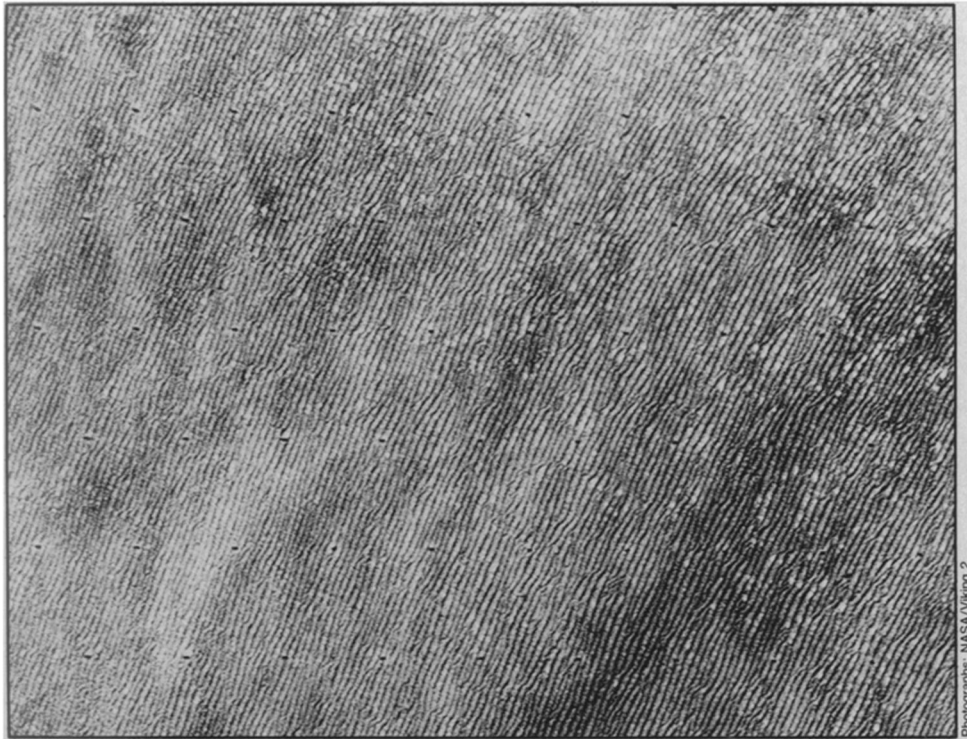
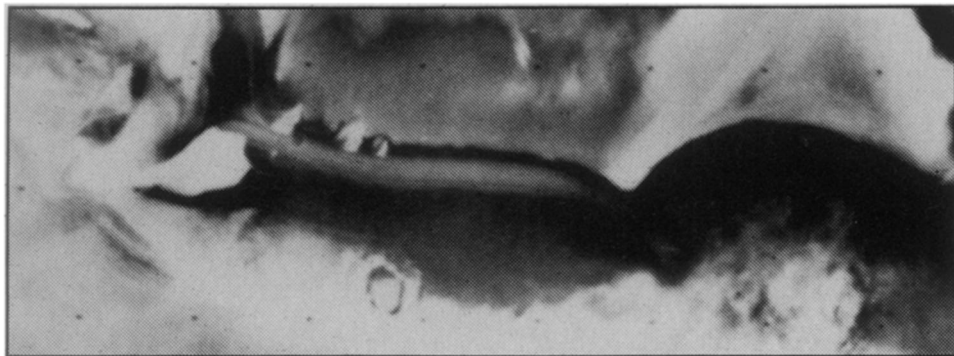


# Mars Album 4

The sweeping sands of the red planet

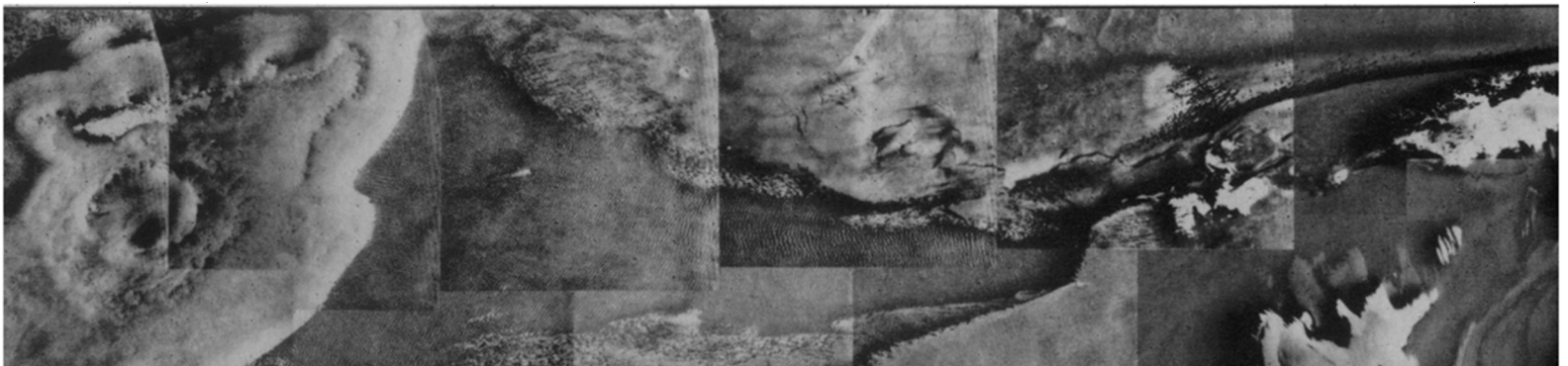


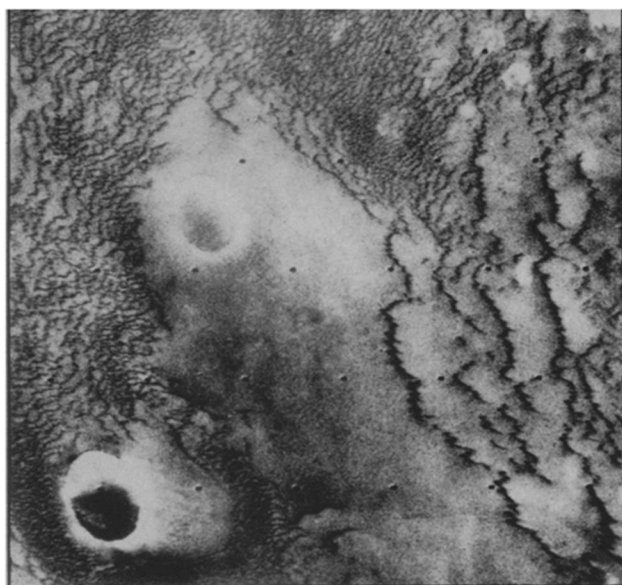
*The fabled sands of Mars are nowhere more spectacularly arrayed than in the vast belt surrounding the planet's north polar cap, described by one Viking scientist as possibly "the largest dune field in the solar system" (SN: 10/30/76, p. 276). The remarkably regular swath shown here—even the breaks in the main structure seem to follow a pattern—spans nearly 100 kilometers, presumably formed by sweeping, circumpolar winds. The white spots are frozen water; the regularly spaced dark ones are "reseau marks" produced in the camera system for photometric calibration. Eight football fields would fit end to end between one dune crest and the next.*



*Smooth, sweeping cliff more than 60 kilometers long is another polar spectacular.*

*Dark sand blown in from Chasma Boreale (below) opens to enclose a 200-kilometer-wide delta of continuous dunes that becomes irregular and mottled to the south. The delta's western edge lies beneath a more recent deposit of water ice. The 20-kilometer crater showing dimly through the ice is bordered on the north and east by what may be either a scalloped cliff or a row of raised hummocks.*





What looks like terracing is rather the patterning of numerous dark, scalloped dunes against a lighter background, the contrast enhanced by computer processing. As on earth, the varied spacing between dunes in this region can begin with the subtlest of irregularities in the bottommost layers of sand, which are then magnified with successive depositions over hundreds of thousands of years. The two conspicuous ice-and-sand-covered craters are about eight kilometers across.



Classic "barchans," or moving, crescent-shaped dunes, dominate this pair of isolated dune-rows. Driven by winds, barchans wander across the sandy wastes of earth and Mars with the "horns" of the crescents pointing the way. The convex, windward slope of such a formation is almost always the more gentle rise, as the wind pushes sand grains up and over the crest to form leeward slopes that typically range on earth from about 32° to as much as a steep 38°. The three large barchans shown at the upper end of the right-hand dune-row each span nearly a kilometer from horn to horn.



Two craters, each hundreds of meters across, lie nearly invisible beneath the blanketing Martian sands. The inexorable dunes are believed capable of completely erasing such former surface features in 100,000 years or less. In the million or so square kilometers of northern, near-polar terrain surveyed by Viking, hundreds of fresh, uncovered craters 150 meters across or larger should have been visible to the spacecraft's cameras; instead, says Viking geologist James A. Cutts, thanks to the shifting sands, there are almost none.

Like a tie-dyed desert, this region of nearly flat sands is marked in jagged patterns by the mixing and re-layering actions of the wind, turning over lighter and darker surface material. Some of the "classic" surface features observed by early astronomers were formed in just this way, though the smaller-scale features shown here could easily be gone tomorrow.



Previous Mars Albums have appeared in the SCIENCE NEWS issues of July 31, Aug. 28 and Oct. 2.