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Introduction

Frank E. Kottlowski, 1953, pp. 8-9

in:

Southwestern New Mexico, Kottlowski, F. E.; [ed.], New Mexico Geological Society 4th Annual Fall Field Conference Guidebook, 153 p.

This is one of many related papers that were included in the 1953 NMGS Fall Field Conference Guidebook.

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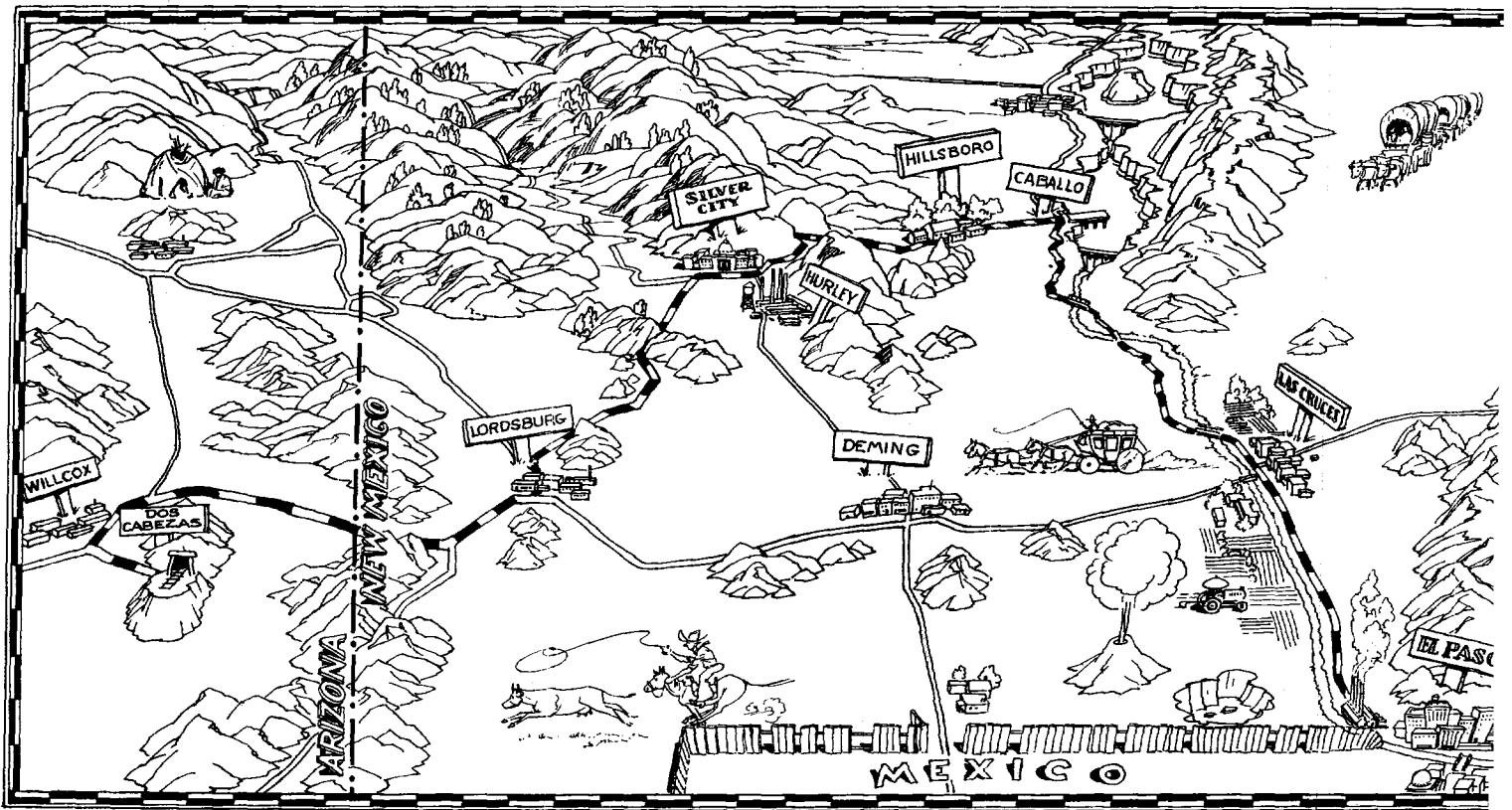
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INTRODUCTION

by

Frank E. Kottowski

Southwestern New Mexico is a land of contrast. From the cool, timbered heights of the Black Range and Mogollon Plateau the traveler may view dune-covered creosote plains of La Mesa; it is scarcely five minutes from the modern crowded streets of El Paso and Las Cruces to the uninhabited desert; the glistening alkali flats of the Animas Valley bear no resemblance to the lush green fields of Mesilla Valley; a rocket from White Sands Rocket Range flashes across the sky above the ruins of a stage coach station; and an airplane flies above the Jomada parallel to El Camino Real, the path of Rodriguez almost four centuries ago.

This is Apacheria, as it was labeled on Spanish maps, and no factor influenced the development of the region more adversely than did the Apaches. They raided the Pueblos, harried the Spanish, feuded with the Comanches, and fought the settlers; as late as 1928 there were Apaches on the warpath. There were no pueblos in this area, and the Spanish themselves held only two settlements, Juarez and Santa Rita, one along the Santa Fe - Chihuahua trail, the other the only mining area they developed.

Along the eastern edge, the Rio Grande,

rising in the lofty San Juan and Sangre de Cristo mountains, flows southward in a ribbon of green amid sandy plains and flanking ridges; it provides the lifeblood of irrigated farms from Mesilla to Brownsville; a narrow strip where cotton, alfalfa, and pecans grow in well-watered profusion just a few miles from where steers dig at dry waterholes and munch on prickly pear cacti.

The northern half of this land of contrast is the Gila Wilderness, the Mogollon volcanic plateau comparable in size and origin with the publicized Yellowstone-Shoshone-Absaroka area. Here rises the Gila River, to wind its twisting way through lonely rock canyons in the midst of thick forests, flowing westward to water most of Arizona and join the mighty Colorado a few miles from the Pacific. This is the backbone of the continent, and we will stand on a spot where a raindrop could split and send one part to the Gulf of Mexico and the other to the Gulf of California, 1200 miles away.

The southern part is typical Basin and Range country where elongate mountain ranges rise like islands from an endless sea of vast greasewood plains. Here the modern miracle of inexpensive electricity drives the driller's bit and the pump to transform the lonely cattle ranges into orchards and cotton fields - and in one place, on the very spot where thirsty explorers fought the Apache for muddy drops from a salty water hole. Here the

ghosts of Spaniards centuries dead, the solitary prospector and his burro, the raiding party of Apaches, and Cibola with its treasure rises out of mirages over the playas.

This area is part of the Mexican Highlands section of the Basin and Range province. The northern border against the Colorado Plateau is obscured by the huge Cenozoic volcanic mass of the Mogollon Plateau which allows only glimpses of complexly faulted and intruded pre-Cenozoic rocks. On the east is the Sacramento section, a gradation from range and valley topography, sloping eastward to the Pecos Valley and the Llano Estacado of the Great Plains. To the south the vast Basin and Range area continues almost to Mexico City. Elevations range from 3700 feet in the Rio Grande Valley near El Paso, to the 10,892 feet of White-water Baldy near Mogollon, and the 10,713 feet of Mt. Graham in Arizona.

The climate is semi-arid to arid although the mountains receive considerable precipitation. Most of the rainfall is in the form of scattered, violent thundershowers during the summer months. Hot dry days and cool nights are the usual fare. As a result, the lower ranges are of bare rock, frequently brilliant in color, carved into craigs along the V-shaped canyons, and surrounded by alluvial fans or pediments that slope down into the bolsons and intermont valleys, whose lowest parts contain playas.

Population density is influenced by three factors: water, mines, and the railroads. El Paso and Las Cruces, along the Rio Grande, Deming and Lordsburg along the railroad, and Silver City on the edge of a great mining district, are the cities. U. S. Highway 85, paralleling El Camino Real, follows the Rio Grande Valley northward; U. S. Highway 70-80 crosses east-west; U. S. Highway 260 trends north-west from Deming to Silver City and beyond; while N. M. Highway 180 crosses from southwest to northeast through the wooded Burro Mountains and over the Black Range. The Southern Pacific Railroad serves El Paso, Deming, and Lordsburg; a branch of the Atchison, Topeka, and Santa Fe Railroad follows the Rio Grande Valley and touches at Deming and Silver City as well as at El Paso.

Extensive irrigation farming is carried on along the Rio Grande and in some of the intermont valleys such as near Deming, the Playas and Animas valleys, and the Mimbres Valley. On the wide plains are large cattle and sheep ranches; in the mountains are mines hoisting the copper, zinc, lead, and fluorite for our industrial nation.

The rocks exposed include a maximum of 15,000

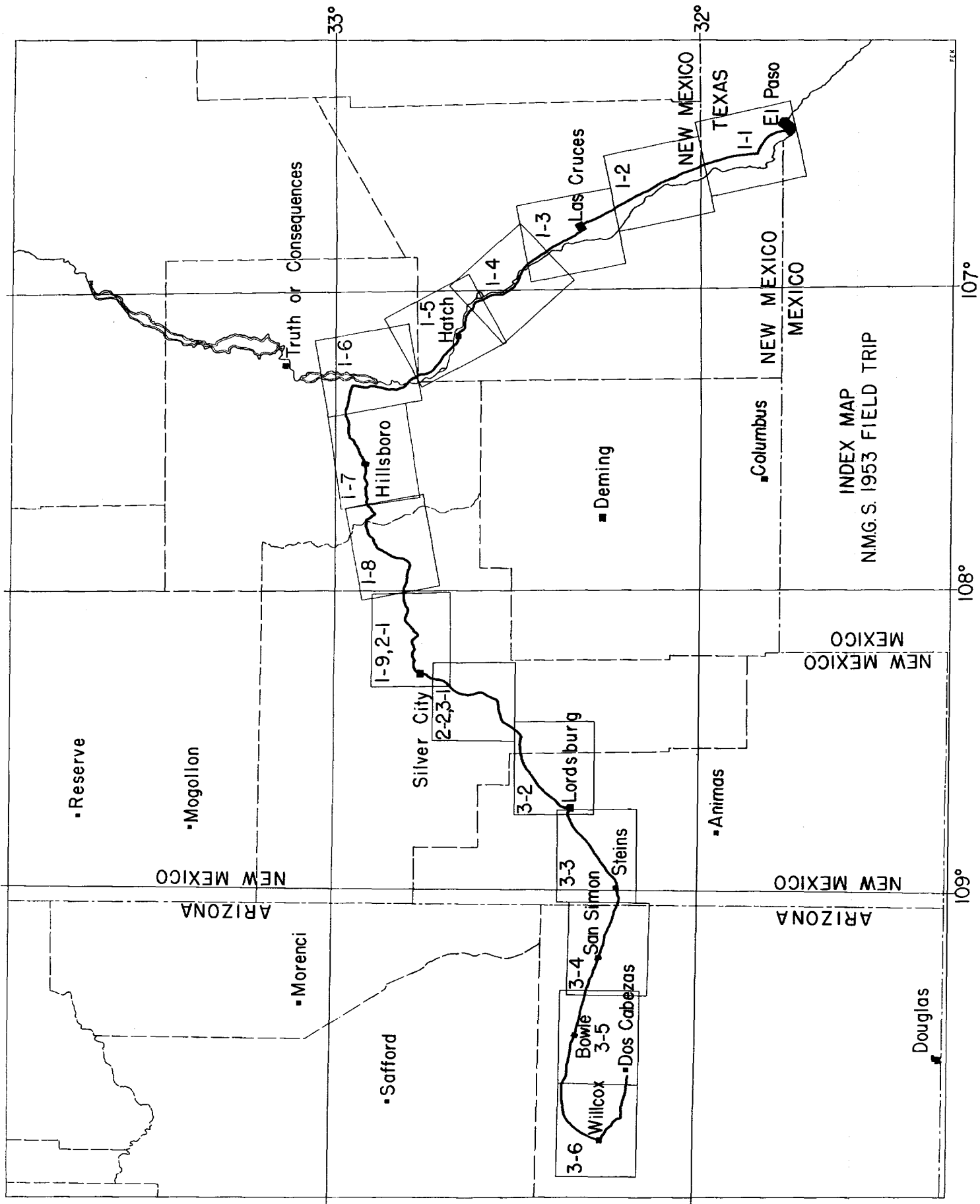
feet of sedimentary beds, and include representatives of Precambrian, Paleozoic, Cretaceous, and Cenozoic time. Pre-Cenozoic strata are exposed in most of the mountain ranges, although many of the upland masses are of Tertiary volcanic rocks. The basins are filled in many places with several thousand feet of late Cenozoic alluvium, so that petroliferous beds may lie at great depths in the depressions. The Cenozoic beds, however, cut across the earlier rocks with a great unconformity, so that there may be hidden anticlines, stratigraphic traps, or faulted domes buried beneath a relatively thin blanket of bolson deposits in some of the intermont valleys.

The conference will begin Thursday with a pre-trip excursion near El Paso to examine outcrops of Paleozoic strata in the Franklin Mountains and the Cretaceous rocks in Cerro de Muleros. The guidebook includes a road log from El Paso to Las Cruces, but the main trip will begin on the north side of Las Cruces. From Las Cruces the caravan will drive to Caballo, then through Hillsboro and Kingston to Silver City. Five stops will be made: (1) near Robledo Mountain, (2) near the Caballo Mountains, (3) along Percha Creek, (4) at Emory Pass, (5) on the west side of Mimbres Valley. Almost continuous exposures of the thick late Tertiary volcanics, late Cenozoic sediments, and Paleozoic sedimentary rocks occur along the route.

Saturday, the conference will examine the Paleozoic and Cretaceous sediments near Silver City, the lead-zinc mines, the Santa Rita copper pit, the Tyrone district, and the White Signal uranium deposits. Sunday, the caravan will drive from Silver City over the Burro Mountains to Lordsburg, then westward through Steins Pass to Willcox and Dos Cabezas, Arizona. Along the route occur outcrops of the Cenozoic bolson deposits, of Quaternary lake sediments, of Paleozoic and Cretaceous strata, and of the tremendously thick Tertiary volcanic beds. West of Lordsburg there will be a stop to discuss areal stratigraphy and structure, and near Dos Cabezas a section from Precambrian to Permian will be examined.

In addition to the road log, the guidebook contains short articles on the rocks exposed along the route, the regional structure, the history of petroleum exploration in the area, and the geology and mineral resources of the Silver City district. There are relatively few detailed geologic maps of southwestern New Mexico, except for the intensive reports on the Silver City district. Much of the geologic record is yet to be, or is being investigated, so that most broad conclusions are tentative, and we hope to whet your appetite, and arouse your interest.

Bon voyage!



INDEX MAP
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