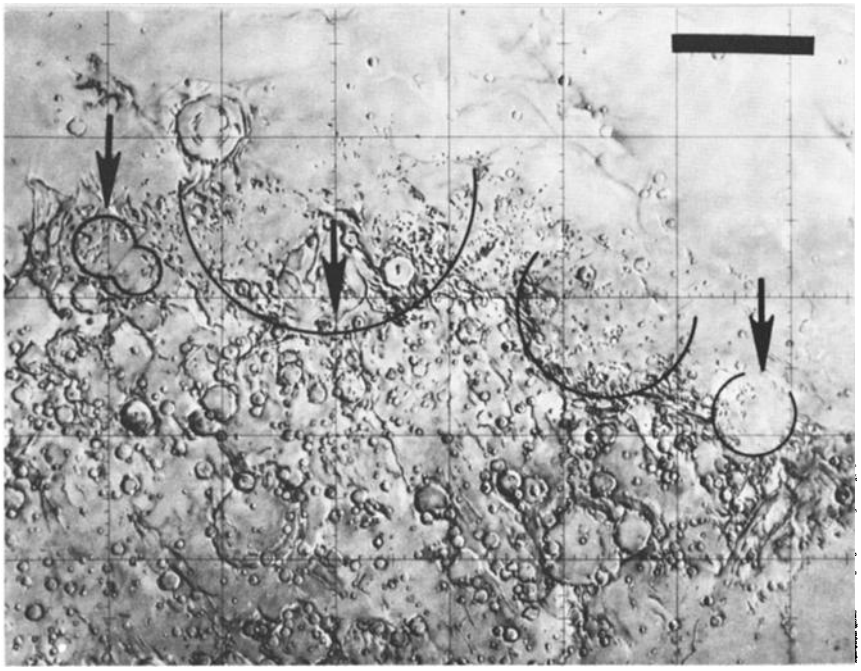

Fig. 14. Outlines of most prominent basins proposed to control the development of the fretted terrain. These basins may have provided primary pathways for igneous intrusions through the martian crust. Superposed craters further localized this magma migration into near-surface reservoirs. Arrow at left indicates basins in Figure 12. The arrow at right corresponds to Figure 13*a*, and the middle arrow to Figure 13*b*. The base is shaded-relief map of Mars. Bar scale indicates 500 km.

Fig. 15. Chaotic terrain, Aram Chaos, north of Margaritifer Sinus. Collapsed terrains form a concentric pattern believed to reflect intrusions along basin-controlled faults. Source region for Ares Vallis occurs on the 300-km-diameter outer ring (arrow). Viking frames 451A01, A02 centered at 14°W, 30°S. Bar scale indicates 100 km.

plosions resulting from vaporization of ice-bearing material by magma injected along ring fractures may account for the missing material. The ring of dark deposits surrounding the example in Figure 6*a* may represent tephra deposited by such explosions.

An early stage of crater-controlled volcanism may be represented oy the craters shown in Figures 6 and 7. Thawing of material in the region northwest of Isidis Planitia is interpreted to be responsible for exposing crater-controlled dikes which are perhaps related to an early stage of volcanism around the Isidis basin. The stripping of floor materials in this region may result from both the abrupt relief (2–3 km over a few hundred kilometers) between the cratered plateau materials and the adjacent plains and the connection of the floor with these plains by channels. In contrast, the region west of Deuteronilus Mensae (Figures 2 and 3) gradually slopes to the northern plains regions with an elevation difference of less than 1 km over thousands of kilometers.

The concentration of floor-fractured craters near the chaotic terrains and the common occurrence of channels extending from circular zones of chaos and from old craters [*Sharp*, 1973; *Schultz et al.*, 1973; *Stockman*, 1976] suggests a genetic relationship. As was noted above, material thawed by crater-controlled intrusions and confined below a relatively impermeable layer (e.g., basalt or frozen sediments) creates a mechanically unstable condition. Such a condition seems likely because the region is thought to represent an old cratered terrain that has been covered by a later stage of marelike volcanism [*Wilhelms*, 1974; *Scott and Carr*, 1978]. Catastrophic release of the metastable crater contained materials as a slurry perhaps produced certain martian channels as described by *Nummedal* [1978].

The general absence of obvious volcanic vent structures in martian craters interpreted as volcanically modified is paral-