



Fig. 3. The multiring pattern associated with Aram Chaos. Concentric patterns of unstable (chaotic regions) and stable terrains delineate ancient multiring basin pattern. The source regions for Ares Vallis occur along the concentric rings, and the plan of Ares Vallis is believed to be both topographically and structurally controlled by an outer ring remnant (arrows). Bar scale represents 100 km. Viking mosaics MC19 NE, NW; MC11 SE, SW.

pendicular to the major valley trend. One prominent meandering channel southeast of Ladon exhibits a flat floor and is deeply incised. To the north, this ring coincides with the arcuate southern boundary of Eos Chasma. Patches of extensive valley networks occur in this region as well; however, most of them appear to have been consumed by mass wasting related to Eos Chasma. To the east, a channel originating at the base of the next interior ring widens at the interior base of the third ring. This region is exceedingly complex and exhibits at least three separate stages of channel development based on superposed channel forms. Complexity in both channeling and the chaotic terrains increases beyond the third ring. An additional but very poorly defined fourth ring also may be present, again identified on the basis of valley patterns, structural control of Eos Chasma, and floor-fractured craters.

A smaller multiringed basin (600 km diameter) overlaps Ladon to the southwest. As in Ladon, chaotic terrains and channel source regions occur along the inner and outer rings. The source region of Nirgal Vallis is most likely related to the inner basin ring. Valley systems are more extensive where these basins overlap.

In summary, Ladon Basin has retained segments of its original morphology and relief but is most readily identified by modifying processes which differ for each ring zone. The occurrence of channel source regions, chaotic terrains, and floor-fractured craters along the second and third rings suggest that endogenic processes are operative in a manner similar to lunar

mare-filled basins. The increased frequency of valley networks, channel plan, and development of Eos Chasma beyond the third ring may be related to the ejecta facies of Ladon.

Aram Chaos. Aram Chaos (Figure 3) was first recognizable in Mariner 6 images as a circular region of fracturing breached by channels (e.g., see *Schultz and Ingerson, 1973*). Mariner 9 clearly revealed its more complex nature and the associated channel, Ares Vallis, that extends to Chryse Planitia [*Masursky, 1973*]. Chaotic terrains typified by Aram Chaos have been interpreted as zones of ground ice melted by igneous intrusion [*Masursky, 1973; Sharp, 1973; Sharp and Malin, 1975; Masursky et al., 1977*], regions of magma withdrawal [*Sharp, 1973*], and regions collapsed by catastrophic removal of an unstable aquifer [*Carr, 1979*]. *Schultz and Glicken [1979]* further proposed that Aram Chaos represents an old impact basin that localized intrusions along concentric ring fractures, thereby resulting in episodic and catastrophic releases of hydrothermal slurries of water and mud.

Figure 4 reveals clearly the concentric arrangement of terrains within and around Aram Chaos. The circular region of Aram Chaos is bounded by an irregular inward-facing scarp and narrow moat. Within this boundary, a wide region of heavily fractured plains partly encircles a complexly modified, crescent-shaped region of lower elevation. The inner boundary of fractured plains is marked in the west by small massifs. This orderly concentric sequence of scarp, moat, fractured plains, massifs, and inner modified region to the west is not well expressed to the