# MARS

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With 114 collaborating authors

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*About the cover:*

A panorama obtained by the Viking 2 Lander. This mosaic was constructed from images taken at different times, so that the shadows of the Lander are discontinuous and the direction of rock shadows is inconsistent. This mosaic was acquired by camera 1, and covers the left and central portions of the region accessible to the Viking 2 sampler arm, which is shown (discontinuously) at the extreme right of the image. An accumulation of drift material can be seen just above and to the left of the sampler housing. The white object extending to above the horizon in this image is the meteorology boom; its shadow can be seen slightly to its right. The colored shadows of some rocks results from changing illumination direction between data acquisition in different bands. The curved horizon in the initial mosaic resulting from the tilt of Lander 2 has been removed from this image, revealing a very flat horizon. Presuming that the rocks in this region are approximately uniformly distributed, their variation in apparent density in the background indicates gently undulating terrain. These images were obtained early in the Lander 2 mission, and show two Lander trenches, one near the middle of the image to the left of the large rock informally named Centaur, and a smaller trench to the left of the rock "ICL" (see also Fig. 2 in the nomenclature appendix, which was acquired by Lander camera 2). Image processing by E. Guinness and M. Dale-Bannister at Washington University in St. Louis. Final image production at U.S.G.S., Flagstaff.

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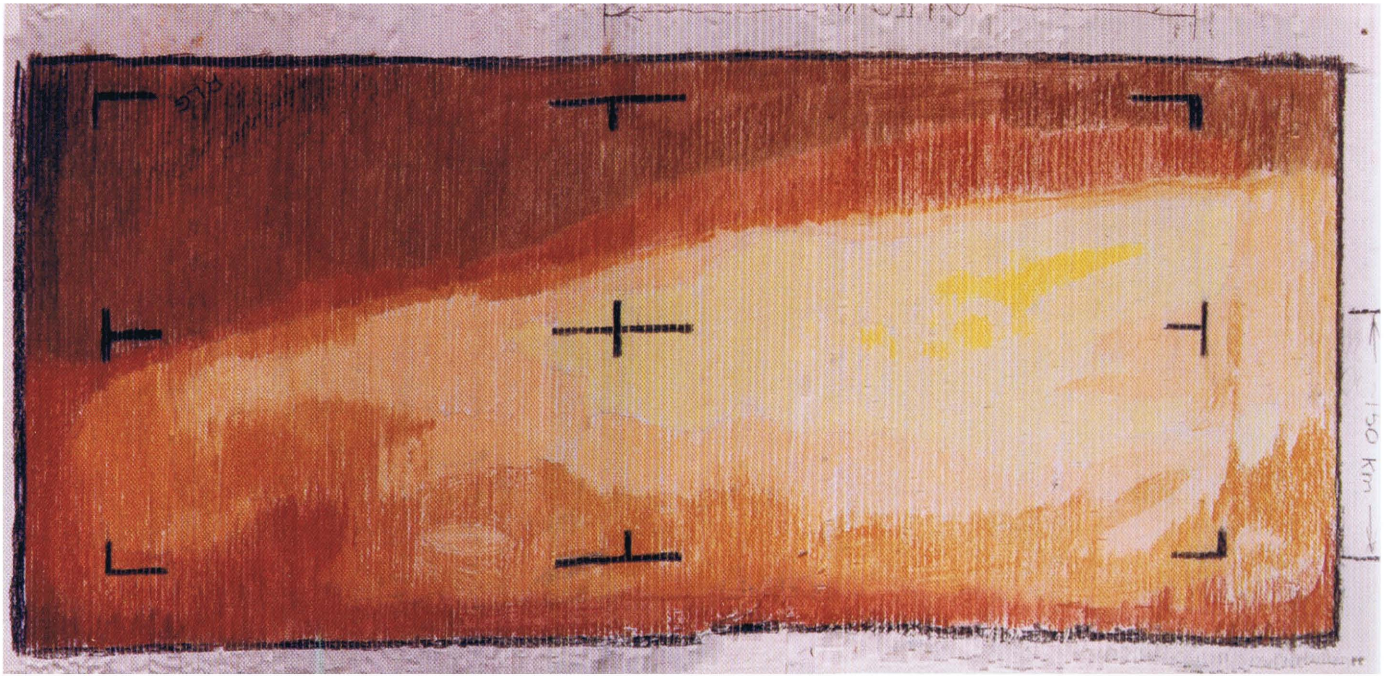


Plate 2. The initial version of Mariner 4 Picture Number 1 — the first close-up photograph of another planet ever taken. With a telemetry transmission rate of 8.33 bits per second, the 22 recorded photographs required four days to be sent back to Earth. As a communications dropout had occurred close to the moment of encounter, it was not known whether any pictures had actually been recorded, so the Mariner Product Manager directed that this picture be assembled in real time as the data came in. The numbers representing the brightness of each pixel in the picture were printed out in a vertical column on a strip of adding-machine tape by a computer at JPL. As the data from each scan line were completed, technicians cut the paper strip and pasted it onto a plywood sheet, overlapping the strips so as to produce one large 200 × 200 matrix of numbers. Using colored chalk, they produced a kind of false-color contour map of the brightness of this historic picture. For many years it hung in the administration building at the laboratory, but recently it was moved into the Space Flight Operations Facility. See text p. 78.