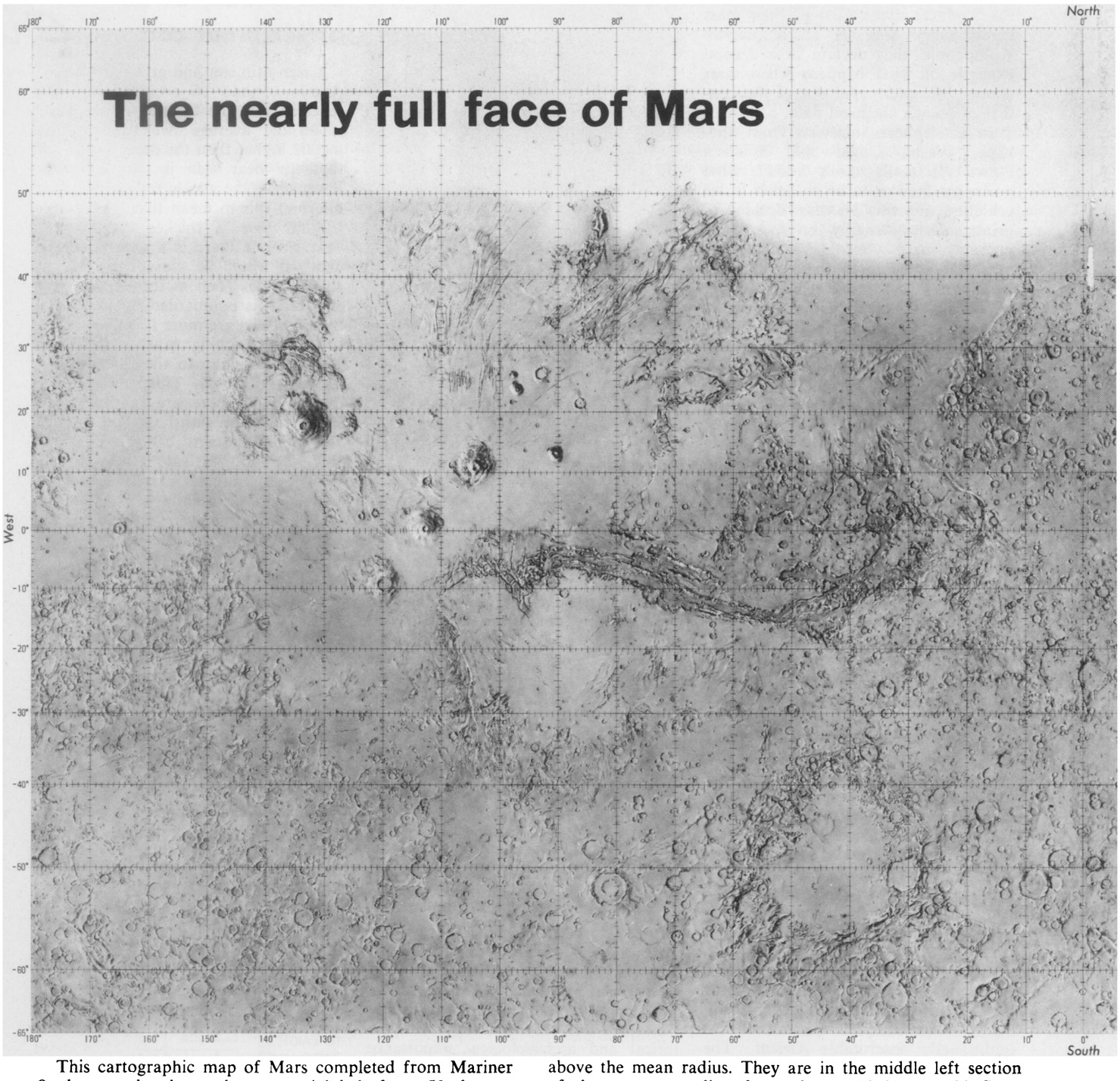
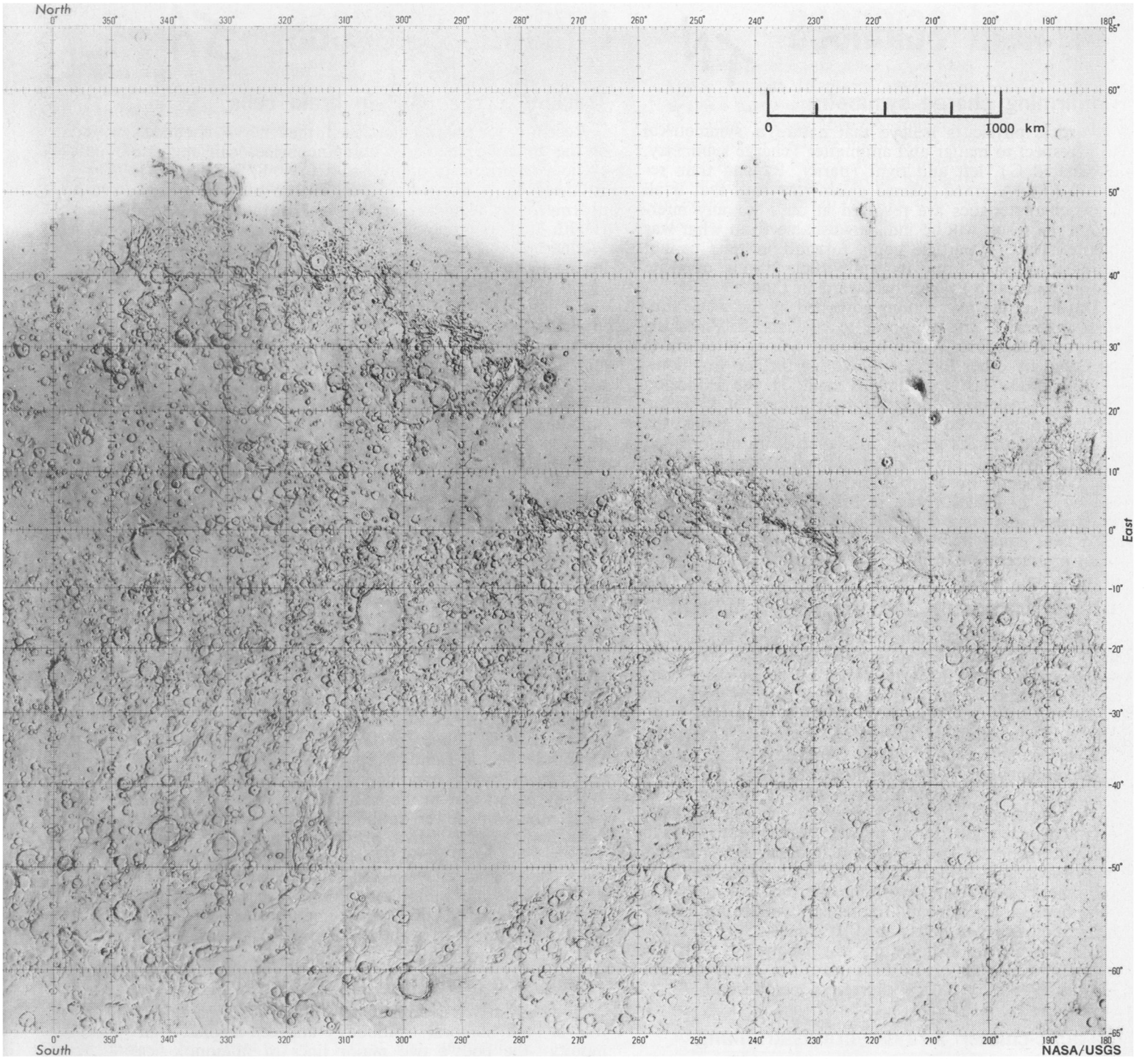



This cartographic map of Mars completed from Mariner 9 photographs shows the equatorial belt from 50 degrees north to 65 degrees south. It is the most detailed comprehensive map of Mars yet derived from the Mariner observations.

Mars, once thought to be moon-like, is actually a geographically complex planet. It has elevation differences of 15 kilometers and at least five different geological areas. With the exception of the northern lowlands and the polar regions, all are visible on this map.

Harold Masursky of the U.S. Geological Survey believes that the oldest surface areas are the densely cratered regions analogous to the lunar highlands. These surround Hellas, the large circular basin in the lower right section. Hellas is the largest basin on Mars, almost twice as large as the largest on the moon, Mare Imbrium. The second region Masursky calls the "great tablelands" that rise 8 kilometers above the mean radius. They are in the middle left section of the map, extending from about 20° N. to 30° S. at about 60° to 100° W. He compares them to the Tibetian or Coloradan plateaus. Cutting through the middle of the plateau is a great fault or rift valley. The best counterpart to this extensive zone on earth is the East African fault system that extends from the southern tip of Africa to the Dead Sea. Parallel to this Martian fault system are lines of volcanic vents formed along the fault zone. At the western end of the fault is the "chandelier region" (90° to 110° W.), characterized by intersecting fault valleys.

The third Martian region is called Amazonis. It is similar, says Masursky, to the young ocean basin floors on earth or Oceanus Procellarum on the moon. This region is northwest of the chandelier, in the upper left portion of the mapped area. It begins at the Tharsis ridge. Along the crest of Tharsis ridge are three huge volcanoes, known informally




as "North, Middle and South Spots." The terrain slopes down to the west. Sitting on the floor of this region is the huge volcanic mountain Nix Olympica (20° N. and 135° W.). From the base of Nix Olympica to Tharsis ridge is a difference in elevation of about 12 kilometers. By comparison, the distance from the floor of the Pacific Ocean to the tops of the volcanic peaks of Hawaii is about 10 kilometers. Northeast of Olympica there is what appears to be an eroded, faulted volcanic region. The northeastern plains in the upper right portion of the map can also be placed in the third geological category.

The fourth type of Martian terrain is the young layered polar deposits not visible on this map. (A map of the entire surface of Mars is now being prepared and should be out within weeks.) This weekend Mariner 9 will photograph the receding north polar cap.

The fifth category is best exemplified by an area just to the left of center in the map extending 10° S. to 20° N. and between 20° W. and 50° W. All along the northern edge of the high plateau, says Masursky, one can see stream channels that vary in size from very small to a kilometer in width and thousands of kilometers in length. They are highly braided tributaries. These sinuous channels could be the result of "ubiquitous water, or a fantastic series of volcanic channels that we do not understand," says Masursky.

Conspicuously absent is evidence of linear or folded mountain chains such as the Alps and the Appalachians.

In addition to these cartographic maps, scientists will make geological maps showing kinds and ages of rocks, topographic maps, wind-deposit maps, meteorological maps and finally a globe of Mars.

Scientists are now using Mariner 9 data to select candidate landing sites for the two Viking spacecraft in 1976.

*—Everly Driscoll*