

Bibliography of Geology and Hydrology, San Juan Basin, New Mexico, Colorado, Arizona, and Utah

GEOLOGICAL SURVEY BULLETIN 1481



Bibliography of Geology and Hydrology, San Juan Basin, New Mexico, Colorado, Arizona, and Utah

By ANN FINLEY WRIGHT

G E O L O G I C A L S U R V E Y B U L L E T I N 1 4 8 1



UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, *Secretary*

GEOLOGICAL SURVEY

H. William Menard, *Director*

Library of Congress Cataloging in Publication Data

Wright, Ann Finley.

Bibliography of geology and hydrology, San Juan Basin, New Mexico, Colorado, Arizona, and Utah.

(Geological Survey bulletin ; 1481)

Includes index.

1. Geology—San Juan River watershed—Bibliography. 2. Hydrology—San Juan River watershed—Bibliography. I. Title. II. Series: United States, Geological Survey. Bulletin ; 1481.

QE75.B9 no. 1481 [Z6034.U5W5] [QE79] 557.3'08s [016.5578] 79-607079

**For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington, D. C. 20402**

Stock Number 024-001-03221-0

CONTENTS

	Page
Abstract	1
Introduction	2
Method of compilation	3
Acknowledgments	3
References	4

ILLUSTRATIONS

	Page
FIGURE 1.—Location map of San Juan Basin in New Mexico, Colorado, Arizona, and Utah	2

BIBLIOGRAPHY OF THE GEOLOGY AND HYDROLOGY, SAN JUAN BASIN, NEW MEXICO, COLORADO, ARIZONA, AND UTAH

By ANN FINLEY WRIGHT

ABSTRACT

The San Juan Basin of New Mexico, Colorado, and portions of Arizona and Utah has long been recognized as a source of varied natural resources. This bibliography of over 2,500 references has been compiled to assist physical-science researchers in their study and development of this region.

INTRODUCTION

The San Juan Basin lies within the state boundaries of New Mexico, Colorado, Arizona, and Utah (fig. 1). The region has long been considered a primary source of natural resources.¹ Some of these resources include water, oil, gas, uranium, and coal.²

Because of continuing interest and activity in the San Juan Basin, a comprehensive collection of the literature has been compiled. This bibliography includes over 2,500 references in geology, hydrology, chemistry, and geography. It is anticipated that this volume will serve the needs of a variety of interest groups. The bibliography will save the repetitious literature search time of those researching the Four Corners-San Juan Basin area.

The citations are dated from mid-1850 historical documents through December 1977 and include documents in English language only. The references are basically in the physical sciences with some historical and archaeological material included as background for the user. They are arranged by author or corporate author. Some citations dealing with nearby and related areas have also been included.

¹Early references include publications by N. H. Darton, S. F. Emmons, and D. W. Johnson.

²Current U.S. Geological Survey publications include: Bailey, Smith, and Ross; J. E. Fassett, R. J. Hackman, G. W. Levings, and J. W. Mercer.

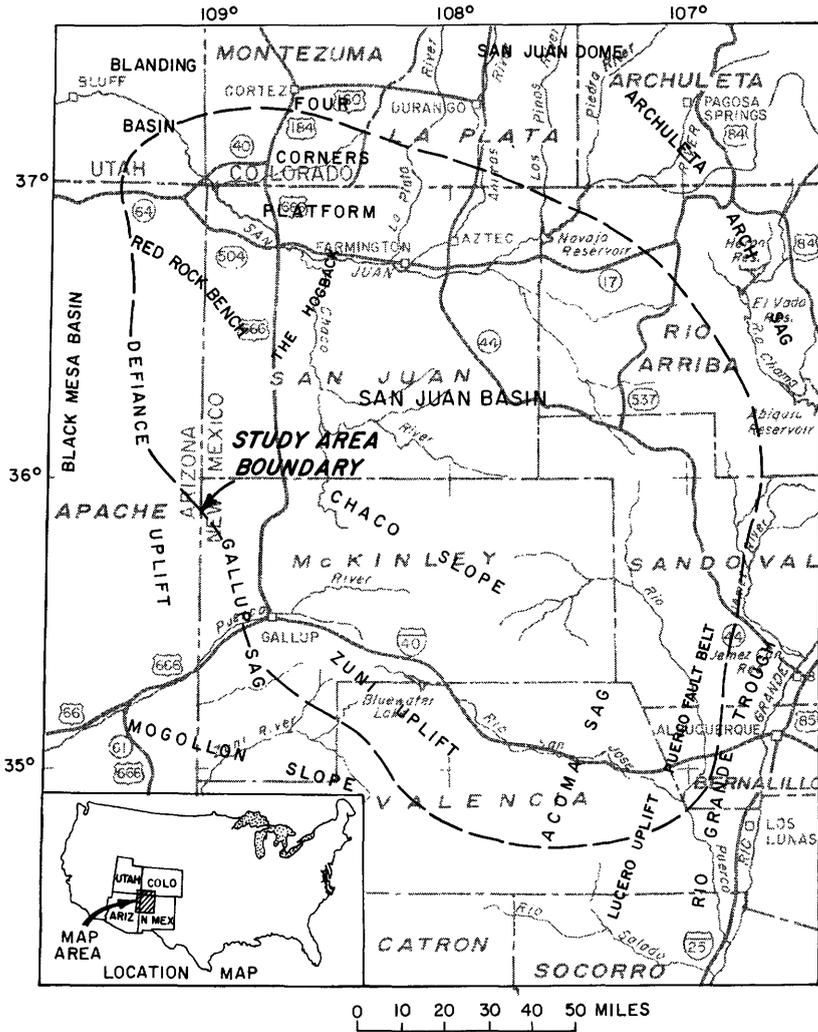


FIGURE 1.—San Juan Basin in New Mexico, Colorado, Arizona, and Utah.

METHOD OF COMPILATION

The bibliographic citations were accumulated through manual searching, computer searches through the U.S. Department of the Interior, Natural Resources Library, Washington, D.C., and through the help of the U.S. Geological Survey Libraries in Reston, Virginia and Denver, Colorado; New Mexico State Library, Santa Fe, and New Mexico State University Library, Las Cruces. Each reference was verified as to existence and availability.

ACKNOWLEDGMENTS

Thanks are expressed to the following for their help in clarifying and confirming the materials presented here: U.S. Geological Survey, Conservation Division, Area Geologist, Farmington, New Mexico; U.S. Park Service, Chaco Center; University of New Mexico, Geology Department faculty and staff; New Mexico State Library, Santa Fe, reference staff members; New Mexico State University Library, Las Cruces, reference staff members; New Mexico State Engineer, Santa Fe; U.S. Geological Survey Libraries, Reston, Virginia and Denver, Colorado, reference staff members, and U.S. Department of the Interior, Natural Resources Library, Washington, D.C., Computerized Search Services staff.

REFERENCES

- Abbiss, H. J., 1963, Mine safety problems, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 264–267, 3 figs.
- Abdel-Gawad, A. M., 1960, Alteration features associated with some basal Chinle uranium deposits; Colorado Plateau [abs.]: *Dissertation Abstracts International*, v. 21, no. 3, p. 590.
- 1975, Identification and interpretation of Tectonic features from Skylab imagery: Rockwell International Corp., Thousand Oaks, California, and NASA Earth Resources Survey Program Report, 2 p.
- Abdel-Gawad, A. M., and Tubbesing, Linda, 1975, Analysis of Tectonic features in United States southwest from Skylab photographs: Rockwell International Corp., Thousand Oaks, California, and NASA Earth Resources Survey Program Report, 95 p.
- Adams, G. E., 1957, Geology of Chama area, Rio Arriba County, New Mexico: University of Texas, Austin, unpublished M.S. thesis, 97 p.
- Adams, J. W., 1965, Rare earths, in *Mineral and water resources of New Mexico*: New Mexico Bureau of Mines and Mineral Resources Bulletin 87, p. 234–237.
- Adams, S. S., 1977, Interpretation of postdepositional processes related to formation and destruction of uranium deposits in sandstones [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 61, no. 5, p. 759.
- Adler, F. J., 1960, The Paradox Basin of Colorado, in *Mineral resources of Colorado, first sequence*: Colorado Mineral Resources Board, Denver, chapter 17, p. 505, 625–651.
- Agasie, J. M., 1969, Late Cretaceous palynomorphs from northeastern Arizona: *Micropaleontology*, v. 15, no. 1, p. 13–30.
- Agey, W. W., Schack, C. H., and Clemmer, J. B., 1962, Metallurgical studies of rhodonite ores, Silverton District, Colorado: Part 1, Beneficiation tests to produce manganese concentrates: U.S. Bureau of Mines Report of Investigations RI 6055, 16 p.
- Aiken, C. V., Laughlin, A. W., and West, F. G., 1977, Residual Bouguer gravity anomaly map of northern New Mexico: U.S. Department of Energy and Los Alamos Scientific Laboratory Open-File Map LA-6737.
- Akers, J. P., 1964, Geology and ground water in the central part of Apache County, Arizona: U.S. Geological Survey Water-Supply Paper 1771, 107 p., 21 figs.
- Akers, J. P., Cooley, M. E., and Repenning, C. A., 1958, Moenkopi and Chinle Formations of Black Mesa Basin and adjacent areas, in *Guidebook of the Black Mesa Basin, northeastern Arizona*: New Mexico Geological Society, 9th Field Conference, p. 88–94, 4 figs.
- Akers, J. P., and Harshbarger, J. W., 1958, Ground water in Black Mesa Basin and adjacent areas, in *Guidebook of the Black Mesa Basin, northeastern Arizona*: New Mexico Geological Society, 9th Field Conference, p. 173–183, 8 figs.
- Akers, J. P., Irwin, J. H., Stevens, P. R., and McClymonds, N. E., 1962, Geology of the Cameron quadrangle, Arizona, with a section on uranium deposits, by W. L. Chenoweth: U.S. Geological Survey Geologic Quadrangle Map GQ-162.
- Akers, J. P., McClymonds, N. E., and Harshbarger, J. W., 1962, Geology and ground water of the Red Lake area, Navajo Indian Reservation, Arizona and New Mexico: U.S. Geological Survey Water-Supply Paper 1576-B, 12 p.
- Akers, J. P., Shorty, J. C., and Stevens, P. R., 1971, Hydrogeology of the Cenozoic igneous rocks, Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geological Survey Professional Paper 521-D, 18 p., 2 figs.
- Aldon, E. F., 1976, Soil ripping treatments for runoff and erosion control: Federal In-

- ter-Agency Sediment Conference, Proceedings, no. 3, p. 2.24–2.29.
- Allen, J. E., 1955, Mineral resources of the Navajo reservation in New Mexico (exclusive of uranium, coal, oil, gas, and water): New Mexico Bureau of Mines and Mineral Resources Bulletin 44, [map].
- Allen, J. E., and Balk, Robert, 1954, Mineral resources of Fort Defiance and Tohatchi quadrangles, Arizona and New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 36, 192 p., 21 figs.
- Allen, J. R. L., 1955, A review of the origin and characteristics of recent alluvial sediments: *Sedimentology*, v. 5, no. 2, p. 89–191.
- Allen, V. T., 1956, Is leucoxene always finely crystalline rutile?: *Economic Geology*, v. 51, no. 8, p. 830–833.
- Alston, D. P., and Shoemaker, E. M., 1960, Late Paleozoic and early Mesozoic structural history of the Uncompahgre front; Colorado Plateau, in *Guidebook to geology of the Paradox Basin fold and fault belt: Four Corners Geological Society, 3rd Field Conference*, p. 47–55.
- Anderson, E. C., 1955, Occurrences of uranium ores in New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 29, 38 p.
- 1957, The metal resources of New Mexico and their economic features through 1954: New Mexico Bureau of Mines and Mineral Resources Bulletin 39, 183 p., 3 figs.
- Anderson, J. B., 1970, Structure and stratigraphy of the western margin of the Nacimiento uplift, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 44 p., 5 figs.
- Anderson, J. E., and Kreith, Frank, 1975, Engineering and ecological evaluation of antitranspirants for increasing runoff in Colorado watersheds: Colorado State University, Fort Collins, Environmental Research Center, 37 p., 13 fig.
- Anderson, J. U., 1970, Soils of the San Juan branch agricultural experiment station: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 180, 16 p., 3 figs.
- Anderson, O. J., Hatton, K. S., and Kottlowski, F. E., 1977, Coal, in *New Mexico's energy resources 1976*, annual report Office of the State Geologist, compiled by E. C. Arnold: New Mexico Bureau of Mines and Mineral Resources Circular 148, p. 17–21.
- Anderson, R. L., and Hutchinson, E. C., 1955, Air-photo of the Four Corners area, in *Guidebook to geology of parts of Paradox, Black Mesa, and San Juan Basins: Four Corners Geological Society, 1st Field Conference*, p. 30–45.
- Anderson, R. Y., 1960a, Cretaceous-Tertiary palynology of the eastern side of the San Juan Basin, New Mexico: Stanford University, Palo Alto, California, unpublished Ph. D. dissertation, 167 p., 1 fig.
- 1960b, Cretaceous-Tertiary palynology of the eastern side of the San Juan Basin, New Mexico: New Mexico State Bureau of Mines and Mineral Resources Memoir 6, 59 p., 1 fig.
- Anderson, R. Y., and Kirkland, D. W., 1960, Origin, varves, and cycles of the Jurassic Todilto Formation, New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 44, no. 1, p. 37–52, 11 figs.
- Anderson, T. C. I., 1951, Geology of a part of northwest San Juan County, New Mexico: University of California, Los Angeles, unpublished M.S. thesis.
- Andrews, D. A., and Hunt, C. B., 1948, Geologic map of eastern and southern Utah: U.S. Geological Survey Oil and Preliminary Gas Investigation Map OM-70.
- Andrews, J. T., Carrara, P. E., King, F. B., and Stuckenrath, R., 1975, Holocene environmental changes in the alpine zone, northern San Juan Mountains, Colorado; Evidence from bog stratigraphy and palynology: *Quaternary Research Center, Washington University, St. Louis, Missouri*, v. 5, no. 2, p. 173–197.

- Anonymous, 1926, San Juan Basin operations: *Oil and Gas Journal*, v. 24, no. 35, p. 60, 104–105.
- 1952, Stratigraphy of Paleozoic, Mesozoic rocks in parts of central New Mexico, *in* Guidebook of the Rio Grande country: New Mexico Geological Society, 3rd Field Conference, p. 106–126.
- 1957, Oil and gas fields of the Four Corners area: *Petroleum Engineer*, v. 29, no. 13, supplementary map.
- 1959, Stratigraphy of the outcropping Permian rocks in the southern part of the San Juan Basin, New Mexico, *in* Guidebook to west-central New Mexico: New Mexico Geological Society, 10th Field Conference, p. 63–65, 1 fig.
- 1975, Data hints infill reserves less than expected (San Juan Basin, New Mexico): *Western Oil Reporter*, v. 32, no. 10, p. 24–26.
- Antevs, Ernst, 1955, Geologic-climate method of dating, *in* Smiley, T. L., ed., *Geochronology—with special reference to the southwestern United States*: University of Arizona, Tucson, *Physical Science Bulletin*, no. 2, chapter 9, p. 151–169.
- Appledorn, C. R., 1954, Some volcanic structures in the Chuska Mountains, Navajo Reservation, Arizona-New Mexico: University of Minnesota, Minneapolis, unpublished M.S. thesis.
- Appledorn, C. R., and Wright, H. E., Jr., 1957, Volcanic structures in the Chuska Mountains, Navajo Reservation, Arizona-New Mexico: *Geological Society of America Bulletin*, v. 68, no. 4, p. 445–468, 8 figs.
- Archbold, N. L., 1959, Relationship of carbonate cement to lithology and vanadium-uranium deposits in the Morrison Formation in southwestern Colorado: *Economic Geology*, v. 54, no. 4, p. 666–682, 12 figs.
- Arlin, Z. E., 1962, Deep well disposal of uranium mill tailing water [abs.] *in* Guidebook of the Mogollon Rim region, east-central Arizona: New Mexico Geological Society, 13th Field Conference, p. 174.
- Armstrong, A. K., 1955, Preliminary observations on the Mississippian system of northern New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 39, 42 p.
- 1957, The Mississippian Caloso and Kelly Formations of west-central New Mexico: Cincinnati University, Ohio, unpublished M.S. thesis, 134 p.
- 1958a, Meramecian (Mississippian) endothyrid fauna from the Arroyo Penasco Formation, northern and central New Mexico: *Journal of Paleontology*, v. 32, no. 5, p. 970–976, 2 figs.
- 1958b, The Mississippian of west-central New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 5, 32 p.
- 1967, Biostratigraphy and carbonate facies of the Mississippian Arroyo Penasco Formation, north-central New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 20, 89 p., 45 figs.
- 1968, Biostratigraphy of Mississippian system in north-central New Mexico [abs.], *in* Abstracts for 1966: Geological Society of America Special Paper 101, p. 6–7.
- 1969, Reply to interim report on Mississippian Arroyo Penasco Formation of north-central New Mexico—a discussion, by E. H. Baltz, Jr.: *American Association of Petroleum Geologists Bulletin*, v. 53, no. 7, p. 1518–1519.
- Armstrong, A. K., and Mamet, B. L., 1974, Biostratigraphy of the Arroyo Penasco Group, lower Carboniferous (Mississippian), north-central New Mexico, *in* Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 145–158, 17 figs.
- 1976, Biostratigraphy and regional relations of the Mississippian Leadville Limestone in the San Juan Mountains, southwestern Colorado: U.S. Geological Survey Professional Paper 985, 25 p., 15 figs.

- 1977, Biostratigraphy and paleogeography of the Mississippian System in northern New Mexico and adjacent San Juan Mountains of southwest Colorado, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 111–127, 8 figs.
- Armstrong, A. K., and Holcomb, L. D., 1967a, Interim report on Mississippian Arroyo Penasco Formation of north-central New Mexico [abs.]: *Petroleum Abstracts*, v. 7, no. 17, p. 1114.
- 1967b, Interim report on Mississippian Arroyo Penasco Formation of north-central New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 51, no. 3, pt. 1, p. 417–424, 7 figs.
- Armstrong, R. L., 1969, K-Ar dating of laccolithic centers in the Colorado Plateau and vicinity: *Geological Society of America Bulletin*, v. 80, no. 10, p. 2081–2086.
- 1973, Avalanche studies in the San Juan mountains of southwestern Colorado, in *Proceedings: Western Snow Committee, 41st Annual Meeting*, p. 44–51.
- Arnold, E. C., 1957, Gas proration—San Juan Basin, in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference*, p. 30–33.
- 1974, Oil and gas development and production, eastern San Juan Basin, in *Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference*, p. 323–328, 1 fig.
- Arnold, E. C., Foster, R. W., Hill, J. M., Kottlowski, F. E., Page, G. B., Reiter, M. A., and Stone, W. J., 1976, New Mexico's energy resources 1975: *New Mexico Bureau of Mines and Mineral Resources Bulletin* 107, 40 p., 18 figs.
- Ash, H. O., 1958, The Jurassic Todilto Formation of New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 63 p., 4 figs.
- Ash, S. R., 1967, The Chinle (upper Triassic) megafloora of the Zuni Mountains, New Mexico, in *Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference*, p. 125–131.
- 1969, Ferns from the Chinle Formation (upper Triassic) in the Fort Wingate area, New Mexico: *U.S. Geological Survey Professional Paper* 613–D, 50 p., 19 figs.
- 1972a, Plant megafossils of the Chinle Formation, in *Investigations in the Triassic Chinle Formation: Museum of Northern Arizona, Flagstaff, Bulletin* 47, p. 23–44, 4 figs.
- 1972b, The search for plant fossils in the Chinle Formation, in *Investigations in the Triassic Chinle Formation: Museum of Northern Arizona, Flagstaff, Bulletin* 47, p. 45–58, 15 figs.
- 1974, Notes on the Chinle Formation (upper Triassic) in east-central Arizona, in *Guidebook to Devonian, Permian and Triassic plant localities, east-central Arizona: Botanical Society of America, 25th Annual AIBS Meeting*, p. 40–42.
- Atwood, W. W., 1918, Relation of landslide and glacial deposits to reservoir sites in the San Juan Mountains, Colorado: *U.S. Geological Survey Bulletin* 685, 38 p., 17 figs.
- Atwood, W. W., and Mather, K. F., 1912a, The evidence of three distinct glacial epochs in the Pleistocene history of the San Juan Mountains, Colorado [abs.]: *Geological Society of America Bulletin*, v. 23, p. 732.
- 1912b, The evidence of three distinct glacial epochs in the Pleistocene history of the San Juan Mountains, Colorado: *Journal of Geology*, v. 20, no. 5, p. 385–409, 4 figs.
- 1912c, The evidence of three distinct glacial epochs in the Pleistocene history of the San Juan Mountains, Colorado [abs.]: *Science*, v. 35, p. 315.
- 1932, Physiography and Quaternary geology of the San Juan Mountains, Colorado: *U.S. Geological Survey Professional Paper* 166, 176 p., 25 figs.

- Austin, S. R., 1960, Alteration at Ambrosia Lake, New Mexico: U.S. Atomic Energy Commission Report RME-134, 19 p.
- , 1963, Alteration of Morrison Sandstone, *in* Geology and technology in the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 38-44, 18 figs.
- Austin, W. L., 1898, Telluride veins in the La Plata Mountains occurrence and nature of the veins: Colorado Science Society Bulletin, no. 10, p. 4-5.
- , 1902, Some tellurium veins in the La Plata Mountains occurrence and nature of the veins and country rock: Colorado Science Society Proceedings, v. 6, p. 87-90.
- Averitt, Paul, 1950, Status of coal resources surveys: Mining Congress Journal, v. 36, no. 2, p. 86-88.
- , 1951a, Current coal research—coal resource studies in the United States during 1950: Economic Geology, v. 46, no. 8, p. 836-841, 3 figs.
- , 1951b, Status of summary coal-resource surveys, November 1, 1951 [abs.]: Economic Geology, v. 46, no. 7, p. 808-809.
- , 1951c, Status of summary coal-resource surveys, November 1, 1951 [abs.]: Geological Society of America Bulletin, v. 62, no. 12, pt. 2, p. 1421.
- , 1960, Coal reserves of the United States, January 1, 1960, *in* Geological Survey research, 1960—short papers in the geological sciences: U.S. Geological Survey Professional Paper 400-B, p. 81-82.
- , 1965, The future of coal production in the Rocky Mountain region: Economic Geology, v. 60, no. 2, p. 351-359.
- , 1966, Coking-coal deposits of the western United States: U.S. Geological Survey Bulletin 1222-G, 48 p., 1 fig.
- , 1969, Coal resources of the United States, January 1, 1967: U.S. Geological Survey Bulletin 1275, 116 p., 11 figs.
- , 1970, Stripping-coal resources of the United States, January 1, 1970: U.S. Geological Survey Bulletin 1322, 34 p., 1 fig.
- , 1972, Coal, *in* Geologic atlas of the Rocky Mountain region: Rocky Mountain Association of Geologists, Denver, p. 297-299, 3 figs.
- , 1975, Coal resources of the United States, January 1, 1974: U.S. Geological Survey Bulletin 1412, 131 p.
- Averitt, Paul, and Berryhill, L. R., 1950, Coal resources of the United States—a progress report, November 1, 1950: U.S. Geological Survey Circular 94, 33 p.
- Averitt, Paul, Detterman, J. S., Harshbarger, J. W., Repenning, C. A., and Wilson, R. F., 1955, Revisions in correlation and nomenclature of Triassic and Jurassic Formations in southwestern Utah and northern Arizona: American Association of Petroleum Geologists Bulletin, v. 39, no. 12, p. 2515-2524, 1 fig.
- Averitt, Paul, and Lopez, Lorreda, 1972, Bibliography and index of U.S. Geological Survey publications relating to coal, 1882-1970: U.S. Geological Survey Bulletin 1377, 173 p.
- Ayers, H. J., 1952, Service operations in the San Juan Basin: Petroleum Engineer, v. 24, no. 5, p. 48-50.
- Baars, D. L., 1958, Cambrian stratigraphy of the Paradox Basin region, *in* Guidebook to Paradox Basin: Intermountain Association of Petroleum Geologists, 9th Field Conference, p. 93-101.
- , 1961a, Permian blanket sandstones of Colorado Plateau, *in* Geometry of sandstone bodies—a symposium: American Association of Petroleum Geologists, 45th Annual Meeting, p. 179-207.
- , 1961b, Permian strata of central New Mexico, *in* Guidebook of Albuquerque country: New Mexico Geological Society, 12th Field Conference, p. 113-120, 5 figs.

- 1961c, Permian system of the Colorado Plateau [abs.], in *Guidebook of the Albuquerque country*: New Mexico Geological Society, 12th Field Conference, p. 196.
- 1962, Permian System of Colorado Plateau: *American Association of Petroleum Geologists Bulletin*, v. 46, no. 2, p. 149–218, 19 figs.
- 1965, Pre-Pennsylvanian paleotectonics of southwestern Colorado (San Juan County and vicinity) and east-central Utah: University of Colorado, Boulder, unpublished Ph. D. dissertation, 179 p., 18 figs.
- 1966, Pre-Pennsylvanian paleotectonics-key to basin evolution and petroleum occurrences in Paradox Basin, Utah and Colorado: *American Association of Petroleum Geologists Bulletin*, v. 50, no. 10, p. 2082–2111, 27 figs.
- 1972, Pre-Pennsylvanian paleotectonic framework of ancestral Rockies of Colorado [abs.]: *Colorado School of Mines, Golden, Quarterly*, v. 67, no. 4, p. 137.
- 1974, Permian rocks of north-central New Mexico, in *Guidebook to Ghost Ranch (central-northern, New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 167–169, 1 fig.
- Baars, D. L., and Campbell, J. A., 1968, Devonian System of Colorado, northern New Mexico and the Colorado Plateau: *The Mountain Geologist*, v. 5, no. 1, p. 31–40.
- Baars, D. L., and Knight, R. L., 1957, Pre-Pennsylvanian stratigraphy of the San Juan Mountains and Four Corners area, in *Guidebook to southwestern San Juan Mountains, Colorado*: New Mexico Geological Society, 8th Field Conference, p. 108–131, 13 figs.
- Baars, D. L., and See, P. D., 1968, Pre-Pennsylvanian stratigraphy and paleotectonics of the San Juan Mountains, southwestern Colorado: *Geological Society of America Bulletin*, v. 79, no. 3, p. 333–350.
- Baars, D. L., and Stevenson, G. M., 1977, Permian rocks of the San Juan Basin, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 133–138, 4 figs.
- Bachman, G. O., Vine, J. D., Read, C. B., and Moore, G. W., 1959, Uranium-bearing coal and carbonaceous shale in the La Ventana Mesa area, Sandoval County, New Mexico, in *Uranium in coal in the western United States*: U.S. Geological Survey Bulletin 1055-J, 12 p., 1 fig.
- Bailey, R. A., Smith, R. L., and Ross, C. S., 1969, Stratigraphic nomenclature of volcanic rocks in the Jemez Mountains, New Mexico: U.S. Geological Survey Bulletin 1274-P, 19 p., 2 figs.
- Bain, G. W., 1952a, Uranium deposits in southwestern Colorado Plateau: U.S. Atomic Energy Commission Report 982 [revised], 59 p.
- 1952b, Uranium in the Dirty Devil Shinarump channel deposit: U.S. Atomic Energy Commission Report RMO-66, 40 p., 8 figs.
- 1953, Part 2, Geology of the plateau uranium deposits (Colorado Plateau): U.S. Atomic Energy Report RMO-44, p. 20–33.
- 1957, Discussion of urano-organic ores (Colorado Plateau): *Economic Geology*, v. 52, no. 2, p. 193–196.
- Baker, A. A., 1933, Geology and oil possibilities of the Moab district, Grand and San Juan Counties, Utah: U.S. Geological Survey Bulletin 841, 95 p., 3 figs.
- 1935, Geologic structure of southeastern Utah: *American Association of Petroleum Geologists Bulletin*, v. 19, no. 10, p. 1472–1507, 3 figs.
- 1936, Geology of the Monument Valley-Navajo Mountain region, San Juan County, Utah: U.S. Geological Survey Bulletin 865, 106 p., 3 figs.
- Baker, A. A., Dane, C. H., and McKnight, E. T., 1954, Geologic structure of parts of Grand and San Juan Counties, Utah: U.S. Geological Survey Preliminary Map OM-169.
- Baker, A. A., Dane, C. H., and Reeside, J. B., Jr., 1933, Paradox Formation of eastern

- Utah and western Colorado: American Association of Petroleum Geologists Bulletin, v. 17, no. 8, p. 963-980, 2 figs.
- 1936, Correlation of the Jurassic Formations of parts of Utah, Arizona, New Mexico and Colorado: U.S. Geological Survey Professional Paper 183, 66 p., 16 figs.
- 1947, Revised correlation of Jurassic Formations in parts of Utah, Arizona, New Mexico, and Colorado: American Association of Petroleum Geologists Bulletin, v. 31, no. 9, p. 1664-1668, 1 fig.
- Baker, A. A., Dobbin, C. E., McKnight, E. T., and Reeside, J. B., Jr., 1927, Notes on the stratigraphy of the Moab region, Utah: American Association of Petroleum Geologists Bulletin, v. 11, no. 8, p. 785-808, 4 figs.
- Baker, A. A., and Reeside, J. B., Jr., 1929, Correlation of the Permian of southern Utah, northern Arizona, northwestern New Mexico, and southwestern Colorado: American Association of Petroleum Geologists Bulletin, v. 13, no. 11, p. 1413-1448, 12 figs.
- Baker, A. A., and Williams, J. S., 1940, Permian in parts of the Rocky Mountain and Colorado Plateau regions: American Association of Petroleum Geologists Bulletin, v. 24, no. 4, p. 617-635, 7 figs.
- Baker, Ian, and Ridley, W. I., 1970, Field evidence and K, Rb, Sr data bearing on the origin of the Mt. Taylor volcanic field, New Mexico, USA: Earth and Planetary Science Letters, v. 10, p. 106-114.
- Ball, M. M., 1954, The sedimentary carnotite deposits of the Colorado Plateau: Compass, v. 31, no. 3, p. 172-174.
- Ballance, W. C., 1962, Ground-water levels in New Mexico, 1961: New Mexico State Engineer Basic-Data Report, 130 p., 20 figs.
- 1963, Ground-water levels in New Mexico, 1962: New Mexico State Engineer Basic-Data Report, 126 p., 20 figs.
- 1965, Ground-water levels in New Mexico, and water levels in artesian wells in the Roswell area for a period of record, 1963: New Mexico State Engineer Basic-Data Report, 143 p., 27 figs.
- Ballance, W. C., and others, 1962, Ground-water levels in New Mexico, 1960: New Mexico State Engineer Technical Report 27, 215 p., 33 figs.
- Ballmer, W. E., 1963, Growth and production, in Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 270-271.
- Baltz, E. H., Jr., 1953a, Stratigraphic relationships of Cretaceous and early Tertiary rocks of a part of northwestern San Juan Basin: University of New Mexico, Albuquerque, unpublished M.S. thesis, 101 p., 7 figs.
- 1953b, Uranium in carbonaceous rocks—southwestern Colorado and New Mexico, in Geologic investigations of radioactive deposits, semiannual progress report, June 1 to November 30, 1953: U.S. Geological Survey Trace Element Investigations Report TEI-390, p. 119-121, 1 fig.
- 1954a, Reconnaissance for uranium in the United States—New Mexico and southeastern Colorado, in Geologic investigations of radioactive deposits, semiannual progress report—June 1 to November 30, 1954: U.S. Geological Survey Trace Element Investigations Report TEI-490, p. 219-222.
- 1954b, Uranium in carbonaceous rocks—southwestern Colorado and northwestern New Mexico, in Geologic investigations of radioactive deposits, semiannual progress report—December 1, 1953 to May 31, 1954: U.S. Geological Survey Trace Element Investigations Report TEI-440, p. 101-102.
- 1962, Stratigraphy and geologic structure of uppermost Cretaceous and Tertiary rocks of the east-central part of the San Juan Basin, New Mexico: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 294 p., 24 figs.

- 1967, Stratigraphy and regional tectonic implications of part of upper Cretaceous and Tertiary rocks, east-central San Juan Basin, New Mexico: U.S. Geological Survey Professional Paper 552, 101 p., 27 figs.
- 1969, Interim report on Mississippian Arroyo Penasco Formation of north-central New Mexico—a discussion: American Association of Petroleum Geologists Bulletin, v. 53, no. 7, p. 1508–1518, 3 figs.
- Baltz, E. H., Jr., Ash, S. R., and Anderson, R. Y., 1966, History of nomenclature and stratigraphy of rocks adjacent to the Cretaceous-Tertiary boundary, western San Juan Basin, New Mexico: U.S. Geological Survey Professional Paper 524–D, 23 p., 5 figs.
- Baltz, E. H., Jr., Rapaport, I. J., Silver, Caswell, Smith, C. T., and West, S. W., 1968, Road log from Albuquerque to Gallup, New Mexico, along U.S. Highway 66 and Interstate 40, in Guidebook of the Defiance-Zuni-Mt. Taylor region, Arizona and New Mexico: New Mexico Geological Society, 18th Field Conference, p. 203–214.
- Baltz, E. H., Jr., and West, S. W., 1967, Ground-water resources of the southern part of Jicarilla Apache Indian Reservation and adjacent areas, New Mexico: U.S. Geological Survey Water-Supply Paper 1576–H, 89 p., 4 figs.
- 1968, Road log from Gallup to Albuquerque on U.S. Highway 66 (Interstate 40), in Guidebook of the Defiance-Zuni-Mt. Taylor region, Arizona and New Mexico: New Mexico Geological Society, 18th Field Conference, p. 215–224.
- Baltz, E. H., Jr., West, S. W., and Ash, S. R., 1962, Potential yield of deep water wells in the southern part of the Jicarilla Apache Indian Reservation and vicinity, San Juan Basin, New Mexico, in Short papers in geology, hydrology, and topography: U.S. Geological Survey Professional Paper 450–D, p. 173.
- Bandoian, C. A., 1969, Geomorphology of the Animas River Valley, San Juan County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 88 p., 12 figs.
- Bannister, Bryant, 1964, Tree-ring dating of the archaeological sites in the Chaco Canyon region, New Mexico: Southwest Parks and Monuments Association, Technical Series, v. 6, pt. 2, p. 115–206.
- Barb, C. F., 1942, Mancos Field, Montezuma County, Colorado: Colorado School of Mines, Golden, Quarterly, v. 37, no. 2, p. 46.
- Barker, Fred, 1968, A brief geologic history of the Precambrian rocks of the Needle Mountains, southwestern Colorado, in Guidebook to San Juan-San Miguel-La Plata region: New Mexico Geological Society, 19th Field Conference, p. 148–149.
- Barnes, F. C., 1948, San Juan Basin: Colorado and New Mexico: Oil and Gas Journal, v. 47, no. 4, p. 73–77.
- 1949a, Development in the San Juan Basin of Colorado and New Mexico: Oil and Gas Journal, v. 48, no. 7, p. 154–162.
- 1949b, Structures of the San Juan Basin: Oil and Gas Journal, v. 47, no. 48, p. 97–100.
- 1950, History of development and production of oil and gas in the San Juan Basin, in Guidebook to the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 144–148.
- 1951, History of development and production of oil and gas in the San Juan Basin, in Guidebook to south and west sides of the San Juan Basin: New Mexico Geological Society, 2nd Field Conference, p. 155–160.
- 1952, Barker Dome gas field, northern San Juan Basin, in Geologic symposium of Four Corners region: Four Corners Geological Society, p. 119–121.
- Barnes, F. C., and Arnold, E. C., 1950, Proved and potential oil and gas traps of the San Juan Basin, in Guidebook to the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 90–95.
- 1951, Proved and potential oil and gas traps of the San Juan Basin, in Guide-

- book to south and west sides of the San Juan Basin: New Mexico Geological Society, 2nd Field Conference, p. 132-140.
- Barnes, F. C., and Hemenway, G. A., 1950, Generalized geologic column of the San Juan Basin, in *Guidebook to the San Juan Basin, New Mexico and Colorado*: New Mexico Geological Society, 1st Field Conference, p. 97.
- Barnes, Harley, 1953, Geology of the Ignacio area, Ignacio and Pagosa Springs quadrangles, La Plata and Archuleta Counties, Colorado: U.S. Geological Survey Oil and Gas Investigations Map OM-138.
- 1954, Stratigraphy and structure of the Cretaceous rocks on the northern flank of the San Juan Basin, Colorado and New Mexico: Johns Hopkins University, Baltimore, Maryland, unpublished Ph. D. dissertation, 140 p., 2 figs.
- Barnes, Harley, Baltz, E. H., Jr., and Hayes, P. T., 1954, Geology and fuel resources of the Red Mesa area, La Plata and Montezuma Counties, Colorado: U.S. Geological Survey Oil and Gas Investigations Map OM-149.
- Baron, H. J., 1906, The Gold Prince mines, San Juan County: *Mining Reporter*, v. 54, p. 204-206.
- Bartram, J. C., 1937, Upper Cretaceous of Rocky Mountain area: *American Association of Petroleum Geologists Bulletin*, v. 21, no. 7, p. 899-913, 6 figs.
- 1939, Summary of Rocky Mountain geology: *American Association of Petroleum Geologists Bulletin*, v. 23, no. 8, p. 1131-1152, 17 figs.
- Basler, J. A., 1973, Interim report of water-resources investigations on the Acoma Pueblo Reservation through September 1, 1973: U.S. Geological Survey Open-File Letter Report, 2 p., 1 fig.
- Bass, N. W., 1944a, Correlation of basal Permian and older rocks, southwestern Colorado, northwest New Mexico, northeast Arizona, and southeast Utah: U.S. Geological Survey Oil and Gas Investigations Preliminary Chart 7.
- 1944b, Paleozoic stratigraphy as revealed by deep wells in parts of southwestern Colorado, northwestern New Mexico, northeastern Arizona, and southeastern Utah: U.S. Geological Survey Oil and Gas Investigations Preliminary Chart 7, text to accompany, 20 p.
- 1950, Pre-Pennsylvanian Paleozoic rocks in western Colorado and southeastern Utah, in *Guidebook to the San Juan Basin, New Mexico and Colorado*: New Mexico Geological Society, 1st Field Conference, p. 56-57, 1 fig.
- Bassett, W. A., Kerr, P. F., Schaeffer, O. A., and Stoenner, R. W., 1963, Potassium-Argon ages of volcanic rocks north of Grants, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 214-216, 1 fig.
- Bastin, E. S., 1922, Silver enrichment in the San Juan Mountains, Colorado, in *Contributions to economic geology 1922*, pt. 1: U.S. Geological Survey Bulletin 735, p. 65-129, 19 figs.
- Bates, R. C., 1959, An application of statistical analysis to exploration for uranium on the Colorado Plateau: *Economic Geology*, v. 54, no. 3, p. 449-466.
- Bates, R. L., 1942, The oil and gas resources of New Mexico: *New Mexico Bureau of Mines and Mineral Resources Bulletin* 18, 130 p., 5 figs.
- 1946a, Development in Arizona, western New Mexico, and northern New Mexico in 1945: *American Association of Petroleum Geologists Bulletin*, v. 30, no. 6, p. 958-962, 1 fig.
- 1946b, Future oil possibilities of New Mexico: *Oil and Gas Journal*, v. 44, no. 39, p. 52-60.
- 1947a, Development in Arizona, western New Mexico and northern New Mexico in 1946: *American Association of Petroleum Geologists Bulletin*, v. 31, no. 6, p. 1039-1041, 1 fig.
- 1947b, Development in northern New Mexico in 1946: *Rocky Mountain Petro-*

- leum Review, p. 115–118.
- 1948, San Juan Basin, production, exploration, literature: *World Oil*, v. 127, no. 12, p. 116–126.
- Bauer, C. M., 1916, Stratigraphy of a part of the Chaco River Valley, in *Contributions to the geology and paleontology of San Juan County, New Mexico*: U.S. Geological Survey Professional Paper 98–P, p. 271–278.
- Bauer, C. M., and Reeside, J. B., Jr., 1921, Coal in the middle and eastern parts of San Juan County, New Mexico: U.S. Geological Survey Bulletin 716–G, p. 155–237.
- Beaumont, E. C., 1948, Correlation between electric and lithologic characteristics in four wells in San Juan County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 41 p.
- 1954, Geology of the Beautiful Mountain anticline, San Juan County, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM–147.
- 1955, Preliminary geologic map of the Shiprock and Hogback quadrangles, San Juan County, New Mexico: U.S. Geological Survey Coal Investigations Map C–29.
- 1957, The Gallup Sandstone as exposed in the western part of the San Juan Basin, in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference*, p. 114–120.
- 1960a, Report of investigation of coal in the Star Lake area, McKinley County, New Mexico: Private consulting report prepared for Public Service Co. of New Mexico, 10 p.
- 1960b, Supplement to report of investigation of coal in the Star Lake area, McKinley County, New Mexico: Private consulting report prepared for Public Service Co. of New Mexico, 10 p.
- 1961, Petroleum exploration in a part of north-central New Mexico, in *Guidebook of the Albuquerque country: New Mexico Geological Society, 12th Field Conference*, p. 175–185, 2 figs.
- 1962, Geology and coal reserves of the Bisti project: Private consulting report prepared for Public Service Co. of New Mexico and Public Service Coal Co., 29 p.
- 1968a, Coal-bearing formations in the western part of the San Juan Basin of New Mexico, in *Guidebook of San Juan-San Miguel-La Plata region: New Mexico Geological Society, 19th Field Conference*, p. 33–40, 2 figs.
- 1968b, A preliminary evaluation of the coal potential of the Evans Ranch Property: Private consulting report prepared for Reserve Oil and Minerals Corp., 6 p.
- 1971a, The geologic and hydrologic conditions and a proposed plan to assess these aspects of the environment: Western Division, Consolidation Coal Co., Englewood, Colorado, Report.
- 1971b, The impact of coal on northwestern New Mexico, in *New Mexico Bureau of Mines and Mineral Resources Memoir 25*, p. 172–175.
- 1971c, Stratigraphic distribution of coal in San Juan Basin, in *New Mexico Bureau of Mines and Mineral Resources Memoir 25*, p. 15–30, 2 figs.
- 1973, Coal deposits of the San Juan Basin [abs.], in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 217.
- Beaumont, E. C., Dane, C. H., and Sears, J. D., 1956, Revised nomenclature of Mesaverde group in San Juan Basin, New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 40, no. 9, p. 2149–2162.
- Beaumont, E. C., and Dixon, G. H., 1965, Geology of the Kayenta and Chilchinbito quadrangles, Navajo County, Arizona: U.S. Geological Survey Bulletin 1202–A, 28 p.

- Beaumont, E. C., and O'Sullivan, R. B., 1955, Preliminary geologic map of the Kirtland quadrangle, San Juan County, New Mexico: U.S. Geological Survey Coal Investigations Map C-32.
- 1957, Geologic map of the Satan Pass-Thoreau area, McKinley County, New Mexico, *in* Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference [in pocket].
- Beaumont, E. C., and Read, C. B., 1950, Geologic history of the San Juan Basin area, New Mexico and Colorado, *in* Guidebook to the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 49-52.
- Beaumont, E. C., and Shomaker, J. W., 1974, Upper Cretaceous coal in the Cuba-La Ventana-Torreon area, eastern San Juan Basin, New Mexico, *in* Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 329-332, 2 figs.
- 1977, Geometry of coal beds in the San Juan Basin, New Mexico [abs.]: American Association of Petroleum Geologists Bulletin, v. 61, no. 5, p. 765.
- Beaumont, E. C., Shomaker, J. W., and Kottlowski, F. C., 1971a, Stratidynamics of coal deposition in southern Rocky Mountain region, U.S.A., *in* Strippable low-sulfur coal resources in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Memoir 25, p. 175-185, 6 figs.
- 1971b, Stratidynamic control of coal occurrences in the San Juan Basin, New Mexico and Colorado [abs.]: Geological Society of America, Abstracts with Programs, v. 3, no. 7, p. 500-501.
- Beaumont, E. C., Shomaker, J. W., and Stone, W. J., compilers and eds., 1976, Guidebook to coal geology of northwest New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 154, 58 p., 38 figs.
- Bejnar, Waldemere, 1949, Lithologic control of ore deposits in the San Juan Mountains, Colorado: Compass, v. 26, no. 2, p. 117-120.
- 1957, Lithologic control of ore deposits in the southwestern San Juan Mountains, *in* Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference, p. 162-173, 7 figs.
- Belser, Carl, 1956, Tungsten potential in the San Juan area, Ouray, San Juan and San Miguel Counties, Colorado: U.S. Bureau of Mines Information Circular IC 7731, 18 p.
- Bendix Field Engineering Corporation, 1977, Survey of lands held for uranium exploration, development and production in fourteen western states in the six month period ending June 30, 1976: U.S. Energy Research and Development Administration Open-File Report GJBX-2(77), 20 p.
- Bent, A. M., and Wright, H. E., Jr., 1963, Pollen analyses of surface materials and lake sediments from the Chuska Mountains, New Mexico: Geological Society of America Bulletin, v. 74, no. 4, p. 491-500, 4 figs.
- Berglof, W. R., 1970, Absolute-age relationships in selected Colorado Plateau uranium ores: Columbia University, New York, unpublished Ph. D. dissertation, 150 p.
- Berglof, W. R., and Wampler, J. M., 1965, Isotopic study of uraninite from the Todilto Limestone, Grants, New Mexico [abs.]: American Geophysical Union Transactions, v. 46, p. 164.
- Berry, F. A. F., 1959a, Hydrodynamics and geochemistry of the Jurassic and Cretaceous systems in the San Juan Basin, northwestern New Mexico and southwestern Colorado [abs.]: Dissertation Abstracts International, v. 20, no. 4, p. 1318-1319.
- 1959b, Hydrodynamics and geochemistry of the Jurassic and Cretaceous systems in the San Juan Basin, northwestern New Mexico and southwestern Colorado: Stanford University, Palo Alto, California, unpublished Ph. D. dissertation, 466 p.

- Bethke, P. M., Barton, P. B., Jr., Lanphere, M. A., and Steven, T. A., 1976, Environment of ore deposition in the Creede mining district, San Juan Mountains, Colorado: *Economic Geology*, v. 71, no. 6, p. 1006-1011.
- Bieberman, R. A., 1951, Mineral resources of the San Juan Basin, in *Guidebook to the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference*, p. 141-146.
- Bieberman, R. A., and Weber, R. H., compilers, 1969, *New Mexico energy resources map: New Mexico Bureau of Mines and Mineral Resources Resource Map RM-2* [revised 1974].
- Bieberman, R. A., Weber, R. H., Summers, W. K., Shomaker, J. W., and Kottlowski, F. E., 1975, Energy Reserves and resources in New Mexico, in *Annual report, July 1, 1973 to June 30, 1974: New Mexico Bureau of Mines and Mineral Resources*, p. 22-26.
- Bierei, G. R., 1977, The environment and coal development in the San Juan Basin, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 77-82, 8 figs.
- Bignell, L. G. E., 1936, Stratigraphic traps explored for future Utah oil supply: *Oil and Gas Journal*, v. 35, no. 30, p. 21-22.
- Billings, G. K., and Rabinowitly, D. D., 1973, Final report, phase 1, Hydrological system Four Corners powerplant and Navajo Mine: Arizona Public Service Co.
- Bingler, E. C., 1963, Niobium-bearing Sanostee heavy mineral deposit, San Juan Basin, northwestern New Mexico: *New Mexico Bureau of Mines and Mineral Resources Circular 68*, 63 p.
- Birdseye, H. S., 1952, San Juan Basin '51 find is good oil production: *Petroleum Engineer*, v. 24, no. 5, p. 44-46.
- 1957, The relation of the Ambrosia Lake uranium deposits to a pre-existing oil pool, in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference*, p. 26-29, 2 figs.
- 1962, Secondary recovery at the Red Mountain field, McKinley County, New Mexico [abs.], in *Guidebook of the Mogollon Rim region, east-central Arizona: New Mexico Geological Society, 13th Field Conference*, p. 175.
- Bissell, H. J., 1970, General geology of the high plateaus and eastern basin ranges, Utah, in *Guidebook Four Corners, Colorado Plateau, and central Rocky Mountain region, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah*, p. 42-52, 7 figs.
- Black, R. A., 1953a, Geophysical district studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-390, p. 50-55.
- 1953b, Geophysical investigations (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-330, p. 68-72.
- 1954, District geophysical studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-490, p. 78-85.
- 1956, Geophysical exploration for uranium on the Colorado Plateau, in *Geology of uranium and thorium: U.N. International Conference on peaceful uses of atomic energy, Geneva, Switzerland, 1955, Proceedings*, v. 6, p. 766-771.
- Black, R. A., and Davis, W. E., 1953, Geophysical investigations of uranium deposits in the Colorado Plateau [abs.]: *American Institute of Mining Engineers, Mining Geology Geophysical Division, Annual Meeting, Abstracts of Technical Papers*, p. 3.
- Blackman, D. H., 1950, Geologic guides to carnotite deposits on the Colorado Plateau [abs.]: *Mining Congress Journal*, v. 36, no. 10, p. 84.
- Blagbrough, J. W., 1965, Quaternary geology of the northern Chuska Mountains and Red Rock Valley, northeastern Arizona and northwestern New Mexico: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 138 p., 14 figs.

- 1967, Cenozoic geology of the Chuska Mountains, *in* Guidebook to Defiance-Zuni-Mt. Taylor Region: New Mexico Geological Society, 18th Field Conference, p. 70–77, 7 figs.
- Blagbrough, J. W., Thieme, D. A., Arthur, B. J., Jr., and Lott, R. W., 1959, Uranium reconnaissance and drilling in the Sanostee area, San Juan County, New Mexico and Apache County, Arizona: U.S. Atomic Energy Commission Report RME-111, 27 p.
- Blaney, H. F., and Hanson, E. G., 1965, Consumptive use and water requirements in New Mexico: New Mexico State Engineer Technical Report 32, 82 p., 6 figs.
- Blodgett, M. E., 1907, The stratigraphy of the Mount Taylor region, New Mexico, with a summary and discussion: Massachusetts Institute of Technology, Cambridge, unpublished B.S. thesis.
- Bogart, L. E., 1957, Photogeology finds a place in the Four Corners: *Petroleum Engineer*, v. 29, no. 13, p. 53.
- Borden, J. L., 1952, Paradox member of the Hermosa Formation, *in* Geological symposium of the Four Corners region: Four Corners Geological Society, p. 27–35, 7 figs.
- Borton, R. L., 1974, A listing of geohydrologic data for 106 exploratory holes drilled by Nuclear Dynamics, Inc., in Rio Arriba, Sandoval, and Santa Fe Counties, 1970–1972: New Mexico State Engineer Open-File Report, 9 p.
- Botinelly, Theodore, and Weeks, A. D., 1957, Mineralogic classification of uranium-vanadium deposits of the Colorado Plateau: U.S. Geological Survey Bulletin 1074-A, 5 p.
- Bowman, F. O., Jr., 1970, Road log from Durango to Denver, Colorado via Ouray, Montrose, Gunnison, Nathrop, Fairplay, and Morrison, *in* Guidebook to Four Corners, Colorado Plateau, and Rocky Mountain region, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 168–181.
- Bowman, F. O., Jr., and Smith, C. T., 1970, Road log from Cedar City, Utah to Durango, Colorado via Long Valley Junction, Kanab, Jacob Lake, Marble Canyon, Tuba City, Mexican Hat, Aneth, and Cortez, *in* Guidebook to Four Corners, Colorado Plateau, and central Rocky Mountain region, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 132–136.
- Boydell, H. C., 1926, The Camp Bird Compound 'veindike' discussion: *Economic Geology*, v. 21, no. 2, p. 185–190.
- Boyer, W. W., and Hanson, E. A., 1926, The Bloomfield Mesa oil and gas field: U.S. Geological Survey Press Notice 4548, January 8, 1926.
- Bozanic, Dan, 1955, A brief discussion of the subsurface Cretaceous rocks of the San Juan Basin, *in* Guidebook to geology of parts of Paradox, Black Mesa, and San Juan Basins: Four Corners Geological Society, 1st Field Conference, p. 89–107.
- Bradbury, J. P., 1967, Origin, paleolimnology and limnology of Zuni Salt Lake Moor, west-central New Mexico: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 247 p., 22 figs.
- Bradish, B. B., and Mills, N. K., 1950a, Pennsylvanian rocks of the San Juan Basin, *in* Guidebook to the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 58–61.
- 1950b, Stratigraphic nomenclature chart, *in* Guidebook to the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 48.
- Brady, B. T., and Rice, R. S., 1977, Helium determinations as an exploration technique in the Ambrosia Lake uranium district, McKinley County, New Mexico: U.S. Geological Survey Open-File Report 77-669, 8 p., 1 fig.
- Brandwein, S. S., 1974, Selected shallow electrical resistivity surveys at Volcano Cliffs, Bernalillo County, and Warm Springs, Sandoval County, New Mexico:

- University of New Mexico, Albuquerque, unpublished M.S. thesis, 139 p.
- Brassfield, J. C., 1956, Preliminary report on uranium possibilities of the Jemez Indian Reservation and Jemez Pueblo Grant, Sandoval County, New Mexico: U.S. Atomic Energy Commission Open-File Report TM-82.
- Breed, C. S., 1970, Two hypotheses of the origin and geologic history of the Colorado River, in *Guidebook Four Corners, Colorado Plateau and central Rocky Mountain region, 1970*: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 31-34, 2 figs.
- Breed, C. S., and Breed, W. J., eds., 1972, *Investigations in the Triassic Chinle Formation*: Museum of Northern Arizona, Flagstaff, Bulletin 47, 103 p., 48 figs.
- Breed, W. J., 1972, Invertebrates of the Chinle Formation, in *Investigations in the Triassic Chinle Formation*: Museum of Northern Arizona, Flagstaff, Bulletin 47, p. 19-22, 3 figs.
- 1973, New avian fossils from the Bidahochi Formation (Pliocene), Arizona, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 144-148, 2 figs.
- Breger, I. A., 1958, Association of uranium with coalified logs (Colorado Plateau), in *Geologic investigations of radioactive deposits, semiannual progress report for June 1 through November 30, 1958*: U.S. Geological Survey Trace Element Investigations Report TEI-750, p. 114-115.
- Breger, I. A., and Duel, Maurice, 1959, Association of uranium with carbonaceous materials, with special reference to Temple Mountain region, in *Geochemistry and mineralogy of the Colorado Plateau uranium ores*: U.S. Geological Survey Professional Paper 320, p. 139-149.
- Brill, K. G., Jr., 1952, Stratigraphy in the Permo-Pennsylvanian zeugogeosyncline of Colorado and northern New Mexico: *Geological Society of America Bulletin*, v. 63, no. 8, p. 809-880, 5 figs.
- Brimhall, R. M., 1973, Ground-water hydrology of Tertiary rocks of the San Juan Basin, New Mexico, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 197-207, 10 figs.
- Brock, J. V., and Gray, G. H., 1973, Deposition and hydrocarbon potential of the lower Cretaceous (Dakota) Sandstone sequence Chaco slope southern San Juan Basin [abs.], in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 218.
- Broding, R. A., and Rummerfield, B. F., 1956a, Petroleum exploration methods as applied to uranium exploration (Colorado Plateau): *Oil and Gas Journal*, v. 54, no. 71, p. 185-188.
- 1956b, Petroleum exploration methods as applied to uranium exploration (Colorado Plateau): *Mines Magazine*, v. 46, no. 7, p. 14-24.
- Brookins, D. G., 1974, Summary of recent Rb-Sr age determinations from Precambrian rocks of north central New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 119-121.
- 1975, Coffinite-Uraninite stability relations in Grants mineral belt, New Mexico [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 59, no. 5, p. 905.
- 1976a, The Grants mineral belt, New Mexico; comments on the coffinite-uraninite relationship, probable clay mineral reactions, and pyrite formation, in *Tectonics and mineral resources of southwestern North America*: New Mexico Geological Society Special Publication 6, p. 158-166, 5 figs.
- 1976b, Uranium deposits of the Grants, New Mexico, mineral belt: U.S. Energy Research and Development Administration Final Report GJO-1636, 120 p.
- 1977, Upper Cretaceous Black Sand deposits of the San Juan Basin, in *Supple-*

- mental articles to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 31–33, 1 fig.
- Brookins, D. G., Lee, M. J., and Shafiqullah, M., 1977, K-Ar ages for clay-size and silt-size fractions of uranium ore from the Grants mineral belt, New Mexico: *Isotopen/West*, no. 18, p. 17–18.
- Brookins, D. G., and Olsen, C. E., 1977, Results of pilot studies of Project NURE from New Mexico; Estancia Basin and an area northeast of Grants mineral belt [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 61, no. 5, p. 772.
- Brooks, R. A., and Campbell, J. A., 1976, Preliminary investigations of elemental variation and diagenetic aspects of tabular uranium deposit, La Sal Mine, San Juan County, Utah: *American Association of Petroleum Geologists Bulletin*, v. 60, no. 4, p. 653–654.
- Broomfield, R. E., 1977, Structural geology and igneous petrology of the Canones area, Rio Arriba County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 75 p.
- Brown, Barnum, 1910, The Cretaceous Ojo Alamo beds of New Mexico with description of the new dinosaur genus *Kritosaurus*: *American Museum of Natural History Bulletin* 28, article 24, p. 267–274.
- Brown, C. F., 1973, A history of the development of the Pictured Cliffs Sandstone in the San Juan Basin of northwestern New Mexico, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 178–184, 8 figs.
- Brown, H. H., 1960, Pennsylvanian of the Paradox Basin salt structure area; Colorado Plateau, in *Guidebook to Paradox Basin fold and fault belt: Four Corners Geological Society, 3rd Field Conference*, p. 79.
- 1973, The Dakota Formation in the plateau area, southwest Utah, in *Cretaceous and Tertiary rocks of southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 52–56, 5 figs.
- Brown, R. W., 1949, Map showing Paleocene deposits of the Rocky Mountains and plains: U.S. Geological Survey General Mineral Resource Preliminary Map.
- Brown, S. C., and Halpenny, L. C., 1949, Water-supply investigation at Lukachukai, Navajo Indian Reservation, Arizona: U.S. Geological Survey Open-File Report, 8 p., 1 fig.
- Brown, S. C., Halpenny, L. C., and Whitcomb, H. A., 1949, Water-supply investigation at Navajo Mountain, Navajo Indian Reservation, San Juan County, Utah: U.S. Geological Survey Open-File Report, 14 p., 1 fig.
- Brown, S. C., and Lauth, R. E., 1957, Oil and gas potentialities of northern Arizona, in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference*, p. 77–84.
- Brown, S. G., 1976, Preliminary maps showing ground-water resources in the Lower Colorado River region, Arizona, Nevada, New Mexico, and Utah: U.S. Geological Survey Hydrologic Investigations Atlas HA-542.
- Brown, W. T., Jr., and Kudo, A. M., 1969, Inclusions of ultramafic and sedimentary rocks in volcanic necks, Sandoval and Valencia Counties, New Mexico [abs.]: *Geological Society of America, Abstracts with Programs*, pt. 5, p. 10.
- Bruyn, Kathleen, 1955, *Uranium country: Boulder*, University of Colorado Press, 165 p.
- Bryan, Kirk, 1925, Date of channel trenching (arroyo cutting) in the arid southwest: *Science*, v. 62, p. 338–344.
- 1939, Stone cultures near Cerro Pedernal and their geological antiquity: *Texas Archaeological and Paleontological Society Bulletin*, v. 11, p. 9–42.
- 1940, Erosion in the valleys of the southwest: *New Mexico Quarterly*, v. 10, no. 4, p. 227–232.

- 1954, The geology of Chaco Canyon, New Mexico, in relation to the life and remains of the prehistoric peoples of Pueblo Bonito: Smithsonian Institution Miscellaneous Collections, v. 122, no. 7, publications 4141, p. 1–65.
- Bryan, Kirk, and McCann, F. T., 1936, Successive pediments and terraces of the upper Rio Puerco in Mexico: *Journal of Geology*, v. 44, no. 2, pt. 1, p. 145–172, 10 figs.
- 1937, The Ceja del Rio Puerco; a border feature of the Basin and Range province in New Mexico; Part 1, Stratigraphy and structure: *Journal of Geology*, v. 45, no. 8, p. 801–828, 9 figs.
- 1938, The Ceja del Rio Puerco, a border feature of the Basin and Range province in New Mexico; Part 2, Geomorphology: *Journal of Geology*, v. 46, no. 1, p. 1–16, 5 figs.
- 1943, Sand dunes and alluvium near Grants, New Mexico: *American Antiquity*, v. 8, p. 281–295.
- Buchner, W. H., 1953, Part I, Fracture studies in the Zuni and Lucero uplifts, New Mexico: U.S. Atomic Energy Commission Report RME-3042, 12 p.
- Buckner, D. H., 1976, Variations in natural gas composition in Blanco Field, San Juan Basin, related to source-rock type thermal maturity, and migration: *American Association of Petroleum Geologists Bulletin*, v. 60, no. 8, p. 1392.
- Budd, Harrell, 1957a, Facies development of the Gallup Formation, in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference*, p. 121–127.
- 1957b, San Juan Basin rim area: *World Oil*, v. 145, no. 2, p. 45–49.
- Budding, A. J., Pitrat, C. W., and Smith, C. T., 1960, Geology of the southeastern part of the Chama Basin, in *Guidebook to Rio Chama country: New Mexico Geological Society, 11th Field Conference*, p. 78–92.
- Burbank, W. S., 1933a, Epithermal base-metal deposits, in *Ore deposits of the western states (Lindgren volume): American Institute of Mining and Metallurgical Engineers*, p. 641–652.
- 1933b, Vein systems of the Arrastre Basin and regional geologic structure in the Silverton and Telluride quadrangles, Colorado: *Colorado Science Society Proceedings*, v. 13, no. 5, p. 135–214.
- 1935a, Copper-bearing ores of Colorado, San Juan Mountains, in *Copper resources of the world: 16th International Geological Conference, Washington, D.C.*, p. 253–257.
- 1935b, San Juan geology: *Engineering and Mining Journal*, v. 136, p. 392.
- 1938, Silverton Caldera, San Juan County, Colorado [abs.]: *Washington Academy of Science Journal*, v. 28, no. 9, p. 417–418.
- 1941, Structural control of ore deposition in the Red Mountains, Sneffels, and Telluride districts of the San Juan Mountains, Colorado: *Colorado Science Society Proceedings*, v. 14, no. 5, p. 141–261.
- 1947a, Eureka and Animas Forks area, San Juan County, in *Mineral resources of Colorado: Colorado Mineral Resources Board, Denver*, p. 433–435.
- 1947b, Late Tertiary ore deposits, districts of the Silverton volcanic center, in *Mineral resources of Colorado: Colorado Mineral Resources Board, Denver*, p. 419–424.
- 1947c, The Mineral Point, Poughkeepsie, and Upper Uncompahgre districts, San Juan and Ouray Counties, in *Mineral resources of Colorado: Colorado Mineral Resources Board, Denver*, p. 437–439.
- 1947d, Red Mountain district, Ouray County, in *Mineral resources of Colorado: Colorado Mineral Resources Board, Denver*, p. 428–431.
- Burbank, W. S., Lovering, T. S., Goddard, E. N., and Eckel, E. B., 1935, Geologic map of Colorado: U.S. Geological Survey Geologic Map [reprint 1959].
- Burbank, W. S., and Luedke, R. G., 1969, Geology and ore deposits of the Eureka and

- adjoining districts, San Juan Mountains, Colorado: U.S. Geological Survey Professional Paper 535, 73 p., 15 figs.
- [U.S.] Bureau of Land Management, 1976, Technical report and environmental analysis record for proposed geothermal leasing of Cabezon, San Ysidro, and Santa Ana Mesa country: U.S. Department of the Interior, Bureau of Land Management, EAR NM-010-6-254, 216 p., 47 figs.
- Burford, A. E., 1954, Geology of Sheep Springs quadrangle, San Juan County, New Mexico: University of Tulsa, Oklahoma, unpublished M.S. thesis.
- Burgener, J. A., 1953, The stratigraphy and sedimentation of the Pictured Cliffs sandstone and Fruitland Formation, upper Cretaceous, of the San Juan Basin: University of Illinois, Champaign, unpublished M.S. thesis.
- Burnside, S. S., and Wenrich-Verbeek, K. J., 1976, Chemical analysis and statistical data for water samples collected in Colorado, New Mexico, and Arizona as part of a study of surface-water and stream-sediment sampling techniques used in uranium exploration: U.S. Geological Survey Open-File Report 76-851, 314 p., 1 fig.
- Burrell, S. D., 1967, Geology of an area southwest of Silverton, San Juan County, Colorado: University of Colorado, Boulder, unpublished M.S. thesis, 106 p., 21 figs.
- Burton, G. C., Jr., 1955, Sedimentation and stratigraphy of the Dakota Formation in the San Juan Basin, in *Guidebook to geology of parts of Paradox, Black Mesa, and San Juan Basins*: Four Corners Geological Society, 1st Field Conference, p. 78-88.
- Busby, M. W., 1966, Annual runoff in the conterminous United States: U.S. Geological Survey Hydrologic Investigations Atlas HA-212.
- Busch, F. E., 1966, Ground-water levels in New Mexico, 1964: New Mexico State Engineer Basic-Data Report, 130 p., 27 figs.
- Busch, F. E., and Hudson, J. D., 1967, Ground-water levels in New Mexico, 1965, and changes in water levels, 1961-1965: New Mexico State Engineer Technical Report 34, 124 p., 44 figs.
- 1968, Ground-water levels in New Mexico, 1966: New Mexico State Engineer Basic-Data Report, 71 p., 29 figs.
- 1969, Ground-water levels in New Mexico, 1967: New Mexico State Engineer Basic-Data Report, 74 p., 30 figs.
- 1970, Ground-water levels in New Mexico, 1968: New Mexico State Engineer Basic-Data Report, 77 p., 31 figs.
- 1976a, Ground-water levels in New Mexico, 1974: New Mexico State Engineer Basic-Data Report, 112 p., 34 figs.
- Bush, A. L., 1953a, Western San Juan Mountains: U.S. Geological Survey Trace Element Investigations Report TEI-330, p. 101-102.
- 1953b, Western San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-390, p. 111-112.
- 1954a, Western San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-440, p. 28-30.
- 1954b, Western San Juan Mountains area, Colorado quadrangle mapping: U.S. Geological Survey Trace Element Investigations Report TEI-490, p. 40-41.
- 1955a, Western San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-590, p. 31-32.
- 1955b, Western San Juan Mountains, Colorado quadrangle mapping: U.S. Geological Survey Trace Element Investigations Report TEI-540, p. 55.
- 1956a, Vanadium-uranium deposits in the Entrada Sandstone, western San Juan Mountains, Colorado [abs.]: Geological Society of America Bulletin, v. 67, no. 12, pt. 2, p. 1678.

- 1956b, Western San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-620, p. 47-50.
- 1957, Western San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-700, p. 30-33.
- Bush, A. L., Marsh, O. T., and Taylor, R. B., 1957, Western San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-690, book 1, p. 67-71.
- Bush, A. L., and Stager, H. K., 1955, The estimation of uranium-vanadium reserves of the Colorado Plateau: *Mining Congress Journal*, v. 41, no. 9, p. 80-82.
- 1958, Accuracy of ore-reserve estimates for uranium-vanadium deposits on the Colorado Plateau, in *Contributions to the geology of uranium*: U.S. Geological Survey Bulletin 1030-D, p. 131-148, 5 figs.
- Bush, A. L., and Taylor, R. B., 1958, Western San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-330, p. 101-102.
- Bush, A. L., Taylor, R. B., and Marsh, O. T., 1956, Western San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-640, p. 47-49.
- Butler, A. P., Jr., 1939, Tertiary and Quaternary geology of the Tusas-Tres Piedras area, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report OF-20, 30 p., 2 figs.
- Butler, B. S., 1929, Relation of the ore deposits of the southern Rocky Mountain region to the Colorado Plateau: *Colorado Science Society Proceedings*, v. 12, p. 23-36.
- Butler, Charles, 1977, History of the Tierra Amarilla Grant, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 91-92, 1 fig.
- Butler, R. F., Lindsay, E. H., Jacobs, L. L., and Johnson, N. M., 1977, Magnetostratigraphy of the Cretaceous-Tertiary boundary in the San Juan Basin, New Mexico: *Nature*, v. 267, no. 5609, p. 318-323.
- Byington, R. M., 1957, Exploration highlights in the Four Corners area, in *Guidebook to geology of southwestern San Juan Basin*: Four Corners Geological Society, 2nd Field Conference, p. 34-35.
- Cadigan, R. A., 1959, Characteristics of the host rock, in *Geochemistry and mineralogy of the Colorado Plateau uranium ores*: U.S. Geological Survey Professional Paper 320, p. 13-24.
- 1963, Tuffaceous sandstones in the Triassic Chinle Formation, Colorado Plateau, in *Short papers in geology and hydrology*: U.S. Geological Survey Professional Paper 475-B, p. 48-51, 1 fig.
- 1967, Petrology of the Morrison Formation in the Colorado Plateau region: U.S. Geological Survey Professional Paper 556, 113 p.
- 1969, Distribution of mercury in Navajo Sandstone, Colorado Plateau region, in *Geological Survey research 1969*: U.S. Geological Survey Professional Paper 650-B, p. 94.
- 1971a, Geochemical distribution of some metals in the Moenkopi Formation and related strata, Colorado Plateau region: U.S. Geological Survey Bulletin 1344, 56 p.
- 1971b, Petrology of the Triassic Moenkopi Formation and related strata in the Colorado Plateau region, *with a section on Stratigraphy* by J. H. Stewart: U.S. Geological Survey Professional Paper 692, 70 p.
- Caldwell, J. W., 1953, Stratigraphic analysis of the upper Cretaceous Pictured Cliffs Sandstone in northeastern San Juan County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 59 p., 14 figs.
- Callaghan, Eugene, 1951, Tertiary and later igneous rocks of the San Juan Basin, in *Guidebook to the south and west sides of the San Juan Basin, New Mexico and Arizona*: New Mexico Geological Society, 2nd Field Conference, p. 119-123.

- Callaghan, Eugene, and Sun, Ming-Shan, 1956, Correlation of some igneous rocks of New Mexico by fusion method: *American Geophysical Union Transactions*, v. 37, no. 6, p. 761-766.
- Callahan, J. T., and Cushman, R. L., 1955, Geology and ground-water supplies of the Fort Wingate Indian School area, McKinley County, New Mexico: U.S. Geological Survey Circular 360, 12 p.
- Callahan, J. T., and Harshbarger, J. W., 1955, Memorandum on water-supply investigation at Shiprock School, Navajo Indian Reservation, San Juan County, New Mexico: U.S. Geological Survey Open-File Report, 11 p., 1 fig.
- Callahan, J. T., Kam, William, and Akers, J. P., 1959, The occurrence of ground water in diatremes of the Hopi Buttes area, Arizona: *Plateau*, v. 32, no. 1, p. 1-12.
- Camp, C. L., Colbert, E. H., McKee, E. D., and Welles, S. P., 1947, A guide to the continental Triassic of northern Arizona: *Plateau*, v. 20, no. 1, p. 1-8.
- Campbell, C. V., 1971, Depositional model—upper Cretaceous Gallup beach shoreline, Shiprock area, northwestern New Mexico: *Journal of Sedimentary Petrology*, v. 41, p. 395-409.
- 1973, Offshore equivalents of upper Cretaceous Gallup beach sandstones, northwestern New Mexico, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 78-84, 8 figs.
- 1976, Reservoir geometry of a fluvial sheet sandstone: *American Association of Petroleum Geologists Bulletin*, v. 60, no. 7, p. 1009-1020, 7 figs.
- Campbell, M. R., 1922, Guidebook of the western United States, Part E, The Denver and Rio Grande western route: U.S. Geological Survey Bulletin 707, 266 p.
- Campbell, M. R., and Gregory, H. E., 1911, The Black Mesa coal field, Arizona; in *Coal and lignite: U.S. Geological Survey Bulletin 431-B*, p. 229-239.
- Cannon, H. L., 1952, The effect of uranium-vanadium deposits on the vegetation of the Colorado Plateau: *American Journal of Science*, v. 250, no. 10, p. 735-770.
- 1953a, Geobotanical reconnaissance near Grants, New Mexico: U.S. Geological Survey Circular 264, 8 p.
- 1953b, Geobotanical research (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-390, p. 37-38.
- 1954, Botanical methods of prospecting for uranium (Colorado Plateau): *Mining Engineer*, v. 6, no. 2, p. 217-220.
- 1955a, Botanical methods of prospecting for uranium (Colorado Plateau): *American Institute of Mining Engineers Transactions*, v. 199, 1954.
- 1955b, Botanical studies and research (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-590, p. 118-119.
- 1956, Botanical studies and research (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-620, p. 113-114.
- 1957, Description of indicator plants and methods of botanical prospecting for uranium deposits on the Colorado Plateau, in *Contributions to the geology of uranium: U.S. Geological Survey Bulletin 1030-M*, p. 399-516.
- 1960, The Development of botanical methods of prospecting for uranium on the Colorado Plateau: U.S. Geological Survey Bulletin 1085-A, 50 p.
- Cannon, H. L., and Kleinhampl, F. J., 1956, Botanical methods of prospecting for uranium (Colorado Plateau), in *Geology of uranium and thorium: U.N. International Conference on peaceful uses of atomic energy, Geneva, Switzerland, 1955, Proceedings*, v. 6, p. 801-805.
- Cannon, H. L., and Starrett, W. H., 1956, Botanical prospecting for uranium on La Ventana Mesa, Sandoval County, New Mexico: U.S. Geological Survey Bulletin 1009-M, p. 391-407.
- Cannon, H. L., and Swanson, V. E., 1975, Contributions of major and minor elements to soils and vegetation by the coal-fired Four Corners Power Plant, San Juan

- County, New Mexico: U.S. Geological Survey Open-File Report 75-170, 36 p., 8 figs.
- Carithers, L. W., and Clinton, N. J., 1956, Uranium in shoreline sandstones of terrestrial and marine origin, Colorado Plateau, *in* Geology of uranium and thorium: U.N. International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, 1955, Proceedings, v. 6, p. 383-386.
- Carrara, P. E., and Andrews, J. T., 1973, Problems and application of lichenometry of geomorphic studies, San Juan Mountains, Colorado: *Artic Alpine Research*, v. 5, no. 4, p. 373-384.
- Carter, K. E., 1958a, Relation of Paradox Basin oil to stratigraphy [abs.]: American Association of Petroleum Geologists, Rocky Mountain Section, Geological Record, p. 124-125.
- 1958b, Relation of Paradox Basin oil to stratigraphy [abs.], *in* Guidebook Black Mesa Basin, northeastern Arizona: New Mexico Geological Society, 9th Field Conference, p. 202.
- Carter, W. D., 1955, La Sal Creek area, Paradox district, Montrose County and San Juan County, Utah: U.S. Geological Survey Trace Element Investigations Report TEI-540, p. 36-38.
- Carter, W. D., and Gualtieri, J. L., 1957, La Sal Creek area, Colorado and Utah: U.S. Geological Survey Trace Element Investigations Report TEI-690, book 1, p. 84-95.
- 1965, Geology and uranium-vanadium deposits of the La Sal quadrangle, San Juan County, Utah, and Montrose County, Colorado: U.S. Geological Survey Professional Paper 508, 82 p.
- Carter, W. D., Gualtieri, J. L., and Warman, J. C., 1955, La Sal Creek area; Utah, Colorado: U.S. Geological Survey Trace Element Investigations Report TEI-590, p. 36-39.
- Case, J. E., and Joesting, H. R., 1972, Principal facts for gravity stations in the central Colorado Plateau, Arizona, Colorado, New Mexico and Utah: U.S. Geological Survey, Geologic Division, Report GD-72-025, 85 p.
- Chapman, E. P., Jr., 1958, Rotary drilling and sampling (Colorado Plateau): *Mining Congress Journal*, v. 44, no. 9, p. 50-53.
- Chapman, Wood and Griswold, Inc., 1974, Geologic map of the Grants uranium region, Valencia, Bernalillo, Sandoval, and McKinley Counties: New Mexico Bureau of Mines and Mineral Resources Geological Map GM-31 [3 sheets].
- Chavez, E. A., 1961, Progress report on contamination of potable ground water in the Grants-Bluewater area, Valencia County, New Mexico: New Mexico State Engineer, Roswell.
- Chenoweth, W. L., 1953, The variegated member or the Morrison Formation in the southeastern part of the San Juan Basin, Valencia County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 86 p., 7 figs.
- 1957, Radioactive titaniferous heavy-mineral deposits in the San Juan Basin, New Mexico and Colorado, *in* Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference, p. 212-217, 4 figs.
- 1967, The uranium deposits of the Lukachukai Mountains, Arizona, *in* Guidebook to Defiance-Zuni-Mt. Taylor Region: New Mexico Geological Society, 18th Field Conference, p. 78-86, 1 fig.
- 1974, Uranium occurrences of the Nacimiento-Jemez region, Sandoval and Rio Arriba Counties, New Mexico, *in* Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 309-313, 2 figs.
- 1976, Uranium resources of New Mexico, *in* Tectonics and mineral resources of

- southwestern North America: New Mexico Geological Society Special Publication 6, p. 138–143, 2 figs.
- 1977, Uranium in the San Juan Basin—an overview, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 257–262, 4 figs.
- Chew, R. T., III, 1956, Uranium and vanadium deposits of the Colorado Plateau that produced more than 1,000 tons of ore through June 30, 1955: U.S. Geological Survey Mineral Investigation Field Studies Map MP–54.
- Chico, R. J., 1959, The geology of the uranium-vanadium deposit of the Diamond No. 2 Mine, near Gallup, New Mexico: Missouri School of Mines, Rolla, unpublished M.S. thesis.
- Childs, O. E., 1948, Geomorphology of the valley of the Little Colorado River, Arizona: Geological Society of America Bulletin, v. 59, no. 4, p. 353–388, 7 figs.
- Christiansen, P. W., 1973, The quest for water in New Mexico: New Mexico Water Resources Research Institute Report 029, 65 p.
- Church, F. S., and Hack, J. T., 1939, An exhumed erosion surface in the Jemez Mountains, New Mexico: *Journal of Geology*, v. 47, no. 6, p. 613–629, 9 figs.
- City of Gallup, 1977, Research study on use of uranium mine water as a municipal supply for the city of Gallup, New Mexico: unpublished report, 100 p.
- Clair, J. R., 1952, Paleozoic rocks of the southern Paradox Basin, in *Geological symposium of the Four Corners region*: Four Corners Geological Society, p. 36–39.
- Clark, D. S., and Havenstrite, S. R., 1963, Geology and ore deposits of the Cliffside mine, Ambrosia Lake area, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 109–116, 5 figs.
- Clark, J. D., and Priest, K. F., 1932, Public water supplies of New Mexico: University of New Mexico, Albuquerque, Bulletin 215, Chemical series, v. 2, no. 1, 40 p., 7 figs.
- Clark, I. G., 1971, The historical approach to water law—its value and its problems, in *Proceedings Sixteenth Annual New Mexico Water Conference*, Las Cruces, p. 173–178.
- Clark, W. R., 1963, Pre-Pennsylvanian correlation problems of the Four Corners area, in *Guidebook to shelf carbonates of the Paradox Basin*: Four Corners Geological Society, 4th Field Conference, p. 61–64, 1 fig.
- Clary, T. A., Mobley, C. M., and Moulton, G. F., Jr., 1963, Geological setting of an anomalous ore deposit in the Section 30 Mine, Ambrosia Lake area, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 72–79, 6 figs.
- Clemens, W. A., 1973, The roles of fossil vertebrates in interpretation of late Cretaceous stratigraphy of the San Juan Basin, New Mexico, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau*: Four Corners Geological Society Memoir, p. 154–167, 5 figs.
- Clinton, N. J., 1956, Uranium reconnaissance of the Black Mountain-Yale Point area, Black Mesa, Navajo Indian Reservation, Arizona: U.S. Atomic Energy Commission Report RME–91, 24 p., 7 figs.
- Cobban, W. A., 1973, Significant ammonite finds in uppermost Mancos Shale and overlying formations between Barker Dome, New Mexico and Grand Junction, Colorado, in *Cretaceous and Tertiary rocks of the Society Memoir*, p. 184–153, 2 figs.
- 1977a, Characteristic marine Molluscan fossils from the Dakota Sandstone and intertongued Mancos Shale, west-central New Mexico: U.S. Geological Survey Professional Paper 1009, 30 p., 7 figs.
- 1977b, Fossil mollusks of the Dakota Sandstone and intertongued Mancos Shale

- of west-central New Mexico, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 213–220, 5 figs.
- Cobban, W. A., Landis, E. R., and Dane, C. H., 1974, Age relations of upper part of Lewis Shale on the east side of San Juan Basin, New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference*, p. 279–282, 2 figs.
- Cobban, W. A., and Reeside, J. B., Jr., 1952, Correlation of the Cretaceous formations of the eastern interior of the United States: *Geological Society of America Bulletin*, v. 63, no. 10, p. 1011–1044.
- Cobban, W. A., and Scott, G. R., 1972, Stratigraphy and ammonite fauna of the Graneros Shale and Greenhorn Limestone near Pueblo, Colorado: *U.S. Geological Survey Professional Paper 645*, 108 p.
- Coffin, R. C., 1921, Radium, uranium, and vanadium deposits of southwestern Colorado: *Colorado Geological Society Bulletin* 16, 231 p.
- Colbert, E. H., 1947, The little dinosaurs of Ghost Ranch: *Natural History*, v. 61, no. 9, p. 392–399 and 427–428.
- 1948, Triassic life in the southwestern United States: *New York Academy of Science Transactions*, ser. II, v. 10, no. 7, p. 229–235.
- 1950, Mesozoic vertebrate faunas and formations of northern New Mexico, in *Guidebook for vertebrate paleontology in northwestern New Mexico: American Museum of Natural History and University of New Mexico, Albuquerque, 4th Field Conference*, p. 57–73.
- 1972, Vertebrates from the Chinle Formation, in *Investigations in the Triassic Chinle Formation: Museum of Northern Arizona, Flagstaff, Bulletin 47*, p. 1–12, 6 figs.
- Colbert, E. H., Northrop, S. A., Romer, A. S., and Simpson, G. G., eds., 1950, *Guidebook for vertebrate paleontology in northwestern New Mexico: American Museum of Natural History and University of New Mexico, Albuquerque, 4th Field Conference*, 91 p.
- Coleman, A. H., 1944, A report on the geology and ore deposits of the B'Cla B'Toh (Beclabito) district, Carrizo uplift area, New Mexico, Arizona: *Union Mines Development Corp. and U.S. Atomic Energy Commission Open-File Report RMO-469*, 23 p.
- Coleman, H. C., 1959, Origin of uranium ores in the Todilto Limestone, near Grants, New Mexico [abs.], in *Guidebook to west-central New Mexico: New Mexico Geological Society, 10th Field Conference*, p. 159.
- Coleman, R. G., 1957, Mineralogical evidences on the temperature of formation of the Colorado Plateau uranium deposits: *Economic Geology*, v. 52, no. 1, p. 1–4.
- Coleman, R. G., and Delevaux, Maryse, 1957, Occurrence of selenium in sulfides from some sedimentary rocks of the western United States: *Economic Geology*, v. 52, no. 5, p. 499–527, 15 figs.
- Collier, A. J., 1919, Coal south of Mancos, Montezuma County, Colorado: *U.S. Geological Survey Bulletin* 691-K, p. 293–310.
- Collins, G. E., 1931, Localization of ore bodies at Rico and Red Mountain, Colorado, as conditioned by geologic structure and history: *Colorado Science Society Proceedings*, v. 12, no. 12, p. 407–424.
- Colton, R. B., 1976, Map showing landslide deposits and late Tertiary and Quaternary faulting in the Ft. Garland-San Luis area, Colorado-New Mexico: *U.S. Geological Survey Open-File Map 76-185*.
- Colton, R. E., 1946a, Black Mesa area of northeastern Arizona is being explored for petroleum deposits: *California Oil World*, v. 39, p. 11–15.
- 1946b, The San Juan Basin of northwestern New Mexico: *Oil Reporter*, v. 3, no. 1, p. 17–20.

- 1946c, The San Juan Basin of northwestern New Mexico: Rocky Mountain Petroleum Yearbook for 1945, p. 239–242.
- Comstock, T. B., 1883, Notes on the geology and mineralogy of San Juan County: American Institute of Mining Engineers Transactions, v. 11, p. 165–191.
- 1884, The distribution of San Juan County, Colorado ores: Engineering Mining Journal, v. 38, p. 208–209, 229, 245–247, 298–299, 315–316, 328–329.
- 1885, The distribution of San Juan County, Colorado ores: Engineering Mining Journal, v. 39, p. 38–39.
- 1887, Geology and vein structure, southwest Colorado: American Institute of Mining and Metallurgical Engineers Transactions, v. 15, p. 218–265.
- Conley, C. D., 1959, Geology of the Chromo Anticline, Archuleta County, Colorado and Rio Arriba County, New Mexico: Colorado School of Mines, Golden, unpublished M.S. thesis, 113 p., 19 figs.
- Cook, D. R., 1952, The geology of the Pride of the West Vein System, San Juan County, Colorado: Colorado School of Mines, Golden, unpublished Ph. D. dissertation, 2 volumes, 137 p., 51 figs.
- Cooke, R. U., and Reeves, R. W., 1976, Arroyos and environmental change in the American southwest: England, Oxford University Press, 213 p.
- Cooley, M. E., 1957, Geology of the Chinle Formation in the upper Little Colorado drainage area, Arizona and New Mexico: University of Arizona, Tucson, unpublished M.S. thesis, 317 p.
- 1958, Physiography of the Black Mesa Basin area, in Guidebook to Black Mesa Basin, northeastern Arizona: New Mexico Geological Society, 9th Field Conference, p. 146–149.
- 1959, Triassic stratigraphy in the State Line section of west-central New Mexico and east-central Arizona, in Guidebook of west-central New Mexico: New Mexico Geological Society, 10th Field Conference, p. 66–73.
- 1962a, Geomorphology and the age of volcanic rocks in northeastern Arizona: Arizona Geological Society Digest, v. 5, p. 97–115.
- 1962b, Late Pleistocene and recent erosion and alluviation in parts of the Colorado River system, Arizona and Utah, in Short papers in the geologic and hydrologic sciences: U.S. Geological Survey Professional Paper 450-B, p. 48–50.
- 1963, Hydrology of the Plateau uplands province, annual report on ground water in Arizona, spring 1962 to spring 1963: Arizona Land Department Water Resources Report 15, p. 27–38.
- compiler, 1967, Arizona highway geologic map: Arizona Geological Society Map.
- Cooley, M. E., and Akers, J. P., 1961a, Ancient erosion cycles of the Little Colorado River, Arizona and New Mexico, in Short papers in the geologic and hydrologic sciences: U.S. Geological Survey Professional Paper 424-C, p. 244–248.
- 1961b, Late Cenozoic geohydrology in the central and southern parts of Navajo and Apache Counties, Arizona: Arizona Geological Society Digest, v. 4, p. 69–77.
- Cooley, M. E., Akers, J. P., and Stevens, P. R., 1964, Lithologic logs, drillers' logs, and stratigraphic sections, pt. 3 of Geohydrologic data in the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: Arizona Land Department Water Resources Report 12-C, 157 p.
- Cooley, M. E., and Davidson, E. S., 1963, The Mogollon Highlands—their influence on Mesozoic and Cenozoic erosion and sedimentation: Arizona Geological Society Digest, v. 6, p. 7–35.
- Cooley, M. E., and Hardt, W. F., 1961, The relation of geology to hydrology in the Segi Mesas area, Utah and Arizona: Arizona Geological Society Digest, v. 4, p. 59–68.
- Cooley, M. E., Harshbarger, J. W., Akers, J. P., and Hardt, W. F., 1969, Regional hydrogeology of the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geological Survey Professional Paper 521-A, 61 p.

- Cooley, M. E., and others, 1966, Maps showing locations of wells, springs, and stratigraphic sections, pt. 4 of Geohydrologic data in the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: Arizona Land Department Water Resources Report 12-D, 2 sheets, 5 figs.
- Cooper, C. A., 1899, The tungsten ores of San Juan County: *Engineering Mining Journal*, v. 67, p. 499.
- Cooper, J. B., and John, E. C., 1965, Ground-water occurrence and geology of southeastern McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 263 p., 7 figs.
- 1968, Geology and ground-water occurrence in southeastern McKinley County, New Mexico: New Mexico State Engineer Technical Report 35, 108 p., 7 figs.
- Cooper, J. B., and Trauger, F. D., 1967, San Juan River Basin; geography, geology, hydrology, in *Water resources of New Mexico: occurrence, development, and use*: New Mexico State Planning Office, p. 185-210.
- Cooper, J. B., and West, S. W., 1967, Principal aquifers and uses of water between Laguna Pueblo and Gallup, Valencia and McKinley Counties, New Mexico, in *Guidebook to Defiance-Zuni-Mt. Taylor region*: New Mexico Geological Society, 18th Field Conference, p. 145-149, 1 fig.
- Cooper, J. C., 1952, Rattlesnake oil and gas field, San Juan County, New Mexico, in *Geological symposium of the Four Corners region*: Four Corners Geological Society, p. 75-82, 4 figs.
- Cope, E. D., 1875a, Geology of New Mexico [abs.]: *American Journal of Science*, 3rd series, p. 152-153.
- 1875b, Geology of New Mexico: National Academy of Science, Philadelphia, Pennsylvania, *Proceedings*, p. 263-267, 269.
- 1875c, Report on the geology of that part of northwestern New Mexico examined during the field season 1874, in *Wheeler, G. M., Annual report geologic exploration west 100th meridian*: p. 61-97.
- 1875d, Report on the geology of that part of northwestern New Mexico examined during the field season 1874, in *Annual report to Chief Engineer*: U.S. Army, War Department, Secretary War to 44th Congress, appendix LL, v. 2, pt. 2, p. 981-1017.
- Corbett, R. G., 1961, Oxidation features at Ambrosia Lake, New Mexico, in *Papers presented at 65th Annual Meeting*: Michigan Academy of Science, Arts, and Letters, Ann Arbor.
- 1963, Uranium and vanadium minerals occurring in Section 22 Mine, Ambrosia Lake area, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 80-81.
- 1964, The geology and mineralogy of Section 22 mine, Ambrosia Lake uranium district, New Mexico: University of Michigan, Ann Arbor, unpublished Ph. D. dissertation.
- Corbitt, L. L., and Woodward, L. A., 1973, Tectonic frameworks in Cordilleran foldbelt in southwestern New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 57, no. 11, p. 2207-2216, 9 figs.
- Cordell, L. E., 1962, Pennsylvanian paleotectonics in central-northwestern New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 62 p., 35 figs.
- Cordell, L. E., Joesting, H. R., and Case, J. E., 1973, Complete Bouguer anomaly, gravity map of the Albuquerque-Grants area, New Mexico: U.S. Geological Survey Open-File Map.
- Corn, R. M., 1975, Alteration-mineralization zoning, Red Mountain, Arizona: *Economic Geology*, v. 70, no. 8, p. 1437-1447.
- Correa, A. C., 1970, Borrego Pass Lentil, a new member of the Crevasse Canyon For-

- mation, southern San Juan Basin, New Mexico: *The Mountain Geologist*, v. 7, no. 2, p. 99–102.
- Craig, L. C., Holmes, C. N., Cadigan, R. A., Freeman, V. L., Mullens, T. E., and Weir, G. W., 1955, Stratigraphy of the Morrison and related formations, Colorado Plateau region—a preliminary report: U.S. Geological Survey Bulletin 1009-E, p. 125–167.
- Craig, L. C., Holmes, C. N., Harshbarger, J. W., Jackson, R. L., Repenning, C. A., and Smith, C. T., 1951, Jurassic Formations of the south and west sides of the San Juan Basin, in *Guidebook of the south and west sides of the San Juan Basin, New Mexico and Arizona*: New Mexico Geological Society, 2nd Field Conference, p. 93–103, 3 figs.
- Creel, B. J., 1974, Water resources problems and research needs of New Mexico: New Mexico Water Resources Research Institute Report 045, 75 p., 2 figs.
- Cronk, R. J., 1963, Geology of the Dysart No. 1 Mine, Ambrosia Lake area, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 60–65, 7 figs.
- Cross, C. W., 1901, Outline of geology of the Silverton quadrangle: U.S. Geological Survey Bulletin 182, p. 29–39.
- Cross, C. W., Howe, Ernest, and Ransome, F. L., 1905, Silverton folio; geography and general geology of the quadrangle, physical history and general geology, stratigraphy, petrology, and economic geology: U.S. Geological Survey Atlas Folio 120, 34 p.
- Cross, C. W., and Larsen, E. S., 1913, Contributions to the stratigraphy of southwestern Colorado: U.S. Geological Survey Professional Paper 90-E, p. 39–50.
- 1935, A brief review of the geology of the San Juan region of southwestern Colorado: U.S. Geological Survey Bulletin 843, 138 p.
- Crow, L. W., 1973, Meteorological factors related to the cumulative impact of air pollutants in northwest New Mexico: Stearns-Roger Corp. report.
- Crow, L. W., and Hadley, D. L., 1972, Report on site meteorology, El Paso Natural Gas Co., Burnham Gasification Complex Unit 1: Stearns-Roger Corp. and Western Scientific Services, Inc., report.
- Crowley, C. J., 1977, Developments in Four Corners-Intermountain area in 1976: American Association of Petroleum Geologists Bulletin, v. 61, no. 8, p. 1204–1207, 1 fig.
- Crump, L. H., 1969, Supply and demand for energy in the United States by states and regions, 1960 and 1965, Part 3, Dry natural gas: U.S. Bureau of Mines Information Circular IC 8403, 8 p.
- Crump, L. H., and Yasnowsky, P. N., 1969, Supply and demand for energy in the United States by states and regions, 1960 and 1965, Part 4, Petroleum and natural gas liquids: U.S. Bureau of Mines Information Circular IC 8411, 25 p.
- Cullins, H. L., and Bowers, W. E., 1965, East Cortez coal area, Montezuma County, Colorado: U.S. Geological Survey Open-File Report, 21 p.
- Cumella, Ronald, 1957, A lithofacies study of the San Rafael group (Jurassic) in the San Juan Basin area: University of Oklahoma, Norman, unpublished M.S. thesis.
- Cummings, Byron, 1910, The ancient inhabitants of the San Juan Valley: University of Utah, Salt Lake City, Bulletin, v. 3, no. 3, pt. 2.
- Dallmus, K. F., 1958, Mechanics of basin evolution and its relation to the habitat of oil in the basin, in *Habitat of oil*: American Association of Petroleum Geologists, p. 883–931.
- Dane, C. H., 1932, Notes on the Puerco and Torrejon Formations, San Juan Basin, New Mexico: Washington Academy of Science, v. 22, no. 14, p. 406–411.
- 1936, The La Ventana-Chacra Mesa coal field: U.S. Geological Survey Bulletin 860-C, p. 81–161, 1 fig.

- 1946, Stratigraphic relations of Eocene, Paleocene, and the latest Cretaceous Formations of the eastern side of San Juan Basin, New Mexico: U.S. Geological Survey Oil and Gas Preliminary Investigations Chart 24.
- 1948a, Geologic map of a part of eastern San Juan Basin, Rio Arriba County, New Mexico: U.S. Geological Survey Oil and Gas Preliminary Investigations Map 78.
- 1948b, Geology and oil possibilities of the eastern side of the San Juan Basin, Rio Arriba County, New Mexico: U.S. Geological Survey Oil and Gas Preliminary Investigations Chart 78.
- 1959, Historical background of the type locality of the Tres Hermanos Sandstone Member of the Mancos Shale, in *Guidebook to west-central New Mexico*: New Mexico Geological Society, 10th Field Conference, p. 85–91.
- 1960a, The boundary between rocks of Carlile and Niobrara age in the San Juan Basin, New Mexico and Colorado: *American Journal of Science*, Bradley volume 258–A, p. 46–56.
- 1960b, The Dakota Sandstone and Mancos Shale of the eastern side of San Juan Basin, New Mexico, in *Guidebook of Rio Chama country*: New Mexico Geological Society, 11th Field Conference, p. 63–74, 10 figs.
- 1960c, New information on the areal extent of some upper Cretaceous units in northwestern New Mexico, in *Short papers in the geological sciences*: U.S. Geological Survey Professional Paper 400–B, p. 241–243, 1 fig.
- Dane, C. H., and Bachman, G. O., 1957a, The Dakota Sandstone and Mancos Shale in the Gallup area, New Mexico, in *Guidebook to geology of southwestern San Juan Basin*: Four Corners Geological Society, 2nd Field Conference, p. 95–98.
- 1957b, Preliminary geologic map of the northwestern part of New Mexico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-224.
- 1965, Geologic map of New Mexico: U.S. Geological Survey, 2 sheets.
- Dane, C. H., Bachman, G. O., and Reeside, J. B., Jr., 1957, The Gallup Sandstone, its age and stratigraphic relationships south and east of the type locality, in *Guidebook to geology of southwestern San Juan Basin*: Four Corners Geological Society, 2nd Field Conference, p. 99–113.
- Dane, C. H., and Bryson, R. P., 1938, Preliminary map showing geologic structure of part of Rio Arriba County, New Mexico: U.S. Geological Survey Map.
- Dane, C. H., Cobban, W. A., and Kauffman, E. G., 1966, Stratigraphy and regional relationships of a reference section for the Juana Lopez Member, Mancos Shale, in the San Juan Basin, New Mexico: U.S. Geological Survey Bulletin 1224–H, 15 p., 3 figs.
- Dane, C. H., Kauffman, E. G., and Cobban, W. A., 1968, Semilla Sandstone, a new member of the Mancos Shale in the southeastern part of the San Juan Basin, New Mexico: U.S. Geological Survey Bulletin 1254–F, 21 p., 1 fig.
- Dane, C. H., Landis, E. R., and Cobban, W. A., 1971, The Twowells Sandstone Tongue of the Dakota Sandstone and the Tres Hermanos Sandstone as used by Herrick (1900), western New Mexico, in *Geological Survey research 1971*: U.S. Geological Survey Professional Paper 750–B, p. B17–B22.
- Dane, C. H., Wanek, A. A., and Reeside, J. B., Jr., 1957, Reinterpretation of section of Cretaceous rocks in Alamosa Creek Valley area, Catron and Socorro Counties, New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 41, no. 2, p. 181–196, 3 figs.
- Dare, W. L., 1961, Uranium mining in the Lukachukai Mountains, Apache County, Arizona, Kerr-McGee Oil Industries, Inc.: U.S. Bureau of Mines Information Circular IC 8011, 30 p.
- Dare, W. L., Lindblom, R. A., and Soule, J. H., 1955, Uranium mining on the Colorado Plateau: U.S. Bureau of Mines Information Circular IC 7726, 60 p.

- Darton, N. H., 1905, Zuni salt deposits, New Mexico, *in* Contributions to economic geology 1904: U.S. Geological Survey Bulletin 260-N, p. 565-566.
- 1910, A reconnaissance of parts of northwestern New Mexico and northern Arizona: U.S. Geological Survey Bulletin 435, 88 p.
- 1925, A resume of Arizona geology: University of Arizona, Tucson, Bureau of Mines Bulletin 119, Geological ser. 3, 298 p., 105 figs.
- 1926, The Permian of Arizona and New Mexico: American Association of Petroleum Geologists Bulletin, v. 10, no. 9, p. 819-852, 10 figs.
- 1928, "Red Beds" and associated formations in New Mexico, with an outline of the geology of the state: U.S. Geological Survey Bulletin 794, 356 p., 173 figs.
- Davidson, E. S., 1959, Geology of the Rainy Day uranium mine, Garfield County, Utah: Economic Geology, v. 54, no. 3, p. 436-448.
- Davies, D. K., Ethridge, F. G., and Berg, R. R., 1971, Recognition of barrier environments: American Association of Petroleum Geologists Bulletin, v. 55, no. 4, p. 550-565.
- Davis, G. H., 1975, Tectonic analysis of folds in the Colorado Plateau of Arizona: University of Arizona, Tucson, Office of Arid Lands Studies, 75 p.
- Davis, J. H., 1960, Geology of El Vado area, Rio Arriba County, New Mexico: University of Texas, Austin, unpublished M.S. thesis, 109 p.
- Davis, W. M., 1901, An excursion to the Grand Canyon of the Colorado: Harvard College, Cambridge, Massachusetts, Zoology Museum Bulletin 38, p. 107-201.
- Davis, G. E., Hardt, W. F., Thompson, L. K., and Cooley, M. E., 1963, Records of ground-water supplies, part 1, *in* Geohydrologic data in the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: Arizona Land Department, Water Resources Report 12-A, 159 p.
- DeAngelis, J. M., 1972, Physical geography of the Chaco Canyon country: Unpublished report to National Park Service, Chaco Center, under direction of Rodman Snead, Geography Department, University of New Mexico, Albuquerque, 113 p.
- Decker, E. R., 1969, Heat flow in Colorado and New Mexico: *Journal of Geophysical Research*, v. 74, no. 2, p. 550-559, 3 figs.
- Deischl, D. G., 1973, The characteristics, history, and development of the Basin Dakota gas field, San Juan Basin, New Mexico, *in* Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir, p. 168-173, 7 figs.
- Devlin, F. J., and Tomkins, J. Q., 1957, The Bisti area, San Juan County, New Mexico, *in* Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference, p. 152-154, 4 figs.
- DeVoto, R. H., 1976, Environments of formation of uranium deposits [abs.]: American Association of Petroleum Geologists Bulletin, v. 60, no. 4, p. 664.
- Dickey, P. A., and Cox, W. C., 1977, Oil and gas in reservoirs with subnormal pressures: American Association of Petroleum Geologists Bulletin, v. 61, no. 12, p. 2134-2142, 8 figs.
- Dickinson, R. G., 1965, Geologic map of the Cerro Summit quadrangle, Montrose County, Colorado: U.S. Geological Survey Geologic Quadrangle Map GQ-486.
- Dickinson, R. G., Leopold, E. B., and Marvin, R. F., 1968, Late Cretaceous uplift and volcanism on the north flank of the San Juan Mountains, Colorado: *in* Cenozoic volcanism in the southern Rocky Mountains: Colorado School of Mines, Golden, Quarterly, v. 63, no. 3, p. 125-148.
- DiGiambattista, C. D., 1952, Regional stratigraphy of Four Corners area, *in* Geological symposium of the Four Corners region: Four Corners Geological Society, p. 5-9.
- Dilworth, O. L., 1960, Upper Cretaceous Farmington Sandstone of northeastern San Juan County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 96 p., 23 figs.

- Dings, M. G., 1941, Geology of the Stony Mountain stock, San Juan Mountains, Colorado: Geological Society of America Bulletin, v. 52, no. 5, p. 695–720, 1 fig.
- Dinwiddie, G. A., 1963, Ground water in the vicinity of the Jackpile and Paguate mines, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 217–218.
- Dinwiddie, G. A., and Motts, W. S., 1964, Availability of ground water in parts of the Acoma and Laguna Indian Reservations, New Mexico: U.S. Geological Survey Water-Supply Paper 1576-E, 65 p., 12 figs.
- Dinwiddie, G. A., Mourant, W. A., and Basler, J. A., 1966, Municipal and community water supplies and uses in New Mexico; northwestern New Mexico: New Mexico State Engineer Technical Report 29C, 197 p., 24 figs.
- Dittert, A. E., Jr., Hester, J. J., Eddy, F. W., 1961, An archaeological survey of the Navajo Reservoir District, northwestern New Mexico: School of American Research and Museum of New Mexico, Santa Fe, Monograph no. 23, 277 p.
- Dixon, G. H., Baltz, D. H., Stipp, T. F., and Bierberman, R. A., compilers, 1955, Map of New Mexico showing test wells for oil and gas, oil and gas fields, and pipelines: U.S. Geological Survey Oil and Gas Investigations Map OM-159.
- Dobyns, R. D., 1950, Geophysical exploration in the San Juan Basin, in *Guidebook of the San Juan Basin*, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 132.
- Dodd, P. H., 1956a, Examples of uranium deposits in upper Jurassic Morrison Formation of the Colorado Plateau, in *Contributions to the geology of uranium and thorium by the U.S. Geological Survey and Atomic Energy Commission for the U.N. International Conference on Peaceful Uses of Atomic Energy*, Geneva, Switzerland, 1955: U.S. Geological Survey Professional Paper 300, p. 243–262, 16 figs.
- 1956b, Some examples of uranium deposits in the upper Jurassic Morrison Formation on the Colorado Plateau, in *Geology of uranium and thorium: U.N. International Conference on Peaceful Uses of Atomic Energy*, Geneva, Switzerland, 1955, Proceedings, v. 6, p. 615–633.
- Dodge, C. N., 1973, An analysis and comparison of pebbles from the Chinle and Morrison Formations, Arizona and New Mexico: University of Arizona, Tucson, unpublished M.S. thesis, 49 p.
- Doney, H. H., 1968, Geology of the Cebolla quadrangle, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 92, 114 p., 21 figs.
- Donnell, J. R., 1970, Oil shale resources of selected rich zones in the Green River Formation: American Institute of Mining Engineers, Hydrocarbon Symposium, Denver, Colorado, February 18–19, 1970.
- Dooley, J. R., Jr., Granger, H. C., and Rosholt, J. N., 1966, Uranium-234 fractionation in the sandstone-type uranium deposits of the Ambrosia Lake district, New Mexico: *Economic Geology*, v. 61, no. 8, p. 1362–1382, 10 figs.
- Dorroh, J. H., Jr., 1946, Certain hydrologic and climatic characteristics of the southwest: University of New Mexico, Albuquerque, Publications in Engineering, no. 1, 64 p., 2 figs.
- Doty, G. C., 1967, Potential sources of water supply for Canoncito Navajo Day School, Bernalillo County, New Mexico: U.S. Geological Survey Open-File Report, 29 p., 5 figs.
- Dove, F. H., 1973, Groundwater in the Navajo Sandstone; A subset of "Simulation of the effects of coal-fired power developments in the Four Corners region": University of Arizona, Tucson, unpublished Ph. D. dissertation, 133 p.
- Dow, V. T., and Batty, J. V., 1961, Reconnaissance of titaniferous sandstone deposits of Utah, Wyoming, New Mexico, and Colorado: U.S. Bureau of Mines Report of

- Investigations RI 5860, 52 p.
- Downs, W. F., and Runnells, D. D., 1975, Trace element concentrations in pyrite from sandstone uranium deposits: *Economic Geology*, v. 70, no. 7, p. 1320.
- Dregne, H. E., and Maker, H. J., 1954, Irrigation well waters of New Mexico; Chemical characteristics, quality, and use: New Mexico State University, Las Cruces, Agricultural Experiment Station Bulletin 386, 28 p., 8 figs.
- DuChene, H. R., 1974, Pennsylvanian rocks of north-central New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 159-165, 2 figs.
- DuChene, H. R., Kues, B. S., and Woodward, L. A., 1977, Osha Canyon Formation (Pennsylvanian), New Morrowan Unit in north-central New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 61, no. 9, p. 1513-1524, 6 figs.
- Duff, A. L., Jr., and Fritts, J. F., 1950, Lands of the San Juan Basin, in *Guidebook of the San Juan Basin, New Mexico, and Colorado*: New Mexico Geological Society, 1st Field Conference, p. 149-151.
- 1951, Lands of the San Juan Basin, in *Guidebook of the San Juan Basin, New Mexico and Arizona*: New Mexico Geological Society, 2nd Field Conference, p. 161-163.
- 1957, Land and leasing in south and west San Juan Basin, in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society*, 2nd Field Conference, p. 25.
- Dugan, T. A., 1977, The San Juan Basin; episodes and aspirations, in *Guidebook to San Juan Basin III: New Mexico Geological Society*, 28th Field Conference, p. 83-89, 6 figs.
- Dunham, R. J., 1962, Classification of carbonate rocks according to deposition texture, in *Classification of carbonate rocks—a symposium: American Association of Petroleum Geologists Memoir 1*, p. 108-121.
- Duschatko, R. W., 1953, Fracture studies in the Lucero uplift, New Mexico: U.S. Atomic Energy Commission Report RME 3072, 49 p.
- Dutton, C. E., 1882, Tertiary history of the Grand Canyon district, with atlas: U.S. Geological Survey Monograph 2, 264 p.
- 1885, Mount Taylor and the Zuni Plateau, in *Sixth Annual Report: U.S. Geological Survey*, p. 105-198.
- Eardley, A. J., 1951, *Structural geology of North America*: New York, Harper and Brothers, 624 p.
- Earhart, Robert, and McDanal, S. K., 1976, Spectrographic and chemical analyses of stream sediments and rocks from the Chama-southern San Juan Mountains wilderness study area, Mineral, Rio Grande, Archuleta, and Conejos Counties, Colorado: U.S. Geological Survey, Geological Division Report 76-017, tape.
- Eckel, E. B., 1949, Geology and ore deposits of the La Plata District, Colorado: U.S. Geological Survey Professional Paper 219, 179 p., 50 figs.
- Edmonds, R. J., 1961, Geology of the Nutria Monocline, McKinley County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 100 p., 8 figs.
- 1967, Ground water in the Window Rock-Lukachukai area, Navajo Indian Reservation, Arizona and New Mexico, in *Guidebook of Defiance-Zuni-Mt. Taylor region, Arizona and New Mexico*: New Mexico Geological Society, 18th Field Conference, p. 86-91.
- Ekren, E. G., and Houser, F. N., 1959, Relations of lower Cretaceous and upper Jurassic rocks, Four Corners area, Colorado: *American Association of Petroleum Geologists Bulletin*, v. 43, no. 1, p. 190-201.
- Ekren, E. B., 1965, Geology and petrology of the Ute Mountains area, Colorado: U.S. Geological Survey Professional Paper 481, 74 p.

- El Paso Natural Gas Co., 1969, Gasbuggy-1 and Gasbuggy-3 core display in El Paso Natural Gas Co. hanger, Farmington, New Mexico: El Paso Natural Gas Co. and U.S. Geological Survey Report PNE-G-52, 82 p.
- Elias, G. K., 1958, Nomenclature chart of the Four Corners area, in *Guidebook to Black Mesa Basin: New Mexico Geological Society, 9th Field Conference*, p. 65.
- Ellis, R. W., 1923, Oil and gas in New Mexico: New Mexico State University, Las Cruces, *Bulletin, Geological ser. 3*, 29 p.
- 1936, Analyses of New Mexico coals: U.S. Bureau of Mines Technical Paper 569, 112 p.
- Ellsworth, P. C., and Hatfield, K. G., 1951, Geology and ore deposits of Mesa VI, Luchachukai District, Arizona: U.S. Atomic Energy Commission Report RMO-802, 12 p.
- Ellsworth, P. C., and Mirsky, Arthur, 1952, Preliminary report on relation of structure to uranium mineralization in the Todilto Limestone, Grants district, New Mexico: U.S. Atomic Energy Commission Report RME-4020, 15 p.
- Elston, D. P., 1960, Early growth of the salt anticlines of the Paradox Basin, Colorado and Utah [abs.]: *Geological Society of America Bulletin*, v. 71, no. 12, pt. 2, p. 1858.
- Elston, W. E., Seager, W. R., and Clemons, R. E., 1975, Emory cauldron, Black Range, New Mexico, source of the Kneeling Nun Tuff, in *Guidebook to Las Cruces country, central-southern New Mexico: New Mexico Geological Society, 26th Field Conference*, p. 283-292.
- Emerick, E. B., 1923, Search for oil in San Juan County: *Oil and Gas Journal*, v. 21, no. 46, p. 96.
- Emmons, S. F., 1905a, Copper in the "red beds" of the Colorado Plateau, in *Contributions to economic geology, 1904: U.S. Geological Survey Bulletin 260*, p. 221-231.
- 1905b, Copper in the red beds of the Colorado Plateau and elsewhere: *Minerals Report*, v. 52, p. 136-137.
- 1906, Copper in the red beds of the Colorado Plateau and elsewhere: *Minerals Magazine*, v. 12, p. 319.
- Emmons, S. F., Cross, Whitman, and Eldridge, G. H., 1896, *Geology of the Denver Basin in Colorado: U.S. Geological Survey Monograph 27*, 556 p.
- Emmons, S. F., and Eldridge, G. H., 1894, Anthracite-Crested Butte folio: *U.S. Geological Survey Geologic Atlas Folio 9*, 11 p.
- Emmons, W. H., 1906, Ore deposits of Bear Creek, near Silverton, Colorado, in *Contributions to economic geology, 1905: U.S. Geological Survey Bulletin 285*, p. 25-27.
- Emmons, W. H., and Larsen, E. S., 1923, *Geology and ore deposits of the Creede district, Colorado: U.S. Geological Survey Bulletin 718*, 198 p., 32 figs.
- Environmental Protection Agency, 1976, Preliminary report on Navajo Reservoir, Archuleta County, Colorado, and San Juan and Rio Arriba Counties, New Mexico, EPA regions VI and VIII: Environmental Protection Agency, National Eutrophication Survey, 15 p.
- Erskin, W. S., 1959, "Micrometeorites" of the Todilto gypsum—a preliminary investigation [abs.], in *Guidebook to west-central New Mexico: New Mexico Geological Society, 10th Field Conference*, p. 161.
- Evans, H. T., Jr., and Garrels, R. M., 1958, Thermodynamic equilibria of vanadium in aqueous systems as applied to the interpretation of the Colorado Plateau ore deposits: *Geochimica et Cosmochimica Acta*, v. 15, nos. 1-2, p. 131-149.
- Evensen, C. G., 1958, The Shinarump Members of the Chinle Formation, in *Guidebook to Black Mesa Basin: New Mexico Geological Society, 9th Field Conference*, p. 95-97.

- Evensen, C. G., and Gray, I. B., 1958, Evaluation of uranium ore guides, Monument Valley, Arizona and Utah: *Economic Geology*, v. 53, no. 6, p. 639–662, 11 figs.
- Everett, A. G., 1969, Archae-environmental analysis of the upper Chaco Drainage Basin, New Mexico, in 1970 yearbook: American Philosophical Society, p. 308–310.
- Fassett, J. E., 1964a, Subsurface geology of the upper Cretaceous Kirtland and Fruitland Formations of the San Juan Basin, New Mexico and Colorado: U.S. Geological Survey Open-File Report, 93 p.
- 1964b, Subsurface geology of the upper Cretaceous Kirtland and Fruitland Formations of the San Juan Basin, New Mexico and Colorado: Wayne State University, Detroit, Michigan, unpublished M.S. thesis, 93 p.
- 1966, Geologic map of the Mesa Portales quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-590.
- 1968a, Core description from GB-1 (Gasbuggy-1) in the northeastern part of the San Juan Basin, Rio Arriba County, New Mexico: U.S. Geological Survey Report PNE-G-19, 37 p.
- 1968b, Summary of geologic data obtained from bore hole GB-1, Project Gasbuggy, in Guidebook to San Juan-San Miguel-La Plata region: New Mexico Geological Society, 19th Field Conference, p. 24–27.
- 1969, Environment of deposition of upper Cretaceous Fruitland Formation coal deposits, San Juan Basin, New Mexico and Colorado [abs.]: American Association of Petroleum Geologists Bulletin, v. 53, no. 3, p. 214.
- 1971, Stratigraphic relation between Cliff House and La Ventana Sandstones, San Juan Basin, New Mexico and Colorado [abs.]: American Association of Petroleum Geologists Bulletin, v. 55, no. 3, p. 536.
- ed., 1973a, Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir, 218 p.
- 1973b, The saga of the Ojo Alamo Sandstone; or, the rock stratigrapher and the paleontologist should be friends, in Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir, p. 122–130.
- 1974, Cretaceous and Tertiary rocks of the eastern San Juan Basin, New Mexico and Colorado, in Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 225–230, 3 figs.
- 1975a, Fruitland Formation coal deposits of San Juan Basin, New Mexico and Colorado [abs.]: American Association of Petroleum Geologists Bulletin, v. 59, no. 5, p. 908.
- ed., 1975b, Guidebook to canyonlands country: Four Corners Geological Society, 8th Field Conference, 281 p.
- 1976a, Stratigraphy of the coals of the San Juan Basin, in Geology of Rocky Mountain coal, a symposium: Colorado Geological Survey Resource Series 1, p. 61–71.
- 1976b, What happened during late Cretaceous time in the Raton and San Juan Basins—with some thoughts about the area in between, in Guidebook to Vermejo Park: New Mexico Geological Society, 27th Field Conference, p. 185–190, 3 figs.
- 1977, Geology of the Point Lookout, Cliff House, and Pictured Cliffs Sandstones of the San Juan Basin, New Mexico and Colorado, in Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 193–197, 2 figs.
- Fassett, J. E., Black, B. A., Jentgen, R. W., and Osterhoudt, W. J., 1977, Road log third day; El Vado Lake to Farmington via Dulce, Lumberton, and Chromo, Ignacio, Colorado, Navajo Dam, and Aztec, in Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 39–55, 25 figs.
- Fassett, J. E., and Hinds, J. S., 1971, Geology and fuel resources of the Fruitland

- Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado: U.S. Geological Survey Professional Paper 676, 76 p., 27 figs.
- 1977, Geology and fuel resources of the Fruitland Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado [abs.], in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 207.
- Fassett, J. E., and James, H. L., eds., 1977a, *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, 310 p.
- 1977b, Supplemental articles to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, 56 p.
- Fassett, J. E., Jentgen, R. W., Black, B. A., Molenaar, C. M., and Woodward, L. A., 1977, Road log second day; Red Mountain Oil Field to El Vado Lake via Pueblo Pintado, Star Lake, Torreon, Cuba, and Llaves, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 19–38, 28 figs.
- Fassett, J. E., Molenaar, C. M., Black, B. A., Jentgen, R. W., and Chenoweth, W. L., 1977, Road log first day; Farmington to Red Mountain oil field via Bisti, Crownpoint, Thoreau, Baca, and Hospah, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 1–18, 22 figs.
- Feldman, S. C., Inglis, M. G., Linden, K. V., Chapin, C. E., Rhodes, R. C., and Kottowski, F. E., 1974, Geologic analysis of ERTS-1 imagery for the state of New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report OF-53, 108 p., 19 figs.
- Fenneman, N. M., 1928, Physiographic divisions of the United States: *Association of American Geographers Annals*, v. 18, p. 261–353.
- 1931, *Physiography of western United States*: New York, McGraw-Hill, 534 p.
- Feth, J. H., and others, 1965, Preliminary map of the conterminous United States showing depth to and quality of shallowest ground water containing more than 1,000 parts per million of dissolved solids: U.S. Geological Survey Hydrologic Investigations Atlas HA-199.
- Fetzner, R. W., 1959a, Pennsylvanian paleotectonics of the Colorado Plateau: University of Wisconsin, Madison, unpublished Ph. D. dissertation, 275 p.
- 1959b, Pennsylvanian paleotectonics of the Paradox Basin; Colorado Plateau, in *Geological Record: American Association of Petroleum Geologists, Rocky Mountain Section*, p. 87–90.
- Fiedler, A. G., 1958, A look at New Mexico's water problems: U.S. Geological Survey Open-File Report, 7 p.
- File, L. A., 1965, *Directory of mines of New Mexico*: New Mexico Bureau of Mines and Mineral Resources Circular 77, 188 p.
- File, L. A., and Northrop, S. A., 1966, County, township, and range locations of New Mexico's mining districts: New Mexico Bureau of Mines and Mineral Resources Circular 84, 66 p., 2 figs.
- Finch, W. I., 1953a, Distribution of uranium deposits in the Shinarump conglomerate of the Colorado Plateau [abs.]: *Economic Geology*, v. 48, no. 7, p. 619.
- 1953b, Distribution of uranium deposits in the Shinarump conglomerate of the Colorado Plateau [abs.]: *Geological Society of America Bulletin*, v. 64, no. 12, pt. 2, p. 1422.
- 1953c, Geologic aspects of the resource appraisal of uranium deposits in Pre-Morrison Formations of the Colorado Plateau—an interim report: U.S. Geological Survey Trace Element Investigations Report TEI-328-A, 35 p.
- 1953d, Pre-Morrison resource appraisal (Colorado Plateau), in *Search for and geology of radioactive deposits*: U.S. Geological Survey Trace Element Investigations Report TEI-330, p. 59–61.
- 1953e, Reconnaissance resource appraisal (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-390, p. 43–45.

- 1953f, Resource appraisal (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-280, p. 24-26.
- 1954, Geology of the Shinarump Number 1 uranium mine, Seven Mile Canyon area, Grand County, Utah: U.S. Geological Survey Circular 336, 14 p.
- 1955, Preliminary geologic map showing the distribution of uranium deposits and principal ore-bearing formations of the Colorado Plateau region: U.S. Geological Survey Miscellaneous Field Studies Map MF-16.
- 1959, Geology of uranium deposits in Triassic rocks of the Colorado Plateau region: U.S. Geological Survey Bulletin 1074-D, p. 125-164, 2 figs.
- Finley, E. A., 1951, Geology of Dove Creek area, Dolores and Montezuma Counties, Colorado: U.S. Geological Survey Oil and Gas Investigations Map OM-120.
- Finnell, T. J., and Gazdik, W. B., 1958, Structural relations at the Hideout Number 1 uranium mine, Deer Flat Area, San Juan County, Utah: *Economic Geology*, v. 53, no. 8, p. 949-957, 4 figs.
- Fischer, R. P., 1936, Peculiar hydrothermal copper-bearing veins of the northeastern Colorado Plateau: *Economic Geology*, v. 31, no. 6, p. 571-599, 8 figs.
- 1949, Origin of the Colorado Plateau vanadium deposits [abs.]: *Washington Academy of Science Journal*, v. 38, no. 3, p. 109.
- 1950, Uranium-bearing sandstone deposits of the Colorado Plateau: *Economic Geology*, v. 45, no. 1, p. 1-11, 6 figs.
- 1956a, Localization and origin of vanadium-uranium ores on the Colorado Plateau: U.S. Geological Survey Trace Element Investigations Report TEI-620, p. 146-147.
- 1956b, Studies of localization and origin of the vanadium-uranium deposits on the Colorado Plateau: U.S. Geological Survey Trace Element Investigations Report TEI-640, p. 195-196.
- 1956c, Uranium-vanadium-copper deposits of the Colorado Plateau region, in *Geology of uranium and thorium: U.N. International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, 1955, Proceedings*, v. 6, p. 605-614.
- 1956d, Uranium-vanadium-copper deposits on the Colorado Plateau, in *Contributions to the geology of uranium and thorium: U.S. Geological Survey Professional Paper 300*, p. 143-154.
- 1957, Localization and origin of the vanadium-uranium deposits on the Colorado Plateau: U.S. Geological Survey Trace Element Investigations Report TEI-690, book 2, p. 383-389.
- 1968, The uranium and vanadium deposits of the Colorado Plateau region, in *Ore deposits of the United States 1933-1967: American Institute of Mining Metallurgical Petroleum Engineers, Inc. [Graton-Sales Volume]*, v. 1, p. 735-746.
- 1970, Similarities, differences and some genetic problems of the Wyoming and Colorado Plateau types of uranium deposits in sandstone: *Economic Geology*, v. 65, no. 7, p. 778-784, 1 fig.
- Fisher, D. J., Erdmann, C. E., and Reeside, J. B., Jr., 1960, Cretaceous and Tertiary Formations of the Book Cliffs, Carbon, Emery, and Grand Counties, Utah, and Garfield and Mesa Counties, Colorado: U.S. Geological Survey Professional Paper 332, 80 p.
- Fitch, D. C., 1971, Exploration geology methods in the Grants minerals belt, in *Selected papers from 1970 uranium symposium, Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 118*, p. 13-28.
- 1974, Uranium resources of New Mexico, in *Papers presented at Energy Crisis Symposium, Albuquerque, New Mexico, 1973: New Mexico Bureau of Mines and Mineral Resources Circular 140*, p. 82-99.
- 1977, Case history of discovery of a new uranium deposit, Ambrosia Lake district, New Mexico [abs.]: *American Association of Petroleum Geologists Bulletin*,

v. 61, no. 5, p. 784.

- Fitter, F., 1958, Stratigraphy and structure of the French Mesa area, Rio Arriba County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 66 p.
- Fitzsimmons, J. P., 1959, The structure and geomorphology of west-central New Mexico, in *Guidebook to west-central New Mexico*: New Mexico Geological Society, 10th Field Conference, p. 112–116, 1 fig.
- 1963, Precambrian of the Four Corners area, in *Guidebook to shelf carbonates of the Paradox Basin*: Four Corners Geological Society, 4th Field Conference, p. 13–20, 1 fig.
- 1967, Precambrian rocks of the Zuni Mountains, in *Guidebook to Defiance-Zuni-Mt. Taylor region*: New Mexico Geological Society, 18th Field Conference, p. 119–121.
- Fitzsimmons, J. P., Armstrong, A. K., and Mackenzie, Gordon, Jr., 1956, Arroyo Penasco Formation, Mississippian, north-central New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 40, no. 8, p. 1935–1944, 3 figs.
- Flesch, G. A., 1974, Stratigraphy and sedimentology of the Morrison Formation (Jurassic), Ojito Spring quadrangle, Sandoval County, New Mexico: a preliminary discussion, in *Guidebook to Ghost Ranch (central-northern, New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 185–195, 7 figs.
- 1975, Stratigraphy and sedimentology of the Morrison Formation (Jurassic), central New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 106 p., 36 figs.
- Flesch, G. A., and Wilson, M. D., 1974, Petrography of Morrison Formation (Jurassic) sandstone of the Ojito Spring quadrangle, Sandoval County, New Mexico, in *Guidebook to Ghost Ranch (central-northern, New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 197–210, 7 figs.
- Folks, J. J., 1975, Soil survey of Santa Fe area, New Mexico, Santa Fe County and part of Rio Arriba County: U.S. Department of Agriculture, Soil Conservation Service, 114 p.
- Folks, J. J., and Ricketts, R. O., 1958, Soil survey Bluewater area, New Mexico: U.S. Soil Conservation Service, ser. 1955, no. 2, 20 p., 12 figs.
- Folsom, C. B., 1951, A re-examination of the natural gas reserves of the San Juan Basin in New Mexico: Colorado School of Mines, Golden, unpublished B. S. thesis.
- Fontaine, W. M., and F. H. Knowlton, 1890, Notes on the Triassic plants from New Mexico: U.S. National Museum Proceedings, v. 13, p. 281–285.
- Forester, R. W., 1975, Oxygen-18/Oxygen-16 and deuterium/hydrogen studies on the interactions between heated meteoric groundwaters and igneous intrusions; western San Juan Mountains, Colorado and the Isle of Skye, Scotland: California Institute of Technology, Pasadena, unpublished Ph. D. dissertation, 373 p.
- Foss, T. H., 1964, Chemical and mineralogical variations in the radial dikes of the Difficulty Creek intrusive center, San Juan Mountains, Colorado: Rice University Houston, Texas, unpublished Ph. D. dissertation, 76 p.
- Foster, R. W. 1957, Stratigraphy of west-central New Mexico, in *Guidebook to geology of southwestern San Juan Basin*: Four Corners Geological Society, 2nd Field Conference, p. 72–72.
- 1974, Petroleum development in New Mexico: New Mexico Bureau of Mines and Mineral Resource Open-File Report OF-58, 52 p., 15 figs.
- Foster, R. W., Frentess, R. M., and Riese, W. C., 1972, Subsurface geology of east-central New Mexico: New Mexico Geological Society Special Publication 4, 22 p., 11 figs.
- Foster, R. W., and Grant, P. R., Jr., 1974a, The future of New Mexico's oil and gas resources: New Mexico Bureau of Mines and Mineral Resources Resource Map

- RM-3, 2 figs.
- 1974b, New Mexico energy resources: New Mexico Bureau of Mines and Mineral Resources Resource Map RM-2.
- Foster, R. W., and Stipp, T. F., 1961, Preliminary geologic and relief map of the Precambrian rocks of New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 57, 37 p.
- Foster, William, 1913a, A remarkable carbonaceous deposit near Putnam, New Mexico [abs.]: International Congress of Applied Chemistry VIII, v. 25, p. 667.
- 1913b, A remarkable carbonaceous deposit near Putnam, New Mexico: *Economic Geology*, v. 8, p. 360-368.
- Four Corners Geological Society, 1952, Geological symposium of the Four Corners region: 145 p.
- 1955, Geology of parts of Paradox, Black Mesa, and San Juan Basins: Field Conference, 217 pp.
- 1957, Geology of southwestern San Juan Basin: 2nd Field Conference, 198 p.
- 1960, Guidebook to geology of the Paradox Basin fold and fault belt (Colorado Plateau): 3rd Field Conference, 183 p.
- Four Corners Geological Society, Nomenclature Committee, 1963, Stratigraphic nomenclature of the Paradox, Black Mesa and San Juan Basins, in Guidebook to shelf carbonates of the Paradox Basin: 4th Field Conference, p. 5-12.
- Freeman, H. C., 1885, The La Plata Mountains, Colorado: American Institute of Mining Engineers Transactions, v. 13, p. 681-684.
- Freeman, J. C., 1949, Geology of the Cabezon Peak area, Sandoval County, New Mexico: Stanford University, Palo Alto, California, unpublished M.S. thesis.
- Freeman, V. L., and Hilpert, L. S., 1956, Stratigraphy of the Morrison Formation in part of the northwestern New Mexico, in Contributions to geology of uranium and thorium: U.S. Geological Survey Bulletin 1030-J, p. 309-334, 4 figs.
- SEE ALSO PARKER, J. W.
- Fuchs-Parker, J. W., 1977, Alibi for a Mesaverde misfit—La Ventana Formation Cretaceous Delta, New Mexico, in Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 199-206, 13 figs.
- Fuller, H. C., and Edlund, V. E., 1962, Metallurgical studies of rhodonite ores, Silverton district, Colorado; Part 2, producing silicomanganese by electric furnace smelting: U.S. Bureau of Mines Report of Investigations RI 6062, 12 p.
- Fuller, H. C., Edlund, V. E., Sterner, J. W., and McDonald, J. F., 1964, Metallurgical studies of rhodonite ores, Silverton district, Colorado; Part 3, melting, quenching, and acid leaching of concentrates and electrolytic recovery of manganese from solution: U.S. Bureau of Mines Report of Investigations RI 6442, 69 p.
- Gabelman, J. W., 1956a, Structural control of uranium deposits in the Zuni-Mt. Taylor region, northwest New Mexico [abs.]: *Economic Geology*, v. 51, no. 1, p. 114.
- 1956b, Uranium deposits in paludal black shales of the Dakota Formation, San Juan Basin, New Mexico, in Contributions to the geology of uranium and thorium: U.S. Geological Survey Professional Paper 300, p. 303-319, 11 figs.
- 1970, The Flat Top uranium mine, Grants, New Mexico: U.S. Atomic Energy Commission Report RME-4112, 81 p.
- Gabelman, J. W., and others, 1956a, Uranium-Ambrosia Lake-New Mexico's newest bonanza: *Mines Magazine*, v. 46, no. 3, p. 58-64.
- 1956b, Uranium-Ambrosia Lake-New Mexico's newest bonanza: *Uranium Magazine*, p. 8-10, 26-31.
- Gabin, V. L., and Lesperance, L. E., 1977, New Mexico climatological data; precipitation, temperature, evaporation, and wind, monthly annual means 1850-1975: Socorro, New Mexico, W. K. Summers and Associates, 436 p.
- Galton, P. M., 1971, The prosauropod dinosaur *Ammosaurus*, the crocodile *Protosu-*

- chus, and their bearing on the age of the Navajo Sandstone of northeastern Arizona: *Journal of Paleontology*, v. 45, no. 5, p. 781–795.
- Garcia, F. N., and Oleachea, P. G., 1974a, New Mexico public water supplies, chemical data, major communities: New Mexico Environmental Improvement Agency, Santa Fe, 157 p.
- 1974b, New Mexico public water supplies, chemical data, minor communities: New Mexico Environmental Improvement Agency, Santa Fe, 217 p.
- Gardner, J. H., 1909a, The coal field between Durango, Colorado and Monero, New Mexico, in *Contributions to economic geology 1907—Part 2: U.S. Geological Survey Bulletin 341*, p. 352–363.
- 1909b, The coal field between Gallina and Raton Spring, New Mexico, in the San Juan coal region, in *Coal fields of Colorado, New Mexico, Utah, Oregon, and Virginia: U.S. Geological Survey Bulletin 341—C*, p. 335–351.
- 1909c, The coal field between Gallup and San Mateo, New Mexico, in *Coal fields of Colorado, New Mexico, Utah, Oregon, and Virginia: U.S. Geological Survey Bulletin 341—C*, p. 364–378.
- 1910a, The Carthage coal field, New Mexico, in *Contributions to economic geology, 1908 Part II—mineral fuels: U.S. Geological Survey Bulletin 381*, p. 452–460.
- 1910b, The coal field between San Mateo and Cuba, New Mexico, in *Contributions to economic geology, 1908 Part II—mineral fuels: U.S. Geological Survey Bulletin 381*, p. 461–473.
- 1910c, The Puerco and Torrejon Formations of the Nacimiento Group: *Journal of Geology*, v. 18, p. 702–741.
- 1912, Stratigraphy of the coal fields of north central New Mexico: *Geological Society of America Bulletin*, v. 23, p. 571–686.
- Garrels, R. M., and Larsen, E. S., III, compilers, 1959, Geochemistry and mineralogy of the Colorado Plateau uranium ores: U.S. Geological Survey Professional Paper 320, 236 p.
- Garrity, T. A., Jr., and Nitzschke, E. T., Jr., 1968a, Water law atlas—a water law primer: New Mexico Bureau of Mines and Mineral Resources Circular 95, 24 p.
- 1968b, Water law atlas: New Mexico Bureau of Mines and Mineral Resources Circular 95, 46 p.
- Gaskill, D. L., 1956, Geology of the White Rock Mountain area, Gunnison County, Colorado: University of New Mexico, Albuquerque, unpublished M.S. thesis, 175 p., 30 figs.
- Gavasci, A. T., and Helmstaedt, H., 1969, A pyroxene-rich garnet-periodotite inclusion in an ultramafic breccia dike at Moses Rock, southeastern Utah: *Journal of Geophysical Research*, v. 74, no. 27, p. 6691–6695.
- Gay, I. M., 1963, Uranium mining in the Grants district, in *Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15*, p. 244–246.
- Gehlbach, F. R., 1965, Herpetology of the Zuni Mountain region, northwest New Mexico: *U.S. National Museum Proceedings*, v. 116, no. 3505, p. 243–332.
- Gerrild, P. M., 1976, Geochemical study of oil in metalliferous veins, Idarado Mine, San Juan Mountains, Colorado: *Journal of Research*, v. 4, no. 5, p. 593–599.
- Gibson, G. G., 1975, Phanerozoic geology of the Gallina quadrangle, Rio Arriba County, north-central New Mexico [abs.]: *Dissertation Abstracts International*, 1976, v. 37, no. 4, p. 1593B–1594B.
- Gilbert, G. K., 1875, Report on the geology of portions of New Mexico and Arizona, in *Geology, Volume 3: U.S. Geographical and Geological Surveys west 100th Meridian*, p. 503–567.
- Giles, D. L., 1976, Precambrian mineralization in the southern Rocky Mountain Re-

- gion, in *Tectonics and mineral resources of southwestern North America: New Mexico Geological Society Special Publication 6*, p. 127–131, 2 figs.
- Gilkey, A. K., 1953, *Fracture pattern of the Zuni Uplift*: U.S. Atomic Energy Commission Report RME-3050, 34 p.
- , 1954, *Fracture pattern of the Zuni Uplift*: Columbia University, New York, unpublished Ph. D. dissertation, 34 p. [1953].
- Gilluly, James, and Reeside, J. B., Jr., 1928, *Sedimentary rocks of the San Rafael Swell and adjacent areas in eastern Utah*: U.S. Geological Survey Professional Paper 150-D, p. 61–110.
- Gilman, M. F., 1908 *Birds of the Navajo reservation in New Mexico: The Condor*, v. 10, p. 146–152.
- Gilmore, C. W., 1917, *Vertebrate faunas of the Ojo Alamo, Kirtland, and Fruitland Formations*, in *Contributions to the geology and paleontology of San Juan County, New Mexico*, part 2 of shorter contributions to general geology, 1916: U.S. Geological Survey Professional Paper 98-Q, p. 279–308, 29 figs.
- , 1919, *Reptilian faunas of the Torrejon, Puerco, and underlying Cretaceous Formations of San Juan County, New Mexico*: U.S. Geological Survey Professional Paper 119, 69 p.
- , 1922, *A new sauropod dinosaur from the Ojo Alamo Formation of New Mexico*: Smithsonian Institution Miscellaneous Collections, v. 72, no. 14, p. 1–9.
- , 1935, *On the reptilia of the Kirtland Formation of New Mexico, with descriptions of new species of fossil turtles*: U.S. National Museum Proceedings, v. 83, no. 2978, p. 159–188.
- Girdley, W. A., 1967, *Petrology of Pennsylvanian limestones, San Juan Mountains, Colorado*: Washington State University, Pullman, unpublished Ph. D. dissertation, 212 p.
- Girty, G. H., 1903, *The carboniferous formations and faunas of Colorado*: U.S. Geological Survey Professional Paper 16, 546 p.
- Gladwin, H. S., 1930, *An outline of southwestern pre-history*: Arizona Historical Review, v. 3, p. 71–87.
- Glassmire, S. H., Jr., 1956, *Economic and engineering aspects of mica and associated minerals of certain areas in north central New Mexico*: New Mexico Economic Development Committee, Santa Fe, 26 p., 3 figs.
- Glennie, K. W., 1970, *Desert sedimentary environments*: Amsterdam, Holland, Elsevier Publishing Company, 222 p.
- Goddard, E. N., 1966, *Geologic map and sections of the Zuni Mountains fluorspar district, Valencia County, New Mexico*: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-454.
- Goddard, E. N., chairman, and others, 1948, *Rock-color chart*: Washington, National Research Council [reprinted by Geological Society of America, 1951], 6 p.
- Goetz, A. F. H., Billingsley, F. C., Elston, D. P., Lucchitta, I., and Shoemaker, E. M., 1974, *Applications of ERTS and EREP images to geologic investigations of the Basin and Range; Colorado Plateau boundary in northwestern and north-central Arizona*: California Institute of Technology, Pasadena, Jet Propulsion Laboratory and NASA Earth Resources Survey Program, 10 p.
- Goetz, A. F. H., Billingsley, F. C., Gillespie, A. R., Abrams, M. J., and Squires, R. L., 1975, *Application of ERTS images and image processing to regional geologic problems and geologic mapping in northern Arizona*: California Institute of Technology, Pasadena, Jet Propulsion Laboratory Technical Report 32-1597, 203 p.
- Goetz, A. F. H., Billingsley, F. C., Gillespie, A. R., Abrams, M. J., Squires, R. L., Shoemaker, E. M., Lucchitta, I., and Elston, D. P., 1975, *Application of ERTS images and image processing to regional geologic problems and geologic mapping in northern Arizona*: California Institute of Technology, Pasadena, Jet Propulsion

- Laboratory Technical Report 32-1597, 188 p.
- Goldman, M. I., and Spencer, A. C., 1941, Correlation of Cross' La Plata Sandstone, southwestern Colorado: *American Association of Petroleum Geologists Bulletin*, v. 25, no. 9, p. 1745-1767.
- Goldstein, E. H., 1957, Geology of the Dakota Formation uraninite deposit near Morrison, Colorado: *Economic Geology*, v. 52, no. 7, p. 775-785, 4 figs.
- Gordon, C. H., 1907, Mississippian (lower Carboniferous) Formations in the Rio Grande valley, New Mexico: *American Journal of Science*, ser. 4, v. 24, p. 58-64.
- Gordon, E. D., 1961, Geology and ground-water resources of the Grants-Bluewater area, Valencia County, New Mexico: *New Mexico State Engineer Technical Report 20*, 109 p., 14 figs.
- Gorham, F. D., Jr., 1975, Tectogenesis of the central Colorado Plateau aulacogen, in *Guidebook to canyonlands country: Four Corners Geological Society, 8th Field Conference*, p. 211-216.
- Gorham, F. D., Woodward, L. A., Callender, J. F., and Greer, A. R., 1977, Fracture permeability in Cretaceous rocks of the San Juan Basin, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 235-241, 4 figs.
- Gorman, F. D., Jr., 1975, Tectogenesis of the central Colorado Plateau aulacogen, in *Guidebook to canyonlands: Four Corners Geological Society, 8th Field Conference*, p. 211-216, 4 figs.
- Gott, G. B., and Erickson, R. L., 1952, Reconnaissance of uranium and copper deposits in parts of New Mexico, Colorado, Utah, Idaho, and Wyoming: *U.S. Geological Survey Circular 219*, 16 p.
- Gottesfeld, A. S., 1972a, Paleogeology of the lower part of the Chinle Formation in the Petrified Forest, in *Investigations in the Triassic Chinle Formation: Museum of Northern Arizona, Flagstaff, Bulletin 47*, p. 59-74, 7 figs.
- 1972b, Palynology of the Chinle Formation, in *Preliminary research in the Triassic Chinle Formation: Museum of Northern Arizona, Flagstaff, Bulletin 47, supplement*, p. 13-18.
- Gould, C. N., 1938, Second geological report on Chaco Canyon National Monument: *Southwestern Monuments Report*, April supplement, p. 374-377.
- Gould, W. L., Howard, V. W., and Buchanan, B. A., 1972, Biotic composition and soil characteristics of an area to be strip mined in San Juan County by El Paso Natural Gas Co.: *New Mexico State University, Las Cruces, Agricultural Experiment Station Special Report 24*.
- Gould, W. L., Rai, Dhanpat, and Wierenga, P. J., 1975, Problems in reclamation of coal mine spoils in New Mexico, in *Practices and problems of land reclamation in western North America: Grand Forks, University of North Dakota Press*, p. 107-121.
- Gould, W. L., Smith, R. B., Metzger, S. P., and Melancon, P. E., 1963, Geology of the Homestake-Sapin uranium deposits, Ambrosia Lake area, in *Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15*, p. 66-71, 3 figs.
- Gram, H. F., 1976, Impact of safe drinking water act on New Mexico, in *Proceedings Twenty-first Annual New Mexico Water Conference: New Mexico Water Resources Research Institute Report 072*, p. 116-121.
- Granger, H. C., 1959, Ambrosia Lake area, New Mexico, in *Geologic investigations of radioactive deposits—semiannual progress report, December 1, 1958 to May 31, 1959: U.S. Geological Survey Trace Element Investigations Report TEI-751*, p. 661-71.
- 1960, Pitchblende identified in a sandstone-type uranium deposit in the central part of the Ambrosia Lake district, New Mexico, in *Geological Survey research*

- 1960: U.S. Geological Survey Professional Paper 400-B, p. 54-55.
- 1962, Clays in the Morrison Formation and their special relation to the uranium deposits at Ambrosia Lake, New Mexico, in *Geological Survey research 1962*: U.S. Geological Survey Professional Paper 450-D, p. 15-20.
- 1963a, *Mineralogy*, in *Geology and technology in the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 21-37.
- 1963b, Radium migration and its effect on the apparent age of uranium deposits of Ambrosia Lake, New Mexico, in *Short papers in geology*: U.S. Geological Survey Professional Paper 475-B, p. 60-63.
- 1968, Localization and control of uranium deposits in the southern San Juan Basin mineral belt—an hypothesis, in *Short papers in geology*: U.S. Geological Survey Professional Paper 600-B, p. 60-70.
- Granger, H. C., and Ingram, B. L., 1966, Occurrence and identification of jordisite at Ambrosia Lake, New Mexico, in *Short papers in geology*: U.S. Geological Survey Paper 550-B, p. 120-124.
- Granger, H. C., and Santos, E. S., 1963, An ore-bearing cylindrical collapse structure in the Ambrosia Lake uranium district, New Mexico, in *Short papers in geology*: U.S. Geological Survey Professional Paper 475-C, p. 156-161.
- Granger, H. C., Santos, E. S., Dean, B. G., and Moore, F. B., 1959, Ambrosia Lake area, New Mexico, in *Geologic investigations of radioactive deposits, semiannual progress report, June 1 to November 30, 1959*: U.S. Geological Survey Trace Element Investigations Report TEI-752, p. 22-30.
- 1961, Sandstone-type uranium deposits at Ambrosia Lake, New Mexico—an interim report: *Economic Geology*, v. 56, no. 7, p. 1179-1210, 8 figs.
- Granger, Walter, 1914, On the names of lower Eocene faunal horizons of Wyoming and New Mexico: *American Museum of Natural History Bulletin*, v. 33, p. 821-830.
- 1915, A revision of the lower Eocene Wasatch and Wind River faunas, Part III—order Condylarthra, families Phenacodontidae and Meniscotheriidae: *American Museum of Natural History Bulletin* v. 34, p. 329-361.
- Grant, Keith, 1974, The Dakota Sandstone (Cretaceous) in the southern part of the Chama Basin, New Mexico: University of Kentucky, Bowling Green, unpublished M.S. thesis.
- Grant, Keith, and Owen, D. E., 1974, The Dakota Sandstone (Cretaceous) of the southern part of the Chama Basin, New Mexico—a preliminary report on its stratigraphy, paleontology, and sedimentology, in *Guidebook to Ghost Ranch (central-northern New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 239-249, 18 figs.
- Grant, P. R., Jr., 1975, ENERGYtic New Mexico...the power state: Albuquerque Industrial Development Service, Inc. and Industrial Foundation of Albuquerque, Inc., 5 figs.
- 1977, ENERGYtic New Mexico...the power state, Second Edition: Albuquerque Industrial Development Service, Inc. and Industrial Foundation of Albuquerque, Inc., 105 p. 11 figs.
- Gray, B. F., Jr. 1958a, API group gets a story of Four Corners geology, exploration outlook—Part 1: *Petroleum World and Oil*, v. 55, no. 12, p. 6 and 8.
- 1958b, API group gets story of Four Corners geology, exploration outlook—Part 2: *Petroleum World and Oil*, v. 55, no. 13, p. 10 and 13.
- 1958c, API group gets story of Four Corners geology, exploration outlook [revised]: *World Oil*, v. 146, no. 5, p. 130 and 132-134.
- Gray, J. R., and Stucky, H. R., eds., 1971, *New Mexico agriculture 1970*: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 195, 44 p., 1 fig.
- Green, M. W., 1971, Geologic map of the Continental Divide quadrangle, McKinley

- County, New Mexico: U.S. Geological Survey Open-File Map.
- 1974, The Iyanbito Member (a new stratigraphic unit) of the Jurassic Entrada Sandstone, Gallup-Grants area, New Mexico: U.S. Geological Survey Bulletin 1395-D, 12 p.
- 1975, Paleodepositional units in upper Jurassic rocks in the Gallup-Laguna uranium area, New Mexico: U.S. Geological Survey Open-File Report 75-610, 13 p., 2 figs.
- Green, M. W., and Jackson, T. J., 1975a, Geologic map of the Church Rock quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 75-258.
- 1975b, Geologic map of the Mariano Lake quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 75-261.
- 1976, Geologic and structure contour maps of the Gallup East quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 76-453.
- Green, M. W., and Pierson, C. T., 1971, Geologic map of the Thoreau NE quadrangle, McKinley County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-954.
- 1977, A summary of the stratigraphy and depositional environments of Jurassic and related rocks in the San Juan Basin, Arizona, Colorado and New Mexico, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 147-152, 1 fig.
- Gregory, E. J., and Hanson, E. G., 1976, Predicting consumptive use with climatological data: New Mexico Water Resources Research Institute Report 066, 43 p., 2 figs.
- Gregory, H. E., 1910, Some features of the geology of the Navajo Reservation (Arizona-Utah) [abs.]: *Science*, new ser., v. 32, p. 62.
- 1911, The San Juan Oil Field, San Juan County, Utah: U.S. Geological Survey Bulletin 431-A, p. 11-25.
- 1913a, Preliminary geologic map of the Navajo-Moki Reservation [abs.]: *Geological Society of America Bulletin*, v. 24, no. 12, p. 680.
- 1913b, The Shinarump conglomerate [abs.]: *Geological Society of America Bulletin*, v. 24, no. 12, p. 679-680.
- 1913c, The Shinarump conglomerate: *American Journal of Science*, 4th ser., v. 35, p. 424-438.
- 1914, A reconnaissance of a portion of the Little Colorado Valley, Arizona: *American Journal of Science*, 4th ser., v. 38, p. 491-501.
- 1915a, The Navajo country (Arizona): *American Geographic Society Bulletin* 47, p. 561-577.
- 1915b, The igneous origin of the "glacial deposits" on the Navajo Reservation, Arizona and Utah: *American Journal of Science*, 4th ser., v. 40, p. 97-115.
- 1916a, Garnet deposits on the Navajo Reservation, Arizona and Utah: *Economic Geology*, v. 11, p. 223-230.
- 1916b, The Navajo country—a geographic and hydrographic reconnaissance of parts of Arizona, New Mexico, and Utah: U.S. Geological Survey Water-Supply Paper 380, 219 p.
- 1916c, The ruins and ancient inhabitants of Chaco Canyon, in *The Navajo country*: U.S. Geological Survey Water-Supply Paper 380, p. 148-149.
- 1917a, Geology of the Navajo country: U.S. Geological Survey Professional Paper 93, 161 p.
- 1917b, The Navajo country—a geographic and hydrographic reconnaissance of parts of Arizona, New Mexico, and Utah [abs.]: *Washington Academy of Science Journal*, v. 7, p. 132.
- 1918, Geology of the Navajo country [abs.]: *Washington Academy of Science Journal*, v. 8, p. 64-65.

- 1938, The San Juan country—a geographic and geologic reconnaissance of southeastern Utah, *with contributions by M. R. Thorpe and H. D. Miser*: U.S. Geological Survey Professional Paper 188, 123 p.
- 1947, Colorado drainage basin: *American Journal of Science*, v. 245, no. 11, p. 694–705.
- 1951, The geology and geography of the Paunsaugunt region, Utah: U.S. Geological Survey Professional Paper 226, 116 p.
- Gregory, H. E., and Campbell, M. R., 1911, The Black Mesa coal field, Arizona, *in Contributions to economic geology, 1909, pt. II*: U.S. Geological Survey Bulletin 431, p. 229–238.
- Gregory, H. E., and Moore, R. C., 1931, The Kaiparowits region—a geographic and geologic reconnaissance of parts of Utah and Arizona: U.S. Geological Survey Professional Paper 164, 161 p.
- Griffiths, J. C., 1954, An investigation into the application of quantitative analysis of sediments in the exploration for uranium ore (Colorado Plateau): U.S. Atomic Energy Commission Report RME-3088, p. 1–4.
- Griffiths, T. M., 1957, Mountains of ash (Colorado): *Natural History*, v. 66, no. 9, p. 472–477.
- Griggs, R. L., 1948, Ground-water resources near Toadlena, New Mexico: U.S. Geological Survey Open-File Report, 9 p.
- Grinnell, R. N., 1952, Physical characteristics of the Kirtland Formation, Cretaceous, in the northwest portion of the San Juan Basin: University of Illinois, Champaign, unpublished M.S. thesis.
- Grose, L. T., Hileman, D. H., and Ward, A. E., 1967, Coal resources of southwest Utah: U.S. Bureau of Mines Information Circular IC 8326, 77 p.
- Gross, E. B., 1956, Mineralogy and paragenesis of the uranium ore, Mi Vida mine, San Juan County, Utah: *Economic Geology*, v. 51, no. 7, p. 632–648, 22 figs.
- Gruner, J. W., 1953a, Primary and secondary sources of uranium in the Colorado Plateau: U.S. Atomic Energy Commission Report RME-3044, p. 36–40.
- 1953b, Syngenetic versus hydrothermal hypothesis for the origin of uranium deposits of the Colorado Plateau: U.S. Atomic Energy Commission Report RME-3044, pt. 6, p. 41–58.
- 1954a, The origin of the uranium deposits of the Colorado Plateau and adjacent regions: *Mines Magazine*, v. 44, no. 3, p. 53–56.
- 1954b, The problem of the primary ores of the Colorado Plateau, *in Annual report for April 1, 1953 to March 31, 1954*: U.S. Atomic Energy Commission Report RME-3094, pt. 4, p. 31–32.
- 1954c, The uranium mineralogy of the Colorado Plateau and adjacent region, *in Guidebook to the uranium deposits and general geology of southeastern Utah*: Utah Geological Society, *Geology of Utah*, no. 9, p. 70–77.
- 1955, A comparison of four important areas of black uranium ore mineralization in Utah, New Mexico and Wyoming in the Chinle, including Shinarump, Brushy Basin (Morrison), and Wind River Formations, *in Annual report for April 1, 1954 to May 31, 1955*: U.S. Atomic Energy Commission Report RME-3020, p. 6–15.
- 1956a, A comparison of black uranium ore deposits in Utah, New Mexico, and Wyoming, *in Contributions to the geology of uranium and thorium*: U.S. Geological Survey Professional Paper 300, p. 203–205.
- 1956b, Mineral associations in the continental-type uranium deposits of the Colorado Plateau and adjacent areas, *in Geology and economic deposits of east-central, Utah*: Intermountain Association of Petroleum Geologists, 7th Field Conference, p. 151–154.
- Gruner, J. W., and Gardiner, Lynn, 1951, A preliminary report on the geology, mineralogy and origin of the uranium deposits of the Grants district, McKinley and

- Valencia Counties, New Mexico, in Annual report for July 1, 1950 to June 30, 1951: U.S. Atomic Energy Commission Report RMO-771, pt. 1, p. 1-20.
- 1952, Mineral associations in the uranium deposits of the Colorado Plateau and adjacent regions with special emphasis on those in the Shinarump Formation, in Annual report July 1, 1951 to June 30, 1952: U.S. Atomic Energy Commission Report RMO-566, pt. 3, 40 p.
- Gruner, J. W., Gardiner, Lynn, and Smith, D. K., Jr., 1954, Mineral associations in the uranium deposits of the Colorado Plateau and adjacent regions, interim report: U.S. Atomic Energy Commission Report RME-3092, 48 p.
- Gruner, J. W., and Knox, J. A., 1957, Minerals identified from properties in Arizona, Colorado, Montana, New Mexico, South Dakota, Texas, Utah, and Wyoming, in Annual report April 1, 1956 to March 31, 1957: U.S. Atomic Energy Commission Report RME-3148, pt. 3, p. 35-48.
- Gruner, J. W., and Smith, D. K., Jr., 1955, Some additional determinations of minerals of the Colorado Plateau, in Annual report April 1, 1954 to March 31, 1955: U.S. Atomic Energy Commission Report RME-3020, p. 34-37.
- Gruner, J. W., Towle, C. C., and Gardiner, Lynn, 1951a, Uranium mineralization in Todilto Limestone near Grants, McKinley County, New Mexico [abs.]: *Economic Geology*, v. 46, no. 7, p. 802.
- 1951b, Uranium mineralization in Todilto Limestone near Grants, McKinley County, New Mexico [abs.]: *Geological Society of America Bulletin*, v. 62, no. 12, p. 1445.
- Gruner, J. W., and others, 1954, Mineral associations in the uranium deposits of the Colorado Plateau and adjacent regions—interim report: U.S. Atomic Energy Commission Report RME-3092, 48 p.
- Hack, J. T., 1941, Dunes of the western Navajo country: *American Geographical Society*, New York, *Geographical Review*, v. 31, no. 2, p. 240-263.
- 1942a, The changing environment of the Hopi Indians of Arizona: Peabody Museum of American Archaeology and Ethnology, Harvard University, Cambridge, Massachusetts, *Papers*, v. 35, no. 1, 85 p.
- 1942b, Prehistoric coal mining in the Jeddito Valley, Arizona: Peabody Museum of American Archaeology and Ethnology, Harvard University, Cambridge, Massachusetts, *Papers*, v. 35, no. 2, 24 p.
- 1942c, Sedimentation and volcanism in the Hopi Buttes, Arizona: *Geological Society of America Bulletin*, v. 53, no. 2, p. 335-372.
- Hackman, R. J., 1967a, Photogeologic map of the Laguna-2 quadrangle, McKinley, Sandoval and Valencia Counties, New Mexico: U.S. Geological Survey Open-File Map.
- 1967b, Photogeologic map of the NE, NW, and SE quarters of the Laguna-1 quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Open-File Map.
- 1975, Preliminary photogeologic map of the Cabezon-2, 15-minute quadrangle, McKinley and Sandoval Counties, New Mexico: U.S. Geological Survey Open-File Map 75-541.
- Hackman, R. J., and Olson, A. B., 1977, Geology, structure, and uranium deposits of the Gallup 1° x 2° quadrangle, New Mexico and Arizona: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-981, 2 sheets.
- Hadlock, H. L., 1962, Surface surveys of lithic sites on the Gallegos Wash: *El Palacio*, v. 69, no. 3, p. 174-184.
- Hafenfeld, S. R., and Brookins, D. G., 1975, Mineralogy of uranium deposits northeast of Laguna district, Sandoval County, New Mexico [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 59, no. 5, p. 910-911.
- Hagen, J. C., 1951, The geology of the Green Mountain mine, San Juan County, Col-

- orado: Colorado School of Mines, Golden, unpublished M.S. thesis.
- Hager, Dorsey, 1924a, Stratigraphy, northeast Arizona, southeast Utah: Mining and Oil Bulletin, v. 10, no. 2, p. 135, 137, 139, 167, 1 fig.
- 1924b, Stratigraphy, northeast Arizona, southeast Utah: Mining and Oil Bulletin, v. 10, no. 4, p. 383, 385, 423, 499, 2 figs.
- 1955, Channels, the key to uranium concentrations in the Colorado Plateau area: Uranium, v. 2, no. 9, p. 12–15.
- Hale, W. E., 1962, Availability of ground water in New Mexico: New Mexico State Engineer miscellaneous report [1961], 18 p., 6 figs.
- Hale, W. E., and Ong, K. J., 1967, Quality of water conditions along the San Juan River and principal tributaries in New Mexico: U.S. Geological Survey Open-File Report, 35 p., 17 figs.
- Hale, W. E., Reiland, L. J., and Beverage, J. P., 1965, Characteristics of the water supply in New Mexico: New Mexico State Engineer Technical Report 31, 131 p., 27 figs.
- Hall, S. A., 1975, Stratigraphy and palynology of Quaternary alluvium at Chaco Canyon, New Mexico: University of Michigan, Ann Arbor, unpublished Ph. D. dissertation, 87 p.
- Halpenny, L. C., 1948, Memorandum on location of proposed well at Crown Point, Navajo Indian Reservation, McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 5 p.
- 1949, Todilto Park—little known scenic wonder of New Mexico: U.S. Geological Survey Open-File Report, 4 p.
- 1951a, Preliminary report on the ground-water resources of the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah, in Guidebook to the San Juan Basin, New Mexico, and Arizona: New Mexico Geological Society, 2nd Field Conference, p. 147–154.
- 1951b, Preliminary report on the ground-water resources of the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geological Survey, Ground Water Branch, Holbrook, Arizona, mimeographed circular, 11 p.
- Halpenny, L. C., and Brown, S. C., 1949, Water-supply investigation of Fort Defiance area, Navajo Indian Reservation, Apache County, Arizona, with a section on quality of water by J. D. Hem: U.S. Geological Survey Open-File Report, 13 p.
- Halpenny, L. C., Brown, S. C., and Hem, J. D., 1949, Water-supply investigation of Fort Defiance area, Navajo Indian Reservation, Apache County, Arizona: U.S. Geological Survey, Holbrook, Arizona, mimeographed circular, 11 p.
- Halpenny, L. C., and Harshbarger, J. W., 1950, Water-supply investigation of Sanostee area, Navajo Indian Reservation, San Juan County, New Mexico: U.S. Geological Survey Open-File Report, 26 p., 2 figs.
- Halpenny, L. C., and Whitcomb, H. A., 1949a, Water-supply investigation at Baca School near Prewitt, McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 16 p., 1 fig.
- 1949b, Water-supply investigation at Thoreau, McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 15 p.
- Hampton, O. W., 1955, Methods and cost of uranium exploration and mining on the Colorado Plateau: University of Colorado, Boulder, unpublished M.S. thesis.
- Hanrahan, E. J., Williamson, R. H., and Brown, R. W., 1976, United States uranium requirements: U.S. Energy Research and Development Administration Open-File Report GJO-108(76), p. 51–66.
- Hansen, B. S., and Cushing, E. J., 1973, Identification of pine pollen of late Quaternary age from the Chuska Mountains, New Mexico: Geological Society of America Bulletin, v. 84, no. 4, p. 1181–1200, 10 figs.
- Hansen, G. H., and Bell, M. N., 1949, The oil and gas possibilities of Utah: Salt Lake

- City, Utah Geology and Mineral Survey, 341 p.
- Hanshaw, B. B., and Hill, G. A., 1969, Geochemistry and hydrodynamics of the Paradox Basin region, Utah, Colorado, and New Mexico: *Chemical Geology*, v. 4, no. 1-2, p. 263-294.
- Hardy, E. L., 1939, Precipitation and evaporation, New Mexico: New Mexico State University, Las Cruces, Agricultural Experiment Station Bulletin 269, 68 p.
- 1941, Climate of New Mexico, in *Agriculture yearbook, 1941*: U.S. Department of Agriculture, p. 1011-1024.
- Harmes, J. C., Southard, J. B., Spearing, D. R., and Walker, R. G., 1975, Depositional environments as interpreted from primary sedimentary structures and stratification sequences: Society of Economic Paleontologists and Mineralogists lecture notes, Shore Course 2, Dallas, Texas, April 5, 1975, 161 p.
- Harmon, G. F., and Taylor, P. S., 1963, Geology and ore deposits of the Sandstone mine, southeastern Ambrosia Lake area, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 102-107, 3 figs.
- Harnett, R. A., 1962, Sedimentary petrology of the Gallup Sandstone, San Juan County, New Mexico: University of Utah, Salt Lake City, unpublished M.S. thesis.
- Harrington, E. R., 1943, The Four Corners country: *New Mexico Magazine*, v. 21, no. 7-9, p. 32-33.
- Harris, A. H., 1963, Ecological districts of some vertebrates in the San Juan Basin, New Mexico: Museum of New Mexico, Santa Fe, *Papers in Anthropology*, no. 8, p. 64.
- Harris, J. J., 1952, Hogback oil field, San Juan County, New Mexico, in *Geological symposium of the Four Corners region*: Four Corners Geological Society, p. 83-85, 2 figs.
- Harshbarger, J. W., 1961, Techniques of ground-water development in the Navajo country: Arizona, New Mexico, and Utah, U.S.A., in *Ground water in arid zones*, Symposium of Athens, 1961, v. 2: International Association of Scientific Hydrology Publication 57, p. 657-679.
- Harshbarger, J. W., and Repenning, C. A., 1954, Water resources of the Chuska Mountains area, Navajo Indian Reservation, Arizona and New Mexico, with a section on quality of water, by J. L. Hatchett: U.S. Geological Survey Circular 308, 16 p.
- Harshbarger, J. W., Repenning, C. A., and Callahan, J. T., 1953, The Navajo country, Arizona-Utah New Mexico, in *Subsurface facilities of water management and patterns of supply-type area studies*, part 4 of *The physical and economic foundation of natural resources*: International and Insular Affairs Commission, House Representatives, U.S. Congress, p. 105-131.
- Harshbarger, J. W., Repenning, C. A., and Irwin, J. H., 1957, Stratigraphy of the uppermost Triassic and the Jurassic rocks of the Navajo country: U.S. Geological Survey Professional Paper 291, 74 p., 38 figs.
- 1958, Stratigraphy of the uppermost Triassic and the Jurassic rocks of the Navajo Country, in *Guidebook to Black Mesa Basin*: New Mexico Geological Society, 9th Field Conference, p. 98-114, 9 figs.
- Harshbarger, J. W., Repenning, C. A., and Jackson, R. L., 1951a, Jurassic stratigraphy of the Navajo country, in *Guidebook to the San Juan Basin*, New Mexico and Arizona: New Mexico Geological Society, 2nd Field Conference, p. 95-99.
- 1951b, Jurassic stratigraphy of the Navajo country: U.S. Geological Survey, Holbrook, Arizona, mimeographed circular, 8 p.
- Harwood, R. J., 1977, Oil and gas generation by laboratory pyrolysis of Kerogen: *American Association of Petroleum Geologists Bulletin*, v. 61, no. 12, p. 2082-2102, 20 figs.

- Haskell, N. A., 1938, On shallow-seated folding in massive rocks (San Juan Mountains, Colorado): *Journal of Geology*, v. 46, no. 2, p. 166-176, 6 figs.
- Hatchell, W. O., 1967, A stratigraphic study of the Navajo Sandstone, Navajo Mountain, Utah and Arizona: University of New Mexico, Albuquerque, unpublished M.S. thesis, 181 p., 7 figs.
- Hatfield, K. G., and Maise, C. R., 1954, Geologic reconnaissance of the Defiance Uplift, Apache County, Arizona: U.S. Atomic Energy Commission Report RME-71, 14 p., 2 figs.
- Haun, J. D., 1959, Lower Cretaceous stratigraphy of Colorado, in *Symposium on Cretaceous rocks of Colorado and adjacent areas*: Rocky Mountain Association of Geologists, 11th Field Conference, p. 1-8.
- Haun, J. D., and Kent, H. C., 1965, Geologic history of Rocky Mountain region: *American Association of Petroleum Geological Bulletin*, v. 49, no. 11, p. 1781-1800, 25 figs.
- , 1970, Geologic history of Rocky Mountain region, in *Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region, 1970*: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 1-20, 25 figs.
- Hausen, D. M., 1956, Paragenesis of the Temple Mountain (Utah) uraniferous asphaltites, Emery County, Utah [abs.]: *Geological Society of America Bulletin*, v. 67, no. 12, pt. 2, p. 1795.
- Hawley, F. M., 1937, Reversed stratigraphy: *American Antiquity*, v. 2, no. 4, p. 297-299.
- Hawley, J. W., and Gile, L. H., 1968, Report on Field trip to San Juan County, New Mexico: U.S. Department of Agriculture, Soil Conservation Service Report.
- Hawn, Laurens, 1874, Geological notes made on the Ute reconnaissance during examination of the Animas; report of the reconnaissance in the Ute Country, made in 1873 by Ruffner: U.S. 42nd Congress, 1st Session, House Executive Document, no. 193, p. 66-69.
- Hayes, P. T., and Zapp, A. D., 1955, Geology and fuel resources of the upper Cretaceous rocks of the Barker Dome-Fruitland area, San Juan County, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM-144.
- Haynes, C. V., Jr., 1966, Geochronology of late Quaternary alluvium: University of Arizona, Tucson, Geochronology Laboratories, Interim Research Report 10, 35 p.
- , 1969, Preliminary report on the late Quaternary geology of the San Pedro Valley, Arizona, in *Guidebook to southern Arizona III*: Arizona Geological Society, p. 79-96.
- Hazen, S. W., Jr., 1949, Lead-zinc-silver in the Poughkeepsie district and part of the upper Uncompahgre and Mineral Point districts, Ouray and San Juan Counties, Colorado: U.S. Bureau of Mines Report of Investigations RI 4508, 110 p.
- Hazenbush, G. C., 1973, Stratigraphy and depositional environments of the Mancos Shale (Cretaceous), Black Mesa, Arizona, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau*: Four Corners Geological Society Memoir, p. 57-71, 10 figs.
- Hazlett, G. W., and Kreek, Justin, 1963, Geology and ore deposits of the southeastern part of the Ambrosia Lake area, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 82-89, 6 figs.
- Hearne, G. A., 1977, Evaluation of a potential well field near Church Rock as a water supply for Gallup, New Mexico: U.S. Geological Survey Water-Resources Investigations 77-98, 21 p., 3 figs.
- Heede, B. H., 1967, The fusion of discontinuous gullies—A case study: *International Association of Scientific Hydrology Bulletin*, v. 12, no. 3, p. 42-50.
- Hemphill, W. R., 1967, Photogeologic map of the east half of the Laguna-4 quadrangle,

- Bernalillo, Sandoval and Valencia Counties, New Mexico: U.S. Geological Survey Open-File Map.
- Henbest, L. G., and Read, C. B., 1944, Stratigraphic distribution of the Pennsylvanian fusulinidae in part of the Sierra Nacimiento of Sandoval and Rio Arriba Counties, New Mexico: U.S. Geological Survey Preliminary Chart 2.
- Henderson, D. C., and Sorensen, E. F., 1968, Consumptive irrigation requirements of selected irrigated areas in New Mexico: New Mexico State University, Las Cruces, Agricultural Experiment Station Bulletin 531, 55 p.
- Henderson, Junius, 1931, Molluscan provinces of the western United States: University of Colorado, Boulder, Studies, v. 18, no. 4, p. 177-186, 1 fig.
- Hendricks, T. A., 1930, Some details of the sedimentation of the Mesaverde Formation on the south end of the San Juan Basin, New Mexico: U.S. Geological Survey Open-File Report, 14 p.
- 1931a, Some details of sedimentation of Mesaverde Formation on the south side of the San Juan Basin, New Mexico [abs.]: University of Colorado, Boulder, Studies, v. 19, no. 1, p. 33.
- 1931b, Some details of the sedimentation of the Mesaverde Formation on the south end of the San Juan Basin, New Mexico: University of Colorado, Boulder, unpublished M.S. thesis.
- Henkle, W. R., Hauge, R. E., and Zimmerman, R., 1975, Pinchouts, intertonguing, and related seam correlations in Fruitland Formation, Fruitland-Burnham, New Mexico [abs.]: American Association of Petroleum Geologists Bulletin, v. 59, no. 5, p. 911.
- Herman, George, and Barkell, C. A., 1957, Pennsylvanian stratigraphy and productive zones, Paradox Salt Basin: American Association of Petroleum Geologists Bulletin, v. 41, no. 5, p. 861-881, 9 figs.
- Hernandez, J. W., 1967a, Proposed water-quality standards for the San Juan River, La Plata River, and Animas River in New Mexico: New Mexico State University, Las Cruces, Engineering Experiment Station, 40 p.
- 1967b, Proposed water-quality standards for the San Juan River, La Plata River, and Animas River in New Mexico: New Mexico State University, Las Cruces, Engineering Experiment Station, 17 p.
- 1968, New Mexico municipal, domestic, and industrial water supply demands, 1968-2068, in Proceedings of Thirteenth Annual New Mexico Water Conference: New Mexico State University, Las Cruces, p. 112-122.
- Hess, F. L., 1922a, Review of radium, uranium, and vanadium deposits of southwestern Colorado, by R. C. Coffin and others, in Colorado Geological Survey Bulletin 16, 1921: Economic Geology, v. 17, no. 16, p. 506-511.
- 1922b, Uranium-bearing asphaltite sediments of Utah: Engineering and Mining Journal, v. 144, p. 272-276.
- Hetland, D. L., 1976, Discussion of the preliminary NURE report and potential resources: U.S. Energy Research and Development Administration Open-File Report GJO-108(76), p. 91-127.
- Hewett, E. L., 1905, Prehistoric irrigation in the Navajo desert: Records of the Past Expedition Society, Washington, D.C., v. 4, p. 323-329.
- Hewett, N. S., 1977, The prehistory of the San Juan Basin, in Guidebook to San Juan Basin III: New Mexico Geological Society 28th Field Conference, p. 65-75, 1 fig.
- Heylman, E. B., Jr., 1958, Oil and gas possibilities around the laccolithic type intrusions in the Colorado Plateau, in Guidebook to geology of Paradox Basin: Intermountain Association of Petroleum Geologists, 9th Field Conference, p. 238-240.
- Hiatt, W. E., 1953, The analysis of precipitation data, in Subsurface facilities of water management and patterns of supply—type area studies, part 4 of the physical and economic foundation of natural resources: International and Insular Affairs

- Commission, House Representatives, U.S. Congress, p. 186–206.
- High, L. R., Jr., and Picard, M. D., 1974, Reliability of cross-stratification types as paleocurrent indicators in fluvial rocks: *Journal of Sedimentary Petrology*, v. 44, no. 1, p. 158–168.
- Hills, R. C., 1882, Jura-Trias of southwestern Colorado: *American Journal of Science*, 3rd ser., v. 23, p. 243–244.
- 1884, Extinct glaciers of the San Juan Mountains: *American Journal of Science*, 3rd ser., v. 27, p. 391–396.
- 1885, Extinct glaciers of the San Juan Mountains: *Colorado Scientific Society, Denver, Proceedings*, v. 1, p. 39–46.
- 1895, Types of past eruptions in the Rocky Mountains: *Colorado Scientific Society, Denver, Proceedings*, v. 4, p. 14–32.
- 1898, The Costilla meteorite, New Mexico: *Colorado Scientific Society, Denver, Proceedings*, v. 5, p. 121–122.
- Hilpert, L. S., 1961, Structural control of epigenetic uranium deposits in carbonate rocks of northwestern New Mexico, in *Geological Survey research*, 1961: U.S. Geological Survey Professional Paper 424-B, p. 5–8, 1 fig.
- 1963, Regional and local stratigraphy of uranium-bearing rocks, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 6–18, 2 figs.
- 1969, Uranium resources of northwestern New Mexico: U.S. Geological Survey Professional Paper 603, 166 p., 20 figs.
- Hilpert, L. S., and Corey, A. F., 1957, Northwest New Mexico, in *Geologic investigations of radioactive deposits—semiannual progress report*, December 1, 1956 to May 31, 1957: U.S. Geological Survey Trace Element Investigations Report TEL-690, book 2, p. 366–381, 7 figs.
- Hilpert, L. S., and Freeman, V. L., 1956, Guides to uranium deposits in the Morrison Formation, Gallup-Laguna area, New Mexico, in *Contributions to the geology of uranium and thorium*: U.S. Geological Survey Professional Paper 300, p. 299–302, 3 figs.
- Hilpert, L. S., and Moench, R. H., 1958, Uranium deposits of the southern part of the San Juan Basin, New Mexico, in *Peaceful uses of atomic energy*: U.N. International Conference, Geneva, Switzerland, 2nd Proceeding, v. 2, p. 527–538.
- 1960, Uranium deposits of the southern part of the San Juan Basin, New Mexico: *Economic Geology*, v. 55, no. 3, p. 429–464.
- Hinds, J. S., 1964, Btu values of Fruitland Formation coal deposits in Colorado and New Mexico, as determined from rotary-drill cuttings, in *Geological Survey research*, 1964: U.S. Geological Survey Professional Paper 501-D, p. 90.
- 1966, Geologic map of the Johnson Trading Post quadrangle, Sandoval County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-591.
- Hinson, H. H., 1947a, Reservoir characteristics of Rattlesnake oil and gas field, San Juan County, New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 31, no. 4, p. 731–771, 12 figs.
- 1947b, Reservoir characteristics of Rattlesnake oil and gas field, San Juan County, New Mexico: Texas Technical University, Lubbock, unpublished M.S. thesis.
- Hiss, W. L., 1975, Evaluation and proposed study of potential ground-water supplies, Gallup area, New Mexico: U.S. Geological Survey Open-File Report 75-522, 153 p., 4 figs.
- 1977a, Scenes from the past—IV, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 57–64.
- 1977b, Uranium mine waste water—A potential source of ground-water in northwestern New Mexico: U.S. Geological Survey Open-File Report 77-625, 10

- p., 2 figs.
- 1977c, Uranium mine waste water—a potential source of ground-water in northwestern New Mexico, *in* Supplemental articles to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 49–53, 2 figs.
- Hiss, W. L., and Marshall, J. G., 1975, Ray-1 well, city of Gallup, McKinley County, New Mexico: U.S. Geological Survey Open-File Report 75–573, 58 p., 3 figs.
- Hiss, W. L., and Shomaker, J. W., compilers, 1974, Papers presented at Energy Crisis Symposium, Albuquerque, New Mexico, 1973: New Mexico Bureau of Mines and Mineral Resources Circular 140, 107 p., 63 figs.
- Hite, R. J., 1960, Stratigraphy of the saline faces of the Paradox Member of the Hermosa Formation of southeastern Utah and southwestern Colorado, *in* Guidebook on geology of Paradox Basin fold and fault belt: Four Corners Geological Society, 3rd Field Conference, p. 86–89.
- 1961, Potash-bearing evaporite cycles in the salt anticlines of the Paradox Basin, *in* Short papers in the geological and hydrologic sciences: U.S. Geological Survey Professional Paper 424–D, p. D–135–D–138, 3 figs.
- 1975, An unusual northeast-trending fracture zone and its relations to basement wrench faulting in northern Paradox Basin, Utah and Colorado, *in* Guidebook to canyonlands country: Four Corners Geological Society, 8th Field Conference, p. 217–223.
- Hoffer, R. M., 1974, An interdisciplinary analysis of Colorado Rocky Mountain environments using ADP techniques, Purdue University, Lafayette, Indiana, Laboratory for Applications of Remote Sensing and NASA Earth Resources Survey Program, 125 p.
- Hohne, F. C., 1963, Production geology methods at the Kermac mines, *in* Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 247–255, 7 figs.
- Hollander, J. T., 1954, Possible flow of water between Rito Resumidera and Poleo Canyon Spring, Rio Arriba County, New Mexico: New Mexico State Engineer Technical Report 2, 18 p. 2 figs.
- Hollenshead, C. T., and Pritchard, R. L., 1961, Geometry of producing Mesaverde Sandstones, San Juan Basin, *in* Geometry of sandstone bodies: American Association of Petroleum Geologists, Research Committee Symposium, Atlantic City, New Jersey, p. 98–118, 15 figs.
- Holmes, W. H., 1877, Geological report on the San Juan district, *in* Ninth Annual Report, 1882–1883: U.S. Geological Survey, p. 237–276.
- Holzle, A. F., 1960, Photogeologic map of the Cabezon-3 quadrangle, McKinley and Sandoval Counties, New Mexico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I–317.
- Hood, J. W., and Kister, L. R., 1960, Saline-water resources of New Mexico: U.S. Geological Survey Water-Supply Paper 1601, 67 p. 5 figs.
- Hook, S. C., and Cobban, W. A., 1977, *Pycnodonte Newberryi* (Stanton)—common guide fossil in upper Cretaceous of New Mexico, *in* Annual report, July 1, 1976 to June 30, 1977: New Mexico Bureau of Mines and Mineral Resources, p. 48–54, 5 figs.
- Hoover, W. B., 1950, Jurassic Formations of parts of Utah, Colorado, Arizona, and New Mexico, *in* Guidebook to San Juan Basin: New Mexico Geological Society, 1st Field Conference, p. 76–81, 2 figs.
- 1952, Regional structure of the Four Corners area, *in* Geological symposium of Four Corners region: Four Corners Geological Society, p. 10–21, 49 figs.
- Hopkins, T. C., 1910, Glacial erosion in the San Juan Mountains, Colorado: Wyoming Historic Geological Society Proceedings, v. 11, p. 31–44.
- Hoskins, W. G., 1963, Geology of the Black Jack no. 2 mine, Smith Lake area, *in*

- Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 49–52, 4 figs.
- Howe, Ernest, 1904, An occurrence of Greenstone schists in the San Juan Mountains, Colorado: *Journal of Geology*, v. 12, p. 501–509.
- 1905, Geology of the Ouray district, Colorado, in *Contributions to economic geology 1904*: U.S. Geological Survey Bulletin 260, p. 51–54.
- 1909, Landslides in the San Juan Mountains, Colorado, including a consideration of their causes and their classification: U.S. Geological Survey Professional Paper 67, 58 p.
- Howe, Ernest, and Cross, C. W., 1905a, Description of the Needle Mountains quadrangle, Colorado: U.S. Geological Survey Atlas Folio 131, 13 p.
- 1905b, Description of the Silverton quadrangle, Colorado: U.S. Geological Survey Atlas Folio 120, 34 p.
- 1905c, Red beds of southwestern Colorado and their correlation [abs.]: *Science*, new ser. 21, p. 349.
- 1905d, Red beds of southwestern Colorado and their correlation: *Geological Society of America Bulletin*, v. 16, p. 447–498.
- 1906a, Glacial phenomena of the San Juan Mountains [abs.]: *Science*, new ser. 23, p. 306–307.
- 1906b, Glacial phenomena of the San Juan Mountains: *Geological Society of America Bulletin*, v. 17, p. 251–274.
- 1907, Description of the Ouray quadrangle, Colorado: U.S. Geological Survey Atlas Folio 153, 20 p.
- Howell, E. E., 1875, Report on the geology of portions of Utah, Nevada, Arizona, and New Mexico: U.S. Geographical and Geological Surveys, West 100th Meridian, v. 3, p. 227–301.
- Howell, J. V., ed., 1948, Structure of typical American oil fields, a symposium on the relation of oil accumulation to structure: *American Association of Petroleum Geologists, Alexander Watts McCoy Memorial Volume*, 516 p.
- Hudson, J. D., 1971, Ground-water levels in New Mexico, 1969: *New Mexico State Engineer Basic-Data Report*, 74 p., 31 figs.
- 1974, Ground-water levels in New Mexico, 1971: *New Mexico State Engineer Basic-Data Report*, 73 p., 31 figs.
- 1975a, Ground-water levels in New Mexico, 1972: *New Mexico State Engineer Basic-Data Report*, 72 p., 32 figs.
- 1975b, Ground-water levels in New Mexico, 1973: *New Mexico State Engineer Basic-Data Report*, 99 p., 32 figs.
- 1976, Ground-water levels in New Mexico, 1975: *New Mexico State Engineer Basic-Data Report*, 128 p., 33 figs.
- Hudson, J. D., and Borton, R. L., 1974, Ground-water levels in New Mexico, 1970, and changes in water levels, 1966–1970; with a section on irrigated cropland acreage in New Mexico, 1970, by E. F. Sorensen: *New Mexico State Engineer Technical Report 39*, 123 p., 53 figs.
- Huffman, A. C., Jr., 1976, Preliminary geologic map of the Sand Spring quadrangle, San Juan County, New Mexico: U.S. Geological Survey Open-File Map 76–408.
- 1977, Preliminary geologic map of the Red Rock Valley NE quadrangle, Apache County, Arizona, and San Juan County, New Mexico: U.S. Geological Survey Open-File Map 77–227.
- Huffman, A. C., Jr., and Lupe, R. D., 1977, Influences of structure on Jurassic depositional patterns and uranium occurrences, northwestern New Mexico, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 277–283, 5 figs.
- Huffman, R. E., 1958, Preliminary report on agricultural use of San Juan water for

- New Mexico: New Mexico State University, Las Cruces, Agricultural Experiment Station, Water Resource Project.
- Humphrey, R. R., 1955, Coconino, Navajo, Apache Counties—a study in range condition, pt. 4 of Forage production on Arizona ranges: University of Arizona, Tucson, Agricultural Experiment Station Bulletin 266, 84 p.
- Hunt, C. B., 1932, The junction of three orogenic types of New Mexico [abs.]: Washington Academy of Science Journal, v. 22, no. 11, p. 315–316.
- 1934, Tertiary structural history of part of northwest New Mexico [abs.]: Washington Academy of Science Journal, v. 24, no. 4, p. 188–189.
- 1936, The Mount Taylor coal field, in *The geology of fuels in the southern part of the San Juan Basin, New Mexico*: U.S. Geological Survey Bulletin 860–B, p. 31–80, 2 figs.
- 1938a, Igneous geology and structure of the Mount Taylor volcanic field, New Mexico: U.S. Geological Survey Professional Paper 189–B, p. 51–80, 13 figs.
- 1938b, Rock-structures associated with some ancient volcanoes: American Geophysical Union Transactions, 19th Annual Meeting, part 1, p. 32–43, 1 fig.
- 1942, New interpretations of some laccolithic mountains and its possible bearing on structural traps for gas and oil: American Association of Petroleum Geologists Bulletin, v. 26, no. 2, p. 197–203.
- 1948a, Geology and fuel resources of the southern part of the San Juan Basin, Rio Arriba County, New Mexico: U.S. Geological Survey Oil and Gas Preliminary Investigations Map 78.
- 1948b, Some geological aspects of the problems of soil genesis and soil classification, in *Proceedings: Second International Conference on Soil Mechanics and Foundational Engineering, Rotterdam, Holland*, v. 3, p. 6–7.
- 1953, Structural history and igneous geology, Cenozoic studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI–280, p. 20–23.
- 1954, Desert varnish: *Science*, v. 120, no. 3109, p. 183–184.
- 1955a, Radiocarbon dating in the light of stratigraphy and weathering processes: *Science Monthly*, v. 81, no. 5, p. 240–247.
- 1955b, Recent geology of Cane Wash, Monument Valley, Arizona: *Science*, v. 122, no. 3170, p. 583–585.
- 1956, Cenozoic geology of the Colorado Plateau: U.S. Geological Survey Professional Paper 279, 99 p.
- Hunt, C. B., Averitt, Paul, and Miller, R. L., 1953, Geology and geography of the Henry Mountains region, Utah: U.S. Geological Survey Professional Paper 228, 234 p.
- Hunt, C. B., and Dane, C. H., 1933, Preliminary map showing geologic structure of the southern part of the San Juan Basin, New Mexico, including parts of San Juan, McKinley, Sandoval, Valencia, and Bernalillo Counties: U.S. Geological Survey Preliminary Map.
- 1954, Map showing geologic structure of the southern part of the San Juan Basin, including parts of San Juan, McKinley, Sandoval, Valencia, and Bernalillo Counties, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM–158.
- Huntington, Ellsworth, 1914a, Climate changes and population in Chaco Canyon, in *The climatic factor as illustrated in arid America*: Carnegie Institute of Washington Publication 192, p. 75–82.
- 1914b, *The climatic factor as illustrated in arid America*: Carnegie Institute of Washington Publication 192, 341 p.
- Hurley, D. B., and Crew, M. E., 1953, Some aspects of diamond drilling by the Atomic Energy Commission on the Colorado Plateau: U.S. Atomic Energy Commission Report RME–56, 10 p.

- Hurst, M. E., 1922, Rock alteration and ore depositions at Telluride, Colorado: *Economic Geology*, v. 17, no. 8, p. 675-702.
- Hutchinson, E. C., and Brogden, R. E., 1976, Water-quality data for the southern Ute Indian Reservation, southwestern Colorado: U.S. Geological Survey Open-File Report 76-16, 36 p., 2 figs.
- Huttle, J. B., 1958, U_3O_8 production now under way at Ambrosia Lake district: *Engineering and Mining Journal*, v. 159, no. 7, p. 87-92.
- Hyatt, M. L., Riley, J. P., McKee, M. L., and Israelsen, E. K., 1970, Computer simulation of the hydrologic-salinity flow system within the upper Colorado River Basin: Utah Water Research Laboratory, Logan, Report PRWG-54-1, 263 p.
- Hynds, J. S., 1960, Controls on Paradox salt deposition in the area of Comb Monocline, San Juan County, Utah: University of New Mexico, Albuquerque, unpublished M.S. thesis, 36 p., 13 figs.
- Iorns, W. V., Hembree, C. H., and Oakland, G. L., 1965, Introduction and summary—water resources of the upper Colorado River Basin technical report: U.S. Geological Survey Professional Paper 441-A, 370 p., 16 figs.
- Irving, J. D., 1905, Ore deposits of the Ouray district, Colorado, in *Contributions to economic geology 1904*: U.S. Geological Survey Bulletin 260, p. 50-77, 4 figs.
- Irwin, C. D., Jr., 1963, Producing carbonate reservoirs in the Four Corners area, in *Guidebook to shelf carbonates of the Paradox Basin: Four Corners Geological Society, 4th Field Conference*, p. 144-148, 5 figs.
- Irwin, J. H., 1966, Geology and availability of ground water on the Ute Mountain Indian Reservation, Colorado and New Mexico: U.S. Geological Survey Water-Supply Paper 1576-G, 109 p., 14 figs.
- Irwin, J. H., Akers, J. P., and Cooley, M. E., 1962, Geology of the Leupp quadrangle, Arizona: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-352.
- Irwin, J. H., Stevens, P. R., and Cooley, M. E., 1971, Geology of the Paleozoic rocks, Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geological Survey Professional Paper 521-C, 32 p.
- Isachsen, Y. W., 1956a, Regional influence of tectonics on uranium occurrences in the Colorado Plateau area [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 40, no. 4, p. 793-794.
- 1956b, Regional influence of tectonics on uranium occurrences in the Colorado Plateau area [abs.]: *American Association of Petroleum Geologists, Rocky Mountain Section, Geological Record*, p. 171-172.
- Isachsen, Y. W., and Evensen, C. G., 1956, Geology of uranium deposits of the Shinarump and Chinle Formations on the Colorado Plateau, in *Geology of uranium and thorium: U.N. International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, Proceedings*, v. 1, p. 350-367.
- Isachsen, Y. W., Mitcham, T. W., Wood, H. B., 1955, Age and sedimentary environments of uranium host rocks, Colorado Plateau: *Economic Geology*, v. 50, no. 2, p. 127-134.
- Jacobs, J. L., 1977, Some recent shallow Pictured Cliffs gas discoveries, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 247-249.
- Jahns, R. H., 1946, Mica deposits of the Petaca district, Rio Arriba County, and the Elk Mountain district, San Miguel County, New Mexico: *New Mexico Bureau of Mines and Mineral Resources Bulletin* 25, 294 p.
- James, H. L., 1972, Cumbres and Toltec scenic railroad: *New Mexico Bureau of Mines and Mineral Resources Scenic Trips to the Geologic Past* no. 11, 73 p.
- James R. Leonard Associates, Inc., 1975, Assessment of cumulative sociocultural impacts of proposed plans for development of coal and water resources in the north-

- ern New Mexico region: Consulting report.
- Jensen, M. L., 1963, Sulfur isotopes and biogenic origin of uraniferous deposits of the Grants and Laguna districts, in *Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15*, p. 182–190, 2 figs.
- Jentgen, R. W., 1977, Pennsylvanian rocks in the San Juan Basin, New Mexico and Colorado, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 129–132, 2 figs.
- Jentgen, R. W., and Fassett, J. E., 1977, Sundance-Bisti-Star Lake 1976 drilling in McKinley and San Juan Counties, northwestern New Mexico: U.S. Geological Survey Open-File Report 77–369, 80 p., 25 figs.
- Jiracek, G. R., 1974, Geophysical studies in the Jemez Mountains region, New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference*, p. 137–144.
- Jiracek, G. R., and Smith, Christian, 1976, Deep resistivity investigations at two known geothermal resource areas (KGRAs) in New Mexico; Radium Springs and Lightning Dock, in *Tectonics and mineral resources of southwestern New Mexico: New Mexico Geological Society Special Publication 6*, p. 71–76, 8 figs.
- Jobin, D. A., 1953a, Ground-water studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI–330, p. 51–52.
- 1953b, Ground-water studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI–390, p. 35–36.
- 1954a, Ground-water studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI–440, p. 35–36.
- 1954b, Ground-water studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI–490, p. 48.
- 1955a, Ground-water studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI–540, p. 65–72.
- 1955b, Ground-water studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI–590, p. 90–97.
- 1956a, Regional transmissivity of the exposed sediments of the Colorado Plateau as related to distribution of uranium deposits, in *Contributions to the geology of uranium and thorium: U.S. Geological Survey Professional Paper 300*, p. 207–211.
- 1956b, Regional transmissivity of the exposed sediments of the Colorado Plateau as related to distribution of uranium deposits, in *Geology of uranium and thorium: U.N. International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, Proceedings*, v. 6, p. 317–320.
- 1962, Relation of the transmissive character of the sedimentary rocks of the Colorado Plateau to the distribution of uranium deposits: U.S. Geological Survey Bulletin 1124, 151 p., 60 figs.
- Joesting, H. R., and Case, J. E., 1960, Salt anticlines and deep seated structures in the Paradox Basin, Colorado and Utah, in *Geological Survey Research 1960: U.S. Geological Survey Professional Paper 400–B*, p. 252–256.
- John, E. C., and West, S. W., 1963, Ground water in the Grants district, in *Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15*, p. 219–221.
- Johnson, D. W., 1907, Volcanic necks of the Mount Taylor region, New Mexico: *Geological Society of America Bulletin*, v. 18, p. 303–324.
- 1932a, Rock fans of arid regions [abs.]: *Geological Society of America Bulletin*, v. 43, no. 1, p. 124.
- 1932b, Rock fans of arid regions [abs.]: *Pan-American Geologist*, v. 57, no. 1, p. 58.

- 1932c, Rocks of arid regions: *American Journal of Science*, v. 23, 5th ser., p. 380–420, 18 figs.
- 1932d, Rock planes of arid regions: *Geographical Review*, v. 22, no. 4, p. 656–665, 8 figs.
- Johnson, H. S., Jr., 1954, Reconnaissance resource appraisal (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEL-440, p. 39–40.
- Johnson, H. S., Jr., and Thordarson, William, 1959, The Elk Ridge-White Canyon channel system, San Juan County, Utah; its effect on uranium distribution: *Economic Geology*, v. 54, no. 1, p. 119–129, 3 figs.
- Johnston, G. C., 1963, Subsidence and pillar recovery in the west area of the Marquez Mine, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 256–263, 7 figs.
- Johnston, H. C., Jr., 1953, *Geology of East Grants Ridge, Valencia County, New Mexico*: University of New Mexico, Albuquerque, unpublished M.S. thesis, 51 p., 5 figs.
- Jones, R. W., 1959, Origin of salt anticlines of Paradox Basin; Colorado, Utah: *American Association of Petroleum Geologists Bulletin*, v. 43, no. 8, p. 1869–1895.
- Jordan, J. G., 1957, Correlation of reef calcarenites of the Pennsylvanian Paradox Formation, San Juan Canyon, Utah: University of New Mexico, Albuquerque, unpublished M.S. thesis, 90 p., 13 figs.
- Judd, J., 1931, A sentinel of the desert: *New Mexico Highway Journal*, v. 9, no. 4, p. 19, 29.
- Judd, N. M., 1929, Arizona sacrifices her prehistoric canals: Smithsonian Institution, *Exploration and Fieldwork*, p. 177–182.
- 1930, Arizona's prehistoric canals from the air: Smithsonian Institution, *Explorations and Fieldwork*, p. 157–166.
- 1954, The material culture of Pueblo Bonito: Smithsonian Institution *Miscellaneous Collections*, v. 124, 398 p.
- 1959, Pueblo del Arroyo, Chaco Canyon, New Mexico: Smithsonian Institution *Miscellaneous Collections*, v. 138, 222 p.
- 1964, The architecture of Pueblo Bonito: Smithsonian Institution *Miscellaneous Collections*, v. 147, 349 p.
- Kaharoeddin, F. A., 1972, Regressive and transgressive phenomena in the Gallup Sandstone, in the northwestern part of San Juan County, New Mexico: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 81 p., 26 figs.
- Karna, W. W., 1977, Coal mining in the San Juan Basin—Utah International's Navajo mine, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 251–252, 1 fig.
- Katich, P. J., Jr., 1951, Recent evidence for lower Cretaceous deposits in Colorado Plateau: *American Association of Petroleum Geologists Bulletin*, v. 35, no. 9, p. 2093–2094.
- Kaufman, W. H., 1972, Structure, stratigraphy, and ore deposits of the central Nacimiento Mountains, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 87 p., 21 figs.
- Kaufman, W. H., Schumacher, O. L., and Woodward, L. A., 1972, Stratiform copper mineralization in the Nacimiento region, New Mexico: New Mexico Bureau of Mines and Mineral Resources Exploration Report E-1, 9 p.
- Kaufmann, R. F., Eadie, G. G., and Russell, C. R., 1975, Summary of ground-water quality impacts of uranium mining and milling in the Grants mineral belt, New Mexico: U.S. Environmental Protection Agency, Office of Radiation Programs—Las Vegas Facility, Technical Note ORP/LV-75-4, 71 p.
- 1976, Effects of uranium mining and milling on ground water in the Grants mineral belt, New Mexico: *Ground Water*, v. 14, no. 5, p. 296–308, 9 figs.

- Kedzie, G. E., 1888, The bedded ore deposits of Red Mountain mining district, Ouray County, Colorado: American Institute of Mining Engineers Transactions, v. 16, p. 570-581.
- Keech, R. A., 1933, To Chaco Canyon by way of Laguna, Enchanted Mesa, and Acoma: El Palacio, v. 35, p. 161-181.
- Keller, G. V., 1959, Directional resistivity measurements in exploration for uranium deposits in the Colorado Plateau; Colorado-Utah in Experimental and theoretical geophysics, 1958-60: U.S. Geological Survey Bulletin 1083-B, p. 37-72.
- Keller, W. D., 1962, Clay minerals in the Morrison Formation of the Colorado Plateau: U.S. Geological Survey Bulletin 1150, 90 p.
- Kelley, D. R., 1954, Drilling in the North Point No. 6, and Horn Channels, White Canyon, San Juan County, Utah: U.S. Atomic Energy Commission Report RME-63, 33 p., 7 figs.
- Kelley, D. R., and Kerr, P. F., 1958, Urano-organic ore at Temple Mountain, Utah: Geological Society of America Bulletin, v. 69, no. 6, p. 701-756, 21 figs.
- Kelley, V. C., 1946, Geology, ore deposits, and mines of the Mineral Point, Poughkeepsie, and upper Uncompahgre districts, Ouray, San Juan, and Hinsdale Counties, Colorado: Colorado Science Society Proceedings, v. 14, no. 7, p. 287-311.
- ed., 1950a, Guidebook of the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, 153 p.
- 1950b, Pre-Cambrian rocks of the San Juan Basin, in Guidebook of the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 53-55.
- 1950c, Regional structure of the San Juan Basin, in Guidebook of the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 101-108.
- 1951, Tectonics of the San Juan Basin, in Guidebook of the south and west sides of the San Juan Basin, New Mexico and Arizona: New Mexico Geological Society, 2nd Field Conference, p. 124-130.
- 1955a, Monoclines of the Colorado Plateau: Geological Society of America Bulletin, v. 66, no. 7, p. 789-804, 10 figs.
- 1955b, Regional tectonics of the Colorado Plateau and relationship to the origin and distribution of uranium: University of New Mexico, Albuquerque, Publications in Geology 5, 120 p.
- 1955c, Tectonics of the Four Corners region, in Guidebook to geology of parts of Paradox, Black Mesa, and San Juan Basins: Four Corners Geological Society, 1st Field Conference, p. 108-117.
- 1956a, Influence of regional structure and tectonic history upon the origin and distribution of uranium on the Colorado Plateau, in Contributions to the geology of uranium and thorium: U.S. Geological Survey Professional Paper 300, p. 171-178, 4 figs.
- 1956b, Tectonics of the Colorado Plateau: American Association of Petroleum Geologists, Rocky Mountain Section, Geological Record, p. 99-108.
- 1957a, General geology and tectonics of the western San Juan Mountains, Colorado, in Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference, p. 154-162, 2 figs.
- 1957b, Tectonics of the San Juan Basin and surrounding areas, in Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference, p. 44-52.
- 1957, Vein and fault systems of the western San Juan Mountains mineral belt, Colorado, in Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference, p. 173-176, 2 figs.
- 1959a, Jointing on the Colorado Plateau [abs.]: Geological Society of America

- Bulletin, v. 70, no. 12, pt. 2, p. 1629–1630.
- 1959b, Structure and fracture systems of the Colorado Plateau [abs.]: Washington Academy of Science Journal, v. 49, no. 3, p. 94.
- compiler, 1963a, Geology and technology of the Grants uranium district: New Mexico Bureau of Mines and Mineral Resources Memoir 15, 277 p.
- 1963b, Tectonic setting, in Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 19–20, 1 fig.
- 1967, Tectonics of the Zuni-Defiance region, New Mexico and Arizona, in Guidebook of Defiance-Zuni-Mt. Taylor region, Arizona and New Mexico: New Mexico Geological Society, 18th Field Conference, p. 28–31.
- Kelley, V. C., and Clinton, N. J., 1960, Fracture systems and tectonic elements of the Colorado Plateau: University of New Mexico, Albuquerque, Publications in Geology 6, 104 p.
- Kelley, V. C., and Silver, Caswell, 1946, Stages and epochs of mineralization in the San Juan Mountains, Colorado, as shown at the Dunmore Mine, Ouray County, Colorado: Economic Geology, v. 41, no. 2, p. 139–159.
- 1952, Geology of the Caballo Mountains: University of New Mexico, Albuquerque, Publications in Geology 4, 286 p.
- Kelley, V. C., and Wood, G. H., 1946, Lucero uplift, Valencia, Socorro, and Bernalillo Counties, New Mexico: U.S. Geological Survey Oil and Gas Preliminary Investigations Map 47.
- Kelley, V. C., and others, 1968, Uranium deposits of the Grants region, in Ore deposits of the United States 1933–1967: American Institute of Mining and Metallurgy Petroleum Engineers (Graton-Sales Volume), v. 1, p. 747–769.
- Kellogg, J. P., 1952, Exploration drilling techniques on the Colorado Plateau: U.S. Atomic Energy Commission Report RME-2, 25 p., 3 figs.
- Kelly, Clyde, and Anspach, E. V., 1913, A preliminary study of the waters of the Jemez Plateau, New Mexico: University of New Mexico, Albuquerque, Bulletin, chemical ser., v. 1, no. 1, 73 p.
- Kelly, T. E., 1977, Geohydrology of the Westwater Canyon member, Morrison Formation, of the southern San Juan Basin, New Mexico, in Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 285–290, 3 figs.
- Kerr, J. L., 1949, The greater San Juan Basin: World Oil, v. 129, p. 66–74.
- Kerr, P. F., 1958, Uranium emplacement in the Colorado Plateau: Geological Society of America Bulletin, v. 69, no. 9, p. 1075–1112, 34 figs.
- Kerr, P. F., and Dahl, H. M., 1953, Uranium-fluorite association in the Todilto Limestone, Grants, New Mexico: U.S. Atomic Energy Commission Report RME-3051, 6 p.
- Kerr, P. F., and Hamilton, P. K., 1953, Hematite pseudomorphs from the Todilto Limestone, Grants, New Mexico: U.S. Atomic Energy Commission Report RME-3068, 9 p.
- 1954, Quartz crystals from the Todilto Limestone, Grants, New Mexico: U.S. Atomic Energy Commission Report RME-3096, pt. 1, p. 56–59.
- Kerr, P. F., and Wilcox, J. T., 1963, Structure and volcanism, Grants Ridge area, in Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 205–213, 7 figs.
- Kerr-McGee Nuclear Corporation, 1975, Uranium statistics and industry projections: Oklahoma City, Oklahoma, 78 p.
- Keyes, C. R., 1940a, Devonian Ouray limestone of Colorado and Arizona: Pan-American Geologist, v. 74, no. 1, p. 68–70.
- 1940b, Equivalency and synonymy of Tohachi shales of northeast Arizona: Pan-

- American Geologist, v. 74, no. 2, p. 157-160.
- 1940c, Inutility of Triassic Chinle Formation of Arizona: Pan-American Geologist, v. 74, no. 4, p. 305-306.
- 1940d, Outlines of Arizona geology: Pan-American Geologist, v. 74, no. 4, p. 251-289.
- 1940e, Outlines of New Mexico geology: Pan-American Geologist, v. 74, no. 2, p. 103-142.
- 1940f, Outlines of New Mexico geology: Pan-American Geologist, v. 74, no. 3, p. 181-234.
- 1940g, Percha shales of New Mexico in synonymy: Pan-American Geologist, v. 74, no. 4, p. 301-304.
- 1940h, Sequential order of the red-beds (New Mexico): Pan-American Geologist, v. 73, no. 4, p. 289-294.
- 1941a, Navajo coal measures on northwestern New Mexico Laramian: Pan-American Geologist, v. 75, no. 4, p. 309-310.
- 1941b, Outlines of Arizona geology: Pan-American Geologist, v. 75, no. 1, p. 19-52.
- 1942, Diversity of Gregory's Chinli Formation: Pan-American Geologist, v. 77, no. 1, p. 79-80.
- Kidder, A. V., 1917, Prehistoric cultures of the San Juan drainage: International Congress of Americanists, Smithsonian Institution, Washington, D. C., 19th Congress Proceedings.
- Kindle, E. M., 1909, The Devonian fauna of the Ouray Limestone: U.S. Geological Survey Bulletin 391, 50 p.
- King, J. W., 1951a, Geology and ore deposits of Mesa V, Lukachukai district, Arizona: U.S. Atomic Energy Commission Report RMO-754, 17 p.
- 1951b, Reconnaissance of Red Rock district, Cove Mesa, and Kinusta (Tree) Mesa, Arizona: U.S. Atomic Energy Commission Report RMO-755, 11 p.
- King, J. W., and Ellsworth, P. C., 1951, Geology and ore deposits of Mesa VII, Lukachukai district, Arizona: U.S. Atomic Energy Commission Report RMO-803, 8 p.
- King, N. R., 1973, Unconformable contact between Fort Hays Limestone Member and Smoky Hill Shale Member of Niobrara Formation and coeval strata (upper Cretaceous) in Colorado and northern New Mexico [abs.]: Geological Society of America, Abstracts with Programs, v. 5, no. 6, p. 488-489.
- 1974, The Carlile-Niobrara contact and lower Niobrara strata near El Vado, New Mexico, in Guidebook to Ghost Ranch: New Mexico Geological Society, 25th Field Conference, p. 259-266.
- 1975, The Mancos Group along the eastern margin of the San Juan Basin—a summary, in Field trips to central New Mexico: American Association of Petroleum Geologists, Rocky Mountain Section and Society of Economic Paleontologists and Mineralogists, p. 57-66.
- King, V. L., 1952, Hospah oil field, McKinley County, New Mexico, in Geological symposium of the Four Corners region: Four Corners Geological Society, p. 95-97, 1 fig.
- King, V. L., and Wengert, S. A., 1957, The Hospah oil field, McKinley County, New Mexico, in Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference, p. 155-168.
- King, W. H., and Allsman, P. T., 1950, Reconnaissance of metal mining in the San Juan region, Ouray, San Juan, and San Miguel Counties, Colorado: U.S. Bureau of Mines Information Circular IC 7554, 109 p.
- Kirk, A. R., and Sullivan, M. W., 1976, Preliminary geologic map of the Dalton Pass quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File

- Map 76-184.
- Kirk, A. R., and Zech, R. S., 1976a, Preliminary geologic and structure contour map of the Hard Ground Flats quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 76-859.
- 1976b, Preliminary geologic and structure contour maps of the Oak Spring quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 76-347.
- 1976c, Preliminary structure contour map of the Dalton Pass quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 76-348.
- 1977, The transgressive and regressive relationships between the upper Cretaceous Mulatto Tongue of the Mancos Shale and the Dalton Sandstone Member of the Crevasse Canyon Formation, Gallup-Pinedale area, New Mexico, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 185-192, 4 figs.
- Kirk, Edwin, 1931, Devonian of Colorado: *American Journal of Science*, v. 22, no. 5, p. 229-239.
- Kirkland, D. W., 1958, The environment of the Jurassic Todilto Basin, northwestern New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 69 p., 31 figs.
- Kirkland, D. W., and Anderson, R. Y., 1970, Microfolding in the Castile and Todilto evaporites, Texas and New Mexico: *Geological Society of America Bulletin*, v. 81, no. 11, p. 3259-3281, 23 figs.
- Kirkland, P. L., 1962, Permian stratigraphy and stratigraphic paleontology of the Colorado Plateau: University of New Mexico, Albuquerque, unpublished M.S. thesis, 245 p., 15 figs.
- Kister, L. R., and Hatchett, J. L., 1963, Selected chemical analyses of the ground water, pt. 2 of Geohydrologic data in the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: Arizona Land Department Water Resources Report 12-B, 58 p.
- Kittel, D. F., 1963, Geology of the Jackpile mine area, in *Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15*, p. 167-176, 6 figs.
- Kittel, D. F., Kelley, V. C., and Melancon, P. E., 1967, Uranium deposits of the Grants region, in *Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference*, p. 173-183, 4 figs.
- Knapp, L. M., 1954, Exploration frontiers in Mesozoic sediments of the Four Corners region [abs.]: *Oil and Gas Journal*, v. 52, no. 50, p. 210.
- Knight, R. L., and Baars, D. L., 1957, New development on age and extent of Ouray Limestone: *American Association of Petroleum Geologists Bulletin*, v. 41, no. 10, p. 2275-2283.
- Knight, R. L., and Cooper, J. C., 1955, Suggested changes in Devonian terminology of the Four Corners area, in *Guidebook to Four Corners: Four Corners Geological Society, 1st Field Conference*, p. 56-58.
- Knowlton, F. H., 1917, Flora of the Fruitland and Kirtland Formations in *Contributions to the geology and paleontology of San Juan County, New Mexico: U.S. Geological Survey Professional Paper 98-S*, p. 327-353.
- 1924, Flora of the Animas Formation, in *Upper Cretaceous and Tertiary Formations of the western part of the San Juan Basin, Colorado and New Mexico: U.S. Geological Survey Professional Paper 134*, p. 71-117, 5 figs.
- Knox, A. S., 1967a, Photogeologic map of the east half of the Grants-1 quadrangle, McKinley and Valencia Counties, New Mexico: U.S. Geological Survey Open-File Map.
- 1967b, Photogeologic map of the Grants-4 quadrangle, Valencia County, New

- Mexico: U.S. Geological Survey Open-File Map.
- Knox, J. A., 1957, Mineralogy of the Ambrosia Lake uranium deposits, McKinley County, New Mexico: University of Minnesota, Minneapolis, unpublished M.S. thesis.
- Knox, J. A., and Gruner, J. W., 1957, Mineralogy of the Ambrosia Lake uranium deposits in McKinley County, New Mexico, in Annual report for April 1, 1956 to March 31, 1957: U.S. Atomic Energy Commission Report RME-3148, p. 5-28.
- Konigsmark, T. A., 1955, Color changes and uranium deposits of the upper Morrison Formation, northeast flank of the Zuni Uplift, New Mexico: U.S. Atomic Energy Commission Report RME-76, pt. 1, 15 p., 4 figs.
- 1956, Geology of a portion of the northeast flank of the Zuni Uplift and Uranium deposits in the Morrison Formation, northeast flank of the Zuni Uplift, New Mexico: University of California, Los Angeles, unpublished M.S. thesis, 46 p.
- 1957, Uranium deposits in the Morrison Formation, McKinley County, New Mexico [abs.], in Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference, p. 253.
- Koogle, R. L., 1955, Tertiary geology of the La Jara Creek area: University of New Mexico, Albuquerque, Open-File Report, 7 p.
- Kottlowski, F. E., 1957, Mesozoic strata flanking the southwestern San Juan Mountains, Colorado and New Mexico, in Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference, p. 138-154.
- 1964, The economic geology of coal in New Mexico: University of New Mexico, Albuquerque, Business Circular 71, 11 p.
- 1973, Geological analysis and evaluation of ERTS-A imagery for the State of New Mexico: New Mexico Bureau of Mines and Mineral Resources Progress Report 23, 10 p.
- Kottlowski, F. E., and Beaumont, E. C., 1965, Coal, in Mineral and water resources of New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 87, p. 100-116.
- 1971, Sulfur in San Juan Basin coals, in Strippable low-sulfur coal resources of the San Juan Basin in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Memoir 25, p. 166-167.
- Kottlowski, F. E., Cooley, M. E., and Ruhe, R. V., 1965, Quaternary geology of the southwest, in The Quaternary of the United States; Congress of International Association Quaternary Research, New Jersey, Princeton University Press, p. 287-296.
- Kottlowski, F. E., and Foster, R. W., compilers and eds., 1969, Exploration for mineral resources: New Mexico Bureau of Mines and Mineral Resources Circular 101, 126 p.
- Kover, A. N., 1960, Photogeologic map of the Chaco Canyon-2 quadrangle, McKinley County, New Mexico: U. S. Geological Survey Miscellaneous Geologic Investigations Map I-315.
- 1967, Photogeologic map of the Chaco Canyon-4 quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map.
- Kover, A. N., and Olson, A. B., 1967, Photogeologic map of Chaco Canyon-3 quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map.
- Kramer, Callahan and Associates, 1974, Effects of rainfall runoff from land irrigated under the Navajo Project on water quality in the San Juan River: Conrad G. Keys Jr., consultants, report prepared for U.S. Department of Interior, Bureau of Indian Affairs.
- Krumbein, W. C., 1951, Occurrence and lithologic associations of evaporites in the United States: Journal of Sedimentary Petrology v. 21, no. 2, p. 63-81, 11 figs.

- Krumbein, W. C., and Sloss, L. L., 1963, *Stratigraphy and sedimentation: San Francisco, California*, W. H. Freeman Company, 660 p., second edition.
- Kudo, A. M., 1974, Outline of the igneous geology of the Jemez Mountains volcanic field, in *Guidebook to Ghost Ranch (central-northern New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 287-289, 1 fig.
- Kuhn, P. J., ed., 1958, *Oil and gas in the Four Corners: Amarillo, Texas*, National Petroleum Bibliography, 298 p.
- Kunkler, J. L., and Scott, A. G., 1977, Plan for a study of part of the Jicarilla Apache Indian Reservation: U.S. Geological Survey Open-File Report 77-756, 39 p., 2 figs.
- Lakes, Arthur, 1900a, The contact deposits of the La Plata Mountains: *Mines Mineralogy*, v. 21, p. 224-225.
- 1900b, The La Plata Mountains of Colorado, a description of the telluride veins and the Mancos contact: *Mines Mineralogy*, v. 20, p. 279-280.
- 1902, Geology along the Animas River, with descriptions of coal and metal mines along its course, including a sketch of the Silver Lake Mine: *Mines Mineralogy*, v. 22, p. 398-399.
- 1903a, The La Plata Mountains; observations on their formation and the influence of the different igneous rocks upon mineralization: *Mines Mineralogy* v. 23, p. 222-223.
- 1903b, The Silver Lake mine, near Silverton, San Juan County; an instance of successful operation of a large mine at high altitude: *Mines Mineralogy*, v. 23, p. 389-390.
- 1910, Prospecting in the San Juan Mountains: *Mining World*, v. 33, p. 520-522.
- 1911, Ore bearing fissures in sedimentary rocks: *Mining Science*, v. 63, p. 443-445.
- Lamb, G. M., 1964, Biostratigraphy of the lower part of the Mancos Formation in the San Juan Basin: University of Colorado, Boulder, unpublished Ph. D. dissertation, 162.
- 1968, Stratigraphy of the Lower Mancos Shale in the San Juan Basin: *Geological Society of America Bulletin*, v. 79, no. 7, p. 827-854.
- 1973, The Lower Mancos Shale in the northern San Juan Basin, in *Cretaceous and Tertiary rocks in the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 72-77, 10 figs.
- Lance, J. F., 1954, Age of the Bidahochi Formation, Arizona [abs.]: *Geological Society of American Bulletin*, v. 65, no. 12, pt. 2, p. 1276.
- 1958, Precambrian rocks of northern Arizona, in *Guidebook of the Black Mesa Basin, northeastern Arizona*: New Mexico Geological Society, 9th Field Conference, p. 66-70.
- Landis, E. R., 1959, Coal resources of Colorado: U.S. Geological Survey Bulletin 1072-C, p. 131-232.
- Landis, E. R., and Dane, C. H., 1967, Geologic map of the Tierra Amarilla quadrangle, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map GM-19, 16 p.
- 1969, The Tierra Amarilla coal field, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 100, 14 p.
- Landis, E. R., Dane, C. H., and Cobban, W. A., 1973a, The Dakota Sandstone and Mancos Shale in the Laguna-Acoma-Grants area, New Mexico, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 28-36, 3 figs.
- 1973b, Stratigraphic terminology of the Dakota Sandstone and Mancos Shale, west-central New Mexico: U.S. Geological Survey Bulletin 1372-J, 44 p.
- 1974, Cretaceous rocks of the Tierra Amarilla coal field and adjacent areas, Rio

- Arriba County, New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 231–238.
- Langan, L. V., and Ash, H. O., 1955, Colorado Plateau and uranium field trip: *Compass*, v. 33, no. 1, p. 31–39.
- Langbein, W. B., and others, 1949, Annual runoff in the United States: U.S. Geological Survey Circular 52, 14 p.
- Langford, F. F., 1977, Surficial origin of North American pitchblende and related uranium deposits: *American Association of Petroleum Geologists Bulletin*, v. 61, no. 1, p. 28–42.
- Lansford, R. R., Sorensen, E. F., Creel, B. J., and Wile, W. W., 1975, Irrigated cropland acreage and source of water used for irrigation in New Mexico, by county: New Mexico State University Las Cruces, Agricultural Experiment Station Research Report 305, 39 p.
- LaPoint, D. J., 1974, Possible source areas for sandstone copper deposits in northern New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 305–308.
- Larsen, E. S., Jr., 1949, The relation between earth movement and volcanism in the San Juan Mountains of Colorado: *American Geophysical Union Transactions*, v. 30, no. 6, p. 862–866.
- 1958, Distribution of uranium in the volcanic rocks of the San Juan Mountains, southwestern Colorado, in *Survey of raw material resources*, v. 2: U.N. International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, 2nd Proceeding, p. 509–514.
- Laughlin, A. W., 1975, Hot dry rock tested for geothermal energy (New Mexico): *Geotimes*, v. 20, no. 3, p. 20–21.
- Laughlin, A. W., Brookins, D. G., and Causey, J. D., 1972, Late Cenozoic basalts from the Bandera lava field, Valencia County, New Mexico: *Geological Society of America Bulletin*, v. 83, no. 5, p. 1543–1552.
- Laverty, R. A., 1967, Geomorphology and structure in the Grants mineral belt, in *Guidebook to Defiance-Zuni-Mt. Taylor region*: New Mexico Geological Society, 18th Field Conference, p. 188–194.
- Laverty, R. A., Ashwill, W. R., Chenoweth, W. L., and Norton, D. L., 1963, Ore processes, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 191–204, 1 fig.
- Laverty, R. A., and Gross, E. B., 1956, Paragenetic studies of uranium deposits of the Colorado Plateau, in *Contributions to the geology of uranium and thorium*: U.S. Geological Survey Professional Paper 300, p. 195–201.
- Lawrence, J. C., 1965, Stratigraphy of the Dakota and Tropic Formations of Cretaceous age in southern Utah, in *Guidebook to the geology of Utah; Geology and resources of south-central Utah, resources for power*: Utah Geological Society and Intermountain Association of Petroleum Geologists, no. 19, p. 71–91.
- Leaming, G. F., 1971, Minerals in the economic development of the Four Corners Region—summary report: Four Corners Regional Commission, Farmington, New Mexico, 55 p.
- Lease, R. C., 1967, Stratigraphy of the lower Morrison Formation along the Defiance Monocline, New Mexico and Arizona: University of New Mexico, Albuquerque, unpublished M.S. thesis, 86 p., 2 figs.
- Lee, M. J., 1976a, Geochemistry of the sedimentary uranium deposits of the Grants mineral belt, southern San Juan Basin, New Mexico [abs.]: *Dissertation Abstracts International*, v. 37, no. 5, p. 2118B.
- 1976b, Geochemistry of the sedimentary uranium deposits of the Grants mineral belt, southern San Juan Basin, New Mexico: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 241 p.

- Lee, M. J., Brookins, D. G., and Mukhopadhyay, Bimal, 1975, Rb-Sr geochronologic study of the Westwater Canyon Member, Morrison Formation, Grants mineral belt, New Mexico [abs.]: Geological Society of America, Abstracts with Programs, v. 7, no. 7, p. 1164.
- Lee, M. J., Mukhopadhyay, Bimal, and Brookins, D. C., 1975, Clay mineralogy of uranium-organic enriched and barren zones in Morrison Formation, Ambrosia Lake district, New Mexico [abs.]: American Association of Petroleum Geologists Bulletin, v. 59, no. 5, p. 914.
- Lee, W. T., 1902, The Morrison shales of southern Colorado and northern New Mexico: *Journal of Geology*, v. 10, p. 45-46.
- 1912, Stratigraphy of the coal fields of north-central New Mexico: Geological Society of America Bulletin, v. 23, p. 571-686.
- 1916, Relation of the Cretaceous Formations of the Rocky Mountains in Colorado and New Mexico, in *Shorter contributions to general geology, 1915*: U.S. Geological Survey Professional Paper 95-C, p. 27-58.
- Lee, W. T., and Knowlton, F. H., 1917, Geology and paleontology of the Raton Mesa and other regions in Colorado and New Mexico: U.S. Geological Survey Professional Paper 101, 450 p., 16 figs.
- Leedy, W. P., 1971, Hydrothermal alteration of volcanic rocks in the Red Mountains district of the San Juan Mountains, Colorado: New York State University, Buffalo, unpublished Ph. D. dissertation, 165 p.
- Leighly, John, 1936, Meandering arroyos of the dry southwest: *Geographical Review*, v. 26, p. 270-282.
- Leland, H. C., and Nichols R. P., 1952, Drilling mud problems in San Juan Basin: *Petroleum Engineer*, v. 24, p. 53-54.
- Leopold, L. B., 1942, Climatic character of the interval between the Jurassic and Cretaceous in New Mexico and Arizona [abs.]: American Association of Petroleum Geologists, v. 26, no. 5, p. 901.
- 1943, Climatic character of the interval between the Jurassic and Cretaceous in New Mexico and Arizona: *Journal of Geology*, v. 51, no. 1, p. 56-62.
- Leopold, L. B., 1951, Pleistocene climate in New Mexico: *American Journal of Science*, v. 249, p. 152-168, 399, 4 figs.
- 1956, Data and understanding of arroyos in New Mexico, in *The future of arid lands*: American Association for the Advancement of Science Publication 43, p. 114-120.
- 1962, Water and the arid zone of the United States, in *Problems of the arid zone—Proceedings of the Paris Symposium*: U.N. Educational, Scientific, and Cultural Organization, Arid Zone Research, v. 18, p. 395-399.
- 1964, Ground water—definition: *Science*, v. 144, no. 3625, p. 1408.
- Leopold, L. B., Emmett, W. W., and Myrick, R. M., 1966, Channel and hillslope processes in a semiarid area, New Mexico, in *Erosion and sedimentation in a semi-humid environment*: U.S. Geological Survey Professional Paper 352-G., p. 193-253.
- Leopold, L. B., and Miller, J. P., 1956, Ephemeral streams—hydraulic factors and their relation to the drainage net: U.S. Geological Survey Professional Paper 282-A, 37 p.
- Leopold, L. B., and Snyder, C. T., 1951, Alluvial fills near Gallup, New Mexico: U.S. Geological Survey Water-Supply Paper 1110-A, 17 p.
- Leopold, L. B., Wolman, M. G., and Miller, J. P., 1964, Fluvial processes in geomorphology: San Francisco, California, W. H. Freeman Company, 522 p.
- Lessertine, R. H., 1965, Kaiparowits and Black Mesa Basins—stratigraphic synthesis: American Association of Petroleum Geologists Bulletin, v. 49, no. 11, p. 1997-2019.

- Leutekhans, G. R., 1976, Gas in tight sands with discussion, *in* Natural gas from unconventional geologic sources: Washington, D. C., National Academy of Science, p. 167-179.
- Levings, G. W., and Farrar, C. D., 1977a, Maps showing ground-water conditions in the northern part of the Chinle area, Apache County, Arizona, 1976: U.S. Geological Survey Water-Resources Investigation Report WRI 77-35, [maps].
- 1977b, Maps showing ground-water conditions in the southern part of the Black Mesa area, Navajo, Apache, and Coconino Counties, Arizona, 1976: U.S. Geological Survey Water-Resources Investigation Report WRI 77-41, [maps].
- 1977c, Maps showing ground-water conditions in the southern part of the Chinle area, Apache County, Arizona, 1976: U.S. Geological Survey Water-Resources Investigation Report WRI 77-50, [maps].
- Lilly, O. J., 1950, Drilling practices in the San Juan Basin, *in* Guidebook to the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 133-134.
- 1952a, Doswell discovery enhances oil possibilities of the San Juan Basin: Oil and Gas Journal, v. 51, p. 102-103.
- 1952b, The Doswell oil field, Rio Arriba County, New Mexico, *in* Geological symposium on the Four Corners region: Four Corners Geological Society, p. 98-103, 4 figs.
- Linden K. V., Feldman, S. C., Inglis, M. H., Kottlowski, F. E., and Tabet, D. E., 1975, Earth resources evaluation for New Mexico by LANDSAT-2: New Mexico Bureau of Mines and Mineral Resources and NASA Earth Resources Survey Program [Washington, D. C.], 5 p.
- Lindgren, Waldemar, and Graton, L. C., 1906, A reconnaissance of the mineral deposits of New Mexico, *in* Contributions to economic geology, 1905: U.S. Geological Survey Bulletin 285, p. 74-86.
- Lindgren, Waldemar, Graton, L. C., and Gordon, C. H., 1910, The ore deposits of New Mexico: U.S. Geological Survey Professional Paper 68, 361 p.
- Link, P. K., 1955, The Cretaceous Pictured Cliffs Sandstone of the San Juan Basin, Colorado and New Mexico: University of Wisconsin, Madison, unpublished M.S. thesis.
- Linton, W. A., 1963, Uranium logging techniques, *in* Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 222-233, 9 figs.
- Lipman, P. W., 1969a, Alkalic and tholeiitic basaltic volcanism related to the Rio Grand depression, southern Colorado and northern New Mexico: Geological Society of America Bulletin, v. 80, no. 7, p. 1343-1354.
- 1969b, Petrogenetic significance of andesitic volcanism in the San Juan Mountains, Colorado [abs.], *in* Andesite Conference, Eugene and Bend, Oregon, 1968: Oregon Department of Geological and Mineral Industries, Salem, Bulletin 65, p. 192.
- Lipman, P. W., Fischer, F. S., Mehnert, H. H., Naeser, C. W., Luedke, R. G., and Steven, T. A., 1976, Multiple ages of Mid-Tertiary mineralization and alteration in the western San Juan Mountains, Colorado: Economic Geology, v. 71, no. 3, p. 571-588.
- Lipman, P. W., and Mehnert, H. H., 1969, Structural history of the eastern San Juan Mountains and the San Luis Valley, Colorado [abs.], *in* Abstracts for 1968: Geological Society of America Special Paper 121, p. 525.
- Lipman, P. W., and Moench, R. H., 1972, Basalts of the Mount Taylor volcanic field, New Mexico: Geological Society of America Bulletin, v. 83, no. 5, p. 1335-1343, 3 figs.
- Lipman, P. W., Mutschler, F. E., Bryant, Bruce, and Steven, T. A., 1969, Similarity

- of Cenozoic igneous activity in the San Juan and Elk Mountains, Colorado, and its regional significance, *in* Geological Survey research 1969: U.S. Geological Survey Professional Paper 650-D, p. 33-42.
- Lipman, P. W., Steven, T. A., and Mehnert, H. H., 1970, Volcanic history of the San Juan Mountains, Colorado, as indicated by potassium-argon dating: Geological Society of America Bulletin, v. 81, no. 8, p. 2329-2352, 4 figs.
- Lockman-Balk, Christina, 1959, List of stratigraphic names used in northwest and central New Mexico, *in* Guidebook to west-central New Mexico: New Mexico Geological Society, 10th Field Conference, p. 100-111.
- 1967, Lexicon of stratigraphic names used in northwest New Mexico and adjacent states, *in* Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference p. 15-27.
- Loleit, A. J., 1963, Cambrian stratigraphic problems of the Four Corners area, *in* Guidebook to shelf carbonates of the Paradox Basin: Four Corners Geological Society, 4th Field Conference, p. 21-30.
- Longgood, T. E., Jr., 1960, Geology of Chromo Peak area, Rio Arriba County, New Mexico: University of Texas, Austin, unpublished M.S. thesis, 141 p.
- Longwell, C. R., 1946, How old is the Colorado River?: American Journal of Science, v. 244, p. 817-835.
- Longwell, C. R., Miser, H. D., Moore, R. C., Bryan, Kirk, and Paige, Sidney, 1925, Rock formations in the Colorado Plateau of southeastern Utah and northern Arizona: U.S. Geological Survey Professional Paper 132-A, 23 p.
- Look, Al, 1955, 1,000 million years on the Colorado Plateau, land of uranium: Denver, Colorado, Bell Publishers, 344 p.
- Lookingbill, J. L., 1953, Stratigraphy and structure of the Gallina uplift, Rio Arriba County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 118 p., 4 figs.
- Loughlin, G. F., 1933, Zoning in certain mining districts in the Mosquito and San Juan Mountains, Colorado [abs.]: Pan-American Geologist, v. 60, no. 2, p. 159.
- 1936, Zoning in certain mining districts in the Mosquito and San Juan Mountains, Colorado, *in* Proceedings of 16th International Geological Congress, 1933: Congress Geological International Programme 16, v. 1, p. 443-446, 3 figs.
- Love, D. W., 1977, Dynamics of sedimentation and geomorphic history of Chaco Canyon National Monument, New Mexico, *in* Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference p. 291-300, 14 figs.
- Lovejoy, B. P., 1958, Paleontology and stratigraphy of the Jemez Springs area, Sandoval County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 101 p., 3 figs.
- Lovejoy, E. M. P., 1973, Major early Cenozoic deformation along Hurricane fault zone, Utah and Arizona: American Association of Petroleum Geologists Bulletin, v. 57, no. 3, p. 510-519, 4 figs.
- Lovering, T. G., 1956, Radioactive deposits in New Mexico: U.S. Geological Survey Bulletin 1009-L. 390 p.
- Lowell, J. D., 1955, Application of cross-stratification studies to problems of uranium exploration, Chuska Mountains, Arizona: Economic Geology, v. 50, no. 2, p. 177-185.
- Lower Colorado Region State-Federal Interagency Group, 1971, Ground water, *in* Lower Colorado region, comprehensive framework study, Appendix V, Water resources: Lower Colorado Region State-Federal Interagency Group, Pacific Southwest Interagency Commission, and Water Resources Council, p. 14-25.
- Lucas, S. G., 1977a, Faunal list of the Largo and Almagre faunas (Wasatchian-Eocene) of the San Juan Basin, New Mexico: American Museum of Natural History, New York City, Novitates [in press].

- 1977b, Vertebrate paleontology of the San Jose Formation, east-central San Juan Basin, New Mexico, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 221–225, 6 figs.
- Lucius Pitkin, Inc., 1975, A study of the Morrison Formation in the San Juan Basin, New Mexico and Colorado: Grand Junction, Colorado, Report AT (05–1), p. 912.
- Luedke, R. G., and Burbank, W. S., 1977, Map showing potential geologic hazards in the Telluride quadrangle, San Miguel, Ouray, and San Juan Counties, Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations Map I–973–B.
- Lunsford, J. V., Keys, C. G., Jr., Gunaji, N. M., Murray, M., Seckler, J., and Stover, F., 1968, Atmospheric water resources research in the state of New Mexico: New Mexico State University, Las Cruces, Engineering Experiment Station Technical Report 47, 149 p., 80 figs.
- Lupton, C. T., 1914, Oil and gas near Green River, Grand County, Utah, in *Contribution to economic geology, 1912, Part II, Mineral fuels: U.S. Geological Survey Bulletin 541–D*, p. 115–133.
- Luszczynski, N. J., 1961, Head and flow of ground water of variable density: *Journal of Geophysical Research*, v. 66, no. 12, p. 4247–4256, 2 figs.
- Lynn, R. D., and Arlin, Z. E., 1962, Deep well construction for the disposal of uranium mill tailing water by the Anaconda Company at Grants, New Mexico: *American Institute of Mining Engineers Transactions*, v. 223, no. 3, p. 230–237, 2 figs.
- Lyons, T. R., 1951, Sedimentary petrology of the Dakota Sandstone in the San Juan Basin of New Mexico and Colorado: University of New Mexico, Albuquerque, unpublished M.S. thesis, 94 p., 24 figs.
- 1958, Pennsylvanian oil and gas fields of the Paradox Basin, in *Symposium on Pennsylvanian rocks of Colorado and adjacent areas: Rocky Mountain Association of Geologists, Denver, Colorado*, p. 117–121.
- Lyons, T. R., Ebert, J. I., and Hitchcock, R. K., 1976, Archaeologic analysis of imagery of Chaco Canyon region, New Mexico, in *ERTS–1, a new window on our planet: U.S. Geological Survey Professional Paper 929*, p. 304–306, 2 figs.
- McCann, F. T., 1938, Ancient erosion surface in the Gallup-Zuni area, New Mexico: *American Journal of Science*, 5th ser., v. 36, no. 214, p. 260–278.
- McCaslin, J. C., 1975a, Four Corners rates another look: *Oil and Gas Journal*, v. 73, no. 8, p. 97.
- 1975b, Interest grows in northern New Mexico: *Oil and Gas Journal*, v. 73, no. 38, p. 155.
- 1975c, New tests dot San Juan Basin: *Oil and Gas Journal*, v. 73, no. 51, p. 73.
- 1976, San Juan Basin's Entrada draws attention: *Oil and Gas Journal*, v. 74, no. 9, p. 141.
- 1977, New Paradox Basin action under way: *Oil and Gas Journal*, v. 75, no. 1, p. 99.
- McClymonds, N. E., 1961, Effects of a buried anticline on ground water in the Navajo Sandstone in the Copper Mine-Preston Mesa area, Coconino County, Arizona, in *Short papers in the geologic and hydrologic sciences: U.S. Geological Survey Professional Paper 424–D*, p. 79–82.
- McComas, M. R., 1963, Productive core analysis characteristics of carbonate rocks in the Four Corners area, in *Guidebook to shelf carbonates of the Paradox Basin: Four Corners Geological Society, 4th Field Conference*, p. 149–156, 4 figs.
- McCormick, W. L., 1953, A study of the McDermott Formation, upper Cretaceous, in the San Juan Basin, southwestern Colorado and northern New Mexico: University of Illinois, Champaign, unpublished M.S. thesis.
- McCubbin, D. G., 1969, Cretaceous strike-valley sandstone reservoirs, northwestern New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 53, no. 10, pt. 1, p. 2114–2140.

- 1973, Facies and paleocurrents of the Gallup Sandstone [abs.], in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 216.
- McDonald, J. E., 1956, Variability of precipitation in an arid region: a survey of characteristics for Arizona: University of Arizona, Tucson, Institute of Atmospheric Physics, Technical Report on Meteorology and Climatology, Arid Regions 1, 88 p.
- McGavock, E. H., and Edmonds, R. J., 1974, Availability of ground water for irrigation, municipal, or industrial use in the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-878.
- McGavock, E. H., Edmonds, R. J., Gillespie, E. L., and Halpenny, L. C., 1966, Supplemental records of ground-water supplies; Part 1-A of Geohydrologic data in the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: Arizona Land Department Water Resources Report 12-E, 55 p.
- McGetchin, T. R., 1968, The Moses Rock Dike; geology, petrology and mode of emplacement of a Kimberlite-bearing breccia dike, San Juan County, Utah: California Institute of Technology, Pasadena, unpublished Ph. D. dissertation, 440 p.
- McGookey, D. P., Haun, J. D., Hale, L. A., Goodell, H. G., McCubbin, D. G., Weimer, R. J., and Wulf, G. R., 1970, Correlation chart of Cretaceous Formations: The Mountain Geologist, v. 7, no. 3, [inside back cover].
- McGookey, D. P., Haun, J. D., Hale, L. A., and others, 1972, Cretaceous system, in *Geologic atlas of the Rocky Mountain region: Rocky Mountain Association of Geologists*, Denver, Colorado, p. 210 and 224, [maps].
- McGuinness, C. L., compiler, 1964, Generalized map showing annual runoff and productive aquifers in the conterminous United States: U.S. Geological Survey Hydrologic Investigations Atlas HA-194.
- McIntosh, W. L., 1975, Preliminary photogeologic map of the Chaco Canyon-1, 15-minute quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 75-542.
- McKee, E. D., 1934, An investigation of the light-colored cross-bedded sandstones of Canyon de Chelly, Arizona: *American Journal of Science*, 5th ser., v. 28, no. 165, p. 219-233.
- 1936, Triassic pebbles in northern Arizona containing invertebrate fossils: *American Journal of Science*, 5th ser., v. 33, p. 260-263.
- 1938, The environment and history of the Toroweap and Kaibab Formations of northern Arizona and southern Utah: *Carnegie Institute of Washington Publication* 492, 268 p.
- 1940, Three types of cross-lamination in Paleozoic rocks of northern Arizona: *American Journal of Science*, v. 238, p. 811-824.
- 1945, Small-scale structures in the Coconino Sandstone of northern Arizona: *Journal of Geology*, v. 53, p. 313-325.
- 1951a, Sedimentary basins of Arizona and adjoining areas: *Geological Society of America Bulletin*, v. 62, no. 5, p. 481-506, 3 figs.
- 1951b, Triassic deposits of the Arizona-New Mexico border area, in *Guidebook to San Juan Basin: New Mexico Geological Society, 2nd Field Conference*, p. 85-92, 2 figs.
- 1954, Stratigraphy and history of the Moenkopi Formation of Triassic age: *Geological Society of America Memoir* 61, 133 p.
- 1963, Nomenclature for lithologic subdivisions of the Mississippian Redwall Limestone, Arizona, in *Geological Survey research 1963: U.S. Geological Survey Professional Paper* 475-C, p. 21-22.

- 1972, Mississippian System (part), in *Geologic atlas of the Rocky Mountains region*: Rocky Mountain Association of Geologists, Denver, Colorado, figs. 1–7.
- McKee, E. D., and Gutschick, R. C., 1969, History of the Redwall Limestone of northern Arizona: Geological Society of America Memoir 114, 726 p.
- McKee, E. D., and McKee, E. H., 1972, Pliocene uplift of the Grand Canyon region—time of drainage adjustment: Geological Society of America Bulletin, v. 83, no. 7, p. 1923–1932, 2 figs.
- McKee, E. D., Oriol, S. S., Ketner, K. B., MacLachlan, M. E., Goldsmith, J. W., MacLachlan, J. C., and Mudge, M. R., 1959, Paleotectonic maps of the Triassic System: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-300, 33 p.
- McKee, E. D., Oriol, S. S., Swanson, V. E., MacLachlan, M. E., MacLachlan, J. C., Ketner, K. B., Goldsmith, J. W., Bell, R. Y., and Jameson, D. J., 1956, Paleotectonic maps of the Jurassic System: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-175, 5 figs.
- McKee, E. D., and Weir, G. W., 1953, Terminology for stratification and cross-stratification in sedimentary rocks: Geological Society of America Bulletin, v. 64, no. 4, p. 381–389.
- McKee, E. D., and others, ed., 1967, Evolution of the Colorado River in Arizona—an hypothesis developed at the Symposium on Cenozoic geology of the Colorado Plateau in Arizona, August 1964: Museum of Northern Arizona, Flagstaff, Bulletin 44, 68 p.
- McKee, E. H., and Anderson, C. A., 1971, Ages of basalt flows in north-central Arizona and their relationship to the Colorado Plateau Province [abs.]: Geological Society of America, Abstracts with Programs, v. 3, no. 2, p. 159.
- McLaughlin, E. D., Jr., 1963, Uranium deposits in the Todilto Limestone of the Grants district, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 136–149, 6 figs.
- McLeroy, D. F., 1966, Geology and origin of the Precambrian banded iron deposits at Cleveland Gulch, Iron Mountain, and Canon Plaza, Rio Arriba County, New Mexico: Stanford University, Palo Alto, California, unpublished Ph. D. dissertation, 302 p.
- 1970, Geology and origin of the Precambrian banded iron deposits at Cleveland Gulch, Iron Mountain, and Canon Plaza, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report OF-21, 226 p., 7 figs.
- 1972, Geochemical background values in iron-bearing rocks of Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 121, 11 p.
- McNeal, R. P., 1961, Hydrodynamic entrapment of oil and gas in Bisti field, San Juan County, New Mexico: American Association of Petroleum Geologist Bulletin, v. 45, no. 3, p. 315–329.
- McNeese, J. A., and Wilson, D. B., 1976, Utilization of brackish water in coal gasification: New Mexico Water Resources Research Institute Report 063, 53 p.
- McPeck, L. A., 1962, Geology of the El Vado-Nutrias Canyon area, Rio Arriba County, New Mexico: Colorado School of Mines, Golden, unpublished M.S. thesis.
- 1965, Dakota-Niobrara (Cretaceous) stratigraphy and regional relationships, El Vado area, Rio Arriba County, New Mexico: *The Mountain Geologist*, v. 2, no. 1, p. 23–34.
- MacRae, M. E., 1963, Geology of the Black Jack No. 1 mine, Smith Lake area, in *Geology and technology in the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 45–48, 2 figs.
- Mace, E. V., and Oertell, E. W., 1958, Exploratory diamond drilling in the No Name

- Canyon area, White Canyon district, San Juan County, Utah: U.S. Atomic Energy Commission Report RME-105 17 p., 4 figs.
- Machette, M. N., and Bachman, G. O., 1975, Generalized logs of drill holes, Sandoval County, New Mexico: U.S. Geological Survey Open-File Report 75-643, 6 p.
- Macklin, J. H., 1959, Timing of post-orogenic uplift in the Rocky Mountains and the Colorado Plateau [abs.]: Geological Society of America Bulletin, v. 70, no. 12, pt. 2, p. 1733.
- Maestas, Sigfredo, and Gallegos, A. F., 1974, The determination of content and origin of lead in surface and ground waters of northwestern New Mexico: New Mexico Water Resources Research Institute Report 048, 109 p.
- Maher, L. J., Jr., 1961, Pollen analysis and postglacial vegetation history in the Animas Valley region, southern San Juan Mountains, Colorado: University of Minnesota, Minneapolis, unpublished Ph. D. dissertation, 91 p.
- Maker, H. J., Bullock, H. E., Jr., and Anderson, J. U., 1974 Soil associations and land classification for irrigation, McKinley County [New Mexico]: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 254, 69 p.
- Maker, H. J., Folks, J. J., Anderson, J. U., and Gallman, W. B., 1971, Soil associations and land classification for irrigation, Sandoval and Los Alamos Counties [New Mexico]: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 188, 45 p.
- Maker, H. J., Folks, J. J., Anderson, J. U., and Link, V. G., 1973, Soil associations and land classification for irrigation, Rio Arriba County [New Mexico]: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 254, 69 p., 12 figs.
- Maker, H. J., Hacker, L. W., and Anderson, J. U., 1974, Soil associations and land classification for irrigation, Valencia County [New Mexico]: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 267, 73 p.
- Maker, H. J., Keetch, C. W., and Anderson, J. U., 1969, Soil associations and land classification for irrigation, San Juan County [New Mexico]: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 161, 40 p.
- Malan, R. C., and Ranspot, H. W., 1959, Geology of the uranium deposits in the Cochetopa mining district, Saquache and Gunnison Counties, Colorado: Economic Geology, v. 54, no. 1, p. 1-19, 3 figs.
- Mallory, W. W., 1972a, Pennsylvanian arkose and the ancestral Rocky Mountains, in Geologic atlas of the Rocky Mountains region, U.S.A.: Rocky Mountain Association of Geologists, Denver, Colorado, p. 131-132.
- ed., 1972b, Geologic atlas of the Rocky Mountain region, U.S.A.: Denver, Colorado, Rocky Mountain Association of Geologists, 331 p.
- Manger, G. E., Gates, G. L., and Cadigan, R. A., 1957, Physical and associated properties in ore-bearing and poorly mineralized uranium ground in Montrose County, Colorado, and San Juan County, Utah: U.S. Geological Survey Trace Element Investigations Report TEI-690, book 2, p. 461-471.
- Mann, L. J., 1976, Ground-water resources and water use in southern Navajo County, Arizona: Arizona Water Commission, Tucson, Bulletin 10.
- Mannhard, C. W., 1975, Deltaic and interdeltaic sedimentation, La Ventana Tongue of Cliff House Sandstone (upper Cretaceous Mesaverde group), southeastern San Juan Basin, New Mexico [abs.]: American Association of Petroleum Geologists Bulletin, v. 59, no. 5, p. 916.
- 1976, Stratigraphy, sedimentology and paleoenvironments of the La Ventana Tongue (Cliff House Sandstone) and adjacent formations of the Mesaverde Group

- (upper Cretaceous), southeastern San Juan Basin, New Mexico: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 182 p.
- Maret, R. E., 1960, Geology of Sinbad Valley anticline: Colorado Plateau, in *Guidebook to geology of the Paradox Basin fold and fault belt: Four Corners Geological Society, 3rd Field Conference*, p. 43–46.
- Martin, J. L., 1971, Stratigraphic analysis of Pennsylvanian strata in the Lucero region of west-central New Mexico: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 196 p.
- Martin, P. S., 1961, The last 10,000 years: Tucson, University of Arizona, Geochronology Laboratories, 119 p.
- Martin, P. S., and P. J. Mehringer, 1965, Pleistocene pollen analysis and biogeography of the Southwest; in *The Quaternary of the United States*, a review volume for VII Congress of International Association Quaternary Research: New Jersey, Princeton University Press, p. 432–452.
- Martinez, Ruben, 1975, Geology of the Pajarito Peak area, Sandoval County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 72 p., 17 figs.
- Marvin, R. G., 1967, Dakota Sandstone-Tres Hermanos relationship southern San Juan Basin area, in *Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference*, p. 170–172.
- Masters, J. A., 1951, Uranium deposits on the southwest rim of Lukachukai Mountains, northeast Arizona: U.S. Atomic Energy Commission Report RMO-911, 10 p.
- , 1953, Geology of the uranium deposits of the Lukachukai Mountains area, northeastern Arizona: U.S. Atomic Energy Commission Report RME-27.
- , 1955, Geology of the uranium deposits of the Lukachukai Mountains area, northeastern Arizona: *Economic Geology*, v. 50, no. 2, p. 111–126, 8 figs.
- Matheny, M. L., 1957, Structures of southwest Paradox Basin: *World Oil*, v. 145, No. 2, p. 63–67.
- Matheny, M. L., and Thomas, D. M., Jr., 1957, The Gallegos-Gallup field, San Juan County, New Mexico, in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference*, p. 147–151, 4 figs.
- Mather, K. F., 1957, Geomorphology of the San Juan Mountains, in *Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference*, p. 102–108, 2 figs.
- Mathewson, D. E., 1953, Reconnaissance of the Morrison Formation north of Bluewater, McKinley County, New Mexico: U.S. Atomic Energy Commission Report RME-57, 15 p.
- Mathewson, D. E., and Buzzalini, A. D., 1957, Field trip notes of Haystack and Poison Canyon mines near Grants, New Mexico, in *Guidebook of southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference*, p. 253–254.
- Matthew, W. D., 1897, A revision of the Puerco fauna: *American Museum of Natural History, New York City, Bulletin*, v. 9, p. 259–323.
- , 1937, Paleocene faunas of the San Juan Basin, New Mexico: *Transactions of American Philosophical Society, Philadelphia Pennsylvania, new ser.*, v. XXX, 510 p., 85 figs.
- Matthews, D. C., 1963, Rudiments of uranium ore metallurgy, in *Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15*, p. 268–269.
- Matuszczak, R. A., 1969, Trinidad Sandstone interpreted and evaluated in Raton Basin, Colorado-New Mexico: *The Mountain Geologist*, v. 6, p. 119–124.
- Maxwell, B. W., 1960, Availability of ground water for irrigation near Zia Pueblo,

- Sandoval County, New Mexico: U.S. Geological Survey Open-File Report, 18 p., 2 figs.
- Maxwell, C. H., 1976a, Geologic map of the Acoma Pueblo quadrangle, Valencia County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-1298.
- 1976b, Stratigraphy and structure of the Acoma region, New Mexico, in *Tectonics and mineral resources of southwestern North America: New Mexico Society Special Publication 6*, p. 88–94, 8 figs.
- 1977, Preliminary geologic map of the McCartys quadrangle, Valencia County, New Mexico: U.S. Geological Survey Open-File Map 77-380.
- Mayhew, E. J., 1952, Mud problems in the Four Corners region, in *Geological symposium on the Four Corners region: Four Corners Geological Society*, p. 128–130.
- Megard, R. O., 1961, The diel cycle of stratification and productivity in two lakes of the Chuska Mountains, New Mexico: *American Midland Naturalist*, v. 66, p. 110–127.
- 1964, The biostratigraphic history of Dead Man Lake, Chuska Mountains, New Mexico: *Ecology*, v. 45, no. 3, p. 529–546.
- Megrue, G. H., 1963, Summerville (Jurassic) alteration associated with uranium mineralization, Laguna and Grants, New Mexico: Columbia University, New York, unpublished Ph. D. dissertation.
- Megrue, G. H., and Kerr, P. F., 1965, Alteration of sandstone pipes, Laguna, New Mexico: *Geological Society of America Bulletin*, v. 76, no. 12, p. 1347–1360 4 figs.
- 1968, Alteration of sandstone pipes, Laguna, New Mexico—reply: *Geological Society of America Bulletin*, v. 79, no. 6, p. 791–794.
- Mehringer, P. J., 1967, The environment of extinction of the late Pleistocene megafauna in the arid southwestern United States, in *The Quaternary of the United States, a review volume for VII Congress of International Association Quaternary Research: New Jersey, Princeton University Press*, p. 247–266.
- Melancon, P. E., 1963, History of exploration, in *Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15*, p. 3–5.
- Melvin, J. W., 1976, Systematic distribution of large uranium deposits in the Grants uranium region, New Mexico, in *Tectonics and mineral resources of southwestern North America: New Mexico Geological Society Special Publication 6*, p. 144–150, 5 figs.
- Mercer, J. W., 1969, Hydrology of the Project Gasbuggy Site, Rio Arriba County, New Mexico: U.S. Geological Survey Report PNE-G-60, 45 p.
- Mercer, J. W., and Cooper, J. B., 1970, Availability of ground water in the Gallup-Tohatchi area, McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 195 p., 29 figs.
- Mercer, J. W., and Lappala, E. G., 1971, Drilling and testing of well 69, Fort Wingate Army Depot, McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 41 p., 7 figs.
- 1972, ERWIN-1 production well, city of Gallup, McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 53 p., 9 figs.
- Merrill, W. M., and Winar, R. M., 1958, Molas and associated formations in San Juan Basin—Needle Mountains area, southwestern Colorado: *American Association of Petroleum Geologists Bulletin*, v. 42, no. 9, p. 2107–2132.
- Mertie, J. B., Jr., 1911, The igneous rocks of the Raton Mesa region of New Mexico and Colorado: Johns Hopkins University, Baltimore, Maryland, unpublished Ph. D. dissertation.
- 1913, Igneous rocks of the Raton Mesa region [abs.]: *Washington Academy of Science Journal*, v. 3, p. 302.

- 1922, Igneous rocks (Raton, Brilliant, and Koehler quadrangles): U.S. Geological Survey Atlas Folio 214, 12 p.
- Middle Rio Grande Council of Governments of New Mexico, 1974, Solid waste management guidelines for State Planning District III New Mexico: Middle Rio Grande Council of Governments of New Mexico Special Report 73, 63 p., 9 figs.
- Miesch, A. T., 1955, Distribution of elements (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-590, p. 127-131.
- 1957, Chemical composition as a guide to the size of sandstone-type uranium deposits in the Morrison Formation on the Colorado Plateau: U.S. Geological Survey Trace Element Investigations Report TEI-700, p. 205-212.
- 1958a, Chemical composition as a guide to the size of sandstone-type uranium deposits in the Morrison Formation on the Colorado Plateau [abs.]: *Economic Geology*, v. 53, no. 7, p. 923-924.
- 1958b, Chemical composition as a guide to the size of sandstone-type uranium deposits in the Morrison Formation on the Colorado Plateau [abs.]: *Geological Society of America Bulletin*, v. 62, no. 12, pt. 2, p. 1613.
- 1961, Classification of elements in Colorado Plateau uranium deposits and multiple stages of mineralization, in *Short papers in the geologic and hydrologic sciences*: U.S. Geological Survey Professional Paper 424-b, p. 289-291.
- 1963, Distribution of elements in Colorado Plateau uranium deposits—a preliminary report: U.S. Geological Survey Bulletin 1147-E, 57 p.
- Miesch, A. T., and Riley, L. B., 1960, Basic statistical measures in geochemical investigations of Colorado Plateau uranium deposits [abs.]: *Mining Engineer*, v. 12, no. 12, p. 1248.
- Miesch, A. T., Shoemaker, E. M., Newman, W. L., and Finch, W. I., 1960, Distribution of elements in sedimentary rocks of the Colorado Plateau to the distribution of uranium deposits, in *Contributions to economic geology, 1959*: U.S. Geological Survey Bulletin 1112-B, p. 17-61.
- Miller, D. S., 1960a, The isotopic geochemistry of uranium, lead, and sulfur in the Colorado Plateau uranium ores: Columbia University, New York, unpublished Ph. D. dissertation, 143 p.
- 1960b, Uranium, lead, and sulfur isotopic data and the origin of the Colorado Plateau uranium ores [abs.]: *Geological Society of America Bulletin*, v. 71, no. 12, pt. 2, p. 1930.
- Miller, D. S., and Kulp, J. L., 1958, Isotopic study of some Colorado Plateau ores: *Economic Geology*, v. 53, no. 8, p. 937-948.
- 1963, Isotopic evidence on the origin of the Colorado Plateau uranium ores: *Geological Society of America Bulletin*, v. 74, no. 5, p. 609-630, 2 figs.
- Miller, J. F., Frederick, R. H., and Tracey, R. J., 1973, NOAA Atlas 2: Precipitation-frequency atlas of the western United States, v. IV., New Mexico: U.S. Department of Commerce, NOAA, National Weather Service, Silver Springs, Maryland, 34 p., 30 figs.
- Miller, L. J., 1953a, Ore textures of uraninite and associated minerals from the Colorado Plateau uranium deposits [abs.]: *Economic Geology*, v. 48, no. 7, p. 625.
- 1953b, Ore textures of uraninite and associated minerals from the Colorado Plateau uranium deposits [abs.]: *Geological Society of America Bulletin*, v. 64, no. 12, pt. 2, p. 1453-1454.
- 1953c, Uranium ore controls of the Happy Jack deposit, White Canyon, San Juan County, Utah: U.S. Atomic Energy Commission Report RME-33, 34 p., 10 figs.
- 1955, Uranium ore controls of the Happy Jack deposit, White Canyon, San Juan County, Utah: *Economic Geology*, v. 50, no. 2, p. 156-169, 9 figs.

- Miller, P. T., 1970a, Road log from Holbrook to Tempe, Arizona, via Painted Desert, Petrified Forest, Meteor Crater, Winslow, Payson, and Scottsdale, in *Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region 1970*: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 150–155.
- 1970b, Road log from Tempe to Grand Canyon, Arizona, via Interstate 17, Sedona, Flagstaff, Sunset Crater, and Desert View, in *Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region 1970*: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 53–61.
- Minerals Map Company, 1956, Uranium map of the Colorado Plateau: Salt Lake City, Utah [map].
- Mirsky, Arthur, 1953, Preliminary report on uranium mineralization in the Dakota Sandstone, Zuni Uplift, New Mexico: U.S. Atomic Energy Commission Report RME-47, 21 p., 7 figs.
- 1955, Jurassic rocks of the Lucero Uplift, northwestern New Mexico: University of Arizona, Tucson, unpublished M.S. thesis.
- Mirsky, Arthur, and Treves, S. B., 1963, Heavy minerals of the pre-Morrison Jurassic rocks, Lucero Uplift, northwestern New Mexico: *Journal of Sedimentary Petrology*, v. 33, no. 2, p. 452–461.
- Miser, H. D., 1924, The San Juan Canyon, southeastern Utah—a geographic and hydrographic reconnaissance: U.S. Geological Survey Water-Supply Paper 538, 80 p.
- 1925a, Erosion in San Juan Canyon, Utah: *Geological Society of America Bulletin*, v. 36, no. 2, p. 365–377.
- 1925b, Geologic structure of the San Juan Canyon and adjacent country, Utah, in *Contributions to economic geology, short papers, and preliminary reports 1923–1924; Part II—Mineral fuels*: U.S. Geological Survey Bulletin 751, p. 115–155, 1 fig.
- Mitcham, T. W., and Evenson, C. G., 1955, Uranium ore guides, Monument Valley district, Arizona: *Economic Geology*, v. 50, no. 2, p. 170–176, 2 figs.
- Mitchell, J. G., 1957, No. 12, Animas River Canyon measured section, in *Colorado measured sections; a symposium*: Rocky Mountain Association of Geologists, Denver, Colorado, p. 59–65.
- Miyamoto, S., Gould, W. L., and Rai, Dhanpat, 1975, Characterizing overburden materials before surface mining in the Fruitland Formation of northwestern New Mexico: Symposium Surface Mining Reclamation Paper 3, p. 80–94.
- Moench, R. H., 1959, Geologic mapping, Laguna district, New Mexico, in *Geologic investigations of radioactive deposits— Semiannual progress report, December 1, 1958 to May 31, 1959*: U.S. Geological Survey Trace Element Investigations Report TEI-751, p. 14–31.
- 1962a, Properties and paragenesis of coffinite from the Woodrow mine, New Mexico: *American Mineralogist*, v. 47, no. 1–2, p. 26–33.
- 1962b, Vanadium-rich garnet from Laguna, New Mexico, in *Short papers in geology, hydrology, and topography*: U.S. Geological Survey Professional Paper 450-b, p. 67–69.
- 1963a, Geologic map of the Laguna quadrangle, New Mexico: U. S. Geological Survey Geologic Quadrangle Map GQ-208.
- 1963b, Geologic map of the Seboyeta quadrangle, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-207.
- 1963c, Geologic limitations on the age of uranium deposits in the Laguna district, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 157–166, 7 figs.
- 1964a, Geology of the Dough Mountain quadrangle, New Mexico: U.S. Geolog-

- ical Survey Geologic Quadrangle Map GQ-354.
- 1964b, *Geology of the South Butte quadrangle, New Mexico—Valencia County: U.S. Geological Survey Geologic Quadrangle Map GQ-355.*
- Moench, R. H., and Hilpert, L. S., 1968, *Alteration of sandstone pipes, Laguna, New Mexico—discussion: Geological Society of America Bulletin, v. 79, no. 6, p. 787–790.*
- Moench, R. H., and Meyrowitz, Robert, 1964, *Goldmanite, a vanadium garnet from Laguna, New Mexico: American Mineralogist, v. 49, p. 644–655.*
- Moench, R. H., and Puffett, W. P., 1956, *Uranium in sandstone-type deposits on the Colorado Plateau—Laguna area, New Mexico, in Geologic investigations of radioactive deposits, semiannual progress report, December 1, 1955 to May 31, 1956: U.S. Geological Survey Trace Element Investigations Report TEI-620, p. 76–78.*
- 1957a, *Preliminary geologic map of the Laguna-4 NW quadrangle, Bernalillo, Sandoval, and Valencia Counties, New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-133.*
- 1957b, *Preliminary geologic map of the Laguna-4 SW quadrangle, Bernalillo and Valencia Counties, New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-134.*
- 1963a, *Geologic map of the Arch Mesa quadrangle, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-211.*
- 1963b, *Geologic map of the Mesa Gigante quadrangle, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-212.*
- Moench, R. H., and Schlee, J. S., 1957, *Geologic mapping, Laguna area, New Mexico, in Geologic investigations of radioactive deposits—Semiannual progress report, December 1, 1956 to May 31, 1957: U. S. Geological Survey Trace Element Investigations Report TEI-690, book 1, p. 161–169.*
- 1967, *Geology and uranium deposits of the Laguna district, New Mexico: U.S. Geological Survey Professional Paper 519, 117 p.*
- Moench, R. H., Schlee, J. S., and Bryan, W. B., 1965, *Geologic map of the La Gotera quadrangle, Sandoval and Valencia Counties, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-371.*
- Moir, G. J., 1974, *Depositional environments and stratigraphy of the Cretaceous rocks, southwest Utah: University of California, Los Angeles, unpublished Ph. D. dissertation, 316 p.*
- Molenaar, C. M., 1973a, *Durango to Farmington, via Cortez, Shiprock, Biclabito Dome, and Big Gap Reservoir, with selected side trips, in Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir, p. 208–214.*
- 1973b, *Sedimentary facies and correlation of the Gallup Sandstone and associated formations, northwestern New Mexico, in Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir, p. 85–110, 19 figs.*
- 1974, *Correlation of the Gallup Sandstone and associated formations, upper Cretaceous, eastern San Juan and Acoma Basins, New Mexico, in Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 251–258, 5 figs.*
- 1975, *Some notes on upper Cretaceous stratigraphic of the Paradox Basin, in Guidebook to canyonlands: Four Corners Geological Society, 8th Field Conference, p. 191–192.*
- 1977a, *The Pinedale oil seep—an exhumed stratigraphic trap in the southwestern San Juan Basin, in Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 243–246, 5 figs.*

- 1977b, Stratigraphy and depositional history of upper Cretaceous rocks of the San Juan Basin area, New Mexico and Colorado, with a note on economic resources, *in* Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 159–166, 1 fig.
- Momper, J. A., 1957, Pre-Morrison stratigraphy of the southern and western San Juan Basin *in* Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference, p. 85–94.
- Momper, J. A., and Tyrrell, W. W., Jr., 1957, Catalog of stratigraphic names of the southwest San Juan Basin and adjacent areas, *in* Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference, p. 17–24.
- Moore, R. C., 1922a, On the stratigraphy of northeastern Arizona: American Association of Petroleum Geologists Bulletin, v. 6, no. 1, p. 47–49.
- 1922b, Stratigraphy of southern Utah: American Association of Petroleum Geologists Bulletin, v. 6, no. 2, p. 199–227.
- 1923, Structural features of the Colorado Plateau and their origin [abs.]: Geological Society of America Bulletin, v. 34, no. 1, p. 88–89.
- Morgan, A. M., 1938, Ground-water conditions in a portion of the San Jose-Bluewater Valley in the vicinity of Grants, New Mexico: U.S. Geological Survey Open-File Report, 15 p., 1 fig.
- Morrisey, N. S., 1957, Dry-hole graveyard to major province; Four Corners: Oil and Gas Journal, v. 55, no. 36, p. 84–90.
- Muehlberger, W. R., 1957, Pennsylvanian outcrops along Brazos uplift, Rio Arriba County, New Mexico: American Association of Petroleum Geologists Bulletin, v. 41, no. 1, p. 140–145, 3 figs.
- 1960a, Precambrian rocks of the Tusas Mountains, Rio Arriba County, New Mexico, *in* Guidebook to Rio Chama country: New Mexico Geological Society, 11th Field Conference, p. 45–47.
- 1960b, Structure of the central Chama Platform, northern Rio Arriba County, New Mexico [abs.]: Geological Society of America Bulletin, v. 71, no. 12, p. 1933.
- 1960c, Structure of the central Chama Platform, northern Rio Arriba County, New Mexico, *in* Guidebook to Rio Chama country: New Mexico Geological Society, 11th Field Conference, p. 103–109.
- 1967, Geology of Chama quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 89, 114 p.
- Muehlberger, W. R., Adams, G. E., Longgood, T. E., and St. John, B. E., 1960, Stratigraphy of the Chama quadrangle, northern Rio Arriba County, New Mexico, *in* Guidebook to Rio Chama country: New Mexico Geological Society, 11th Field Conference, p. 103–109.
- Murray, C. R., 1944, Preliminary conclusion on ground-water conditions in the Bluewater area, Valencia County, New Mexico: U.S. Geological Survey Open-File Report, 4 p.
- Murray, D. K., 1976, New Frontiers in Colorado coal research [abs.]: American Association of Petroleum Geologists Bulletin, v. 60, no. 8, p. 1404–1405.
- Myers, A. T., and Hamilton, J. C., 1962, Rhenium in plant samples from the Colorado Plateau, *in* Geological Survey research, 1961: U.S. Geological Survey Professional Paper 424-B, p. 286–288.
- Myers, D. A., and McKay, E. J., 1970, Geologic map of the Mount Washington quadrangle, Bernalillo and Valencia Counties, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-886.
- Naff, R. L., Bakr, A. A., and Gross, G. W., 1975, Environmental controls on ground-water chemistry in New Mexico; I. The effect of phreatophytes: New Mexico Water Resources Research Institute Report 052, 102 p., 17 figs.

- Nagel, F. G., 1951, Regional stratigraphic analysis of the upper Cretaceous rocks of the Rocky Mountain region and adjacent areas: Northwestern University, Evanston, Illinois, unpublished M.S. thesis, 122 p., 9 figs. [1952].
- Nash, J. T., 1965, Introductory study of the Jackpile Sandstone and uranium mineralization, Valencia County, New Mexico: Columbia University, New York, unpublished M.S. thesis.
- 1967a, Geology and uranium deposits of the Jackpile mine area, Laguna, New Mexico: Columbia University, New York, unpublished Ph. D. dissertation, 217 p.
- 1967b, Geology and uranium deposits of the Jackpile mine area, Laguna, New Mexico [abs.]: Dissertation Abstracts International, sec. B, v. 28, no. 4, p. 1581B.
- 1968, Uranium deposits in the Jackpile Sandstone, New Mexico: Economic Geology, v. 63, no. 7, p. 737–750, 6 figs.
- 1975, Fluid inclusion studies of vein, pipe, and replacement deposits, northwestern San Juan Mountains, Colorado: Economic Geology, v. 70, no. 8, p. 1448–1462.
- Nash, J. T., and Kerr, P. F., 1966, Geologic limitations on the age of uranium deposits in the Jackpile Sandstone, New Mexico: Economic Geology, v. 61, no. 7, p. 1283–1287, 2 figs.
- 1968a, Uranium deposits in the Jackpile Sandstone, New Mexico [abs.]: Mining Engineering, v. 19, no. 12, p. 40.
- 1968b, Uranium deposits in the Jackpile Sandstone, New Mexico [abs]: Petroleum Abstracts, v. 8, no. 2, p. 57.
- National Air Pollution Control Administration, 1970, Report for consultation on the Four Corners interstate air quality control region: U.S. Department of Health, Education and Welfare, National Air Pollution Control Administration Report, 103 p.
- Neff, A. W., 1960, Comparisons between the salt anticlines of south Persia and those of the Paradox Basin, Colorado Plateau, in Guidebook to geology of the Paradox Basin fold and fault belt: Four Corners Geological Society, 3rd Field Conference, p. 56–64.
- New Mexico Department of Development, 1974, Community profile, Farmington, New Mexico 1974–1975: Economic Development Division, Santa Fe, 32 p.
- New Mexico Department of Public Health, 1967, Chemical analyses of the municipal drinking water supplies of the State of New Mexico, 1967: Santa Fe, 47 p., 1 fig.
- New Mexico Geological Society, 1950, Guidebook of the San Juan Basin, New Mexico and Colorado: 1st Field Conference, 156 p., 38 figs.
- 1951, Guidebook of the south and west sides of the San Juan Basin, New Mexico and Arizona: 2nd Field Conference, 167 p., 48 figs.
- 1957, Guidebook of southwestern San Juan Mountains: 8th Field Conference, 258 p.
- New Mexico Governor's Energy Task Force, 1975, Coal surface mining in New Mexico: A report of the Governor's Task Force Committee on Coal Surface Mining, G. E. Dials, chairman, 28 p.
- New Mexico Land Resources Association, 1959, Land resources of New Mexico: Santa Fe, 102 p.
- New Mexico State Engineer, 1956a, Climatological summary New Mexico; temperature 1850–1954, frost 1850–1954, evaporation 1912–1954: Technical Report 5, 277 p., 5 figs.
- 1956b, Climatological summary New Mexico; Precipitation 1849–1954: Technical Report 6, 407 p., 5 figs.
- 1959, Hydrologic summary, New Mexico—streamflow and reservoir content 1888–1954: Technical Report 7, 326 p., 8 figs.

- compiler, 1967, Water resources of New Mexico; occurrence, development, and use: New Mexico State Planning Office, Santa Fe, 321 p., 46 figs.
- 1972, Municipal and rural domestic water use in New Mexico in 1970 and projected rates for 1980, 2000, and 2020: Memorandum, 6 p.
- 1974b, Survey and monumentation project: Technical Report, 254 p., 2 figs.
- 1977a, Water-resources data for New Mexico Calendar Year 1975, Surface-water records: 242 p., 2 figs.
- 1977b, Water-resources data for New Mexico Calendar Year 1975, Water-quality records: 345 p., 2 figs.
- New Mexico State Planning Office, 1966, Summary reports on New Mexico's resources Phase 1 State Resources Development Plan—an excerpt Section VI, Land and water; Section VII, Climate: p. 63–100, 1 fig.
- New Mexico State University, 1956, Water resources and their economic importance in New Mexico: Las Cruces, Agriculture and Mechanical Arts Report 1, 145 p., 4 figs.
- New Mexico Water Quality Control Commission, 1967, Water quality standards, The San Juan, La Plata, and Animas Rivers in New Mexico: Santa Fe, 86 p.
- 1969, San Juan River water data, 1964 thru 1968: New Mexico Health and Social Services Department, Santa Fe.
- 1974, Lower Colorado River Basin plan: Santa Fe, 139 p., 16 figs.
- 1975, Water quality in New Mexico: Santa Fe, 59 p., 14 figs.
- 1976, The State of New Mexico continuing planning process for water quality management: Santa Fe, 31 p., 2 figs.
- Newberry, J. S., 1861, Geological report, in Ives, J. C., Report upon the Colorado River of the West: U.S. 36th Congress, 1st session, Senate Executive Document-House Executive Document 90, pt. 3, 154 p.
- 1876a, Geological report, in Macomb, J. N., Report of the exploring expedition from Santa Fe, New Mexico, to the junction of the Grand and Green Rivers of the great Colorado of the West in 1859: U.S. Army Engineering Department, p. 101–109.
- 1876b, Geological report: Report of the exploring expedition from Santa Fe, New Mexico to the junction to the Grand and Green rivers of the great Colorado of the West in 1855, under the command of Capt. J. N. Macomb: American Journal of Science, 3rd ser., v. 13, p. 220–221.
- 1876c, Geologic report: Report of the exploring expedition from Santa Fe, New Mexico to the junction of the Grand and Green rivers of the great Colorado of the West in 1855, under the command of Capt. J. N. Macomb: U.S. Army Engineering Department, p. 9–118.
- Newman, W. L., 1959, Chemical composition as a guide to the size of sandstone-type uranium deposits, Colorado Plateau [abs.]: Washington Academy of Science Journal, v. 49, no. 3, p. 90–91.
- 1962, Distribution of elements in sedimentary rocks of the Colorado Plateau—a preliminary report, in Contributions to the geology of uranium, 1958–60: U.S. Geological Survey Bulletin 1107-F, p. 337–445.
- Nichols, R., 1975, Archaeomagnetic study of Anasazi-related sediments of Chaco Canyon, New Mexico: University of Oklahoma, Norman, unpublished M.S. thesis, 111 p.
- Nicolasis, S. M., 1975, Geology of the South Ophir district, San Juan and San Miguel Counties, Colorado: Colorado School of Mines, Golden, unpublished M.S. thesis.
- Nightingale, H. I., 1970, Statistical evaluation of salinity and nitrate content and trends beneath urban and agricultural areas: Ground Water, v. 8, no. 1, p. 22–28, 7 figs.
- Noble, E. A., 1960, Genesis of uranium belts of the Colorado Plateau: 21st Interna-

- tional Geological Congress, Copenhagen, Denmark, 1960, Report, pt. 15, p. 26–39.
- Noble, L. F., 1914, The Shinumo quadrangle, Grand Canyon district, Arizona: U.S. Geological Survey Bulletin 549, 100 p.
- Nockolds, S. R., 1954, Average chemical compositions of some igneous rocks: Geological Society of America Bulletin, v. 65, no. 10, p. 1007–1032.
- Norman, J. C., and Haskin, L. A., 1968, The geochemistry of Sc-A comparison to the rare earths and Fe: *Geochimica et Cosmochimica Acta*, v. 32, no. 1, p. 93–108, 4 figs.
- Northrop, S. A., 1950, General geology of the northern part of New Mexico, in *Guidebook for vertebrate paleontology in northwestern New Mexico*: Society of Vertebrate Paleontology, American Museum of Natural History and University of New Mexico, Albuquerque, 4th Field Conference, p. 26–47.
- , 1959, *Minerals of New Mexico*, revised edition: Albuquerque, University of New Mexico Press, 665 p.
- Northrop, S. A., Wood, G. H., and Cowan, H. J., 1946, Geology of Nacimiento Mountains, San Pedro Mountain, and adjacent plateaus in parts of Sandoval and Rio Arriba County, New Mexico: U.S. Geological Survey Oil and Gas Preliminary Investigation Map 57.
- Nowels, K. B., 1925, Navajo Reservation development: *Oil and Gas Journal*, October 1, 1925, p. 225–264, 300.
- , 1929, Development and relation of oil accumulation to structure in the Shiprock district of the Navajo Indian Reservation, New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 12, no. 2, p. 117–151.
- Obradovich, J. D., and Cobban, W. A., 1975, A time-scale for the late Cretaceous of the western interior of North America: *Canadian Geological Society Special Paper* 13, p. 31–54.
- Olson, A. B., 1969, Photogeologic map of the Hosta Butte quadrangle (and adjacent area to the south), McKinley County, New Mexico: U. S. Geological Survey Open-File Map.
- Ong, H. L., and Swanson, V. E., 1966, Absorption of copper by peat, lignite, and bituminous coal: *Economic Geology*, v. 61, no. 7, p. 1214–1231.
- Orlansky, Ralph, 1971, Palynology of the upper Cretaceous Straight Cliffs Sandstone, Garfield County, Utah: *Utah Geologic and Mineralogic Survey Bulletin* 89, 57 p.
- Ostrander, R. E., 1957, Medio Field, Sandoval County, New Mexico, in *Guidebook to geology of southwestern San Juan Basin*: Four Corners Geological Society, 2nd Field Conference, p. 138–140.
- O'Sullivan, R. B., 1955, Preliminary geologic map of the Naschitti quadrangle, San Juan and McKinley Counties, New Mexico: U.S. Geological Survey Coal Investigation Map C-31.
- , 1970, The upper part of the upper Triassic Chinle Formation and related rocks, southeastern Utah and adjacent areas: U.S. Geological Survey Professional Paper 644-E, 22 p.
- , 1974, The upper Triassic Chinle Formation in north-central New Mexico, in *Guidebook to Ghost Ranch (central-northern, New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 171–174, 2 figs.
- , 1977, Triassic rocks in the San Juan Basin of New Mexico and adjacent areas, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 139–146, 3 figs.
- O'Sullivan, R. B., and Beaumont, E. C., 1957, Preliminary geologic map of western San Juan Basin, San Juan and McKinley Counties, New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM-190.
- O'Sullivan, R. B., and Beikman, H. M., 1963, Geology, structure, and uranium deposits

- of the Shiprock Quadrangle, New Mexico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-345.
- O'Sullivan, R. B., and Craig, L. C., 1973, Jurassic rocks of northeast Arizona and adjacent areas, in *Guidebook to Monument Valley and vicinity, Arizona and Utah*: New Mexico Geological Society, 24th Field Conference, p. 79-85.
- O'Sullivan, R. B., and Green, M. W., 1973, Triassic rocks of northeast Arizona and adjacent areas, in *Guidebook to Monument Valley and vicinity, Arizona and Utah*: New Mexico Geological Society, 24th Field Conference, 1973: p. 72-78.
- O'Sullivan, R. B., Repenning, C. A., Beaumont, E. C., and Page, H. G., 1972, Stratigraphy of the Cretaceous rocks and the Tertiary Ojo Alamo Sandstone, Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: U.S. Geological Survey Professional Paper 521-E, 65 p.
- Owen, D. E., 1963, The Dakota Formation of the San Juan Basin, New Mexico and Colorado: University of Kansas, Lawrence, unpublished Ph. D. dissertation, 388 p.
- 1966, Nomenclature of Dakota Sandstone (Cretaceous) in San Juan Basin, New Mexico and Colorado: American Association of Petroleum Geologists Bulletin, v. 50, no. 5, p. 1023-1028, 3 figs.
- 1969, The Dakota Sandstone of the eastern San Juan and Chama Basins and its possible correlation across the southern Rocky Mountains, in *Guidebook to Raton Basin, Colorado, and New Mexico: The Mountain Geologist*, v. 6, no. 3, p. 87-92.
- 1973, Depositional history of the Dakota Sandstone, San Juan Basin area, New Mexico, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 37-51, 23 figs.
- 1975, Dakota Sandstone of eastern edge of San Juan Basin, New Mexico [abs.]: American Association of Petroleum Geologists Bulletin, v. 59, no. 5, p. 919.
- Owen, D. E., Lester, J. W., Jr., Kostura, J. R., and Grant, Keith, 1976, Paleocurrent analysis of Dakota and subjacent sandstones, San Juan Basin, New Mexico [abs.]: American Association of Petroleum Geologists Bulletin, v. 60, no. 8, p. 1405.
- Owen, D. E., and Siemers, C. T., 1977, Lithologic correlation of the Dakota Sandstone and adjacent units along the eastern flank of the San Juan Basin, New Mexico, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 179-183, 2 figs.
- Owen, J. R., and Shown, L. M., 1976, Hydrology of arid and semiarid area, in *ERTS-1, a new window on our planet*: U.S. Geological Survey Professional Paper 929, p. 217-219.
- Pacific Southwest Inter-Agency Committee, Water Resources Council, 1971a, Pacific southwest analytical summary report on water and land resources based on framework studies of four regions: 185 p., 58 figs.
- 1971b, Upper Colorado region comprehensive framework study: Upper Colorado Region State-Federal Inter-Agency Group, Pacific Southwest Inter-Agency Committee, Water Resources Council, 18 v.
- Page, H. G., and Repenning, C. A., 1958, Late Cretaceous stratigraphy of Black Mesa, Navajo and Hopi Indian Reservations, Arizona, in *Guidebook to Black Mesa Basin*: New Mexico Geological Society, 8th Field Conference, p. 115-122, 3 figs.
- Page, L. R., Stocking, H. E., and Smith, H. B., compilers, 1956, Contributions to the geology of uranium and thorium by the U.S. Geological Survey and Atomic Energy Commission for the U.N. International Conference on peaceful uses of atomic energy, Geneva, Switzerland, 1955: U.S. Geological Survey Professional Paper 300, 739 p., 218 figs.
- Park, C. F., Jr., and Burbank, W. S., 1934, The Red Arrow gold discovery in the La Plata Mountains, Colorado: U.S. Geological Survey Press Memorandum 81670,

6 p.

- Parker, J. M., Riggs, E. A., and Fisher, W. L., 1977, Oil and gas potential of the San Juan Basin, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 227–234, 6 figs.
- SEE ALSO FUCHS-PARKER, J. W.
- Parker, J. W., 1957, Nacimiento Mountains—history and relation to the San Juan Basin in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference*, p. 73–76.
- 1975, La Ventana delta (Cretaceous), New Mexico [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 59, no. 5, p. 919.
- Parker, J. W., Bowman, F. O., Jr., and See, P. D., 1963, Stratigraphic nomenclature of the Paradox, Black Mesa, and San Juan Basins, in *Shelf carbonates of the Paradox Basin, a symposium: Four Corners Geological Society, 4th Field Conference*, p. 5–12.
- Parker, J. W., and Roberts, J. W., 1963, Devonian and Mississippian stratigraphy of the central part of the Colorado Plateau, in *Guidebook to shelf carbonates of the Paradox Basin, a symposium: Four Corners Geological Society, 4th Field Conference*, p. 31–60.
- 1966, Regional Devonian and Mississippian stratigraphy, central Colorado Plateau: *American Association of Petroleum Geologists Bulletin*, v. 50, no. 11, p. 2404–2433.
- Parker, R. L., and Adams, J. W., 1973, Niobium (Columbium) and tantalum, in *United States mineral resources: U.S. Geological Survey Professional Paper 820*, 443–454.
- Pastuszak, R. A., 1969, *Geomorphology of part of the La Plata and San Juan Rivers, San Juan County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis*, 83 p., 17 figs.
- Paterson, W. C., 1951, Thorium is metal for future power and atomic weapons (Colorado Plateau): *Idaho Mining Industry Annual Report 53*, p. 110–115.
- Patterson, J. A., 1976, Uranium market activities: U.S. Energy Research and Development Administration Open-File Report GJO-108(76), p. 27–50.
- Patterson, J. L., and Somers, W. P., 1966, Magnitude and frequency of floods in the United States—Part 9, Colorado River Basin: U.S. Geological Survey Water-Supply Paper 1683, 475 p., 25 figs.
- Payne, A. L., 1962, *Geology and uranium deposits of the Colorado Plateau: Stanford University, Palo Alto, California, unpublished Ph. D. dissertation*, 287 p.
- Payne, T. G., 1942, Stratigraphical analysis and environmental reconstruction: *American Association of Petroleum Geologists Bulletin*, v. 26, no. 11, p. 1697–1770.
- Peck, R. E., 1957, North American Mesozoic charophyta: U.S. Geological Survey Professional Paper 294-A, 44 p.
- Peirce, H. W., 1958, Permian sedimentary rocks of the Black Mesa Basin area, in *Guidebook to Black Mesa Basin: New Mexico Geological Society, 9th Field Conference*, p. 82–87.
- 1964, Internal correlation of the Permian DeChelly Sandstone-Defiance Plateau, Arizona, in *Contributions to the geology of northern Arizona: Museum of Northern Arizona, Flagstaff, Bulletin 40*, p. 15–32.
- 1967, Permian stratigraphy of the Defiance Plateau, Arizona, in *Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference*, p. 57–62, 2 figs.
- Penttila, William, 1962, *Stratigraphy and structure of the Horseshoe, Gallup, and Verde Gallup pools, San Juan County, New Mexico: Colorado School of Mines, Golden, unpublished M.S. thesis*.
- 1963a, *Stratigraphy of the Horseshoe and Verde pools, San Juan County, New*

- Mexico [abs.]: Geological Society of America Special Paper 73, p. 93.
- 1963b, Mapping pre-Niobrara unconformity may be key to San Juan Basin oil: *Oil and Gas Journal*, v. 61, no. 43, p. 164–166.
- 1964, Evidence for the pre-Niobrara unconformity in the northwestern part of the San Juan Basin: *The Mountain Geologist*, v. 1, p. 3–14.
- Perry, B. L., 1963, Limestone reefs as an ore control in the Jurassic Todilto Limestone of the Grants district, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 150–156, 8 figs.
- Perry, V. D., 1961, The significance of mineralized breccia pipes: *Mining Engineer*, v. 13, p. 367–376.
- Peters, J. R., 1942, High level potholes near Toadlena, New Mexico: *Plateau*, v. 15, no. 1, p. 1–19.
- Peterson, Fred, 1969a, Cretaceous sedimentation and tectonism in the southeastern Kaiparowits region, Kane County, Utah: U.S. Geological Survey Open-File Report, 259 p.
- 1969b, Four new members of the upper Cretaceous Straight Cliffs Formation in the southeastern Kaiparowits region, Kane County, Utah: U.S. Geological Survey Bulletin 1274-J, 28 p.
- Peterson, Fred, and Barnum, B. E., 1973, Geologic map and coal resources of the northeast quarter of the Cummings Mesa quadrangle, Kane County, Utah: U.S. Geological Survey Coal Investigations Map C-63.
- Peterson, Fred, Cornet, Bruce, and Turner-Peterson, C. E., 1977, New data bearing on the stratigraphy and age of the Glen Canyon Group (Triassic and Jurassic) in southern Utah and northern Arizona [abs.]: Geological Society of America, Abstracts with Programs, v. 9, no. 6, p. 755.
- Peterson, Fred, and Kirk, A. R., 1977, Correlation of Cretaceous rocks in the San Juan, Black Mesa, Kaiparowits, and Henry Basins, southern Colorado Plateau, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 167–178, 4 figs.
- Peterson, Fred, and Ryder, R. T., 1975, Cretaceous rocks in the Henry Mountains region, Utah and their relation to neighboring regions, in *Guidebook to canyonlands country: Four Corners Geological Society, 8th Field Conference*, p. 167–189.
- Peterson, J. A., 1959, Petroleum geology of the Four Corners area includes a discussion: *World Petroleum Congress, Proceedings*, no. 1, p. 499–523.
- 1966, Stratigraphic vs. structural controls on carbonate-mound hydrocarbon accumulation, Aneth Area, Paradox Basin: American Association of Petroleum Geologists Reprint Series 15, p. 142–155.
- Peterson, J. A., Loliet, A. J., Spencer, G. W., and Ullrich, R. 1965, Sedimentary history and economic geology of the San Juan Basin, New Mexico and Colorado: *American Association of Petroleum Geologists Bulletin*, v. 49, no. 11, p. 2076–2119, 24 figs.
- Peterson, J. A., and Ohlen, H. R., 1963, Pennsylvanian shelf carbonates, Paradox Basin, in *Guidebook to shelf carbonates of the Paradox Basin*: Four Corners Geological Society, symposium, p. 65–79.
- Peterson, K. L., and Mehringer, P. J., Jr., 1976, Postglacial timberline fluctuations, La Plata Mountains, southwestern Colorado: *Arctic and Alpine Research*, v. 8, no. 3, p. 275–288.
- Petre, R. W., 1898, Mines of La Plata Mountains: *Engineering Mining Journal*, v. 66, p. 667–668.
- Phoenix, D. A., 1953, Ground-water studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigations Report TEI-280, p. 23–24.
- Picard, M. D., 1958, Relationship of structure to Paradox Basin oil [abs.]: American Association of Petroleum Geologists, Rocky Mountain Section, Denver, Colorado,

- Geological Record, p. 125.
- 1960a, Carbon dioxide, nitrogen and helium in Mississippian of Four Corners region (Colorado Plateau), preliminary statement, *in* Guidebook to geology of the Paradox Basin fold and fault belt: Four Corners Geological Society, 3rd Field Conference, p. 138–140.
- 1960b, Pennsylvanian gas in the Four Corners region [abs.]: American Association of Petroleum Geologists, Rocky Mountain Section, Denver, Colorado, Geological Record, p. 162.
- 1960c, Pennsylvanian gas in the Four Corners region [abs.]: American Association of Petroleum Geologists Bulletin, v. 44, no. 6, p. 960.
- Pierson, C. T., 1953a, San Juan Mountains, Colorado: reconnaissance: U.S. Geological Survey Trace Element Investigation Report TEI-280, p. 23–24.
- 1953b, San Juan Mountains, Colorado: reconnaissance: U.S. Geological Survey Trace Element Investigation Report TEI-390, p. 110–111.
- 1954, Reconnaissance for radioactive minerals, San Juan Mountains, Colorado: U.S. Geological Survey Trace Element Investigation Report TEI-440, p. 89–91.
- Pierson, C. T., and Green, M. W., 1977, Factors controlling localization of uranium deposits in the Dakota Sandstone, Gallup and Ambrosia Lake mining districts, McKinley County, New Mexico: U.S. Geological Survey Open-File Report 77-766, 62 p., 2 figs.
- Pierson, C. T., Weeks, W. F., and Kleinhampl F. J., 1958, Reconnaissance for radioactivity in the metal-mining districts of the San Juan Mountains, Colorado, *in* Contributions to the geology of uranium, 1956: U.S. Geological Survey Bulletin 1046-O, p. 385–413.
- Pike, W. S., Jr., 1947, Intertonguing marine and nonmarine upper Cretaceous deposits of New Mexico, Arizona, and southwestern Colorado: Geological Society of America Memoir 24, 103 p.
- Piller, Richard, and Adams, J. A. S., 1959, Distribution of thorium and uranium in the Mancos Shale (Cretaceous), Colorado Plateau [abs.]: Geological Society of America Bulletin, v. 70, no. 12, pt. 2, p. 1656–1657.
- Pipiringos, G. N., and O'Sullivan, R. B., 1975, Chert pebble unconformity at the top of the Navajo Sandstone in southeastern Utah, *in* Guidebook to canyonlands country: Four Corners Geological Society, 8th Field Conference, p. 149–156.
- Pitman, R. K., 1958, Uranium-vanadium deposits of the Cottonwood Wash mining area, San Juan County, Utah with a section on mineralogy by E. B. Gross: U.S. Atomic Energy Commission Report RME-109 [revised], 26 p., 7 figs.
- Plouff, Donald, 1972, Gravity observations near the San Juan Mountains, Colorado: U.S. Geological Survey, Geologic Division, Report GDO 72-026, 78 p.
- Pommer, A. M., 1956, Transportation and deposition of uranium ore-forming minerals (Colorado Plateau): U.S. Geological Survey Trace Element Investigation Report TEI-620, p. 319–320.
- Potter, P. E., 1967, Sand bodies and sedimentary environments; a review: American Association of Petroleum Geologists Bulletin, v. 51, no. 3, p. 337–365.
- Powell, J. S., 1973, Paleontology and sedimentation of the Kimbeto Member of the Ojo Alamo Sandstone, *in* Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir, p. 111–122, 7 figs.
- Powers, Sidney, 1926a, Effect of salt and gypsum on the formation of Paradox and other valleys of southwestern Colorado [abs.]: Geological Society of America Bulletin, v. 37, no. 1, p. 168.
- 1926b, Effect of salt and gypsum on the formation of Paradox and other valleys of southwestern Colorado: Pan-American Geologist, v. 45, no. 2, p. 166.
- Pritchard, R. L., 1972, Petroleum and natural gas, San Juan Basin, *in* Geologic atlas of the Rocky Mountain Region: Rocky Mountain Association of Geologists, Den-

- ver, Colorado, p. 284–285.
- 1973, History of Mesaverde development in the San Juan Basin, *in* Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir, p. 174–177, 3 figs.
- Prommel, H. W. C., 1937, Pennsylvanian basin of west-central Colorado geologized: *Oil and Gas Journal*, v. 36, no. 19, p. 20–21, 24.
- Prosser, W. C., 1910, Tungsten in San Juan County, Colorado: *Engineering Mining Journal*, v. 90, p. 320.
- 1911a, The Bear Creek sylvanite camp (near Silverton), Colorado: *Engineering Mining Journal*, v. 91, p. 712.
- 1911b, Gold deposits of the San Juan, Colorado: *Mines and Minerals*, v. 31, p. 335–337.
- 1911c, Prospecting in Colorado; mining in San Juan County: *Engineering Mining Journal*, v. 92, p. 99, 435.
- Prudden, T. M., 1903, The prehistoric ruins of the San Juan watershed: *American Anthropologist*, new ser., v. 5, p. 224–283.
- Purington, C. W., 1903, Geology of the Virginium mine, San Juan Mountains, Colorado: *Engineering Mining Journal*, v. 76, p. 458.
- 1905a, The Camp Bird and Smuggler-Union fissures: *Engineering Mining Journal*, v. 79, p. 1243–1244.
- 1905b, Ore horizons in the veins of the San Juan Mountains, Colorado: *Economic Geology*, v. 1, p. 129–133.
- Rai, Dhanpat, 1974, Chemical and physical properties of core samples from a coal-bearing formation San Juan County, New Mexico: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 287, 13 p.
- Rai, Dhanpat, Wierenga, P. J., and Gould, W. L., 1975, Chemical and physical properties of soil samples from a coal-bearing formation in San Juan County, New Mexico: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 294, 24 p.
- Randall, Alan, and Dewbre, Joe, 1972, Inventory of water diversions and rate structures for cities, towns, and villages in New Mexico: New Mexico State University, Las Cruces, Agricultural Experiment Station Research Report 241, 50 p.
- Rankin, C. H., 1944, Stratigraphy of the Colorado Group, upper Cretaceous in northern New Mexico: *New Mexico Bureau of Mines and Mineral Resources Bulletin* 20, 30 p., 6 figs.
- Rapaport, Irving, 1952, Interim report on the ore deposits of the Grants district, New Mexico: U.S. Atomic Energy Commission Report RMO-1031, 19 p.
- 1963, Uranium deposits of the Poison Canyon ore trend, Grants district, *in* Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 122–135, 6 figs.
- Rapaport, Irving, Hadfield, J. P., and Olson, R. H., 1952, Jurassic rocks of the Zuni Uplift, New Mexico: U.S. Atomic Energy Commission Report RMO-642, 47 p.
- Rapp, J. R., 1959, Reconnaissance of the geology and ground-water conditions of the Farmington area, San Juan County, New Mexico: U.S. Geological Survey Open-File Report, 13 p., 1 fig.
- 1960, Reconnaissance of ground water for irrigation, Acoma Indian Reservation, Valencia County, New Mexico: U.S. Geological Survey Open-File Report, 26 p., 2 figs.
- Rasor, C. A., 1953, Geology of Colorado Plateau uranium deposits [abs.]: American Institute of Mining Engineers, Mining Geology, Geophysical Division Annual Meeting, Abstracts of Technical Papers, p. 16.
- Ratte, J. C., and Steven, T. A., 1967, Ash flows and related volcanic rocks associated with the Creede Caldera, San Juan Mountains, Colorado: U.S. Geological Survey

Professional Paper 524—H, 58 p.

- Rautman, Christopher, 1977, Uranium industry in New Mexico, in Annual report July 1, 1976 to June 30, 1977: New Mexico Bureau of Mines and Mineral Resources, p. 55–65, 7 figs.
- Read, C. B., 1950, Stratigraphy of outcropping Permian rocks around the San Juan Basin, in Guidebook to San Juan Basin, New Mexico, and Colorado: New Mexico Geological Society, 1st Field Conference, p. 62–66, 3 figs.
- 1951, Stratigraphy of the outcropping Permian rocks around the San Juan Basin, in Guidebook to the south and west sides of the San Juan Basin, New Mexico and Arizona: New Mexico Geological Society, 2nd Field Conference, p. 80–84, 3 figs.
- Read, C. B., and Ash, S. R., 1961, Stratigraphic significance of the Cretaceous fern *Tempskyia* in the western conterminous United States; in Short papers in the geologic and hydrologic sciences: U.S. Geological Survey Professional Paper 424—D, p. 250–254.
- Read, C. B., Duffner, R. T., Wood, G. H., Jr., and Zapp, A. D., 1950, Coal resources of New Mexico, in Guidebook to the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 124–131, 1 fig.
- Read, C. B., and Henbest, L. G., 1942, Pennsylvanian and Permian stratigraphy of northern New Mexico [abs.]: American Association of Petroleum Geologists Bulletin, v. 26, no. 5, p. 910.
- Read, C. B., and Wanek, A. A., 1961a, Correlation of Permian rocks in northeastern Arizona and adjoining parts of New Mexico and Utah, in Short papers in the geologic and hydrologic sciences: U.S. Geological Survey Professional Paper 424—C, p. 156–160.
- 1961b, Stratigraphy of outcropping Permian rocks in parts of northeastern Arizona and adjacent areas: U.S. Geological Survey Professional Paper 374—H, 10 p.
- 1967, Stratigraphy of outcropping Permian rocks in parts of northeastern Arizona, and adjacent areas (excerpts), in Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference, p. 122–124.
- Read, C. B., and Wood, G. H., Jr., 1946, Distribution and correlation of Pennsylvanian rocks in late Paleozoic sedimentary basins of northern New Mexico [abs.]: Geological Society of America Bulletin, v. 57, no. 12, pt. 2, p. 1273–1274.
- 1947, Distribution and correlation of Pennsylvanian rocks in late Paleozoic sedimentary basins of northern New Mexico, in Wanless, H. R., ed., Symposium on Pennsylvanian problems: Journal of Geology, v. 55, no. 3, pt. 2, p. 220–236.
- Read, C. B., Wood, G. H., Wanek, A. A., and MacKee, P. V., 1949, Stratigraphy and geologic structure in the Piedra River Canyon, Archuleta County, Colorado: U.S. Geological Survey Oil and Gas Investigations Preliminary Map 96.
- Read, C. B., and others, 1967, Second-day road log from Gallup through the Zuni Mountains to Thoreau and return to Gallup via Smith Lake, Mariano Lake, and Pinedale, in Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference, p. 97–118.
- Read, W. A., 1957, Ascent of Shiprock, in Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference, p. 15–16.
- Reagan, A. B., 1927, Garnets in the Navajo country: American Mineralogist, v. 12, p. 414–415.
- 1932, The Tertiary-Pleistocene of the Navajo country in Arizona: Kansas Academy of Science Transactions, v. 35, p. 253–259.
- Reed, E. K., 1944, The abandonment of the San Juan region: El Palacio, v. 51, no. 4.
- Reed, H. W., 1911, Secondary enrichment of gold deposits, San Juan region, Colorado: Mining and Scientific Press, San Francisco, v. 102, p. 825.

- Reed, R. K., 1971, Precambrian geology of the central Nacimiento Mountains, Sandoval County, New Mexico: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 114 p.
- Reeder, H. O., and others, 1959, Annual water-level measurements in observation wells, 1951-55, and atlas of maps showing changes in water levels for various periods from beginning of record through 1954, New Mexico: New Mexico State Engineer Technical Report 13, 339 p., 4 figs.
- 1960a, Changes in water levels in 1955, and annual water-level measurements in January and February 1956 in observation wells in New Mexico: New Mexico State Engineer Technical Report 16, 145 p., 31 figs.
- 1960b, Ground-water levels in New Mexico, 1956: New Mexico State Engineer Technical Report 19, 251 p., 19 figs.
- 1961, Ground-water levels in New Mexico, 1957: New Mexico State Engineer Technical Report 22, 306 p., 19 figs.
- 1962a, Ground-water levels in New Mexico, 1958: New Mexico State Engineer Technical Report 23, 288 p., 20 figs.
- 1962b, Ground-water levels in New Mexico, 1959: New Mexico State Engineer Technical Report 24, 125 p., 21 figs.
- Reese, D. L., 1975, Developments in Four Corners-Intermountain area in 1974: American Association of Petroleum Geologists Bulletin, v. 59, no. 8, p. 1390-1392.
- 1976, Developments in Four Corners-Intermountain area in 1975: American Association of Geologists Bulletin, v. 60, no. 8, p. 1239-1242, 1 fig.
- Reese, V. R., 1952, Oil and gas possibilities in the Dakota Formation, San Juan Basin, New Mexico and Colorado, in Geological symposium of the Four Corners region: Four Corners Geological Society, p. 68-74, 5 figs.
- 1955, Pictured Cliffs and Fruitland gas developments of the San Juan Basin northwestern New Mexico and southwestern Colorado, in Guidebook to geology of parts of Paradox, Black Mesa, and San Juan Basins: Four Corners Geological Society, Field Conference, p. 137-143.
- 1957, Cretaceous oil and gas horizons of the San Juan Basin, Colorado and New Mexico, in Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference, p. 36-39.
- 1977, Oil and gas potential of the Gallup Formation—a fourth stratigraphic producing interval of the inner San Juan Basin, in Supplemental articles to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 23-29, 4 figs.
- Reeside, J. B., Jr., 1924, Upper Cretaceous and Tertiary Formations of the western part of the San Juan Basin, Colorado and New Mexico and Flora of the Animas Formation by F. H. Knowlton: U.S. Geological Survey Professional Paper 134, 117 p., 5 figs.
- 1929, Triassic-Jurassic "Red Beds" of the Rocky Mountain region; a discussion: Journal of Geology, v. 37, no. 1, p. 47-63, 1 fig.
- 1934, Geology and fuel resources of the southern part of the San Juan Basin, New Mexico, in Part 1, The coal field from Gallup eastward toward Mount Taylor: U.S. Geological Survey Bulletin 860, p. 1-29.
- Reeside, J. B., Jr., and Baker, A. A., 1929, The Cretaceous section in Black Mesa, northeastern Arizona: Washington Academy of Science Journal, v. 19, no. 2, p. 30-37.
- Reeside, J. B., Jr., and Bassler, Harvey, 1922, Stratigraphic sections in southwestern Utah and northwestern Arizona, in Shorter contributions to general geology, 1921: U.S. Geological Survey Professional Paper 129-D, p. 53-77, 1 fig.

- Reiche, Parry, 1937, The Toreva-block, a distinctive landslide type: *Journal of Geology*, v. 45, no. 5, p. 538-548.
- 1938, An analysis of cross-lamination; the Coconino Sandstone: *Journal of Geology*, v. 46, no. 8, p. 906-932.
- 1941, Erosion stages of the Arizona Plateau as reflected in a headwater drainage area: *Museum of Northern Arizona, Flagstaff, Plateau*, v. 13, p. 53-64.
- Reiland, L. J., and Haynes, G. L., Jr., 1963, Flow characteristics of New Mexico streams; flow-duration, high-flow, and low-flow tables for selected stations through water year 1959: *New Mexico State Engineer Special Report*, 342 p., 4 figs.
- Reinhardt, E. V., 1952a, The distribution of uranium-vanadium deposits in the Colorado Plateau relative to Tertiary intrusive masses: *U.S. Atomic Energy Commission Report RMO-816*, 16 p.
- 1952b, Practical guides to uranium ores on the Colorado Plateau: *U.S. Atomic Energy Commission Report RMO-1027*, 13 p., 1 fig.
- 1954, Structural controls of uranium deposits (Colorado Plateau): *Mining Congress Journal*, v. 40, no. 10, p. 49-52.
- Reiter, M. A., Edwards, C. L., Hartman, Harold, and Weidman, Charles, 1975, Terrestrial heat flow along the Rio Grande Rift, New Mexico and southern Colorado: *Geological Society of America Bulletin*, v. 86, no. 6, p. 811-818, 4 figs.
- Renault, J. R., 1969, Variation in some Quaternary basalts in New Mexico [abs.], in *Abstracts for 1968: Geological Society of America Special Paper 121*, p. 247.
- 1970, Major-element variations in the Potrillo, Carrizozo, and McCarthys basalt fields, New Mexico: *New Mexico Bureau of Mines and Mineral Resources Circular 113*, 22 p.
- Renault, J. R., and Hayslip, D. L., 1977, Thermoluminescence of quartz in uraniumiferous sandstones-methods and initial tests, in *Annual report July 1, 1976 to June 30, 1977: New Mexico Bureau of Mines and Mineral Resources*, p. 66-75, 9 figs.
- Reneau, W. E., Jr., and Harris, J. D., Jr., 1957, Reservoir characteristics of Cretaceous sands of the San Juan Basin, in *Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference*, p. 40-43.
- Renick, B. C., 1931, *Geology and ground-water resources of western Sandoval County, New Mexico: U.S. Geological Survey Water-Supply Paper 620*, 117 p., 3 figs.
- Repenning, C. A., Cooley, M. E., and Akers, J. P., 1969, Stratigraphy of the Chinle and Moenkopi Formations, Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah: *U.S. Geological Survey Professional Paper 521-B*, 34 p.
- Repenning, C. A., and Galloway, S. E., 1952, Memorandum on groundwater investigations of four proposed stock wells in Puertocito area, Socorro County, and Canoncito area, Bernalillo and Valencia Counties, New Mexico: *U.S. Geological Survey Open-File Report*, 4 p., 1 fig.
- Repenning, C. A., and Irwin, J. H., 1954, Bidahochi Formation of Arizona and New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 38, no. 8, p. 1821-1826.
- Repenning, C. A., Lance, J. F., and Irwin, J. H., 1958, Tertiary stratigraphy of the Navajo country, in *Guidebook to Black Mesa Basin: New Mexico Geological Society, 9th Field Conference*, p. 123-129, 4 figs.
- Repenning, C. A., and Page, H. G., 1956, Late Cretaceous stratigraphy of Black Mesa, Navajo and Hopi Indian Reservations, Arizona: *American Association of Petroleum Geologists Bulletin*, v. 40, no. 2, p. 255-294.
- Repenning, C. A., and Whitcomb, H. A., 1950, Memorandum on location of proposed well 15 miles north of Crown Point, McKinley County, New Mexico: *U.S. Geological Survey Open-File Report*, 5 p.
- Repenning, C. A., and others, 1958, Tertiary stratigraphy of the Navajo country, in

- Guidebook to Black Mesa Basin: New Mexico Geological Society, 9th Field Conference, p. 123–129.
- Research, Inc., 1955, Research and development of geophysical and geochemical techniques for uranium exploration on the Colorado Plateau; final report: U.S. Atomic Energy Commission Report RME-3111, 94 p.
- Reynolds, S. E., 1956, New Mexico water resources, in *Proceedings of First Annual New Mexico Water Conference*: New Mexico State University, Las Cruces, p. 6–17, 2 figs.
- 1961, An outline of the statutes governing appropriation and use of ground water in New Mexico, in *Proceedings of Sixth Annual New Mexico Water Conference*: New Mexico State University, Las Cruces, p. 79–82.
- 1966, The water situation in New Mexico: *New Mexico Professional Engineer*, v. 18, no. 7, p. 16.
- 1973, State Water Plan, in *Proceedings of Eighteenth Annual New Mexico Water Conference*: New Mexico Resources Research Institute Report 026, p. 10–18.
- Rhodes, F. H. T., and Fisher, J. H., 1957, Ignacio quartzite of southwestern Colorado: *American Association of Petroleum Geologists Bulletin*, v. 41, no. 11, p. 2508–2518, 8 figs.
- Richardson, G. B., 1909, Reconnaissance of the Book Cliffs coal field, between Grand River, Colorado, and Sunnyside, Utah: *U.S. Geological Survey Bulletin* 371, 54 p.
- Richmond, G. M., 1954, Modification of the glacial chronology of the San Juan Mountains, Colorado: *Science*, v. 119, no. 3096, p. 614–615.
- 1965, Quaternary stratigraphy of the Durango area; San Juan Mountains, Colorado, in *Geological Survey research 1965*: U.S. Geological Survey Professional Paper 525-C, p. 137–143.
- Rickard, T. A., 1903, Across the San Juan Mountains: *New York, Engineering Mining Journal*, 115 p.
- Ridgley, J. L., 1977, Stratigraphy and depositional environments of Jurassic-Cretaceous rocks in the southwest part of the Chama Basin, New Mexico, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 153–158, 4 figs.
- Riese, W. C., 1977, Geology and geochemistry of the Mount Taylor uranium deposit, Valencia County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 119 p.
- Riese, W. C., and Brookins, D. G., 1977, Subsurface stratigraphy of the Morrison Formation in the Mount Taylor area and its relation to uranium ore genesis, in *Guidebook to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 271–275, 3 figs.
- Rigby, Keith, Jr., and Lucas, Spencer, 1977, Fossil mammals from the Ojo Alamo Sandstone, in *Supplemental articles to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 55–56, 1 fig.
- Ritzma, H. R., and Doelling, H. H., 1969, Mineral resources San Juan County, Utah, and adjacent areas: Part 1, Petroleum, potash, ground water, and miscellaneous minerals: *Utah Geological and Mineralogical Survey Special Studies* 24, 125 p.
- Robertson, J. F., 1973, Geologic map of the Thoreau quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 20 p., 1 fig.
- 1974, Preliminary geologic map of the Pinedale quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 74–244.
- 1976, Preliminary geologic map of the Casamero Lake quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 76–681.
- Robertson, J. F., and Jackson, T. J., 1975, Preliminary geologic and structure contour

- maps of the Hosta Butte quadrangle, McKinley County, New Mexico: U.S. Geological Survey Open-File Map 75-302.
- Robinson, H. H., 1907, The Tertiary peneplain of the plateau district, and adjacent country, in *Arizona and New Mexico: American Journal of Science*, 4th ser., v. 24, p. 109-129.
- 1910, A new erosional cycle in the Grand Canyon district, Arizona: *Journal of Geology*, v. 18, p. 742-763.
- 1913, The San Franciscan volcanic field, Arizona: U.S. Geological Survey Professional Paper 76, 213 p.
- Roeber, M. M., Jr., 1972, Possible mechanics of lateral enrichment and physical positioning of uranium deposits, Ambrosia Lake area, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 118 (supplement), 16 p.
- Romans, R. C., 1975, Palynology of some upper Cretaceous coals of Black Mesa, Arizona: *Pollen et Spores*, v. 17, no. 2, p. 273-329.
- Romer, A. S., 1950, The upper Paleozoic Abo Formation and its vertebrate fauna, in *Guidebook to field trip to northwestern New Mexico: American Museum of Natural History and University of New Mexico*, Albuquerque, 4th Field Conference, p. 48-56.
- Romer, A. S., and Price, L. W., 1940, Review of the Pelycosauria: *Geological Society of America Special Paper* 28, 538 p.
- Root, A. P., Jr., and Simmons, J. F., 1934, The Red Arrow discovery: *Engineering Mining Journal*, v. 135, no. 6, p. 260-261.
- Rosenzweig, Abraham, 1957, Mineralogical notes on the Silverton quadrangle, Colorado, in *Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society*, 8th Field Conference, p. 199-202.
- 1961, Mineralogical notes on the uranium deposits of the Grants and Laguna districts, in *Guidebook to Albuquerque country: New Mexico Geological Society*, 12th Field Conference, p. 168-171.
- Rosenzweig, Abraham, Gruner, J. W., and Gardiner, Lynn, 1954, Widespread occurrence and character of uraninite in the Triassic and Jurassic sediments of the Colorado Plateau: *Economic Geology*, v. 49, no. 4, p. 351-361.
- Ross, C. S., 1931, The Valles Mountain volcanic center of New Mexico [abs.]: *American Geophysical Union Transactions*, 12th Annual Meeting, p. 185-186.
- 1938, Valles Volcano, New Mexico [abs]: *Washington Academy of Science Journal*, v. 28, p. 417.
- Rountree, Russ, 1974, Further exploration in San Juan area due: *Western Oil Reporter*, v. 31, no. 11, p. 11-12.
- 1975a, Exploration is up, development drilling down New Mexico, petroleum, San Juan Basin: *Western Oil Reporter*, v. 32, no. 12, p. 32-33.
- 1975b, Geothermal interest getting hot in New Mexico: *Western Oil Reporter*, v. 32, no. 9, p. 74-75.
- 1976a, Emphasis—Four Corners; gas incentives generating exploration interest: *Western Oil Reporter*, v. 33, no. 10, p. 21-22.
- 1976b, Emphasis—Four Corners; search for Rockies' carbon dioxide spreading: *Western Oil Reporter*, v. 33, no. 10, p. 28-29.
- Royse, C. F., and Wadell, J. S., 1970, Geology of the Verde Valley, Yavapai County, Arizona, in *Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region, 1970: National Association of Geology Teachers*, southwest section, Cedar City, Utah, p. 35-39, 3 figs.
- Ruetschilling, R. L., 1973, Structure and stratigraphy of the San Ysidro quadrangle, Sandoval County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 79 p., 21 figs.
- Rusen, S. J., 1977, Logging in the San Juan Basin of northwestern New Mexico, in

- Supplemental articles to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 35–40, 6 figs.
- Russel, H. Y., 1912, The Treasury Tunnel raise (Red Mountain, Colorado): *Engineering Mining Journal*, v. 94, p. 1137–1139.
- Sabins, F. F., Jr., 1963, Anatomy of stratigraphic trap, Bisti field, New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 47, no. 2, p. 193–228.
- 1964, Symmetry, stratigraphy, and petrography of cyclic Cretaceous deposits in San Juan Basin: *American Association of Petroleum Geologists Bulletin*, v. 48, no. 3, pt. 1, p. 292–316.
- 1972, Comparison of Bisti and Horseshoe Canyon stratigraphic traps, San Juan Basin, New Mexico, *in* Stratigraphic oil and gas fields; classification, exploration methods, and case histories: *American Association of Petroleum Geologists Memoir* 16, p. 610–622, 10 figs.
- 1973, Anatomy of stratigraphic trap, Bisti field, New Mexico, *in* Sandstone reservoirs and stratigraphic concepts II: *American Association of Petroleum Geologists Reprint Series* 8, p. 50–85.
- Sabins, F. F., Jr., and Bonham, L. C., 1960, New fossil occurrence in Mesaverde Group, San Juan Basin, New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 44, no. 12, p. 1936–1937.
- St. John, B. E., 1960, Geology of the Tecolote Point area, Rio Arriba County, New Mexico: University of Texas, Austin, unpublished M.S. thesis.
- San Juan Council of Governments, 1974, San Juan community profile: Farmington, New Mexico, 7 p.
- Sanborn, A. F., ed., 1958, Guidebook to the geology of the Paradox Basin: Intermountain Association of Petroleum Geologists, 9th Field Conference, 308 p.
- Sandusky, C. L., 1975, Sedimentology of Morrison Formation in southern San Juan Basin [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 59, no. 5, p. 922.
- Sangster, D. F., 1976, Environment of ore deposition in the Creede mining district, San Juan Mountains, Colorado; I. Geologic hydrologic and geophysical setting: *Economic Geology*, v. 71, no. 4, p. 821.
- Santos, E. S., 1963, Relation of ore deposits to the stratigraphy of the Ambrosia Lake area, *in* Geology and technology of the Grants uranium region: *New Mexico Bureau of Mines and Mineral Resources Memoir* 15, p. 53–59, 4 figs.
- 1966a, Geologic map of the San Lucas Dam quadrangle, McKinley County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-516.
- 1966b, Geologic map of the San Mateo quadrangle, McKinley and Valencia Counties, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-517.
- 1970, Stratigraphy of the Morrison Formation and structure of the Ambrosia Lake district, New Mexico: U.S. Geological Survey Bulletin 1272-E, 30 p.
- 1975, Lithology and uranium potential of Jurassic Formations in the San Ysidro-Cuba and Majors Ranch areas, northwestern New Mexico: U.S. Geological Survey Bulletin 1329, 22 p., 2 figs.
- Santos, E. S., Hall, R. B., and Weisner, R. C., 1975, Mineral resources of the San Pedro Parks Wilderness and vicinity, Rio Arriba and Sandoval Counties, New Mexico: U.S. Geological Survey Bulletin 1385-C, 29 p.
- Santos, E. S., and Moench, R. H., 1971, Measured sections of the Morrison Formation and related rocks in northwestern New Mexico: U.S. Geological Survey Open-File Report, 61 p., 1 fig.
- Santos, E. S., and Thaden, R. E., 1966, Geologic map of the Ambrosia Lake quadrangle, McKinley County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-515.

- Sarmiento, Roberto, 1957, Microfossil zonation of Mancos Group: American Association of Petroleum Geologists Bulletin, v. 41, no. 8, p. 1683-1693, 4 figs.
- Saucier, A. E., 1967, The Morrison and related formations in the Gallup, New Mexico region: University of New Mexico, Albuquerque, unpublished M.S. thesis, 106 p., 9 figs.
- 1967, The Morrison Formation in the Gallup region, in Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference, p. 138-144.
- 1974, Stratigraphy and uranium potential of the Burro Canyon Formation in the southern Chama Basin, New Mexico, in Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 211-219.
- 1975, Paleotectonic setting of late Jurassic Morrison Formation on the Colorado Plateau [abs.]: American Association of Petroleum Geologists Bulletin, v. 59, no. 5, p. 922.
- 1976, Tectonic influence on uraniferous trends in the late Jurassic Morrison Formation, in Tectonic and mineral resources of southwestern North America: New Mexico Geological Society Special Publication 6, p. 151-157, 5 figs.
- 1977, Exploration and development in the Grants uranium region, New Mexico [abs.]: American Association of Petroleum Geologists Bulletin, v. 61, no. 5, p. 825.
- Schicktan, W. S., 1963, Navajo land and leasing in Utah and northeastern Arizona, in Guidebook to shelf carbonates of the Paradox Basin: Four Corners Geological Society, 4th Field Conference, p. 1, 2 figs.
- Schilling, F. A., Jr., 1975, Annotated bibliography of Grants uranium region, New Mexico, 1950 to 1972: New Mexico Bureau of Mines and Mineral Resources Bulletin 105, 69 p.
- Schilling, J. H., Baltosser, W. W., Griswold, G. B., Wagner, W. K., File, L.A., Kottowski, F. E., Beaumont, E. C., and Baker, D. H., Jr., 1971, Survey of surface mining in New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 114, 17 p.
- Schlee, J. S., 1957, Petrology of the Jackpile Sandstone, New Mexico [abs.]: Geological Society of America Bulletin, v. 68, no. 12, pt. 2, p. 1793.
- 1959, Sandstone pipes of the Laguna area, New Mexico [abs.]: Geological Society of America Bulletin, v. 70, no. 12, pt. 2, p. 1669.
- 1963, Sandstone pipes of the Laguna area, New Mexico: Journal of Sedimentary Petrology, v. 33, no. 1, p. 112-123, 7 figs.
- Schlee, J. S., and Moench, R. H., 1961, Properties and genesis of "Jackpile" Sandstone, Laguna, New Mexico, in Geometry of sandstone ore bodies: American Association of Petroleum Geologists, p. 134-150.
- 1963a, Geologic map of the Mesita quadrangle, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-210.
- 1963b, Geologic map of the Moquino quadrangle, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-209.
- Schmidt-Collerus, J. J., 1967, Investigation of the relationship between organic matter and uranium deposits, part 1—literature review: University of Denver, Colorado, Research Institute Report 2323, 141 p.
- Schrader, F. C., 1906, The Durango-Gallup coalfield of Colorado and New Mexico, in Contributions to economic geology, 1905: U.S. Geological Survey Bulletin 285 p. 241-258.
- Schultz, L. G., 1963, Clay minerals in Triassic rocks of the Colorado Plateau: U.S. Geological Survey Bulletin 1147-C, 71 p.
- Schumacher, O. L., 1972, Geology and ore deposits of the southwest Nacimiento Range, Sandoval County, New Mexico: University of New Mexico, Albuquerque,

- unpublished M.S. thesis, 79 p., 20 figs.
- Schumm, S. A., and Chorley, R. J., 1964, The fall of Threatening Rock: *American Journal of Science*, v. 262, no. 9, p. 1041-1054, 4 figs.
- Schumm, S. A., and Hadley, R. F., 1957, Arroyos and the semi-arid cycle of erosion: *American Journal of Science*, v. 255, no. 3, p. 161-174, 8 figs.
- Schwartz, T. E., 1906, Features of the occurrence of ore at Red Mountain, Ouray County, Colorado: *American Institute of Engineers Transactions*, v. 36, p. 31-39.
- 1890, The ore deposits of Red Mountain, Ouray County, Colorado: *American Institute of Mining Engineers Transactions*, v. 18, p. 139-145.
- Schwarz, F. P., Jr., 1967, Geology and ore deposits of Minnie Gulch, San Juan County, Colorado: Colorado School of Mines, Golden, unpublished Ph.D. dissertation.
- Scott, G. L., 1960, Permian sedimentary framework of the Four Corners region: University of Wisconsin, Madison, unpublished Ph. D. dissertation.
- Scott, R. A., 1961, Fossil woods associated with uranium on the Colorado Plateau, *in Short papers in the geological and hydrologic sciences: U.S. Geological Survey Professional Paper 424-B*, p. 130-132.
- Seaman, D. M., 1934a, Minerals and mineral deposits of the San Juan region, Colorado: University of Colorado, Boulder, *Studies*, v. 22, no. 1, p. 60.
- 1934b, Minerals and mineral deposits of the San Juan region (San Juan and San Miguel and Ouray Counties), Colorado: University of Colorado, Boulder, unpublished M.S. thesis.
- Sears, J. D., 1925, Geology and coal resources of the Gallup-Zuni Basin, New Mexico: *U.S. Geological Survey Bulletin 767*, 52 p., 4 figs.
- 1936, The coal field from Gallup eastward toward Mount Taylor, with a measured section of pre-Dakota (?) rocks near Navajo Church: *U.S. Geological Survey Bulletin 860-A*, 29 p.
- Sears, J. D., Hunt, C. B., and Dane, C. H., eds., 1936, Geology and fuel resources of the southern part of the San Juan Basin, New Mexico: *U.S. Geological Survey Bulletin 860*, 166 p., 3 figs.
- Sears, J. D., Hunt, C. B., and Hendricks, T. A., 1941, Transgressive and regressive Cretaceous deposits in southern San Juan Basin, New Mexico, *in Shorter contributions to general geology, 1938-40: U.S. Geological Survey Professional Paper 193-F*, p. 101-121.
- Sears, R. E., 1953, Geology of the area between Canjilon Mesa and Abiquiu, Rio Arriba County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 71 p.
- Sears, R. S., Marjaniemi, D. K., and Blomquist, J. T., 1974a, Study of the Morrison Formation in the San Juan Basin, New Mexico and Colorado: *U.S. Atomic Energy Commission Report GJO-912-20*, 416 p.
- 1947b, Study of the Morrison Formation in the San Juan Basin, New Mexico and Colorado: Lucius Pitkin, Inc., Grand Junction, Colorado, Appendices volume, *U.S. Atomic Energy Commission Open-File Report*, 374 p.
- Sellers, W. D., ed., 1960a, *Arizona climate*: Tucson, University of Arizona Press, 60 p.
- 1960b, Precipitation in Arizona and western New Mexico: *Proceedings Twenty-eighth Annual Western Snow Conference*, Santa Fe, New Mexico, p. 81-94.
- Senftle, F. E., 1956, Nuclear geology (Colorado Plateau): *U.S. Geological Survey Trace Element Investigation Report TEI-620*, p. 332-334.
- Shakel, D. W., 1975, "Colorado Plateau uplift"; persistent myth of Arizona geology [abs.]: *Geological Society of America, Abstracts with Programs*, v. 7, no. 7, p. 1265-1266.
- Shaler, M. K., 1907a, Gypsum in northwestern New Mexico, *in Contributions to economic geology, Part I, 1906: U.S. Geological Survey Bulletin 315-H*, p. 260-265.

- 1907b, A reconnaissance survey of the western part of the Durango-Gallup coal field of Colorado and New Mexico, in *Contributions to economic geology, Part II, coal, lignite, and peat*: U.S. Geological Survey Bulletin 316-F, p. 376-426.
- Shaler, M. K., and Gardner, J. H., 1907, Clay deposits of the western part of the Durango-Gallup coal field, Colorado and New Mexico, in *Contributions to economic geology, Part I*, 1906: U.S. Geological Survey Bulletin 315-I, P. 296-302.
- Shantz, Robert, 1977, Mineral processing in New Mexico, in *Annual report July 1, 1976 to June 30, 1977*: New Mexico Bureau of Mines and Mineral Resources, p. 76-79.
- Sharp, J. V. A., 1955, Uranium deposits in the Morrison Formation, Church Rock area, McKinley County, New Mexico: U.S. Atomic Energy Commission Report RME-79, 19 p., 5 figs.
- Sharpe, D. R., 1974, Mudflows in the San Juan Mountains; Colorado; flow constraints, frequency and erosional effectiveness: University of Colorado, Boulder, unpublished M.S. thesis.
- Shaughnessy, Jack, and Butcher, R. H., 1973, Geology of Project Wagon Wheel Nuclear stimulation project, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 185-196, 11 figs.
- Shawe, D. R., 1956a, Alteration related to Colorado Plateau ore deposits [abs]: *Geological Society of America Bulletin*, v. 67, no. 12, pt. 2, p. 1732-1733.
- 1956b, Significance of roll ore bodies in genesis of uranium-vanadium deposits on the Colorado Plateau, in *Geology of uranium and thorium: U.N. International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, Proceedings*, v. 6, p. 335-337.
- 1966, Zonal distribution of elements in some uranium-vanadium roll and tabular ore bodies on the Colorado Plateau, in *Geological Survey research 1966*: U.S. Geological Survey Professional Paper 550-B, p. 169-171.
- Shawe, D. R., Archbold, N. E., and Simmons, G. C., 1959, Geology and uranium-vanadium deposits of the Slick Rock district, San Miguel and Dolores Counties, Colorado: *Economic Geology*, v. 54, no. 3, p. 395-415.
- Shawe, D. R., and Granger, H. C., 1965, Uranium ore rolls-an analysis: *Economic Geology*, V. 60, no. 2, p. 240-250.
- Shearer, C. R., Reiter, M. A., and Edwards, C. L., 1975, Terrestrial heat-flow studies in eastern Arizona and western New Mexico [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 59, no. 5, p. 923.
- Shelton, J. W., 1951, The Mesaverde group, Cretaceous, in the northwestern part of the San Juan Basin: University of Illinois, Champaign unpublished M.S. thesis.
- Shimer, H. W., and Blodgett, M. E., 1908, The stratigraphy of the Mount Taylor region, New Mexico: *American Journal of Science*, 4th ser., v. 25, p. 53-67.
- Shoemaker, E. M., 1953, Collapse origin of the diatremes of the Navajo-Hopi Reservation [abs.]: *Geological Society of America Bulletin*, v. 64, no. 12, pt. 2, p. 1514.
- 1954, Structural features of southeastern Utah and adjacent parts of Colorado, New Mexico, and Arizona, in *Guidebook to uranium deposits and general geology of southeastern Utah*: Utah Geological Society, *Geology of Utah* no. 9, p. 48-69.
- 1956a, Diatremes on the Navajo and Hopi Reservations, Arizona, in *Geologic investigations of radioactive deposits, semiannual progress report, December 1, 1955 to May 31, 1956*: U.S. Geological Survey Trace Element Investigation Report TEI-620, p. 78-85, 4 figs.
- 1956b, Occurrence of uranium in diatremes on the Navajo and Hopi Reservations, Arizona, New Mexico, and Utah, in *Contributions to the geology of uranium and thorium by the U.S. Geological Survey and Atomic Energy Commission for the U.S. International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, 1955*: U.S. Geological Survey Professional Paper 300, p. 179-

- 185, 2 figs.
- 1956c, Structural features of the central Colorado Plateau and their relation to uranium deposits, in *Contributions to the geology of uranium and thorium by the U.S. Geological Survey and Atomic Energy Commission for the U.S. International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, 1955: U.S. Geological Survey Professional Paper 300*, p. 155–170, 3 figs.
- 1975, Late Cenozoic faulting and uplift of the Colorado Plateau [abs]: *Geological Society of America, Abstracts with Programs*, v. 7, no. 7, p. 1270.
- Shoemaker, E. M., Case, J. E., and Elston, D. P., 1958, Salt anticlines of the Paradox Basin, in *Guidebook to geology of Paradox Basin: Intermountain Association of Petroleum Geologists, 9th Field Conference*, p. 39–59.
- Shomaker, J. W., 1967a, The Mount Taylor volcanic field; a digest of the literature, in *Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference*, p. 195–201.
- 1967b, Site study for a water well, Fort Wingate Army Ordinance Depot, McKinley County, New Mexico: *U.S. Geological Survey Open-File Report*, 28 p., 3 figs.
- ed., 1968, *Guidebook of San Juan-San Miguel-La Plata region, New Mexico and Colorado: New Mexico Geological Society, 19th Field Conference*, 211 p.
- 1969, Drilling and testing of well number 340, Fort Wingate Army Depot, McKinley County, New Mexico: *U.S. Geological Survey Open-File Report*, 57 p., 6 figs.
- 1971a, Recent coal developments in the San Juan Basin, Colorado and New Mexico, in *Strippable low-sulfur coal resources of the San Juan Basin in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Memoir 25*, p. 175.
- 1971b, Water resources of Fort Wingate Army Depot and adjacent areas, McKinley County, New Mexico: *U.S. Geological Survey, Open-File Report*, 230 p.
- 1973, Coal reserves of Hogback Mountain Tongue of Menefee Formation, San Juan Basin, New Mexico: *New Mexico Bureau of Mines and Mineral Resources Open-File Report OF-34*, 6 p., 3 figs.
- 1974a, Effects on water resources of El Paso Natural Gas Company Burnham gasification plants: *Consulting report to El Paso Natural Gas Company*, 12 p.
- 1974b, Hydrologic conditions near the United Nuclear Corporation millsite (McKinley County): *Consulting report to United Nuclear Industries, Inc., Richland, Washington*, 23 p.
- 1975a, Availability of ground-water supply from Gallup Sandstone in NW/4 Section 15, T. 16 N. R. 20 W.: *Consulting report to Western New Mexico Engineering Company*, 22 p.
- 1975b, An overview of New Mexico's coal industry, in *Proceedings of 20th Annual New Mexico Water Conference, Las Cruces: New Mexico Water Resources Research Institute Report 053*, p. 48–61, 7 figs.
- 1975c, Well report, The Cherokee and Pittsburg Coal and Mining Company No. 1 Gallo Wash water well: *Consulting report to the Cherokee and Pittsburg Coal and Mining Company*, 18 p.
- 1975d, Well report, The Cherokee and Pittsburg Coal and Mining Company No. 1 Star Lake water well: *Consulting report to the Cherokee and Pittsburg Coal and Mining Company*, 26 p.
- 1976a, Hydrologic conditions in and near United Nuclear Corporation Dalton Pass area, McKinley County, New Mexico: *Consulting report to United Nuclear Industries, Inc., Richland, Washington*, 26 p.
- 1976b, Summary of well and spring records near Star Lake Mine area (Mc-

- Kinley County): Consulting report to Genge Environmental Consultants, 14 p.
- Shomaker, J. W., Beaumont, E. C., and Kottlowski, F. E., compilers and eds., 1971, Strippable low-sulfur coal resources of the San Juan Basin in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Memoir 25, 189 p., 59 figs.
- Shomaker, J. W., and Hiss, W. L., 1974, Humate mining in northwestern New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 333-336, 3 figs.
- Shomaker, J. W., and Stone, W. J., 1976, Availability of ground water for coal development in the San Juan Basin, New Mexico, in *Guidebook to coal geology of northwest New Mexico*: New Mexico Bureau of Mines and Mineral Resources Circular 154, p. 43-48.
- Shomaker, J. W., and Whyte, M. R., 1977, Geologic appraisal of deep coals, San Juan Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 155, 39 p., 13 figs.
- Siemers, C. T., 1977, Core and E-log analysis of a coal-bearing sequence; lower part of the upper Cretaceous Menefee Formation (Mesaverde Group), northwestern New Mexico, in *Geology of Rocky Mountain coal, a symposium, 1977*: Colorado Geological Survey Workshop, 11 p.
- 1978, Generation of a simplified working depositional model for repetitive coal-bearing sequences using core, wire-line logs and outcrop field data; an example from the upper Cretaceous Menefee Formation (Mesaverde Group), northwestern New Mexico, in *Geology of Rocky Mountain coal, a symposium, 1977*: Colorado Geological Survey, [in preparation].
- Siemers, C. T., Flesch, G. A., and Ruetschilling, R. L., 1973, The distribution of trace fossils in the upper part of the Morrison Formation and the Dakota Formation in part of the southeastern San Juan Basin, New Mexico [abs.], in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 215.
- Siemers, C. T., and King, N. R., 1974, Macroinvertebrate paleoecology of a transgressive marine sandstone, Cliff House Sandstone (upper Cretaceous), Chaco Canyon, northwestern New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico)*: New Mexico Geological Society, 25th Field Conference, p. 267-277, 10 figs.
- Siemers, C. T., and Wadell, J. S., 1975, Humate deposits in New Mexico [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 59, no. 5, p. 923.
- 1977, Humate deposits of the Menefee Formation (upper Cretaceous), northwestern New Mexico, in *Supplemental articles to San Juan Basin III*: New Mexico Geological Society, 28th Field Conference, p. 1-21, 21 figs.
- Siemers, C. T., and others, 1975, Upper Jurassic and upper Cretaceous stratigraphy and sedimentology, eastern San Juan Basin, New Mexico; Part 1 of field trips to New Mexico: *American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists, Rocky Mountain Sections, Annual Meeting June 1-4, 1975*, Albuquerque, New Mexico, 98 p.
- Silver, B. A., 1966, North American Mid-Jurassic through Mid-Cretaceous stratigraphic patterns of Colorado Plateau, Rocky Mountains and Great Plains: Stanford University, Palo Alto, California, unpublished Ph. D. dissertation, 96 p.
- Silver, Caswell, 1948, Jurassic overlap in western New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 32, no. 1, p. 68-81, 4 figs.
- 1950, The occurrence of gas in the Cretaceous rocks of the San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 109-123, 7 figs.
- 1951a, Cretaceous stratigraphy of the San Juan Basin, in *Guidebook to the San*

- Juan Basin: New Mexico Geological Society, 2nd Field Conference, p. 104–117, 4 figs.
- 1951b, Stratigraphic oil and gas possibilities in the San Juan Basin, New Mexico and Colorado [abs.]: American Association of Petroleum Geologists, v. 35, no. 5, p. 1105–1106.
- 1951c, Stratigraphic oil and gas possibilities in the San Juan Basin, New Mexico and Colorado [abs.]: Oil and Gas Journal, v. 49, no. 46, p. 114–115.
- 1957, History and folklore of the San Juan region, in Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference, p. 222–234.
- Silver, Caswell, and Hoover, W. B., 1951, Geologic map of the San Juan Basin (compilation), in Guidebook to south and west sides of the San Juan Basin, New Mexico and Arizona: New Mexico Geological Society, 2nd Field Conference, back cover.
- Silver, L. T., 1948, Paragenesis of the ores of Poughkeepsie Gulch, San Juan Mountains, Colorado: University of New Mexico, Albuquerque, unpublished M.S. thesis, 81 p., 5 figs.
- Simmons, G. C., 1957, Contact of Burro Canyon Formation with Dakota Sandstone, Slick Rock district, Colorado, and correlation of Burro Canyon Formation: American Association of Petroleum Geologists Bulletin, v. 41, no. 11, p. 2519–2529.
- Simpson, G. C., 1948a, The Eocene of the San Juan Basin, New Mexico: American Journal of Science, v. 246, pt. 1, p. 257–282.
- 1948b, The Eocene of the San Juan Basin, New Mexico: American Journal of Science, v. 246, pt. 2, p. 363–385.
- 1948c, A fossil-collecting campaign in New Mexico: Science, v. 107, no. 2774, p. 207–212.
- 1950a, Cenozoic formations and vertebrate faunas (San Juan Basin), in Guidebook of vertebrate paleontology in northwestern New Mexico: American Museum of Natural History and University of New Mexico, Albuquerque, 4th Field Conference, p. 74–85.
- 1950b, Lower Tertiary Formations and vertebrate faunas of the San Juan Basin, in Guidebook to San Juan Basin, New Mexico and Colorado: New Mexico Geological Society, 1st Field Conference, p. 85–90.
- 1954, An apatemyid from the early Eocene of New Mexico: American Museum of Natural History Novitates 1654, 4 p.
- 1955, The Phenacolemuridae, new family of early primates: American Museum of Natural History Bulletin, v. 105, p. 411–442.
- 1959, Fossil mammals from the type area of the Puerco and Nacimiento strata, Paleocene of New Mexico: American Museum of Natural History Novitates 1957, 22 p.
- 1960, Late Cretaceous and early Cenozoic in the San Juan Basin, in Guidebook to Rio Chama country: New Mexico Geological Society, 11th Field Conference, p. 75–77.
- Simpson, J. H., 1852, Journal of a military reconnaissance from Santa Fe, New Mexico, to the Navajo country: Secretary of War, U.S. Congress, 1st Session, Senate Executive Document 64, 140 p.
- Sinclair, W. J., and Granger, Walter, 1914a, Paleocene deposits of the San Juan Basin, New Mexico: American Museum of Natural History Bulletin, v. 33, p. 297–316.
- 1914b, "Laramie?" Puerco, and Torrejon in the San Juan Basin, New Mexico [abs.]: Geological Society of America Bulletin, v. 25, p. 138.
- Sinclair, William, 1963, Geology of the upper east fork of the San Juan River area, Mineral and Archuleta Counties, Colorado: Colorado School of Mines, Golden, unpublished M.S. thesis.

- Slack, P. B., 1973, Structural geology of the northeast part of the Rio Puerco fault zone, Sandoval County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 74 p., 18 figs.
- 1975, Tectonic development of the northeast part of the Rio Puerco fault zone, New Mexico: *Geology*, v. 3, no. 11, p. 665–668.
- Slack, P. B., and Campbell, J. A., 1976, Structural geology of the Rio Puerco fault zone and its relationship to central New Mexico tectonics, in *Tectonics and mineral resources of southwestern North America*: New Mexico Geological Society Special Publication 6, p. 46–52.
- Smith, A. E., Jr., 1974, Minerals of Creede, Mineral County, Colorado: *Rocks and Minerals*, v. 49, no. 6, p. 394–400.
- Smith, C. T., 1951a, Generalized nomenclature chart for formation and member names used in road logs, in *Guidebook to south and west sides of the San Juan Basin*, New Mexico and Arizona: New Mexico Geological Society, 2nd Field Conference, p. 13.
- 1951b, Problems of Jurassic stratigraphy of the Colorado Plateau and adjoining regions, in *Guidebook to south and west sides of the San Juan Basin*, New Mexico and Arizona: New Mexico Geological Society, 2nd Field Conference, p. 99–102.
- 1953, Geology of the Thoreau quadrangle, McKinley and Valencia Counties, New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 31, 36 p.
- 1955, Uranium occurrences of the Colorado Plateau, in *Guidebook to geology of parts of Paradox, Black Mesa and San Juan Basins*: Four Corners Geological Society, 1st Field Conference, p. 169–176.
- 1957a, Entrance road log, Albuquerque to Durango, in *Guidebook to southwestern San Juan Mountains*, Colorado: New Mexico Geological Society, 8th Field Conference, p. 27–37.
- 1957b, Geology of the Zuni Mountains, Valencia and McKinley Counties, New Mexico, in *Guidebook to geology of southwestern San Juan Basin*: Four Corners Geological Society, 2nd Field Conference, p. 53–61.
- 1958, Geologic map of Inscription Rock 15-minute quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 4.
- 1959a, Geologic map of the Foster Canyon quadrangle, Valencia and McKinley Counties, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 9.
- 1959b, Jurassic rocks of the Zuni Mountains, in *Guidebook of west-central New Mexico*: New Mexico Geological Society, 10th Field Conference, p. 74–80.
- 1967, Jurassic stratigraphy of the north flank of the Zuni Mountains, in *Guidebook to Defiance-Zuni-Mt. Taylor region*: New Mexico Geological Society, 18th Field Conference, p. 132–137.
- 1970a, Notes on the geology of the Colorado Plateau, in *Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region*, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 21–30, 2 figs.
- 1970b, Road log from Albuquerque, New Mexico to Cameron Trading Post, Arizona via the Navajo and Hopi Indian Reservations, in *Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region*, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 63–78.
- 1970c, Road log from Cedar City to Moab, Utah via Parawan, Kingston, Capitol Reef National Monument, and Green River, in *Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region*, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 136–145.
- 1970d, Road log from Moab, Utah to Albuquerque, New Mexico via Blanding, Aneth, Four Corners Monument, Farmington, and Cuba, in *Guidebook to Four*

- Corners, Colorado Plateau, central Rocky Mountain region, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 155-168.
- ed., 1970e, Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, 183 p.
- Smith, C. T., Budding, A. J., and Pitrat, C. W., 1961, Geology of the southeastern part of the Chama Basin: New Mexico Bureau of Mines and Mineral Resources Bulletin 75, 57 p.
- Smith, C. T., Kelley, V. C., Baltz, E. H., Jr., and Bailey, R. A., 1968, Road log from Albuquerque to Farmington, in Guidebook to San Juan-San Miguel-La Plata region: New Mexico Geological Society, 19th Field Conference, p. 193-201.
- Smith, C. T., Miller, P. T., and Cooper, L. C., 1970a, Road log from Cameron Trading Post, Arizona to Cedar City, Utah via Desert View, Page, Kanab, and Long Valley Junction, in Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 94-106.
- 1970b, Road log from Grand Canyon, Arizona to Cedar City, Utah via Desert View, Cameron, Kanab, and Long Valley Junction in Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 93.
- Smith, C. T., Miller, P. T., Cooper, L. C., and Roseman, Mike, 1970, Road log from Cedar City, Utah to Holbrook, Arizona via Long Valley Junction, Kanab, Jacob Lake, Marble Canyon, Moenkopi, Keams Canyon, and Bidahochi, in Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region, 1970: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 123-131.
- Smith, H. T. U., 1935, The Tertiary and Quaternary geology of the Abiquiu quadrangle, New Mexico: Harvard University, Cambridge, Massachusetts, unpublished Ph. D. dissertation.
- 1936, Periglacial landslide topography of Canjilon Divide, Rio Arriba County, New Mexico: Journal of Geology, v. 44, no. 7, p. 836-860, 10 figs.
- 1937a, Physiography of lower Chama Valley, New Mexico [abs.]: Pan-American Geologist, v. 68, no. 3, p. 240.
- 1937b, Tertiary and Quaternary geology of the Abiquiu quadrangle, New Mexico [abs.]: Geological Society of America, 1936, Proceedings, p. 103.
- 1938a, Physiography of lower Chama Valley, New Mexico [abs.]: Geological Society of America, 1937, Proceedings, p. 114.
- 1938b, Tertiary geology of the Abiquiu quadrangle, New Mexico: Journal of Geology, v. 46, no. 7, p. 933-965, 12 figs.
- Smith, H. V., 1956, The climate of Arizona: Arizona State University, Tempe, Agricultural Experiment Station Bulletin 279, 99 p.
- Smith, J. A., 1957, Insoluble residue study of Pennsylvanian strata exposed in San Juan Canyon, San Juan County, Utah: University of New Mexico, Albuquerque, unpublished M.S. thesis, 84 p., 5 figs.
- Smith, M. C., Jr., 1967, The AEC and the Grants mineral belt, in Guidebook to Defiance-Zuni-Mt. Taylor region: New Mexico Geological Society, 18th Field Conference, p. 184-187.
- Smith, R. L., Bailey, R. A., and Ross, C. S., 1970, Geologic map of the Jemez Mountains, New Mexico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-571.
- Soister, P. E., 1952, Geology of Santa Ana Mesa and adjoining areas, Sandoval County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 126 p., 8 figs.

- Sorensen, E. F., 1977, Water use by categories in New Mexico counties and river basins, and irrigated and dry cropland acreage in 1975: New Mexico State Engineer Technical Report 41, 34 p., 4 figs.
- Sorensen, E. F., Stotelmeyer, R. B., and Baker, D. H., Jr., 1973, Mineral resources and water requirements for New Mexico minerals industries: New Mexico Bureau of Mines and Mineral Resources Circular 138, 26 p., 1 fig.
- Sorenson, J. B., and Greenfield, R. L., 1977, "New Mexican Nationalism" and the evolution of energy policy in New Mexico: University of New Mexico, Albuquerque, Law School, Natural Resources Journal, v. 17, no. 2, p. 283-300.
- Soule, J. H., 1956, Reconnaissance of the "red bed" copper deposits in southeastern Colorado and New Mexico: U.S. Bureau of Mines Information Circular IC 7740, 74 p., 39 figs.
- Speer, W. R., 1957, Verde-Gallup pool, San Juan County, New Mexico, in Guidebook to geology of southwestern San Juan Basin: Four Corners Geological Society, 2nd Field Conference, p. 141-146, 3 figs.
- 1958, Recent developments in the fractured reservoirs in the Rocky Mountains [abs.]: American Association of Petroleum Geologists, Rocky Mountain Section, Geologic Record, p. 123.
- 1971, Economic factors in the utilization of San Juan Basin coal, in Strippable low-sulfur coal resources of the San Juan Basin in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Memoir 25, p. 141-165.
- Spencer, A. C., 1900, Devonian strata in Colorado: American Journal of Science, 4th ser., v. 9, p. 125-133.
- Spencer, C. W., 1975, Petroleum geology of east-central Utah and suggested approaches to exploration, in Guidebook to canyonlands: Four Corners Geological Society, 8th Field Conference, p. 263-275, 6 figs.
- Spiegel, Z. E., 1961, Late Cenozoic sediments of the lower Jemez River region: U.S. Geological Survey Open-File Report, 16 p., 2 figs.
- Spurr, J. E., 1925, The Camp Bird (Colorado) compound vein-dike: Economic Geology, v. 20, no. 2, p. 115-152.
- Spurrier, R. R., 1950, Oil conservation in New Mexico, in Guidebook to San Juan Basin: New Mexico Geological Society, 1st Field Conference, p. 152-153.
- Spurrier, R. R., and Barnes, F. C., 1949, San Juan Basin exhibits for the Federal Power Commission: New Mexico Oil and Gas Commission, Santa Fe, December, 1949.
- Squires, J. B., 1963, Geology and ore deposits of the Ann Lee mine, Ambrosia Lake area, in Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 90-101, 4 figs.
- 1969, Origin and depositional environment of uranium deposits of the Grants region, New Mexico: Stanford University, Palo Alto, California, unpublished Ph. D. dissertation, 228 p.
- 1972, Uranium deposit of the Grants region, New Mexico: Wyoming Geological Association Earth Science Bulletin, p. 3-12.
- Staatz, M. H., 1965, Thorium, in Mineral and water resources of New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 87, p. 230-234.
- Stainbrook, M. A., 1947, Brachiopoda of the Percha Shale of New Mexico and Arizona: Journal of Paleontology, v. 21, p. 297-328.
- Stanton, T. W., 1917, Contributions to the geology and paleontology of San Juan County, New Mexico, in Nonmarine Cretaceous invertebrates of the San Juan Basin: U.S. Geological Survey Professional Paper 98-R, p. 309-326.
- Stark, N. B., and Harris, P. F., 1972, Studies of trace elements in soils and plants from the Four Corners area of New Mexico: University of Nevada, Reno, Desert Research Institute, Center of Water Resources Research Project Report 20, 91 p.
- State of New Mexico, Economic Development Division, 1976, Farmington community

- profile, 1974–1975: Santa Fe, annual report. •
- Stearns, C. E., 1943, The Galisteo Formation of north-central New Mexico: *Journal of Geology*, v. 51, no. 5, p. 301–319.
- Stearns, N. D., 1928, Laboratory tests on physical properties of water-bearing materials, in *Contributions to the hydrology of the United States*, 1927: U.S. Geological Survey Water-Supply Paper 596-F, p. 121–176.
- Stephens, E. V., 1973, Geologic map and coal resources of the Wide Hollow Reservoir quadrangle, Garfield County, Utah: U.S. Geological Survey Coal Investigations Map C-55.
- Steven, T. A., 1960, Geology and ore deposits of the Summitville district, San Juan Mountains, Colorado: U.S. Geological Survey Professional Paper 343, 70 p.
- Steven, T. A., and Eaton, G. P., 1975, Environment of ore disposition in Creede mining district, San Juan Mountains, Colorado: *Economic Geology*, v. 70, no. 6, p. 1023–1037.
- Steven, T. A., Lipman, P. W., Fisher, F. S., Bieniewski, C. L., and Meeves, H. C., 1977, Mineral resources of study area, contiguous to the Uncompahgre Primitive area, San Juan Mountains, southwestern Colorado: U.S. Geological Survey Bulletin 1391-E, 126 p.
- Steven, T. A., and Ratte, J. C., 1959, Caldera subsidence in the Creede area, San Juan Mountains, Colorado [abs.]: *Geological Society of America Bulletin*, v. 70, no. 12, pt. 2, p. 1788–1789.
- 1960, Geology and ore deposits of the Summitville district, San Juan Mountains, Colorado: U.S. Geological Survey Professional Paper 343, 70 p.
- 1965, Geology and structural control of ore deposition in the Creede district, San Juan Mountains, Colorado: U.S. Geological Survey Professional Paper 487, 90 p.
- Steven, T. A., Schmitt, L. J., Jr., Sheridan, M. J., and Williams, F. E., 1969, Mineral resources of the San Juan Primitive area, Colorado: U.S. Geological Survey Bulletin 1261-F, 186 p.
- Stevens, P. R., 1958, The examination of drill cuttings and the application of the results obtained to the solving of field problems: U.S. Geological Survey Open-File Report.
- Stevens, R. P., 1886, On the San Juan Mountains: *New York Academy of Science Transactions*, v. 5, p. 121–130.
- Stevenson, G. M., and Baars, D. L., 1977, Pre-Carboniferous paleotectonics of the San Juan Basin, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 99–110, 8 figs.
- Stewart, J. H., 1961a, Origin of cross-strata in fluvial sandstone layers in the Chinle Formation (upper Triassic) on the Colorado Plateau, in *Short papers in the geologic and hydrologic sciences*: U.S. Geological Survey Professional Paper 424-B, p. 127–129, 2 figs.
- 1961b, Stratigraphy and origin of the Chinle Formation (upper Triassic) on the Colorado Plateau: Stanford University, Palo Alto, California, unpublished Ph. D. dissertation, 247 p.
- 1969, Major upper Triassic lithogenetic sequences in Colorado Plateau region: *American Association of Petroleum Geologists Bulletin*, v. 53, no. 9, p. 1866–1879.
- Stewart, J. H., Poole, F. G., and Wilson, R. F., 1972a, Stratigraphy and origin of the Chinle Formation and related upper Triassic strata in the Colorado Plateau region, with a section on sedimentary petrology by R. A. Cadigan, and with a section on conglomerate studies by William Thordarson, H. F. Albee, and J. H. Stewart: U.S. Geological Survey Professional Paper 690, 336 p.
- 1972b, Stratigraphy and origin of the Triassic Moenkopi Formation and related

- strata in the Colorado Plateau region, with a section on sedimentary petrology by R. A. Cadigan: U.S. Geological Survey Professional Paper 691, 195 p.
- Stewart, J. H., Poole, F. G., Wilson, R. F., and Breed, C. S., 1972, Changes in nomenclature of the Chinle Formation on the southern part of the Colorado Plateau; 1850's-1950's with addenda, summarizing changes in the nomenclature of the Chinle Formation to 1970, *in* Investigations in the Triassic Chinle Formation: Museum of Northern Arizona, Flagstaff, Bulletin 47, p. 75-103, 2 figs.
- Stewart, J. H., Williams, G. A., Albee, H. F., and Raup, O. B., 1959, Stratigraphy of Triassic and associated formations in part of the Colorado Plateau region, with a section on sedimentary petrology by R. A. Cadigan, *in* Contributions to the geology of uranium, 1956: U.S. Geological Survey Bulletin 1046-Q, p. 487-576, 15 figs.
- Stieff, L. R., 1953, Isotope geology of the Colorado Plateau: U.S. Geological Survey Trace Element Investigation Report TEI-330, p. 252-253.
- Stieff, L. R., and Stern, T. W., 1953a, Isotope geology of the Colorado Plateau ores: U.S. Geological Survey Trace Element Investigation Report TEI-270, pt. 1, p. 53-54.
- 1953b, Isotope geology of the Colorado Plateau ores: U.S. Geological Survey Trace Element Investigation Report TEI-280, p. 82-86.
- 1959, Isotopic study of some Colorado Plateau ores (summary): *Economic Geology*, v. 54, no. 4, p. 752.
- Stieff, L. R., Stern, T. W., and Milkey, R. G., 1953, A preliminary determination of the age of some uranium ores of the Colorado Plateaus by the uranium-lead method: U.S. Geological Survey Circular 271, 19 p.
- Stokes, W. L., 1941, Stratigraphy of the Morrison Formation and related deposits in and adjacent to the Colorado Plateau: Princeton University, New Jersey, unpublished Ph. D. dissertation, 70 p.
- 1944, Morrison and related deposits in and adjacent to the Colorado Plateau: *Geological Society of America Bulletin*, v. 55, no. 8, p. 951-992.
- 1952a, Lower Cretaceous in Colorado Plateau: *American Association of Petroleum Geologists Bulletin*, v. 36, no. 9, p. 1766-1776.
- 1952b, Salt-generated structures of the Colorado Plateau and possible analogies [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 36, no. 5, p. 961.
- 1952c, Salt-generated structures of the Colorado Plateau and possible analogies [abs.]: *Oil and Gas Journal*, v. 50, no. 44, p. 126.
- 1953, Progress report on relation of sedimentary features of the Salt Wash Sandstone to tectonic elements and uranium mineralization: U.S. Atomic Energy Commission Report RME-3058, 5 p.
- 1954, Some stratigraphic, sedimentary and structural relations of uranium deposits in the Salt Wash Sandstone, final report: U.S. Atomic Energy Commission Report RME-3102, 50 p.
- 1956, Nature and origin of Paradox Basin salt structures, *in* Guidebook to geology and economic deposits of east central Utah: Intermountain Association Petroleum Geologists, 7th Field Conference, p. 42-47.
- 1961, Fluvial and eolian sandstone bodies in Colorado Plateau, *in* Geometry of sandstone bodies: American Association of Petroleum Geologists, p. 151-178.
- Stokes, W. L., Jones, D. J., and Sadlick, Walter, 1953, Primary sedimentary features in relation to uranium deposits in the Salt Wash Sandstone: U.S. Atomic Energy Commission Report RME-3043, 74 p.
- Stone, W. J., 1975, Hydrogeologic considerations in mining and development of energy resources, San Juan Basin, New Mexico: *Mining Engineering Journal*, v. 27, no. 12, p. 67.
- 1976, Hydrogeologic considerations in mining and development of energy re-

- sources, San Juan Basin, New Mexico: American Institute of Mining Engineers, 105th annual meeting, preprint 76-AG-74.
- Stone, W. J., and Kelly, T. E., 1975, Ground water for energy development, northwestern New Mexico, in *Proceedings of 20th Annual New Mexico Water Conference: New Mexico Water Resources Research Institute Report 053*, p. 62-83, 12 figs.
- Storms, W. H., 1910, *Mining in the San Juan: Mining and Scientific Press*, San Francisco, California, v. 101, p. 610, 737, 865.
- Strahler, A. N., 1940, Landslides of the Vermillion and Echo Cliffs, northern Arizona: *Journal of Geomorphology*, v. 3, p. 285-297.
- 1952, Dynamic basis of geomorphology: *Geological Society of America Bulletin*, v. 63, no. 9, p. 923-938.
- Strawn, E. J., 1960, The San Juan Basin of Colorado, in *Mineral resources of Colorado*, 1st sequence: Colorado Mineral Research Board, Denver, chap. 18, p. 505, 653-667.
- Strobell, J. D., Jr., 1953a, Grade distribution studies (Colorado Plateau): U.S. Geological Survey Trace Element Investigation Report TEI-330, p. 59.
- 1953b, Ore distribution study (Colorado Plateau): U.S. Geological Survey Trace Element Investigation Report TEI-330, p. 58-59.
- 1956, Geology of the Carrizo Mountains area in northeastern Arizona and northwestern New Mexico: U.S. Geological Survey Oil and Gas Investigations Map OM-160.
- 1958, Salient stratigraphic and structural features of the Carrizo Mountains area, Arizona, New Mexico, in *Guidebook to the geology of the Paradox Basin: Intermountain Association of Petroleum Geologists, 9th Field Conference*, p. 66-73.
- Strong, M. E., 1975, Zuni Pueblo watershed project, McKinley County, New Mexico environmental impact statement: U.S. Department of Agriculture, Soil Conservation Service, 69 p.
- Stucky, H. R., Lansford, R. R., and Creel, B. J., 1971, Citizens' conferences on water, 1971; A consideration of the pressing water problems of New Mexico—with citizens' recommendations: *New Mexico Water Resources Research Institute Report 11*, 126 p., 32 figs.
- Summers, W. K., 1965a, Chemical characteristics of New Mexico's thermal waters—a critique: *New Mexico Bureau of Mines and Mineral Resources Circular 83*, 27 p., 9 figs.
- 1965b, A preliminary report on New Mexico's geothermal energy resources: *New Mexico Bureau of Mines and Mineral Resources Circular 80*, 41 p., 1 fig.
- 1968, Geothermics—New Mexico's untapped resource: *New Mexico Bureau of Mines and Mineral Resources Circular 98*, 9 p.
- 1972a, Hydrogeology and water supply of the Pueblo of Zuni, McKinley and Valencia Counties, New Mexico: *New Mexico Bureau of Mines and Mineral Resources Open-File Report OF-33*, 118 p., 24 figs.
- compiler, 1972b, *Geothermal resources of New Mexico: New Mexico Bureau of Mines and Mineral Resources Resource Map RM-1*.
- 1975, New Mexico thermal waters, in *Proceedings of 20th Annual New Mexico Water Conference: New Mexico Water Resources Research Institute Report 053*, p. 92-113.
- 1976, *Catalog of thermal waters in New Mexico: New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 4*, 80 p.
- Sumsion, C. T., 1976, Developing a state water plan; ground water conditions in Utah, spring 1976: *Utah Division of Water Resources Cooperative Investigation Report No. 15*.

- Sun, M. S., and Allen, J. E., 1957a, Authigenic brookite in Cretaceous Gallup Sandstone, Gallup, New Mexico: *Journal of Sedimentary Petrology*, v. 27, no. 3, p. 265-670.
- 1957b, Authigenic brookite in Cretaceous Gallup Sandstone, Gallup, New Mexico [abs.]: *Geological Society of America Bulletin*, v. 68, no. 12, pt. 2, p. 1873.
- Sun, M. S., and Weber, R. H., 1955, Ardennite from the Grants uranium district, New Mexico [abs.]: *American Mineralogist*, v. 40, no. 3-4, p. 338.
- 1957, Santafeite, a new hydrated vanadate from New Mexico [abs.]: *Geological Society of America Bulletin*, v. 68, no. 12, p. 1802.
- 1958, Santafeite, a new hydrated vanadate from New Mexico: *American Mineralogist*, v. 43, no. 7-8, p. 677-687, 2 figs.
- Sun, M. S., and Weege, R. J., 1959, Native selenium from Grants, New Mexico: *American Mineralogist*, v. 44, no. 11-12, p. 1309-1311.
- Swain, F. M., 1946, Middle Mesozoic nonmarine ostracoda from Brazil and New Mexico: *Journal of Paleontology*, v. 20, no. 6, p. 543-555.
- Swanberg, C. A., 1975, Application of chemical geothermometers to thermal waters of southwest New Mexico and west Texas [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 59, no. 5, p. 924.
- Sweetser, A. L., 1911, *The La Plata Mountains: Mining Science*, v. 64, p. 229.
- Swift, E. R., 1956, Study of the Morrison Formation and related strata, north-central New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 79 p., 9 figs.
- Szabo, Ernest, 1969, Pennsylvanian paleotectonics of the Paradox region in parts of Utah, Arizona, New Mexico, and Colorado: University of New Mexico, Albuquerque, unpublished Ph. D. dissertation, 137 p., 37 figs.
- Szabo, Ernest, and Wengerd, S. A., 1975, Stratigraphy and tectogenesis of the Paradox Basin, in *Guidebook to canyonlands: Four Corners Geological Society, 8th Field Conference*, p. 193-210, 12 figs.
- Tabet, D. E., 1977, Reclamation of coal surface-mined lands in New Mexico, in *Annual report July 1, 1976 to June 30, 1977: New Mexico Bureau of Mines and Mineral Resources*, p. 81-85, 1 fig.
- Tabet, D. E., Inglis, M. H., Morain, S. A., Love, L. L., and Feldman, S. C., 1976, Analysis of LANDSAT-B imagery as a tool for evaluating, developing, and managing the natural resources of New Mexico: *New Mexico Bureau of Mines and Mineral Resources and NASA Earth Resources Survey Program*, 111 p.
- Tabet, D. E., Kottlowski, F. E., Inglis, M. H., Love, L. L., and Morain, S. A., 1975, Earth resources evaluation for New Mexico by LANDSAT-2: *New Mexico Bureau of Mines and Mineral Resources and NASA Earth Resources Survey Program*, 6 p.
- Taff, J. A., 1907, The Durango coal district, Colorado, in *Coal fields of Colorado and Utah: U.S. Geological Survey Bulletin 316-E*, p. 321-337.
- Tank, R. W., 1958, Standard nomenclature and general stratigraphic correlations in the Four Corners area of the Paradox Basin, in *Guidebook to geology of Paradox Basin: Intermountain Association of Petroleum Geologists, 9th Field Conference*, p. 9.
- Tanner, W. F., 1965, Upper Jurassic paleogeography of the Four Corners region: *Journal of Sedimentary Petrology*, v. 35, no. 3, p. 564-574.
- 1968, Shallow lake deposits, lower part of Morrison Formation (late Jurassic), northern New Mexico: *The Mountain Geologist*, v. 5, no. 3, p. 187-195, 3 figs.
- 1970, Triassic-Jurassic lakes in New Mexico: *The Mountain Geologist*, v. 7, no. 4, p. 281-289.
- 1972, Large gypsum mounds in the Todilto Formation, New Mexico: *The Mountain Geologist*, v. 9, no. 1, p. 55-58.

- 1974, History of Mesozoic lakes of northern New Mexico, *in* Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 219–223, 1 fig.
- Tatum, J. L., 1949, Oil and gas exploration in the Four Corners area of Arizona, Colorado, New Mexico, and Utah: *World Oil*, v. 129, no. 8, p. 69–76.
- 1951, Significant developments in the Four Corners area: *World Oil*, v. 133, no. 1, p. 73–76.
- 1952a, Oil and gas in the Paradox Basin (revision): *Oil and Gas Journal*, v. 51, no. 2, p. 108–109, 130.
- 1952b, Oil and gas possibilities of the Paradox Basin, *in* Geological symposium of the Four Corners region: Four Corners Geological Society, p. 40–45, 2 figs.
- 1957, Tomorrow's discoveries, in the Paradox Basin (Colorado Plateau): *Petroleum Engineer*, v. 29, no. 13, p. 24–25.
- 1960, Oil and gas prospects in the Paradox Basin of the Colorado Plateau, *in* Guidebook to geology of the Paradox Basin fold and fault belt: Four Corners Geological Society, 3rd Field Conference, p. 125–126.
- Teller, H. L., Kelin, D. A., and Cameron, D. R., 1973, General disposition and aquatic environmental effects of silver iodide in precipitation management (San Juan Mountains), *in* Water for the human environment: International Water Resources Association, Champaign, Illinois, Special Sessions—Water Pollution, v. 41, p. 537–547.
- Tester, A. C., 1921, The Pennsylvanian of the San Juan Basin: University of Kansas, Lawrence, unpublished M.S. thesis.
- Thaden, R. E., 1956, Grants area, New Mexico, *in* Geologic investigations of radioactive deposits, semiannual progress report, December 1, 1955 to May 31, 1956: U.S. Geological Survey Trace Element Investigation Report TEI-620, p. 75–76.
- 1958, Grants area, New Mexico, *in* Geologic investigations of radioactive deposits: U.S. Geological Survey Trace Element Investigation Report TEI-740, p. 71–72.
- Thaden, R. E., Merrin, Seymour, and Raup, O. B., 1967, Geologic map of the Grants SE quadrangle, Valencia County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-682.
- Thaden, R. E., and Ostling, E. J., 1967, Geologic map of the Bluewater quadrangle, Valencia and McKinley Counties, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-679.
- Thaden, R. E., and Santos, E. S., 1957, Grants, New Mexico, *in* Geologic investigations of radioactive deposits—semiannual report, June 1 to November 30, 1957: U.S. Geological Survey Trace Element Investigation Report TEI-700, p. 58–60.
- 1959, Geologic mapping, Grants area, New Mexico, *in* Geologic investigations of radioactive deposits—semiannual progress report, December 1, 1958 to May 31, 1959: U.S. Geological Survey Trace Element Investigation Report TEI-751, p. 32–43.
- 1963, Map showing the general structural features of the Grants area and the areal distribution of the known uranium ore bodies in the Morrison Formation, *in* Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, map between p. 20–21.
- Thaden, R. E., Santos, E. S., and Ostling, E. J., 1966, Geologic map of the Goat Mountain quadrangle, McKinley County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-518.
- 1967, Geologic map of the Dos Lomas quadrangle, Valencia and McKinley Counties, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-680.
- Thaden, R. E., Santos, E. S., and Raup, O. B., 1967, Geologic map of the Grants quad-

- rangle, Valencia County, New Mexico: U.S. Geological Survey Geologic Quadrangle Map GQ-681.
- Theis, C. V., and others, 1954, Estimating transmissibility from specific capacity: U.S. Geological Survey Open-File Report, 11 p., 2 figs.
- Thiel, H. J., 1966, Navajo water resources, supplies, and management of the proposed Navajo Tribal Water Authority (NTWA): Report prepared for Raymond Nakai, Navajo Tribal Council, Chairman, Window Rock, Arizona, 249 p.
- Thomas, H. E., 1963a, General summary of effects of the drought in the southwest: U.S. Geological Survey Professional Paper 373-H, 22 p.
- 1963b, The meteorological phenomenon of drought in the southwest: U.S. Geological Survey Professional Paper 372-A, 43 p.
- Thompson, Van, 1950, Marketing of oil and gas from the San Juan Basin, *in* Guidebook to San Juan Basin: New Mexico Geological Society, 1st Field Conference, p. 135-143.
- Thoreau, J., 1926, Camp Bird compound veindike—discussion: *Economic Geology*, v. 21, no. 1, p. 90-91.
- Thorntwaite, C. W., 1948, An approach toward a rational classification of climate: *Geological Review*, v. 38, no. 1, p. 55-94.
- Thorntwaite, C. W., Sharp, C. F. S., and Dosch, E. F., 1942, Climate and accelerated erosion in the arid and semi-arid southwest, with special reference to the Polacca Wash drainage basin, Arizona: U.S. Department of Agriculture Technical Bulletin 808, 134 p., 57 figs.
- Timmer, R. S., 1976, Geology and sedimentary copper deposits in the western part of the Jarosa and Seven Springs quadrangle, Rio Arriba and Sandoval Counties, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 151 p.
- Tipton, W. D., 1961, Geology and uranium mineralization of the Todilto Limestone in the Grants mineral belt [abs.], *in* Guidebook to Albuquerque country: New Mexico Geological Society, 12th Field Conference, p. 195-196.
- Titcomb, H. A., 1902, The Camp Bird gold mine and mills: *Colorado School of Mines, Golden, Quarterly*, v. 24, p. 56-67.
- Toll, R. H., 1908, *La Plata Mountains, Colorado*: Mining and Scientific Press, San Francisco, California, v. 97, p. 741-744.
- Towle, C. C., and Rapaport, Irving, 1952a, Uranium deposits of the Grants district, New Mexico [abs.]: *Economic Geology*, v. 47, no. 1, p. 128.
- 1952b, Uranium deposits of the Grants district, New Mexico [abs.]: *Mining Engineering*, v. 4, no. 11, p. 1039-1040.
- Trainer, F. W., 1974, Ground water in the southwestern part of the Jemez Mountains volcanic region, New Mexico, *in* Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 337-345, 2 figs.
- 1975, Mixing of thermal and nonthermal waters in the margin of the Rio Grande Rift, Jemez Mountains, New Mexico, *in* Guidebook to Las Cruces country: New Mexico Geological Society, 26th Field Conference, p. 213-218.
- Trauger, F. D., 1953, Memorandum on ground water for public supply at the Canoncito Reservation Day School, Bernalillo County, New Mexico: U.S. Geological Survey Open-File Report, 6 p.
- ed., 1967, *Guidebook to Defiance-Zuni-Mt. Taylor region, Arizona and New Mexico*: New Mexico Geological Society, 18th Field Conference, 228 p.
- Trice, E. L., Jr., 1957, Geology of the Lagunitas Lakes area, Rio Arriba County, New Mexico: University of Texas, Austin, unpublished M.S. thesis.
- Tripp, R. M., 1956, Trends in the philosophy of occurrence and exploration for uranium (Colorado Plateau): *Mining Congress Journal*, v. 42, no. 7, p. 56-59.

- Truesdell, A. H., 1959, Relation of the Todilto Limestone uranium deposits (New Mexico) to Colorado Plateau uranium deposits in sandstone [abs.]: *Economic Geology*, v. 54, no. 7, p. 1351.
- Truesdell, A. H., and Weeks, A. D., 1959, Relation of the Todilto Limestone uranium deposits to Colorado Plateau uranium deposits in sandstone [abs.]: *Geological Society of America Bulletin*, v. 70, no. 12, pt. 2, p. 1689–1690.
- 1960, Paragenesis of uranium ores in Todilto Limestone near Grants, New Mexico, in *Geological Survey research, 1960: U.S. Geological Survey Professional Paper 400-B*, p. 52–54.
- Tschudy, R. H., 1973, The Gasbuggy core—a palynological appraisal, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 131–143, 6 figs.
- 1976, Palynology of Crevasse Canyon and Menefee Formation of San Juan Basin, New Mexico, in *Guidebook to coal geology of northwest New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 154*, p. 48–58.
- Tuan, Y. F., 1966, New Mexican gullies—a critical review and some recent observations: *Association of American Geographers Annals*, v. 56, p. 573–597.
- Turnbow, D. R., 1959a, Mississippian of the Four Corners region [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 43, no. 5, p. 1106–1107.
- 1959b, Mississippian of the Four Corners region [abs.]: *American Association of Petroleum Geologists, Rocky Mountain Section, Denver, Colorado, Geologic Record*, p. 147.
- 1959c, Mississippian of the Four Corners region [abs.]: *Oil and Gas Journal*, v. 57, no. 12, p. 210–211.
- Turner, D. S., 1958, Catalogue of stratigraphic names of the Black Mesa Basin and adjacent areas, in *Guidebook to the Black Mesa Basin: New Mexico Geological Society, 9th Field Conference*, p. 130–135.
- Turner, W. M., 1974, Review of the groundwater conditions in the Bluewater Basin—Horace Springs area, Valencia County, New Mexico: Albuquerque, New Mexico, Hydrotechnics, Inc., 17 p.
- Turney, O. A., 1929, Prehistoric irrigation in Arizona: Phoenix, Arizona State Historical Papers.
- Tweto, Ogden, and Sims, P. K., 1960, Relation of the Colorado mineral belt to Precambrian structure, in *Short papers in the geological sciences: U.S. Geological Survey Professional Paper 400-B*, p. B8–B10.
- 1963, Precambrian ancestry of the Colorado mineral belt: *Geological Society of America Bulletin*, v. 74, no. 8, p. 991–1014.
- Tyrrell, W. W., Jr., 1959a, Dakota stratigraphy in the San Juan Basin area: *Petroleum Information*, Denver, Colorado, *Geologic Record*, p. 43–54.
- 1959b, Dakota stratigraphy in the San Juan Basin [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 43, no. 5, p. 1107.
- Udis, Bernard, Howe, C. W., and Kreider, J. F., 1973, The interrelationship of economic development and environmental quality in the upper Colorado River Basin; an interindustry analysis: University of Colorado, Boulder, Department of Economics, 651 p.
- Umbach, P. H., 1948, Developments in Arizona, western New Mexico, and northern New Mexico in 1947: *American Association of Petroleum Geologists Bulletin*, v. 32, no. 6, p. 984–987, 1 fig.
- 1949, Developments in Arizona, western New Mexico, and northern New Mexico in 1948: *American Association of Petroleum Geologists Bulletin*, v. 33, no. 6, p. 931–934, 1 fig.
- 1950a, Cretaceous rocks of the San Juan Basin area, in *Guidebook to the San Juan Basin: New Mexico Geological Society, 1st Field Conference*, p. 82–84.

- 1950b, Developments in Arizona, western New Mexico, and northern New Mexico in 1949: American Association of Petroleum Geologists Bulletin, v. 34, no. 6, p. 1144–1149, 1 fig.
- 1951, Statistics on exploratory drilling in San Juan Basin area [abs.]: American Association of Petroleum Geologists Bulletin, v. 35, no. 5, p. 1105.
- 1952a, Exploration and development in the San Juan, Paradox, and Black Mesa Basins, in Geological symposium of the Four Corners region: Four Corners Geological Society, p. 22–26, 6 figs.
- 1952b, Exploration expands in Four Corners region: Petroleum Engineer, v. 24, no. 5, p. 58, 60, 63–64.
- 1952c, Exploration expands in Four Corners region, in Geological symposium of the Four Corners region: Four Corners Geological Society, p. 22–26.
- 1952d, Four Corners area; extent and development of oil and gas fields: Mines Magazine, v. 42, no. 11, p. 62–64, 6 figs.
- 1952e, Statistics on exploration on the Four Corners area, New Mexico, Colorado, Utah, and Arizona [abs.]: American Association of Petroleum Geologists Bulletin, v. 36, no. 5, p. 962.
- 1952f, Statistics on exploration of the Four Corners area, New Mexico, Colorado, Utah, and Arizona (digest): Oil and Gas Journal, v. 50, no. 44, p. 125.
- 1953a, Tectonics and its relation to oil and gas production in Four Corners area of New Mexico, Colorado, Arizona, and Utah [abs.]: American Association of Petroleum Geologists Bulletin, v. 37, no. 5, p. 1132.
- 1953b, Tectonics and its relation to oil and gas production in Four Corners area of New Mexico, Colorado, Arizona, and Utah [abs.]: American Association of Petroleum Geologists Bulletin, v. 37, no. 11, p. 2611.
- 1953c, Tectonics and its relation to oil and gas production in Four Corners area of New Mexico, Colorado, Arizona, and Utah [abs.]: Oil and Gas Journal, v. 51, no. 47, p. 175.
- 1955a, Areas of promise recalled—San Juan Basin: Petroleum Engineer, v. 27, no. 10, p. 56–59, 3 figs.
- 1955b, Oil and gas developments in Arizona, western New Mexico, and northern New Mexico in 1954: American Association of Petroleum Geologists Bulletin, v. 39, no. 6, p. 1061–1067, 2 figs.
- 1955c, (Oil and gas) Developments in Arizona, western New Mexico, and northern New Mexico in 1954 [abs.]: American Geological Institute, Geological Abstracts, v. 3, no. 3, p. 12.
- Umbach, P. H., and Barnes, F. C., 1951, Developments in Arizona, western New Mexico, and northern New Mexico in 1950: American Association of Petroleum Geologists Bulletin, v. 35, no. 6, p. 1266–1273, 2 figs.
- 1952, Developments in Arizona, western New Mexico, and northern New Mexico in 1951: American Association of Petroleum Geologists Bulletin, v. 36, no. 6, p. 1147–1156, 2 figs.
- 1953a, (Oil and gas) Developments in Arizona, western New Mexico, and northern New Mexico in 1952: American Association of Petroleum Geologists Bulletin, v. 37, no. 6, p. 1376–1383, 2 figs.
- 1953b, (Oil and gas) Developments in Arizona, western New Mexico, and northern New Mexico in 1952 [abs.]: American Geological Institute, Geological Abstracts, v. 1, no. 1–2, p. 89.
- 1954a, (Oil and gas) Developments in Arizona, western New Mexico, and northern New Mexico in 1953: American Association of Petroleum Geologists Bulletin, v. 38, no. 6, p. 1156–1163, 2 figs.
- 1954b, (Oil and gas) Developments in Arizona, western New Mexico, and northern New Mexico in 1953 [abs.]: American Geological Institute, Geological Ab-

- stracts, v. 2, no. 3, p. 47.
- Umbach, P. H., and Lewis, P. W., 1955, A summary of drilling activities in the Four Corners area 1945–1954, in *Guidebook to geology of parts of Paradox, Black Mesa, and San Juan Basins: Four Corners Geological Society, 1st Field Conference*, p. 46–50.
- U.S. Army, Corps of Engineers, 1967, *Water resources development in New Mexico: Southwestern Division, Dallas, Texas*, 29 p.
- 1972, Report on review survey for flood control and allied purposes, Rio Grande and tributaries Rio Puerco and Rio Salado, New Mexico: Albuquerque District Report 89, 62 p.
- 1974, Flood plain information, Puerco River, vicinity of Gallup, McKinley County, New Mexico: Los Angeles District, California, 44 p., 43 figs.
- U.S. Atomic Energy Commission, 1956a, Photogeologic map of the Lisbon Valley anticline and surrounding area, San Juan County, Utah: Preliminary Map 3.
- 1956b, Preliminary geologic map of Bluewater area, showing portions of McKinley and Valencia Counties, New Mexico: Preliminary Map 2.
- 1956c, Preliminary geologic map of Gallup area, showing a portion of McKinley County, New Mexico: Preliminary Map 1.
- 1959a, Preliminary reconnaissance reports on reported occurrences of uranium deposits, Colorado, San Juan County: U.S. Atomic Energy Commission, Division of Raw Materials, Grand Junction, Colorado, 34 p.
- 1959b, Preliminary reconnaissance reports on reported occurrences of uranium deposits, New Mexico, McKinley County: U.S. Atomic Energy Commission, Division of Raw Materials, Grand Junction, Colorado, 33 p.
- 1959c, Preliminary reconnaissance reports on reported occurrences of uranium deposits, New Mexico, Rio Arriba County: U.S. Atomic Energy Commission, Division of Raw Materials, Grand Junction, Colorado, 31 p.
- 1959d, Preliminary reconnaissance reports on reported occurrences of uranium deposits, New Mexico, San Juan County: U.S. Atomic Energy Commission, Division of Raw Materials, Grand Junction, Colorado, 83 p.
- 1959e, Preliminary reconnaissance reports on reported occurrences of uranium deposits, New Mexico, Sandoval County: U.S. Atomic Energy Commission, Division of Raw Materials, Grand Junction, Colorado, 42 p.
- 1959f, Preliminary reconnaissance reports on reported occurrences of uranium deposits, Utah, San Juan County: U.S. Atomic Energy Commission, Division of Raw Materials, Grand Junction, Colorado, 101 p.
- 1970, Preliminary reconnaissance for uranium in New Mexico, 1950–1958: U.S. Atomic Energy Commission Report RME-160, 223 p.
- U.S. Bureau of Indian Affairs, 1976, Navajo Indian irrigation project: U.S. Department of Interior, Bureau of Indian Affairs INT DES 76–20, pages vary, 31 figs.
- 1977, Draft environmental statement Navajo-El Paso/consolidation coal lease and mining plan, Navajo Reservation, San Juan County, New Mexico: U.S. Department of Interior, Bureau of Indian Affairs INT DES 77–4, pages vary.
- U.S. Bureau of Mines, 1936, Analyses of New Mexico coals: Technical Paper 569, 112 p.
- 1937, Analyses of Colorado coals: Technical Paper 574, 327 p.
- 1977a, The mineral industry of New Mexico in 1976: Mineral Industry Survey, January 1977.
- 1977b, Uranium, in *Commodity data summaries, 1977: Annual Report*, p. 182–183.
- U.S. Bureau of Reclamation, 1966a, Navajo Dam and reservoir: 241 p.
- 1966b, Re-evaluation report, Navajo Indian irrigation project, New Mexico: U.S. Department of Interior, Bureau of Reclamation, Amarillo, Texas, Region 5, 53 p.

- 1975, Assessment of cumulative sociocultural impacts of proposed plans for development of coal and water resources in the northern New Mexico region: pages vary.
- 1976a, New Mexico water resources assessment for planning purposes: U.S. Bureau of Reclamation, New Mexico Interstate Stream Commission, and New Mexico State Engineer, 218 p., 31 figs, boxed map folio.
- 1976b, Proposed expansion of the San Juan powerplant San Juan County, New Mexico: U.S. Department of Interior, Bureau of Reclamation INT DES 76-33, pages vary.
- 1976c, Western Gasification Company (WESCO) coal gasification project and expansion of Navajo Mine by Utah International, Inc.; final environmental statement: U.S. Department of Interior, Bureau of Reclamation, Amarillo, Texas, Region 5, INT FES 76-2, 2 v., pages vary.
- 1977a, Final environmental statement El Paso coal gasification project, San Juan County, New Mexico: U.S. Department of Interior, Bureau of Reclamation INT FES 77-02, 2 v., pages vary.
- 1977b, Proposed expansion of the San Juan powerplant, New Mexico; final environmental statement: INT FES 77-29, pages vary.
- compilers, 1977c, Resource and potential reclamation evaluation Bisti West study site, Bisti coal field: U.S. Department of Interior, Bureau of Land Management, Bureau of Reclamation, and U.S. Geological Survey EMRIA Report 5-1976, 103 p., 34 figs.
- U.S. Department of Agriculture, Soil Conservation Service, 1958, Soil survey Blue-water area, New Mexico: U.S. Department of Agriculture, Soil Conservation Service and New Mexico Agriculture Experiment Station, ser., 1955, no. 2, 20 p., 12 figs.
- 1967, Soil survey Zuni Mountain area, New Mexico: U.S. Department of Agriculture, Soil Conservation, Service and New Mexico Agricultural Experiment Station, 86 p., 28 figs.
- 1968, Soil survey of Cabezon area, New Mexico: U.S. Department of Agriculture, Soil Conservation Service, and New Mexico Agricultural Experiment Station, 44 p., 11 figs.
- U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Environmental Data Service, 1917-1977, Climatological data; annual summaries, New Mexico: annual report.
- U.S. Department of Commerce, Weather Bureau, 1955, Climatic summary of the United States; supplement for 1931 through 1952, New Mexico, *in* Climatography of the United States: No. 11-25, 96 p.
- 1956, Substation history, New Mexico; a summary of information available on substation locations, elevations, exposures, instrumentations, records, and observers from date station established through year 1955: U.S. Government Printing Office, Superintendent of Documents, 112 p.
- 1965, Decennial census of United States climate, *in* Climatic summary of the United States: No. 86-25, 98 p.
- U.S. Energy Research and Development Administration, 1976, Statistical data of the uranium industry: Open-File Report GJO-100(76), 87 p.
- 1977a, ERDA announces figures for 1976 uranium exploration and development drilling by industry: U.S. Energy Research and Development Administration, Grand Junction, Colorado, News Release 77-15.
- 1977b, ERDA reports 1976 U.S. uranium production and 1977 estimate of uranium resources: U.S. Energy Research and Development Administration, Grand Junction, Colorado, News Release 77-35.
- U.S. Environmental Protection Agency, 1973, Water quality criteria, 1972, a report

- of the Committee on Water Quality Criteria: EPA-R3-73-033, 594 p.
- 1975, Water quality impacts of uranium mining and milling in the Grants mineral belt, New Mexico: U.S. Environmental Protection Agency, Dallas, Texas, Region VI, Report EPA 90619-75-002.
- U.S. Geological Survey, 1957, Exploration drilling on the Colorado Plateau, 1947-1956: Trace Element Investigation Report TEI-690, bk. 2, p. 328-339.
- compiler, 1965, Mineral and water resources of New Mexico (report of U.S. Senate): New Mexico Bureau of Mines and Mineral Resources Bulletin 87, 437 p., 89 figs.
- 1970, A proposal for a comprehensive investigation of the water resources of the Acoma, Laguna, Alamo, and Canoncito Indian lands in parts of Bernalillo, Sandoval, Socorro, and Valencia Counties, New Mexico: Open-File Report, 21 p., 3 figs.
- 1971, Map showing the general depth to ground water in New Mexico: Open-File Map.
- 1972a, Aeromagnetic map of the Jemez area, New Mexico: Open-File Map.
- 1972b, Map showing estimated thickness of aquifers that contain brine in New Mexico: Open-File Map.
- 1972c, Map showing estimated thickness of aquifers that contain fresh ground water in New Mexico: Open-File Map.
- 1972d, Map showing estimated thickness of aquifers that contain moderately saline ground water in New Mexico: Open-File Map.
- 1972e, Map showing estimated thickness of aquifers that contains slightly saline ground water in New Mexico: Open-File Map.
- 1972f, Map showing estimated thickness of aquifers that contain very saline ground water in New Mexico: Open-File Map.
- 1972g, Map showing observed changes of ground water level and hydrographs of selected wells in New Mexico: Open-File Map.
- 1972h, Map showing the estimated potential yield of water wells in New Mexico: Open-File Map.
- 1976a, Hydrologic unit map—1974 State of New Mexico: U.S. Geological Survey and U.S. Water Resources Council, 1 sheet.
- 1976b, Water resources data for New Mexico, 1975: Water-Data Report NM-75-1, 603 p., 5 figs.
- 1977a, Energy resources map of Colorado, 1977: Miscellaneous Geologic Investigations Map I-1039.
- 1977b, Water resources data for New Mexico, 1976: Water-Data Report NM-76-1, 655 p., 6 figs.
- 1961-1974, Water resources data for New Mexico—Part 1, Surface water records: Water Resources Division, annual report.
- 1965-1974, Water resources data for New Mexico—Part 2, Water quality records: Water Resources Division, annual report.
- U.S. Public Health Service, 1962a, Drinking water standards: Federal Register, March 6, 1962, p. 2152-2155.
- 1962b, Public Health Service drinking water standards—1962: U.S. Department of Health, Education, and Welfare, Public Health Service Publication 956, revised, 61 p., 1 fig.
- 1964, A study of water quality conditions in the Animas-San Juan-La Plata area, summer 1961: U.S. Department of Health, Education, and Welfare, Public Health Service Report.
- U.S. Soil Conservation Service, 1970, New Mexico soil and water conservation needs inventory: U.S. Department of Agriculture, Soil Conservation Service, and New Mexico Conservation Needs Committee, 289 p.

- 1963–1976, The small watershed program in New Mexico: U.S. Department of Agriculture, Soil Conservation Service, annual report.
- 1975, Zuni Pueblo watershed, McKinley County, New Mexico: U.S. Department of Agriculture, Soil Conservation Service, 53 p.
- 1976, Inventory of potential and existing upstream reservoir sites, Farmington study area: U.S. Department of Agriculture, Soil Conservation Service, Economic Research Service, 74 p.
- U.S. Vanadium Company, 1952, Mesa miracle in Colorado, Utah, New Mexico, Arizona: New York, U.S. Vanadium Company, Union Carbide and Carbon Corporation, 32 p.
- U.S. Weather Bureau, Climatological data, annual summary of Arizona, New Mexico, and Utah: U.S. Department of Commerce, Weather Bureau, annual report.
- University of Arizona, 1965a, Normal annual precipitation normal May–September precipitation, 1931–60, State of Arizona: Tucson, Map.
- 1965b, Normal annual precipitation-normal October–April precipitation, 1931–60, State of Arizona: Tucson, Map.
- Urdike, R. G., and Pewe, T. L., 1970, The glacial and related Quaternary events of the San Francisco Peaks, Arizona, in *Guidebook to Four Corners, Colorado Plateau, central Rocky Mountain region, 1970*: National Association of Geology Teachers, southwest section, Cedar City, Utah, p. 39–42, 1 fig.
- Utah Construction and Mining Company, 1969, Navajo mine—coal for the energy needs of the southwest: Salt Lake City, pamphlet, 11 p.
- Van Couvering, Martin, 1958a, "Geology of southwestern San Juan Basin," a review of the Four Corners Geological Society publication: *American Association of Petroleum Geologists Bulletin*, v. 42, no. 5, p. 1101–1102.
- 1958b, Review of guidebook of western San Juan Mountains, Colorado by New Mexico Geological Society: *American Association of Petroleum Geologists Bulletin*, v. 42, no. 2, p. 454–457.
- 1958c, Review of guidebook of western San Juan Mountains, Colorado by New Mexico Geological Society: *Economic Geology*, v. 53, no. 1, p. 112.
- 1959, Review of guidebook of the Black Mesa Basin, northeastern Arizona by New Mexico Geological Society: *American Association of Petroleum Geologists Bulletin*, v. 43, no. 3, p. 697–700.
- 1960, Review of guidebook of west-central New Mexico by New Mexico Geological Society: *American Association of Petroleum Geologists Bulletin*, v. 44, no. 5, p. 644–646.
- Van Wagenen, H. R., 1906, Tungsten in Colorado: Colorado School of Mines, Golden, Bulletin, v. 3, p. 138–169.
- Vann, R. P., 1931, Paleontology of the upper Cretaceous of Chaco Canyon, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 64 p.
- 1942, Paleontology of the upper Cretaceous of Chaco Canyon, New Mexico [abs.]: University of New Mexico, Albuquerque, Bulletin 383, v. 55, no. 8, p. 65–66.
- Varnes, D. J., 1947, South Silverton area, Animas district, San Juan County, in *Mineral resources of Colorado*: Denver, Colorado Minerals Resource Board, p. 431–433.
- 1948, Geology and ore deposits of the South Silverton area, San Juan County, Colorado: Denver, Colorado Mining Association, 12 p.
- Varnes, D. J., and Burbank, W. S., 1947, Cement Creek and Mineral areas, Eureka district, San Juan County, in *Mineral resources of Colorado*: Colorado Mineral Resources Board, Denver, p. 435–437.
- Vine, J. D., Swanson, V. E., and Bell, K. G., 1958, The role of lumic acids in the geochemistry of uranium, in *United Nations survey of raw-material resources*:

- United Nations Second International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, Proceedings, v. 2, p. 187-191.
- Vivian, G., and Mathews, T. W., 1964, Kin-Kletso—a Pueblo III community in Chaco Canyon, New Mexico: Southwest Monuments Association Technical Series, v. 6, pt. 1, p. 1-115.
- Vizcaino, H. P., and O'Neill, A. J., 1977, Preliminary study of the uranium potential of Tertiary rocks in the central San Juan Basin, New Mexico: U.S. Energy Research and Development Administration, Grand Junction, Colorado, GJBX-78(77), 28 p., 14 figs.
- Vlissides, S.D., and Bieberman, R. A., 1961, Map of New Mexico showing oil and gas fields, unsuccessful test wells, Precambrian rocks, and pipelines: U.S. Geological Survey Oil and Gas Investigations Map OM-207.
- Waite, L. A., 1973, Flood of July 17, 1972 in Gallup, New Mexico: U.S. Geological Survey Water-Resources Investigations 43-73, 13 p., 2 figs.
- Walcott, C. D., 1883, Pre-Carboniferous strata in the Grand Canyon of the Colorado, Arizona: American Journal of Science, 3rd ser., v. 26, p. 437-442.
- , 1895, Algonkian rocks of the Grand Canyon of the Colorado: Journal of Geology, v. 3, p. 312-330.
- Waldschmidt, W. A., 1941a, Cementing materials in sandstones and their probable influence on migration and accumulation of oil and gas [Rocky Mountain region]: American Association of Petroleum Geologists Bulletin, v. 25, no. 10, p. 1839-1879.
- , 1941b, Results of petrographic studies of sandstone cores from Rocky Mountain structures [abs.]: Oil and Gas Journal, v. 39, no. 47, p. 58.
- , 1941c, Results of petrographic studies of sandstone cores from Rocky Mountain structures: American Association of Petroleum Geologists Bulletin, v. 25, no. 5, p. 939-940.
- , 1946, Gramp's [oil] field, Archuleta County, Colorado: American Association of Petroleum Geologists Bulletin, v. 30, no. 4, p. 561-580.
- , 1948, Gramp's [oil] field, Archuleta County, Colorado, in J. V. Howell, ed., Structure of typical American oil fields: American Association of Petroleum Geologists, v. 3, p. 110-131.
- Waldschmidt, W. A., and Adams, J. W., 1942, The beryl-monazite pegmatite dike of Centennial Cone, Colorado: Colorado School of Mines, Golden, Quarterly, v. 37, no. 3, p. 29-38.
- Waldschmidt, W. A., and LeRoy, L. W., 1944, Reconsideration of the Morrison Formation in the type area, Jefferson County, Colorado: Geological Society of America Bulletin, v. 55, no. 9, p. 1097-1114.
- Walker, G. W., 1963a, Age of uranium-bearing veins in the conterminous United States, in Geology of uranium-bearing veins in the conterminous United States: U.S. Geological Survey Professional Paper 455-B, p. 29-35, 1 fig.
- , 1963b, Host rocks and their alterations as related to uranium-bearing veins in the conterminous United States, in Geology of uranium-bearing veins in the conterminous United States: U.S. Geological Survey Professional Paper 455-C, p. 37-53, 1 fig.
- , 1963c, Supergene alteration of uranium-bearing veins in the conterminous United States, in Geology of uranium-bearing veins in the conterminous United States: U.S. Geological Survey Professional Paper 455-E, p. 91-203, 3 figs.
- Walker, G. W., and Adams, J. W., 1963, Mineralogy, internal structure and textural characteristics, and paragenesis of uranium-bearing veins in the conterminous United States, in Geology of uranium-bearing veins in the conterminous United States: U.S. Geological Survey Professional Paper 455-D, p. 55-90, 38 figs.
- Walker, G. W., and Osterwald, F. W., 1963a, Concepts of origin of uranium-bearing

- veins in the conterminous United States, in *Geology of uranium-bearing veins in the conterminous United States*: U.S. Geological Survey Professional Paper 455-F, p. 105-120.
- 1963b, Introduction to the geology of uranium-bearing veins in the conterminous United States, including sections on geographic distribution and classification of veins, in *Geology of uranium-bearing veins in the conterminous United States*: U.S. Geological Survey Professional Paper 455-A, p. 1-28.
- Wanek, A. A., 1954, Geologic map of the Mesa Verde area, Montezuma County, Colorado: U.S. Geological Survey Oil and Gas Investigations Map OM-152.
- 1959, Geology and fuel resources of the Mesa Verde area, Montezuma and La Plata Counties, Colorado, in *Contributions to economic geology, 1957*: U.S. Geological Survey Bulletin 1072-M, p. 667-721, [1960].
- Wantland, Dart, 1952, Geophysical investigation for United States Atomic Energy Commission in the Colorado Plateau area: U.S. Bureau of Reclamation Geologic Report G-119, 151 p.
- 1954a, Examples of geophysical exploration for uranium, Colorado Plateau area: *Mines Magazine*, v. 44, no. 8, p. 18-24.
- 1954b, Examples of geophysical exploration for uranium, Colorado Plateau area: *Mines Magazine*, v. 44, no. 9, p. 26-33.
- 1955, Examples of geophysical exploration for uranium, Colorado Plateau area: *Oil and Gas Journal*, v. 53, no. 48, p. 149-156.
- [U.S.] Water Resources Policy Commission, 1952, Ten rivers in America's future, No. 5, The Colorado: President's Water Resources Policy Commission Report, v. 2, 108 p., 2 figs.
- Waters, A. C., and Granger, H. C., 1953a, Relation of uranium to volcanic materials in Triassic and Jurassic Formations (Colorado Plateau): U.S. Geological Survey Trace Element Investigation Report TEI-620, pt. 1, p. 18.
- 1953b, Volcanic debris in uraniumiferous sandstones, and its possible bearing on the origin and precipitation of uranium (Colorado Plateau): U.S. Geological Survey Circular 224, 26 p.
- Watson, R. A., 1959, Landslides on the east flank of the Chuska Mountains, New Mexico: University of Minnesota, Minneapolis, unpublished M.S. thesis.
- Watson, R. A., and Wright, H. E., Jr., 1963, Landslides on the east flank of the Chuska Mountains, northwestern New Mexico: *American Journal of Science*, 5th ser., v. 261, p. 525-548.
- Webber, B. N., 1947, Geology and ore resources of the uranium-vanadium depositional province of the Colorado Plateau region: U.S. Atomic Energy Commission RMO-437, 279 p., 73 figs.
- Weber, R. H., and Kottlowski, F. E., 1959, Gypsum resources of New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 68, 68 p., 5 figs.
- Weege, R. J., 1963, Geology of the Marquez mine, Ambrosia Lake area, in *Geology and technology of the Grants uranium region*: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 117-121, 3 figs.
- Weeks, A. D., 1951, Red and gray clay underlying ore-bearing sandstone of the Morrison Formation in western Colorado: U.S. Geological Survey Trace Element Memorandum TEM-251, 19 p.
- 1953, Mineralogic study of some Jurassic and Cretaceous claystones and siltstones from western Colorado and eastern Utah: U.S. Geological Survey Trace Element Investigation Report TEI-285, 22 p.
- 1954, Properties of uranium-bearing minerals: U.S. Geological Survey Trace Element Investigation Report TEI-490, p. 282.
- 1955, Properties of uranium-bearing minerals: U.S. Geological Survey Trace Element Investigation Report TEI-540, p. 263-264.

- 1956a, Mineralogy and oxidation of the Colorado Plateau uranium ores, in *Geology of uranium and thorium: U.N. International Conference on Peaceful Uses of Atomic Energy*, Geneva, Switzerland, Proceedings, 1955, v. 6, p. 525–529.
- 1956b, Mineralogy and oxidation of the Colorado Plateau uranium ores, in *Contributions to the geology of uranium and thorium: U.S. Geological Survey Professional Paper 300*, p. 187–193.
- 1956c, Mineralogy of uranium deposits, in *Geologic investigations of radioactive deposits—semiannual report, December 1, 1955 to May 31, 1956: U.S. Geological Survey Trace Element Investigation Report TEI-620*, p. 123–128.
- 1956d, Mineralogy of uranium deposits, in *Geologic investigations of radioactive deposits—semiannual progress report, June 1, 1956 to November 30, 1956: U.S. Geological Survey Trace Element Investigation Report TEI-640*, p. 263–266.
- Weeks, A. D., Cisney, E. A., and Sherwood, A. M., 1953, Montroseite, a new vanadium oxide from the Colorado Plateau: *American Mineralogist*, v. 38, no. 11–12, p. 1235–1241.
- Weeks, A. D., and Coleman, R. G., 1955, General mineralogic studies (Colorado Plateau): *U.S. Geological Survey Trace Element Investigation Report TEI-590*, p.126–127.
- Weeks, A. D., and Garrels, R. M., 1959, Geologic setting of the Colorado Plateau ores, in *Geochemistry and mineralogy of the Colorado Plateau uranium ores: U.S. Geological Survey Professional Paper 320*, p. 3–11.
- Weeks, A. D., Lindberg, M. L., and Meyrowitz, Robert, 1961, Grantsite, a new hydrated sodium calcium vanadyl vanadate from New Mexico and Colorado—a preliminary description, in *Geological Survey research, 1961: U.S. Geological Survey Professional Paper 424-B*, p. 293.
- 1962, Grantsite, a new hydrated sodium calcium vanadyl vanadate from New Mexico and Colorado—a preliminary description [abs.]: *American Geological Institute, Geoscience Abstracts*, v. 4, no. 4–1443, p. 38.
- Weeks, A. D., Lindberg, M. L., Truesdell, A. H., and Meyrowitz, Robert, 1964, Grantsite, a new hydrated sodium calcium vanadate from New Mexico, Colorado, and Utah: *American Mineralogist*, v. 49, no. 11–12, p. 1511–1526.
- 1965, Grantsite, a new hydrated sodium calcium vanadate from New Mexico, Colorado, and Utah [abs.]: *American Geological Institute, Geoscience Abstracts*, v. 7, no. 7–872, p. 50.
- Weeks, A. D., and Riley, L. B., 1952, The Colorado Plateau project: *U.S. Geological Survey Trace Element Investigation Report TEI-218*, p. 12–15.
- 1953a, General mineralogical studies (Colorado Plateau): *U.S. Geological Survey Trace Element Investigation Report TEI-330*, p. 61–65.
- 1953b, Mineralogic studies (Colorado Plateau): *U.S. Geological Survey Trace Element Investigation Report TEI-270*, pt. 1, p. 11–14.
- Weeks, A. D., and Thompson, M. E., 1954, Identification and occurrence of uranium and vanadium minerals from the Colorado Plateau: *U.S. Geological Survey Bulletin 1009-B*, p. 13–62.
- Weeks, A. D., Thompson, M. E., and Sherwood, A. M., 1954, Navajoite, a new vanadium oxide from Arizona, summary: *Science*, v. 119, no. 3088, p. 326.
- 1955, Navajoite, a new vanadium oxide from Arizona: *American Mineralogist*, v. 40, nos. 3–4, p. 207–212.
- Weeks, A. D., Thompson, M. E., and Thompson, R. B., Jr., 1953, Mineral associations and types of uranium ores on the Colorado Plateau [abs.]: *Geological Society of America Bulletin*, v. 64, no. 12, pt. 2, p. 1489–1490.
- 1954, Mineral associations and types of uranium ores on the Colorado Plateau [abs.]: *American Mineralogist*, v. 39, nos. 3–4, p. 348–349.
- Weeks, A. D., and Truesdell, A. H., 1958a, Mineralogy and geochemistry of the ura-

- niium deposits of the Grants district, New Mexico [abs.]: *Geological Society of America Bulletin*, v. 69, no. 12, pt. 2, p. 1658–1659.
- 1958b, Mineralogy and geochemistry of the uranium deposits of the Grants district, New Mexico, in *Geologic investigations of radioactive deposits—semiannual progress report, December 1, 1957 to May 31, 1958*: U.S. Geological Survey Trace Element Investigation Report TEI-740, p. 72–77.
- 1958c, Mineralogy and geochemistry of the uranium deposits of the Grants district, New Mexico [abs.]: *Economic Geology*, v. 53, no. 7, p. 932–933.
- Weeks, H. H., Mohr, C. L., and Durwood, R. H., 1925, Oil and water possibilities of parts of Delta and Mesa Counties: *Colorado Geological Survey Bulletin* 28, 46 p., 7 figs.
- Weimer, R. J., 1960, Upper Cretaceous stratigraphy, Rocky Mountain area: *American Association of Petroleum Geologists Bulletin*, v. 44, no. 1, p. 1–20.
- 1970, Rates of deltaic sedimentation and intrabasin deformation, upper Cretaceous of Rocky Mountain region, in *Deltaic sedimentation modern and ancient*: Society of Economic Paleontologists and Mineralogists Special Publication 15, p. 270–292.
- Weir, D. B., 1952, Geologic guides to prospecting for carnotite deposits on the Colorado Plateau, in *Contributions to geology of uranium*: U.S. Geological Survey Bulletin 988-H, p. 15–27, 9 figs.
- Weir, G. W., 1951, Cross-lamination in the Salt Wash Sandstone member of the Morrison Formation [abs.]: *Geological Society of America Bulletin*, v. 62, no. 12, pt. 2, p. 1514.
- Weir, J. E., Jr., 1958, Geology and hydrology of the Valles Caldera, Sandoval County, north-central New Mexico: U.S. Geological Survey Open-File Report, 2 p.
- 1971, Hydraulic testing of the Ojo Alamo Sandstone in Hole GB-3, Project Gasbuggy, Rio Arriba County, New Mexico Gasbuggy-5: U.S. Geological Survey Report PNE-G-76, 26 p.
- Welles, S. P., 1972, Fossil-hunting for Tetrapods in the Chinle Formation: a brief pictorial history, in *Investigations in the Triassic Chinle Formation*: Museum of Northern Arizona, Flagstaff, Bulletin 47, p. 13–18, 11 figs.
- Wells, E. H., and Wootton, T. B., 1932, Gold mining and gold deposits in New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 5, revised edition, 1940, 24 p.
- Wengerd, S. A., 1950a, Photogeologic characteristics of Paleozoic rocks on the Monument Upwarp, Utah: *Photogrammetric Engineering*, Washington, D. C., v. 16, p. 770–781.
- 1950b, Triassic rocks of northwestern New Mexico and southwestern Colorado, in *Guidebook to San Juan Basin*: New Mexico Geological Society, 1st Field Conference, p. 67–72.
- 1951a, Oil in the Four Corners region: *Colorado School of Mines, Golden, Mines Magazine*, v. 41, no. 10, p. 33–38, 42, 49.
- 1951b, Reef limestones of the Hermosa Formation, Utah: *American Association of Petroleum Geologists Bulletin*, v. 35, no. 5, p. 1038–1051, 8 figs.
- 1952, The San Juan—new basin of wealth: *Petroleum Engineer*, v. 24, no. 5, p. 55–81.
- 1954, Shallow oil possibilities of the Four Corners region: *Colorado School of Mines, Golden, Mines Magazine*, v. 44, no. 11, p. 66–71.
- 1956a, Paradox oil in the Four Corners region: *Oil and Gas Journal*, v. 54, no. 73, p. 106–111.
- 1956b, Sealing factors for non-structural Paleozoic oil in the Paradox Basin of the Four Corners region [abs.]: *Oil and Gas Journal*, v. 54, no. 53, p. 139.
- 1957a, Permo-Pennsylvanian strata of the western San Juan Mountains, Col-

- orado, in *Guidebook to southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference*, p. 131–138, 2 figs.
- 1957b, Shallow oil in the San Juan Basin (Colorado-New Mexico) [abs.], in *Guidebook to the southwestern San Juan Mountains, Colorado: New Mexico Geological Society, 8th Field Conference*, p. 255.
- 1958, Origin and habitat of oil in the San Juan Basin of New Mexico and Colorado, in *Symposium on habitat of oil: American Association of Petroleum Geologists*, p. 366–394.
- 1959a, Pennsylvanian oil possibilities of San Juan Basin, Four Corners region; Colorado-New Mexico: *American Association of Petroleum Geologists Bulletin*, v. 43, no. 9, p. 2214–2227, 5 figs.
- 1959b, Pennsylvanian oil possibilities of San Juan Basin, Four Corners region [abs.]: *American Geological Institute Geoscience Abstracts*, v. 1, no. 10, p. 52.
- 1959c, Stratigraphic controls on Pennsylvanian oil of Paradox Basin, Four Corners region [abs.]: *American Association of Petroleum Geologists Bulletin*, v. 43, no. 7, p. 1778.
- 1959d, Regional geology as related to the petroleum potential of the Lucero region, west-central New Mexico, in *Guidebook to west-central New Mexico: New Mexico Geological Society, 10th Field Conference*, p. 121–134.
- 1961, *Guidebook of Rio Chama country*, by New Mexico Geological Society, a review: *American Association of Petroleum Geologists Bulletin*, v. 45, no. 4, p. 571–572.
- 1962a, Pennsylvanian sedimentation in Paradox Basin, Four Corners region, in *Symposium on the Pennsylvanian System in the United States: American Association of Petroleum Geologists*, p. 263–330.
- 1962b, Pennsylvanian sedimentation in the Paradox Basin, Four Corners region [abs.]: *American Geological Institute, Geoscience Abstracts*, v. 4, no. 4–3221, p. 19–20.
- 1962c, Regional structural-stratigraphic cross section, east-central Arizona to west-central New Mexico, in *Guidebook to the Mogollon Rim region, east-central Arizona: New Mexico Geological Society, 13th Field Conference*, p. 58.
- 1963, Regional structural-stratigraphic cross section, east-central Arizona to west-central New Mexico [abs.]: *American Geological Institute, Geoscience Abstracts*, v. 5, no. 5–4670, p. 13.
- Wengerd, S. A., and Matheny, M. L., 1958, Pennsylvanian System of Four Corners region: *American Association of Petroleum Geologists Bulletin*, v. 42, no. 9, p. 2048–2106.
- Wengerd, S. A., and Strickland, J. W., 1954, Pennsylvanian stratigraphy of Paradox Salt Basin, Four Corners region, Colorado and Utah: *American Association of Petroleum Geologists Bulletin*, v. 38, no. 10, p. 2157–2199.
- Wengerd, S. A., and Szabo, Ernest, 1968, Pennsylvanian correlations in southwestern Colorado, in *Guidebook of San Juan-San Miguel-La Plata region: New Mexico Geological Society, 19th Field Conference*, p. 159–164.
- Wentworth, C. K., 1926, *Methods of mechanical analysis of sediments: University of Iowa, Iowa City, Studies in Natural History*, v. 11, no. 11, 52 p.
- West, F. G., 1973, Geohydrology of the Jemez Plateau [abs.]: *American Geophysical Union (EOS) Transactions*, v. 54, no. 11, p. 1214–1215.
- West, F. G., Kintzinger, P. R., and Purtymun, W. D., 1975, Hydrologic testing Geothermal Test Hole No. 2: University of California, Los Alamos Scientific Laboratory, New Mexico, 8 p.
- West, R. L., 1971, Cochiti—A key water resource development for New Mexico, in *Proceedings of 16th Annual New Mexico Water Conference: New Mexico State University, Las Cruces*, p. 179–197, 3 figs.

- West, S. W., 1957a, Interim report on water wells, Gallup, New Mexico: U.S. Geological Survey Open-File Report, 23 p., 8 figs.
- 1957b, Possibility of development of ground-water supply at Chaco Canyon National Monument, San Juan County, New Mexico: U.S. Geological Survey Open-File Report, 29 p., 1 fig.
- 1958, The Gallup Sandstone as a fresh-water aquifer, *in* Guidebook to Black Mesa Basin: New Mexico Geological Society, 9th Field Conference, p. 184–185.
- 1961a, Availability of ground water in the Gallup area, New Mexico: U.S. Geological Survey Circular 443, 21 p., 2 figs.
- 1961b, Disposal of uranium-mill effluent near Grants, New Mexico, *in* Short papers in the geologic and hydrologic sciences: U.S. Geological Survey Professional Paper 424-D, p. 376.
- 1969, Disposal of uranium-mill effluent by well injection near Grants, New Mexico: U.S. Geological Survey Open-File Report, 127 p.
- 1972, Disposal of uranium-mill effluent by well injection in the Grants area, Valencia County, New Mexico: U.S. Geological Survey Professional Paper 386-D, 28 p.
- West, S. W., and others, 1965, Water resources, *in* Mineral and water resources of New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 87, p. 387–437, 20 figs.
- Weston, William, 1878, The San Juan silver mines: *Engineering Mining Journal*, v. 25, p. 150–151.
- 1891, Red Mountain silver mines, Ouray County: *Engineering Mining Journal*, v. 51, p. 348.
- Whelan, Mark, 1952, Major magnetic anomalies of the Four Corners region, *in* Geological symposium of the Four Corners region: Four Corners Geological Society, 1st Field Conference, p. 126–127.
- Whitaker, G. O., 1950, Field notes on Coryphodon quarry, Eocene, San Juan Basin, New Mexico: American Museum of Natural History Archives, 66 p.
- Whitcomb, H. A., 1949, Water-supply investigation at Torreon, Sandoval County, New Mexico: U.S. Geological Survey Open-File Report, 14 p.
- 1950, Memorandum on geologic reconnaissance in the vicinity of water well 5 miles south of Gallup, McKinley County, New Mexico: U.S. Geological Survey Open-File Report, 3 p.
- White, C. S., 1976, Factors influencing natural water quality and changes resulting from land-use practices: *Water, Air, and Soil Pollution Journal*, v. 6, no. 1, p. 53–69.
- Whitlatch, E. E., Jr., 1977, Coal gasification and water resources development: *Journal of Water Resources Planning and Management Division, Proceedings of American Society of Civil Engineers*, v. 103, no. WR2, Paper 13345, p. 299–314.
- Whyte, M. R., and Shomaker, J. W., 1977, A geological appraisal of the deep coals of the Menefee Formation of the San Juan Basin *in* Supplemental articles to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 41–48, 5 figs.
- Wierenga, P. J., Van Genuchten, M. T., and Boyle, F. W., 1975, Transfer of boron and tritiated water through sandstone (New Mexico): *Journal of Environmental Quality*, v. 4, no. 1, p. 83–87.
- Wilcox, J. T., 1962, A basaltic breccia plug on East Grants Ridge, Valencia County, New Mexico: Columbia University, New York, unpublished M.S. thesis.
- Wilcox, L. V., 1955, Classification and use of irrigation waters: U.S. Department of Agriculture Circular 969, 19 p., 4 figs.
- Willard, M. E., 1956, Clay minerals in the Cretaceous rocks of the Tohachi quadrangle, New Mexico [abs.]: *Geological Society of America Bulletin*, v. 67, no. 12, pt. 2,

- p. 1803.
- 1964, Sedimentology of the upper Cretaceous rocks of Todilto Park, New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 14, 47 p.
- Williams, Howell, 1936, Pliocene volcanoes of the Navajo-Hopi country: Geological Society of America Bulletin, v. 47, no. 1, p. 111–171, 16 figs.
- Williams, J. R., 1956, A petrographic study of the subsurface Gallup Sandstone of San Juan County, New Mexico: Texas Technical University, Lubbock, unpublished M.S. thesis.
- Willis, B. M., 1952, San Juan Basin developed on a sound basis: *Petroleum Engineer*, v. 24, no. 5, p. 83–89.
- Williston, S. W., and Case, E. C., 1912, The Permo-Carboniferous of northern New Mexico: *Journal of Geology*, v. 20, no. 1, p. 1–12, 2 figs.
- Wilpolt, R. H., 1956, Background for exploration in the Colorado Plateau: *Mining Congress Journal*, v. 42, no. 5, p. 64–66.
- Wilson, E. D., Moore, R. T., and Cooper, J. R., 1969, Geologic map of Arizona: Arizona Bureau of Mines and U.S. Geological Survey Map.
- Wilson, G. M., 1952, San Juan Basin becoming major gas producing area: *World Oil*, v. 134, no. 5, p. 104–106.
- Wilson, J. C., 1977, The McKinley Mine, in *Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 253–255, 2 figs.
- Winchester, D. E., 1920, Geology of Alamosa Creek Valley, Socorro County, New Mexico, with special reference to the occurrence of oil and gas, in *Contributions to economic geology, 1920; Part II mineral fuels: U.S. Geological Survey Bulletin 716-A*, p. 1–15.
- 1922a, Distribution and importance of the oil-shale deposits of the United States: *Colorado School of Mines, Golden, Quarterly*, v. 17, no. 4, supplement B, p. 51–52.
- 1922b, Distribution and importance of the oil-shale deposits of the United States: *American Mining Congress Proceedings, 25th Annual Convention*, p. 756–758.
- 1923, Oil shale of the Rocky Mountain region: *U.S. Geological Survey Bulletin 729*, 204 p., 4 figs.
- 1931, Oil and gas map of New Mexico: New Mexico Bureau of Mines and Mineral Resources Map.
- 1933, The oil and gas resources of New Mexico: *New Mexico Bureau of Mines and Mineral Resources Bulletin 9*, 223 p., 11 figs.
- 1935, Natural gas in Colorado, northern New Mexico, and Utah, in *Geology of natural gas: American Association of Petroleum Geologists*, p. 363–384, 8 figs.
- 1936, Oil and gas map of New Mexico: New Mexico Bureau of Mines and Mineral Resources map revised to July 15, 1936 by A. H. L. Andreas.
- Witkind, I. J., 1975, The Abajo Mountains; an example of the laccolithic groups on the Colorado Plateau, in *Guidebook to canyonlands: Four Corners Geological Society, 8th Field Conference*, p. 245–252, 6 figs.
- Witkind, I. J., and Thaden, R. E., 1963, Geology and uranium-vanadium deposits of the Monument Valley area, Apache and Navajo Counties, Arizona: *U.S. Geological Survey Bulletin 1103*, 171 p.
- Wolff, P. A., and Pertile, R. K., 1961, How Kerr-McGee drilled 90-inch Ambrosia Lake ventilation shaft: *Mining World*, v. 23, no. 3, p. 34–37.
- Wollman, Nathaniel, 1962, The value of water in alternative uses, with special application to water use in the San Juan and Rio Grande Basins of New Mexico: Albuquerque, University of New Mexico Press, 426 p.
- Woltz, David, 1972, The chemistry of groundwaters in the Jemez area and a magnetic survey of a potential source of magmatic fluids: University of New Mexico, Al-

- buquerque, unpublished M.S. thesis, 90 p., 26 figs.
- Wood, G. H., Kelley, V. C., and MacAlpin, A. J., 1948, Geology of southern part of Archuleta County, Colorado: U.S. Geological Survey Oil and Gas Preliminary Investigations Map 81.
- Wood, G. H., and Northrop, S. A., 1946, Geology of the Nacimiento Mountains, San Pedro Mountain, and adjacent plateaus in part of Sandoval and Rio Arriba Counties, New Mexico: U.S. Geological Survey Oil and Gas Preliminary Investigations Map 57.
- Wood, H. B., 1956, Age, environment, and production of uranium host rocks on the Colorado Plateau, in *Geology of uranium and thorium: United Nations International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland, Proceedings*, v. 6, p. 307–316.
- 1968, Geology and exploitation of uranium deposits in the Lisbon Valley area, Utah, in *Ore deposits in the United States, 1933–1967: American Institute of Mining, Metallurgy, and Petroleum Engineers, New York, [Graton-Sales Volume], v. 1, p. 770–789.*
- Wood, J. W., Jr., 1956, A stratigraphic study of the (Cretaceous) Gallup Sandstone, San Juan County, New Mexico: Texas Technical University, Lubbock, unpublished M.S. thesis.
- Woodruff, E. G., 1912a, The coal resources of Gunnison Valley, Mesa and Delta Counties, Colorado, in *Contributions to economic geology, short papers and preliminary report, 1910, pt. II—Mineral fuels: U.S. Geological Survey Bulletin 471–H*, p. 565–573.
- 1912b, Geology of the San Juan oil field, Utah, in *Contributions to economic geology, short papers and preliminary reports, 1910, pt. II—Mineral fuels: U.S. Geological Survey Bulletin 471–A–4*, p. 76–104, 1 fig.
- 1912c, Marsh gas along Grand River near Moab, Utah, in *Contributions to economic geology, short papers and preliminary reports, 1910, pt. II—Mineral fuels: U.S. Geological Survey Bulletin 471–A–4*, p. 105.
- Woodward, L. A., 1973, Structural framework and tectonic evolution of the Four Corners region of the Colorado Plateau, in *Guidebook of Monument Valley and vicinity, Arizona and Utah: New Mexico Geological Society, 24th Field Conference*, p. 94–98.
- 1974, Tectonics of central-northern New Mexico, in *Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference*, p. 123–129, 4 figs.
- Woodward, L. A., Anderson, J. B., Kaufman, W. H., and Reed, R. K., 1973, Geologic map and sections of the San Pablo quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 26.
- Woodward, L. A., and Callender, J. F., 1977, Tectonic framework of the San Juan Basin, in *Guidebook to the San Juan Basin III: New Mexico Geological Society, 28th Field Conference*, p. 209–212, 2 figs.
- Woodward, L. A., DuChene, H. R., and Martinez, Ruben, 1977, Geology of Gilman quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 45.
- Woodward, L. A., DuChene, H. R., and Reed, R. K., 1974, Geologic map of the San Miguel Mountain quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 34.
- Woodward, L. A., Gibson, G. G., and McLelland, Douglas, 1976, Geology of Gallina quadrangle, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 39.
- Woodward, L. A., Kaufman, W. H., and Anderson, J. B., 1972, Nacimiento fault and related structures, northern New Mexico: *Geological Society of America Bulletin*,

- v. 83, no. 8, p. 2383–2396, 15 figs.
- Woodward, L. A., Kaufman, W. H., and Reed, R. K., 1973, Geologic map and sections of Rancho del Chaparral quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 27.
- Woodward, L. A., Kaufman, W. H., and Schumacher, O. L., 1974, Sandstone copper deposits of the Nacimiento region, New Mexico, *in* Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 295–299, 2 figs.
- Woodward, L. A., Kaufman, W. H., Schumacher, O. L., and Talbott, L. W., 1974, Strata-bound copper deposits in Triassic sandstone of Sierra Nacimiento, New Mexico: *Economic Geology*, v. 69, no. 1, p. 108–120, 12 figs.
- Woodward, L. A., McLelland, Douglas, Anderson, J. B., and Kaufman, W. H., 1972, Geologic map of the Cuba quadrangle, Sandoval and Rio Arriba Counties, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 25.
- Woodward, L. A., McLelland, Douglas, and Husler, J. W., 1977, Precambrian rocks of the northern part of the Nacimiento Uplift, New Mexico, *in* Guidebook to San Juan Basin III: New Mexico Geological Society, 28th Field Conference, p. 93–98, 2 figs.
- Woodward, L. A., McLelland, Douglas, Kaufman, W. H., 1974, Geologic map of the Nacimiento Peak quadrangle, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 32.
- Woodward, L. A., and Martinez, Ruben, 1974, Geologic map of the Holy Ghost Spring quadrangle, Sandoval County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 33.
- Woodward, L. A., Martinez, Ruben, DuChene, H. R., Schumacher, O. L., and Reed, R. K., 1974, Precambrian rocks of the southern Sierra Nacimiento, New Mexico, *in* Guidebook to Ghost Ranch (central-northern New Mexico): New Mexico Geological Society, 25th Field Conference, p. 95–99, 2 figs.
- Woodward, L. A., and Northrop, S. A., eds., 1976, Tectonics and mineral resources of southwestern North America, a volume honoring Vincent C. Kelley: New Mexico Geological Society Special Publication No. 6, 218 p., 176 figs.
- Woodward, L. A., and Ruetschilling, R. L., 1976, Geology of the San Ysidro quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 37.
- Woodward, L. A., and Schumacher, O. L., 1973a, Geologic map and sections of the La Ventana quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 28.
- 1973b, Morrison Formation of southeastern New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 129, 7 p.
- Woodward, L. A., and Timmer, R. S., 1977, Geology of the Jarosa quadrangle, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map [in press].
- Woolsey, L. H., 1907, Lake Fork extension of the Silverton mining area, Colorado, *in* Contributions to economic geology, 1906, pt. 1, Metals and nonmetals except fuels: U.S. Geological Survey Bulletin 315–A, p. 26–30.
- Wright, H. E., Jr., 1941, Cerro Colorado, an isolated non-basaltic volcano in central New Mexico [abs.]: Geological Society of America Bulletin, v. 52, no. 12, pt. 2, p. 1942.
- 1943, Cerro Colorado, an isolated non-basaltic volcano in central New Mexico: *American Journal of Science*, v. 241, no. 1, p. 43–56.
- 1951, Opal cement in thick Tertiary eolian sandstone, Chuska Mountains, Arizona-New Mexico [abs.]: Geological Society of America Bulletin, v. 62, no. 12, pt. 2, p. 1492–1493.

- 1954, Problem of the Tohatchi Formation, Chuska Mountains, Arizona-New Mexico: American Association of Petroleum Geologists Bulletin, v. 38, no. 8, p. 1827–1836, 3 figs.
- 1956, Origin of the Chuska Sandstone, Arizona-New Mexico—a structural and petrographic study of a Tertiary eolian sediment: Geological Society of America Bulletin, v. 67, no. 4, p. 413–434, 6 figs.
- 1964, Origin of the lakes in the Chuska Mountains, northwestern New Mexico: Geological Society of America Bulletin, v. 75, no. 7, p. 589–598, 4 figs.
- Wright, H. E., Jr., and Becker, R. M., 1951, Correlation of Jurassic Formations along Defiance Monocline, Arizona-New Mexico: American Association of Petroleum Geologists Bulletin, v. 35, no. 3, p. 607–623.
- Wright, J. C., and Dickey, D. D., 1958, Pre-Morrison Jurassic strata of southeastern Utah, in Guidebook to geology of the Paradox Basin: Intermountain Association of Petroleum Geologists, 9th Field Conference, p. 172–181.
- Wright, J. R., 1975, Water quality and solid waste problems in rural New Mexico and some solutions in water pollution control in low density areas: Proceedings Rural Environmental Engineering Conference, ed., by W. J. Jewell, and R. Swan, p. 217–225.
- Wright, L. A., 1948, The Globe permatite, Rio Arriba County, New Mexico: American Journal of Science, v. 246, no. 11, p. 665–688.
- Wright, M. S., Jr., 1960, Photogeology giving rapid coverage in Four Corners: World Oil, v. 150, no. 2, p. 104–107.
- Wright, R. J., 1950, Reconnaissance of certain uranium deposits in Arizona: U.S. Atomic Energy Commission RMO-679, 21 p.
- 1955a, Colorado Plateau uranium deposits: Economic Geology, v. 50, no. 8, p. 884–885.
- 1955b, Lithologic controls of uranium ore deposits (Colorado Plateau): Mining Congress Journal, v. 41, no. 4, p. 98–100.
- 1955c, Ore controls in sandstone uranium deposits of the Colorado Plateau: Economic Geology, v. 50, no. 2, p. 135–155, 10 figs.
- Wylie, E. T., 1963, Geology of the Woodrow breccia pipe, in Geology and technology of the Grants uranium region: New Mexico Bureau of Mines and Mineral Resources Memoir 15, p. 177–181, 3 figs.
- Young, Allen, and McIver, R. D., 1977, Distribution of hydrocarbons between oils and associated fine-grained sedimentary rocks; physical chemistry applied to petroleum geochemistry, II: American Association of Petroleum Geologists Bulletin, v. 61, no. 9, p. 1407–1436, 26 figs.
- Young, R. A., 1966, Cenozoic geology along the edge of the Colorado Plateau in northwestern Arizona: Washington University, St. Louis, Missouri, unpublished Ph. D. dissertation, 220 p.
- Young, R. G., 1955, Sedimentary facies and intertonguing in the upper Cretaceous of the Book Cliffs, Utah-Colorado: Geological Society of America Bulletin, v. 66, no. 2, p. 177–201.
- 1956a, Geology of the uranium deposits of the Ambrosia Lake district, McKinley County, New Mexico: Paper presented at Rocky Mountain Minerals Conference, American Institute of Mining Engineers, Salt Lake City, Utah, September 26–28, 1956.
- 1956b, Stratigraphy and structure of the Ambrosia Lake area, New Mexico: Uranium Magazine, v. 3, no. 5, p. 40–44.
- 1957, Lake Cretaceous cyclic deposits, Book Cliffs, eastern Utah: American Association of Petroleum Geologists Bulletin, v. 41, no. 8, p. 1760–1774.
- 1958a, Basal Cretaceous deposits of the Colorado Plateau [abs.]: Geological Society of America Bulletin, v. 69, no. 12, pt. 2, p. 1750.

- 1958b, Stratigraphic relations in the upper Cretaceous of the Book Cliffs, Utah-COLORADO [abs.]: *Dissertation Abstracts International*, v. 18, no. 3, p. 1014–1016.
- 1959, Cretaceous deposits of the Grand Junction area, Garfield Mesa and Delta Counties, Colorado, in *Symposium on Cretaceous rocks of Colorado and adjacent areas*: Rocky Mountain Association of Geologists, p. 17–25.
- 1960, Dakota Group of the Colorado Plateau: *American Association of Petroleum Geologists Bulletin*, v. 44, no. 2, p. 156–194, 20 figs.
- 1973, Depositional environments of basal Cretaceous rocks of the Colorado Plateau, in *Cretaceous and Tertiary rocks of the southern Colorado Plateau: Four Corners Geological Society Memoir*, p. 10–27, 23 figs.
- Young, R. G., and Ealy, G. K., 1956a, Structure contour map of the Ambrosia Lake area, McKinley County, New Mexico: U.S. Atomic Energy Commission Map no. 6.
- 1956b, Uranium occurrences in the Ambrosia Lake area, McKinley County, New Mexico: U.S. Atomic Energy Commission RME-86, 15 p.
- Young, R. G., Kelling, R. V., and Simpson, Ernest, 1956, Surface geologic map of the Ambrosia Lake area, McKinley County, New Mexico: U.S. Atomic Energy Commission Map no. 7.
- Young, W. E., 1966, Mineral resources at Howardsville Reservoir site, Animas-La Plata project, San Juan County, Colorado: U.S. Congress, 89th Second Session, House Document no. 436, p. 215–225.
- Zakis, William, 1952, Table Mesa oil field, San Juan County, New Mexico, in *Geological symposium of the Four Corners region*: Four Corners Geological Society, p. 86–94, 3 figs.
- Zapp, A. D., 1949, Geology and coal resources of the Durango area, La Plata and Montezuma Counties, Colorado: U.S. Geological Survey Oil and Gas Preliminary Investigations Map 109, 2 sheets.
- Zareski, G. K., 1954, Reconnaissance of uranium occurrences at Wray Mesa, San Juan County, Utah, and Montrose County, Colorado: U.S. Atomic Energy Commission RME-69, pt. 1, 15 p.
- Zeller, H. D., 1953, Uranium in carbonaceous rocks; Utah-New Mexico: U.S. Geological Survey Trace Element Investigation Report TEI-390, p. 117–118.
- 1954, Uranium in carbonaceous rocks; Utah and New Mexico: U.S. Geological Survey Trace Element Investigation Report TEI-440, p. 102.
- 1955, Reconnaissance for uranium-bearing carbonaceous materials in southern Utah: U.S. Geological Survey Circular 349, 9 p.
- Zickefoose, P. W., 1974, A socioeconomic analysis of the impact of new highway construction in the Shiprock growth center area: New Mexico State University, Las Cruces, Center for Business Services, 240 p., 9 figs.
- Ziegler, D. L., 1955, Preliminary geologic map of the Toadlena quadrangle, New Mexico: U.S. Geological Survey Coal Investigations Map C-30.
- Zilinski, R. E., Jr., 1976, Geology of the central part of the Lucero Uplift, Valencia County, New Mexico: University of New Mexico, Albuquerque, unpublished M.S. thesis, 69 p., 19 figs.
- Zilinski, R. E., Jr., and Callender, J. F., 1975, Laramide monoclinial development and associated gravity sliding on the eastern edge of the Colorado Plateau [abs.]: *Geological Society of America, Abstracts with Programs*, v. 7, no. 7, p. 1328.
- Zink, L. B., 1973, Population projections for the New Mexico state water plan, in *Proceedings of 18th Annual New Mexico Water Conference*: New Mexico Water Resources Research Institute Report 026, p. 19–29.
- Zitting, R. T., Masters, J. A., Groth, F. A., and Webb, M. D., 1957a, Geology of the Ambrosia Lake area uranium deposits, McKinley County, New Mexico: *Mines Magazine*, v. 47, no. 3, p. 53–58.

- 1957b, Geology of the Ambrosia Lake area uranium deposits, McKinley County, New Mexico: Transactions 60th National Minerals Conference, Denver, Colorado, February 7-9, 1957, v. 1, p. 106-114.

