



**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 encounters (Davies and Batson, 1973). The mosaic 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 2,439 km.

**PROJECTION**  
The Lambert conformal conic projection is used for this sheet, with a scale of 1:4,623,000 at lat 22.5°. Latitudes are based on the assumption that the spin axis of Mercury is perpendicular to the plane of the orbit. Longitudes are positive westward in accordance with the usage of the International Astronomical Union (IAU, 1971). Meridians are numbered so that a reference crater named Hun Kal (lat 0.6° S) is centered on long 20° (Murray and others, 1974; Davies and Batson, 1975).

**CONTROL**  
Planimetric control is provided by photogrammetric triangulation using Mariner 10 pictures (Davies and Batson, 1975). Discrepancies between images in the base mosaic appear to be less than 5 km. The base mosaic was tied to a much later iteration than the base mosaic of other Mercury quadrangles. Discrepancies as large as 20 km were adjusted along the north edge to match the Tolstoj (H-8) and Beethoven (H-7) quadrangles. No attempt was made to join the Tolstoj (H-8) quadrangle to the east or the Bach (H-15) quadrangle to the west. Discrepancies as large as 40 km exist on these boundaries.

**MAPPING TECHNIQUES**  
Mapping techniques are similar to those described by Batson (1973a, 1973b). A mosaic was made with pictures that had been digitally transferred to the Lambert conformal conic projection. Shaded relief was copied from the mosaic and portrayed with uniform illumination with the sun to the west. Many Mariner 10 pictures inside (and on the base mosaic) were examined to improve the portrayal. The shading is not generalized and may be interpreted with nearly photographic reliability (Iuge, 1972).

Shaded relief analysis and representation were made by F. M. Bridges.

**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 5M-45/135 R: Abbreviation for Mercury (Hemera) sheet number 12

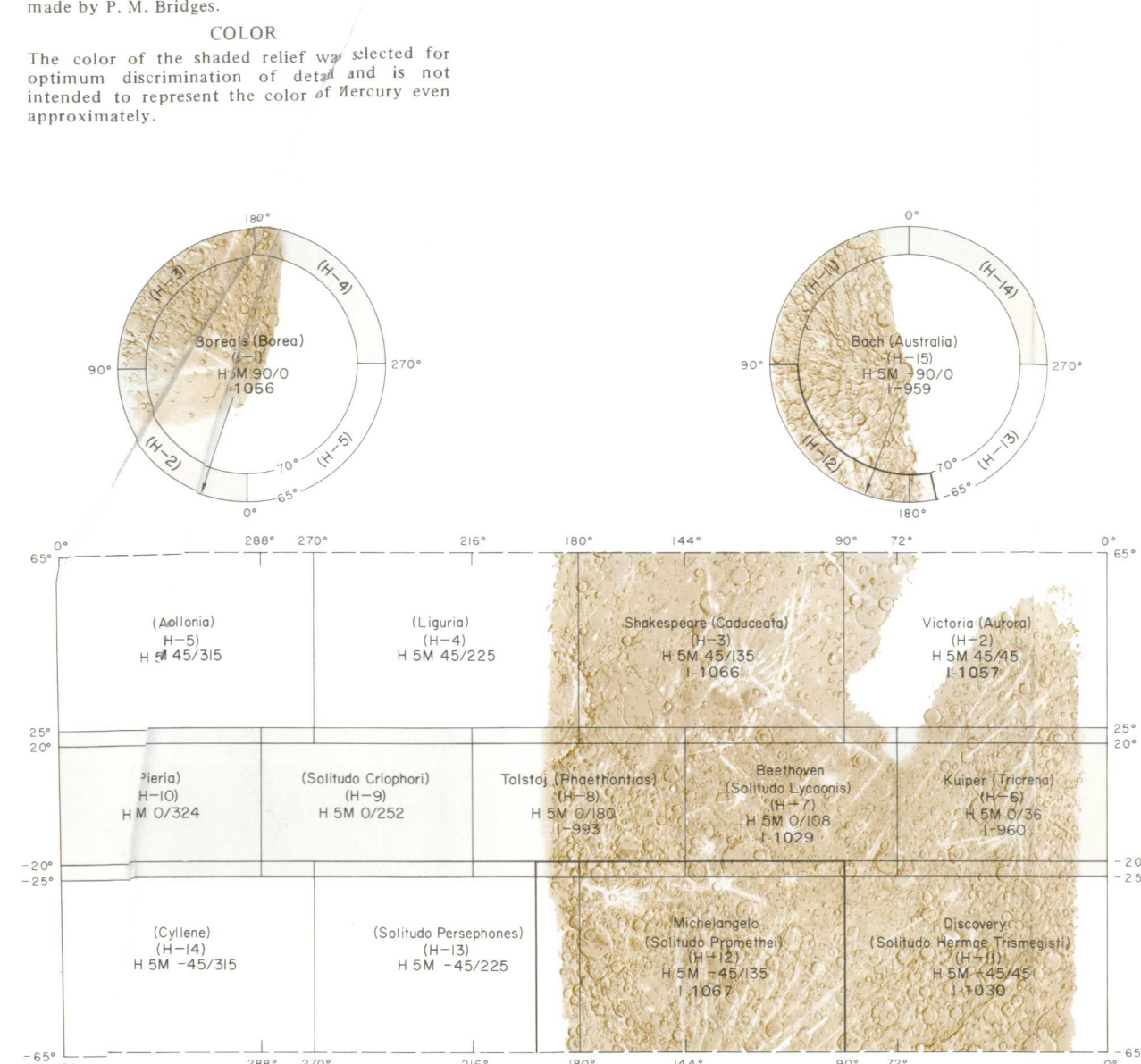
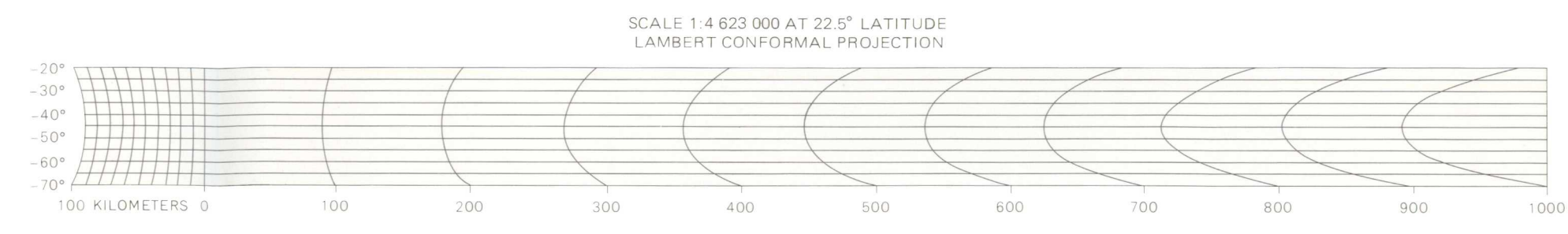
RELIEF INDICES  
H 5M-45/135 R: Abbreviation for Mercury (Hemera) 1:5,000,000 series; center of sheet, 45° S latitude, 135° longitude; shaded relief map, R.

A small part of the H-13 quadrangle is included on this sheet, because insufficient data are available to justify preparation of a separate sheet.

**REFERENCES**  
Batson, R. M., 1973a, *Topographic products from the Mariner 9 mission*, Jour. Geophys. Res., v. 78, no. 20, p. 4434-4435.  
—, 1973b, *Television cartography*, U.S. Geol. Survey open-file report, 28 p.  
Davies, M. E., and Batson, R. M., 1975, *Surface coordinates and cartography of Mercury*, Jour. Geophys. Res., v. 80, no. 17, p. 2417-2430.  
Iuge, J. L., 1972, *Principles of lunar illustration*, Astronaut. Chart and Inf. Center Ref. Pub., RP-251, 48 p.  
Iuge, J. L., and Bridges, F. M., 1976, *Applied photoreproduction for airbrush cartography*, Photogram. Eng., v. 42, no. 6, p. 749-760.  
International Astronomical Union, Commission 16, 1971, *Physical study of planets and satellites*, in Rep., 14th General Assembly, 1970. Internat. Astron. Union Trans., v. XIV B, p. 105-108.  
—, 1977, *Physical study of planets and satellites*, in Proc. 14th General Assembly 1976: Internat. Astron. Union Trans., in press.  
Murray, B. C., Batson, R. M., J. S., Danabon, G. E., Davies, M. E., Gault, D. E., Hagler, Bruce, O'Leary, Brian, Strom, R. G., Soumi, Verter, and Frank, Neville, 1974, *Mercury's surface: Preliminary description and interpretation from Mariner 10 pictures*, Science, v. 183, no. 4148, p. 169-176.  
Murray, B. C., 1975, *The Mariner 10 pictures of Mercury*, An overview, Jour. Geophys. Res., v. 80, no. 17, p. 2342-2344.

**INDEX TO MARINER 10 PICTURES**  
The mosaic used to control the positioning of features on this map was made with the Mariner 10 pictures outlined above. Useful coverage was not available for the mosaic in the cross-hatched area, although part of that area was filled in visually from pictures of marginal quality that could not be included in the mosaic.

Interior - Geological Survey, Reston, Va. - 1977 - G77087  
Prepared on behalf of the Planology Program Office,  
National Aeronautics and Space Administration under  
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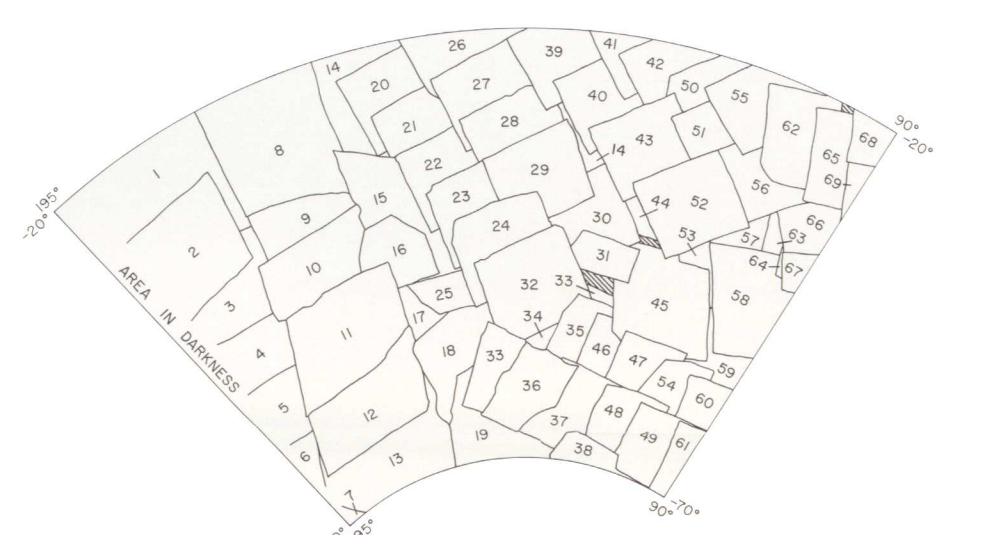


**NOTE TO USERS**  
Users noting errors or omissions are urged to indicate them on the map and to forward the map to Anthropogenic Studies, Geologic Division, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

**SUPPLEMENTAL SOURCE INDEX**  
The Mariner 10 pictures outlined above were used to provide additional detail on the map but were not used on the controlled mosaic.

### SHADED RELIEF MAP OF THE MICHELANGELO QUADRANGLE OF MERCURY (SOLITUDO PROMENTHEI ALBEDO PROVINCE)

H-12  
H 5M-45/135 R  
1977



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7	166842	30	166852	53	166809
8	241	31	166858	54	166821
9	247	32	166864	55	166820
10	166868	33	166870	56	166818
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12	166880	35	166882	58	166816
13	166886	36	166888	59	166815
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15	258	38	166900	61	166813
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17	166918	40	166924	63	166811
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19	166942	42	166948	65	166809
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7	166980	34	167080
8	166993	35	167112
9	167006	36	167144
10	167019	37	167176
11	167032	38	167208
12	167045	39	167240
13	167058	40	167272
14	167071	41	167304
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