

#### 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. Details of the Mariner 9 mission that are related to the mapping are described by Batson and others (1979). This revised version was based on Viking Orbiter images. A series of papers describing the Viking mission was published by the Journal of Geophysical Research (American Geophysical Union, 1977).

#### 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 3392.4 km and a polar radius of 3275.7 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 latitudes  $\pm 30^\circ$  and 1:4,290,000 at latitudes  $\pm 60^\circ$ . Standard parallels for the Lambert conformal conic projection are at latitudes  $\pm 35.8^\circ$  and  $\pm 59.2^\circ$ . Longitudes increase to the west in accordance with astronomical convention for Mars.

#### 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 Mariner 9 spacecraft. The first meridian passes through the center of a small crater, Airy-3 (lat  $5.19^\circ$  S, long  $0^\circ$ ), located within the crater Airy.

#### MAPPING TECHNIQUE

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

Shaded relief was portrayed using airbrush techniques detailed by Inge (1972) and photo-interpreted methods described by Inge and Bridges (1976). Uniform illumination from the west was used throughout. Size, shape and position 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 and representation were made by Anthony G. Sanchez. Revisions were made by Barbara J. Hall.

#### COLOR

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

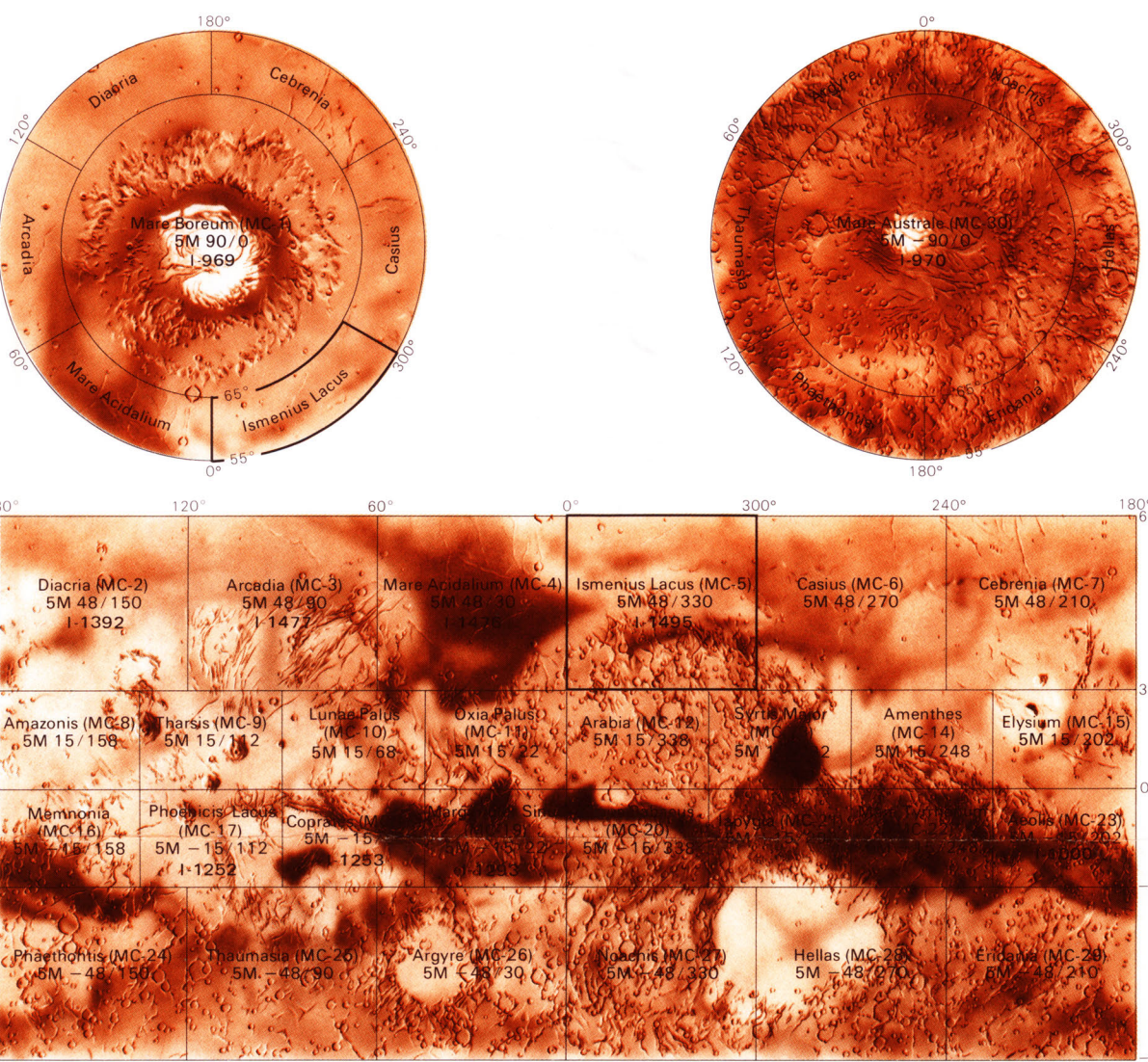
#### NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (IAU, 1974, 1977, 1980, and 1983). 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 a double- or triple-letter. The prefix ISM (identifying the Ismenius Lacus 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 eastern or southern map.

MC-5: Abbreviation for Mars Chart 5, M 5M 48/330 RN: Abbreviation for Mars, 1:5,000,000 series, center of sheet, lat  $48^\circ$  N, long  $330^\circ$ , shaded relief map (R) nomenclature (N).

#### REFERENCES

- American Geophysical Union, 1977, Journal of Geophysical Research, v. 82, no. 28, p. 3959-4681.  
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, NASA SP-433, 146 p.  
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Davies, M. E., and Arthur, D. W. G., 1973, Martian surface coordinates, Journal of Geophysical Research, v. 78, no. 20, p. 4351-4394.  
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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.  
1980, Working Group for Planetary System Nomenclature, in 17th General Assembly, Montreal, 1979, Proceedings: International Astronomical Union Transactions, v. 17B, p. 293-297.  
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QUADRANGLE LOCATION  
Number preceded by 1 refers to published shaded relief map

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.

## SHADED RELIEF MAP OF THE ISMENIUS LACUS QUADRANGLE OF MARS

M 5M 48/330 RN

MC-5  
1982

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