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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.

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.

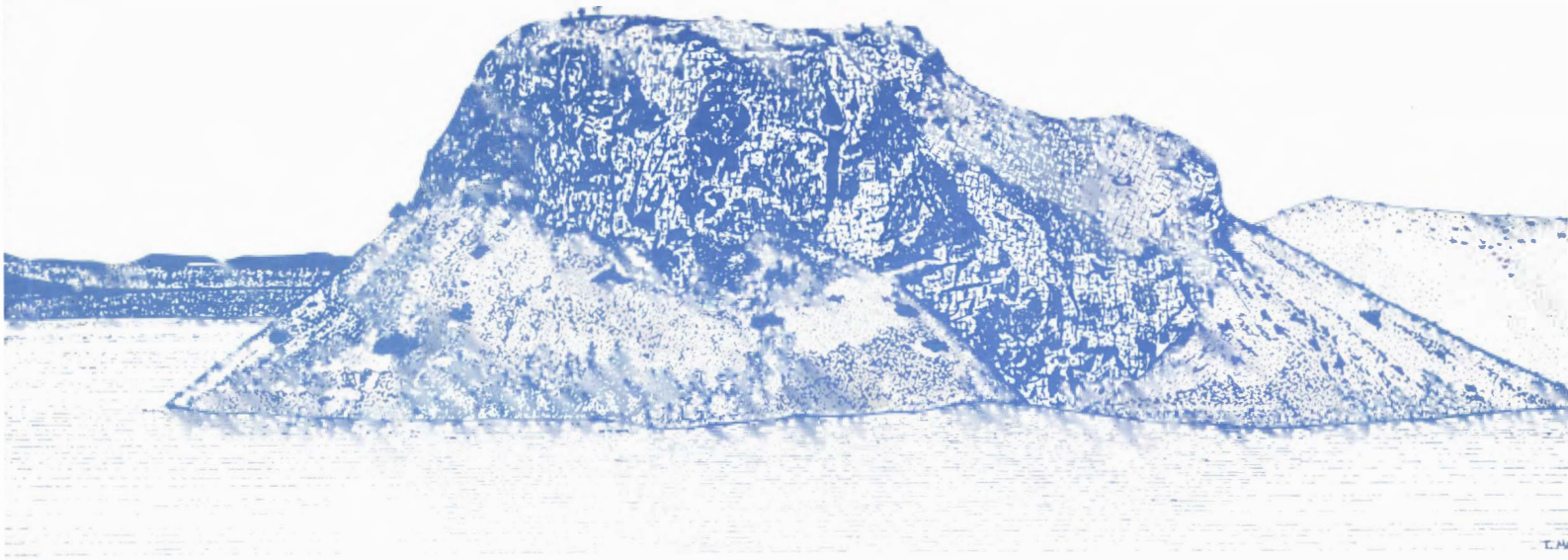
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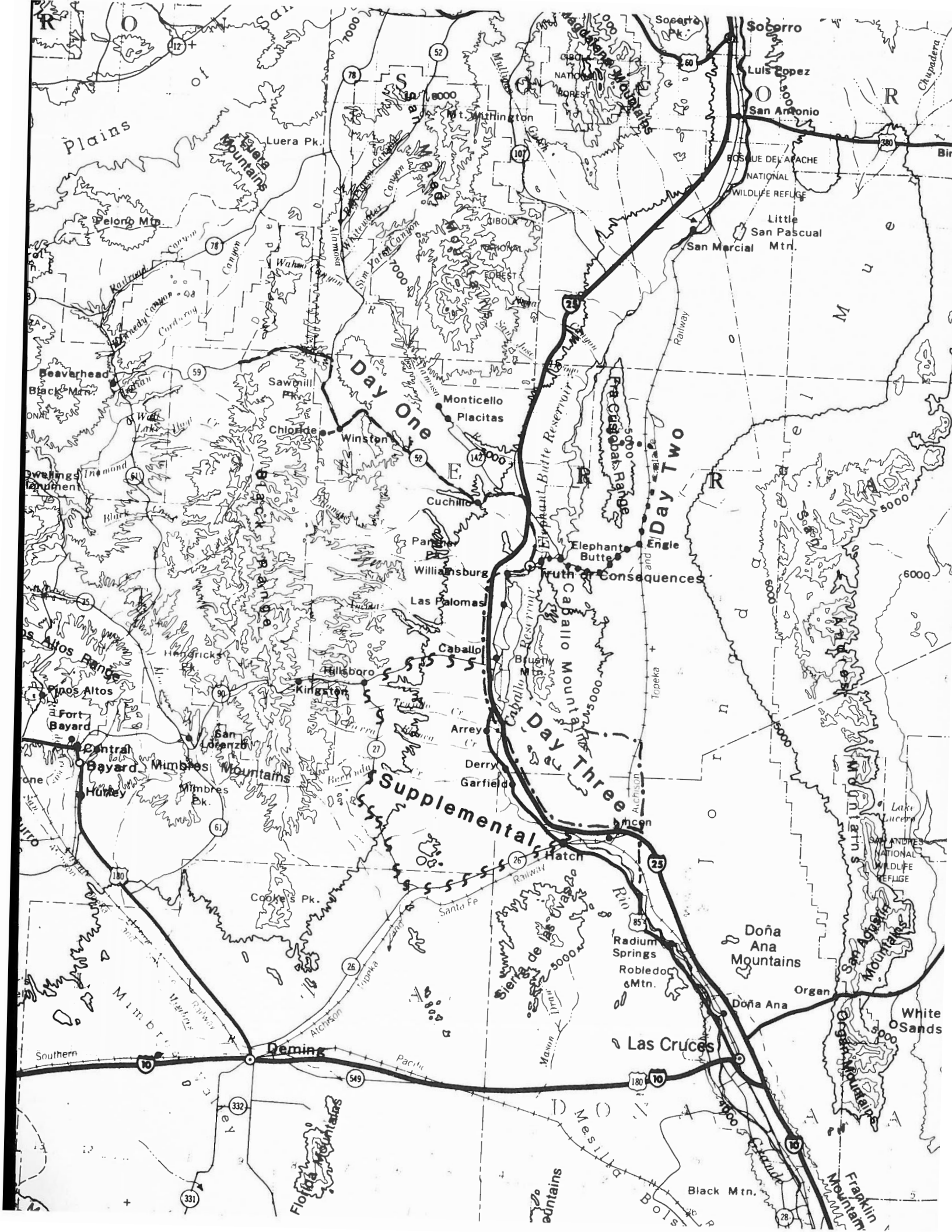
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TRUTH or CONSEQUENCES REGION



New Mexico Geological Society

1986


Socorro
Luis Lopez
San Antonio
Mt. Withington
Luera Pk.
Luera Mountains
Peloro Mtn.
Railroad Canyon
Kennedy Canyon
Beaverhead
Black Mtn.
Sawmill Pk.
Monticello
Placitas
Chloride
Winston
Day One
Cuchillo
Dwellings Monument
Black Range
Williamsburg
Las Palomas
Caballo
Hillsboro
Kingston
Pinos Altos Range
Pinos Altos
Fort Bayard
Central
Bayard
Hurley
San Lorenzo
Mimbres Mountains
Mimbres Pk.
Arrey
Derry
Garfield
Supplemental
Hatch
Cooke's Pk.
Deming
Southern
Florida Mountains
Elephant Butte Reservoir
Caballo Mountains
Day Two
Day Three
Elephant Butte
Truth or Consequences
Engle
Rincon
Radium Springs
Robledo Mtn.
Sierra de las Uvas
Doña Ana Mountains
Doña Ana
Organ
Las Cruces
White Sands
San Agustin Mountains
Lake Lucero
San Andres National Wildlife Refuge
Bosque del Apache National Wildlife Refuge
Little San Pascual Mtn.
San Marcial
Mesilla Bolson
Black Mtn.
Franklin Mountains
Rio Grande
Railway
Atchison Topeka and Santa Fe Railway
Southern Pacific Railway



This guidebook is dedicted to the memory of
ROBERT A. WELLNITZ



The New Mexico Geological Society has lost a good friend and ardent supporter. Robert A. Wellnitz died on July 3, 1986, at the age of sixty-three after a lengthy struggle with cancer. He and his wife, Beverly, have been active in NMGS since 1966.

Robert was born in Moline, Illinois. He was an Eagle Scout and a World War II Army Signal Corps veteran. He was with the advance party in Japan after the surrender to establish communications in Tokyo and Yokohama. While in the army, he saw New Mexico for the first time and vowed to make it his home. In 1946, he joined the Los Alamos National Laboratory. He left the Laboratory in 1949 to study electrical engineering at the University of New Mexico and then pursued a career in electronics. When he returned to the Laboratory, he worked in the audio and video group until his death.

Bob and Beverly were among the founding members of the Los Alamos Geological Society and served that organization in many capacities. Many will remember Bob for his active role in the Earth Treasure Show each year in Los Alamos. During that show, he gave his time sawing geodes and cleaning jewelry for donations. These donations were used to assist undergraduate geology majors from New Mexican universities to attend the fall field conference.

Bob was an antique-gas-engine collector and enthusiast and a member of the Tri-State Antique Engine and Threshers Association in Bird City, Kansas. He enjoyed New Mexico during the fall hunt, loved to camp and fish, and hated to miss the Cimarron Rodeo on the Fourth of July. Bob was a man of many interests, always anxious to help when there was a problem, and never passed up a brew with good company.

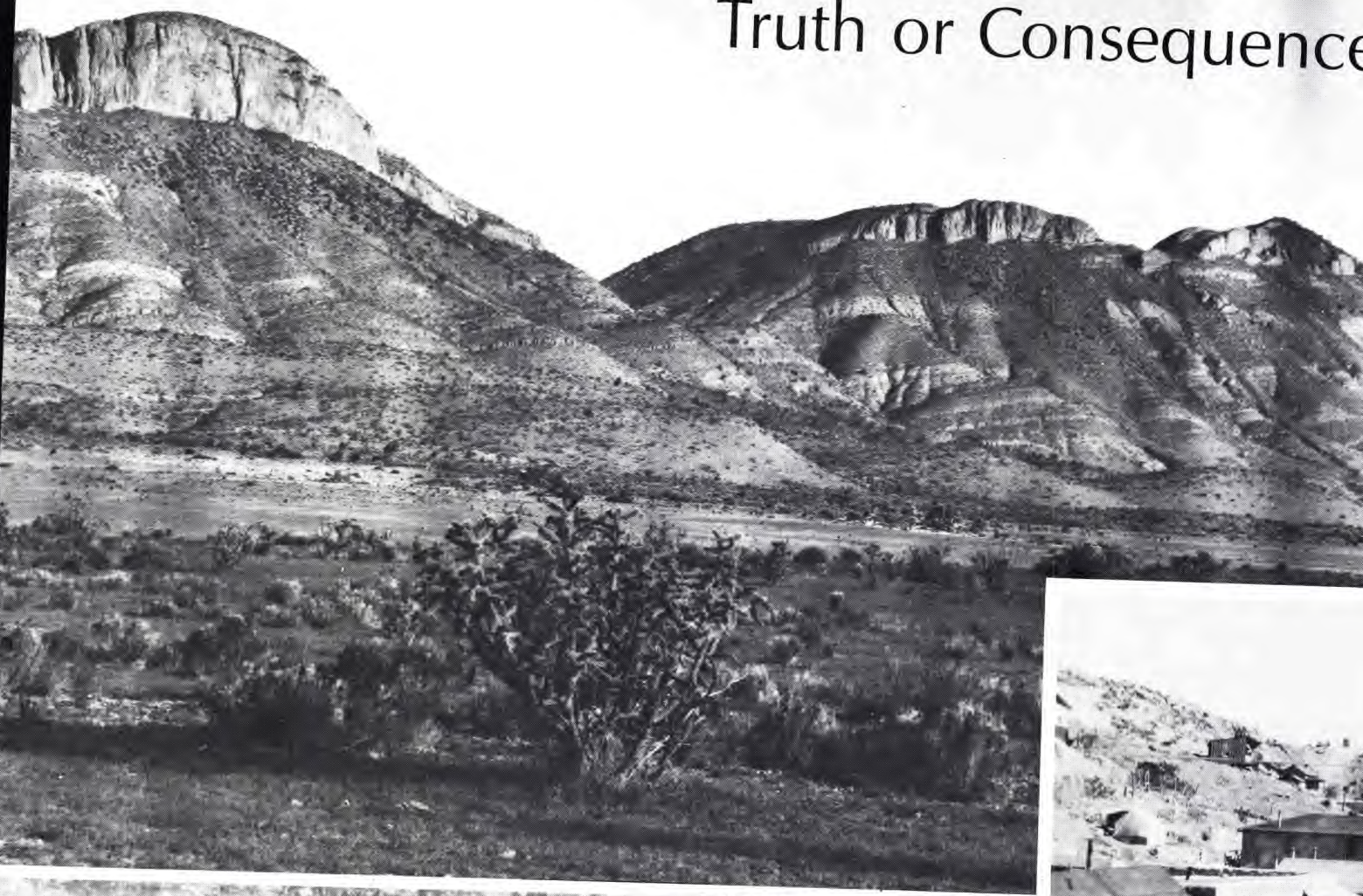
We have all lost a very good friend.

John D. Allen





Truth or Consequence





New Mexico Geological Society Thirty-seventh Annual Field Conference

Region







Editors

Russell E. Clemons

William E. King

Greg H. Mack

Managing Editor

Jiri Zidek

October 16–18, 1986

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PRESIDENT'S MESSAGE

Welcome to the thirty-seventh consecutive Fall Field Conference of the New Mexico Geological Society!

This marks the fortieth, or "ruby," anniversary of the conception of the Society early in 1946 by Vincent Kelley, Caswell Silver, and Gordon Wood. The disputatious may say the Society was founded in 1947, but that was only the year of the first organizational meeting. Anyhow, since those thrilling days of yesteryear, the Society continues, through good times and lean, to add to our knowledge of New Mexico geology and provide scholastic support to the state's geology students.

Another very productive Geoscience Research Conference was held this spring on the NMIMT campus in Socorro. Thirty-seven papers were presented and two papers tied for Best Student Paper. The Society awarded $7,500 in scholarships, including the third NMGS Fellowship of $1,000. Also awarded this year were two State Science Fair prizes.

The Society wishes to extend many thanks to the following individuals for hard work on preparation of this conference: general and road-logging chairman Bob Osburn; guidebook editors Russ Clemons, Bill King, and Greg Mack; managing editor Jiri Zidek; registration chairman Tom Giordano; logistics co-chairmen Jim Olsen and Russ Jentgen; caravan chairman Rich Harrison; road loggers Bill Seager, Charlie Maxwell, Rich Harrison, and Rick Lozinsky; and WELEX and Schlumberger Well Services, which provided technical assistance. Our gratitude also goes to Frank Kottlowski, Director of the New Mexico Bureau of Mines & Mineral Resources, for his continued support and encouragement; Eric Nelson and graduate students of the Colorado School of Mines for the Fra Cristobal field trip; and Oppenheimer Industries, St. Cloud Mining Company, Tenneco Minerals, and the ranchers who so graciously allowed us to invade their beautiful land and study the geology thereon. Thanks also to the dedicated individuals who serve on committees, those who serve in many ways behind the scenes, and to the entire NMGS membership, who help make this one of the finest geological societies in the world.

Let's have a great time here in T or C Region and get out and find those rubies!

Kay S. Hatton

COMMITTEES

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R.E. Clemons ..... New Mexico State University
T.L. Eggleston ..... New Mexico Institute of Mining & Technology
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J.C. Hunter ..... Colorado School of Mines
R.P. Lozinsky ..... New Mexico Institute of Mining & Technology
C.H. Maxwell ..... U.S. Geological Survey
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1 9 8 6
FIELD-CONFERENCE SCHEDULE

Wednesday, October 15, Registration Day

1:00-4:00 p.m. Boat tour of Elephant Butte reservoir.
4:00-10:00 p.m. Registration: Elephant Butte Resort Inn, Hot Springs Landing.
7:00-9:30 p.m. Cocktail Party.

Thursday, October 16, First Day

7:45 a.m. Rendezvous at jct. of NM-85 and NM-52 about 4 mi north of T or C.
8:00 a.m. Caravan departs on a tour of ore deposits and volcanic geology of the Sierra Cuchillo, Winston graben, and Black Range (lunch provided).
5:30 p.m. Barbecue at final stop overlooking Paramount Canyon in Black Range.

Friday, October 17, Second Day

8:00 a.m. Caravan assembles at Deep Well about 25 mi east of T or C (follow entry log).
8:15 a.m. Caravan departs for a tour of Paleozoic stratigraphy and Laramide structure in the Fra Cristobal Range (lunch provided).
7:30 p.m. Prime-rib dinner at Elephant Butte Resort Inn.
8:30 p.m. Speaker: Dr. C.R. Twidale, University of Adelaide, South Australia, on structural geomorphology.

Saturday, October 18, Third Day

8:30 a.m. Rendezvous at Upham interchange, 42 mi southeast of T or C on 1-25.
9:00 a.m. Depart for tour of Laramide structural features and Paleozoic and Laramide stratigraphy of the southern Caballo Mountains (lunch provided).
3:30-4:00 p.m. End of conference.

CREDITS

Front Cover: Sketch of Elephant Butte by Teresa A. Mueller. From the cover of New Mexico Bureau of Mines & Mineral Resources Circular 187.

Front End Sheet: Topographic map of field-trip routes. Map from New Mexico Bureau of Mines & Mineral Resources Resource Map 11.

Facing Front End Sheet: Delivering the Saturday Evening Post to Elephant Butte, 10 April 1912. Man on horse believed to be Andy Lyons. Photograph courtesy of Geronimo Springs Museum, Truth or Consequences.

Frontispiece: (TOP) Lake Valley mill and smelter, 1880. Photograph courtesy of Geronimo Springs Museum, Truth or Consequences. (BOTTOM) Chloride in winter of 1890; view eastward, toward Sierra Cuchillo. Photograph courtesy of Geronimo Springs Museum, Truth or Consequences.

Title Pages: (UPPER LEFT) Chupadera formation (Yeso, Glorieta, San Andres Formations) in western ridge of San Andres Mountains east of Engle; looking west from point near old Rhodes Ranch. Photo N.H. Darton, September 1916, courtesy of U.S. Geological Survey. (CENTER) Main Street, Hot Springs, ca 1920, post card, courtesy of Robert W. Eveleth. (UPPER RIGHT) U.S. Treasury mine near Chloride ca 1910. Photograph courtesy of Geronimo Springs Museum, Truth or Consequences. (LOWER RIGHT) Snake mine east of Hillsboro, post card, courtesy of Geronimo Springs Museum, Truth or Consequences.

Back End Sheet: (LEFT) "Rhyolite porphyry croppings at upper end Davis claims, Hardcastle Creek, Taylor Creek district," 8 August 1920 by J.M. Hill. Photograph courtesy of U.S. Geological Survey. (RIGHT) Lonely prospector preparing for a cold winter in the Black Range around the turn of the century. Photograph courtesy of Geronimo Springs Museum, Truth or Consequences.

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Photographs at Geronimo Springs Museum were copied by Glenn R. Osburn.

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