

New Mexico Geological Society

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Introduction

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This is one of many related papers that were included in the 1954 NMGS Fall Field Conference Guidebook.

Annual NMGS Fall Field Conference Guidebooks

Every fall since 1950, the New Mexico Geological Society (NMGS) has held an annual [Fall Field Conference](#) that explores some region of New Mexico (or surrounding states). Always well attended, these conferences provide a guidebook to participants. Besides detailed road logs, the guidebooks contain many well written, edited, and peer-reviewed geoscience papers. These books have set the national standard for geologic guidebooks and are an essential geologic reference for anyone working in or around New Mexico.

Free Downloads

NMGS has decided to make peer-reviewed papers from our Fall Field Conference guidebooks available for free download. This is in keeping with our mission of promoting interest, research, and cooperation regarding geology in New Mexico. However, guidebook sales represent a significant proportion of our operating budget. Therefore, only *research papers* are available for download. *Road logs*, *mini-papers*, and other selected content are available only in print for recent guidebooks.

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Southward from Artesia the caravan leaves the cultivated area and proceeds along the foothills of the northeastern prong of the Guadalupe Mountains. From some points the placid waters of Lake McMillan, fed by the Pecos River, may be seen in the distance. Eastward across the Pecos are red cliffs of Permian strata, and beyond are open sandy stretches. Still farther east are the flat lands of the Llano Estacado or Staked Plains. Not visible but nevertheless present in this region east of the Pecos are the more important oil and gas fields of Eddy and southern Lea Counties, and the potash mines area.

The City of Carlsbad lies on the northern edge of the Delaware Basin, a wide expanse of brush-covered plains, low rolling hills, large cattle ranches and smaller farms. The Pecos River, meandering through this plain, flows southward to its confluence with the Rio Grande. Where it crosses the New Mexico-Texas line is the point of lowest elevation of New Mexico, 2850 feet.

On the second day of the field conference the caravan penetrates the eastern Guadalupe Mountains and studies the Permian strata of which they are composed. The transition of these strata into the massive limestones of the Capitan Reef will be observed and the reef itself will be crossed with opportunity given for noting its geologic character. After leaving the reef zone the party proceeds along the northern margin of the Delaware Basin and follows a course in general parallel with the Capitan Reef, which rises in elevation to the southwest.

Some distance past White City, the entrance to the Carlsbad Caverns National Park, the caravan crosses the state line into Texas. Formations of Permian age characteristic of the Delaware Basin crop out along the highway, and to the north can be seen the bold front of the Guadalupe. Ahead and to the southwest is the sheer cliff of El Capitan (Guadalupe Point) and the higher Guadalupe Peak some distance northward from it. The Peak is eight miles south of the Texas-New Mexico line, and is the highest point in Texas (8751 feet.)

Proceeding onward over outcrops of Permian strata the party finally arrives at the Point of the Guadalupe and detours from the highway to Beacon Hill, an observation point in the Delaware Mountains where a magnificent view of the surrounding region is obtained. Much of the geology of the region is here laid before

the eye of the observer. Near here in earlier times passed several exploring expeditions, and a little distance to the north the stagecoaches of the old Butterfield stage line rocked and rolled over the stoney road-bed.

On this day opportunity is given to see the Capitan Reef, with its northern back-reef facies and its southern Delaware Basin facies and it is hoped that the observations which will be made will serve as a partial foundation for any further studies of the reef which the observer may undertake. Much has been said and written about the origin of the reef and the correlation of strata transitional thereto, but many geologists still hold the opinion that much still remains to be done before all the problems of the reef can be solved.

After two days of surface studies the field conference on the third day takes its participants underground with the choice of a guided tour through the potash mine of the International Minerals and Chemical Corporation or a special geological tour through the Carlsbad Caverns.

Those who visit the potash mine will see the sub-surface character of the Salado salt and anhydrite and the occurrence of the potash minerals. They will see a modern mine operated on a large scale by up-to-date mining methods. This is an experience which no geologist should overlook.

Those who visit the Carlsbad Caverns will see more of the exposed Capitan reef, and in addition will penetrate its solution chambers and view the magnificence of the stalactitic and stalagmitic growths, and other speleological splendors.

The field conference committee requests that all participants in the potash mine trip or the caverns trip cooperate fully with the mine management or the Park authorities. These trips have been arranged with this understanding. A tour of the mine requires complete attention to business and full compliance with all instructions or requests made by the guide; otherwise serious consequences may develop. The Park authorities have laid down rules for the proper conduct of visitors to the Caverns and the preservation of its natural wonders. It is essential that all who take part in this trip stay on the trails and in no way mar the rock formations. While on the surface in the Park it is to be understood that all geologic hammers are to be left in the cars and no rock specimens are to be

collected.

Some statement regarding the preparation of this guidebook appears to be in order. It is, of course, understood that three days are wholly insufficient for seeing more than a small part of this vast region. Southeastern New Mexico was selected last year by the officers of the Society as the region for this year's conference. The General Chairman and his assistants have done their best to provide a field trip which would give the participants a general view and a basic understanding of the geology of the region as well as some acquaintance with its unsolved problems. For those who care to make use of them, road logs in addition to those prepared for the route of the caravan are provided. Much of the Sacramento-Guadalupe Mountain region is remote or not readily accessible, and field studies are practicable only by jeep, by horseback, or on foot. The roads logged in the guidebook are all passable by automobile.

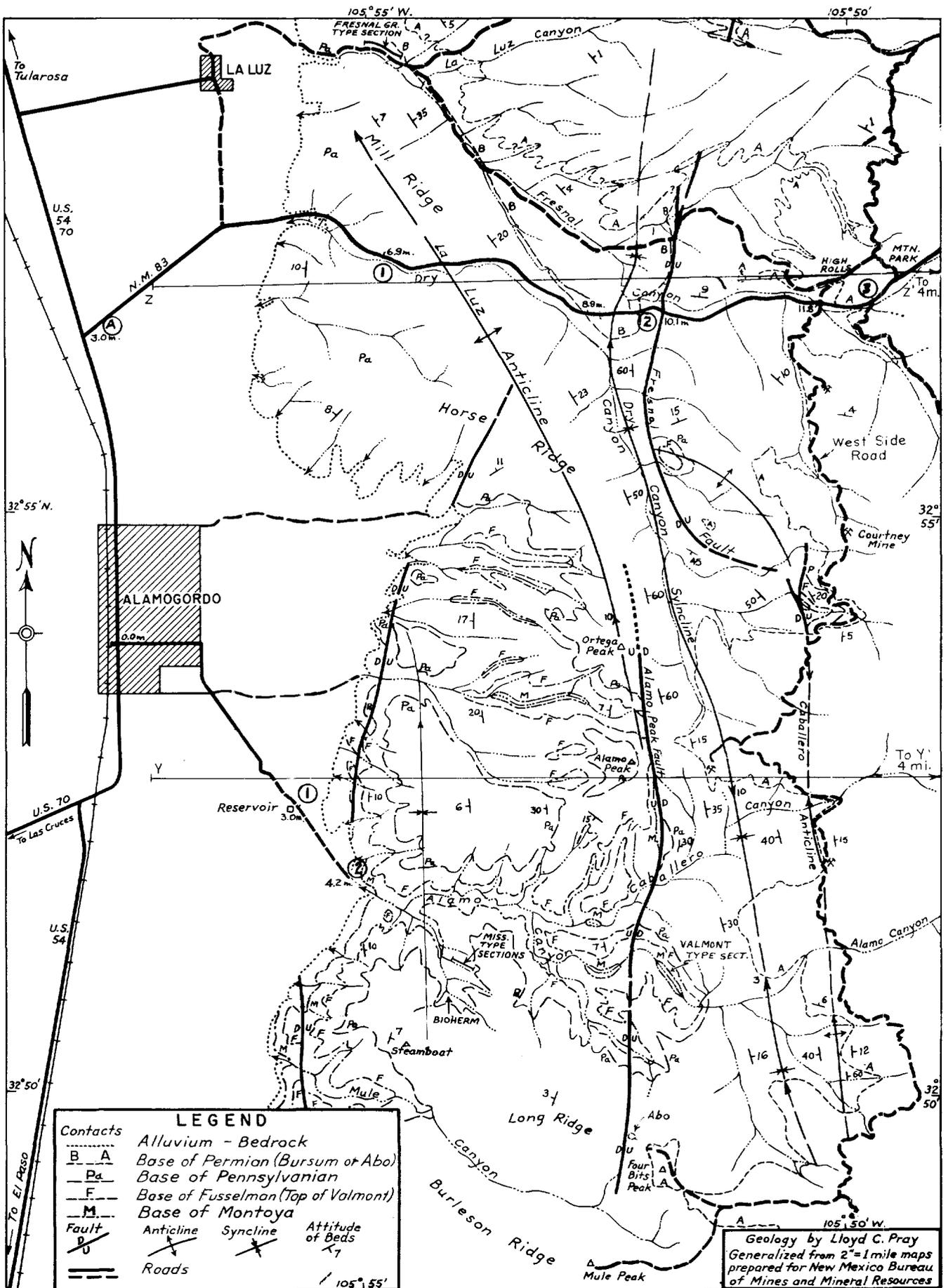
A visit to the oil fields of southeastern New Mexico, while desirable, could not be scheduled in the three days allotted for this conference. Even had this been possible, little additional geologic information relating to the stratigraphy and structure of the fields would be gained, inasmuch as the subsurface geology is obscured by younger formations. The formations of importance in the oil fields with respect to oil and gas are exposed along the route of the field trip and will be discussed at selected points.

An attempt has been made to collect in this guidebook a series of papers which would serve as references for the geologist interested in the region. Those from whom articles were requested have responded nobly and appreciation for their time and efforts is here expressed. The authors are all competent in their fields, their papers have not been published elsewhere, and these articles bring to light information not heretofore available.

Southeastern New Mexico, like other parts of the state, has an interesting historical background. It is believed that the participants in this field conference will find their travels through the region more interesting if they will acquaint themselves with its history, and they are accordingly referred as recommended reading to the article "Adventures and Exploits of Pecos Pioneers" by Maurice G. Fulton, Research Specialist, Chaves County Historical Society.

Mention must be made of the reproductions of Peter Hurd's paintings and sketches which appear in the guidebook. Peter Hurd is our best known artist of the southwest. His home is at San Patricio in the Sacramento Mountains, in the Rio Ruidoso Valley about 50 miles west of Roswell, and most of the paintings are typical of Peter Hurd's country and the foothills of the Sacramento Mountains. The original paintings and sketches are, with one exception, the property of the Roswell Museum and may be seen in the Peter Hurd wing. Permission to reproduce these paintings was granted by the artist and the Museum, through the courtesy of R. Vernon Hunter, Director.

The officers and the committee members of the New Mexico Geological Society who have collaborated in the preparation of this guidebook, and in the arrangements for the field trip, welcome you to the Fifth Field Conference. We hope that you will find the trip interesting and profitable and that when you return home you will take with you pleasant memories of the Sacramento-Guadalupe Mountain region and the Pecos Valley.



GEOLOGIC MAP OF A PORTION OF SACRAMENTO MOUNTAINS, OTERO CO., NEW MEXICO