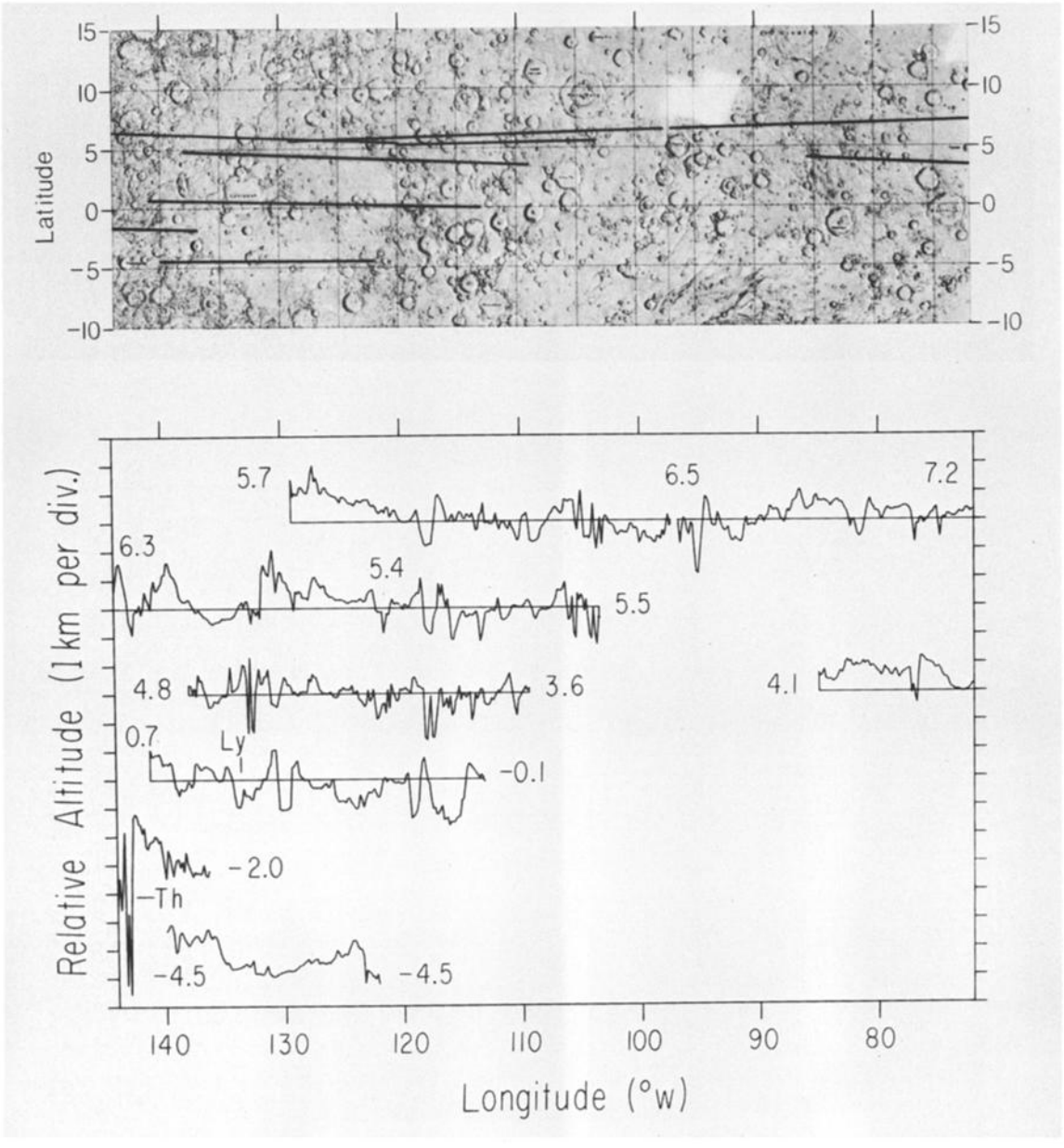

Fig. 2*b*. (Top) USGS shaded-relief map of the H-7 (Beethoven) quadrangle (72°–144°W longitude), with subradar tracks indicated. (Bottom) The altitude profiles for H-7. The display format follows that of Figure 2*a* (see caption). Ly, Lysippus; Th, Theophanes.

gles, are available in 1 : 5,000,000-scale shaded-relief maps published by the *U.S. Geological Survey* [1976, 1977*a*, *b*] and reproduced in the *Atlas of Mercury* [*Davies et al.*, 1978]. The relevant portions of these shaded-relief maps are included in Figures 2*a*–2*c* with the subradar tracks superimposed. The H-6 and H-8 quadrangles are also available in USGS geologic maps [*Schaber and McCauley*, 1980; *De Hon et al.*, 1981], and we refer to these maps in the discussion sections. The western portion of the H-8 quadrangle and the whole of the H-9 and H-10 quadrangles cover that portion of Mercury which was not imaged by Mariner 10 (the "unimaged hemisphere").

Since the USGS shaded-relief maps are the standard reference maps, careful checks were made for consistency between the Arecibo and USGS coordinate grids. The longitudes of features in the Arecibo altitude profiles agree very closely with their corresponding locations on the H-7 and H-8 quadrangles, whereas a small (0.4°) longitude shift was required for the profiles in Figure 2*a* in order to line them up with features on the H-6 quadrangle (see the appendix). Uncertainties in Mercury's pole position admit potential latitude grid errors of about a degree (see the appendix). The large N-S dimension of the radar footprint and the possibility of inhomogeneous surface scattering properties makes latitude errors harder to identify than longitude errors. Although it may be possible to use the altimetry data to place tighter constraints on Mercury's pole position, such an analysis is beyond the scope of this paper.

We have used the rms data scatter within the 0.15° averaging bin as an empirical measure of the random error of each altitude estimate. These errors are typically between 0.05 and 0.2 km, but can be as much as 1 km. The error bars have been omitted from the profiles in Figures 2*a*–2*e* for reasons of clarity, but they are shown in the "detail" figures accompanying sections 4, 5, and 6.