

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

NOTES ON BASE
This is one map in a set of topographic map sheets covering areas of special interest on Mars at nominal scales of 1:1,000,000 and 1:250,000 (Batson, 1973). The major source of map data was the Mariner 9 television experiment (Masursky and others, 1970).

ADOPTED FIGURE
The frame of Mars used for the computation of the map projection is an oblate spheroid (flattening of 1/192) with an equatorial radius of 3393.4 km and a polar radius of 3375.3 km.

PROJECTION
The transverse Mercator projection is used for this sheet, with a scale of 1:1,000,000 at 10° longitude. Longitudes increase to the west in accordance with usage of the International Astronomical Union (IAU, 1971). Latitudes are geographic (de Vancouleurs and others, 1973).

CONTROL
Planimetric control is provided by photogrammetric triangulation using Mariner 9 pictures (Davies, 1973; Davies and Arthur, 1973) and the radio-tracked position of the spacecraft. The first meridian passes through the crater Ainy-Q (lat 5.19° S) within the crater Ainy. No simple statement is possible for the precision, but local consistency is 2 km.

MAPPING TECHNIQUE
A series of mosaics of Mercator projections of Mariner 9 pictures was assembled at 1:5,000,000. Shaded relief was copied from the mosaics and portrayed with uniform illumination with the sun to the west. Many Mariner 9 pictures besides those in the base mosaic were examined to improve the portrayal (Levinthal and others, 1973). The shading is not generalized and may be interpreted with photographic reliability (Inge, 1972).

Shaded relief analysis and representation were made by Jay L. Inge.

ALBEDO MARKINGS
The markings superimposed on the shaded relief were hand copied from pictures that were computer enhanced especially to show low frequency tone variation (Batson and Inge, 1976). The surface in these pictures is illuminated from a variety of angles from the camera line of sight. The markings therefore delineate boundaries of local brightness variations only and should not be considered as a true measure of albedo. No attempt was made to use Earth based telescope albedo data.

Airbrush portrayal of albedo markings was done by Jay L. Inge.

CONTOURS
Since Mars has no seas and hence no sea level, the datum (the 0 km contour line) for altitudes is defined by a gravity field described by spherical harmonics of fourth order and fourth degree (Jordan and Lorell, 1973) combined with a 6.1 millibar atmospheric pressure surface derived from radio-oscillation data (Klaum and others, 1973; Christensen, 1975). This datum is a triaxial ellipsoid with semimajor axes of A=3356.6 km, B=3393.3 km, and a semiminor axis of C=3376.3 km. The semi-major axis A intersects the Martian surface at long 185°.

The contour lines (Wa, 1975) were compiled from Earth-based radar determinations (Downs and others, 1971; Pettengill and others, 1971) and measurements made by Mariner 9 instrumentation, including the ultraviolet spectrometer (Inge and others, 1974), infrared interferometer spectrometer (Omata and others, 1973), and stereoscopic Mariner 9 television pictures (Wa and others, 1973).

Formal analysis of contour-line accuracy has not been made. The estimated vertical accuracy of each source of data indicates a probable error of 1-2 km.

COLOR
No attempt was made on the map to precisely duplicate the color of the Martian surface, although the color used does approximate it.

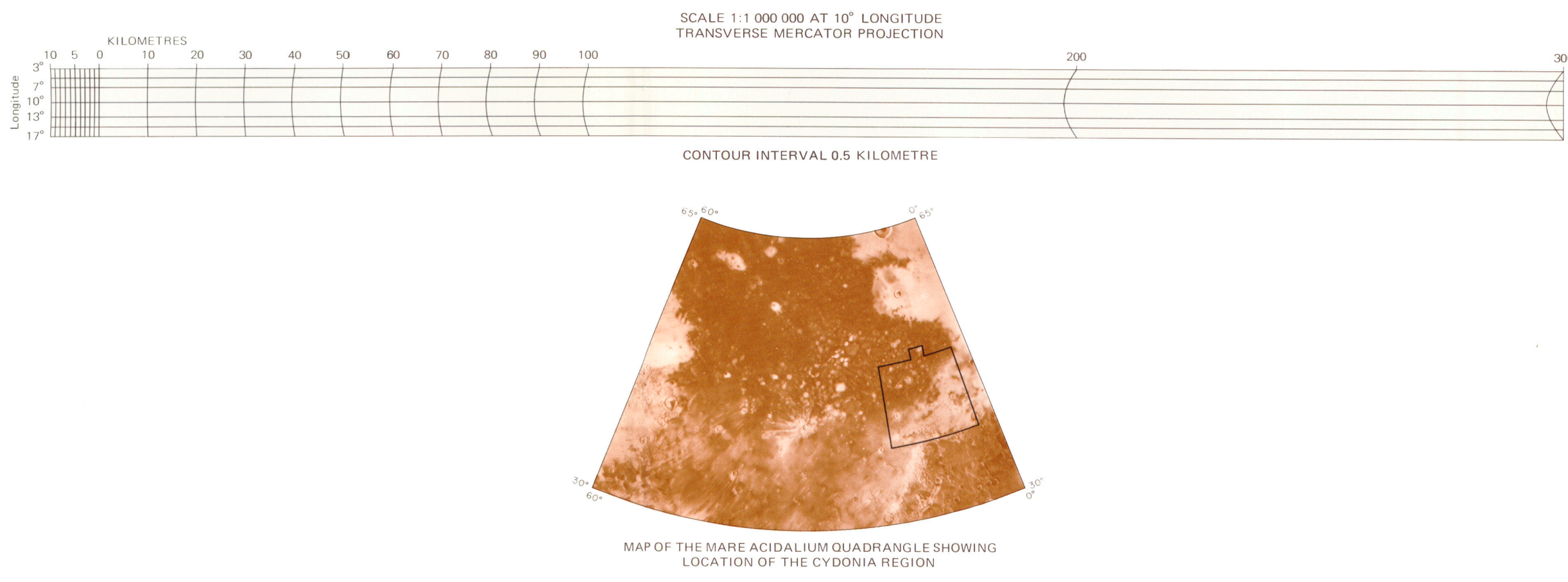
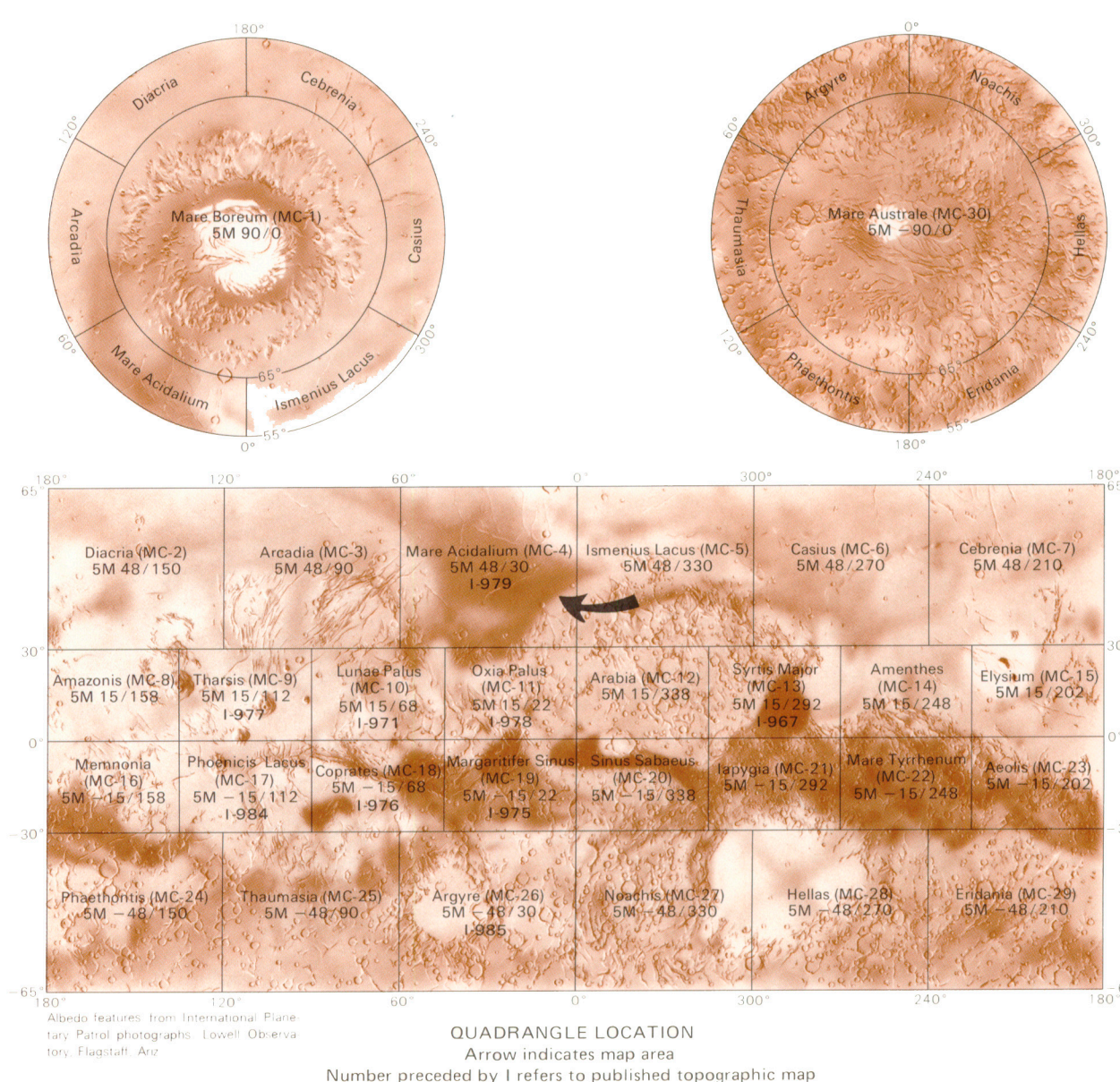
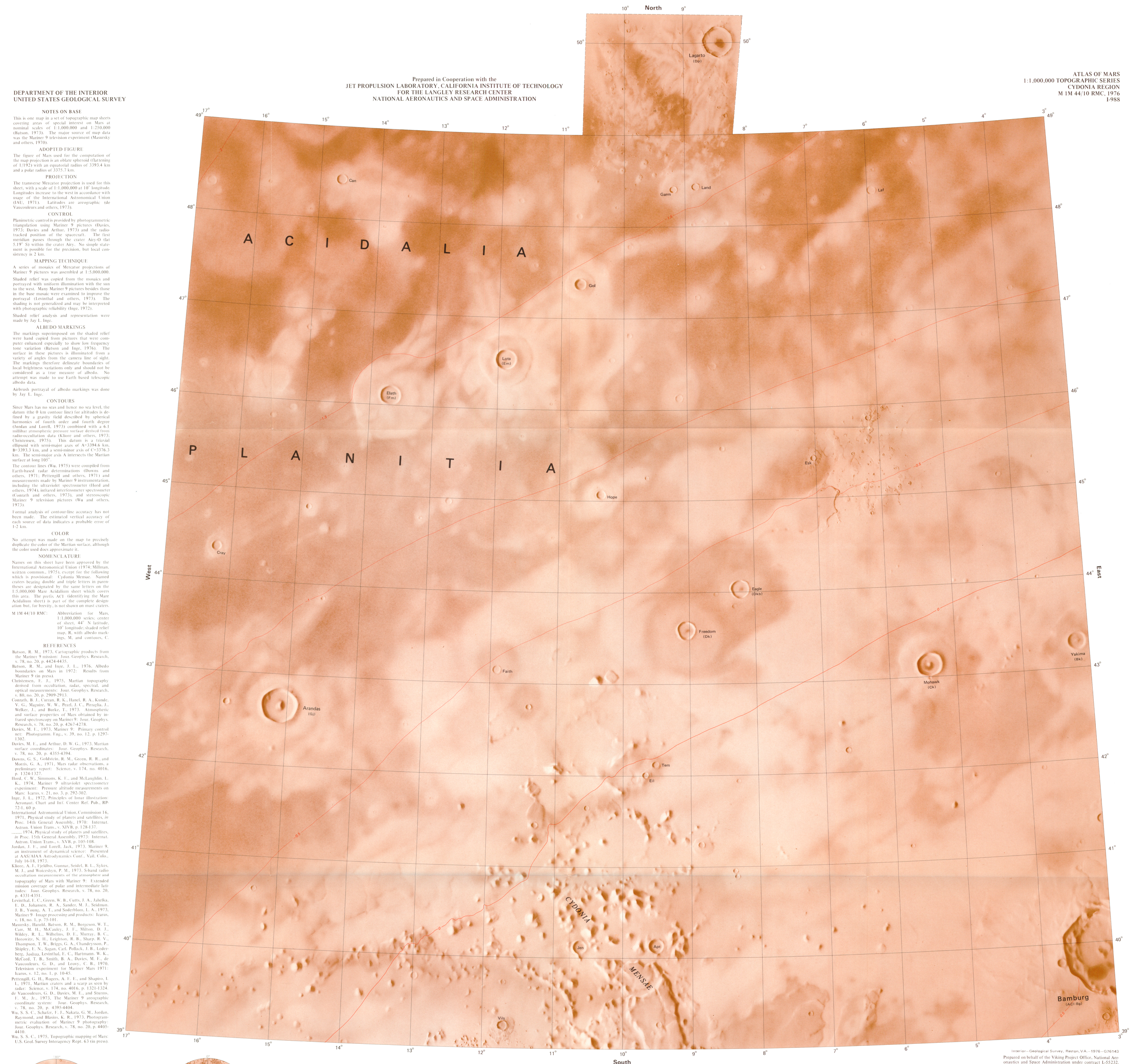
NOMENCLATURE
Names on this sheet have been approved by the International Astronomical Union (1974; Millman, written commun., 1975), except for the following which is provisional: Cydonia Mensae. Named craters bearing double and triple letters in parentheses are designated by the same letters on the 1:5,000,000 Mars Acidalium sheet which covers this area. The prefix ACI (identifying the Mars Acidalium sheet) is part of the complete designation but, for brevity, is not shown on most craters.

M IM 44/10 RMC: Abbreviation for Mars, 1:1,000,000 series, center of sheet, 44° N latitude, 10° longitude, shaded relief map, R, with albedo markings, M, and contours, C.

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ATLAS OF MARS
1:1,000,000 TOPOGRAPHIC SERIES
CYDONIA REGION
M IM 44/10 RMC, 1976
1-988



A-camera pictures		High resolution B-camera pictures	
Index No.	DAIS No.	Index No.	DAIS No.
1	12188517	1	12188552
2	9162624	2	9162609
3	9162604	3	9162619
4	9254609	4	9254609

Albedo pictures		DAIS No.	
Index No.	DAIS No.	Index No.	DAIS No.
1	12188517	1	9162609
2	9162624	2	9162619
3	9162604	3	9162609

TOPOGRAPHIC MAP OF THE CYDONIA REGION OF MARS
M IM 44/10 RMC
1976

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