DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ATLAS OF MERCURY
1:15,000,000 TOPOGRAPHIC SERIES
H 15M 1R 1979
I-1149

SOUTH POLAR REGION

NOTES ON BASE

This is one sheet in a series of topographic map sheets covering that part of the surface of Mercury that was illuminated during the Mariner 10 mission (Davies and Batson, 1975). The source of map data was the Mariner 10 television experiment (Murray, 1975).

ADOPTED FIGURE

The map projections are based on a sphere with a radius of 2439 km.

PROJECTION

The Mercator projection is used between the 57° parallels, and the polar stereographic projection is used for the polar regions north and south of the 55° parallels. Longitudes increase to the west in accordance with usage of the International Astronomical Union (IAU, 1971). Latitudes are based on the assumption that the spin axis of Mercury is perpendicular to the plane of the orbit. Meridians are numbered so that a reference crater named Hun Kal (lat 0.2° S.) is centered on long 20° (Murray and others, 1974; Davies and Batson, 1975). This crater is too small to be shown at the 1:15 000 000 scale.

CONTROL

Planimetric control is provided by a mosaic of digitally transformed and scaled 1:5 000 000 quadrangles. The quadrangles were originally controlled by different iterations of the Mercury control net. Although an attempt was made to tie all segments of the base mosaic to the November 1976 version of the net (Davies and Katayama, 1976), a few discrepancies as large as 40 km exist between the net and this map.

MAPPING TECHNIQUE

Mapping techniques are similar to those described by Batson (1973a,b). Shaded relief maps at 1:5 000 000 were reduced to 1:15 000 000 and transformed where necessary to the projections of this sheet.

Shaded relief was portrayed with uniform illumination with the sun to the west using airbrush techniques described by Inge (1972) and Inge and Bridges (1976).

Shaded relief analysis and representation were made by Barbara J. Hall.

COLOR

The color of the shaded relief was selected for optimum discrimination of detail and is not intended to represent the color of Mercury even approximately.

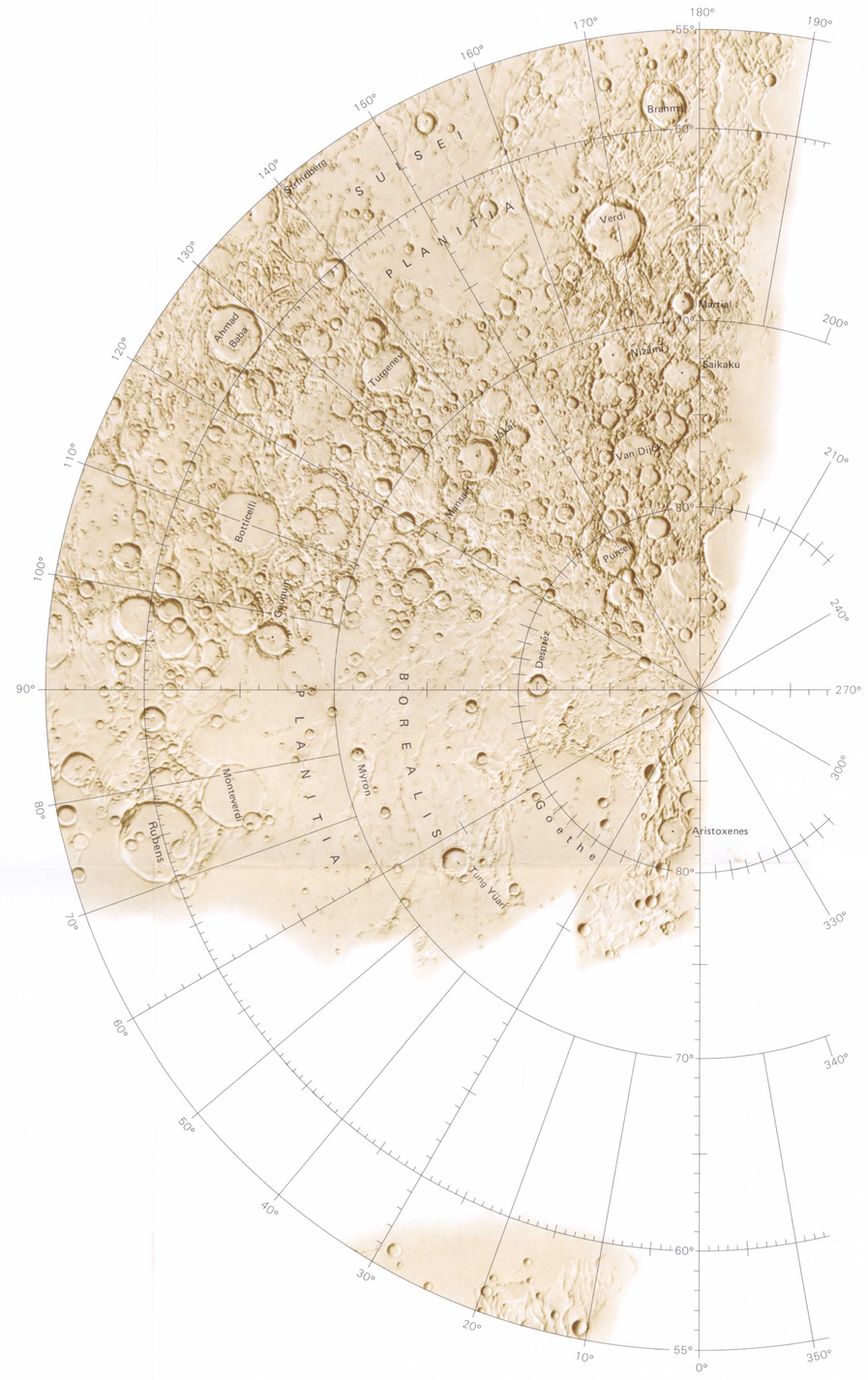
NOMENCLATURE

All names on this sheet are approved by the International Astronomical Union (IAU, 1977).

H 15M 1R: Abbreviation for Mercury (Hermes) 1:15 000 000 series; first edition shaded relief map, R.

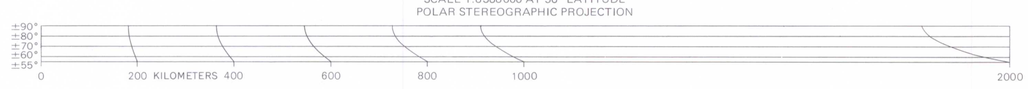
REFERENCES

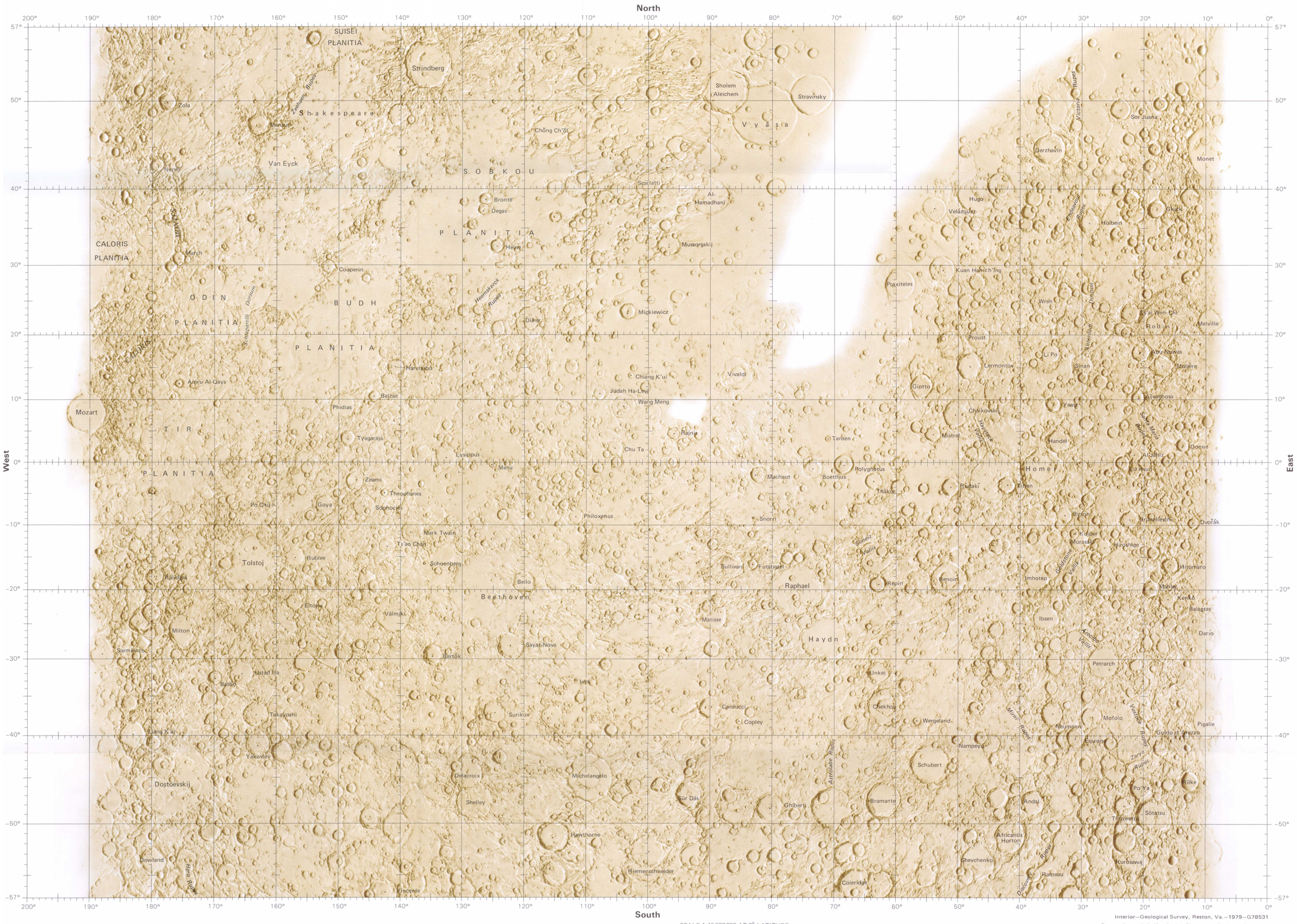
Batson, R. M., 1973a, Cartographic products from the Mariner 9 mission: Journal of Geophysical Research, v. 78, no. 20, p. 4424-4435.
———1973b, Television cartography: U.S. Geological Survey Open-File Report, 35 p.
Davies, M. E., and Batson, R. M., 1975, Surface coordinates and cartography of Mercury: Journal of Geophysical Research, v. 80, no. 17, p. 2417-2430.
Davies, M. E., and Katayama, F. Y., 1976, The control net of Mercury: Rand Corporation, R-2089-NASA, 19 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 Commission 16, 1971. Physical study of planets and satellites, *in* Proceedings 14th General Assembly 1970: International Astronomical Union Transactions, v. 14B, p. 105-108.
———1977, Physical study of planets and satellites, *in* Proceedings 16th General Assembly 1976: International Astronomical Union Transactions, v. 16B, p. 325, 331-336, 355-362.
Murray, B. C., 1975, The Mariner 10 pictures of Mercury: An overview: Journal of Geophysical Research, v. 80, no. 17, p. 2342-2344.
Murray, B. C., Belton, M. J. S., Danielson, G. E., Davies, M. E., Gault, D. E., Hapke, Bruce, O'Leary, Brian, Strom, R. G., Soumi, Verner, and Trask, Newell, 1974, Mercury's surface: Preliminary description and interpretation from Mariner 10 pictures: Science, v. 185, no. 4146, p. 169-179.



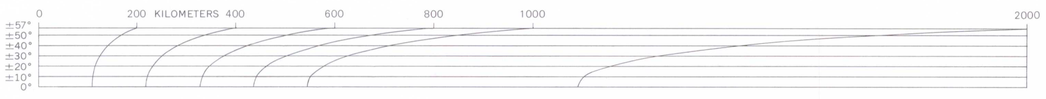
NORTH POLAR REGION

SCALE 1:8388000 AT 56° LATITUDE
POLAR STEREOGRAPHIC PROJECTION

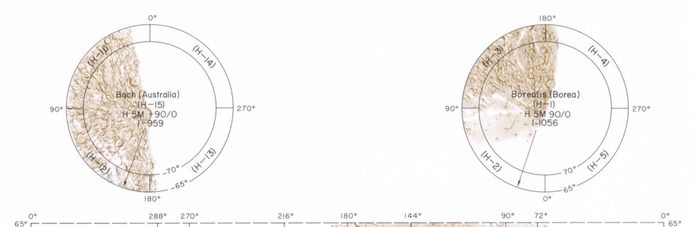


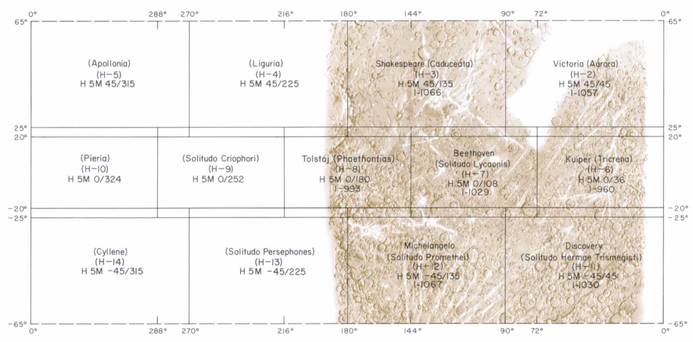


SCALE 1:15000000 AT 0° LATITUDE
1:8388000 AT 56° LATITUDE
MERCATOR PROJECTION



Interior—Geological Survey, Reston, Va.—1979—G78531
Prepared on behalf of the Planetary Geology Program, Planetary Division, Office of Space Science, National Aeronautics and Space Administration under contract W-13,709





ARRANGEMENT OF 1:5 000 000 MAP SHEETS ON MERCURY

The provisional name "Goethe" was changed to "Borealis", and the provisional name "Tir" was changed to "Tolstoj" by the International Astronomical Union in 1976 (IAU, 1977). The provisional names appeared on earlier editions of this index map as well as on the Tolstoj (H-8) Quadrangle of Mercury. The number preceded by I 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 64, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

SHADED RELIEF MAP OF MERCURY

H 15M 1R

1979

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