



Fig. 18. (a) Right-lateral offset of Dardanus Sulcus. North is up. (Voyager 1 image 16404.44, centered near 18°S, 18°W.) (b) Sketch map of same area. Boundaries of groove lanes and sets of parallel grooves are shown in fine lines. Crater rims are shown in hachured lines. The strike-slip fault is shown as a heavy dashed line, and the sense of offset is shown by arrows.

approximately curvilinear, but the northernmost and southernmost ones possess right echelon bends.

Offsets of Distinctive Structures

Two examples of major strike-slip offset in the sub-Jovian hemisphere have been suggested by *Smith et al.* [1979a] and *Lucchitta* [1980], and both occur across portions of the identified hemispheric scale lineaments. One is a right-lateral offset across the lineament labelled "IIIa", which is near the small circle continuation of lineament III; the other is a left-lateral offset across the lineament labelled "IIa," which is near the small circle continuation of lineament II. The right-lateral offset is of Dardanus Sulcus and totals approximately 50 km (Figure 18, located at "a" in Figure 17b). Significantly, the strike-slip fault itself is visible as a subdued dark terrain trough in Figure 18, and has not been entirely buried by younger, superposed structures or materials.

The left-lateral offset is of a north-northwest oriented band of ridges or troughs in Nun Sulci, and totals approximately 70 km (Figure 19, located at "b" in Figure 17b). Figure 19b is a structural map of the site, showing features whose stratigraphic relations indicate a similar or younger age than that of the offset feature. Adjacent to the strike-slip fault is a variety of sharply defined northeast oriented troughs, whose orientations are con-

sistent with en echelon fractures. Groove lanes and throughgoing grooves throughout the nearby region have northeast orientations that are also consistent with transtensional deformation. In addition, there are several low, northwest oriented ridges which have orientations consistent with transpressional features.

Synthesis of Results and Interpretations

There is morphologic evidence in the sub-Jovian hemisphere for two minor shear zones, a right-lateral one between Barnard Regio and Nicholson Regio and a left-lateral one in Nun Sulci. The offsetting structural lineaments are near alignment with similar structural lineaments in the anti-Jovian hemisphere.

TIMING, CHARACTER, AND DISTRIBUTION OF SHEAR DEFORMATION

Timing of Faulting

The timing of shear offset of large blocks of lithosphere may be constrained by four mutually consistent observations. First, there is evidence that furrow systems I and II and the younger, unique, northeast oriented dark terrain trough all have been offset (Figures 4, 12, and 13). Second, some groove lanes appear to have been offset by shear; alternatively, they formed in previ-