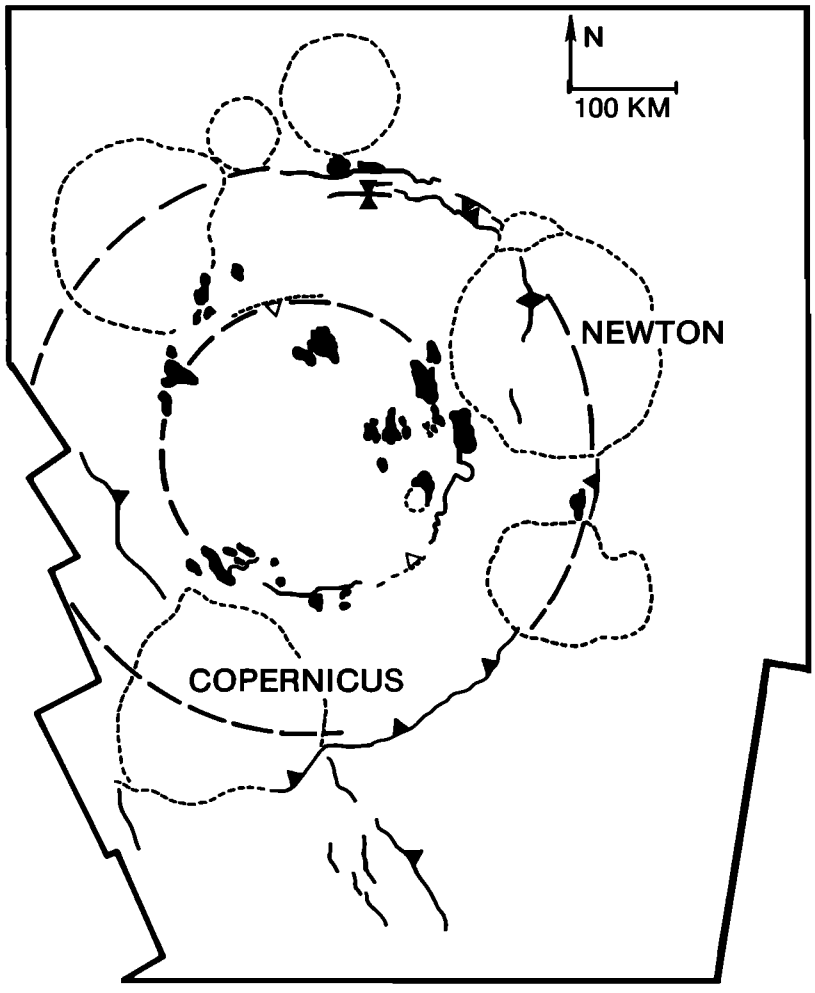

Fig. 13*b*. Sketch map identifying massifs and scarps indicating ancient multiring plan shown in Figure 13*a*.

or intrusively triggered hydrothermal activity (channel source regions and ground sapping on Mars).

Reactivated basin rings contrast somewhat with pristine ring forms. Unmodified basin rings corresponding to the Rook Mountains of Orientale typically are a collection of massifs, whereas reactivated basin rings commonly form a well-defined moat or scarp. For example, the collapsed terrain forming the prominent moat of Aram Chaos is thought to correspond with zone D. The original ring pattern of this basin ring may have been delineated by massifs that formed a more irregular ring plan. The difference in expression contrasts the effects of deep-seated ring faults (zone D) with topographic ring highs (inner zone E). Reactivated basin rings on the moon exhibit a similar contrast. The boundary scarp of Mare Smythii corresponds to the outer limit of zone D. Even though the original massifs are nearly gone (owing to subsequent impact degradation), the circular plan has been reestablished by later volcanism/tectonism [*Schultz*, 1976, 1979].

The extensive network of narrow valleys within the next stable zone (E) leads to the interpretation that this region is easily eroded and highly permeable—a condition easily understood for highly fractured basement material overlain by basin ejecta. The overlay of ejecta of this zone is consistent with interpretations of the domical terrain between the Rook and Cordillera rings of Orientale as ejecta deposits [*Head*, 1974]. A consistent model of the ejection process and basin mechanics is discussed in *Schultz et al.* [1981] and *Croft* [1981].

The next unstable zone (F) is not typically expressed as continuously as the interior unstable annuli. Although a well defined scarp may exist (e.g., Orientale's Cordillera on the moon or scarps around Ladon, Aram, and the large unnamed example on Mars), endogenic modification occurs only locally as mare ponds (e.g., Lacus Atumni of Orientale) on the moon or chaotic terrains, channel sources, and zones of sapping on Mars. The relatively well defined scarp indicates a well-defined fault zone. The discontinuous nature of endogenic modification, however, suggests that the scarp developed during a short-lived period of nonuniform radial tension during basin formation. Subsequent endogenic processes may be localized along this zone, but massive readjustment along the entire ring can occur only during conditions of widespread tension. Observations indicate that localized modification is most common and occurs in conjunction with regional volcanism/tectonism, rather than global tension. Beyond the principal scarp, which bounds the unstable annulus F, preexisting structures may be preserved as illustrated by the cookie cutter geometry exposed along the fretted terrains. Nevertheless, an additional ring fracture (H) may cut across this terrain and, in certain locations, be the site of volcanism (mare-filled craters) or hydrothermal processes (collapsed terrain, channel source regions). Similar circumferential fractures develop around lunar craters that have undergone extensive endogenic modification [*Schultz*, 1976]. Because gradational