dumping, for fear that the fibers could cause cancer in people who drink water containing them. Gross maintained that the fibers were harmless, but Reserve lost the case and is now appealing. A report by the Academy subcommittee might well play a key role in the outcome of this and similar court cases, as well as in the drafting of additional environmental legislation.

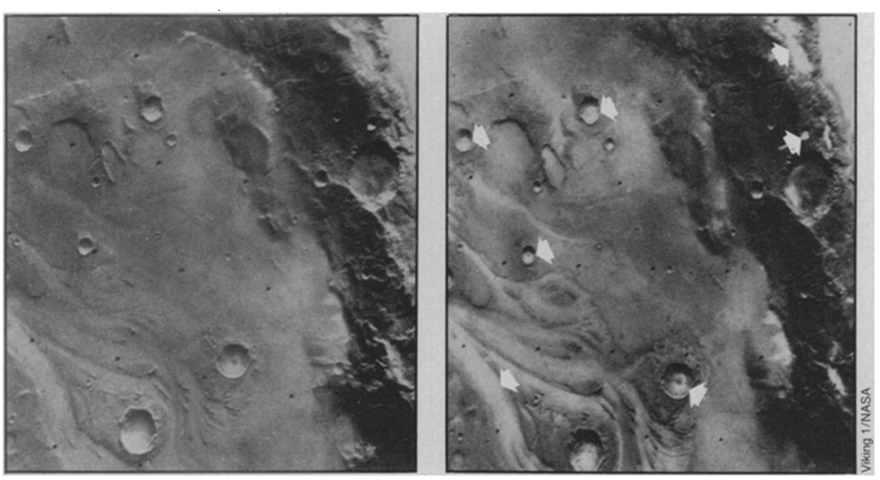
Specifically, Gross is accused of improperly telling the company what conclusions the subcommittee had reached, before they were available to the public. Earlier he had agreed to turn over draft documents of deliberations to the company, and an internal company memorandum noted that "we should have some opportunity to assist Dr. Gross in evaluating the contents of those reports."

All this came to light when copies of this and other memoranda were made available to EPA lawyers by the court. Gross explained that he did not at first realize that the committee proceedings were meant to be confidential, and that when he found out they were, he informed Reserve that he could not supply the draft reports. Nevertheless, he did subsequently pass on the tentative conclusions in a telephone conversation. According to one news report, Gross received $75 an hour for the time he spent talking to Reserve Mining Co. representatives.

Charges of conflict of interest are not new at the Academy—in some fields it would be virtually impossible to obtain the services of experts who did not have some vested interest in the outcome of a report. To keep committee deliberations above board, then, a "bias statement" is required from members to disclose possible conflicts, and members are expected not to use privileged information for personal gain. In his bias statement, Gross did not mention having been a consultant for Reserve Mining, but an Academy spokesman told SCIENCE NEWS that his subsequent actions led to his requested resignation.

The official NAS statement concerning the affair cites a "serious" conflict of interest by Gross, and behavior "inappropriate and incompatible with responsibilities of a member" of its committees. The statement also says that a review is continuing into how the matter originally arose so that future incidents can be prevented. This will probably mean tightening up the working definitions of conflict of interest and inappropriate conduct, as well as a more rigorous disclosure procedure. □

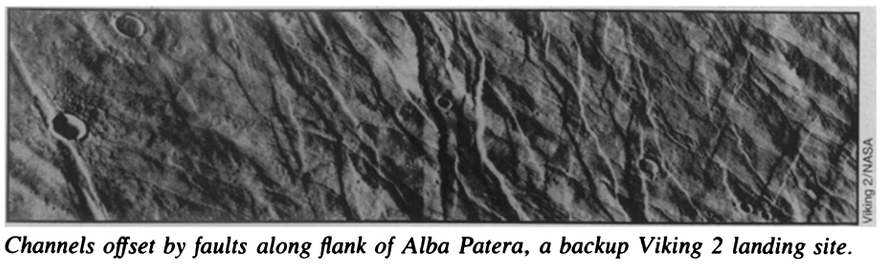
Viking: New types of Mars terrain



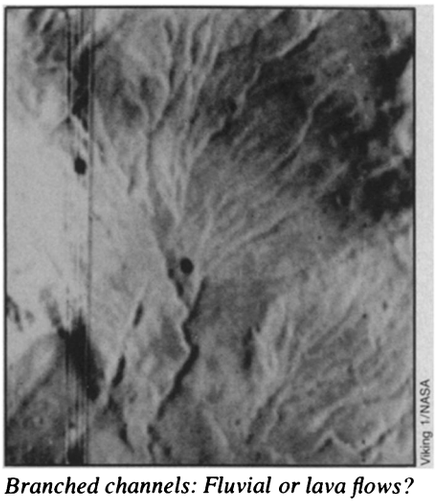
Two photos, 30 minutes apart, show development of water fog in low areas (arrows).

Scientists scanning photos from the two Viking orbiters to choose a safe site for the Viking 2 lander have now discovered, in the process, at least four types of Martian terrain that have never been seen on the planet.

In the Plains of Acidalia, the region that includes the second lander's original primary site in Cydonia, there is an area much like the "collapsed terrain" known in other parts of Mars, believed to have been created when permafrost suddenly melted out from underneath it. In the previously known cases, however, the abruptly dropped surface has been strewn with a chaotic jumble of huge blocks, perhaps a consequence of the rapid subsidance. The newly found terrain has all the proper symptoms of collapse—sharp borders, mottled floors, etc.—but it is mysteriously short of the blocky rubble. It is possible, says site-selection team head Harold Masursky of the U.S. Geological Survey, that the region simply collapsed more slowly, minimizing the resulting chaos. But not even the collapsed terrain with blocks is well understood yet. Slow collapse is certainly well enough known in the permafrost regions of earth, however. Engineers working on the Alaskan pipeline or on large-scale projects in Siberia have to deal with it all the time.



Channels offset by faults along flank of Alba Patera, a backup Viking 2 landing site.



Branched channels: Fluvial or lava flows?

Elsewhere in Acidalia, the photos from orbit have revealed several strange groups of curving parallel ridges so neatly ordered that Masursky compares their appearance to that of contour plowing on earth. Except that they're hundreds of times larger. On earth, says Masursky, similar alignments have resulted from surface slumping adjacent to fault lines, but seldom, if ever, with such "geometric fidelity."

So much exotic stuff has been turning up in Viking's crisp photos of the former first-choice site region, in fact, that it may well be the first to be dropped from the list. Still another kind of hitherto unknown surface feature for example, is the "measles." Similar features spotted in the Chryse region during the search for the first lander's site were identified as "pedestal craters," small craters where molten ejecta presumably formed broad-shouldered, hard blankets that preserved sharp-cornered mesas when the surrounding material was eroded away. Cydonia's measles were at first thought to be the same phenomenon, says Masursky, until closer scrutiny revealed a softer, more stoop-shouldered morphology. Now, he says, it seems more likely that they resulted from rocks thrown out by larger impacts nearby, crashing into tens of

meters of dust on the surface and compressing some of the dust into solid blocks, clustered around the secondary impact craters. Wind then presumably blew most of the loose dust away, leaving only what was piled around the compression blocks and rounding the corners to form the observed mounds. Even Viking's sharp images can't account for all the blocks, however, and if there's one thing the site-seekers don't like in their quest for a safe berth for lander 2 it's a mystery.

Even the backup site in the region of the huge saucer called Alba Patera, tempting to some geologists because of the possible youth of its fluvial features, has its curiosities. The latest photos have revealed thin, winding lava channels with nearly the same form as that of others thought to be tributaries cut by flowing water. This doesn't mean that the many vast fluvial features already found have suddenly been reassigned a new origin; they're still thought to be water-formed, says Masursky, with only one category of small rilles in confusion. "But," he says, "I'm no longer as sure as I once was that for each little channel I can tell whether it's a lava channel or a fluvial channel." Furthermore, he adds, there may be lava tributaries and *dis*-tributaries both.

Some of Viking's findings, meanwhile, are less surprising than reassuring, a distinction sometimes masked by the ready ability of some researchers to take new discoveries into account. Recent photos from the Viking 1 orbiter, for example, provided the first visual evidence of moisture—water—in transit between the surface and the atmosphere, a gratifying datum in view of previously observed diurnal fogs and hazes. A view of the surface taken 80 minutes after sunrise showed a number of bright spots apparently representing water-ice vapor just above the surface over several craters and channels that had no such spots in a photo of the same area made 30 minutes before.

"What it suggests," says William A. Baum of Lowell Observatory, "is that some significant fraction, at least [of the water in the atmosphere], is evolved probably daily from these low spots and probably returns again by some process to the surface."

Another finding with a ready home was the observation, by chief lander meteorologist Seymour L. Hess of Florida State University, of weeks of slow but steady drop in the surface pressure of the atmosphere. It fits right in, he says, with the freeze-out of carbon dioxide at the Martian south pole, where it is winter. The trend has not been countered by sublimation of CO_2 from the polar cap in the summery north because the solstice has just passed and the north pole is near its minimum.

Meanwhile, back at the lander, attention focused last week on the search for organic molecules in the soil by Viking's gas chromatograph/mass spectrometer (GCMS). The first analysis (SN: 8/14/76, p. 99) in which the test cell was heated to 200°C, failed to confirm even that a soil sample was inside. The second run, at 500°C, indicated the presence of a sample by recording the release of "copious amounts" of water, according to GCMS team leader Klaus Biemann of the Massachusetts Institute of Technology, and some carbon dioxide, but not of any complex organic material. Simpler organics, he said, would require rigorous computer analysis to detect them through the confusing presence of so much water. Because so much more water was given off by the sample at 500° than at 200°, Biemann theorized that the water may have come from hydrated minerals rather than from water molecules adsorbed onto the sample grains. Plans to analyze a second sample were thus modified to include a 350° run, in hopes of finding a temperature that would drive off organics without freeing the water from its mineralogically bound state.

As the lander's three biology instruments were being readied for their various second cycles and control runs, some of the mission scientists addressed themselves to the question of whether life that instruments would recognize might be possible even if there is too little organic residue for the GCMS's nominal detection limit of one part per million. The answer of Viking chief biologist Harold P. Klein is "yes." In earthly soils, he pointed out, most of the organic material is from the remains of past generations of living creatures; only a tiny fraction is from currently living things. One could imagine, says Klein, that on Mars, "you don't have a lot of dead bodies all around the place." Some process that transfers the vital carbon into the atmosphere, for example, could rob the GCMS of most of its intended subject matter. Or, the living Martian microorganisms might be feeding on—recycling—their ancestors. □

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BIRDS OF PREY—Michael Everett—Putnam, 1976, 10x12, 128 p., 130 color photographs, $12.95. Starting with the fossil record, discusses the many variations within the Order Falconiformes, their physical characteristics, hunting and feeding, the breeding cycle, migration, and their state in the world today. Species list included.

THE BIRTH ORDER FACTOR: How Your Personality is Influenced by Your Place in the Family—Lucille K. Forer with Henry Still—McKay, 1976, 315 p., $9.95. Practicing clinical psychologist discusses birth order in relations to personality patterns, achievement, social relationships, marriage and parenthood.

THE BOWELS OF THE EARTH—John Elder—Oxford U Pr, 1976, 232 p., photographs, diagrams, $13.25. This introductory geophysics text with glossary index is a highly readable and original book, views the global dynamical processes of the geology of our planet from its interior—as a reactor and cauldron, producing global displacements, crustal retreading, rock-mushrooms, magma clocks, and crustal broilers.

ENCYCLOPEDIA OF ASSOCIATIONS, Vol. 1: National Organizations of the U.S.—Margaret Fisk, Ed.—Gale, 1976, 10th ed., 1,418 p., $64. Gives detailed information not only about all nonprofit American national membership associations, but also includes foreign groups, some types of U.S. local and regional groups, and citizen action groups.

INFRARED: The New Astronomy—David A. Allen—Halsted Pr, 1976, 228 p., photographs, diagrams, tables, $12. After brief historical section, the book describes the techniques of infrared astronomy, and separate chapters deal with the many unanticipated and unusual discoveries made during the last decade.

SCIENCE AND ITS PUBLIC: The Changing Relationship—Gerald Holton and William A. Blanpied, Eds.—Reidel Pub, 1976, 320 p., $26; paper, $11. Essays examine some of the serious critiques of 20th-century science in the more industrialized countries, aimed at stimulating research into the significance of arguments made from both within and outside science.

SIBERIA TODAY AND TOMORROW: A Study of Economic Resources, Problems and Achievements—Violet Conolly—Taplinger, 1976, 284 p., 12 plates, diagrams, maps, tables, $20. Attempts to present a balanced account of the Siberian economy as it emerges from a critical study of the available Russian material.