DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ATLAS OF MARS
1:5,000,000 TOPOGRAPHIC SERIES
THARSIS QUADRANGLE
M 5M 15/112 RN, 1987
I-1922 (MC-9: REVISED) SHEET 1 OF 2

NOTES ON BASE

A series of topographic maps covering the entire surface of Mars at a nominal scale of 1:5,000,000 was originally compiled from Mariner 9 data (Batson and others, 1979). This original series is now being revised and augmented with image data from Viking Orbiter.

ADOPTED FIGURE

The figure of Mars used for the computation of the map projection is an oblate spheriod (flattening of 1/192) with an equatorial radius of 3393.4 km and a polar radius of 3375.5 km.

PROJECTION

The Mercator, Lambert Conformal Conic, and Polar Stereographic projections are used for this map series. The scale of the series is 1:5,000,000 at the equator. The projections have common scales of 1:4,336,000 at lat ±30° and 1:4,306,000 at lat ±65°. Standard parallels for the Lambert Conformal Conic projection are at lat ±35.8° and ±59.2°. Longitude increases to the west in accordance with astronomical convention for Mars.

CONTROL

Image placement is based on the 1978 control net (Davies and others, 1978). The first meridian passes through the center of a small crater, Airy-O (lat. 5.19° S., long 0°), located within the crater Airy.

MAPPING TECHNIQUE

A series of mosaics of Mariner 9 pictures was assembled at 1:5,000,000 scale based on projections described above.

Shaded relief was portrayed by use of airbrush techniques detailed by Inge (1972) and photointerpretive methods described by Inge and Bridges (1976). Uniform sun illumination from the west was used throughout. Sizes, shapes, and positions of features were taken from the base mosaic. In the first edition of the map, various computer enhancements of many Mariner 9 pictures, besides those in the base mosaic, were examined in an attempt to portray the surface as accurately as possible. This revised edition was produced by incorporating information derived from various enhancements of higher resolution Viking images of the map area.

Original shaded relief analysis, representation, and revisions were made by Patricia M. Bridges.

COLOR

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

NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (IAU, 1974, 1977, 1983, 1986 and 1988) except for the provisional name indicated by an asterisk. Double- and triple-letter designations for craters refer to position on the map and are derived from a grid based on equidistant meridians and parallels; the alphabet (I and O omitted) runs in the direction of increasing longitude (W) and latitude (N). The complete designation of a crater is the name of the quadrangle followed by double or triple letters. The prefix THR (identifying the THARSIS quadrangle) is part of the complete designation but, for brevity, is not shown on most craters. Some craters have commemorative names; letter designations for these craters are shown in parentheses. Where craters lie mostly on an adjoining map, their letters are derived from the other map; where craters lie exactly on the boundary of two maps, their letters are derived from the eastern or southern map.

MC-9: Abbreviation for Mars Chart 9.

M 5M 15/112 RN: Abbreviation for Mars, 1:5,000,000 series; center of sheet, lat 15° N., long 112°; shaded relief map (R) with nomenclature (N).

REFERENCES

Batson, R.M., Bridges, P.M., and Inge, J.L., 1979, Atlas of Mars, The 1:5,000,000 map series: National Aeronautics and Space Administration, Special Publication 438, 146 p.

Davies, M.E., Katayama, F.Y., and Roth, J.A., 1978, Control net of Mars: February 1978: The Rand Corporation, R-2309-NASA, 91 p.

Inge, J.L., 1972, Principles of lunar illustration: Aeronautical Chart and Information Center Reference Publication 72-1, 60 p.

Inge, J.L., and Bridges, P.M., 1976, Applied photointerpretation for airbrush cartography: Photogrammetric Engineering and Remote Sensing, v. 42, no. 6, p. 749-760.

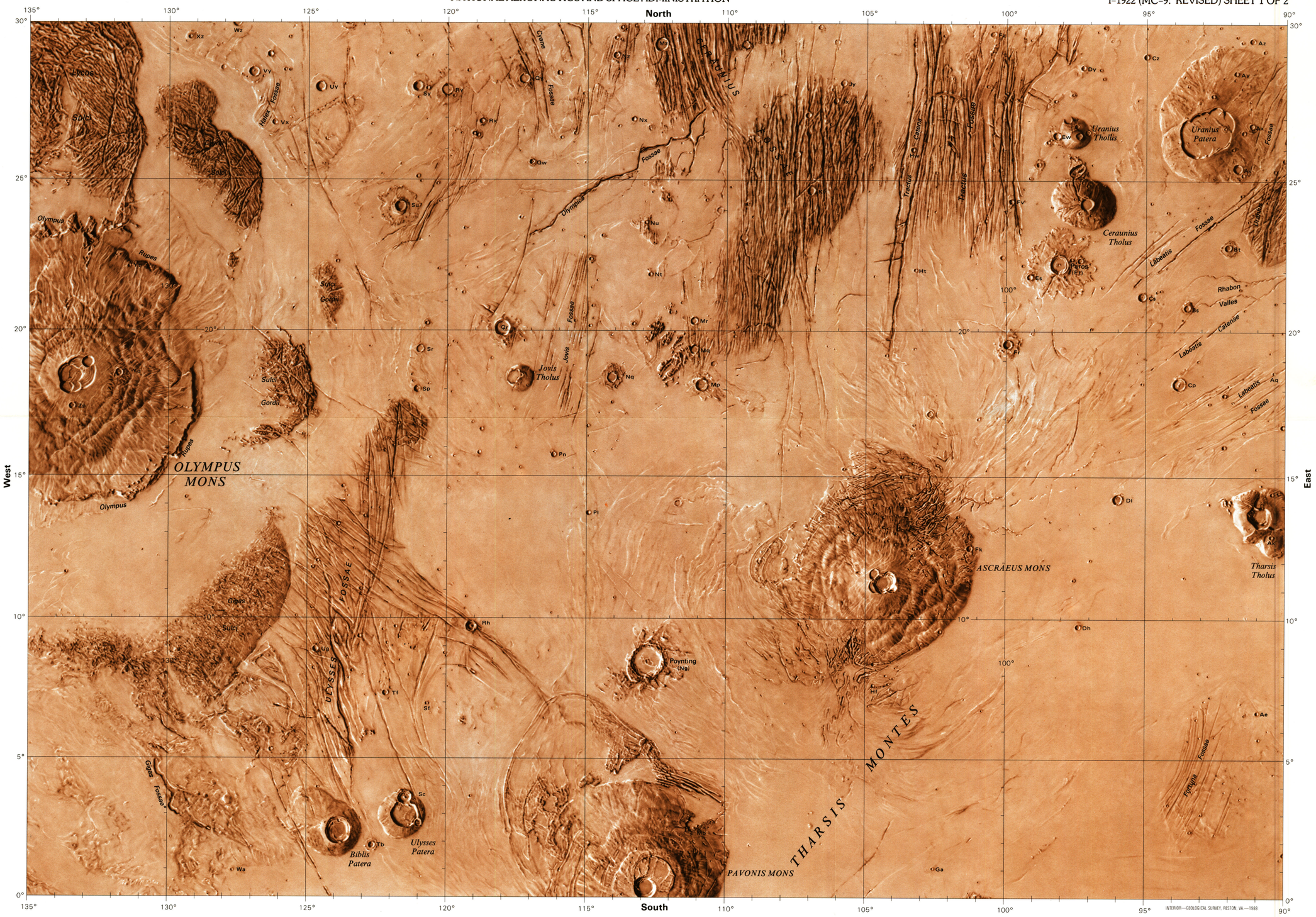
International Astronomical Union, 1974, Commission 16: Physical study of planets and satellites, *and* Lunar and martian nomenclature, *in* 15th General Assembly, Sydney, 1973, Proceedings: International Astronomical Union Transactions, v. 15B, p. 105-108, 217-221.

_____1977, Working Group for Planetary System Nomenclature, *in* 16th General Assembly, Grenoble, 1976, Proceedings: International Astronomical Union Transactions, v. 16B, p. 321-325, 331-336, 355-362.

_____1983, Working Group for Planetary System Nomenclature, *in* 18th General Assembly, Patras, 1982, Proceedings: International Astronomical Union Transactions, v. 18B, p. 334-336.

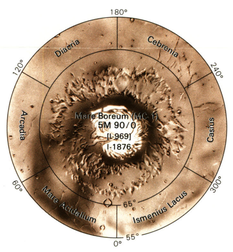
_____1986, Working Group for Planetary System Nomenclature *in* 19th General Assembly, New Delhi, 1985, Proceedings: International Astronomical Union Transactions, v. 19B, p. 347-350.

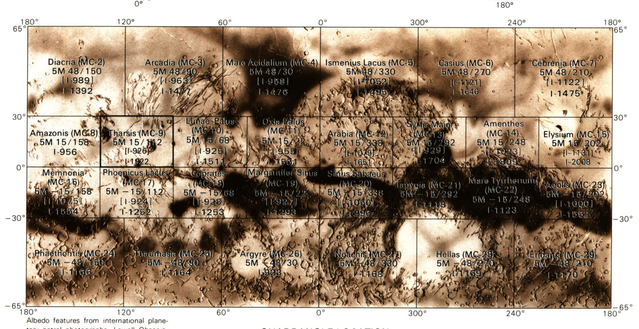
_____1988, Working Group for Planetary System Nomenclature, *in* Reports on Astronomy: International Astronomical Union Transactions, v. 20A, P. 704.



INTERIOR—GEOLOGICAL SURVEY, RESTON, VA.—1988

Revised in January 1987 on behalf of the Planetary Geology and Geophysics Program, Planetary Division, Office of Space Science and Applications, National Aeronautics and Space Administration, under contract W-15,814. This map supersedes I-926 (the first edition of this sheet).



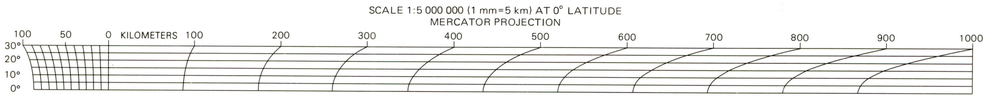


Albedo features from international planetary patrol photographs. Lowell Observatory, Flagstaff, Ariz

QUADRANGLE LOCATION

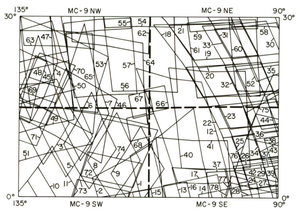
Number preceded by I refers to published shaded relief map. (Number in brackets refers to earlier map superseded by revised version.)

SCALE 1:5 000 000 (1 mm=5 km) AT 0° LATITUDE
MERCATOR PROJECTION



1:2,000,000-SCALE CONTROLLED PHOTOMOSAICS

I-Series No.	Quadrangle No.
I-1821	MC-9 NW
I-1258	MC-9 NE
I-1622	MC-9 SW
I-1260	MC-9 SE



INDEX OF VIKING SOURCES

This shaded relief map has been revised by using 1:2,000,000-scale controlled photomosaics and the supplementary Viking pictures outlined above. Copies of various enhancements of these pictures are available from National Space Science Data Center, Code 601, Goddard Space Flight Center, Greenbelt, MD 20771.

VIKING 1

Index No.	Picture No.	Index No.	Picture No.	Index No.	Picture No.
1	40A33	24	444A08	47	738A09
2	40A35	25	444A09	48	741A05
3	41A35	26	444A10	49	741A07
4	41A36	27	444A11	50	753A81
5	41A37	28	444A12	51	753A83
6	41A39	29	444A13	52	759A62
7	41A40	30	444A22	53	771A16
8	41A41	31	444A23	54	814A29
9	41A43	32	444A24	55	814A30
10	41A50	33	444A25	56	814A31
11	41A53	34	444A26	57	814A32
12	294A73	35	444A27	58	816A07
13	294A74	36	444A28	59	816A08
14	439A33	37	444A30	60	816A09
15	439A47	38	444A31	61	816A10
16	439A49	39	444A33	62	849A07
17	439A51	40	496A91	63	849A08
18	444A02	41	496A93	64	849A09
19	444A03	42	496A94	65	849A10
20	444A04	43	682A01	66	516A53
21	444A05	44	682A22	67	516A55
22	444A06	45	735A64	68	516A56
23	444A07	46	735A66		

VIKING 2

Index No.	Picture No.
69	355B12
70	355B14
71	355B16
72	356B30
73	356B31
74	356B32
75	357B08
76	357B10
77	357B11
78	357B14

INDEX OF 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.

A-CAMERA PICTURES

Index No.	DAS No.	Index No.	DAS No.
1	6895178	23	7183158
2	6895668	24	7183228
3	6895738	25	7183298
4	6967138	26	7183368
5	6967208	27	7183438
6	6967278	28	7183648
7	6967348	29	7183788
8	6967418	30	7183928
9	6967768	31	7255188
10	7039168	32	7255258
11	7039238	33	7255328
12	7039308	34	7255398
13	7039378	35	7255468
14	7039588	36	7255818
15	7039728	37	8226864
16	7111128	38	8298824
17	7111198	39	8370854
18	7111268	40	8442884
19	7111338	41	8513864
20	7111408	42	8514844
21	7111618	43	6895248
22	7111758		

SHADED RELIEF MAP OF THE THARSIS QUADRANGLE OF MARS

MC-9: REVISED

M 5M 15/112 RN

1988

NOTE TO USERS

Users noting errors or omissions are urged to indicate them on the map and to forward it to U.S. Geological Survey, Building 4, Room 454, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

For sale by U.S. Geological Survey, Map Distribution, Box 25286, Federal Center, Denver, CO 80225