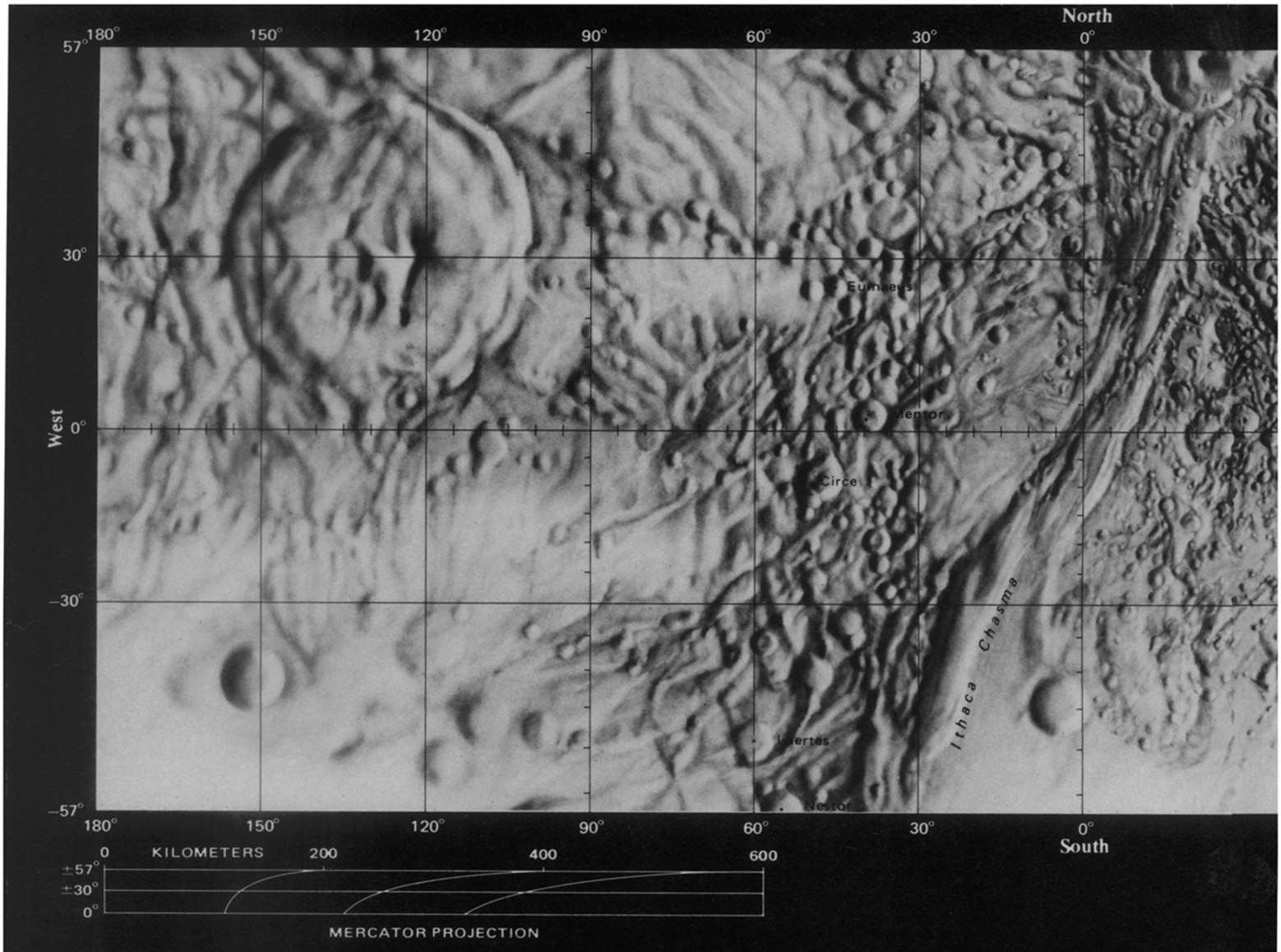


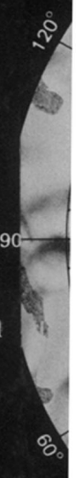
MAPPING THE MOONS OF SATURN

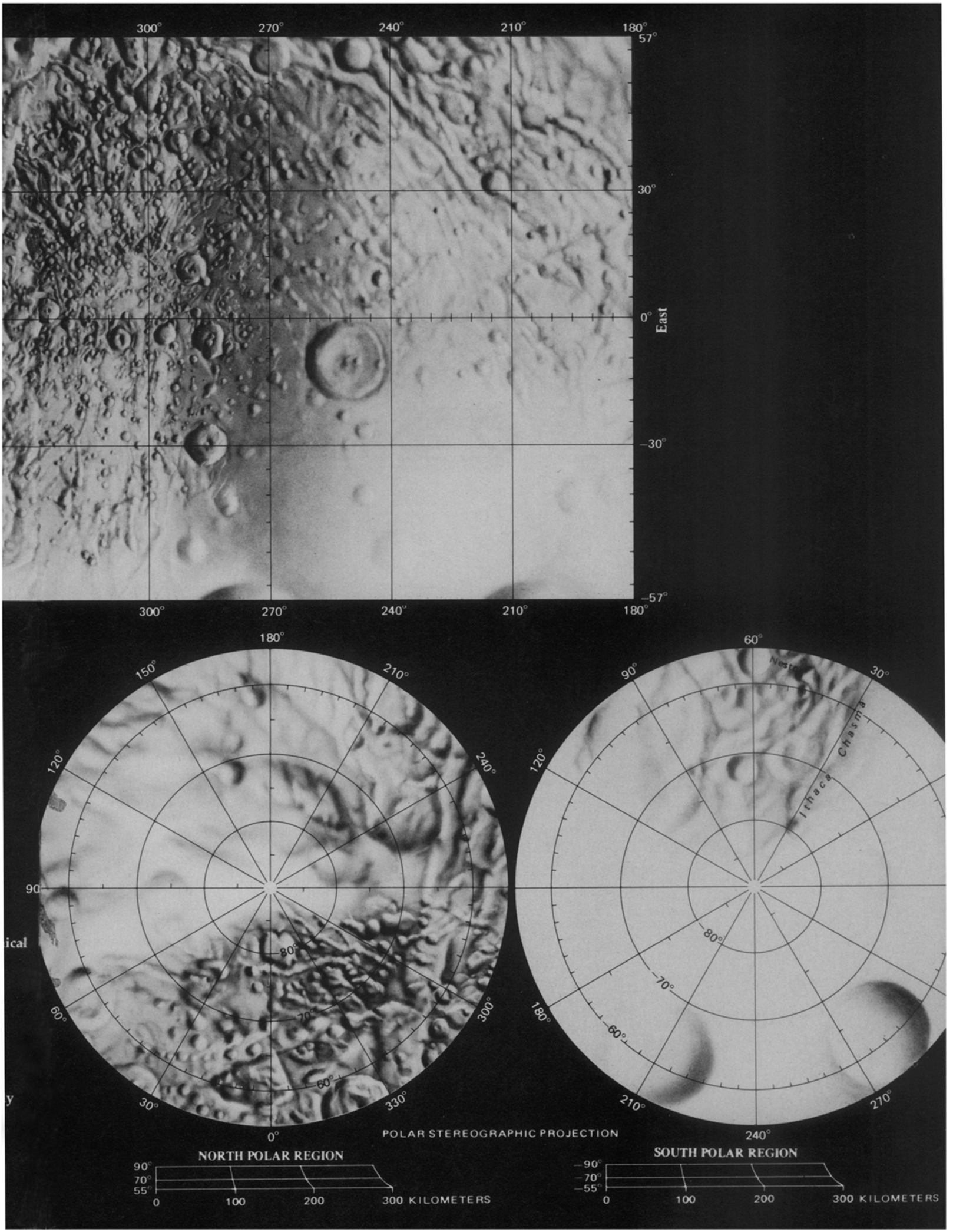
PART THREE

TETHYS

Map of Tethys (diameter 1,060 km), third closest to Saturn of the planet's major satellites, was prepared from photos taken by the Voyager 1 and 2 spacecraft. Drawn at 1:10,000,000 scale by Patricia M. Bridges of the U. S Geological Survey's Branch of Astrogeologic Studies, the map is reproduced here in original size (1 cm = 100 km at the equator). The 0° meridian of longitude always faces Saturn, and the left half of the map shows the side of Tethys that faces ahead as it moves around the planet. The placement of surface features shown (still being refined) is estimated to be accurate within localized regions to ±50 km over 66 percent of the mapped area, although extremely limited overlap among the photos makes the ties between adjacent regions tenuous. The photos used in preparing the map range in resolution from about 8 to 40 km per line pair, with lower-resolution and unphotographed areas left blank.

The most conspicuous feature on ice-rich Tethys is a vast trough dubbed Ithaca Chasma (nomenclature is provisional, pending approval by the International Astronomical Union), which extends at least 270° around the satellite with an average width of about 100 km. Freezing of a thick, liquid-water mantle (Tethys' density is only about 1.2 g/cm^3) beneath an already frozen crust could have produced enough expansion to account for the area of the trough, but it is unclear why all the expansion would have taken place in a single band rather than in widely distributed faults. Also prominent is the large crater, about 400 km across, on the leading hemisphere. A radius through the center of the crater would be approximately normal to the plane roughly defined by the trough, suggesting that the formation of the two features may be somehow connected. Crater-count variations suggest varied surface ages. — Jonathan Eberhart




300°
270°
240°
210°
180°
57°
30°
0°
East
−30°
−57°
180°
150°
210°
120°
240°
90
60°
80°
70°
60°
30°
330°
0°
300°
60°
90°
30°
120°
Ithaca Chasma
80°
70°
60°
180°
210°
270°
240°
POLAR STEREOGRAPHIC PROJECTION
NORTH POLAR REGION
90°
70°
55°
0
100
200
300 KILOMETERS
SOUTH POLAR REGION
−90°
−70°
−55°
0
100
200
300 KILOMETERS