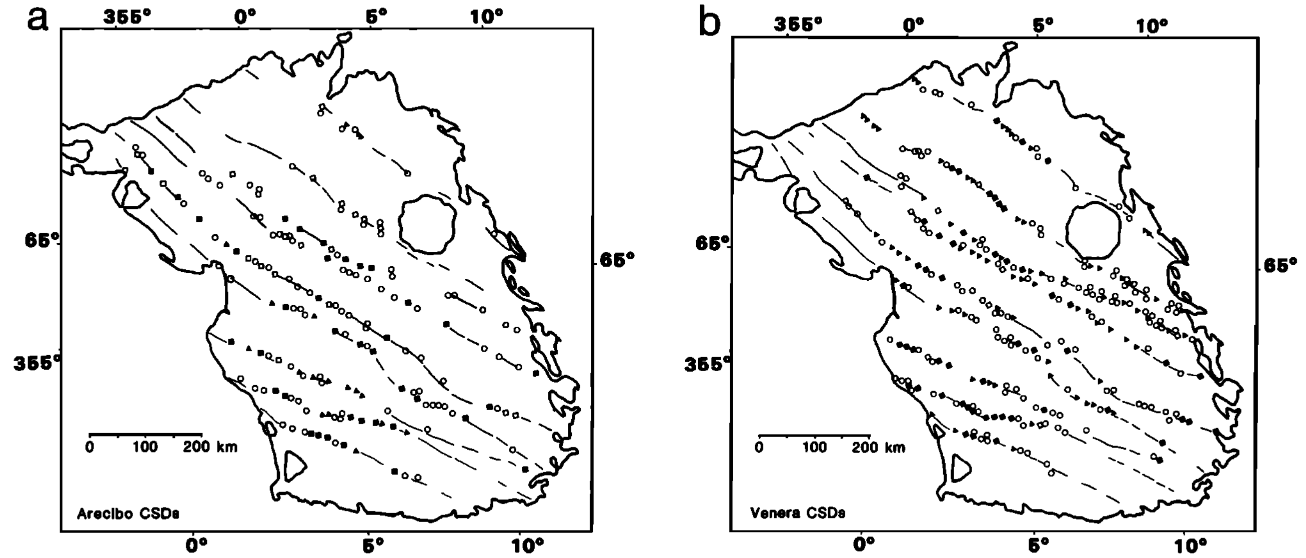

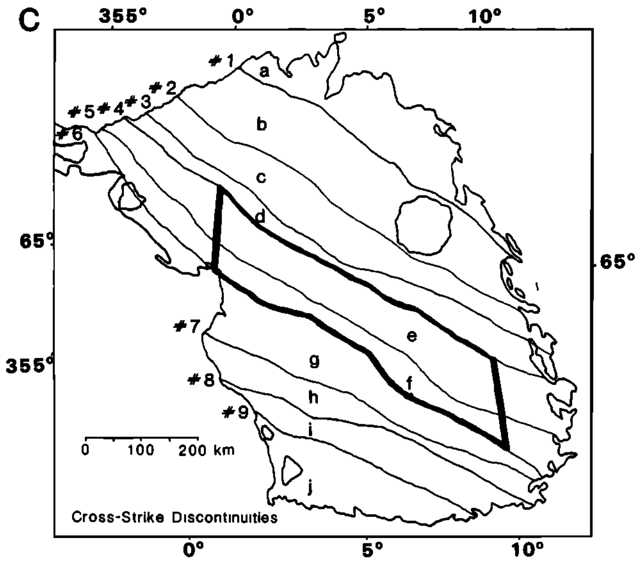

Fig. 8. Cross-strike discontinuities (CSDs). (*a*) Arecibo map of features defining CSDs. Circles represent ridge terminations, triangles represent changes in the width of ridges (>50%), open boxes represent changes in strike, solid boxes represent changes in width and strike, and heavy lines represent lineaments. (*b*) Venera map of features defining CSDs. Symbols as in Figure 8*a*. (*c*) Simple sketch map showing location of CSDs across Maxwell Montes. The CSDs are numbered 1-9 from north to south and divide Maxwell Montes into 10 crustal domains, identified here as a-j. Area in bold outline is that shown in Figure 10.

materials in these regions are relatively smooth and appear to have undergone minimal tectonic deformation in the form of the dark ridges and the extensional chasmata southwest of Maxwell. It is possible that plains materials could have buried CSDs in these regions. On Maxwell, these features have been recognized as topographic troughs in radar image stereo pairs (A. Pronin, personal communication, 1986).

Shear zones. The alignment of individual lineaments into semicontinuous linear features is also observed along the southern flank of Maxwell Montes, particularly within the Venera lineament map (Figure 6). These lineaments trend parallel to this southern flank which is characterized by a steep scarp where the topography decreases from over 7 km to less than 4 km (Figure 2*c*). Examination of the Pioneer Venus topography (Figure 1*c*) reveals that this steep scarp is linearly continuous to the west of Maxwell Montes for over 500 km and trends approximately N80°E. A similar 3-km-high scarp is present along the northern flank of Maxwell Montes (Figure 2*c*) and is also linearly continuous to the west for close to 500 km, while trending approximately N60°E (Figure 1*c*). As in the south, highly continuous, subparallel radar-dark lineaments are observed within the mountain and in the plains adjacent to this steep scarp. The regions corresponding to these scarps have been mapped by other investigators as shear zones [*Ronca and Basilevsky*, 1986; *Basilevsky et al.*, 1986; *Pronin et al.*, 1986; *Head*, 1986]. Consistent with this interpretation, the lineaments mapped along the southern scarp (Figure 6) can be interpreted as faults associated with the shear zones. In order to test this hypothesis and more fully characterize these zones and the style and sense of deformation associated with them, we have mapped the areas to the immediate south and north of Maxwell Montes in Figure 9.

The Venera image is used for this mapping since these regions are areas of relatively low radar return to the Arecibo system. The structural mapping of southern Maxwell (Figure 9*b*) shows that in addition to the north trending ridges associated with the mountain belt and the lineaments cutting across them, there are additional sigmoidal ridges striking approximately N70°W, at low angles (approximately 30°) to the trend of the lineaments. Anticlinal structures similar to these ridges are commonly observed cutting across terrestrial strike-slip faults at low angles [*Harding*, 1974, 1976], and the orientation of these features is determined by the sense of shear along the faults. The ridges associated with the N80°E trending lineaments in southern Maxwell strike N70°W, which is consistent with a left-lateral sense of shear, so that the region to the north of the shear zone (Maxwell Montes) is moving west relative to the region to the south. This sense of shear is the same found for this zone by *Ronca and Basilevsky* [1986] and *Pronin et al.* [1986]. *Ronca and Basilevsky* [1986] based their conclusion on the apparent deflection of the long, arcuate troughs in the plains southwest of Maxwell (Figures 1 and 2).

The N60°E trending shear zone to the north of Maxwell Montes is characterized by dark lineaments following the trend