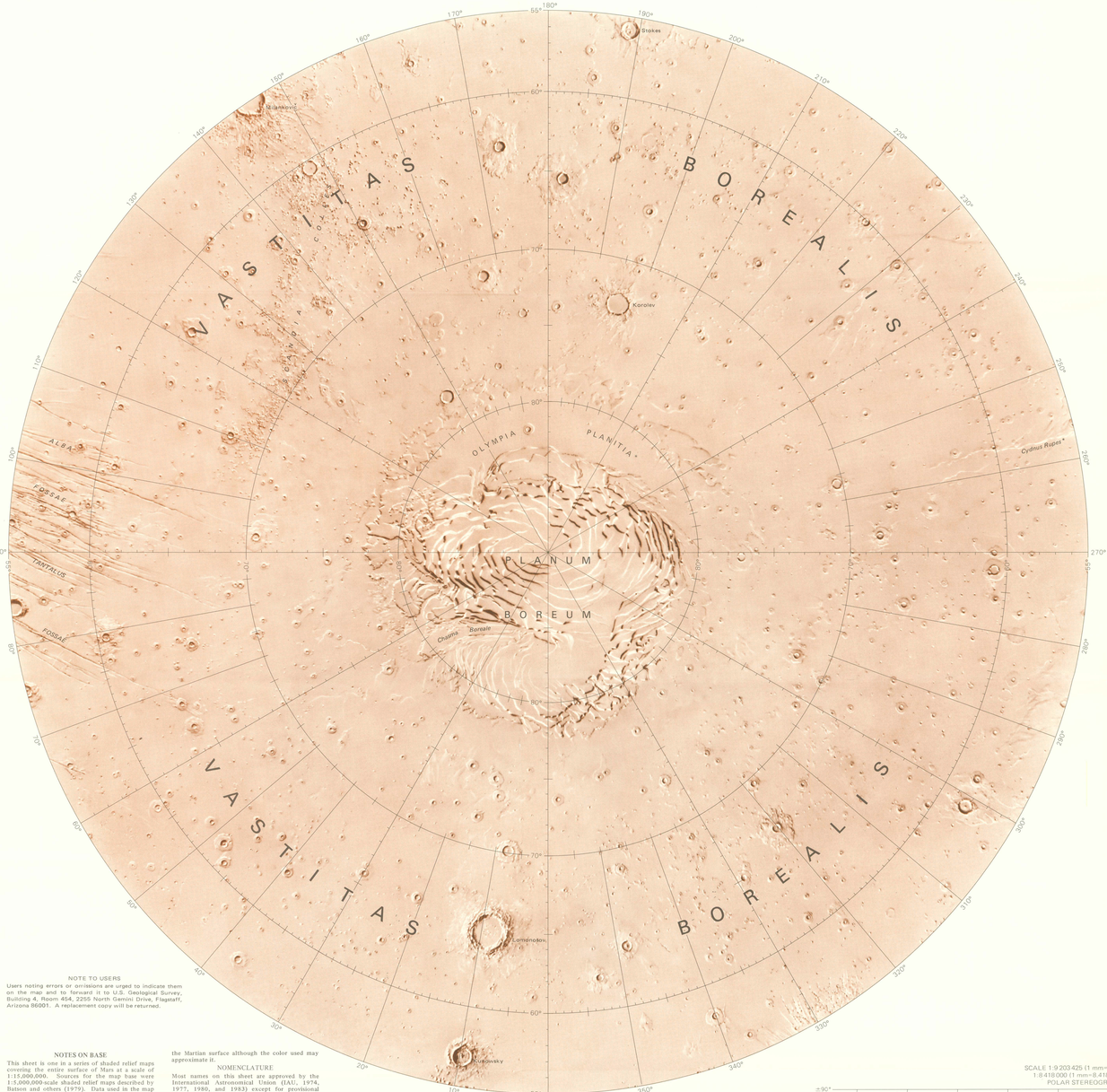
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

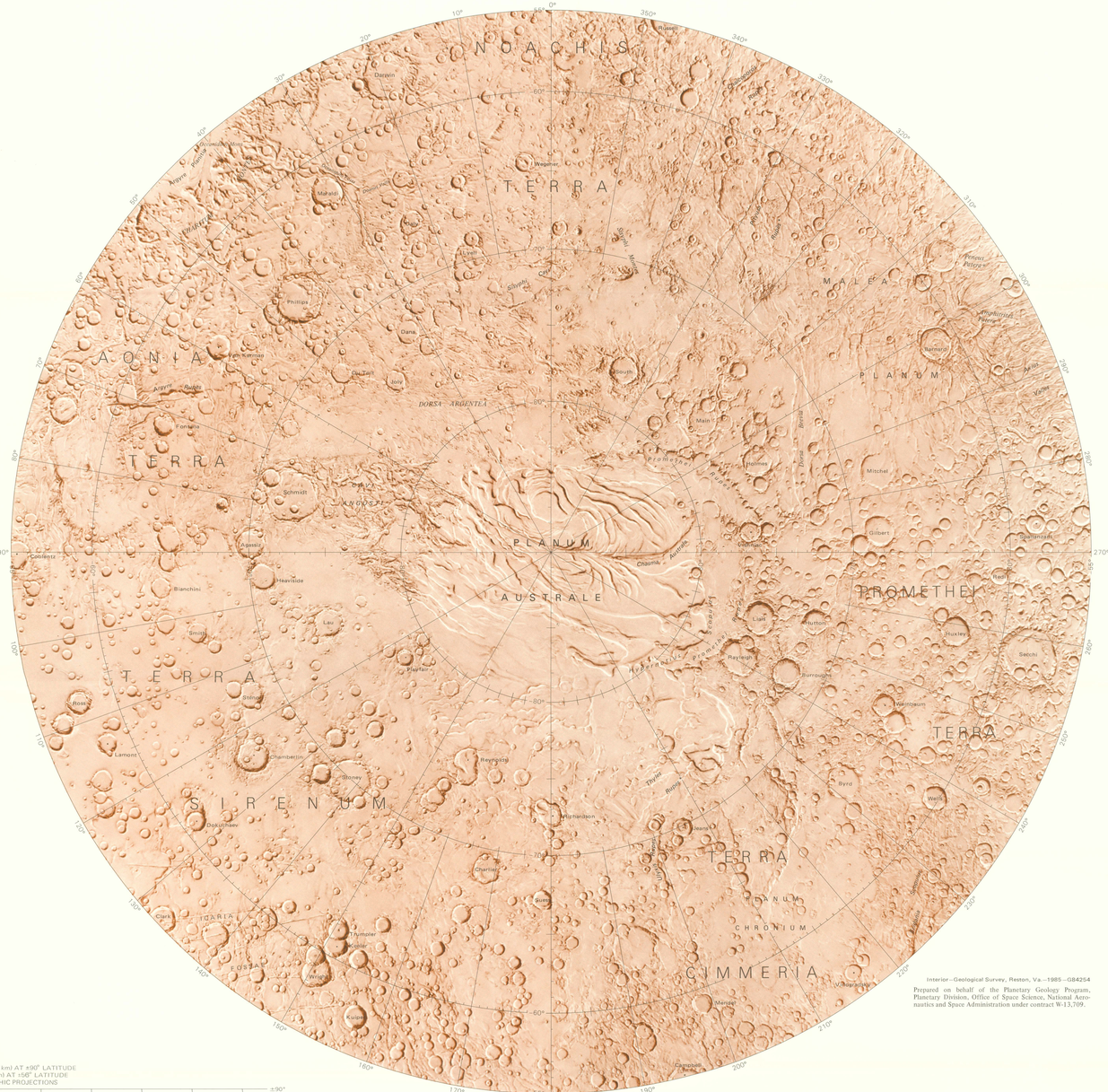
ATLAS OF MARS
1:15,000,000 TOPOGRAPHIC SERIES
POLAR REGIONS
M 15M ±90/0 2RN, 1985
I-1618 SHEET 1 OF 3



NOTE TO USERS

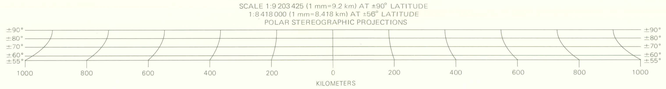
Users noting errors or omissions are urged to indicate them on the map and to forward it to U.S. Geological Survey, Building 4, Room 454, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

NORTH POLAR REGION
M 15M 90/0 2RN



SOUTH POLAR REGION
M 15M –90/0 2RN

SCALE 1:9 203 425 (1 mm=9.2 km) AT ±90° LATITUDE
1:8 418 000 (1 mm=8.418 km) AT ±56° LATITUDE
POLAR STEREOGRAPHIC PROJECTIONS



NOTES ON BASE

This sheet is one in a series of shaded relief maps covering the entire surface of Mars at a scale of 1:15,000,000. Sources for the map base were 1:5,000,000-scale shaded relief maps described by Batson and others (1979). Data used in the map portrayal were obtained from Viking Orbiter images.

ADOPTED FIGURE

The figure of Mars used for computing the map projections is an oblate spheroid (flattening of 1/192) with an equatorial radius of 3,393.4 km and a polar radius of 3,375.7 km.

PROJECTIONS

The Mercator projection is used between the 57° parallels; the polar stereographic projection is used for the polar regions north and south of the 55° parallels. Scales are 1:15,000,000 at the equator and 1:9,203,425 at the poles. The projections have a common scale of 1:8,418,000 at lats ±56°. Longitudes increase to the west in accordance with astronomical convention for Mars. Latitudes are areographic.

CONTROL

Planimetric control for the 1:5,000,000 maps used to compile the bases for these sheets was derived from photogrammetric triangulations using Mariner 9 pictures (Davies, 1973). This control net was upgraded through the use of Viking data (Davies and others, 1978). At least 85 percent of the image control points lie within 0.5 mm of the positions published in 1978.

MAPPING TECHNIQUE

The mapping bases for this series were assembled from 1:5,000,000 shaded relief maps reduced and digitally transformed where necessary to fit the projections. During shaded relief portrayal, features on these bases were used to position details taken from Viking Orbiter pictures. Features were drawn with uniform illumination from the west, using airbrush techniques described by Inge (1972) and photointerpretive methods described by Inge and Bridges (1976). The shading is not generalized and accurately represents the character of surface features.

Shaded relief analysis and portrayal were made by Barbara J. Hall (south pole) and Jay L. Inge (north pole).

COLOR

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

NOMENCLATURE

Most names on this sheet are approved by the International Astronomical Union (IAU, 1974, 1977, 1980, and 1983) except for provisional names, which are indicated by an asterisk. Named features and their positions are taken from published maps of Mars with scales of 1:2,000,000, 1:5,000,000, and 1:25,000,000.

M 15M ±90/0 2RN Abbreviation for Mars; 1:15,000,000 series; center of map, lat 90° N. or lat 90° S., long 0°; 2nd edition; shaded relief (R); 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, NASA SP-438, 146 p.

Davies, M. E., 1973, Mariner 9: Primary control net: Photogrammetric Engineering, v. 39, no. 12, p. 1297-1302.

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 RP-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.

_____1980, Working Group for Planetary System Nomenclature, *in* 17th General Assembly, Montreal, 1979, Proceedings: International Astronomical Union Transactions, v. 17B, p. 293-297.

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

SHADED RELIEF MAP OF MARS
POLAR REGIONS

1985

Interior--Geological Survey, Reston, Va.--1985--084254

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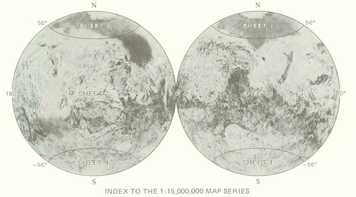

INDEX TO THE 1:15,000,000 MAP SERIES

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