Upper Granular Chert zone	
Chalky Chert zone	Eminence
	Potosi
Lower Granular Chert zone	

Chert zones have made it possible to locate accurately the stratigraphic position entered in the dolomite section. The upper part of the Ellenburger has been truncated in four wells in the Big Lake field (Reagan County). Restoration of the truncated part shows the axis of the folding to be parallel to the Permian folding (San Andres) which runs NW.-SE. rather than N.-S.

Some 275 feet of Ellenburger is absent from the base against the Apco Ridge (Pecos County), probably due to overlap, and about 900 feet has been eroded from the top of the section in this area.

21. ROBERT L. BATES, geologist, New Mexico Bureau of Mines and Mineral Resources, Socorro, New Mexico (Published with the permission of the Director)
Lateral Gradation in Seven Rivers Formation, Rocky Arroyo, Eddy County, New Mexico

The paper embodies results of a study of surface exposures of Rocky Arroyo, 12 miles northwest of Carlsbad, New Mexico. In the walls of this and adjacent canyons is revealed an abrupt lateral change in lithology in the Seven Rivers formation. A 275-foot section of gypsum with thin beds of dolomitic limestone merges into a thinner section of uniform dolomitic limestone with some sandstone beds. Evidence is presented to show that this change is the result of interfingering of gypsum and dolomitic limestone. Thin beds of the latter extend for some distance into the gypsum. However, thick layers of gypsum between beds of dolomitic limestone end abruptly and their places are taken by zones of red porous loosely crystalline calcitic limestone. These limestone beds become thinner away from the gypsum beds and finally pinch out, so that in the final analysis the gypsum beds are equivalent to bedding planes in the section of dolomitic limestone. Channeling of the canyon walls by present-day streams has produced a striking type of breccia, in which angular blocks of dense light-colored dolomitic limestones are firmly embedded in red crystalline highly calcitic limestone.

The following conclusions are suggested. The lateral change of section does not represent overlap, as has previously been suggested, but is an abrupt lateral gradation. This gradation is not a local phenomenon but occurs in the Seven Rivers formation for an undetermined distance at the same relative position back of the Capitan Reef, the controlling factor of Permian sedimentation in this region. Advance and retreat of the Seven Rivers seas is suggested, with the anhydrite-depositing environment approaching closest to the Capitan Reef in earliest Seven Rivers time and thereafter making shorter advances. The presence of the lateral gradation in the subsurface should be taken into account when correlating well logs penetrating the Seven Rivers section farther to the east.

22. L. R. LAUDON, University of Tulsa, Tulsa, Oklahoma
ARTHUR BOWSHER, University of Tulsa, Tulsa, Oklahoma
Mississippian Formations of Sacramento Mountains of New Mexico

Formations of Mississippian age are exposed along the west face of the Sacramento mountains of New Mexico from a short distance north of Alamogordo southward to the vicinity of Grapevine canyon. Detailed sections have been measured and the faunas collected throughout the entire area of exposure. The name Cabellero is proposed for the gray, nodular, marly limestone formation of Kinderhook age lying at the base of the Mississippian section. The Caballero formation has heretofore been considered as a part of the Lake Valley formation. The Lake Valley formation has been divided into three members, Alamogordo at the base, followed by Arcente, and capped by Dona Ana. The fauna of the Caballero formation is closely related to that of the Chouteau formation of the upper Mississippi valley region. The Lake Valley formation is entirely of early Osage age. Both Fern Glen and lower Burlington faunas can be recognized. Spectacular large bioherms characterize the Alamogordo member making it necessary to subdivide the member into several facies.

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