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Front Matter

(Usually includes Dedication, President's Message, & Conference Organizer's Message.)

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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.

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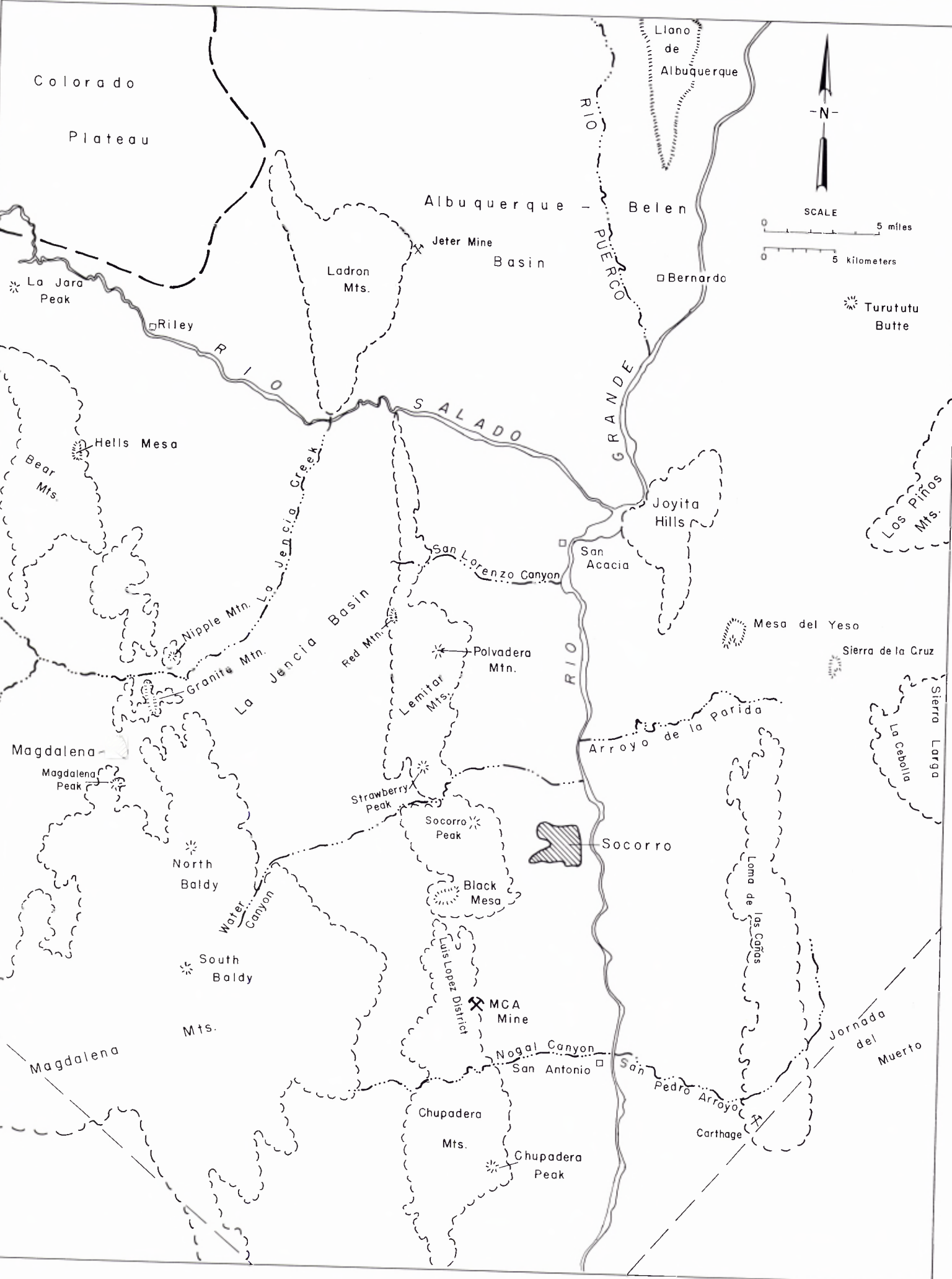
NMGS has decided to make peer-reviewed papers from our Fall Field Conference guidebooks available for free download. This is in keeping with our mission of promoting interest, research, and cooperation regarding geology in New Mexico. However, guidebook sales represent a significant proportion of our 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.

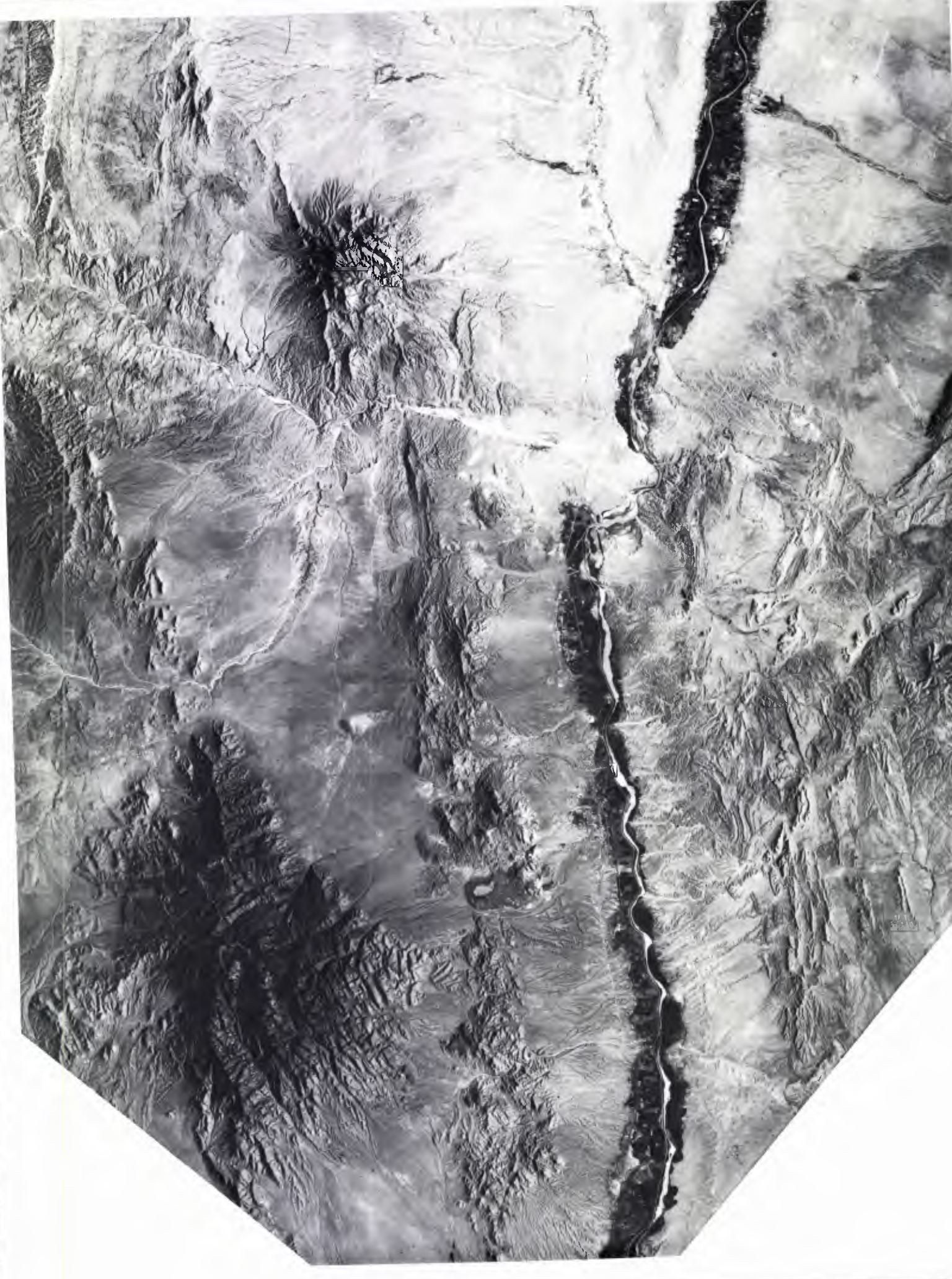
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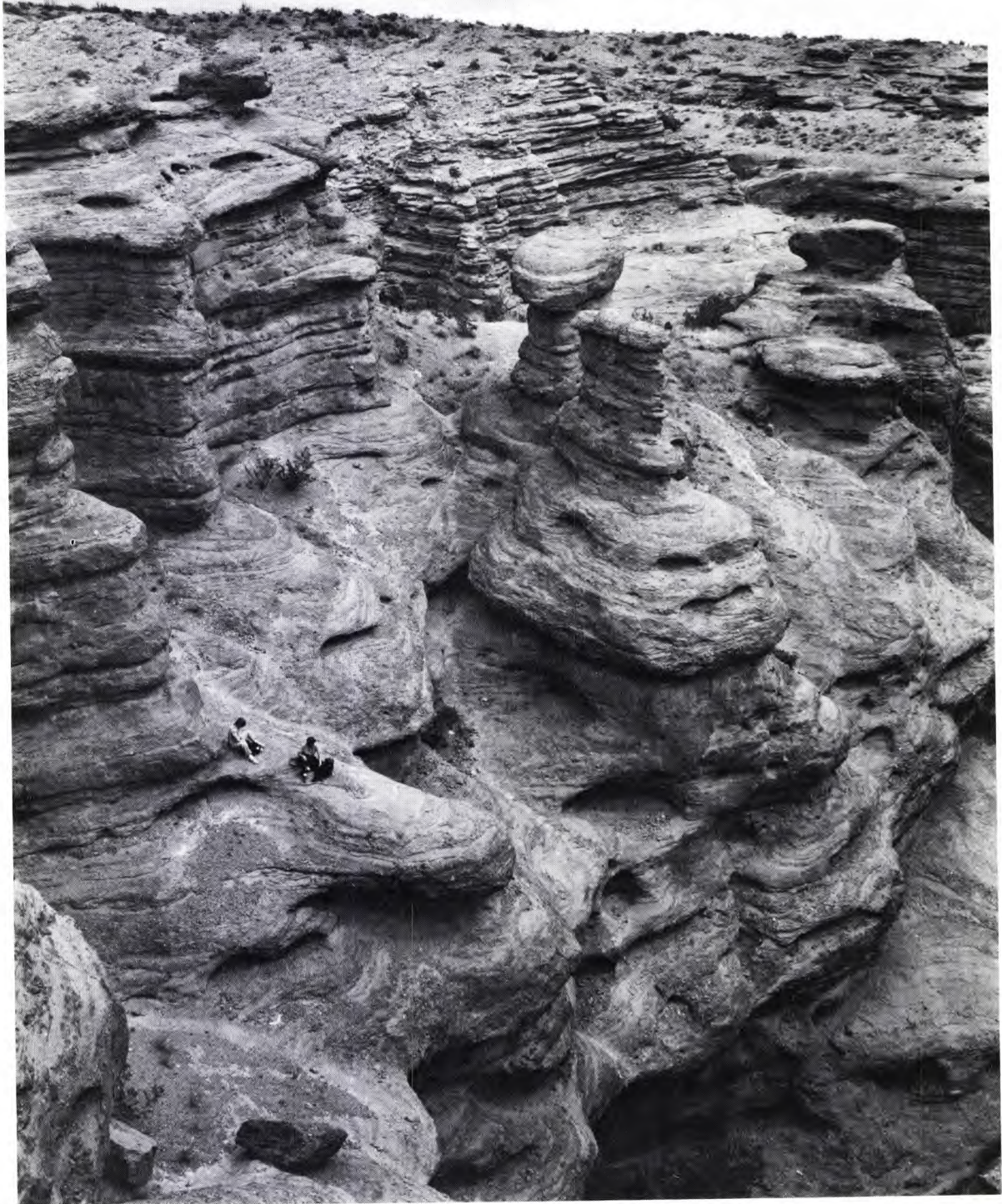
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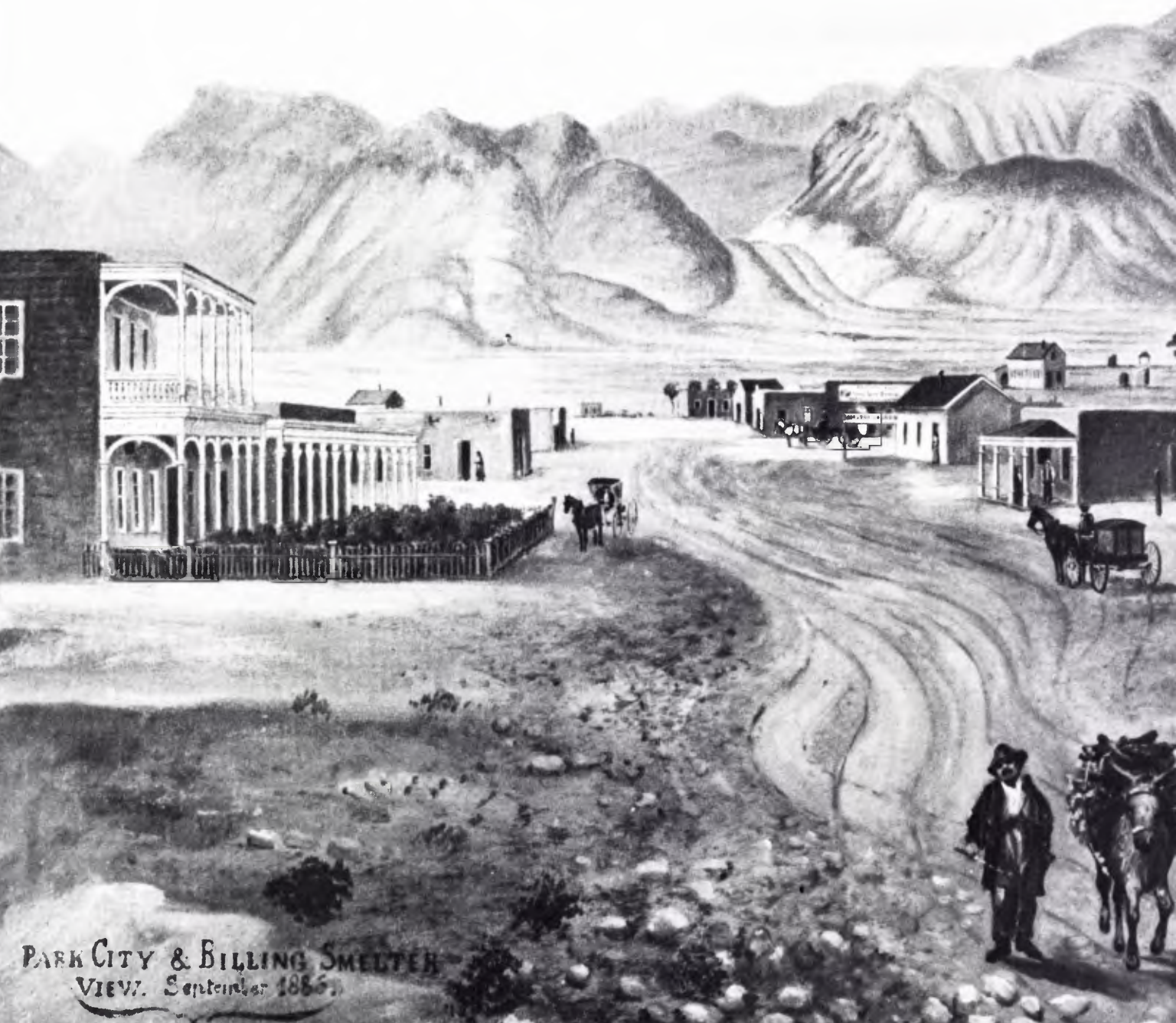




Land of Enchantment—San Lorenzo Canyon. Photo: Bob Osburn.

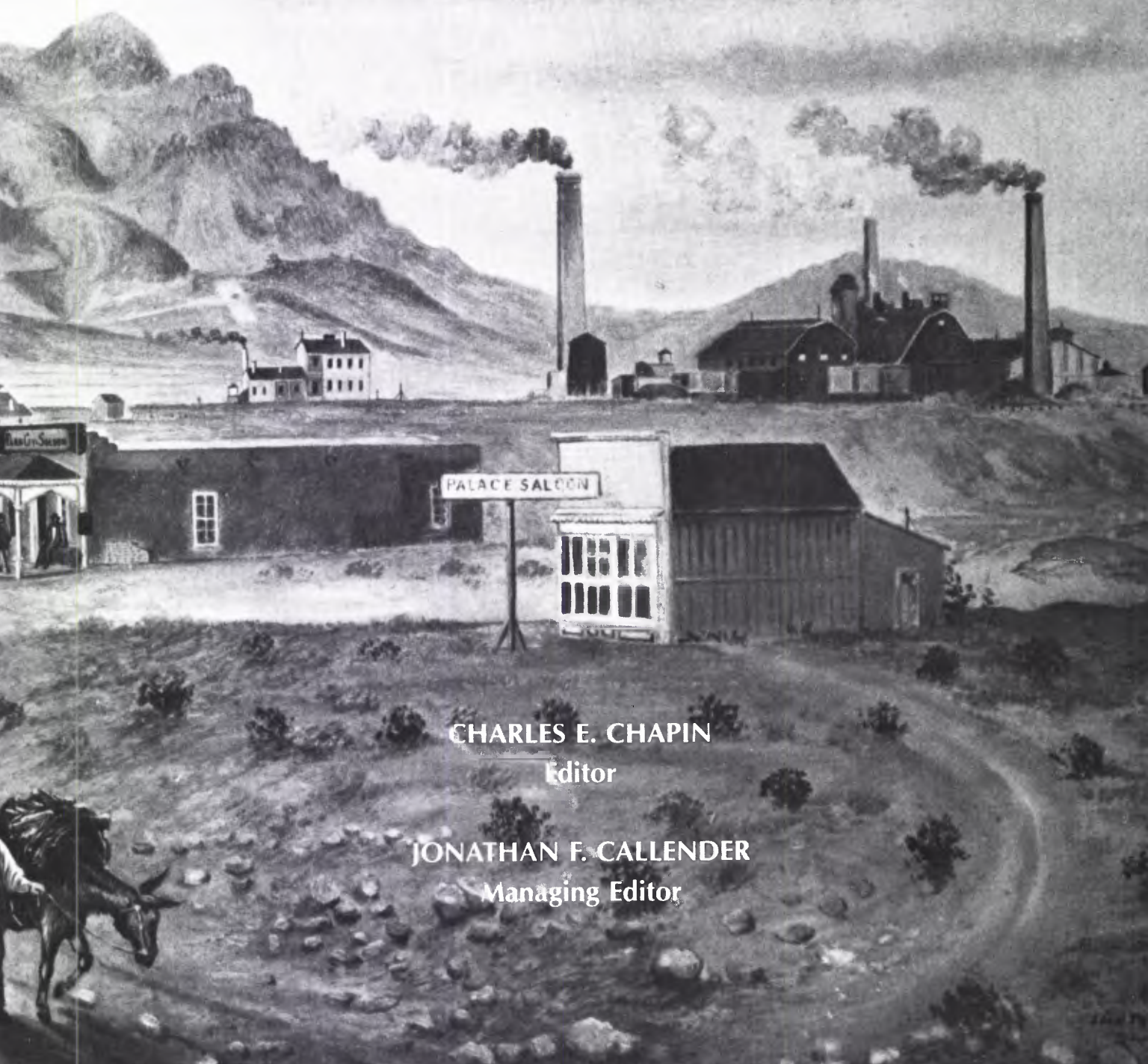


New Mexico Geological Society
Thirty-Fourth Annual Field Conference
October 13–15, 1983



PARK CITY & BILLING SMELTER
VIEW. September 1886.

Socorro Region II



CHARLES E. CHAPIN
Editor

JONATHAN F. CALLENDER
Managing Editor

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PRESIDENT'S MESSAGE

Welcome to the thirty-fourth annual fall field conference of the New Mexico Geological Society. Ever since becoming aware of the Society as a student flagman on the twentieth field conference in Mexico, I have been impressed by the quality of the publications and field trips sponsored by the Society. Subsequent associations with other field trip committees and now the executive committee impresses me even further with the enormous amount of participation and coordination necessary to maintain the quality of our Society. That it happens consistently and annually amazes me.

This amazing annual event is a credit to you the members for your support. Most specifically, I thank Chuck Chapin and his committee for donating a portion of their lives to make this year's event a success. I also thank Jon Callender for once again coordinating the guidebook as managing editor.

Other successes during the past year include the rebirth of the annual spring meeting, for which I thank Tony Budding. Also, publication sales continue at unprecedented highs, thanks to Jamie Robertson, assisted by Norma Meeks. The Geologic Highway Map is a runaway success, thanks mainly to Russ Clemons. Our scholarships also continue at unprecedented levels, supported by exceptional sales, and future scholarships will be strongly supported by an unusually favorable investment of our scholarship fund with the guidance of Jamie Robertson.

Unfortunately the Society is faced with some future uncertainties. Our plans to visit southeastern New Mexico for the 1984 annual fall field conference conflicted with the plans of another society, but we expect to replace it with a Rio Grande rift field trip. However, 1985 is totally open. This is a situation unique to the Society, as we've always had our fall field conferences scheduled several years in advance. This suggests that we may have saturated the state or exhausted our membership, and it may be time to reconsider our policy of publishing a new guidebook in conjunction with a new field trip each year. The executive committee and I request your advice.

Meanwhile, let's learn some new geology, renew our friendships, and teach our student associates about the fulfillment and warmth of our profession.

Russell W. Jentgen
President

EDITORS' MESSAGE

The 1983 New Mexico Geological Society field conference returns to the Socorro area after a lapse of 20 years. One of the advantages of returning to the site of a former field conference is the perspective gained on trends and progress in the geological sciences during the intervening years. We think you will be impressed with the enormous growth in knowledge of the geology of the Socorro area during the past 20 years. In the bustle of our daily lives, we tend to lose sight of the forest for the trees and think that things are moving slowly, when in fact they are moving very rapidly. Take a few minutes to compare the 1963 and 1983 Socorro guidebooks and ask the question "What will the next 20 years bring?"

Socorro is located at a four-way intersection of the Rio Grande rift, Colorado Plateau, High Plains, and Mogollon-Datil volcanic field. The 41 papers and 11 mini-papers contributed to the guidebook reflect this diversity, as do the road logs. Of particular interest are several historical papers, both in the main body of the guidebook and in the road logs, that present previously unpublished data on past events in the Socorro area.

We continue with last year's innovation of printing short papers in the road logs; these are listed in the table of contents with the respective road logs so they can be easily located. A new innovation is the printing of tectonic, gravity, and aeromagnetic maps, all at the same scale and projection, on a two-page foldout plus the facing page so that the three maps can be viewed simultaneously. Lin Cordell and Randy Keller have digitized the gravity and aeromagnetic data so that maps can be printed for any area of New Mexico at any desired scale or projection. A stratigraphic nomenclature chart has been printed on the back of the foldout so that, when it is unfolded, the chart is visible as you read the papers.

We wish to express our appreciation to those who provided time, ideas, and materials for this guidebook. Our special thanks go to the authors of papers and summaries; to the New Mexico Bureau of Mines and Mineral Resources for drafting, typing, proofreading, secretarial help, and four-wheel-drive vehicles; to Cheryl Cape, Susan McGeary, and George Thompson for copies of cross sections along the COCORP lines; to Steven Cather for road logging and review of manuscripts; to Dick Chamberlin for road logging and photographs; to Ted Eggleston, Dick Chamberlin, Bob Osburn, JoAnne Osburn, and Orin Anderson for road logging and preparation of geologic maps and cross sections for several stops; to Bob Eveleth for historical data and many photographs of early Socorro scenes; to Pat Giclas for pen-and-ink drawings; to John Hawley for road logging and solicitation of several key papers; to Laura Kedzie, Jim Moore, and Leslie Nelson for diligent proofreading; to Mike Machette for road logging and several excellent photographs; to the National Atomic Museum, Albuquerque, New Mexico, for photographs of the Trinity atomic test; to Ed Smith for permission to reproduce photographs from the Joseph E. Smith collection; to Spencer Wilson, Gene Cobb, and the Socorro County Historical Society for photographs and material on the Ocean-to-Ocean Highway; and finally to Bob Osburn who filled many roles and took most of the photographs for the road logs.

Charles E. Chapin
Jonathan F. Callender

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G. R. Osburn	Photography

1 9 8 3

FIELD CONFERENCE SCHEDULE

WEDNESDAY, October 12**Registration Day**

4:00-10:00 p.m.

Registration: Lower Lobby, Macey Center, New Mexico Tech campus, Socorro, New Mexico

6:00-9:00 p.m.

Cocktail Party: North Patio, Macey Center, New Mexico Tech campus

THURSDAY, October 13**First Day**

7:30 a.m.

Assembly Point, Francisco de Avondo St., along north side of Sedillo Park, Socorro. Field trip starts at Escondida exit on Interstate 25, two miles north of Socorro. Registration for late arrivals will be held at the first stop.

7:45 a.m.

Caravan departs for tour of structure and stratigraphy east of t1-1.. Rio Grande from the Joyita Hills to Carthage. **(Lunch provided.)**

6:30 p.m.

Prime rib dinner in Copper and Galena rooms at Macey Center

8:00 p.m.

Speaker: Dr. Warren Hamilton, U.S. Geological Survey
"Mode of Extension of Continental Crust"
Auditorium, Macey Center**FRIDAY, October 14****Second Day**

7:45 a.m.

Assembly Point, Francisco de Avondo St., along north side of Sedillo Park. Caravan departs from Escondida exit for tour of Lemitar Mountains, Riley area, and Ladron Mountains. **(Lunch provided.)**

5:00 p.m.

Barbecue dinner in San Lorenzo Canyon, Lemitar Mountains

SATURDAY, October 15**Third Day**

8:15 a.m.

Assembly Point, Francisco de Avondo St., along north side of Sedillo Park.

8:30 a.m.

Caravan departs from southbound on-ramp, 1-25 Interchange, south edge of Socorro for tour of Socorro cauldron and northern Chupadera Mountains via San Antonio and Nogal Canyon. **(Lunch provided.)**

3:30-4:00 p.m.

Return to Socorro

CREDITS

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