

NOTES ON BASE
This is one map in a series of topographic map sheets covering the entire surface of Mars at nominal scales of 1:25,000,000 and 1:5,000,000 (Batson, 1973). The major source of map data was the Mariner 9 television experiment (Masursky and others, 1970).

ADOPTED FIGURE
The figure 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 3375.7 km.

PROJECTION
The Mercator projection is used for this sheet, with a scale of 1:5,000,000 at the equator and 1:4,136,000 at lat. 30°. Longitudes increase to the west in accordance with usage of the International Astronomical Union (IAU, 1971). Latitudes are areographic (de Vaucouleurs 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 Alys (lat. 5.19° S) within the crater Alys. No simple statement is possible for the precision, but local consistency is ±10 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 for improved 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 Patricia M. Bridges.

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 telescopic albedo data.

Airbrush portrayal of albedo markings was done by Patricia M. Bridges.

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 a spherical harmonics of fourth order and fourth degree (Jordan and Lorell, 1973) combined with a 6.1 millibar atmospheric pressure surface derived from radio-occultation data (Kjore and others, 1973; Christensen, 1975). This datum is a triaxial ellipsoid with semi-major axes of A=3394.6 km, B=3393.3 km, and a semi-minor axis of C=3376.3 km. The semi-major axis A intersects the Martian surface at long. 105°.

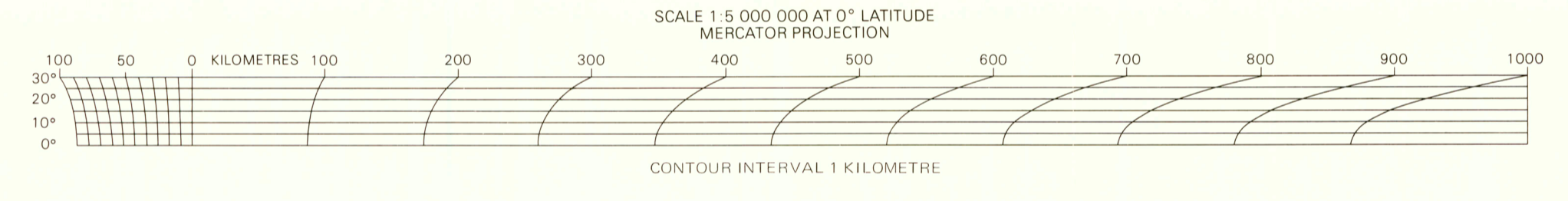
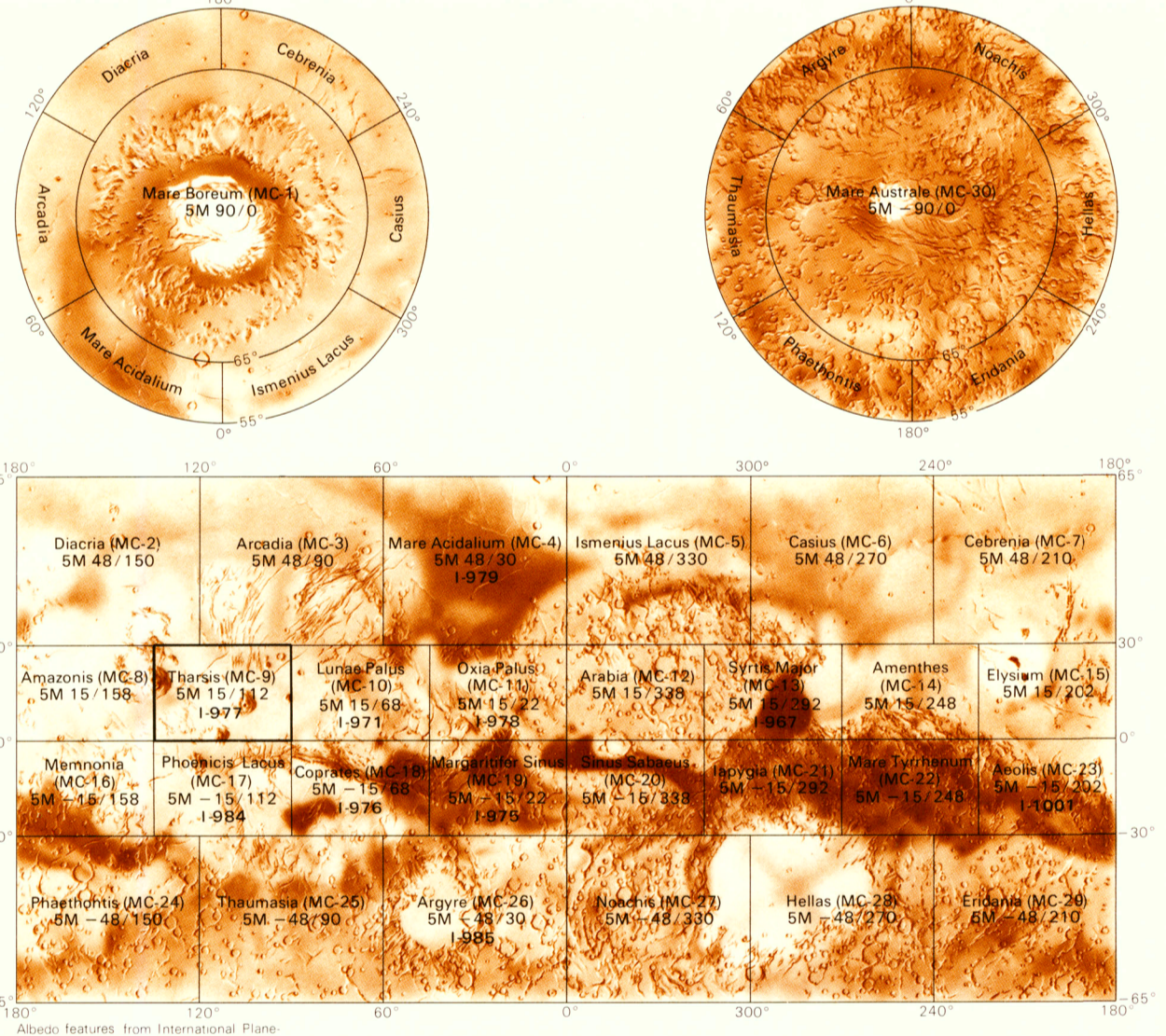
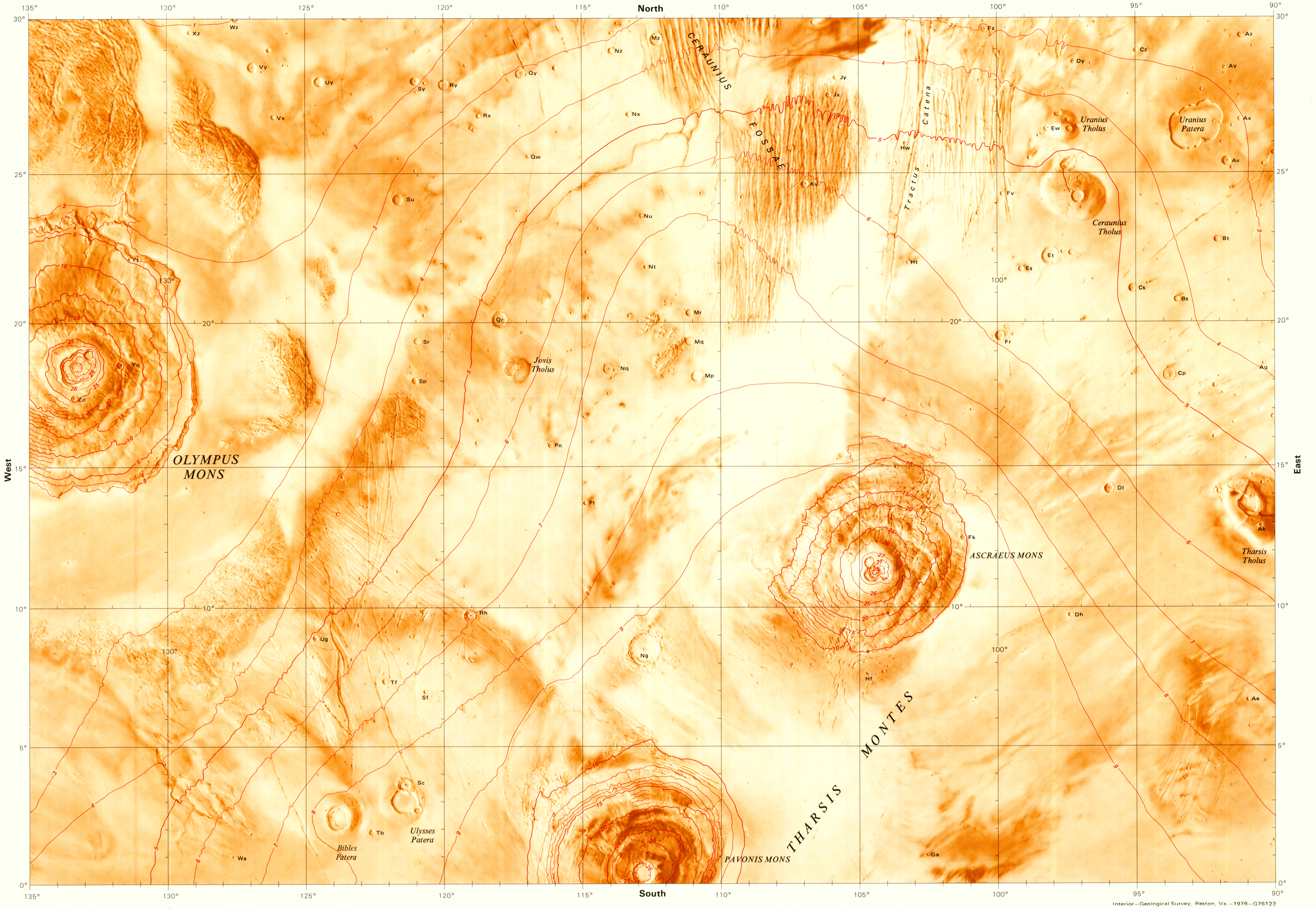
The contour lines (Wu, 1975) were compiled from Earth-based radar determinations (Downs and others, 1971; Pettengill and others, 1971) and measurements made by Mariner 9 instrumentation, including the ultrahigh spectrometer (Blair and others, 1974), infrared interferometer spectrometer (Conrath and others, 1973), and stereoscopic Mariner 9 television pictures (Wu 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
All names on this sheet are approved by the International Astronomical Union (IAU, 1974; Milman, written commun., 1975). Double letter designations for craters refer to position on the map.

ABBREVIATIONS FOR MARS CHART 9
M SM 15/112 RMC. Abbreviation for Mars 1:5,000,000 series; center of sheet, 15° N latitude, 112° longitude; shaded relief map, R, with albedo markings, M, and contours, C.

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INDEX TO MARINER 9 PICTURES USED TO MAKE THE ALBEDO MARKINGS OVERLAY

Most of the pictures indexed above were specially processed to accentuate albedo markings. Only the useful image areas of the pictures are outlined.

Index No.	DAS No.	Index No.	DAS No.	Index No.	DAS No.
1	0728684	23	7111608	46	6967206
2	0728684	24	7111608	47	6967206
3	0728684	25	7111608	48	6967206
4	0728684	26	7111608	49	6967206
5	0728684	27	7111608	50	6967206
6	0728684	28	7111608	51	6967206
7	0728684	29	7111608	52	6967206
8	0728684	30	7111608	53	6967206
9	0728684	31	7111608	54	6967206
10	0728684	32	7111608	55	6967206
11	0728684	33	7111608	56	6967206
12	0728684	34	7111608	57	6967206
13	0728684	35	7111608	58	6967206
14	0728684	36	7111608	59	6967206
15	0728684	37	7111608	60	6967206
16	0728684	38	7111608	61	6967206
17	0728684	39	7111608	62	6967206
18	0728684	40	7111608	63	6967206
19	0728684	41	7111608	64	6967206
20	0728684	42	7111608	65	6967206
21	0728684	43	7111608	66	6967206
22	0728684	44	7111608	67	6967206

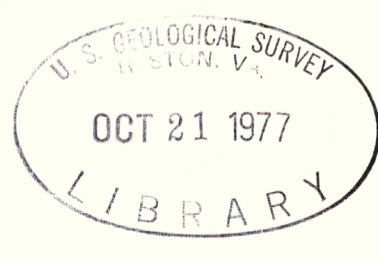
INDEX TO MARINER 9 PICTURES

The mosaic used to control the positioning of features on this map was made with the Mariner 9 A-camera pictures outlined above, identified by vertical numbers. Also shown by solid black rectangles are the high-resolution B-camera pictures, identified by italic numbers.

Index No.	DAS No.	Index No.	DAS No.	Index No.	DAS No.
1	6967206	22	7111608	43	6967206
2	6967206	23	7111608	44	6967206
3	6967206	24	7111608	45	6967206
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20	6967206	41	7111608	62	6967206
21	6967206	42	7111608	63	6967206
22	6967206	43	7111608	64	6967206
23	6967206	44	7111608	65	6967206

TOPOGRAPHIC MAP OF THE THARSIS QUADRANGLE OF MARS
MC-9
M SM 15/112 RMC
1976

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Mars (Tharsis quad.) Topo 1:5,000,000. 1976
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