



## THE GEOLOGICAL SOCIETY OF AMERICA

P. O. Box 1719,  
Boulder, Colorado 80302, U.S.A.

# 1968 Annual Meetings

NOVEMBER 11-13, 1968  
MEXICO CITY, MEXICO

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ABSTRACTS

### Classification of Lunar Rilles

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Lunar rilles or rimae are clefts, furrows, or channels of varying shapes and sizes. The dimensions are less important than the shape; rilles of different sizes may belong to one of four major geometric classes in plan view—linear, arcuate, sinuous, or complex. Type examples of twelve subclasses are identified. Differences among a number of the subclasses are defined by the degree of sinuosity. The latter can be treated quantitatively by determining the "sinuosity index": the percentage of curved portions of a rille as compared to its total length.

Single, branching, and network linear rilles crosscut maria and terrae, completely disregarding pre-existing structures. They appear to be grabens controlled mainly by major fracture systems. Arcuate rilles usually parallel basin borders, and some are confined to crater interiors. Thus, they appear to be controlled by localized structures. Sinuous rilles of varying wavelengths, single or branching, V- or U-shaped in cross section, occur mostly in maria. Double sinuous rilles are found in plateau plains and rugged terrain. The geometry of sinuous rilles suggests that they may have been produced by short-lived, prolonged, or multi-step erosive action caused by fluid flow. Rilles displaying combinations of linear and sinuous geometry are limited to borders of large basins and parallel to highland ridges. This indicates that they may have formed by the widening of pre-existing fractures. Some crater chains (both endogenetic and exogenetic) form rilles, and a few irregular rilles exhibit an anarchy of geometric shapes and mode of occurrence.