Service/News

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New Publications

NMBMMR

***Bulletin 109**—Bibliography of New Mexico geology and mineral technology 1976–1980, by D. M. Adkins-Heljeson and C. L. Holts, 1984 $13.00

Contains over 2,900 references and cross references to the geology and mineral technology of New Mexico. Citations include both published and unpublished material. All references cited are indexed by subject matter, and, when possible, by geographic location.

***Circular 183**—Stratigraphically controlled gas production from Abo red beds (Permian), east-central New Mexico, by R. F. Broadhead, 1984, 36 pp., 5 tables, 26 figs., 3 appendices $5.50

The Abo red beds in the subsurface of Chaves County have become some of the most important targets of natural-gas drilling in New Mexico since they were designated "tight gas sand" in 1980. In this report, the Abo red beds of east-central New Mexico have been mapped and analyzed geologically; emphasis was placed on the lithologic characteristics of productive Abo sandstones.

***Circular 189**—Devonian stratigraphy of the San Andres Mountains, Doña Ana, Sierra and Socorro Counties, New Mexico, by J. E. Sorauf, 1984, 32 pp., 1 table, 36 figs., appendix $3.00

Devonian stratigraphic relationships are described from 16 localities in the San Andres Mountains, Mud Springs Mountains, and at Hermosa, New Mexico.

***Geologic Map 56**—Geology of Capitol Dome quadrangle, Luna County, New Mexico, by R. E. Clemons, 1984, 1 sheet with text, 1 cross section, scale 1:24,000 $4.00

Capitol Dome quadrangle is in east-central Luna County, immediately southeast of Deming. The western Mimbres Basin and the northwest end of the Florida Mountains occupy much of the area mapped and described. GM–56 is the second of four conterminous 7½-min quadrangles mapped as part of a five-part, comprehensive geologic and mineral-resource investigation of the Florida Mountains.

***Geologic Map 58**—Geology of Gym Peak quadrangle, Luna County, New Mexico, by R. E. Clemons and G. A. Brown, 1984, 1 sheet with text, 3 cross sections, scale 1:24,000 $3.50

This map, part three in a five-part series on the Florida Mountains, describes the geology of the Gym Peak 7½-min quadrangle. Part one is the Florida Gap 7½-min quadrangle (GM–52); part two is the Capitol Dome quadrangle described above; part four will be the South Peak 7½-min quadrangle (to be published as GM–59); part five will be a comprehensive report on the Florida Mountains.

***Postcard**—Generalized geologic map of New Mexico, compiled by R. M. North, 1984, scale 1:5,000,000 $.25

The geology of New Mexico generalized to 13 rock units, reduced in scale to postcard format, and printed in vivid color. An explanation and correlation chart briefly identify the rock-stratigraphic units. Perfect for short geologic correspondence.

USGS

BULLETINS

910—Evidence for acid-precipitation-induced trends in stream chemistry at hydrologic bench-mark stations, by R. A. Smith and R. B. Alexander, 1983, 12 pp.

MISCELLANEOUS FIELD STUDIES MAPS

***MF–1516**—Mineral-resource potential and geologic map of the Caballo and Polvadera roadless areas, Los Alamos and Rio Arriba Counties, New Mexico, by Kim Manley, U.S. Geological Survey, and M. E. Lane, U.S. Bureau of Mines, 1983, lat 35°52′30″ to about 36°07′30″, long 106°15′ to 106°30′, 4 pp., 1 sheet, scale 1:62,500

***MF–1560–A**—Mineral-resource potential and geologic map of Guadalupe Escarpment Wilderness study area, Eddy County, New Mexico, by P. T. Hayes and T. D. Light, U.S. Geological Survey, and J. R. Thompson, U.S. Bureau of Mines, 1983, lat 32° to about 32°07′30″, long about 104°40′ to 104°50′, 6 pp., 1 sheet, scale 1:24,000

MF–1570–B—Geologic map of the Latir Peak and Wheeler Peak Wildernesses and Columbine–Hondo Wilderness study area, Taos County, New Mexico, by J. C. Reed, Jr., P. W. Lipman, and J. R. Robertson, 1983, scale 1:50,000

***MF–1660**—Seismicity map of the State of New Mexico, by C. W. Stover, B. G. Reagor, and S. T. Algermissen, 1983, lat about 31° to about 37°, long about 103° to about 109°, scale 1:1,000,000

***MF–1666**—Geologic map of the Mule Creek quadrangle, Grant County, New Mexico, by J. C. Ratté and W. E. Brooks, 1983, scale 1:24,000

OIL AND GAS INVESTIGATIONS CHART

OC–118—Stratigraphic sections of subsurface Jurassic rocks in the San Juan Basin, New Mexico, Colorado, Utah, and Arizona, by R. Lupe, 1983, 2 sheets

WATER RESOURCES INVESTIGATIONS

WRI–82–4015—Estimates of vertical hydraulic conductivity and regional ground-water flow rates in rocks of Jurassic and Cretaceous age, San Juan Basin, New Mexico and Colorado, by P. F. Frenzel and F. P. Lyford, 1982, 59 pp.

WRI–83–4016—Geohydrology of the proposed Waste Isolation Pilot Plant site, Los Medanos area, Southeastern New Mexico, by J. W. Mercer, 1983, 113 pp.

WATER SUPPLY PAPER

2250—National water summary 1983—hydrologic events and issues, 1984, 243 pp.

This volume is the first of an annual series that provides a state-by-state assessment of U.S. water resources

AVAILABLE ONLY THROUGH NTIS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA 22161

PB–83 220 863—Analytical results for stream-sediment concentrate, sieved stream-sediment, rock, and water samples from the Silver City 1° × 2° quadrangle, New Mexico and Arizona, by S. K. McDanal, C. L. Forn, J. R. Hassemer, and K. C. Watts, 1983, 1 tape

Other publications

Microfacies analysis of Mule shoe Mound (Early Mississippian), Sacramento Mountains, New Mexico: a point-source depositional model—part I, by W. D. Jackson and T. De Keyser, 1984, West Texas Geological Society, Bulletin, v. 23, no. 5, pp. 6–10

Depositional sequences and stratigraphic revision of the Lake Valley shelf, Early Mississippian, Sacramento Mountains, New Mexico, by T. De Keyser, 1983, West Texas Geological Society, Bulletin, v. 23, no. 3, pp. 4–10

State-coupled low temperature geothermal resource assessment program, fiscal year 1982, edited by L. Icerman and A. Starkey, 1983, DOE contract no. AS07–78IDO1717, 284 pp.

Advances in geology of the prophyry copper deposits, southwestern North America, edited by S. R. Titley, 1982, University of Arizona Press, 560 pp. Includes two articles on New Mexico: Geology of the Copper Flat porphyry copper deposit, Hillsboro, Sierra County, New Mexico, by P. G. Dunn, pp. 313–325, and the Tyronne copper deposit, Grant County, New Mexico, by Joseph Kolessar, pp. 327–333

Open-file reports

NMBMMR

***189**—Site identification for low-level radioactive waste disposal in New Mexico, by J. W. Hawley, 1984, 16 pp., 6 tables, 8 figures, 1 appendix, 1 over-sized map $9.00

USGS

79–0619—Coal-resource occurrence and coal-development potential maps of the Nageezi NE quadrangle, Rio Arriba and San Juan Counties, New Mexico, by Dames and Moore, 1983, 18 pp., 9 over-sized sheets, scale 1:62,500

***83–360**—Chemical analyses and statistical summary for samples of minus-200-mesh stream-sediment, magnetic, and nonmagnetic heavy-mineral concentrates from the Latir Peak and Wheeler Peak Wildernesses and the Columbine–Hondo Wilderness study area, Taos County, New Mexico, by S. Sutley, S. Ludington, P. Billings, and D. Jones, 1984, 39 pp., 1 over-sized sheet

***83–594**—Mineral-resource potential of the southwest addition to the White Mountains Wilderness, Lincoln County, New Mexico, by K. Segerstrom, F. R. Hladky, and J. P. Briggs, 1983, 11 pp.

***83–631**—Aeromagnetic map and magnetic source-analysis map of the San Simon 15′ quadrangle, Arizona and New Mexico, by J. C. Wynn, B. Waitzeneger, T. R. Watters, H. Mirzai-Pouinak, and A. Gardner, 1984, 2 over-sized sheets, scale 1:62,500

***83–665**—Mineral-resource areas of the Basin and Range Province of New Mexico, compiled by M. F. Hutchins, 1983, 16 pp., 1 map, scale 1:500,000

***83–703**—Description of slides showing aeromagnetic and gravity data for regional mineral exploration in Colorado, New Mexico, and Arizona, by D. P. Klein, 1983, 18 pp.

***83–818**—Comparison of abundances of chemical elements in mineralized and unmineralized sandstone of the Brushy Basin Member of the Morrison Formation, Smith Lake district, Grants uranium region, New Mexico, by C. T. Pierson, C. S. Spirakis, and J. F. Robertson, 1983, 47 pp.

***83–924**—Mineral-resource assessment of the Silver City 1° × 2° quadrangle, New Mexico–Arizona, by D. H. Richter, W. N. Sharp, K. C. Watts, G. L. Raines, B. B. Houser, and D. P. Klein, 1984, 81 pp.

U.S. Bureau of Mines

MLA 106–83—Mineral investigation of the Dome Wilderness, Sandoval County, New Mexico, by G. S. Ryan, 9 pp.

New projects

USGS

9350–03620—Tin resources, Black Range, New Mexico and Idaho, by C. H. Maxwell. The purposes of the study are: to determine the resources of the study area; to relate the type of tin occurrences and deposits to the geology; to determine the geochemical signature of each type of deposit and potential byproducts; and from these data attempt to derive a model that will classify the deposits and define the resource potential of the regions. Projected completion date—1986.

9350–03626—Orogrande mining district, New Mexico, by S. L. Moore. The primary objective is to map in detail the geology, alteration, and mineralization of the mining district; to study the distribution and zoning of the ore minerals; to collect geochemical samples that will indicate present and future potential mineral production. Secondly, the detailed structure and stratigraphy of the district will be related to 1) the Sacramento escarpment to the east, 2) the Sierra Blanca region to the northeast, 3) the Tularosa Basin, and 4) the structural zone separating the southern end of the Oscura Mountains from the northern end of the San Andres Mountains.

Announcements

New periodical

Oil & gas update, a new 10-page bi-weekly newsletter will feature articles about geophysical crew locations, drilling deals, speculative surveys, leases for sale, computer developments for the petroleum industry, company news, and more. *Oil & gas update* will be edited by Julia L. Moll, former editor-in-chief of *Oil & gas land intelligence* and associate editor of *GeoPhysical update*. To receive a free sample of *Oil & gas update* or more information, call Moll at 303/232–5422.

Grand Junction Geological Society

The Grand Junction Geological Society has published a guidebook for their 1983 field trip in the northern Paradox Basin and the Uncompahgre uplift. Articles cover petroleum in northwest Grand County, Utah, the Book Cliff coal field, humates at Harley dome, tectonics of the Uncompahgre uplift, Colorado Plateau laccoliths, uranium–vanadium deposits, aeromagnetic interpretations, relationships of basement faults to drainage, Unaweep Canyon glaciation and geophysical interpretation, salt anticlines, contemporary cliff dwellings, and vegetative zones of western Colorado–eastern Utah. The 150-page guidebook also provides new and detailed road logs of the entire route, plus a log of the Dolores River from Gateway, Colorado, to Dewey Bridge, Utah. Included with the guidebook is a structure–contour map of the Cisco, Utah, area showing oil and gas fields and dry holes. The price of the guidebook is $25.00 (postage included); order from Bill Chenoweth, 707 Brassie Drive, Grand Junction, CO 81501.

Rocky Mountain Association of Geologists field trip

The RMAG fall field trip, Oct. 1–3, 1984, will be on hydrocarbon source rocks and oil in outcrops, Front Range, southern Colorado. The first day will include examination of cores and geochemical presentations, and the next two days participants will go by bus to outcrops between Denver and Walsenburg, CO. Registration details and itinerary will be announced in midsummer 1984.

USGS

TOPOGRAPHIC MAPS—REVISED (scale 1:24,000)

	yr	yr (rev)	lat	long	contour (ft)
Colorado Canyon	66	79–82	34° 37′ 30″	104° 15′	10
Puerto Creek	63	79–82	34° 45′	104° 37′ 30″	20 10
Fourmile Canyon	63	81–82	36° 37′ 30″	107° 22′ 30″	20

INTERMEDIATE BLM MAPS (scale 1:100,000)

	yr	lat	long	contour (m)
Clayton (NM–TX)	1982	36°	106°	20
Corona	1980	34°	105°	20
Deming	1982	32°	107°	20
Fort Sumner	1979	34°	104°	10
Gallup	1983	35° 30′	108°	20
Navajo Reservoir	1980	36° 30′	107°	50
Oscura Mountains	1982	33° 30′	106°	20
Raton (NM–CO)	1982	36° 30′	104°	50
Roy	1981	35° 30′	104°	20
Springer	1983	36°	104°	20
Toadlena	1980	36°	108°	20
Tucumcari (NM–TX)	1978	35°	103°	—
Zuni	1983	35°	108°	20

MINING REGISTRATIONS
(SEPTEMBER 15, 1983 THROUGH OCTOBER 25, 1983)
State Mine Inspector 2340 Menaul N.E. Albuquerque, NM 87107

Date and operation	Operators and owners	Location
9–15–83 mill	Operator—F&R Development, Inc., Rt. 2, Box 89A, Hillsboro, NM 88042; Gen. Mgr.—Hank Fingado, 6840 Rio Grande NW, Albuquerque, NM; Gen. Supt.—David Fingado, Rt. 2, Box 89A, Hillsboro, NM 88042; Other official—Ben Ruiz; Property owner—H. S. and Don Fingado, 6840 Rio Grande NW, Albuquerque, NM 87107	Sierra Co.; sec. 4, T. 15 S., R. 7 W.; Hillsboro mining district; federal land; ores milled—gold, silver; capacity of mill—10 tons per day; directions to mill: 2 mi north of Hillsboro on Warm Springs Canyon road
10–3–83 gold, silver	Operator—Blue Bell, Turley Mining, Rt. 1, P.O. Box 47–A, Deming, NM 88030; Gen. Mgr.—C. F. Turley, 1501 Gilbert Rd., Mesa, AZ 85203, phone: (602) 834–9102; Person in charge—Mack Thompson, NM–497 west, Deming, NM 88030, phone: 546–9740; Property owner—C. F. Turley, 1501 Gilbert Rd., Mesa, AZ 85203	Sierra Co.; sec. 15, T. 10 S., R. 9 W.; Black Range (Grafton) mining district; federal land; works–decline; directions to mine: take forest road 524 from Winston, NM north-westerly approximately 7 mi, turn right on forest road 903, go up Alaska Draw to workings
10–3–83 gold, silver	Operator—Ivanhoe Emporia, Turley Mining, Rt. 1, P.O. Box 47-A, Deming, NM 88030; Gen. Mgr.—C. F. Turley, 1501 Gilbert Rd., Mesa, AZ 85203, phone: (602) 834–9102; Person in charge—Mack Thompson, NM–497 west, Deming, NM 88030, phone: 546–9740; Property owner—J. Shoffstall and M. Holbrook, P.O. Box 94670, Oklahoma City, OK 73143	Sierra Co.; sec. 22, T. 10 S., R. 9 W.; Black Range (Grafton) mining district; private land; works–lateral adit; directions to mine: take forest road 524 from Winston, NM northwesterly, go up Turkey Creek approximately 6 mi, turn left, go up hill to mine
10–3–83 limestone	Operator—Crushing Plant, Rocky Mountain Stone Co., Inc., 4741 Pan American Freeway, NE, Albuquerque, NM; Gen. Mgr.—Tim Lardner, 9112 Comanche, NE, Albuquerque, NM, phone: 298–2485; Person in charge—Vince Lardner, 4741 Pan American Freeway, Albuquerque, NM, phone: 345–8518; Gen. Supt.—Scott Lardner, 9112 Comanche, Albuquerque, NM, phone: 298–2485; Other official—Dave Lardner, 4424 Hidden Valley Ct., Albuquerque, NM; Property owner—Vince Lardner, 4741 Pan American Freeway, Albuquerque, NM	Bernalillo Co.; private land; directions to mine: 0.5 mi north of Montgomery/Montano intersection, on the west frontage road of I–25
10–11–83 metals	Operator—Waldo, New Mexico Institute of Mining and Technology, Socorro, NM 87801–9990; Gen. Mgr.—George Griswold, Mining Dept., New Mexico Tech., Socorro, NM, phone: 835–5346; Gen. Supt.—Robert M. Chamberlin, P.O. Box 448, Magdalena, NM 87825, phone: 854–2497; Property owner—ASARCO, Inc., P.O. Box 5747, Tucson, AZ	Socorro Co.; sec. 36, T. 2 S., R. 4 W.; Magdalena mining district; private land; underground; directions to mine: south from Magdalena toward Kelly, NM, access road leads directly east of old ASARCO mill site
10–25–83 uranium	Operator—Quivera Mining Co., P.O. Box 218, Grants, NM 87020; Gen. Mgr.—Arthur Gebeau, same address, phone: 287–8851; Person in charge—Jim Meisner, same address and phone; Other officials—Rob Luke, Rod Tregembo, Billy Stevens, Kerr–McGee Center, Oklahoma City, OK 73125; Property owner—Quivira Mining Co., same address	McKinley Co.; secs. 17, 19, 30, 33, 35, 36, T. 14 N., R. 9 W. and secs. 22, 24, T. 14 N., R. 10 W.; Grants mining district; private land; underground; directions to mine: approximately 23 mi north of Grants, NM on SR 509 Spur

Abstracts

New Mexico Academy of Science

The New Mexico Academy of Science met on October 21 and 22, 1983, at the Lew Wallace Center and the University of New Mexico (Albuquerque). Following are abstracts from talks given at the meeting.

Dolomitic microfacies of the Ordovician system, north Franklin Mountains, Doña Ana County, New Mexico, by Robert J. Kondelin and David V. LeMone, Department of Geological Sciences, University of Texas (El Paso), El Paso, TX, and Kevin von Finger, Environmental Office, Fort Bliss Military Reservation, Fort Bliss, TX

The Ordovician system of the north Franklin Mountains consists almost entirely of dolomitized marine limestones. Units present are the McKelligon Limestone and the Scenic Drive Formation of the El Paso Group (Early Ordovician) and the Upham Dolomite, Aleman Formation, and Cutter Formation of the Montoya Group (Late Ordovician). Field study was conducted on two stratigraphic sections, one on the Doña Ana bombing range and the other at north Anthony's Nose, southern Doña Ana County. Thin sections were made from samples taken from those areas and analyzed under a petrographic microscope. Of 164 thin sections made, 53 show pervasive dolomitization and recrystallization which completely obscured depositional textures. The remaining thin sections may be divided into nine major microfacies with several submicrofacies. They are as follows: 1) dolomitized, non-laminated micrite; 2) dolomitized, light-colored, laminated and cross-laminated micrite; 3) dolomitized, dark, cherty, laminated, spiculitic micrite; 4) dolomitized bioclastic wackestone, a) pelmatozoan dominated, b) whole brachiopod dominated, c) bryozoan dominated, or d) mixed fauna; 5) dolomitized bioclastic packstone, a) pelmatozoan dominated, b) brachiopod–bryozoan dominated, c) gastropod–trilobite dominated, d) gastropod–ostracod dominated, or e) mixed fauna; 6) dolomitized bioclastic grainstone; 7) dolomitized intraclastic–lithoclastic conglomerate; 8) dolomitized, oncolitic, stromatolitic micrite; and 9) dolomitized collapse breccia. Environments of deposition of these microfacies include supratidal, intertidal, and shallow subtidal. Quartz sand and silt occur in variable concentrations within microfacies 1, 2, 4, 5, and 7. Often the quartz sand is rounded and poorly sorted. In addition to making microfacies classification possible, thin-section examination allowed identification of many features not visible in hand samples. Allochems identified this way include trilobites, bryozoans, gastropods, ostracods, pelmatozoans, and microfossils (sponge spicules, chitinozoans, scolecodonts). Algal stromatolites and oncolites were also noticed. Bioturbation is indicated by oriented quartz sand grains and concentrations of bioclasts. Length-slow chalcedony nodules indicating sulfate replacements were found at several horizons. Crystal size and form of dolomite were also studied by thin-section examination. Xenotopic dolomite with low porosity predominates. Stylolites indicate that significant pressure solution has occurred, thus reducing the total thickness of the Ordovician system.

Sedimentary structures of the Fusselman Dolomite, north Franklin Mountains, Doña Ana County, New Mexico, by L. McEvers and D. V. LeMone, Department of Geological Sciences, University of Texas (El Paso), El Paso, TX, and Kevin von Finger, Environmental Office, Fort Bliss Military Reservation, Fort Bliss, TX

Sedimentary structures have been recognized at several horizons within the Early to Middle Silurian Fusselman dolomite near north Anthony's Nose, southern Doña Ana County, New Mexico. These structures include: bioturbation, wavy-laminae, cross-laminae, cut-and-fill, parallel-laminae, and desiccation cracks. Bioturbated units range from sparsely to abundantly fossiliferous and are common in the Fusselman at this location. These units are interpreted as shallow subtidal to low intertidal deposits. Wavy- to cross-laminated units contain intraclasts, desiccation cracks, and cut-and-fill structures. These structures and their vertical relationships to bioturbated or parallel-laminated units can be interpreted to indicate an intertidal environment. Parallel-laminated units occur with associated dessication cracks that suggest a high intertidal to supratidal environment. A significant portion of the Fusselman occurs as a structureless, massive dolomite containing poorly preserved crinoids, corals, brachiopods, and stromatoporids. These units probably represent a shallow subtidal, open-marine environment. Vertical relationships of the structures described indicate that several transgressive and regressive sequences are present in the Fusselman Dolomite of the north Franklin Mountains.

Basinal Mississippian carbonate microfacies, north Franklin Mountains, Doña Ana County, south-central New Mexico, by H. D. Madden and D. V. LeMone, Department of Geological Sciences, University of Texas (El Paso), El Paso, TX, and Kevin von Finger, Environmental Office, Fort Bliss Military Reservation, Fort Bliss, TX

The Mississippian system of the north Franklin Mountains is represented by (in ascending order): the dark, dense, fine-grained, and medium-bedded Las Cruces Formation (Osage–Meramec); the fine-grained, dense, cherty Rancheria Formation (Meramec); and the shaly and argillaceous limestones of the Helms Formation (Chester). Carbonate microfacies studies of these units indicate a distal-carbonate-turbidite sequence in a shallowing upward sequence. The Las Cruces Formation and the upper and middle members of the Rancheria Formations contain easily recognizable turbidite sequences. Laminated spiculites and bioclastic packstones interbedded with quiet-water pelagic micrite and non-laminated spiculites are the most common turbidite couple. Peloidal wackestones to packstones of the upper member of the Rancheria Formation were deposited in shallower water probably by turbidite flows and/or traction currents. Also present in the upper member are bioclastic grainstones which might suggest proximity to slope and deep shelf margin. The upper member of the Rancheria Formation contains larger scale cross-laminations compared with the underlying strata. Cut-and-fill structures and higher clastic content also were recorded. The Helms Formation is composed of clay and silt in peloidal microspar, calcareous shale, and calcareous siltstone. These lithologies would seem to result from slow deposition in deeper water which would create alternating layers of shale and argillaceous limestone with considerably more clastic debris than previous Mississippian sedimentation. The uppermost beds of the Helms Formation contain oolitic grainstones resulting from shoaling conditions.

Microfacies of the Pennsylvanian system, north Franklin Mountains, Doña Ana County, New Mexico, by R. C. Roark and D. V. LeMone, Department of Geological Sciences, University of Texas (El Paso), El Paso, TX, and Kevin von Finger, Environmental Office, Fort Bliss Military Reservation, Fort Bliss, TX

The well exposed Early Pennsylvanian system in the north Franklin Mountains of south-central New Mexico includes La Tuna Formation and approximately half of the Berino Formation. These exposures are composed of highly fossiliferous, cherty limestones and minor upward-increasing clastics (shales) which range in thickness from 560 ft (171 m) to 785 ft (239 m). Two hundred twenty thin sections, derived from samples collected from two measured sections, were analyzed. These data indicate 13 microfacies in La Tuna Formation and 10 microfacies in the exposed portion of the Berino Formation. Tentatively, they have been established as follows: La Tuna Formation—1/L–micrite; 2/L–coated grains in micrite; 3/L–coated, worn bioclastic grainstone; 4/L–spiculite; 5/L–whole shells in micrite; 6/L–foraminiferal grainstone–packstone; 7/L–crinoid-echinoid-foraminiferal grainstone–packstone; 8/L–crinoidal grainstone–packstone; 9/L–variable fossil grainstone–packstone; 10/L–red algae grainstone–packstone; 11/L–foraminiferal wackestone; 12/L–variable fossil wackestone; 13/L–phylloid algae wackestone; Berino Formation—1/B–coated grains in micrite; 2/B–coated, worn bioclastic grainstone; 3/B–spiculite; 4/B–boundstone; 5/B–foraminiferal grainstone–packstone; 6/B–crinoid-echinoid-brachiopod grainstone–packstone; 7/B–variable fossil grainstone–packstone; 8/B–foraminiferal wackestone; 9/B–crinoid-echinoid-brachiopod wackestone; 10/B–variable fossil wackestone. La Tuna and Berino sediments were deposited in a fluctuating sea level, open-shelf marine environment where circulation was good. Water energy was low to high, and water depth ranged from tens to hundreds of meters. Cyclicity in environment and clastic content was noted in the upper La Tuna and Berino Formations which probably indicates episodic tectonism of the highlands to the west as well as fluctuating sea level.

Preliminary microfacies analysis of the Pennsylvanian system, Robledo Mountains, Doña Ana County, New Mexico, by T. J. Roepke, Department of Geological Sciences, University of Texas (El Paso), El Paso, TX

The Robledo Mountains, which lie approximately 10 mi (16 km) northwest of Las Cruces, contain a well exposed Pennsylvanian section. The Pennsylvanian crops out only in the northern portion of the range and has measured thickness of 655 ft (200 m). It consists almost entirely of light to medium gray, ledge- and cliff-forming, bioclastic limestones. While field analysis reveals some degree of cyclicity in the Missourian strata, the evidence of cyclicity is not clearly apparent in the observed thin sections. Seven general microfacies have been established: unfossiliferous mudstone; bioclastic micrite; bioclastic wackestone, bioclastic packstone; stromatolitic mudstone; aggregate-grain packstone; and rounded bioclastic grainstone. Three Wilsonian facies belts (6, 7, 8) are apparently correlatable with these seven microfacies. The winnowed platform edge sands (facies belt 6) are characteristically represented by the rounded bioclastic grainstone microfacies; an open marine platform (facies belt 7) is represented by the bioclastic mudstone–wackestone–packstone microfacies; and a restricted marine platform—tidal-flat environment (facies belt 8) is indicated by the unfossiliferous mudstone, stromatolitic mudstone, and aggregate-grain packstone microfacies. Fauna

observed in the section include: fusulinids, fenestrate bryozoans, brachiopods, phylloid algae, solitary and colonial corals, crinoids (pelmatozoans), trilobites, ostracods, cephalopods, and gastropods.

AN EARLY CRETACEOUS RUDIST-BIOSTROME SEQUENCE, EAST POTRILLO MOUNTAINS, DOÑA ANA COUNTY, NEW MEXICO, by C. A. Pickens, Department of Geological Sciences, University of Texas (El Paso), El Paso, TX

A sequence of rudist biostromes are located at the southern end of the East Potrillo Mountains, Doña Ana County, New Mexico. These biostromes attain a maximum thickness of 20.7 ft (6.3 m). The biostromes are believed to have developed on a shallow shelf in clear, probably near normal, marine water. Environmental interpretations were established by the presence of a large, locally transported, 3 ft (1 m) coral colony observed in the northern area adjacent to the biostrome. The biostromes in the northern portion of the area are more poorly developed in thickness and definition as well as being richer in clastics. *Orbitolina*, however, are very abundant within the northern section of the biostromes, while the better developed southern section contains fewer *Orbitolina*. Relatively rare Monopleurid "bouquets" are observed at the base of the biostromes. These inverted, cone-shaped bundles of colonial monopleurids average 1 ft (.3 m) in height and 1.5 ft (.5 m) in width at the top. The monopleurid bouquets are interpreted as the colonizing rudist community on the shelf. Caprinids replaced the monopleurid bouquets after a decrease or break in sedimentation. Solitary monopleurids colonized the area after the caprinids died off, possibly due to a sedimentation shift. High-spired gastropods (turritellids) subsequently replaced the monopleurids.

CRETACEOUS FAUNA OF THE FORMATION MOUNTAINS, TEXAS AND NEW MEXICO, by D. V. LeMone, Southwest Biostratigraphic Institute, Department of Geological Sciences, University of Texas (El Paso), El Paso, TX

The essentially middle Cretaceous rocks of the Franklin Mountains are confined to exposures in El Paso County, Texas. These outcrops are exposed as a result of either Tertiary intrusive activity or by preservation along the western side of the West Boundary fault zone of the range. In the El Paso border region 12 formations with a cumulative, conservative thickness of 4,596 ft (1,401 m) are recognized. Ages range from Aptian(?) to Turonian. The currently assignable thickness of Albian rocks is 4,116 ft (1,255 m) in the El Paso area.

Eight of the 12 regionally distributed formations have been documented on the southwest flank of the Franklin Mountains. The Cuchillo, Benigno, Finlay, and Del Norte formations are not recognized in the Franklin Mountains. Twenty-three localities have been documented.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, BULLETIN, V. 68, NO. 1, JANUARY 1984

LANGLEY DEEP FIELD, DISCOVERY AND INTERPRETATION, by G. J. Henderson, ARCO Oil and Gas Co., Dallas, TX, E. A. Lake, ARCO Oil and Gas Co., Denver, CO, and G. Douglas, ARCO Oil and Gas Co., Midland, TX, p. 116

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DETRITAL AND AUTHIGENIC CLAY MINERALS IN LOWER MORROW SANDSTONES OF EASTERN NEW MEXICO, by J. Mazzullo, Texas A&M University, College Station, TX, and L. J. Mazzullo, Midland, TX, p. 117

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MCDONALD (DEVONIAN) FIELD, LEA COUNTY, NEW MEXICO, by S. M. Roberts, Harvey E. Yates Co., Midland, TX, p. 119

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OBSERVED UNDERGROUND BEHAVIOR AT THE WASTE ISOLATION PILOT PLANT IN SOUTHEASTERN NEW MEXICO, by D. K. Shukla and R. F. McKinney, D'Appolonia Consulting Engineers, Albuquerque, NM, p. 687

TRANSITION FROM ARC VOLCANISM TO STABLE SHELF AND SUBSEQUENT CONVERGENT-MARGIN SEDIMENTATION IN NORTHERN NEW MEXICO BETWEEN 1.8 AND 1.5 GA, by K. Soegaard and K. A. Ericksson, VPI and SU, Blacksburg, VA, p. 691

New Mexico Geological Society news

The elected officers of NMGS for 1984 are Dave Norman, President, Jeff Grambling, Vice President, Kay Hatton, Treasurer, Dave Love, Secretary, and Russ Jentgen, Past President. Jiri Zidek is now the managing editor. The executive committee met January 27 to consider the following items. The Society is in good financial condition with publication sales of more than $60,000 last year. The executive committee decided to allocate $10,000 for student support, funding $7,000 for grants-in-aid, $1,000 for a newly established student fellowship, and $2,000 for the permanent student-scholarship account. Those students interested in applying for support should talk to their department chairpersons. NMGS will provide savings bond awards to the winners of the Junior and Senior divisions of the State Science Fair. The Society also will increase our clerical secretary's salary for her outstanding work. Dave Norman reported that plans for the spring meeting, April 27, include a symposium on epithermal deposits. The executive committee voted to fund an NMGS special publication containing papers given at the symposium, to be published sometime after the meeting. Bob Riecker reported that plans for the fall field trip to the Taos area, October 11–13, are progressing smoothly. The first two days will be by bus; the third day will be in cars. Fall field trips after 1984 need to be planned now! The executive committee recommended the formation of a permanent field trip committee to consider future conferences. If you have suggestions for future trips, particularly if you would like to help organize a trip, please contact any of the executive committee members. The executive committee would like all NMGS members to consider: 1) including a subscription to *New Mexico Geology* with membership in our Society, beginning in 1985; 2) raising regular and associate member dues to $10; 3) raising student member dues to $6 to cover the cost of *New Mexico Geology;* 4) making a dues payment deadline of July 1; 5) requiring nonmembers to pay $15 more than members to register for fall field conferences (the money would automatically make the registrant a member of the Society the following year, including a subscription to *New Mexico Geology*); and 6) publishing the list of Society members shortly after the July 1 deadline. Let the executive committee know your opinion of these proposed changes.

New Mexico Bureau of Mines and Mineral Resources staff notes

James Barker, Industrial Minerals Geologist, was the author of the chapter on sulfur in the fifth edition of *Industrial Rocks and Minerals* which was recently published by SME of AIME. Gretchen Roybal and Frank Campbell, Coal Geologists, will present a paper at the AAPG meeting in San Antonio, TX, entitled "Coal geology of the Salt Lake coal field, west-central New Mexico." Marshall Reiter, Senior Geophysicist, received a grant from the National Science Foundation to do a two-year study entitled "Terrestrial heat-flow studies in west-central New Mexico."

Jiri Zidek, Chief Editor, has accepted the position of Managing Editor for the New Mexico Geological Society. Bob Osburn, Economic Geologist, presented a paper that he wrote with Ted Eggleston and Charles Chapin at the AGU meeting in San Francisco, CA, entitled "Reversely zoned Hells Mesa Tuff and Socorro cauldron." The abstract was published in *Transactions of the American Geophysical Union* (v. 64, no. 45, p. 884).

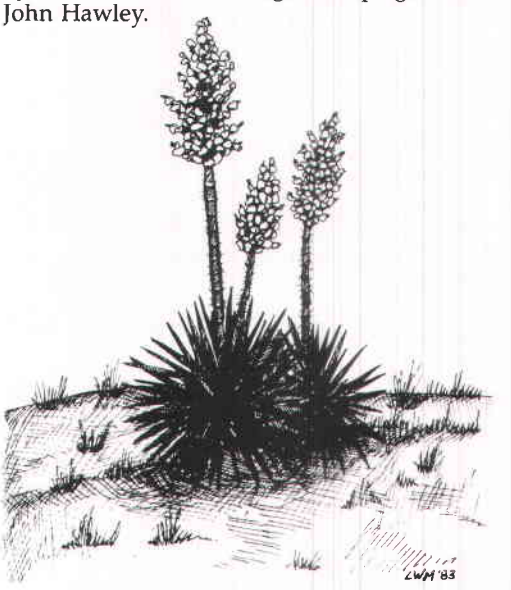
An article by Marshall Reiter and Gerry Clarkson, graduate student, entitled "Relationship between heat flow, paleotemperatures, coalification, and petroleum maturation in the San Juan Basin, northwest New Mexico and southwest Colorado" was published in *Geothermics* (v. 12, no. 4, pp. 323–339). Robert North, Mineralogist, oversaw the setting up of a mineral exhibit in the reception lobby of the New Mexico Energy and Minerals Department in Santa Fe, NM; part of the cost for the exhibit cases was funded by Larry Kehoe, former secretary of NMEMD. Gary Johnpeer, Engineering Geologist, was accepted into AIPG as Certified Professional Geologic Scientist (CPGS) 6428 in January. Continuation of our cooperative contract with the U.S. Geological Survey's computerization of point-source coal data for New Mexico project was approved. This project, in its fifth year, is overseen by Gretchen Roybal.

New staff members are Brian Arkell, Coal Geologist, Nancy Blount, Coal Lab Technician, and Carol Hjellming, Editorial Secretary. Bill Stone and John Hawley are serving on a task force to investigate the hydrology of coal surface mining for EMD. Lynn Brandvold, JoAnne Osburn, Virginia McLemore, and Barbara Popp were speakers at the Women in Science workshop held recently at New Mexico Tech. A mineral-resources exhibit was set up at the New Mexico Mining Association's reception for the New Mexico legislature by Bob Eveleth, Virginia McLemore, Dave Menzie, Don Wolberg, and George Austin.

At a meeting in Denver, CO, with representatives from BLM, USGS, and DOE, Dick Chamberlin and Virginia McLemore participated in discussions about how to release the NURE data for the twenty-two 2° quadrangles that cover New Mexico. NMBMMR has agreed to a memorandum of understanding (MOU) with the U.S. Bureau of Mines to collaborate in collecting mineral statistics; Bob Eveleth will be NMBMMR's main participant. The U.S. Geological Survey recently published *Geologic map of Latir Peak and Wheeler Peak Wilderness and Columbine–Hondo Wilderness study area* (MF–1570–B), by J. C. Reed, P. W. Lipman, and James Robertson.

Lynn Brandvold was a coauthor on an article in *Deposition, both wet and dry,* entitled "Natural precipitation and atmospheric particulates in central and northern New Mexico." *Review of Geologic Instruments* contained an article by Jacques Renault entitled "Turbine-drive sample spinner for x-ray diffraction." A symposium volume, "Revolution in the earth's sciences," included an article by George Austin entitled "Industrial minerals and rocks, fifty years of development." The January *GSA Bulletin* contained an article by W. R. Seager, J. W. Hawley, and others entitled "New K–Ar dates for basalts and the evolution of the southern Rio Grande rift."

NMBMMR Resource Map 11, *Topographic map of New Mexico* (scale 1:1,000,000) was drafted by Teresa Mueller, Mickey Wooldridge, and Bill Arnold and edited by John Hawley, Steve Blodgett, Robert Eveleth, Robert Kelley, and Frank Kottlowski. The Tucumcari 2° quadrangle geologic map, a part of the *Geologic Atlas of Texas,* was compiled by G. K. Eifler, F. D. Trauger, Z. Spiegel, and John Hawley.



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