

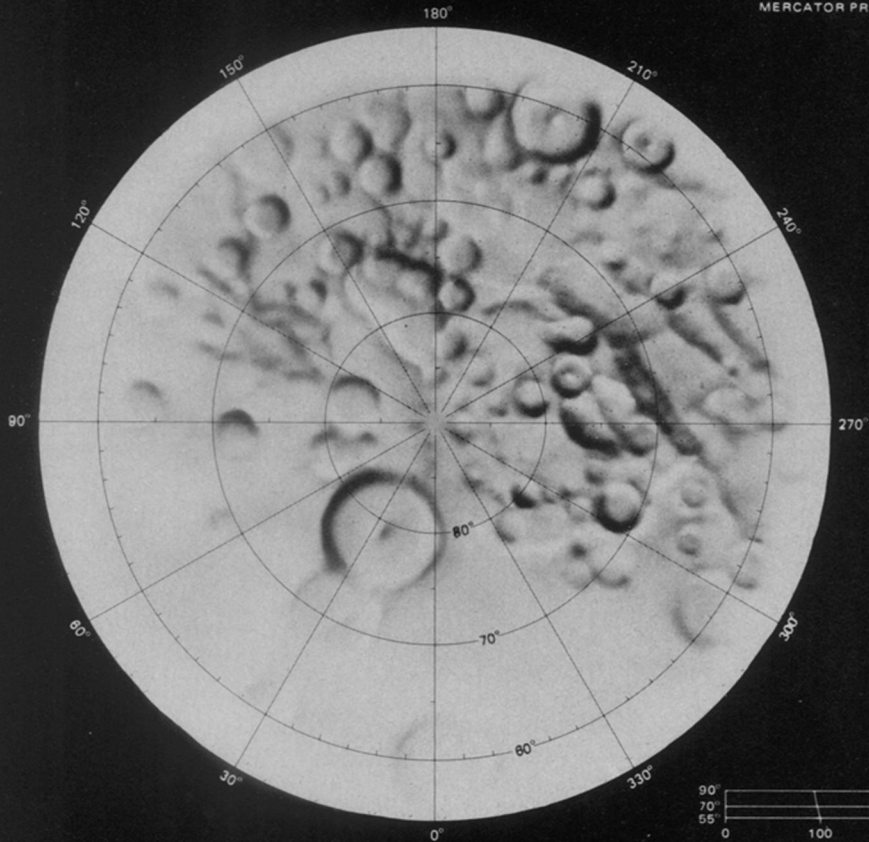
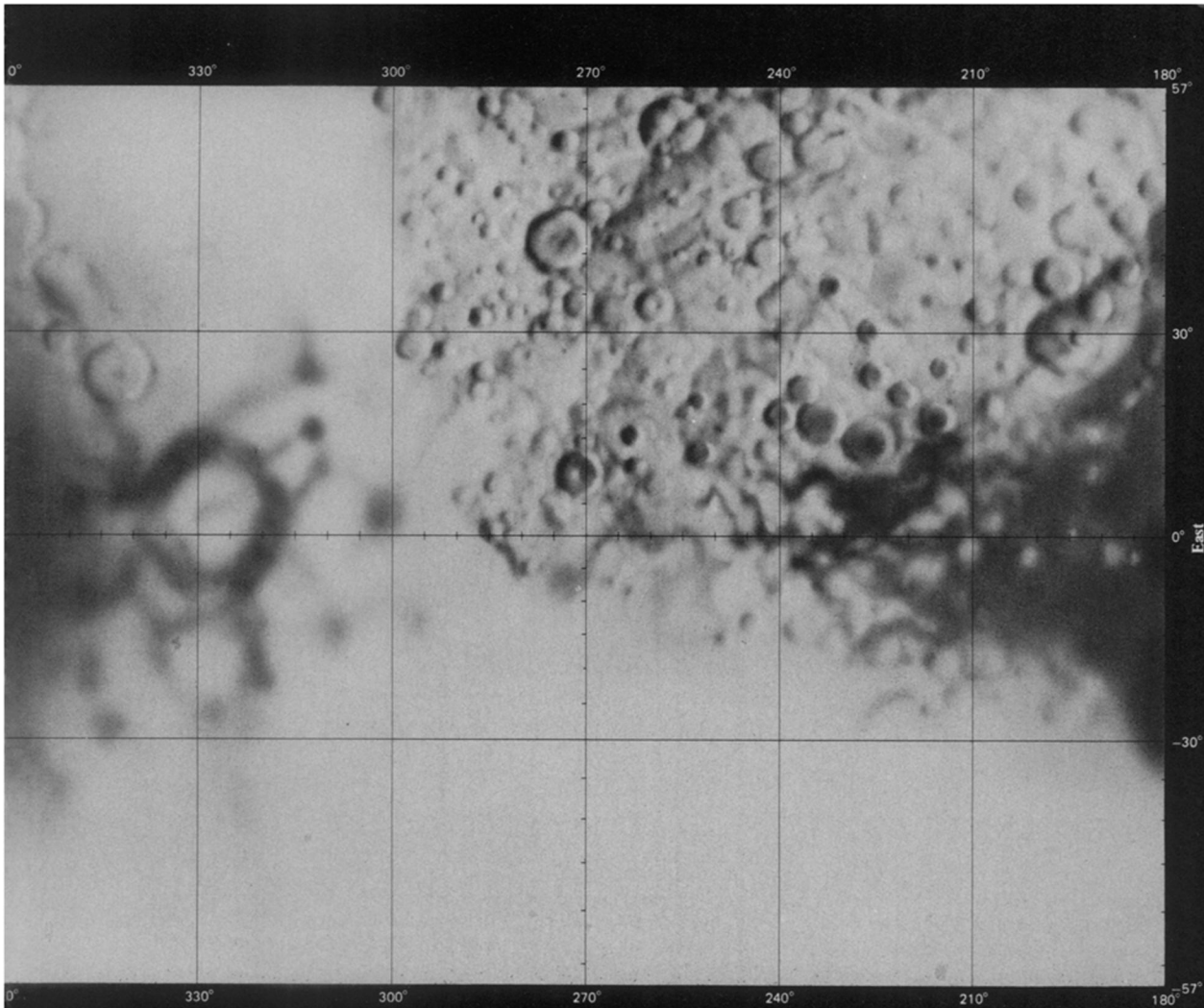
MAPPING THE MOONS OF SATURN
PART ONE

IAPETUS

Map of Iapetus, outermost and third largest (diameter 1,460 km) of Saturn's major satellites, was prepared from photos taken primarily by the Voyager 2 spacecraft, with some Voyager 1 images used for albedo information. Drawn at 1:10,000,000 scale by Jay L. Inge of the U. S. Geological Survey's Branch of Astrogeologic Studies, it is reproduced here at 1:7,000,000 (1 cm = 70 km at the equator). The 0° meridian of longitude always faces Saturn, and the left half of the map shows the side of Iapetus that faces ahead as it moves around the planet. The placement of surface features shown (still being refined) is estimated to be accurate to within ± 70 km over 66 percent of the mapped area. The photos used in preparing the map range in resolution from about 20 to 40 km per line pair, with lower-resolution and unphotographed areas left blank.

The leading hemisphere of Iapetus is fully 10 times as dark as the trailing hemisphere (albedo 0.5 vs. 0.04-0.05), the greatest such difference of any known solar system object. One idea has been that the dark material might have been somehow transported in from similarly dark Phoebe, the next satellite out, and preferentially deposited on the leading side as Iapetus moved through it. Spectral data, however, indicate the dark side to be redder than Phoebe, and closer to the kerogen-like, organic material found in some carbonaceous chondrite meteorites. Alternative suggestions are that the material came from a yet-undiscovered object, that it came from within Iapetus to cover the otherwise icy surface, or that it was exposed when outside material eroded the ice cover away. Iapetus' low density (1.16 ± 0.09 g/cc), however, implies only a small amount of such heavier-than-ice components.

—JONATHAN EBERHART



NORTH POLAR REGION

