

New publications

NMBMMR

***Bulletin 131**—Continental magmatism, abstracts, by IAVCEI, 1989, 340 pp. \$12.00

***Memoir 46**—Field excursions to volcanic terranes in the western United States, volume I: Southern Rocky Mountain region, edited by C. E. Chapin and J. Zidek, 1989, x+486 pp. \$25.00

***Memoir 47**—Field excursions to volcanic terranes in the western United States, volume II: Cascades and Intermountain West, edited by C. E. Chapin and J. Zidek, 1989, ix+285 pp. \$17.00

These three publications have been produced for the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) General Assembly held in Santa Fe, New Mexico, on June 25–July 1, 1989. *Bulletin 131* contains more than 600 abstracts pertaining to symposia on 1) North American cordilleran magmatism, 2) continental arcs, 3) extensional volcanism, 4) aqueous magmatic fluids, ore deposits, and geothermal systems, 5) active volcanism and hazards, and 6) volcanic and magmatic processes. *The memoirs* contain a combination of scientific papers and field guides designed to familiarize the reader with the geology of a particular volcanic field and then lead him through it. *Memoir 46* consists of nine excursions to volcanic fields in New Mexico, Arizona, Colorado, and Texas; *Memoir 47* contains seven excursions to volcanic fields in Washington, Oregon, Montana, Wyoming, Idaho, Nevada, and California. The individual excursions were compiled from contributions of three to eleven authors each; a total of 105 authors contributed to the 16 excursions. The technical papers form integral parts of the excursions, contain much new data, and are expected to serve as important references for many years.

The volumes may be purchased as a set at the discounted price of \$50.00 plus postage and handling.

***Bulletin 124**—Lower and Middle Pennsylvanian strata in the Orogrande and Pedregosa Basins, New Mexico, by J. L. Wilson, 1989, 16 pp., 6 figs., 1 table. \$5.00

This report appraises the depositional environment and potential reservoir development of Lower and Middle Pennsylvanian strata in and around the Orogrande and Pedregosa Basins in southern New Mexico and northern Chihuahua, Mexico. A NE–SW cross section from the Sacramento to the Big Hatchet Mountains shows Lower and Middle Pennsylvanian carbonate and terrigenous rock types in detail, and an isopach and facies map shows their distribution. Compiled from years of investigation, the report will be an invaluable reference on carbonate petrography of Pennsylvanian strata for the region.

USGS

PROFESSIONAL PAPER

1440—Quaternary movement along the La Jencia fault, central New Mexico, by M. N. Machette, 1988, 82 pp.

BULLETIN

1734-F—Mineral resources of the Sierra Ladrones Wilderness Study Area, Socorro County, New

Mexico, by S. L. Moore, M. S. Allen, C. L. Long, and J. T. Neubert, 1989, 22 pp.

GEOLOGIC QUADRANGLE MAPS

GQ-1611—Geologic map of the Wilson Mountain quadrangle, Catron and Grant Counties, New Mexico, by J. C. Ratté and W. E. Brooks, 1989, scale 1:24,000.

GQ-1661—Geologic map of the Tse Bonita School quadrangle, McKinley County, New Mexico, by R. S. Zech, 1989, scale 1:24,000.

GEOPHYSICAL INVESTIGATION

GP-980—Aerial gamma-ray color contour maps of regional surface concentrations of potassium, uranium, thorium and composite-color maps of uranium, potassium, thorium, and their ratios in New Mexico, by J. S. Duval, 1989, 4 sheets, scale 1,000,000.

HYDROLOGIC INVESTIGATIONS ATLAS

HA-665—Distribution of fluoride in ground water in the alluvial basins of Arizona and adjacent parts of California, Nevada, and New Mexico, by F. N. Robertson and W. B. Garrett, 1988, 3 sheets, scale 1:500,000.

MISCELLANEOUS FIELD STUDIES MAPS

MF-2068—North-south stratigraphic cross sections of Upper Cretaceous rocks, northern San Juan Basin, southwestern Colorado, by C. M. Molenaar and J. K. Baird, 1989, 3 sheets.

MF-2069—Preliminary geologic map of the Grey Hill Spring quadrangle, San Juan and McKinley Counties, New Mexico, by R. B. O'Sullivan, D. L. Weide, and G. R. Scott, in cooperation with the US BIA and the Navajo Nation, 1989, scale 1:24,000.

MF-2075—Geologic map of the O Bar O Canyon West quadrangle, Catron County, New Mexico, by D. H. Richter and V. A. Lawrence, 1989, scale 1:24,000

MISCELLANEOUS INVESTIGATIONS SERIES MAPS

I-1907—Geologic map of the Latir volcanic field and adjacent areas, northern New Mexico, by P. W. Lipman and J. C. Reed, Jr., 1989, 2 sheets, scale 1:48,000

I-1940—Swelling clays map of the conterminous United States, by W. W. Olive, A. F. Chleborad, C. W. Frahme, J. Schlocker, R. R. Schneider, and R. L. Schuster, 1989, scale 1:7,500,000.

Other publications

Alexopoulos, J. S., Grieve, R. A. F., and Robertson, P. B., 1989, Microscopic lamellar deformation features in quartz—discriminative characteristics of shock-generated varieties—reply: *Geology*, v. 17, no. 5, pp. 478–479.

Alexander, J. I. D., and Watkinson, A. J., 1989, Microfolding in the Permian Castile Formation—an example of geometric systems in multilayer folding, Texas and New Mexico: *Geological Society of America, Bulletin*, v. 101, no. 5, pp. 742–750.

Baldrige, W. S., and Olsen, K. H., 1989, The Rio Grande rift: *American Scientist*, v. 77, no. 3, pp. 240–247.

Bertram—Howery, S. G., and Hunter, R. L., 1989, Plans for evaluation of the Waste Isolation Pilot

Plant's compliance with EPA standards for radioactive-waste management and disposal: Sandia National Laboratories, Rept. SAND88-2871, 40 pp.

Bertram—Howery, S. G., and Hunter, R. L., editors, 1989, Preliminary plan for disposal-system characterization and long-term performance evaluation of the Waste Isolation Pilot Plant: Sandia National Laboratories, Rept. SAND89-0178, variously paginated.

Broadhead, R. F., 1989, Bravo Dome CO₂ field—U.S.A. New Mexico, Bravo Dome: American Association of Petroleum Geologists, *Treatise of Petroleum Geology, Atlas of Oil and Gas Fields*, Rept. A-011, 21 pp.

Carter, N. L., and Officer, C. B., 1989, Microscopic lamellar deformation features in quartz—discriminative characteristics of shock-generated varieties—comment: *Geology*, v. 17, no. 5, pp. 478–479.

Cavazza, W., 1989, Sedimentation pattern of a rift-filling unit, Tesuque Formation (Miocene), Española Basin, Rio Grande rift, New Mexico: *Journal of Sedimentary Petrology*, v. 59, no. 2, pp. 287–296.

Clemons, R. E., 1989, Lost mines and buried treasures in south-central New Mexico: *El Palacio*, v. 94, no. 3, pp. 26–37.

Drewes, H., leader, 1989, Tectonics of the eastern part of the Cordilleran orogenic belt, Chihuahua, New Mexico and Arizona: American Geophysical Union, 28th International Geological Congress, Field Trip Guidebook T121, 82 pp.

Fallin, J. A. T., 1989, Hydrogeology of Lower Cretaceous strata under the southern High Plains of Texas and New Mexico: Texas Water Development Board, Rept. 314, 39 pp.

Finch, W. I., Huffman, A. C., Jr., and Fassett, J. E., leaders, 1989, Coal, uranium, and oil and gas in Mesozoic rocks of the San Juan Basin—atomy of a giant energy-rich basin: American Geophysical Union, 28th International Geological Congress, Field Trip Guidebook T120, 99 pp.

Friedman, G. M., 1989, Cementation patterns, review of *Diagenesis of sedimentary sequences*, edited by J. D. Marshall: *Science*, v. 242, no. 4883, pp. 1317–1318.

Gonzales, M. M., 1989, Compilation and comparison of test-hole location surveys in the vicinity of the Waste Isolation Pilot Plant site: Sandia National Laboratories, Rept. SAND 88-1065, 260 pp.

Grambling, J. A., and Tewksbury, B. J., editors, 1989, Proterozoic geology of the southern Rocky Mountains: Geological Society of America, Special Paper 235, 175 pp. (includes The role of crustal extension in the metamorphism of Proterozoic rocks in northern New Mexico, by J. A. Grambling, M. L. Williams, R. F. Smith, and C. K. Mawer, pp. 87–110; Proterozoic supracrustal rocks and plutons of the Cimarron Canyon area, north-central New Mexico, by R. A. Wobus, pp. 111–118; Geology and geochemistry of early Proterozoic volcanic and subvolcanic rocks of the Pecos greenstone belt, Sangre de Cristo Mountains, New Mexico, by J. M. Robertson and K. C. Condie, pp. 119–146; Geochronologic study of Precambrian rocks of the Sandia Mountains, New Mexico, by D. G. Brookins and A. Majumdar, pp. 147–154).

Icerman, L., and Parker, S. K., editors, 1988, New Mexico statewide geothermal energy program:

Upcoming geologic meetings

- New Mexico Research and Development Institute, final technical report, 231 pp.
- Johnson, W. R., 1989, Soil survey of Socorro County area, New Mexico: U.S. Dept. Agriculture, Soil Conservation Service, rept., 328 pp.
- Klein, G. deV., 1989, Geothermometry, review of *Thermal history of sedimentary basins*, edited by N. L. Naeser and T. H. McCulloh: Science, v. 243, no. 4898, p. 1619.
- Krumhansl, J. L., 1989, Waste Isolation Pilot Plant brine field pH measurements—technique and interpretation: Sandia National Laboratories, Rept. SAND88-3352, 50 pp.
- Lappin, A. R., and Hunter, R. L., editors, Systems analysis, long-term radionuclide transport, and dose assessments, Waste Isolation Pilot Plant (WIPP), southeastern New Mexico; March 1989: Sandia National Laboratories, Rept. SAND89-0462, variously paginated.
- McHone, J. F., Nieman, R. A., Lewis, C. F., and Yates, A. M., 1989, Stishovite at the Cretaceous-Tertiary boundary, Raton, New Mexico: Science, v. 243, no. 4895, pp. 1182-1184.
- Monastersky, R., 1989, Signs of an ancient worldwide wallop: Science News, v. 135, no. 9, p. 132.
- Norman, D. I., Kyle, P. R., and Baron, C., 1989, Analysis of trace elements including rare earth elements in fluid inclusion liquids: Economic Geology, v. 84, no. 1, pp. 162-166.
- Shupe, S. J., and Folk-Williams, J. A., 1988, The upper Rio Grande—a guide to decision-making: Western Network, Santa Fe, 52 pp.
- Torma, A. E., and Gundiler, I. H., editors, 1989, Precious and rare metal technologies, symposium proceedings: Elsevier, Process Metallurgy 5, 702 pp. (includes Mineralogy of silver-bearing ore deposits of the Western United States and Peru, by W. X. Chavez, Jr., J. Manrique, and P. Shrestha, pp. 43-50; A regional study of precious-metal mineralization: Chloride mining district, New Mexico, by R. W. Harrison, pp. 51-68).
- Wilbur, J. H., 1989, Snake Bridge vaults into record book: New Mexico Magazine, v. 67, no. 6, pp. 53-57.
- Williams, M. L., 1987, Stratigraphic, structural, and metamorphic relationships in Proterozoic rocks from northern New Mexico: Ph.D. dissertation, University of New Mexico, 138 pp.
- Wilson, W. E., editor, 1989, New Mexico: The Mineralogical Record, v. 20, no. 1, 96 pp. (The entire January-February issue is devoted to New Mexico.)
- Zeuch, D. H., 1989, Isostatic hot-pressing mechanism maps for pure and natural sodium chloride—applications to nuclear waste isolation in bedded and domal salt formations: Sandia National Laboratories, Rept. SAND88-2207, 96 pp.

Open-file reports

NMBMMR

- *351—Hydrocarbon source-rock evaluation, James K. Anderson, Inc. No. 1 Wishbone Federal well, sec. 1, T4S, R3E, Socorro County, New Mexico, by G. S. Bayliss and R. R. Schwarzer, GeoChem Laboratories, Inc., 1989, 43 pp. \$8.60
- *354—Hydrocarbon source-rock evaluation, Sunray Mid-Continent Oil Co. No. 1 Briscoe well, sec. 31, T10N, R30E, Quay County, New Mexico, by G. S. Bayliss and R. R. Schwarzer, GeoChem Laboratories, Inc., 1989, 14 pp. \$2.80
- *355—Hydrocarbon source-rock evaluation, Mar Oil and Gas Co. No. 1 Estes well, sec. 35, T5N, R8E, Torrance County, New Mexico, by G. S. Bayliss and R. R. Schwarzer, GeoChem Laboratories, Inc., 1989, 16 pp. \$3.20

Conference title	Dates	Location	Contact for more information
Finding oil with a computer: case histories, tools, and techniques	Sept. 10-12	Midland Center Midland, TX	Permian Basin Graduate Center P.O. Box 1518 Midland, TX 79702 (915) 683-2832
Denver Gem & Mineral Show	Sept. 15-17	Merchandise Mart Denver, CO	Sandy Walden 5365 W. Leawood Dr. Littleton, CO 80123 (303) 794-7473
New Mexico Geological Society fall field seminar	Sept. 28- Oct. 1	Southeastern Colorado Plateau	Les McFadden UNM Dept. of Geology Albuquerque, NM 87131 (505) 277-2307
AAPG-SEPM-EMD Rocky Mountain Section meeting	Oct. 1-4	Albuquerque, NM	James R. Connolly UNM Dept. of Geology Albuquerque, NM 87131 (505) 277-3817
Association of Engineering Geologists annual meeting	Oct. 1-6	Vail, CO	William K. Smith USGS, Box 25046, MS 966 Denver, CO 80225 (303) 236-7362
Petroleum technology into the second century	Oct. 16-19	Macey Center Socorro, NM	Centennial Office P.O. Box K New Mexico Tech Socorro, NM 87801 (505) 835-5525
Late Cambrian-Ordovician geology of the Southern Midcontinent	Oct. 18-19	Norman, OK	Kenneth S. Johnson Oklahoma Geological Survey University of Oklahoma Norman, OK 73019 (405) 325-3031
Search for the subtle trap: hydrocarbon exploration in mature basins	Oct. 19-20	Midland Center Midland, TX	West Texas Geological Society P.O. Box 1595, Midland, TX 79702 (915) 683-1573
Lordsburg Gem and Mineral Society show	Oct. 27-29	National Guard Armory Lordsburg, NM	Maggie Veeder Box 503 Lordsburg, NM 88045 (505) 542-9533
Society of Exploration Geophysicists annual meeting	Oct. 29- Nov. 2	Dallas, TX	Sally Shank, SEG P.O. Box 702740 Tulsa, OK 74170 (918) 493-3516
Tenth New Mexico Mineral Symposium	Nov. 11-12	Macey Center Socorro, NM	Judy Vaiza, NMBMMR, Socorro, NM 87801 (505) 835-5302

USGS

- 87-450-U—Petroleum geology of the Palo Duro Basin and Pedernal Uplift provinces as a basis for estimates of undiscovered hydrocarbon resources, by M. E. Henry, 1989, 35 pp.
- *88-450-M—The geologic setting of southern Arizona and southwestern New Mexico, with a rationale for assessment of undiscovered, economically recoverable oil and gas: a summary of four potential plays, by W. C. Butler, 1989, 155 pp. \$31.00
- 88-643—Abstracts of the U.S. Geological Survey, central region; 1988 poster review, compiled by C. E. Barker and A. B. Coury, 1989, 29 pp.
- *89-7—Analytical results and sample locality map for stream-sediment and heavy-mineral-concentrate samples from the Rimrock (NM-020-007),

- Sand Canyon (NM-020-008), Little Rimrock (NM-020-009), Pinyon (NM-020-010), and Petaca Pinta (NM-020-014) Wilderness Study Areas, Cibola County, New Mexico, by J. H. Bullock, Jr., T. A. Roemer, and G. A. Nowlan, 1989, 27 pp., 1 nonreproducible map plate. \$5.40
- *89-8—Analytical results and sample locality map for stream-sediment and heavy-mineral-concentrate samples from the Chamisa (NM-010-021), Empedrado (NM-010-063), and La Lena (NM-010-063A) Wilderness Study Areas, Sandoval and McKinley Counties, New Mexico, by J. H. Bullock, Jr., T. A. Roemer, and G. A. Nowlan, 1989, 18 pp., 1 nonreproducible map plate. \$3.60
- 89-32—Geologic and hydrologic data for the Rustler Formation near the Waste Isolation Pilot Plant, southeastern New Mexico, by S. F. Richey, 1989, 72 pp.

New Mexico Bureau of Mines and Mineral Resources staff notes

William McIntosh is new Research Geologist and Margaret Barroll Postdoctoral Fellow; Ann Johnston became Ann Lanning by marriage. The anniversaries of our staff with five or more years of service from May through August 1989 were: Annabelle Lopez and Manuel Vasquez, 6; Albert Baca, 7; Jane Love, 8; Gretchen Roybal, Lynne McNeil, Dave Love, and Virginia McLemore, 9; Orin Anderson and Richard Chamberlin, 10; Barbara Popp, 11; and Frank Kottowski, 38. Chris McKee was promoted to X-ray Facility Manager, Jeanne Verploegh to Chem Lab Technician II, Albert Baca to Maintenance Carpenter II, Ruben Archuleta to Metallurgical Lab Technician, Monte Brown and Becky Titus to Cartographer II, and Manuel Vasquez to Mechanic I.

For the Quadrennial meeting of the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) in Santa Fe, Chuck Chapin was publications chairman and with Jiri Zidek, aided by Lynne McNeil, Monte Brown, and Becky Titus, put together Bulletin 131, Memoirs 46 and 47, and the program/directory. Field-trip leaders included Chuck Chapin, Steve Cather, and Bill McIntosh. McIntosh, Chapin, and John Sutter gave a poster session titled "Timing and distribution of Oligocene ignimbrite activity in the Mogollon-Datil volcanic field, southwestern New Mexico." Steve Cather, Dave Love, and Paul Bauer attended the session, Lois Devlin and Jennifer Borja handled NMBMMR's exhibits.

Virginia McLemore presented two talks at the 28th International Geological Congress titled "Geology and geochemistry of Cambrian-Ordovician syenites in New Mexico and their relationship to a Cambrian-Ordovician carbonatite and alkalic magmatic event in New Mexico and Colorado, USA," and "Mineralogy and geochemistry of alteration associated with the Lemitar carbonatites, central New Mexico, USA." Judy Vaiza, Lynne McNeil, and Preciliano Vaiza managed NMBMMR's exhibit; Frank Kottowski was one of the eight USA delegates to IGC and IUGS Council meetings.

John Hawley's talk at Landfill Issues in New Mexico Forum, sponsored by Senator Bingaman, was "Geology and environmental concerns at

landfill waste-disposal sites in New Mexico." Jim Barker's talk at Industrial Minerals Forum was "Testing of perlite: economics and health characteristics." Ron Broadhead's talk to the Roswell and the Albuquerque Geological Societies was "Petroleum geology of Pennsylvanian and Lower Permian strata, Tucumcari Basin, east-central New Mexico." Marc Wilson's talk to Albuquerque Gem and Mineral group was "Geology and mineralogy of Michigan's Keweenaw Peninsula." At the GSA Rocky Mountain and Cordilleran sections meeting, Diane Bellis' and Don Wolberg's talks were "An unusual occurrence of the mineral huntite from the Late Cretaceous coal-bearing Fruitland Formation, San Juan Basin" and "Geochemical signatures in a Late Cretaceous stratigraphic sequence from the San Juan Basin"; the poster presented by Don, Diane, George Austin, and Paul Domski was "Stratigraphy and paleo geochemistry of the Fossil Forest sedimentary sequence, Late Cretaceous, San Juan Basin: implications for depositional environments." Gretchen Roybal described the NCRDS system at the spring NMGIC meeting. Diane Bellis' talk to the Albuquerque Geological Society was "Fluid inclusions in fossil amber: primitive atmosphere or not?"

Staff members participated in the following meetings, workshops, and seminars: AAPG national meeting (Ron Broadhead, AAPG House of Delegates; Sam Thompson, workshops; Frank Kottowski, EMD Executive Committee; and Steve Cather); Water Quality Control Commission (Lynn Brandvold); San Juan Regional Coal Team (Don Wolberg and Gretchen Roybal); Industrial Minerals Forum (George Austin and Jim Barker); Kodak workshop (Monte Brown); LANL photographic seminar (Irean Rae, Michael Wooldridge, and Monte Brown); Professional Secretaries International workshop (Judy Vaiza, Lynne McNeil, Theresa Lopez, and Lorraine Peck); Association of American State Geologists annual meeting (James Robertson); GSA Rocky Mountain and Cordilleran sections meeting (Diane Bellis and Don Wolberg); USGS WRD workshop on sediment/contaminants transport research (Dave Love); New Mexico Geographic Information Council spring meeting (Dave Love and Gretchen Roybal); Water Resources Re-

search Institute planning meeting (John Hawley); Denver X-ray Conference (Chris McKee); AAPG computer short course (Gretchen Roybal); Archaeological Society of New Mexico field school (Bob Weber); Ute Mountain Gem and Mineral Society show (Marc Wilson); San Juan Gem and Mineral Society show (Marc Wilson); Marc visited many mineral museums in the Midwest for comparison with our museum; landslide workshop by USGS and Arizona Geological Society (John Hawley and Bill Haneberg); Sample Dissolution Methods for Atomic Spectroscopy workshop (Lynn Brandvold, Barbara Popp, and Jeanne Verploegh); legislative hearing on landfill and hazardous-waste management in southern New Mexico (John Hawley); EPA meeting concerning Cimarron mill near Carrizozo (Lynn Brandvold and Abe Gundiler); hearings by Bernalillo County Commission and Albuquerque City Council on Cerro Colorado landfill site (John Hawley); and NMERI workshop on Albuquerque soils and foundations (Dave Love and Bill Haneberg).

Abe Gundiler's project on "Pressure oxidation of refractory sulfide ores and thiourea leaching of the residues" was funded by NMMMRRI; George Austin was elected to fellowship in GSA; BLM presented Don Wolberg with "Volunteers for Public Lands" Award for recovering a fossil elk specimen near Roswell. Lois Devlin is NMBMMR's representative on Tech's Drug Policy Committee. Mrs. Ethel Schmitt and Dr. Harrison H. (Jack) Schmitt donated the thirty-year collections of Dr. Harrison A. Schmitt to NMBMMR; Bob Eveleth is appraising this outstanding gift to our Geotechnical Information Center, along with the mining papers of Seymour Thurmond donated by Mrs. Helen Thurmond. Raymond Schmidt donated to the Mineral Museum a historic plaque and a silver specimen from the Bridal Chamber vug at Lake Valley. (See page 62, this issue.) Diane Bellis and Don Wolberg uncovered a fossil coconut from the Fruitland Formation in the Fossil Forest (stump field) of the Split Lips Flat area during the summer field course.

In Paleotechniques, Paleontological Society Special Publication No. 4, are two papers by Don Wolberg, "Stabilizing pyritic material" and "Glues and other stick'ums and patch'ums, stabilizing compounds for strengthening fossils." The Kansas Geological Society's guidebook series 6, Regional geology and paleontology of upper Paleozoic Hamilton quarry area, includes two papers by Jiri Zidek, "Hamilton quarry Acanthodes" and "Hamilton quarry Chondrichthyes."

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• Science and Service

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