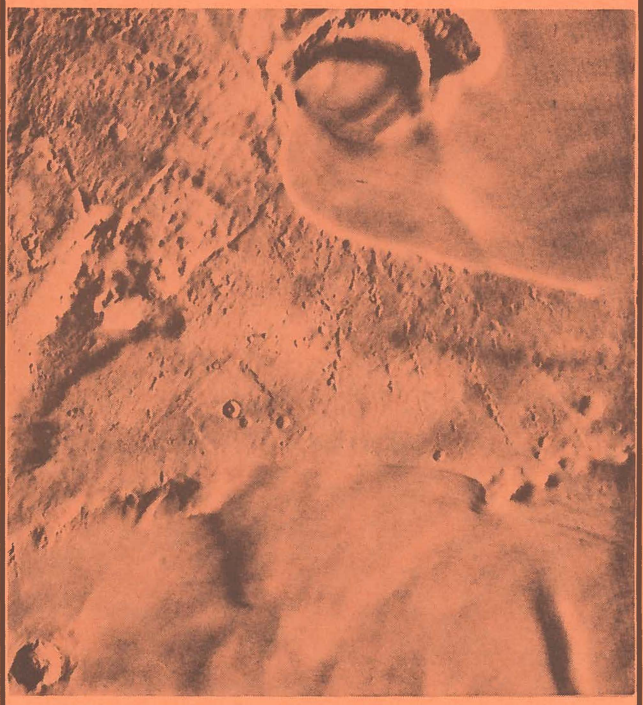
From: Telemail—
To: [POSTMAN/NASA]
(First line of text) TO: ZIMBLEMAN@LPI.SPAN



SNC meteorite found in Antarctica



Viking Lander 2 site in Utopia Planitia (21B054)



South polar layered deposits (383B50)

NEWSLETTER CONTRIBUTIONS

In an effort to keep the Study Group informed about the latest meetings, activities, and other news relevant to MEVTV's goals and Mars in general, contributions to the MEVTV Newsletter are cordially invited. Contributions should be brief and written in Newsletter style. Submissions may be either typewritten or transmitted as standard ASCII text files over the telephone. To send contributions via electronic mail, your modem should be set to either 300 or 1200 baud; to reach the LPI VAX dial (713)-486-8214 or 486-9782. The username is "MAILBOX," the password is "LPI" (after each entry hit RETURN). When the prompt "$" appears on your screen, type "MAIL." All contributions should be addressed to "ZIMBELMAN." When you complete your message hit CTRL-Z and then type "EXIT" in response to the prompt ">." When the symbol "$" returns to your screen, type "LOG" and then hang up. For electronic mail, any PC or terminal will theoretically work; however, best compatibility is achieved by using or emulating a DEC terminal.

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