

BULLETIN 52

Bibliography of
New Mexico Geology
and Mineral Technology,
1951-1955

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Introduction

PURPOSE AND SCOPE

In this bibliography are listed and indexed references relating to the geology and mineral technology of New Mexico that have appeared in the literature during the years 1951 through 1955. This volume thus serves as a supplement to the "Bibliography of New Mexico Geology and Mineral Technology Through 1950," issued as Bulletin 43 of the State Bureau of Mines and Mineral Resources. A few references published before 1951, but not cited in Bulletin 43, also are included.

The listing includes published and unpublished material available to the general public that contains enough information to be useful. Short news items and articles containing only brief mention of New Mexico are omitted. Undoubtedly a few references have been overlooked. The reader is urged to call the authors' attention to such omissions, for inclusion in a future supplement. The suggestion of other means of improving this series of bibliographies also will be welcome.

Part I, *Bibliography*, is a list of authors, arranged alphabetically. Each author's writings are placed under his name in chronological order and are numbered. Each title is given in full; explanatory notes added to the title by the compilers of this bibliography are enclosed in brackets. Following the title is the name of the publication, the volume and number of the periodical, the page or pages on which the paper appears, notes on illustrations, if any, and finally the date.

Part II, *Index*, is an alphabetical list of subjects arranged under 13 major headings. These headings are subdivided according to the nature of the material indexed. Most papers are indexed under more than one heading, but under each heading the name of the author and the serial number of his paper follow appropriately. Using these data the reader can find the title and reference of the paper in Part I, *Bibliography*. Further details regarding subdivision are given in the section preceding the Index.

HOW PUBLICATIONS MAY BE OBTAINED

Many publications of the various governmental agencies may be obtained from the department or bureau of issue; there is a charge for some reports, but others will be furnished gratis. The stock of many bulletins has been exhausted. Whether or not a given publication of the U. S. Geological Survey is available, and its price, can be determined from a pamphlet entitled "Publications of the Geological Survey," issued in May 1953, and from monthly supplements entitled "New Publications of the Geological Survey." These pamphlets may be obtained free of charge from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Many volumes or numbers of periodicals may be obtained from the issuing society or association. Books, indicated in the bibliography by italic print, may be ordered from the publishers. Out-of-print periodicals and books occasionally may be found in the stock of dealers in secondhand books.

A stock of publications still in print relating to areas in New Mexico is kept at the State Bureau of Mines, in Socorro. Included among these, in addition to the Bureau's own publications, are publications of the U. S. Geological Survey and other organizations, a list of which, with prices, is presented at the end of this bulletin.

There are a number of New Mexico libraries where government and other publications cited in this bibliography may possibly be consulted: Albuquerque, University of New Mexico; Las Vegas, New Mexico Highlands University; Santa Fe, State Library Extension Service; Silver City, New Mexico Western University; Socorro, New Mexico Institute of Mining and Technology; State College, New Mexico College of Agriculture and Mechanic Arts.

The State Bureau of Mines and Mineral Resources will be glad to supply current data regarding the availability of New Mexico geologic literature and to assist in obtaining original, typewritten, or photostat copies.

SOURCES OF INFORMATION

Most of the references listed in this bibliography were found by a search of the literature available in the libraries of the New Mexico Institute of Mining and Technology, files of the State Bureau of Mines and Mineral Resources, private libraries of the State Bureau of Mines staff, and periodicals obtained by interlibrary loans. A list of the periodicals and serials examined is found under Serials, page 4. These references were indexed as they were read.

A few additional articles were found in bibliographies encountered during this search. Others were reported as omissions from Bulletin 43, or were found listed in the "Monthly Catalog—United States Government Publications," published by the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Two other important sources were used. Unpublished (open-file) reports of the U. S. Geological Survey were obtained from Circulars 227, 263, 337, and 364, of the U. S. Geological Survey. Unpublished theses were taken from the "Bibliography of Geology Theses," published by the Petroleum Research Company, Denver, Colorado, and from information supplied by various schools. References from these sources were indexed by title only, unless the particular report was locally available for examination.

ACKNOWLEDGMENTS

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couragement and support of this project; to Dr. Edmund H. Kase, Jr., publications editor, New Mexico Institute of Mining and Technology, for the editing of the manuscript; and to the library staff of the same institution—Mr. W. Martin Speare, librarian, Miss Lucille Cobb, research librarian, and Mrs. Irma Youngblood, library assistant—for their generous and able assistance. We wish to thank the many other institutions and individuals, including members of the Bureau of Mines staff, for providing information which helped in the compilation of this bibliography.

SERIALS

The following list gives both the abbreviated citation and the full name of the periodicals and serials which have been examined in the compilation of the bibliography. The place of publication is given, if known.

- Acad. Nat. Sci. Phila. Notulae Naturae; Proc.—Academy of Natural Sciences of Philadelphia Notulae Naturae; Proceedings. Philadelphia, Pa.
- Acta Cryst.—Acta Crystallographica. Copenhagen, Denmark.
- Am. Assoc. Petrol. Geol. Bull.—American Association of Petroleum Geologists Bulletin. Tulsa, Okla.
- Am. Caver.—American Caver. See National Speleological Society Bulletin.
- Am. Ceramic Soc. Bull.; Jour.—American Ceramic Society Bulletin; Journal (contains Ceramic Abstracts). Columbus, Ohio.
- Am. Geol. Inst. Geol. Abs.—American Geological Institute Geological Abstracts. New York City.
- Am. Geophys. Union Trans.—American Geophysical Union Transactions. Washington, D. C.
- Am. Jour. Sci.—American Journal of Science. New Haven, Conn.
- Am. Mineralogist—American Mineralogist. Ann Arbor, Mich.
- Am. Mus. Nat. History Bull.; Novitates—American Museum of Natural History Bulletin; Novitates. New York City.
- Am. Scientist—American Scientist. New Haven, Conn.
- Ariz. Univ., Ariz. Bur. Mines Bull. Geol. Ser.; Mineral Technology Ser.—University of Arizona, Arizona Bureau of Mines Bulletin, Geological Series; Mineral Technology Series. Tucson.
- Arkansas-White-Red Basins Inter-Agency Committee.
- Bull. Am. Paleontology—Bulletin of American Paleontology. Ithaca, N. Y.
- Bur. Am. Ethnology Bull.—Bureau of American Ethnology Bulletin. Washington, D. C.
- Calif. Inst. Technology Thesis—California Institute of Technology Thesis. Pasadena.

- Calif. Univ. Pub. Geol. Sciences—University of California Publications in Geological Sciences. Berkeley and Los Angeles.
- Chem. Abs.—Chemical Abstracts. Columbus, Ohio.
- Chicago Univ. Thesis—University of Chicago Thesis. Chicago, Ill.
- Civil Eng.—Civil Engineering. Easton, Pa.
- Coal Age. New York City.
- Colo. Min. Assoc. Min. Yearbook—Colorado Mining Association Mining Yearbook. Denver.
- Colo. School of Mines Quart.; Thesis—Colorado School of Mines Quarterly; Thesis. Golden.
- Colo. Sci. Soc. Proc.—Colorado Scientific Society Proceedings. Denver.
- Columbia Univ. Thesis—Columbia University Thesis. New York City.
- Compass—Provo, Utah.
- Compressed Air Mag.—Compressed Air Magazine. Phillipsburg, N. J.
- Denison Univ. Sci. Lab. Jour.—Denison University Scientific Laboratories Journal. Granville, Ohio.
- Dissertation Abs.—Dissertation Abstracts. Ann Arbor, Michigan.
- Econ. Geology—Economic Geology. Urbana, Ill.
- Eng. Min. Jour.—Engineering and Mining Journal. New York City.
- Explosives Engineer. Wilmington, Del.
- Field and Laboratory. Dallas, Texas.
- Four Corners Geol. Soc.—Four Corners Geological Society.
- Geol. Soc. Am. Bull.; Mem.; Special Papers—Geological Society of America Bulletin; Memoir; Special Papers. New York City.
- Geophysics. Austin, Texas.
- Harvard Univ. Thesis—Harvard University Thesis. Cambridge, Mass.
- Ill. Univ. Thesis—University of Illinois Thesis. Urbana.
- Ind. Univ. Thesis—Indiana University Thesis. Bloomington.
- Indust. and Eng. Chem.—Industrial and Engineering Chemistry. Washington, D. C.
- Internat. Boundary and Water Commission U. S. and Mex. Water Bull.—International Boundary and Water Commission, United States and Mexico Water Bulletin.
- Internat. Geol. Cong., 19th, Algiers—International Geological Congress, 19th, Algiers. Algiers, Algeria.
- Iowa Univ. Thesis—State University of Iowa Thesis. Iowa City.
- Jour. Geol. Education—Journal of Geological Education. Appleton, Wis.
- Jour. Geology—Journal of Geology. Chicago, Ill.
- Jour. Geophys. Research—Journal of Geophysical Research. Washington, D. C.
- Jour. Paleontology—Journal of Paleontology. Tulsa, Okla.

- Jour. Petrol. Technology—Journal of Petroleum Technology. Dallas, Texas.
- Jour. Sed. Petrology—Journal of Sedimentary Petrology. Tulsa, Okla.
- Kans. Univ. Paleont. Contr.; Thesis—University of Kansas Paleontological Contributions; Thesis. Lawrence.
- Kans. Univ., State Geol. Survey Bull.—University of Kansas, State Geological Survey Bulletin. Lawrence.
- Kennecott Chinorama. Hurley, N. Mex.
- Meteoritics—Meteoritics, the Journal of the Meteoritical Society and the Institute of Meteoritics of the University of New Mexico. Albuquerque, N. Mex. Formerly Meteoritical Society Contributions.
- Meteor. Soc. Contr.—Meteoritical Society Contributions. Later, Meteoritics.
- Mich. Univ. Thesis—University of Michigan Thesis. Ann Arbor.
- Min. and Contracting Rev.—Mining and Contracting Review. Salt Lake City, Utah.
- Min. Cong. Jour.—Mining Congress Journal. Washington, D. C.
- Min. Eng.—Mining Engineering. New York City.
- Mineralogical Mag.—Mineralogical Magazine. London, England. Includes separately paged Mineralogical Abstracts.
- Mineralogist. Portland, Ore.
- Mines Mag.—Mines Magazine. Denver, Colo.
- Min. Mag.—Mining Magazine. London, England.
- Min. World—Mining World. San Francisco, Calif.
- Natl. Geog. Mag.—National Geographic Magazine. Washington, D. C.
- Natl. Oil Scouts and Landmen's Assoc. Year Book—National Oil Scouts and Landmen's Association Year Book. Austin, Texas.
- Natl. Speleol. Soc. Bull.; News—National Speleological Society Bulletin (later, also called American Caver); News. Arlington, Va.
- Neues Jahrb. Min., Monatshefte—Neues Jahrbuch für Mineralogie, Monatshefte. Stuttgart, Germany.
- N. Mex. Business—New Mexico Business. Albuquerque.
- N. Mex. Geol. Soc. Guidebook; Program Annual Meeting—New Mexico Geological Society Guidebook; Program Annual Meeting. Socorro.
- N. Mex. Health Officer—New Mexico Health Officer. Santa Fe.
- N. Mex. Historical Rev.—New Mexico Historical Review. Albuquerque.
- N. Mex. Inst. Min. and Technology Thesis—New Mexico Institute of Mining and Technology Thesis. Socorro. Formerly New Mexico School of Mines.
- N. Mex. Inst. Min. and Technology, Research and Development Div. GI—New Mexico Institute of Mining and Technology, Research and Development Division Geophysical Investigation. Socorro.
- N. Mex. Inst. Min. and Technology, State Bur. Mines and Mineral Res. Bienn. Rpt.; Bull.; Circ.; Ground-Water Rpt.; Guidebook; Petrol.

- Expl. Map.—New Mexico Institute of Mining and Technology, State Bureau of Mines and Mineral Resources Biennial Report; Bulletin; Circular; Ground-Water Report; Guidebook; Petroleum Exploration Map. Socorro. Formerly New Mexico School of Mines, State Bureau of Mines and Mineral Resources.
- N. Mex. Mag.—New Mexico Magazine. Santa Fe.
- N. Mex. Miner—New Mexico Miner. Albuquerque. Formerly New Mexico Miner and Prospector.
- N. Mex. Miner and Prospector—New Mexico Miner and Prospector. Albuquerque. Later, New Mexico Miner.
- N. Mex. Oil and Gas Eng. Committee Ann. Rpt.; Eng. Rpt.—New Mexico Oil and Gas Engineering Committee Annual Report; Engineering Report. Hobbs.
- N. Mex. Oil Conservation Commission Monthly Statistical Report—New Mexico Oil Conservation Commission Monthly Statistical Report. Santa Fe.
- N. Mex. Prof. Engineer—New Mexico Professional Engineer. Albuquerque. Formerly New Mexico Professional Engineer and Contractor.
- N. Mex. Prof. Engineer and Contractor—New Mexico Professional Engineer and Contractor. Albuquerque. Later, New Mexico Professional Engineer.
- N. Mex. State Eng. Bienn. Rpt.; Tech. Rpt.—New Mexico State Engineer Biennial Report; Technical Report. Santa Fe.
- N. Mex. State Inspector of Mines Ann. Rpt.—New Mexico State Inspector of Mines Annual Report. Albuquerque.
- N. Mex. Tax Bull.—New Mexico Tax Bulletin. Santa Fe.
- N. Mex. Univ. Alumnus; Bull. Chem. Ser.; Pub. Anthropol. Ser.; Geol. Ser.; Meteoritics Ser.; Thesis—University of New Mexico Alumnus; Bulletin, Chemistry Series; Publication, Anthropology Series; Geology Series; Meteoritics Series; Thesis. Albuquerque.
- N. Mex. Univ., Bur. Business Research N. Mex. Studies in Business and Economics—University of New Mexico, Bureau of Business Research, New Mexico Studies in Business and Economics. Albuquerque.
- N. Mex. Univ., Dept. of Govt. Div. of Research Pub.—University of New Mexico, Department of Government, Division of Research Publication. Albuquerque.
- Northwestern Univ. Thesis—Northwestern University Thesis. Evanston, Ill.
- Nuclear Science Abs.—Nuclear Science Abstracts. Oak Ridge, Tenn.
- Oil and Gas Jour.—Oil and Gas Journal. Tulsa, Okla.
- Oil Reporter. Later, Rocky Mountain Oil Reporter.
- Okla. Geol. Survey Bull.; Circ.; Mineral Rpt.—Oklahoma Geological Survey Bulletin; Circular; Mineral Report. Norman.
- Palaeontographica Americana. Ithaca, N. Y.

- Paläontologische Zeitschr.—Paläontologische Zeitschrift. Stuttgart, Germany.
- Panhandle Geol. Soc. Guidebook—Panhandle Geological Society Guidebook.
- Pecos River Commission. Carlsbad, New Mexico.
- Petrol.—Petroleum. London, England.
- Petrol. Engineer—Petroleum Engineer. Dallas, Texas.
- Petrol. Refiner—Petroleum Refiner. Houston, Texas.
- Petrol. Week—Petroleum Week. New York City.
- Pipeliner. El Paso, Texas.
- Pit and Quarry. Chicago, Ill.
- Plateau. Flagstaff, Ariz.
- Pop. Astronomy—Popular Astronomy. Northfield, Minn. No longer published.
- Rock Products. Chicago, Ill.
- Rocks and Minerals. Peekskill, N. Y.
- Rocky Mountain Oil Reporter. Denver, Colo. Formerly Oil Reporter.
- Roswell Geol. Soc. Guidebook—Roswell Geological Society Guidebook. Roswell, N. Mex.
- Santa Fe Mag.—Santa Fe Magazine. Chicago, Ill.
- Sci. Am.—Scientific American. New York City.
- Science. Washington, D. C.
- Sci. Monthly—Scientific Monthly. Washington, D. C.
- Seismol. Soc. Am. Bull.—Seismological Society of America Bulletin. Berkeley, Calif.
- Smithsonian Inst. Ann. Rpt.; Misc. Coll.—Smithsonian Institute Annual Report; Miscellaneous Collections. Washington, D. C.
- Sun Trails. Albuquerque, N. Mex.
- Texas Jour. Science—Texas Journal of Science. Austin.
- Texas Technological College Thesis. Lubbock.
- Texas Univ. Thesis—University of Texas Thesis. Austin.
- Texas Univ., Bur. Econ. Geol. Pub.; Rpt. Inv.—University of Texas, Bureau of Economic Geology Publications; Report of Investigation. Austin.
- Tulsa Geophys. Soc. Proc.—Tulsa Geophysical Society Proceedings. Tulsa, Okla.
- Univ. of Washington Thesis—University of Washington Thesis. Seattle.
- Uranium Inf. Digest—Uranium Information Digest. Grand Junction, Colo.
- Uranium Mag.—Uranium Magazine. Denver, Colo.
- U. S. Atomic Energy Commission Airborne Anomaly Map; RME; RMO—United States Atomic Energy Commission Airborne Anomaly Map; Raw Materials Exploration Report; Division of Raw Materials Report. Oak Ridge, Tenn., and [Airborne Anomaly Maps] Grand Junction, Colo.

- U. S. Bur. Mines Bull.; Inf. Circ.; Materials Survey; Minerals Yearbook; Rpt. Inv.; Tech. Paper—United States Bureau of Mines Bulletin; Information Circular; Materials Survey; Minerals Yearbook; Report of Investigation; Technical Paper. Washington, D. C.
- U. S. Bur. Reclamation Geol. Rpt.—United States Bureau of Reclamation Geological Report. Washington, D. C.
- U. S. Cong., S. Doc.; H. Doc.—United States Congress, Senate Document; House of Representatives Document. Washington, D. C.
- U. S. Geol. Survey Bull.; Circ.; Coal Inv. Map; Mineral Inv. Field Studies Map; Mineral Inv. Res. Appraisals Map; Oil and Gas Inv. Map; Open-File Report; Prof. Paper; TEI; TEM; Water-Supply Paper—United States Geological Survey Bulletin; Circular; Coal Investigations Map; Mineral Investigations Field Studies Map; Mineral Investigations Resource Appraisals Map; Oil and Gas Investigations Map; Open-File Report; Professional Paper; Trace Elements Investigations Report; Trace Elements Memorandum Report; Water-Supply Paper. Washington, D. C.
- U. S. Natl. Mus. Bull.; Proc.—United States National Museum Bulletin; Proceedings. Washington, D. C.
- U. S. Natl. Park Service—United States National Park Service. Washington, D. C.
- U. S. Public Health Service Pub. Water Pollution Ser.—United States Public Health Service Publication, Water Pollution Series. Washington, D. C.
- U. S. Soil Conserv. Service Regional Bull. Geol. Ser.; Soil Ser.—United States Soil Conservation Service Regional Bulletin, Geological Series; Soil Series. Albuquerque, N. Mex.
- Utah Geol. and Mineralogical Soc. Guidebook—Utah Geological and Mineralogical Society Guidebook.
- Utah Geol. and Mineralogical Survey Circ.—Utah Geological and Mineralogical Survey Circular. Salt Lake City.
- Washington Univ. Thesis—Washington University Thesis. St. Louis, Mo.
- Water Well Jour.—Water Well Journal. Urbana, Ill.
- West Texas Geol. Soc. Guidebook—West Texas Geological Society Guidebook. Midland, Texas.
- Wis. Univ. Thesis—University of Wisconsin Thesis. Madison.
- World Oil. Houston, Texas.
- World Petrol.—World Petroleum. New York City.
- Zeitschr. Kryst.—Zeitschrift für Krystallographie und Mineralogie. Leipzig, Germany.
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2. Ghosts of the past [ghost towns of N. Mex.]: *N. Mex. Mag.*, v 32, n 1, pp 22-23, 42, illus., 1954.

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2. Apache tears and other mineral oddities from the Mogollon Mountains, New Mexico: *Rocks and Minerals*, v 26, n 3-4, pp 138-143, illus., 1951.
3. Beginner's luck [smithsonite, Organ mining district]: *Rocks and Minerals*, v 27, pp 468-471, illus., 1952.
4. A rock hound hits the jackpot [fluorite]: *N. Mex. Mag.*, v 30, n 5, pp 29, 39, 41, 43, illus., 1952.
5. Halite [Zuni salt lake]: *Rocks and Minerals*, v 30, n 3-4, pp 115-120, illus., 1955.

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El Paso and Albuquerque now are linked by this new 248-mile products line: *Oil and Gas Jour.*, v 54, n 11, p 123, 2 figs, 1955.

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2. (and Jones, S. M., and others). Preliminary geologic map of the Capitan quadrangle, Lincoln County, New Mexico, in *Guidebook of the Capitan-Carrizozo-Chupadera Mesa region, Lincoln and Socorro Counties, New Mexico*: *Roswell Geol. Soc., Fifth Field Conference*, Nov. 30-Dec. 1, scale 1 inch to 4 miles, 1951.
3. The Carrizozo Malpais, in *Guidebook of the Capitan-Carrizozo-Chupadera Mesa region, Lincoln and Socorro Counties, New Mexico*: *Roswell Geol. Soc., Fifth Field Conference*, Nov. 30-Dec. 1, pp 9-11, 1951; [abs.] *Geol. Soc. Am. Bull.*, v 63, n 12, pt 2, p 1319, 1952.

4. A Mexican trip in your own backyard [Carrizozo lava flow]: *N. Mex. Miner*, v 14, n 10, pp 26-29, illus., 1952.
5. (and Jones, Stewart M.). Geology of Capitan quadrangle, New Mexico [abs.]: *Geol. Soc. Am. Bull.*, v 63, n 12, pt 2, pp 1319-1320, 1952.
6. Tohatchi formation of Mesaverde group, western San Juan Basin, New Mexico: *Am. Assoc. Petrol. Geol. Bull.*, v 37, n 11, pp 2569-2571, 1953. [See Allen, J. E., 7; Repenning, C. A., 3; Silver, C., 4; and Wright, H. E., Jr., 3, for discussion.]
7. [Discussion of "Tohatchi formation of Mesaverde group, western San Juan Basin, New Mexico" by John Eliot Allen] Tohatchi formation, San Juan Basin, New Mexico: *Am. Assoc. Petrol. Geol. Bull.*, v 38, n 4, p 661, 1954.
8. (and Balk, Robert). Mineral resources of Fort Defiance and Tohatchi quadrangles, Arizona and New Mexico: *N. Mex. Inst. Min. and Technology, State Bur. Mines and Mineral Res. Bull.* 36, 192 pp, 16 pls incl. geol. map, 21 figs incl. index maps, 1954; [abs.] *Am. Geol. Inst. Geol. Abs.*, v 2, n 4, pp 68-73, 1954.
9. (and Baldwin, Brewster, and Hill, John). Selected stratigraphic sections in the Menefee and Crevasse Canyon formations, in Allen, J. E., and Balk, R., Mineral resources of Fort Defiance and Tohatchi quadrangles, Arizona and New Mexico: *N. Mex. Inst. Min. and Technology, State Bur. Mines and Mineral Res. Bull.* 36, pp 157-164, 1954.
10. Mineral resources of the Navajo Reservation in New Mexico (exclusive of uranium, coal, oil, gas, and water): *N. Mex. Inst. Min. and Technology, State Bur. Mines and Mineral Res. Bull.* 44, map and text, 1955.

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1. Blanco-Mesa Verde gas pool: *World Oil*, v 141, n 7, pp 115-119, 6 figs, 1955.
2. Stratigraphic gas development in Blanco-Mesa Verde pool of San Juan Basin [abs.]: *Am. Assoc. Petrol. Geol. Bull.*, v 39, n 4, p 534, 1955.
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2. Occurrences of uranium ores in New Mexico: *N. Mex. Inst. Min. and Technology, State Bur. Mines and Mineral Res. Circ.* 29, 27 pp, map, 1954; [revised] 39 pp, map, 1955.
3. Mineral deposits and mines in south-central New Mexico, in *Guidebook of south-central New Mexico*: *N. Mex. Geol. Soc., Sixth Field Conference*, Nov. 11-13, pp 121-122, 1955.

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2. A gravity survey of the Rio Grande trough near Socorro, New Mexico: *Am. Geophys. Union Trans.*, v 36, n 1, pp 144-148, 3 figs, 1954; [abs.] *Am. Geol. Inst. Geol. Abs.*, v 3, n 1, p 69, 1955; [abs.] *U. S. Geol. Survey Bull.* 1033-A, p 20, 1955.

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2. Age of the Clovis fluted points with the Naco mammoth: *Am. Antiquity*, v 19, pp 15-17, 1953.

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INTRODUCTORY NOTE

Because the index to a bibliography can be used most effectively when the reader is familiar with its organization, the system of headings, subheadings, and entries used in this index are described below.

In this index the literature in Part I, Bibliography, is listed by subject under 13 major headings, as follows:

Areas. Papers which cover some phase of the geology or mineral technology for a given area are listed under that area.

Economic Geology. Papers dealing with mineral deposits (mines, mining districts, and oil and gas fields), substances (metallics, nonmetallics, and fuels), and general mining and petroleum geology.

Geophysics and Geochemistry. Papers covering gravity, magnetic, electric, seismic, radioactivity, and other geophysical methods used to prospect for mineral deposits and to determine structures; geochemical and geobotanical studies; and general geophysical subjects.

Historical and Stratigraphic Geology. Papers covering the description, history, correlation, or geographic extent of formations and other rock units.

Maps. Includes geologic maps showing by colors, patterns, or symbols the areas of outcrop and ages of rock units; geophysical maps showing the results of geophysical surveys; and mineral industry maps showing the occurrence of specific mineral commodities and the installations (mines, mills, pipelines, wells, refineries, etc.) related to their utilization. Does not include maps as illustrations in papers.

Mineralogy. Papers giving mineral descriptions and localities. Also includes descriptions of meteorites.

Mining Technology. Covers prospecting and exploration, development, mining, concentration, processing, refining, transportation, and utilization of metals, non-metals, and coal; and the history of mining areas.

Oil and Gas Technology. Covers exploration, drilling, production, processing, refining, transportation, and utilization of oil and gas.

Paleontology. Papers describing or interpreting fossil remains of animals, plants, and early man.

Petrology. Covers descriptions of igneous and metamorphic rocks.

Physical and Structural Geology. Papers on structural geology, erosion and sedimentation, and general physical geology.

Physiography. Covers land forms and their formation as related to geologic structures and stratigraphy.

Water. Papers on underground and surface water geology and technology, including water level, quality, quantity, springs, wells, stream investigations and measurements, irrigation, pumping, pollution, etc.

The 13 major headings are divided further into subheadings. These subheadings are of two types: geographic and subject. A glance through the index will give the reader a general picture of the varying types of subheadings used under each major heading.

Under each subheading the names of the authors and the serial numbers of their papers follow appropriately. Using these data the reader can find the title and reference of a paper in Part I, Bibliography.

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 Mineral technology: Alford, 2; James, 3; Wiggins; Woods, B., 9.
- Llano Estacado: *see* High Plains
- Lordsburg quadrangle, Hidalgo County, geology: Flege. *See also* Hidalgo County.
- Los Pinos Mountains, Socorro County, geology: Kelley, V. C., 7; Staatz; Wilpolt.
- Lucero Mesa, Valencia County, geology: Bucher, 1; Duschatko, 1; Jicha, 7; Kelley, V. C., 7; N. Mex. Geol. Soc., 1.
- Luna County:
 Geology: Bogart; Bushman, 3; Conover, 1-4, 8, 9, 11; Elston, 1, 2; Holsler; Jahns, 7; Jicha, 1, 2, 4; Kelley, V. C., 5; McClure.
 Mineral technology: Weiss.
- Magdalena Mountains, Socorro County:
 Geology: Kalish; Kelley, V. C., 7.
 Mineral technology: Alford, 2; Harrington, 1; Smith, T. E., 1, 2; Wolle.
- Maazanita Mountains, Bernalillo County, geology: Szabo.
- Manzano Mountains, Tarrant and Valencia Counties, geology: Armstrong; Basham; Dorman; Kelley, V. C., 7, 8; N. Mex. Geol. Soc., 2.
- McKinley County:
 Geology: Allen, J. E., 6-10; Balk; Bucher, 1, 2; Callahan; Cannon, H. L., 1, 2; Colman; Cook; Ellsworth; Froelich; Gilkey, 1, 2; Gruner, 1-6; Hilpert; Hunt; Kerr, 2-4; King, V. L.; Kleinhamp, 2; Konigsmark, 1, 2; Leopold, 2; Mirsky; Narten, 1-3; N. Mex. Geol. Soc., 1; O'Sullivan, 2; Rapaport, 1-3; Smith, C. T., 1-5; Stead; Sun, 3; Towle.
 Mineral technology: Anon., 21; King, V. L.; Richardson.
- Mesilla Valley, Dona Ana County, geology: Conover, 8, 10.
- Mexican Plateau, geology: Atwood, W. W.
- Mimbres Valley, Luna County, geology: Conover, 1-4, 8, 9, 11; Jahns, 7; McClure.
- Mines: *see Economic Geology; Mining Technology*
- Mining districts: *see Economic Geology*
- Mogollon Mountains, Catron County:
 Geology: Alfredo, 2.
 Mineral technology: Alford, 2; Burridge; Hoover, H. A., 1, 2; Wolle.
- Mora County:
 Geology: Bachman, G. O., 1; Baltz, E. H., 4, 5; Bass; Bieberman, 13; Jahns, 4; Laub; Raitz; Tschanz, 1, 2; Zeller, H. D., 1, 3.
 Mineral technology: Bieberman, 13.
- Moreno Valley, Colfax County, mineral technology: Alford, 2; Knaus; Wolle.
- Mount Laughlin quadrangle, Colfax County, geology: Wood, G. H. *See also* Colfax County.
- Mount Taylor area, Valencia County, geology: Bachman, G. O., 3; Mathewson, 1; N. Mex. Geol. Soc., 1; Sharp, K. D.
- Nacimiento Mountains, Sandoval County, geology: Armstrong; Bachman, G. O., 3.
- Naschitti quadrangle, San Juan and McKinley Counties, geology: O'Sullivan, 2; Ordonez, 1, 2; *See also* San Juan Basin.
- Navajo Indian Reservation, geology: Allen, J. E., 6-10; Balk; Callahan; Halpenny, 1, 2; Hatchett; Harshbarger, 1-4; Leopold, 2; O'Sullivan, 2; Reagan; Repenning, 1-3; Shoemaker, 2; Stokes, 1-3; Strobell, 1-4; Willard; Wright, H. E., 1-3. *See also* San Juan Basin.
- Northeastern New Mexico:
 Geology: Ark.-White-Red Basins In-

- ter-Agency Comm., 1, 3, 5, 6; Baldwin, 2; Bieberman, 12, 14; Helmig, 2; Klinck; Levings; Lohman, 1; Maher, 1; Muehlberger; Panhandle Geol. Soc., 1-3; Rocky Mt. Assoc. Geol., 4; Strickfaden; U. S. Natl. Park Service, 1.
- Mineral technology: Ark.-White-Red Basins Inter-Agency Comm., 1-7; Bieberman, 12, 14; Mencher, 3.
- Northern New Mexico, geology: Armstrong; Brill, 1.
- Northwestern New Mexico: *see* San Juan Basin
- Oil and gas fields: *see Economic Geology; Oil and Gas Technology*
- Organ Mountains, Dona Ana County: Geology: Alfredo, 3; Kottlowski, 8; Owens; Soule, 1, 2.
- Mineral technology: Alford, 2; Raynor; Soule, 1, 2; Wolle.
- Oscura Mountains, Socorro County, geology: Kottlowski, 2.
- Otero County: Geology: Anon., 16; Baltz, E. H., 4; Bates; Dunn; Jicha, 6; Kottlowski, 8; Otte, 1, 2; Plumley, 1; Poldervaart; Pray, 1-7; Roswell Geol. Soc., 3, 6; Russell; Sandeen, 3; U. S. Natl. Park Service, 2; Winkler, 12, 14; Woods, B., 2.
- Mineral technology: Lemmons.
- Pecos River Valley, geology: Albright, J. L., 1; Lang, W. B.; McClure; Pecos River Commission.
- Pedernal Hills, Torrance County, geology: Roswell Geol. Soc., 4.
- Permian Basin: *see* Southeastern New Mexico
- Picuris Range, Sangre de Cristo Mountains, Taos County, geology: Jahns, 1, 3, 5; Montgomery, 1, 2; Smith, I.
- Pinos Altos Range, Grant County, geology: Kelley, V. C., 1.
- Plainview Basin, eastern New Mexico, geology: Jones, T. S.
- Playa Valley, Hidalgo County, geology: Conover, 2-4, 8, 9, 11.
- Portales Valley, Roosevelt County, geology: Conover, 1-4, 8, 9, 11; McClure.
- Puertecito quadrangle, Socorro County, geology: Tonking. *See also* Socorro County.
- Pyramid Mountains, Hidalgo County, geology: Flege.
- Quay County: Geology: Conover, 2-4, 8, 9, 11; Foster, R. W., 4; Judson, 2, 3; Smith, S. W.; Smith, W. H.; Trauger, 1, 3. Mineral technology: Foster, R. W., 4.
- Raton Basin: Geology: Cave, 1, 2; Cline; Fenneman; Heck; Johnson, R. B.; King, P. B., 1; Panhandle Geol. Soc., 2. Mineral technology: Gardner, F. J., 2; McCaslin; Rocky Mt. Oil Reporter, 3.
- Raton Mesa, Colfax County, geology: Levings.
- Rincon Valley, Dona Ana County, geology: Conover, 10, 12.
- Rio Arriba County: Geology: Baltz, E. H., 4; Barker; Corey; Gabelman, 2; Gott, 1; Hollander; Jahns, 1, 3; Lilly, 1, 2; Lookingbill, 1, 2; Sears, R. S.; Winograd; Zeller, H. D., 2. Mineral technology: Bigelow, 1; Lilly, 1, 2.
- Rio Grande Valley, geology: Albright, J. L., 2; Anderson, R. C., 1, 2; Bloodgood; Clark, 2; Conover, 10, 12; Eardley; Fagadau; Harrington, 2, 3, 5, 8; International Boundary and Water Comm. U. S. and Mexico, 1-4; Jahns, 7; Kelley, V. C., 7, 8, 14, 15; Kelley, W. D.; Kottlowski, 5, 6, 8; McClure; N. Mex. Geol. Soc., 2, 3, 5.
- Robledo Mountain, Dona Ana County, geology: Kottlowski, 8.
- Rocky Mountains, geology: Atwood, W. W.; Eardley; Fenneman; Howell. *See also* Jemez Mountains; Sangre de Cristo Mountains.
- Roosevelt County: Geology: Conover, 1-4, 8, 9, 11; Foster, R. W., 7; McClure. Mineral technology: Foster, R. W., 7; Gardner, F. J., 1.
- Roswell Basin, geology: Bean; Conover, 1-4, 8, 9, 11; Fiedler; Hantush; Harrington, 6; McClure.
- Sacramento Mountains, Otero County, geology: Baltz, E. H., 4; Bates; Dunn; Otte, 1, 2; Plumley, 1; Pray, 1-7; Roswell Geol. Soc., 3, 6; Woods, B., 2.
- San Agustin Plains, Catron County: Geology: Bushman, 2. Mineral technology: Bushman, 2.
- San Andres Mountains, Dona Ana and Sierra Counties, geology: Ander-

Areas (continued)

- son, E. C., 3; Bushnell, 3; Kelley, V. C., 1; Kottlowski, 8, 9; N. Mex. Geol. Soc., 5.
- Sandia Mountains, Bernalillo and Sandoval Counties, geology:** Armstrong; Crane; Hayes, 1; Kelley, V. C., 7, 10; N. Mex. Geol. Soc., 2; Reynolds, C. B., 1-3; Toomey.
- Sandoval County:**
Geology: Armstrong; Bachman, G. O., 3; Brunton; Bundy; Froelich; Gott, 1; Harrison; Hayes, 1; Hunt; Kelley, V. C., 7, 10; Langston, 1, 2; Mills; Neher; Reynolds, C. B., 1-3; Sears, P. B.; Soister; Stearns, C. E., 1-3; Stearns, H. T.; Toomey; Vine.
Mineral technology: Bundy; Stevenson, D.
- Sangre de Cristo Mountains:**
Geology: Armstrong; Bachman, G. O., 1; Baltz, E. H., 5; Jahns, 1, 3-5; Kelley, V. C., 4, 7, 8; Kottlowski, 1; Laub; Montgomery, 1, 2; Panhandle Geol. Soc., 2; Schilling; Smith, I.
Mineral technology: Anon., 2; Alford, 1, 2; Knaus; Montgomery, 1.
- San Juan Basin:**
Geology: Allen, J. E., 6-10; Allen, R. W., 1-3; Anderson, R. L.; Atwood, W. W.; Bachman, G. O., 3; Baltz, E. H., 1-4; Barnes, 1, 3; Beaumont, 1-3; Bieberman, 3, 9; Bozanic; Bryan, 5; Budd; Burton, 1, 2; Bushman, 1; Callaghan, 1; Cannon, H. L., 1, 2; Chenoweth; Clayton, 1, 2; Cooper, J. C., 1, 2; Craig, 1, 2; Davis; DiGiambattista; Drouillard; Eardley; Fenneman; Finch; Four Corners Geol. Soc., 1, 2; Gabelman, 1, 2; Grinnell; Gruner, 1-6; Halpenny, 1, 2; Harper, J. L.; Harris, J. J.; Harshbarger, 1-4; Hatchett; Hayes, 2; Hiestand; Hilpert; Holmes, W. H.; Hoover, W. B.; Hunt; Isachsen; Joesting; Johnston, H. C.; Kelley, V. C., 2, 9, 11-13, 16; Kerr, 2-4; King, V. L.; Knapp; Langan; Leopold, 2; Lilly, 1, 2; Luedke; Lyons; Mallory; McConathy; McKee, 3; Momper; Narten, 1-3; N. Mex. Geol. Soc., 1; O'Sullivan, 2; Rapaport, 1-3; Raup, 2; Read, 1; Reagan; Reese, 1, 2; Reinhart; Repenning, 1-3; Rinehart; Robinson; Rocky Mt. Assoc. Geol., 1; Rosenzweig; Senter; Sharp, J. V. A.; Shoemaker, 1-4; Silver, 1-5; Simpson, 1-3; Smith, C. T., 1-5; Stead, F. W.; Stephenson; Stokes, 1-3; Strobell, 1-4; Sun, 3; Towle; Turnbow; Umbach, 8; Vorbe; Wantland, 1, 2; Weeks; Wengerd, 1-9; Whelan; Willard; Wilson, D. P.; Winkler, 8; Winters, 2; Wright, H. E., 1-3; Wright, R. J.; Zakis; Ziegler.
- Mineral technology:** Anon., 20, 21, 24-26, 31; Allen, R. W., 1; Arnold; Ayres; Barnes, 2, 4, 6; Bigelow, 3; Birdseye; Bushman, 1; Coel; Dare; Donaldson; Dougherty; Fitzpatrick, 1, 2; Folsom; Foster, A. L.; Fuller, 1, 2; Gardner, F. J., 4, 5; Goodin; Harris, R. W.; Hollis; Hough, 1, 3; Ingalls, 1, 2, 4, 9, 12; Kennedy; King, V. L.; Larsen; Leland; Lilly, 1, 2; Macey; Manuel; Mayhew, 1, 2; McConathy; Mencher, 1, 2; Menneer; Mize, 1, 2; Morrisey; N. Mex. Oil & Gas Eng. Comm., 1, 3, 5, 7, 9; N. Mex. Oil Conservation Comm.; Nicolson; Owen; Paredes; Rinehart; Roberts, W. H.; Rocky Mt. Oil Reporter, 1; Swainson; Tatum; Thomas, C. F.; Umbach, 1-7, 9-13; U. S. Vanadium Co.; Waati; Waylett; Wengerd, 4, 8; Wiederkehr; Willis, 1-4; Wilson, G. M., 1, 2; Winters, 1.
- San Juan County, geology:** Baltz, E. H., 1-3; Barnes, 3; Beaumont, 1-3; Budd; Cooper, J. C., 1; Drouillard; Harris, J. J.; Hayes, 2; Hunt; O'Sullivan, 2; Raup, 2; Strobell, 1-4; Wantland, 1, 2; Weeks; Winkler, 8; Zakis; Ziegler.
- San Mateo Mountains, Sierra and Socorro Counties, geology:** Kelley, V. C., 14, 15.
- San Miguel County:**
Geology: Baltz, E. H., 4, 5; Foster, R. W., 5; Gott, 1; Griggs, 1, 4; Jaffe; Pittman; Poldervaart; Read, 2; Sidwell, 2-4; Stever; Weldon.
Mineral technology: Alford, 1; Bass; Foster, R. W., 5; Knaus.
- San Pedro Mountains, Santa Fe County, geology:** Armstrong.
- Santa Fe County:**
Geology: Armstrong; Baldwin, 1, 3; Cannon, H. L., 3; Disbrow; Foster,

- E. E.; Griggs, 4; Kottlowski, 1; N. Mex. Geol. Soc., 2; Olsen; Rocky Mt. Assoc. Geol., 2; Spiegel, 1; Stearns, C. E., 1-3; Sun, 1, 2; Turnbull.
- Mineral technology: Alford, 2; Bullock, 1, 2; Higgins; James, 2; Knaus; Shenk; Uteley; Williams, C. F.; Wolle; Woods, B., 10.
- Santa Fe quadrangle, Santa Fe county, geology: Baldwin, 1, 3; Kottlowski, 1. *See also* Santa Fe County.
- Santa Rita quadrangle, Grant County, geology: Hernon, 1; Lovering. *See also* Grant County.
- Sherman quadrangle, Grant, Luna, and Sierra Counties, geology: Elston, 1; Jicha, 2. *See also* Grant County; Luna County; Sierra County.
- Ship Rock quadrangle, San Juan County, geology: Beaumont, 2. *See also* San Juan Basin.
- Sierra Blanca Mountains, Lincoln and Otero Counties, geology: Bachman, G. O., 3.
- Sierra County:
 Geology: Albright, J. L., 2; Anderson, E. C., 3; Bachman, G. O., 3; Bachman, H. G., 1, 2; Beck, 5; Boyd, F. S., 1, 2; Bushnell, 1-3; Conover, 10, 12; Doyle; Elston, 1; Jahns, 6-8; Jicha, 1, 2, 4, 5; Kelley, V. C., 1, 6, 7, 14, 15; Kottlowski, 5, 6, 8, 9; Kuellmer, 2-4; Maxwell; N. Mex. Geol. Soc., 2, 5; Rocky Mt. Assoc. Geol., 2; Silver, 6; Theis, 2; Thompson, M. L., 2; Thompson, S., 1-3; Winkler, 1, 2.
- Mineral technology: Alford, 2; Anderson, E. C., 3; Brown, M. B.; Creasey; Wolle; Woods, B., 3.
- Sierra Cuchillo, Sierra County, geology: Anderson, E. C., 3; Boyd, F. S., 2; Jahns, 7, 8; Kelley, V. C., 14, 15; Kottlowski, 8; N. Mex. Geol. Soc., 5.
- Socorro County:
 Geology: Anderson, R. C., 1, 2; Armstrong; Bachman, G. O., 3; Bate-
 man; Duschatko, 1, 2; Foster, R. W., 6; Gott, 1; Gruner, 6; Johnson, D.; Johnson, J. T.; Jones, S. M., 1; Kalish; Kelley, V. C., 7, 14, 15; Keyes, 3; Kottlowski, 2; Kutnewsky, 2; LeMone; Neuschel; N. Mex. Bur. Mines and Mineral Res., 2; N. Mex. Geol. Soc., 2; Rocky Mt. Assoc. Geol., 2; Roswell Geol. Soc., 2; Sidwell, 1; Spiegel, 3; Staatz; Sykes; Tonking; Wilpolt.
- Mineral technology: Anon., 12; Alford, 2; Argall, 1; Foster, R. W., 6; Harrington, 1; Kutnewsky, 1, 2; Smith, T. E., 1, 2; Wolle.
- Socorro Mountains, Socorro County:
 Geology: Kelley, V. C., 7.
- Mineral technology: Argall, 1.
- Southeastern New Mexico:
 Geology: Anon., 29; Bean; Black, D. M., 1-4; Black, T. H.; Boyd, D. W.; Bradley; Byrd; Cave, 3; Cloud; Conover, 1-4, 6, 7, 9; Daly, 1-3; DeFord; Dunlap; Fellows; Flawn, 1-4; Galloway; Haigh; Hale, 1-3; Harper, J. L.; Harris, T. F.; Helmig, 1; Hendrickson; Herrick; Hollingsworth; Hoot; Hoylman; Hughes, P. W.; Hull; Innes; Johnston, C. H.; Jones, C. L., 1, 2; Krumbein, 1; Lloyd, 1; Maley; McKay; Miller, D. N.; Moran, 1, 2; Morton; Newell, 2; N. Mex. Bur. Mines and Mineral Res., 2; N. Mex. Geol. Soc., 4; Olive; Pratt; Rigby, 1, 2; Roswell Geol. Soc., 1, 3, 5; Schmitt, G. T.; Sheldon; Sloss; Stead, F. L., 1, 2; Stewart, F. H.; Stipp, 1; Summers; Sutherland; Terry; Theis, 1; U. S. Natl. Park Service, 3; Waltman; Wells; West Texas Geol. Soc., 1, 2.
- Mineral technology: Anon., 6, 7, 18, 19, 28; Anderson, K.; Argall, 3, 6, 11; Atcheson; Atwood, G. E.; Bachman, W. S.; Bigelow, 2; Borland; Bromell, 1-3; Brown, D. C.; Bruhn; Chafetz, 1-6; Estlow; Gardner, F. J., 3; Gardner, H. L.; Griffin; Hardison; Harley, 1-7; Haworth; Hadden; Henwood; Herbert; Hoot; Hurst, 1, 2; Huttel, 1; Ingalls, 3, 5-7, 10, 11; Jacobs; Johnson, D.; Kinney; Koonce; Kornfeld; Kurlmeyer; Latz; Libbey; Little; Logan, 1, 2; Luckett; Martin, R. H.; McGhee, 2; McLaughlin, D. H.; McLaughlin, P. L.; McLaughlin, R. B.; Messer; Miller, H. A.; Murphy; N. Mex. Oil & Gas Eng. Comm., 2, 4, 6, 8, 9; N. Mex. Oil Conservation Comm.; Nordyke; Rocky Mt. Oil Reporter, 2; Schultz, 1, 2; Sheldon; Smith, C. W.; Smith, H. I.; Staley; Stead, F.

Areas (continued)

- L., 1; Swords, 1, 2; Terry; Thurman; Tong; Vertrees; Ware, 1, 2; Willis, 1, 4; Withers, 1-3.
- Southern New Mexico, geology: Bliss-
enbach; Bushnell, 3; Conover, 10;
Fitzsimmons, 1-3; Flower, 2, 6;
Kottlowski, 3-6, 8, 9; N. Mex. Geol.
Soc., 5; Thompson, M. L., 2.
- Southwestern New Mexico:
Geology: Bogart; Boyd, F. S., 1;
Bushman, 3; Callaghan, 4, 5; Con-
over, 1-4, 8, 9, 11; Elston, 1, 2;
Flege; Flower, 3; Holser; Jahns, 7;
Jicha, 1, 2, 4; Kelley, V. C., 5;
Kelly, 2; Knechtel; Kottlowski, 5;
McClure; N. Mex. Geol. Soc., 3;
Rocky Mt. Assoc. Geol., 3; San-
deen, 2; Strongin; Winkler, 10;
Zeller, R. A., 1, 2.
- Mineral technology: Sandeen, 1;
Weiss.
- Springer quadrangle, Colfax County,
geology: Wood, G. H. *See also* Col-
fax County.
- Taos County:
Geology: Anon., 2; Baltz, E. H., 4;
Chapman; Jahns, 1, 3, 5; Kelley,
V. C., 4; Montgomery, 1, 2; Pan-
handle Geol. Soc., 2; Rocky Mt.
Assoc. Geol., 2; Schilling; Smith,
I.; Winkler, 4, 11, 13; Winograd.
- Mineral technology: Anon., 2-5, 9,
17; Knaus; Montgomery, 1.
- Thoreau quadrangle, McKinley and
Valencia Counties, geology: Smith,
C. T., 3. *See also* McKinley Coun-
ty; Valencia County.
- Toadlena quadrangle, San Juan Coun-
ty, geology: Ziegler. *See also* San
Juan Basin.
- Tohatchi quadrangle, McKinley Coun-
ty, geology: Allen, J. E., 6-9; Balk;
Bushman, 1; Leopold, 2; Repen-
ning, 3; Silver, 4; Willard. *See also*
San Juan Basin.
- Torrance County, geology: Armstrong;
Basham; Dorman; Gott, 1; Kelley,
V. C., 7; N. Mex. Geol. Soc., 2;
Rocky Mt. Assoc. Geol., 2; Roswell
Geol. Soc., 4.
- Tularosa Basin, Otero and Lincoln
Counties, geology: Albright, J. L.,
2; Conover, 10; Kelley, V. C., 14;
Kottlowski, 8; Sandeen, 3; Wink-
ler, 14.
- Union County:
Geology: Baldwin, 2; Bieberman, 14;
Klinck; Levings; Muchlberger;
Panhandle Geol. Soc., 1-3; Strick-
faden; U. S. Natl. Park Service, 1.
Mineral technology: Bieberman, 14.
- Valencia County:
Geology: Argall, 3; Bachman, G. O.,
3; Bucher, 1, 2; Cannon, H. L., 1, 2;
Chenoweth; Colman; Duschatko,
1; Ealy; Ellsworth; Froelich; Gil-
key, 1, 2; Goddard; Gott, 1; Grun-
ner, 1, 3-6; Hilpert; Hunt; Huttl,
2; Jicha, 7; Johnston, H. C.; Kelley,
V. C., 7, 8; Kerr, 2-4; Kleinhampl,
2; Konigsmark, 1, 2; Mathewson,
1; Mirsky; Narten, 1-3; N. Mex.
Geol. Soc., 1, 2; Rapaport, 1-3;
Raup, 2; Sharp, J. V. A.; Sharp,
K. D.; Smith, C. T., 1-4; Stead, F.
W.; Towle; Winters, 2.
- Mineral technology: Anon., 20; Ar-
gall, 2, 3; Colwell; Hough, 4;
Huttl, 2; Lynn; Mathewson, 1, 2;
Strachan; Swainson; Waylett;
Weeks; Winters, 1.
- Victorio Mountains, Luna County,
geology: Holser.
- White Sands, Dona Ana and Otero
Counties, geology: Anon., 16;
Jicha, 6; Russell; U. S. Natl. Park
Service, 2.
- Zuni Mountains, McKinley and Valen-
cia Counties, geology: Bucher, 1,
2; Gilkey, 1, 2; Goddard; Gott, 1;
Konigsmark, 1, 2; Mirsky; N. Mex.
Geol. Soc., 1; Rapaport, 1, 2;
Smith, C. T., 1-3.
- Zuni Salt Lake, Catron County:
Geology: Alfredo, 5.
Mineral technology: Alfredo, 5;
Woods B., 4; Woods, C., 2.

Economic Geology

Abiquiu mining district, Rio Arriba
County: Gott, 1.

Alteration:

Cochiti district: Bundy.

Fierro-Hanover district: Belt.

Santa Rita quadrangle: Hernon, 1;

Leroy, 3.

Alum, San Juan Basin: Bieberman, 3.

Aztec mine, Baldy district: Pettit.

Aztec oil and gas field, San Juan Coun-
ty: Rinehart.

Baldy mining district, Colfax County:
Ark.-White-Red Basins Inter-
Agency Comm., 6; Pettit.

Barite:

Caballo Mountains district: Kelley, V. C., 6.

Hansonburg district: Kottlowski, 2.

Barker Dome gas field, San Juan County: Barnes, 1, 3; Rinehart.

Beryllium:

Harding mine: Jahns, 1, 5.

Iron Mountain district: Anderson, E. C., 3; Jahns, 8.

Victorio district: Holser.

Bibliography, through 1950: Burks.

Black Hawk mining district, Grant County: Gillerman, 3, 4, 7.

Blanco gas field, San Juan and Rio Arriba Counties: Allen, R. W., 1-3; Barnes, 1; Budd; Rinehart.

Bloomfield oil field, San Juan County: Barnes, 1.

Bueyeros CO₂ field, Harding County: Ark-White-Red Basins Inter-Agency Comm., 6.

Building stone, San Juan Basin: Bieberman, 3.

Bulfrog mine, Central district: Kelly, 2.

Burro Mountains mining district, Grant County: Gillerman, 1, 6; Kleinhampl, 1; N. Mex. Geol. Soc., 3.

Caballo Mountains mining district, Sierra County: Anderson, E. C., 3; Kelley, V. C., 6.

Capitan coal field, Lincoln County: Bodine; N. Mex. Geol. Soc. 4; Roswell Geol. Soc., 2.

Capitan iron mine, Lincoln County: Kelley, V. C., 3.

Carbon dioxide, Bueyeros field: Ark-White-Red Basins Inter-Agency Comm., 6.

Carthage coal field, Socorro County: Berryhill.

Central mining district, Grant County: Allen, V. T., 1, 2; Ballmer, 1; Beck, 4; Fowler; Givens; Hernon, 1; Kelly, 2; Leroy, 1-3; N. Mex. Geol. Soc., 3; Ordonez, 1, 2.

Cerrillos coal field, Santa Fe County: Berryhill; Turnbull.

Cerrillos mining district, Santa Fe County: Foster, E. E.; Griggs, 2, 4.

Chino mine: *see* Santa Rita mine

Chloride Flat mining district, Grant County: Hernon, 2.

Chloride mining district, Sierra County: Anderson, E. C., 3.

Chuska mining district, San Juan

County: Bachman, G. O., 3; Drouillard; Raup, 2.

Clay: Weber, 1.

Bentonite: Reynolds, D. H.

Caballo Mountains district: Kelley, V. C., 6.

San Juan Basin: Allen, J. E., 10; Bieberman, 3.

Tohatchi quadrangle: Allen, J. E., 8.

Coal: Wanless, 2; Young, W. H.

Analyses: Snyder, N. H.

Caballo Mountains: Kelley, V. C., 6.

Capitan field: Bodine; N. Mex. Geol. Soc., 4; Roswell Geol. Soc., 2.

Carthage field: Berryhill.

Cerrillos field: Berryhill; Turnbull.

Coking: Berryhill.

Hagan field: Harrison.

Monero field: Berryhill.

Raton field: Ark-White-Red Basins

Inter-Agency Comm., 6; Berryhill;

Panhandle Geol. Soc., 2; Pettit.

San Juan Basin: Bieberman, 3, 9; Hayes, 2.

Tohatchi quadrangle: Allen, J. E., 8.

Cochiti mining district, Sandoval County: Bundy.

Cooks Peak mining district, Luna County: Jicha, 4.

Copper: Butler.

Abiquiu district: Gott, 1.

Burro Mountains district: Kleinhampl, 1; N. Mex. Geol. Soc., 3.

Caballo Mountains district: Kelley, V. C., 6.

Central district: Fowler; Leroy, 1-3; N. Mex. Geol. Soc., 3.

Chloride district: Anderson, E. C., 3.

Copper Flat (Hillsboro) deposit: Kuellmer, 3, 4.

Coyote Creek district: Gott, 1; Laub.

Cuchillo Negro district: Jahns, 8.

Gallina district: Gott, 1.

Jemez Springs district: Gott, 1.

Lordsburg district: Flege; Kelly, 1.

Organ district: Kottlowski, 9; Soule, 1, 2.

Pinos Altos district: Hernon, 2.

Rio Arriba County: Gabelman, 2.

San Juan Basin: Bieberman, 3.

Santa Rita mine: Ballmer, 1; Hernon, 1; Leroy, 1-3; N. Mex. Geol. Soc., 3.

Scholle district: Gott, 1.

Sedimentary deposits: Ark-White-Red Basins Inter-Agency Comm., 6.

Economic Geology (continued)

Tecolote district: Gott, 1.
 Zuni Mountains district: Gott, 1.
 Copper Flat (Hillsboro) copper deposit,
 Sierra County: Kuellmer, 3, 4.
 Coyote Creek mining district, Mora
 County: Gott, 1; Laub; Tschanz,
 1, 2; Zeller, H. D., 1, 3.
 Cuchillo Negro mining district, Sierra
 County: Jahns, 8.
 Denton oil field, Eddy County: Fellows.
 Dolomite, Caballo Mountains district:
 Kelley, V. C., 6.
 Doswell oil field, Rio Arriba County:
 Lilly, 1, 2.
 Elizabethtown mining district, Colfax
 County: Ark.-White-Red Basins
 Inter-Agency Comm., 6.
 Fierro-Hanover mining district, Grant
 County: Belt; Hernon, 1; Horton;
 Kelly, 2; O'Sullivan, 1; Raup, 1.
Fluorite:
 Burro Mountains: Gillerman, 1, 6.
 Caballo Mountains district: Ander-
 son, E. C., 3; Kelley, V. C., 6.
 Hansonburg district: Kottlowski, 2.
 Lordsburg area: Flege.
 Organ district: Kottlowski, 9.
 Zuni Mountains district: Bieberman,
 3; Goddard.
 Gallina mining district, Rio Arriba
 County: Gott, 1.
Gas: see also Oil and Gas.
 Barker Dome field: Barnes, 1, 3;
 Rinehart.
 Blanco field: Allen, R. W., 1-3;
 Barnes, 1; Budd; Rinehart.
 Carbon dioxide: Ark.-White-Red
 Basins Inter-Agency Comm., 6.
 Gavilan field: Barnes, 1.
 Helium: Anderson, C. C.; Bieber-
 man, 3, 9.
 Ute Dome field: Barnes, 1.
 Gavilan gas field, Rio Arriba County:
 Barnes, 1.
 Gem stones, San Juan Basin: Bieber-
 man, 3.
 General: Bateman; Burks; Lindgren;
 Stubbs.
 Geobotanical studies: *see Geophysics
 and Geochemistry*, Geobotanical
 prospecting.
 Geophysical prospecting: *see Geophys-
 ics and Geochemistry*
 Georgetown mining district, Grant
 County: Hernon, 2.
 Glorieta mining district, Santa Fe

County: Griggs, 2, 4.
Gold:
 Baldy district: Pettit.
 Caballo Mountains district: Kelley,
 V. C., 6.
 Chloride district: Anderson, E. C., 3.
 Cochiti district: Bundy.
 Elizabethtown district: Ark.-White-
 Red Basins Inter-Agency Comm.,
 6.
 Jicarilla district: N. Mex. Geol. Soc.,
 4.
 Kingston district: Kuellmer, 2.
 Nogal district: N. Mex. Geol. Soc., 4.
 Organ district: Kottlowski, 9.
 Pinos Altos district: Hernon, 2.
 San Juan Basin: Bieberman, 3.
 Ute Creek district: Pettit.
 White Oaks district: N. Mex. Geol.
 Soc., 4.
 Gossans: Kelly, 1, 2; Raup, 1.
 Grants mining district, McKinley and
 Valencia Counties: Cannon, H. L.,
 1, 2; Colman; Colwell; Ealy; Ells-
 worth; Froelich; Gruner, 1-6;
 Hilpert; Huttl, 2; Kerr, 2-4; Klein-
 hampl, 2; Konigsmark, 1, 2;
 Mirsky; Narten, 1-3; Rapaport, 2,
 3; Raup, 2; Rosenzweig; Sharp, J.
 V. A.; Smith, C. T., 3; Stead, F. W.;
 Strachan; Sun, 3; Towle. *See also*
 Laguna mining district.
 Graphite: Wood, J. A.
Gravel:
 Caballo Mountains district: Kelley,
 V. C., 6.
 San Juan Basin: Allen, J. E., 10.
 Tohatchi quadrangle: Allen, J. E., 8.
 Ground Hog mine, Central mining dis-
 trict: Allen, V. T., 1, 2; Fowler.
 Ground water: *see Water*
 Guadalupita mining district: *see*
 Coyote Creek mining district
 Guano, Caballo Mountains district:
 Kelley, V. C., 6.
 Gypsum: Jicha, 3.
 Caballo Mountains district: Kelley,
 V. C., 6.
 San Juan Basin: Allen, J. E., 10; Bie-
 berman, 3.
 Hagan coal field, Sandoval County:
 Harrison.
 Hanover mine, Fierro-Hanover dis-
 trict: Horton; Raup, 1.
 Hanover mining district: *see Fierro-
 Hanover mining district*
 Hansonburg mining district, Socorro

- County: Kottlowski, 2; Roswell Geol. Soc., 2.
- Harding pegmatite mine, Taos County: Anon., 2; Jahns, 1, 3, 5; Montgomery, 1, 2.
- Haystack mine, Grants district: Colman; Colwell; Mathewson, 2; Strachan.
- Helium: Anderson, C. C.; Bieberman, 3, 9.
- Hermosa mining district: *see* Palomas mining district
- Hillsboro mining district, Sierra County: Kuellmer, 3.
- Hogback oil field, San Juan County: Barnes, 1; Harris, J. J.; Rinehart.
- Hospah oil field, McKinley County: Barnes, 1; King, V. L.; Rinehart.
- Iron:
- Caballo Mountains district: Kelley, V. C., 6.
- Capitan iron mine: Kelley, V. C., 3.
- Central district: Fowler.
- Fierro-Hanover district: Hernon, 1.
- Iron Horse magnetite deposit: Johnson, D.
- Iron Mountain district: Anderson, E. C., 3; Jahns, 8.
- Oölitic deposits: Kelley, V. C., 1.
- Iron Horse magnetite deposit, Socorro County: Johnson, D.
- Iron Mountain mining district, Sierra and Socorro Counties: Anderson, E. C., 3; Boyd, F. S., 2; Jahns, 8.
- Jackpile mine, Laguna district: Argall, 3; Gruner, 3, 6; Huttel, 2.
- Jemez Springs mining district, Sandoval County: Gott, 1.
- Jicarilla mining district, Lincoln County: N. Mex. Geol. Soc., 4.
- Kingston mining district, Sierra County: Kuellmer, 2.
- Kyanite, Petaca district: Corey.
- Laguna mining district, Valencia County: Argall, 3; Gruner, 3, 6; Hilpert; Rapaport, 2, 3.
- Lake Valley mining district, Sierra County: Creasey; Jicha, 1, 4.
- Lead:
- Bullfrog mine: Kelly, 2.
- Caballo Mountains district: Anderson, E. C., 3; Kelley, V. C., 6.
- Central district: Fowler.
- Cooks Peak district: Jicha, 4.
- Cuchillo Negro district: Jahns, 8.
- Hansonburg district: Kottlowski, 2.
- Lake Valley district: Jicha, 4.
- Macho district: Jicha, 4.
- Organ district: Kottlowski, 9.
- Palomas district: Jahns, 6; Jicha, 5.
- Pewabic mine: Kelly, 2.
- Pinos Altos district: Hernon, 2.
- San Juan Basin: Bieberman, 3.
- Limestone:
- Caballo Mountains district: Kelley, V. C., 6.
- San Juan Basin: Allen, J. E., 10.
- Lindreth oil and gas field, Rio Arriba County: Rinehart.
- Lithium: Chapman.
- Harding mine: Jahns, 1.
- Mora County: Jahns, 4.
- Lordsburg mining district, Hidalgo County: Flege; Kelly, 2.
- Luis Lopez mining district, Socorro County: Neuschel.
- Macho mining district, Sierra County: Jicha, 4.
- Magdalena mining district, Socorro County: Johnson, J. T.
- Maljamar oil and gas field, Lea County: Hoot; Terry.
- Manganese:
- Caballo Mountains district: Anderson, E. C., 3; Kelley, V. C., 6.
- Kingston district: Kuellmer, 2.
- Lake Valley district: Creasey; Jicha, 4.
- Luis Lopez district: Neuschel.
- San Juan Basin: Allen, J. E., 10.
- Tohatchi quadrangle: Allen, J. E., 8.
- Mica, Petaca district: Jahns, 1.
- Mining districts: Anderson, E. C., 1; Northrop, 3.
- Molybdenum: Kelley, V. C., 4.
- Baldy district: Ark.-White-Red Basins Inter-Agency Comm., 6.
- Questa molybdenum mine: Schilling.
- Monero coal field, Rio Arriba County: Berryhill.
- Natural gas: *see* Gas; Oil and gas
- Nogal mining district, Lincoln County: N. Mex. Geol. Soc., 4; Roswell Geol. Soc., 2.
- Oil: *see* also Oil and gas
- Bloomfield field: Barnes, 1.
- Denton field: Fellows.
- Doswell field: Lilly, 1, 2.
- Eddy County: Sheldon.
- Hogback field: Barnes, 1; Harris, J. J.; Rinehart.
- Hospah field: Barnes, 1; King, V. L.; Rinehart.

Economic Geology (continued)

- Red Mountain field: Barnes, 1; Rinehart.
- Seven Lakes field: Rinehart.
- Stoney Butte field: Barnes, 1; Rinehart.
- Oil and gas:**
- Aztec field: Rinehart.
- Chaves County: Terry.
- Colfax County: Bieberman, 10.
- Curry County: Foster, R. W., 2.
- De Baca County: Foster, R. W., 3.
- Eddy County: Terry.
- Guadalupe County: Bieberman, 11.
- Harding County: Bieberman, 12.
- Index to well samples at N. Mex.
- Bur. Mines: Bieberman, 1, 2, 4, 6, 8.
- Jornada del Muerto: Kelley, V. C., 6.
- Lea County: Terry.
- Lindreth field: Rinehart.
- Maljamar field: Hoot; Terry.
- Mora County: Bieberman, 13.
- Northwestern New Mexico: *see* San Juan Basin
- Permian Basin: Anon., 29; Bigelow, 2; Fellows: Hoot; Terry; West Texas Geol. Soc., 2.
- Quay County: Foster, R. W., 4.
- Rattlesnake field: Barnes, 1; Cooper, J. C., 1; Rinehart.
- Roosevelt County: Foster, R. W., 7.
- San Juan Basin: Allen, R. W., 1-3; Barnes, 1, 3; Bieberman, 3, 9; Bigelow, 1, 3; Budd; Cooper, J. C., 1; Harris, J. J.; King, V. L.; Lilly, 1, 2; Reese, 1, 2; Rinehart; Umbach, 8; Waati; Wengerd, 1, 4-9; Wilson, D. P.; Zakis.
- San Miguel County: Foster, R. W., 5.
- Socorro County: Foster, R. W., 6.
- Southeastern New Mexico: *see* Permian Basin
- Table Mesa field: Barnes, 1; Rinehart; Zakis.
- Traps: Barnes, 1.
- Union County: Bieberman, 14.
- Oil and gas possibilities:**
- Jornada del Muerto: Albright, J. L., 2.
- Northeastern New Mexico: Helmig, 2; Rocky Mt. Assoc. Geol., 4.
- Permian Basin: DeFord; Harris, T. F.; Helmig, 1.
- Plainview Basin: Jones, T. S.
- Raton Basin: Cave, 1, 2; Helmig, 2; Rocky Mt. Assoc. Geol., 4.
- Rio Grande Valley: Albright, J. L., 2; Rocky Mt. Assoc. Geol., 2.
- San Juan Basin: Beaumont, 1-3; Reese, 1; Rocky Mt. Assoc. Geol., 1; Silver, 1; Wengerd, 5, 8, 9; Wilson, D. P.
- Southwestern New Mexico: Rocky Mt. Assoc. Geol., 3.
- Tularosa Basin: Albright, J. L., 2.
- Organ mining district, Dona Ana County: Kottowski, 9; Soule, 1, 2.
- Palomas mining district, Sierra County: Jahns, 6; Jicha, 5.
- Peat: Woods, B., 2.
- Pecos mine, San Miguel County: Panhandle Geol. Soc., 2.
- Pegmatites: Jahns, 1, 3-5; Montgomery, 1, 2.
- Perlite:
- Lake Valley quadrangle: Jicha, 4.
- Lordsburg area: Flege.
- Peralta Canyon, Sandoval County: Mills.
- San Juan Basin: Bieberman, 3.
- Socorro deposit: Kutnewsky, 2.
- Petaca mining district, Rio Arriba County: Corey; Jahns, 1, 3.
- Petroleum: *see* Gas; Oil and gas
- Pewabic mine, Fierro-Hanover district: Anon., 10; Kelly, 2.
- Pinos Altos mining district, Grant County: Hernon, 2.
- Placers, gold: Hernon, 2; Kelley, V. C., 6; N. Mex. Geol. Soc., 4.
- Poison Canyon mine, Grants district: Colman; Gruner, 3, 5, 6; Hilpert; Mathewson, 2.
- Potash: Dunlap; Jones, C. L., 1, 2; N. Mex. Geol. Soc., 4.
- Pumice:
- Jemez Mountains area: Neher.
- San Juan Basin: Bieberman, 3.
- Questa molybdenum mine, Taos County: Schilling.
- Raton coal field, Colfax County: Ark-White-Red Basins Inter-Agency Comm., 6; Berryhill; Panhandle Geol. Soc., 2; Pettit.
- Rattlesnake oil and gas field, San Juan County: Barnes, 1; Cooper, J. C., 1; Rinehart.
- Redbed copper deposits: *see* Sedimentary copper deposits.
- Red Mountain oil field, McKinley County: Barnes, 1; Rinehart.
- Santa Rita mine, Central district: Ballmer, 1; Beck, 4, 6; Givens; Hernon,

- 1; Leroy, 1-3; N. Mex. Geol. Soc., 3; Ordonez, 1, 2.
- Scholle mining district, Socorro, County: Gott, 1.
- Scoria, northeastern New Mexico: Ark.-White-Red Basins Inter-Agency Comm., 6.
- Sedimentary copper deposits: Ark.-White-Red Basins Inter-Agency Comm. 6.
- Seven Lakes oil field, McKinley County: Rinehart.
- Shiprock mining district, San Juan County: Stokes, 1-3; Strobell, 1-3; Wantland, 1-3.
- Silver:
- Caballo Mountains district: Kelley, V. C., 6.
- Chloride district: Anderson, E. C., 3.
- Chloride Flat district: Hernon, 2.
- Cochiti district: Bundy.
- Cooks Peak district: Jicha, 4.
- Georgetown district: Hernon, 2.
- Kingston district: Kuellmer, 2.
- Lake Valley district: Jicha, 4.
- Lordsburg district: Flege.
- Organ district: Kottlowski, 9.
- Palomas district: Jahns, 6; Jicha, 5.
- Pinos Altos district: Hernon, 2.
- San Juan Basin: Bieberman, 3.
- Socorro perlite deposit, Socorro County: Kutnewsky, 2.
- Stone:
- San Juan Basin: Allen, J. E., 10.
- Tohatchi quadrangle: Allen, J. E., 8.
- Stoney Butte oil field, San Juan County: Barnes, 1; Rinehart.
- Sulfur, San Juan Basin: Bieberman, 3.
- Table Mesa oil and gas field, San Juan County: Barnes, 1; Rinehart; Zakis.
- Tantalum, Harding mine: Jahns, 1.
- Taylor Creek mining district, Catron and Sierra Counties: Anderson, E. C., 3.
- Tecolote mining district, San Miguel County: Gott, 1; Griggs, 4.
- Thorium:
- Bibliography: Cooper, M., 2, 4.
- Hidalgo County: Boyd, F. S., 1.
- In dikes: Boyd, F. S., 1.
- In pegmatites: Boyd, F. S., 1.
- Sierra County: Boyd, F. S., 1.
- Tin:
- Sierra Cuchillo: Jahns, 8.
- Taylor Creek district: Anderson, E. C., 3.
- Tungsten, Iron Mountain district: Anderson, E. C., 3; Jahns, 8.
- Turquoise, Cerrillos district: Foster, E. E.
- Tyrone mining district: *see* Burro Mountains mining district
- Uranium: Anderson, E. C., 2; Bachman, G. O., 3; Baltz, E. H., 4; Bieberman, 3; Bruyn; Butler, A. P.; Cooper, M., 1-4; Davis; Erickson, R. L.; Finch; Gabelman, 1; Isachsen; Kaiser; Kerr, 1; Keyes, 3; King, R. U.; Mathewson, 1; McKelvey, 1, 2; N. Mex. Mining Assoc., 2; Reinhart; Rosenzweig; Schnabel; Shoemaker, 1, 4; Smith, C. T., 5; U. S. Geol. Survey, 11, 12, 16, 17, 25; U. S. Vanadium Co.; Weber, 3; Weeks; Weir.
- Bibliography: Cooper, M., 1-4; Wallace.
- Black Hawk district: Gillerman, 3, 4.
- Burro Mountains district: Raup, 3, 4.
- Caballo Mountains: Boyd, F. S., 2.
- Cerrillos district: Griggs, 2, 4.
- Chuska district: Bachman, G. O., 3; Drouillard; Raup, 2.
- Coyote Creek district: Laub; Tschanz, 1, 2; Zeller, H. D., 1, 3.
- Datil Mountains: Bachman, G. O., 3; Griggs, 2-5.
- Desanti mine: Gruner, 4.
- Glorieta district: Griggs, 2, 4.
- Grants district: Cannon, H. L., 1, 2; Colman; Colwell; Ealy; Ellsworth; Froelich; Gruner, 1-6; Hilpert; Huttli, 2; Kerr, 2-4; Kleinhapl, 2; Konigsmark, 1, 2; Mathewson, 2; Mirsky; Narten, 1-3; Rapaport, 2, 3; Raup, 2; Rosenzweig; Sharp, J. V. A.; Smith, C. T., 3; Stead, F. W.; Strachan; Sun, 3; Towle.
- Haystack mine: Colman; Mathewson, 2; Strachan.
- Hidalgo County: Boyd, F. S., 1.
- In carbonaceous rocks: Bachman, G. O., 2; Baltz, E. H., 3; Duncan, 1, 2; Vine; Zeller, H. D., 1-3.
- In coal: Bachman, G. O., 2; Baltz, E. H., 1; Vine.
- In dikes: Boyd, F. S., 1.
- In fluorite: Boyd, F. S., 1; Wilmarth, V. R.
- In limestone: Ealy; Ellsworth; Gott,

Economic Geology (continued)

- 2; Gruner, 2; Kerr, 2-4; Rapaport, 2.
- In pegmatites: Boyd, F. S., 1.
- In sandstone: Cannon, H. L., 2, 3; Froelich; Gillerman, 4; Hilpert; Kleinhampl, 2; Mirsky; Narten, 1-3; Rapaport, 2; Stokes, 3; Tschanz, 1, 2; Wright, R. J.
- In shale: Bachman, G. O., 2, 3; Duncan, 1, 2; Vine.
- In volcanic rocks: Bachman, G. O., 3.
- Iron Mountain district: Boyd, F. S., 2; Jahns, 8.
- Jackpile mine: Argall, 3; Gruner, 3, 6; Hilpert; Huttl, 2.
- Jemez Springs district: Gott, 1.
- Laguna district: Argall, 3; Gruner, 3, 6; Hilpert; Rapaport, 2, 3.
- La Ventana area, Sandoval County: Vine.
- Mount Taylor area: Bachman, G. O., 3; Mathewson, 1.
- Nacimiento Mountains: Bachman, G. O., 3.
- Poison Canyon mine: Colman; Gruner, 3, 5, 6; Hilpert; Mathewson, 2.
- Relationship to tectonic features: Kelley, V. C., 13.
- Shiprock district: Stokes, 1-3; Strobell, 1-3; Wantland, 1-3.
- Sierra County: Boyd, F. S., 1, 2; Jahns, 8.
- Southeastern New Mexico: Waltman.
- Tecolote district: Griggs, 4.
- White Signal district: Gillerman, 2, 4, 5; Granger, 1, 2; N. Mex. Geol. Soc., 3.
- Woodrow mine: Argall, 3; Gruner, 3.
- Zuni Mountains district: Bucher, 2; Konigsmark, 1, 2; Mirsky; Rapaport, 2.
- Ute Creek mining district, Colfax County: Pettit.
- Ute Dome gas field, San Juan County: Barnes, 1.
- Vanadium:
- Caballo Mountains district: Anderson, E. C., 3; Kelley, V. C., 6.
- San Juan Basin: Bieberman, 3.
- Victorio mining district, Luna County: Holser.
- Water: *see Water*
- White Oaks mining district, Lincoln County: N. Mex. Geol. Soc., 4; Roswell Geol. Soc., 2.
- White Signal mining district, Grant County: Gillerman, 2, 4, 5, 8; Granger, 1, 2; N. Mex. Geol. Soc., 3.
- Woodrow mine, Laguna district: Argall, 3; Gruner, 3.
- Zinc:
- Bullfrog mine: Kelly, 2.
- Central district: Anon., 10; Fowler; Hernon, 1; Kelly, 1.
- Cooks Peak district: Jicha, 4.
- Cuchillo Negro district: Jahns, 8.
- Fierro-Hanover district: Horton; Kelly, 2; Raup, 1.
- Lordsburg district: Kelly, 2.
- Macho district: Jicha, 4.
- Organ district: Kottlowski, 9.
- Pewabic mine: Anon., 10; Kelly, 2.
- Pinos Altos district: Hernon, 2.
- Zuni Mountains mining district, Valencia County: Bieberman, 3; Bucher, 2; Goddard; Gott, 1; Konigsmark, 1, 2; Mirsky; N. Mex. Geol. Soc., 1; Smith, C. T., 1, 3.

Geophysics and Geochemistry

- Aeromagnetic maps, Grant County: Dempsey.
- Bibliography: Burks; Cooper, M., 1-4; Wallace.
- Blackhawk district, radioactivity surveys: Bell.
- Burro Mountains district, radioactivity surveys: Bell.
- Copper Flat, Hillsboro district: Kuellmer, 3.
- Electrical methods: *see Resistivity surveys.*
- Exploration:
- Oil and gas: *see Oil and gas exploration*
- Ore deposits: *see various mines and districts*
- Geobotanical studies:
- Grants district: Cannon, H. L., 1-3; Froelich; Kleinhampl, 2; Narten, 1-3.
- Toxic vegetation: Beath.
- Uranium indicators: Cannon, H. L., 1-3; Froelich; Kleinhampl, 2; Narten, 1-3.
- Grant County, magnetic surveys: Dempsey.
- Grants district:
- Geobotanical studies: Cannon, H. L., 1-3; Froelich; Kleinhampl, 2; Narten, 1-3.

- Radioactivity surveys: Cook; Stead, F. W.
- Gravity surveys:
 Ground-water investigations: Winkler, 12, 13.
 Rio Grande Valley, Socorro, County: Anderson, R. C., 1, 2.
 San Juan Basin: Clayton, 1, 2; Joesting; Harper, J. L.
 Uranium deposits: Joesting.
- Iron Horse magnetite deposit, magnetic surveys: Johnson, D.
- Logging oil and gas wells:
 Radioactivity methods: Stephenson.
 Resistivity methods: McConathy; Schmitt, G. T.
- Magnetic surveys:
 Airborne profile, Albuquerque to Lordsburg: Agocs.
 Grant County: Dempsey.
 Copper Flat, Hillsboro district: Kuellmer, 3.
 Ground-water: Winkler, 13.
 Iron Horse magnetite deposit: Johnson, D.
 Magnetization of Triassic sediments: Graham, J. W.
 Permian Basin: Flawn, 4; Hoylman.
 San Juan Basin: Clayton, 1, 2; Joesting; Harper, J. L.; Whelan.
- Magnetometer: *see* Magnetic surveys
- Oil and gas exploration: Clayton, 1, 2; Daly, 1-3; Eckhardt, 1-3; Hammer, 1-3; Harper, J. L.; Hoylman; Innes; McConathy; McKay; Schmitt, G. T.; Stephenson; Whelan.
- Permian Basin:
 Magnetic surveys: Flawn, 4; Hoylman.
 Resistivity surveys: Schmitt, G. T.
 Seismic surveys: Daly, 1-3; Innes; McKay.
 Spectrochemical surveys: Weimer.
- Radioactivity surveys:
 Airborne anomaly maps: U. S. Atomic Energy Comm.
 Blackhawk district: Bell.
 Burro Mountains district: Bell.
 Drill hole logging: Bell.
 Grants district: Cook; Stead, F. W.
 San Juan Basin: Stephenson.
 Uranium deposits: Bell; Cook; Stead, F. W.
 Well logging: Stephenson.
- Resistivity surveys:
 Ground-water: Holmes, C.; Winkler, 1, 2, 5-15.
- Permian Basin: Schmitt, G. T.
 San Juan Basin: McConathy; Wantland, 1, 2.
 Uranium deposits: Davis; Wantland, 1, 2.
 Well logging: McConathy; Schmitt, G. T.
- Rio Grande Valley, gravity surveys: Anderson, R. C., 1, 2.
- San Juan Basin:
 Gravity surveys: Clayton, 1, 2; Harper, J. L., Joesting.
 Magnetic surveys: Clayton, 1, 2; Harper, J. L.; Joesting; Whelan.
 Radioactivity surveys: Stephenson.
 Resistivity surveys: McConathy; Wantland, 1, 2.
- Seismic surveys:
 Ground-water: Sykes; Winkler, 4, 5, 10, 12, 13, 16.
 Permian Basin: Daly, 1-3; Innes; McKay.
 Uranium deposits: Wantland, 3.
 Velocity in sedimentary rocks, Permian Basin: Daly, 1-3.
- Spectrochemical surveys, correlation Paleozoic rocks: Weimer.
- Toxic vegetation, geobotanical studies: Beath.
- Well logging: *see* Logging oil and gas wells

Historical and Stratigraphic Geology

- Note:* Only the more detailed articles on historical geology and stratigraphy are listed by area in this section. To find all the articles on an area that include some stratigraphy or historical geology, look under the given area in the section *Areas*. (A few geology articles listed under *Areas* do not include stratigraphy or historical geology, although most do.)
- Abiquiu formation: Kottlowski, 6.
 Abo formation: Flower, 3; Jahns, 8; Kelley, V. C., 6; Kottlowski, 2, 9; Kuellmer, 2; N. Mex. Geol. Soc., 1, 2, 5; Otte, 1; Pray, 6; Read, 1; Reynolds, C. B., 3; Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Silver, 6; Spiegel, 3; Thompson, S., 3; Tinking; Wilpolt. *See* also Manzano group.
 Adobe formation: Kottlowski, 2.
 Aleman formation: Flower, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Silver, 6.

Historical and Stratigraphic Geology (continued)

See also Montoya group.

Ancha formation: Baldwin, 3; Kottlowski, 6.

Animas formation: Silver, 2.

Arroyo Penasco formation: Armstrong.

Baca formation: Griggs, 1; Kottlowski, 6, 8; Spiegel, 3; Tonking; Wilpolt.

Bandelier tuff: Bundy; Vine.

Bar B formation: Kelley, V. C., 6; Silver, 6. See also Magdalena group.

Bat Cave formation: Flower, 3, 6; Jahns, 8; Kelley, V. C., 6; Silver, 6.

See also El Paso group.

Bear Springs basalt: Jicha, 4.

Bell Canyon formation: Newell, 2; Roswell Geol. Soc., 1. See also Delaware Mountain group.

Bell Top formation: Kottlowski, 8.

Benton formation: Bachman, G. O., 1; Panhandle Geol. Soc., 2.

Bernal formation: Bachman, G. O., 1; N. Mex. Geol. Soc., 5.

Bibliography, through 1950: Burks.

Bidahochi formation: Repenning, 2.

Biscara intrusive andesite: Barker.

Black Range: Kuellmer, 2.

Bliss sandstone: Flower, 1-3, 5, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellmer, 2; N. Mex. Geol. Soc., 2; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6; Thompson, S., 3.

Bolander group: Kottlowski, 2.

Bone Spring formation: Newell, 2; Roswell Geol. Soc., 1.

Brushy Canyon formation: Newell, 2; Roswell Geol. Soc., 1. See also Delaware Mountain group.

Bruton formation: Kottlowski, 2.

Burned Mountain metarhyolite: Barker.

Burrego formation: Kottlowski, 2.

Bursum formation: Flower, 3; Kottlowski, 2, 9; N. Mex. Geol. Soc., 5; Pray, 7; Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Spiegel, 3; Thompson, M. L., 2; Wilpolt.

Caballero formation: Flower, 3, 6; Jicha, 4; Kottlowski, 9; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3.

Caballo Mountains: Doyle; Kelley, V. C., 6; Silver, 6.

Cable Canyon formation: Flower, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Silver, 6. See also Montoya group.

Caloso formation: Armstrong.

Cambrian: Cooper, J. C., 2.

Bliss sandstone: Flower, 1-3, 5, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellmer, 2; N. Mex. Geol. Soc., 2; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6; Thompson, S., 3.

Canutillo formation: Flower, 2, 3; Sandeen, 3.

Capitan formation: Bradley; Hale, 3; Hendrickson; Newell, 2.

Capitan quadrangle: Allen, J. E., 2, 5.

Capulin basalt: Wood, G. H.

Capulin Mountain: U. S. Natl. Park Service, 1.

Carlile shale: Griggs, 1; Levings; Stearns, C. E., 1; Wood, G. H.

Carlsbad Caverns: Black, D. M., 1; Black, T. H.; U. S. Natl. Park Service, 3.

Carlsbad formation: Hale, 3; Hendrickson.

Carmel formation: N. Mex. Geol. Soc., 1.

Carrizozo lava flow: Allen, J. E., 3, 4.

Castile formation: Hale, 3; Hendrickson; Olive; Roswell Geol. Soc., 1.

Cenozoic: Baltz, E. H., 2; McKee, 1; Sandeen, 3; Simpson, 1-3.

Abiquiu formation: Kottlowski, 6.

Ancha formation: Baldwin, 3; Kottlowski, 6.

Baca formation: Griggs, 4; Kottlowski, 6, 8; Spiegel, 3; Tonking; Wilpolt.

Bandelier tuff: Bundy; Vine.

Basalt flows: Allen, J. E., 3, 4; Jicha, 4, 7.

Bear Springs basalt: Jicha, 4.

Bell Top formation: Kottlowski, 8.

Bidahochi formation: Repenning, 2.

Biscara intrusive andesite: Barker.

Capulin basalt: Wood, G. H.

Chuska sandstone: Allen, J. E., 8; Wright, H. E., 2.

Cieneguilla limburgite: Stearns, C. E., 2, 3.

Cisneros basalt: Barker.

Clayton basalt: Wood, G. H.

Climite: Antevs, 3; Leopold, 1; Sears, P. B.

Conejos andesite: Barker.

Datil (volcanic) group: Griggs, 4; Johnson, J. T.; Kalish; Kottlowski, 6, 8; Spiegel, 3; Tonking; Wilpolt.

Deza formation: Wright, H. E., 3.

Dorado basalt: Barker.

- Espinazo volcanics: Stearns, C. E., 2, 3.
- Galisteo formation: Baldwin, 3; Stearns, C. E., 3.
- Gamerco formation: Allen, J. E., 8; Leopold, 2.
- Gatuna formation: Hendrickson.
- Gila conglomerate: Heindl.
- Hells Mesa rhyolite: Tonking.
- Hinsdale (volcanic) series: Barker.
- Kneeling Nun rhyolite tuff: Jicha, 4.
- La Jara Peak basalt: Tonking.
- Las Feveras formation: Bachman, G. O., 1.
- Los Pinos gravels: Barker.
- Macho andesite: Jicha, 4.
- McRae formation: *see* Cretaceous
- Mimbres Peak formation: Jicha, 4.
- Nacimiento formation: Silver, 2.
- Nakaibito formation: Allen, J. E., 8; Leopold, 2.
- Ogallala formation: Griggs, 1; Hale, 1; Hendrickson; Howard; Judson, 3; Levings; Roswell Geol. Soc., 4; Wood, G. H.
- Orejon andesite: Kottlowski, 9.
- Ortiz pediment gravels: Reynolds, C. B., 3.
- Palm Park formation: Kelley, V. C., 6; Kottlowski, 8; Silver, 3.
- Palomas gravels: Jahns, 8; Kottlowski, 8.
- Picuris tuff: Montgomery, 2.
- Poison Canyon formation: Panhandle Geol. Soc., 2; Wood, G. H.
- Pollack quartz latite: Jicha, 4.
- Popotosa formation: Kottlowski, 6; Spiegel, 3.
- Raton basalt: Wood, G. H.
- Raton formation: Levings; Panhandle Geol. Soc., 2; Wood, G. H.
- Razorback formation: Jicha, 4.
- Ritito conglomerate: Barker.
- Rubio Peak formation: Jicha, 4.
- Sand Canyon formation: Judson, 2, 3.
- San Jon formation: Judson, 2, 3.
- Santa Fe group: Baldwin, 3; Jahns, 7, 8; Jicha, 4; Kelley, V. C., 6; Kottlowski, 6, 8; LeMone; Montgomery, 2; N. Mex. Geol. Soc., 1, 2; Reynolds, C. B., 3; Silver, 6; Spiegel, 3; Stearns, C. E., 3; Thompson, S., 3; Tonking; Wilpolt.
- Servilleta formation: Montgomery, 2.
- Spears latite: Tonking.
- Sugarlump tuffs: Jicha, 4.
- Tesuque formation: Baldwin, 3; Kottlowski, 6.
- Thurman formation: Jahns, 7; Kelley, V. C., 6; Kottlowski, 8; Silver, 6.
- Treasure Mountain welded tuff: Barker.
- Uvas basaltic andesite: Kottlowski, 8.
- Volcanics: Bundy; Callaghan, 1, 5; Elston, 2; Flege; Griggs, 4; Jahns, 7, 8; Jicha, 2, 4, 7; Kalish; Kottlowski, 3, 4, 6, 9; Kuellmer, 2; Muehlberger; Spiegel, 3; Stearns, C. E., 2, 3; Sun, 1, 2; Tonking; Wilpolt; Wood, G. H.
- Wheatland formation: Judson, 3.
- Winston beds: Kottlowski, 8.
- Chalk Bluff formation: Hendrickson.
- Cherry Canyon formation: Newell, 2; Roswell Geol. Soc., 1. *See also* Delaware Mountain group.
- Chinle formation: Allen, J. E., 8; Bachman, G. O., 1; Griggs, 1; Lookingbill, 2; McKee, 3; N. Mex. Geol. Soc., 1; Reynolds, C. B., 3; Smith, C. T., 3; Tonking. *See also* Dockum group.
- Chuska sandstone: Allen, J. E., 8; Wright, H. E., 2.
- Cieneguilla limburgite: Stearns, C. E., 2, 3.
- Cisneros basalt: Barker.
- Clayton basalt: Wood, G. H.
- Cliff House formation: Bozanic; Hayes, 2. *See also* Mesaverde group.
- Climate, Cenozoic: Antevs, 3; Leopold, 1; Sears, P. B.
- Coal fields: *see Economic Geology*
- Coane formation: Kottlowski, 2.
- Colorado shale: Jicha, 4.
- Conejos andesite: Barker.
- Contadero formation: Flower, 3, 6; Kottlowski, 9; Sandeen, 3.
- Council Springs limestone: Kottlowski, 2.
- Cretaceous: Baltz, E. H., 2; Cobban, 2; McKee, 1; Nagel; Sharp, K. D.; Spiegel, 3; Willard; Zeller, R. A., 1.
- Animas formation: Silver, 2.
- Benton formation: Bachman, G. O., 1; Panhandle Geol. Soc., 2.
- Carlile shale: Griggs, 1; Levings; Stearns, C. E., 1; Wood, G. H.
- Cliff House formation: Bozanic; Hayes, 2.
- Colorado shale: Jicha, 4.

Historical and Stratigraphic Geology (continued)

Correlation: Cobban, 2.

Crevasse Canyon formation: Allen, J. E., 8, 9; Tonking.

Dakota formation: Allen, J. E., 8; Bachman, G. O., 1; Bass; Bozanic; Burton, 1, 2; Bushnell, 3; Griggs, 1; Kottlowski, 9; Krumbein, 2; Levings; Lookingbill, 2; Lyons; N. Mex. Geol. Soc., 1, 2; Panhandle Geol. Soc., 2; Reese, 1; Reynolds, C. B., 3; Sandeen, 3; Silver, 2, 6; Smith, C. T., 3; Stearns, C. B., 1; Thompson, S., 3; Tonking; Wilpolt; Wood, G. H.

Fruitland formation: Hayes, 2; Reese, 2; Silver, 2.

Gallup sandstone: Allen, J. E., 8.

Graneros shale: Griggs, 1; Levings; Stearns, C. E., 1.

Greenhorn limestone: Griggs, 1; Levings; Stearns, C. E., 1; Wood, G. H.

Kirtland formation: Grinnell; Hayes, 2; Silver, 2.

La Cruz Peak formation: Tonking.

Lewis formation: Bozanic; Hayes, 2.

Mancos shale: Allen, J. E., 8; Bozanic; Bushnell, 3; Cobban, 1; Hayes, 2; Kottlowski, 9; Krumbein, 2; Lookingbill, 2; N. Mex. Geol. Soc., 1, 2; Reynolds, C. B., 3; Sandeen, 3; Silver, 2, 6; Smith, C. T., 3; Stearns, C. E., 1; Thompson, S., 3; Tonking; Wilpolt.

McRae formation: Bushnell, 2, 3; Kelley, V. C., 6; Kottlowski, 6; Silver, 6; Thompson, S., 3.

Menefee formation: Allen, J. E., 8, 9; Bozanic; Hayes, 2.

Mesaverde group: Allen, J. E., 6-9; Bozanic; Bushnell, 3; Hayes, 2; Kottlowski, 9; Krumbein, 2; Lookingbill, 2; N. Mex. Geol. Soc., 1, 2; Reynolds, C. B., 3; Sandeen, 3; Silver, 2, 6; Stearns, C. E., 1; Thompson, S., 3; Vine; Wilpolt.

Niobrara formation: Griggs, 1; Levings; Panhandle Geol. Soc., 2; Stearns, C. E., 1; Wood, G. H.

Ojo Alamo sandstone: Silver, 2.

Pictured Cliffs formation: Bozanic; Caldwell; Hayes, 2; Reese, 2.

Pierre shale: Levings; Panhandle Geol. Soc., 2; Wood, G. H.

Point Lookout formation: Bozanic; Hayes, 2.

Purgatoire formation: Griggs, 1; Levings; Panhandle Geol. Soc., 2; Smith, W. H.; Wood, G. H.

Sarten sandstone: Jicha, 4.

Tohatchi formation: Allen, J. E., 6-8.

Trinidad sandstone: Levings; Panhandle Geol. Soc., 2; Wood, G. H.

Vermejo formation: Levings; Panhandle Geol. Soc., 2; Wood, G. H.

Volcanics: Flege.

Crevasse Canyon formation: Allen, J. E., 8, 9; Tonking. *See also* Mesa-verde group.

Cutler formation: Lookingbill, 2; Read, 1.

Cutter formation: Flower, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6. *See also* Montoya group.

Dakota formation: Allen, J. E., 8; Bachman, G. O., 1; Bass; Bozanic; Burton, 1, 2; Bushnell, 3; Griggs, 1; Kottlowski, 9; Krumbein, 2; Levings; Lookingbill, 2; Lyons; N. Mex. Geol. Soc., 1, 2; Panhandle Geol. Soc., 2; Reese, 1; Reynolds, C. B., 3; Sandeen, 3; Silver, 2, 6; Smith, C. T., 3; Stearns, C. E., 1; Thompson, S., 3; Tonking; Wilpolt; Wood, G. H.

Datil volcanics: Griggs, 4; Johnson, J. T.; Kottlowski, 6, 8; Spiegel, 3; Tonking; Wilpolt.

Delaware Mountain group: Hendrickson; Hull; Rigby, 1. *See also* Bell Canyon formation; Brushy Canyon formation; Cherry Canyon formation.

Del Cuerto formation: Kottlowski, 2.

Devonian: Cooper, J. C., 2; Pray, 7.

Canutillo formation: Flower, 2, 3; Sandeen, 3.

Contadero formation: Flower, 3, 6; Kottlowski, 9; Sandeen, 3.

Onate formation: Flower, 3, 6; Jahns, 8; Kottlowski, 9; Roswell Geol. Soc., 6; Sandeen, 3.

Percha shale: Cooper, G. A., 1, 2; Flower, 3, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kottlowski, 9; Kuellmer, 2; Miller, A. K.; Sandeen, 3; Silver, 6.

Sly Gap formation: Cooper, G. A., 2; Flower, 3, 6; Kottlowski, 9; Roswell Geol. Soc., 6; Sandeen, 3.

Dewey Lake redbeds: Roswell Geol. Soc., 1.

Deza formation: Wright, H. E., 3.

- Dockum group: Bushnell, 3; Griggs, 1; Hendrickson; Howard; Kottlowski, 9; Levings; N. Mex. Geol. Soc., 2; Roswell Geol. Soc., 6; Sidwell, 2; Spiegel, 3; Wilpolt; Wood, G. H. *See* also Chinle formation; Santa Rosa formation.
- Dona Ana County: Kottlowski, 3-6, 8, 9.
- Dorado basalt: Barker.
- El Paso group: Flower, 2, 3, 5, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellmer, 2; N. Mex. Geol. Soc., 2; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6. *See* also Bat Cave formation: Sierrite formation.
- Embudo granite: Montgomery, 2.
- Entrada sandstone: Allen, J. E., 8; Griggs, 1; Harshbarger, 1; Levings; Lookingbill, 2; Panhandle Geol. Soc., 2; Reynolds, C. B., 3; Smith, C. T., 3.
- Espinazo volcanics: Stearns, C. E., 2, 3.
- Evaporites: Krumbein, 1; Sloss; Stewart, F. H.
- Fra Cristobal Mountains: Thompson, S., 1-3.
- Fresnal group: Looke. *See* also Bruton formation.
- Fruitland formation: Hayes, 2; Reese, 2; Silver, 2.
- Fusselman formation: Flower, 3, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellmer, 2; N. Mex. Geol. Soc., 2; Pray, 2, 4, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6.
- Galisteo formation: Baldwin, 3; Stearns, C. E., 3.
- Gallup sandstone: Allen, J. E., 8. *See* also Mesaverde group.
- Gamero formation: Allen, J. E., 8; Leopold, 2.
- Gas fields: *see Economic Geology*
- Gatuna formation: Hendrickson.
- Gila conglomerate: Heindl.
- Glorieta formation: Flower, 3; Kottlowski, 9; N. Mex. Geol. Soc., 5; Otte, 1; Read, C. B., 1; Roswell Geol. Soc., 4, 6; Sandeen, 3; Smith, C. T., 3; Tonking; Wilpolt.
- Goat Seep formation: Hendrickson; Newell, 2.
- Graneros shale: Griggs, 1; Levings; Stearns, C. E., 1.
- Grayburg formation: Moran, 2; Newell, 2; Roswell Geol. Soc., 1.
- Greenhorn limestone: Griggs, 1; Levings; Stearns, C. E., 1; Wood, G. H.
- Guadalupe County: Gardner, J. H.
- Guadalupe Mountains: Bradley; Roswell Geol. Soc., 1, 3; West Texas Geol. Soc., 1.
- Gym limestone: Bogart; Flower, 3; Kelley, V. C., 5.
- Hells Mesa rhyolite: Tonking.
- Helms formation: Flower, 3, 6; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3.
- Hinsdale (volcanic) series: Barker.
- Hogback quadrangle: Beaumont, 2.
- Holder formation: Otte, 1.
- Hueco limestone: Bogart; Flower, 2, 3; Kottlowski, 9; N. Mex. Geol. Soc., 5; Roswell Geol. Soc., 1; Thompson, M. L., 2.
- Huertas limestone: Reynolds, C. B., 3.
- Jemez Mountains: Armstrong.
- Jornada del Muerto: Albright, J. L., 2.
- Jurassic: McKee, 1; Ogden; Rapaport, 1; Smith, S. W.; Weldon; Wright, H. E., 1.
- Carmel formation: N. Mex. Geol. Soc., 1.
- Entrada sandstone: Allen, J. E., 8; Griggs, 1; Harshbarger, 1; Levings; Lookingbill, 2; Panhandle Geol. Soc., 2; Reynolds, C. B., 3; Smith, C. T., 3.
- Morrison formation: Allen, J. E., 8; Bachman, G. O., 1; Chenoweth; Craig, 1, 2; Finch; Griggs, 1; Harshbarger, 1; Levings; Lookingbill, 2; N. Mex. Geol. Soc., 1, 2; Panhandle Geol. Soc., 2; Reynolds, C. B., 3; Smith, C. T., 3; Wood, G. H.
- Naranjo formation: Bachman, G. O., 1; Wood, G. H.
- Ocate sandstone: Bachman, G. O., 1; Wood, G. H.
- Red Mesa formation: N. Mex. Geol. Soc., 1.
- Summerville formation: Allen, J. E., 8; Harshbarger, 1.
- Thoreau formation: Smith, C. T., 3.
- Todilto limestone: Allen, J. E., 8; Finch; Lookingbill, 2; N. Mex. Geol. Soc., 1; Reynolds, C. B., 3; Smith, C. T., 3.
- Wanakah formation: Bachman, G. O., 1; Wood, G. H.
- Wingate sandstone: Allen, J. E., 8; Harshbarger, 1; N. Mex. Geol. Soc., 1; Smith, C. T., 3.

Historical and Stratigraphic Geology (continued)

- Kelly formation: Armstrong; Jahns, 8; Jicha, 4.
- Kiawa Mountain formation: Barker.
- Kirtland formation: Grinnell; Hayes, 2; Silver, 2.
- Kirtland quadrangle: Beaumont, 3.
- Kneeling Nun rhyolite tuff: Jicha, 4.
- Laborcita formation: Otte, 1.
- La Cruz Peak formation: Tonking.
- Ladron Mountains: Armstrong.
- La Jara Peak basalt: Tonking.
- Lake Valley formation: Bowsher, 1, 2; Flower, 3, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellmer, 2; N. Mex. Geol. Soc., 2; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6; Spiegel, 3.
- Lake Valley quadrangle: Jicha, 1, 2, 4; Kottlowski, 9.
- Lanoria quartzite: Flower 2.
- Las Cruces formation: Flower, 2, 6; Kottlowski, 9.
- Las Ferveras formation: Bachman, G. O., 1.
- Las Tablas quadrangle: Barker.
- Lewis formation: Bozanic; Hayes, 2.
- Lexicon:
San Juan Basin: Momper.
Through 1938: Wilmarth, M. G.
- Lincoln County: Bodine.
- Lobo formation: Jicha, 4.
- Log Springs formation: Armstrong.
- Lordsburg quadrangle: Flege.
- Los Pinos gravels: Barker.
- Los Pinos Mountains: Staatz.
- Luna County: Bogart.
- Macho pyroxene andesite: Jicha, 4.
- Madera formation: Brill, 1; Kottlowski, 2; Lookingbill, 2; N. Mex. Geol. Soc., 2; Reynolds, C. B., 3; Wilpolt. *See also* Magdalena group.
- Magdalena group: Bachman, G. O., 1; Baldwin, 3; Jahns, 8; Jicha, 4; Kalish; Kelley, V. C., 6; Kottlowski, 9; Kuellmer, 2; N. Mex. Geol. Soc., 2; Panhandle Geol. Soc., 2; Roswell Geol. Soc., 4, 6; Sidwell, 1-4; Silver, 6; Spiegel, 3; Thompson, M. L., 2; Thompson, S., 3; Wanless, 3; Wood, G. H. *See also* Bar B formation; Madera formation; Nakaye formation; Red House formation; Sandia formation.
- Magdalena Mountains: Kalish.
- Man: *see Paleontology*, Man
- Mancos shale: Allen, J. E., 8; Bozanic; Bushnell, 3; Cobban, 1; Hayes, 2; Kottlowski, 9; Krumbein, 2; Lookingbill, 2; N. Mex. Geol. Soc., 1, 2; Reynolds, C. B., 3; Sandeen, 3; Silver, 2, 6; Smith, C. T., 3; Stearns, C. E., 1; Thompson, S., 3; Tonking; Wilpolt.
- Manzano group: *see* Abo formation; San Andres formation; Yeso formation.
- Manzano Mountains: Armstrong; Basham; Dorman.
- Maquinita granodiorite: Barker.
- McRae formation: Bushnell, 2, 3; Kelley, V. C., 6; Kottlowski, 6; Silver, 6; Thompson, S., 3.
- Menefee formation: Allen, J. E., 8, 9; Bozanic; Hayes, 2. *See also* Mesaverde group.
- Mesaverde group: Allen, J. E., 6-9; Bozanic; Bushnell, 3; Hayes, 2; Kottlowski, 9; Krumbein, 2; Lookingbill, 2; N. Mex. Geol. Soc., 1, 2; Reynolds, C. B., 3; Sandeen, 3; Silver, 2, 6; Stearns, C. E., 1; Thompson, S., 3; Vine; Wilpolt. *See also* Cliff House formation; Crevasse Canyon formation; Gallup sandstone; Menefee formation; Pictured Cliffs formation; Point Lookout formation; Tohatchi formation.
- Mesozoic: *see* Triassic; Jurassic; Cretaceous
- Mimbres Peak formation: Jicha, 4.
- Mines: *see Economic Geology*
- Mining districts: *see Economic Geology*
- Mississippian: Armstrong; Cooper, J. C., 2.
- Arroyo Penasco formation: Armstrong.
- Caballero formation: Flower, 3, 6; Jicha, 4; Kottlowski, 9; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3.
- Caloso formation: Armstrong.
- Helms formation: Flower, 3, 6; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3.
- Huertas limestone: Reynolds, C. B., 3.
- Kelly formation: Armstrong; Jahns, 8; Jicha, 4.
- Lake Valley formation: Bowsher, 1, 2; Flower, 3, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kottlowski, 9;

- Kuellermer, 2; N. Mex. Geol. Soc., 2; Pray, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6; Spiegel, 3.
- Las Cruces formation: Flower, 2, 6; Kottlowski, 9.
- Rancheria formation: Flower, 3, 6; Kottlowski, 9; Pray, 7; Roswell Geol. Soc., 6.
- Montoya group: Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellermer, 2; N. Mex. Geol. Soc., 2; Pray, 4, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6. *See also Aleman formation; Cable Canyon formation; Cutter formation; Upham dolomite.*
- Moppin metavolcanics: Barker.
- Mora County: Bachman, G. O., 1; Bass; Raitz.
- Morrison formation: Allen, J. E., 8; Bachman, G. O., 1; Chenoweth; Craig, 1, 2; Finch; Griggs, 1; Harshbarger, 1; Levings; Lookingbill, 2; McKee, 2, 3; N. Mex. Geol. Soc., 1, 2; Panhandle Geol. Soc., 2; Reynolds, C. B., 3; Smith, C. T., 3; Wood, G. H.
- Moya formation: Kottlowski, 2.
- Nacimiento formation: Silver, 2.
- Nacimiento Mountains: Armstrong.
- Nakaibito formation: Allen, J. E., 8; Leopold, 2.
- Nakaye formation: Kelley, V. C., 6; Silver, 6. *See also Magdalena group.*
- Naranjo formation: Bachman, G. O., 1; Wood, G. H.
- Naschitti quadrangle: O'Sullivan, 2.
- Niobrara formation: Griggs, 1; Levings; Panhandle Geol. Soc., 2; Stearns, C. E., 1; Wood, G. H.
- Northeastern New Mexico: Levings; Maher, 1; Panhandle Geol. Soc., 1-3; Wood, G. H.
- Northern New Mexico: Armstrong; Brill, 1.
- Ocate sandstone: Bachman, G. O., 1; Wood, G. H.
- Ogallala formation: Griggs, 1; Hale, 1; Hendrickson; Howard; Judson, 4; Levings; Roswell Geol. Soc. 4; Wood, G. H.
- Oil fields: *see Economic Geology*
- Ojo Alamo sandstone: Silver, 2.
- Onate formation: Flower, 3, 6; Jahns, 8; Kottlowski, 9; Roswell Geol. Soc., 6; Sandeen, 3.
- Ordovician:
- Aleman dolomite: Flower, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Silver, 6.
- Bat Cave formation: Flower, 3, 6; Jahns, 8; Kelley, V. C., 6; Silver, 6.
- Cable Canyon formation: Flower, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Silver, 6.
- Cutter formation: Flower, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6.
- El Paso group: Flower, 2, 3, 5, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellermer, 2; N. Mex. Geol. Soc., 2; Pray, 2; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6.
- Montoya group: Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellermer, 2; N. Mex. Geol. Soc., 2; Pray, 4, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6.
- Sierrite formation: Flower, 3, 6; Jahns, 8; Kelley, V. C., 6; Silver, 6.
- Simpson group: Morton; Roswell Geol. Soc., 6.
- Upham dolomite: Flower, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Silver, 6.
- Valmont formation: Jahns, 8; Pray, 4; Roswell Geol. Soc., 6.
- Orejon andesite: Kottlowski, 9.
- Ortega formation: Barker; Montgomery, 2.
- Ortiz pediment gravels: Reynolds, C. B., 3.
- Paleozoic: *see Cambrian; Ordovician; Silurian; Devonian; Mississippian; Pennsylvanian; Permian*
- Palm Park formation: Kelley, V. C., 6; Kottlowski, 8; Silver, 6.
- Palomas gravels: Jahns, 8; Kottlowski, 8.
- Pederal Hills: Roswell Geol. Soc., 4.
- Pennsylvanian: Maher, 1; McKee, 1; Pittman; Pray, 5; Sandeen, 3; Stever; Szabo; Toomey; Turnbow; Wanless, 1, 2; Warn.
- Adobe formation: Kottlowski, 2.
- Bar B formation: Kelley, V. C., 6; Silver, 6.
- Bolander group: Kottlowski, 2.
- Bruton formation: Kottlowski, 2.
- Burrego formation: Kottlowski, 2.
- Coane formation: Kottlowski, 2.
- Council Springs limestone: Kottlowski, 2.
- Del Cuerto formation: Kottlowski, 2.

Historical and Stratigraphic Geology (continued)

- Fresnal group: Looke.
 Holder formation: Otte, 1.
 Hueco limestone: *see* Permian, Hueco limestone
 Log Springs formation: Armstrong.
 Madera formation: Brill, 1; Jahns, 8; Kottlowski, 2; Lookingbill, 2; N. Mex. Geol. Soc., 2; Reynolds, C. B., 3; Wilpolt.
 Magdalena group: Bachman, G. O., 1; Baldwin, 3; Griggs, 1; Jahns, 8; Jicha, 4; Kalish; Kelley, V. C., 6; Kottlowski, 9; Kuellmer, 2; N. Mex. Geol. Soc., 2; Panhandle Geol. Soc., 2; Roswell Geol. Soc., 4, 6; Sidwell, 1-4; Silver, 6; Spiegel, 3; Thompson, M. L., 2; Thompson, S., 3; Wanless, 3; Wood, G. H.
 Moya formation: Kottlowski, 2.
 Nakaye formation: Kelley, V. C., 6; Silver, 6.
 Red House formation: Kelley, V. C., 6; Silver, 6.
 Reefs: Otte, 1, 2; Plumley, 1; Wells.
 Sandia formation: Brill, 1; Flower, 3; Jahns, 8; Kottlowski, 2; N. Mex. Geol. Soc., 2; Reynolds, C. B., 3; Wilpolt.
 Story formation: Kottlowski, 2.
 Percha shale: Cooper, G. A., 1, 2; Flower, 3, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kottlowski, 9; Kuellmer, 2; Miller, A. K.; Sandeen, 3; Silver, 6.
 Permian: Krumbein, 1; Lloyd, 1; Mather, 1; McKee, 1; Panhandle Geol. Soc., 2; Sloss; Stewart, F. H.; Szabo; Toomey; Turnbow.
 Abo formation: Flower, 3; Jahns, 8; Kelley, V. C., 6; Kottlowski, 2, 9; Kuellmer, 2; N. Mex. Geol. Soc., 1, 2, 5; Otte, 1; Pray, 6, 7; Read, 1; Reynolds, C. B., 3; Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Silver, 6; Spiegel, 3; Thompson, S., 3; Tonking; Wilpolt.
 Bell Canyon formation: Newell, 2; Roswell Geol. Soc., 1.
 Bernal formation: Bachman, G. O., 1; N. Mex. Geol. Soc., 5.
 Bone Spring formation: Newell, 2; Roswell Geol. Soc., 1.
 Brushy Canyon formation: Newell, 2; Roswell Geol. Soc., 1.
 Bursum formation: Flower, 3; Kottlowski, 2, 9; N. Mex. Geol. Soc., 5; Pray, 6, 7; Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Spiegel, 3; Thompson, M. L., 2; Wilpolt.
 Capitan formation: Bradley; Hale, 3; Hendrickson; Newell, 2.
 Capitan reef: Cloud; Hickok; Roswell Geol. Soc., 1.
 Carlsbad formation: Hendrickson.
 Castile formation: Hale, 3; Hendrickson; Olive; Roswell Geol. Soc., 1.
 Chalk Bluff formation: Hendrickson.
 Cherry Canyon formation: Newell, 2; Roswell Geol. Soc., 1.
 Cutler formation: Lookingbill, 2; Read, 1.
 Delaware Mountain group: Hendrickson; Hull; Newell, 2; Rigby, 1.
 Dewey Lake redbeds: Roswell Geol. Soc., 1.
 Glorieta formation: Flower, 3; Kottlowski, 9; N. Mex. Geol. Soc., 5; Otte, 1; Read, 1; Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Smith, C. T., 3; Tonking; Wilpolt.
 Goat Seep formation: Hendrickson; Newell, 2.
 Grayburg formation: Moran, 2; Newell, 2; Roswell Geol. Soc., 1.
 Gym limestone: Bogart; Flower, 3; Kelley, V. C., 5.
 Hueco limestone: Bogart; Flower, 2, 3; Kottlowski, 9; N. Mex. Geol. Soc., 5; Roswell Geol. Soc., 1; Thompson, M. L., 2.
 Laborcita formation: Otte, 1.
 Lobo formation: Jicha, 4.
 Pierce Canyon formation: Miller, D. N.
 Queen formation: Moran, 2; Newell, 2; Roswell Geol. Soc., 1.
 Red Tanks formation: Flower, 3; Roswell Geol. Soc., 4.
 Reefs: Newell, 2; Wells.
 Rustler formation: Hendrickson; Roswell Geol. Soc., 1.
 Salado formation: Hendrickson; Roswell Geol. Soc., 1.
 San Andres formation: Bachman, G. O., 1; Boyd, D. W.; Brill, 1; Chisholm; Flower, 3; Griggs, 1; Hendrickson; Jahns, 8; Kelley, V. C., 6; Kottlowski, 9; Newell, 2; N. Mex. Geol. Soc., 1, 2, 5; Otte, 1; Pray, 6, 7; Read, 1; Reynolds, C. B., 3;

- Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Sidwell, 2; Silver, 6; Smith, C. T., 3; Spiegel, 3; Thompson, S., 3; Tonking; Wilpolt.
- Sangre de Cristo formation: Bachman, G. O., 1; Brill, 1; Girggs, 1; N. Mex. Geol. Soc., 2; Roswell Geol. Soc., 4; Sidwell, 2; Wood, G. H.; Zeller, H. D., 3.
- Seven Rivers formation: Newell, 2; Roswell Geol. Soc., 1.
- Tansill formation: Newell, 2; Roswell Geol. Soc., 1.
- Victorio Peak formation: Newell, 2.
- Yates formation: Newell, 2; Roswell Geol. Soc., 1.
- Yeso formation: Bachman, G. O., 1; Brill, 1; Flower, 3; Griggs, 1; Jahns, 8; Kelley, V. C., 6; Kottlowski, 9; Newell, 2; N. Mex. Geol. Soc., 1, 2, 5; Otte, 1; Pray, 6, 7; Read, 1; Reynolds, C. B., 3; Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Sidwell, 2; Silver, 6; Smith, C. T., 3; Spiegel, 3; Thompson, S., 3; Tonking; Wilpolt.
- Permian Basin: Anon., 29; Bradley; Hendrickson; Hull; Johnston, C. H.; Maley; N. Mex. Geol. Soc., 4; Olive; Roswell Geol. Soc., 1, 3; Sloss; Stewart, F. H.; Weimer; Wells.
- Petaca schist: Barker.
- Pictured Cliffs formation: Bozanic; Caldwell; Hayes, 2; Reese, 2. *See* also Mesaverde group.
- Picuris tuff: Montgomery, 2.
- Pierce Canyon formation: Miller, D. N.
- Pierre shale: Levings; Panhandle Geol. Soc., 2; Wood, G. H.
- Point Lookout formation: Bozanic; Hayes, 2. *See* also Mesaverde group.
- Poison Canyon formation: Panhandle Geol. Soc., 2; Wood, G. H.
- Poleo formation: Lookingbill, 2.
- Pollack quartz latite: Jicha, 4.
- Popotosa formation: Kottlowski, 6; Spiegel, 3.
- Precambrian:
 Black Range: Kuellmer, 2.
 Burned Mountain metarhyolite: Barker.
 Caballo Mountains: Kelley, V. C., 6.
 Embudo granite: Montgomery, 2.
- Fra Cristobal Mountains: Thompson, S., 3.
- Kiawa Mountain formation: Barker.
- Lake Valley quadrangle: Jicha, 4.
- Lanoria quartzite: Flower, 2.
- Los Pinos Mountains: Staatz.
- Magdalena Mountains: Kalish.
- Manzano Mountains: Basham.
- Maquinita granodiorite: Barker.
- Moppin metavolcanics: Barker.
- Northeastern New Mexico: Panhandle Geol. Soc., 2; Wood, G. H.
- Ortega formation: Barker; Montgomery, 2.
- Pegmatites: Barker.
- Permian Basin: Flawn, 1-3.
- Petaca schist: Barker.
- Priest granite: Dorman.
- Rio Grande depression: N. Mex. Geol. Soc., 2.
- Sacramento Mountains: Roswell Geol. Soc., 6.
- Sandia granite: Reynolds, C. B., 3.
- Sandia Mountains: Hayes, 1; Reynolds, C. B., 3.
- Sangre de Cristo Mountains: Bachman, G. O., 1; Baldwin, 3; Kottlowski, 1; Sidwell, 2.
- Socorro County: Spiegel, 3; Wilpolt.
- Tres Piedras granite: Barker.
- Tularosa Basin: Sandeen, 3.
- Vadito formation: Montgomery, 2.
- Priest granite: Dorman.
- Puertecito quadrangle: Tonking.
- Purgatoire formation: Griggs, 1; Levings; Panhandle Geol. Soc., 2; Smith, W. H.; Wood, G. H.
- Quaternary: *see* Cenozoic
- Quay County: Judson, 2, 3; Smith, S. W.; Smith, W. H.
- Queen formation: Moran, 2; Newell, 2; Roswell Geol. Soc., 1.
- Rancheria formation: Flower, 3, 6; Kottlowski, 9; Pray, 7; Roswell Geol. Soc., 6.
- Raton basalt: Wood, G. H.
- Raton formation: Levings; Panhandle Geol. Soc., 2; Wood, G. H.
- Raton Mesa: Levings.
- Razorback formation: Jicha, 4.
- Red House formation: Kelley, V. C., 6; Silver, 6. *See* also Magdalena group.
- Red Mesa formation: N. Mex. Geol. Soc., 1.
- Red Tanks formation: Flower, 3; Roswell Geol. Soc., 4.

Historical and Stratigraphic Geology (continued)

- Reefs: Cloud; Hickok; Newell, 2; Otte, 1, 2; Plumley, 1; Roswell Geol. Soc., 1; Wells.
- Rio Arriba County: Barker; Lookingbill, 1, 2; Sears, R. S.
- Rio Grande depression: Albright, J. L., 2; Fagadau; N. Mex. Geol. Soc., 2, 3, 5.
- Ritito conglomerate: Barker.
- Rubio Peak formation: Jicha, 4.
- Rustler formation: Hendrickson; Roswell Geol. Soc., 1.
- Sacramento Mountains: Otte, 1, 2; Plumley, 1; Pray, 1-7; Roswell Geol. Soc., 3, 6.
- Salado formation: Hendrickson; Roswell Geol. Soc., 1.
- San Andres formation: Bachman, G. O., 1; Boyd, D. W.; Brill, 1; Chisholm; Flower, 3; Griggs, 1; Hendrickson; Jahns, 8; Kelley, V. C., 6; Kottlowski, 9; Newell, 2; N. Mex. Geol. Soc., 1, 2, 5; Otte, 1; Pray, 6, 7; Read, 1; Reynolds, C. B., 3; Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Sidwell, 2; Silver, 6; Smith, C. T., 3; Spiegel, 3; Thompson, S., 3; Tonking; Wilpolt. *See also* Manzano group.
- Sand Canyon formation: Judson, 2, 3.
- Sandia formation: Brill, 1; Flower, 3; Kottlowski, 2; N. Mex. Geol. Soc., 2; Reynolds, C. B., 3. *See also* Magdalena group.
- Sandia granite: Reynolds, C. B., 3.
- Sandia Mountains: Hayes, 1; Reynolds, C. B., 3; Toomey.
- Sangre de Cristo formation: Bachman, G. O., 1; Brill, 1; N. Mex. Geol. Soc., 2; Roswell Geol. Soc., 4; Sidwell, 2; Wood, G. H.; Zeller, H. D., 3.
- Sangre de Cristo Mountains: Armstrong; Bachman, G. O., 1; Brill, 1; Griggs, 1; Kottlowski, 1; Montgomery, 2.
- San Jon formation: Judson, 2, 3.
- San Juan Basin: Allen, J. E., 6-10; Anderson, R. L.; Baltz, E. H., 2; Beaumont, 1-3; Bozanic; Burton, 1, 2; Caldwell; Callaghan, 1; Chenoweth; Cooper, J. C., 2; Craig, 1, 2; DiGiambattista; Four Corners Geol. Soc., 1, 2; Grinnell; Harshbarger, 1; Johnston, H. C.; Momper; N. Mex. Geol. Soc., 1; O'Sullivan, 2; Read, 1; Reese, 1, 2; Silver, 2; Smith, C. T., 1-4; Turnbow; Vorbe; Wengerd, 2, 3.
- San Miguel County: Bass; Griggs, 1; Pittman; Stever; Weldon.
- San Pedro Mountains: Armstrong.
- Santa Fe County: Baldwin, 1, 3; Stearns, C. E., 1-3; Sun, 1, 2.
- Santa Fe group: Baldwin, 3; Jahns, 7, 8; Jicha, 4; Kelley, V. C., 6; Kottlowski, 6, 8; LeMone; Montgomery, 2; N. Mex. Geol. Soc., 1, 2; Reynolds, C. B., 3; Silver, 6; Spiegel, 3; Stearns, C. E., 3; Thompson, S., 3; Tonking; Wilpolt.
- Santa Rita quadrangle: Hernon, 1.
- Santa Rosa formation: Bachman, G. O., 1; Griggs, 1; Reynolds, C. B., 3; Sidwell, 2. *See also* Dockum group.
- Sarten sandstone: Jicha, 4.
- Servilleta formation: Montgomery, 2.
- Seven Rivers formation: Newell, 2; Roswell Geol. Soc., 1.
- Shinarump conglomerate: Allen, J. E., 8; McKee, 3.
- Ship Rock quadrangle: Beaumont, 2.
- Sierrite formation: Flower, 3, 6; Jahns, 8; Kelley, V. C., 6; Silver, 6. *See also* El Paso group.
- Silurian, Fusselman formation: Flower, 3, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6; Kuellmer, 2; N. Mex. Geol. Soc., 2; Pray, 2, 4, 7; Roswell Geol. Soc., 6; Sandeen, 3; Silver, 6.
- Simpson group: Morton; Roswell Geol. Soc., 6.
- Sly Gap formation: Cooper, G. A., 2; Flower, 3, 6; Kottlowski, 9; Roswell Geol. Soc., 6; Sandeen, 3.
- Socorro County: Kottlowski, 2; Spiegel, 3; Tonking; Wilpolt.
- Southeastern New Mexico: *see* Permian Basin
- Southwestern New Mexico: N. Mex. Geol. Soc., 3.
- Spears latite: Tonking.
- Story formation: Kottlowski, 2.
- Sugarlump tuffs: Jicha, 4.
- Summerville formation: Allen, J. E., 8; Harshbarger, 1.
- Tansill formation: Newell, 2; Roswell Geol. Soc., 1.
- Tertiary: *see* Cenozoic
- Tesuque formation: Baldwin, 3; Kottlowski, 6.

- Thoreau formation: Smith, C. T., 3.
 Thoreau quadrangle: Smith, C. T., 3.
 Thurman formation: Jahns, 7; Kelley, V. C., 6; Kottlowski, 8; Silver, 6.
 Toadlena quadrangle: Ziegler.
 Todilto limestone: Allen, J. E., 8; Finch; Lookingbill, 2; N. Mex. Geol. Soc., 1; Reynolds, C. B., 3; Smith, C. T., 3.
 Tohatchi formation: Allen, J. E., 6-8. *See also Mesaverde group.*
 Tohatchi quadrangle: Allen, J. E., 6-9.
 Treasure Mountain welded tuff: Barker.
 Tres Piedras granite: Barker.
 Triassic: Graham, J. W.; McKee, 1.
 Chinle formation: Allen, J. E., 8; Bachman, G. O., 1; Griggs, 1; Lookingbill, 2; McKee, 3; N. Mex. Geol. Soc., 1; Reynolds, C. B., 3; Smith, C. T., 3; Tonking.
 Dockum group: Bushnell, 3; Griggs, 1; Hendrickson; Howard; Kottlowski, 9; Levings; N. Mex. Geol. Soc., 2; Roswell Geol. Soc., 6; Sidwell, 2; Spiegel, 3; Wilpolt; Wood, G. H.
 Poleo formation: Lookingbill, 2.
 Santa Rosa sandstone: Bachman, G. O., 1; Griggs, 1; Reynolds, C. B., 3; Sidwell, 2.
 Shinarump conglomerate: Allen, J. E., 8; McKee, 3.
 Trinidad sandstone: Levings; Panhandle Geol. Soc., 2; Wood, G. H.
 Tularosa Basin: Albright, J. L., 2; Sandeen, 3.
 Upham dolomite: Flower, 6; Jahns, 8; Jicha, 4; Kelley, V. C., 6. *See also Montoya group.*
 Uvas basaltic andesite: Kottlowski, 8.
 Vadito formation: Montgomery, 2.
 Valmont formation: Jahns, 8; Pray, 4; Roswell Geol. Soc., 6.
 Vermejo formation: Levings; Panhandle Geol. Soc., 2; Wood, G. H.
 Victorio Peak formation: Newell, 2.
 Volcanic rocks: Bundy; Callaghan, 1, 5; Elston, 2; Flege; Griggs, 4; Jahns, 7, 8; Jicha, 2, 4, 7; Kalish; Kottlowski, 3, 4, 6, 9; Muehlberger; Stearns, C. E., 2, 3; Sun, 1, 2; Tonking; Wilpolt; Wood, G. H.
 Wanakeh formation: Bachman, G. O., 1; Wood, G. H.
 Wheatland formation: Judson, 3.
 White Sands: U. S. Natl. Park Service, 2.
 Wingate sandstone: Allen, J. E., 8; Harshbarger, 1; N. Mex. Geol. Soc., 1; Smith, C. T., 3.
 Winston beds: Kottlowski, 8.
 Yates formation: Newell, 2; Roswell Geol. Soc., 1.
 Yeso formation: Bachman, G. O., 1; Brill, 1; Flower, 3; Griggs, 1; Jahns, 8; Kelley, V. C., 6; Kottlowski, 9; Newell, 2; N. Mex. Geol. Soc., 1, 2, 5; Otte, 1; Pray, 6, 7; Read, 1; Reynolds, C. B., 3; Roswell Geol. Soc., 1, 4, 6; Sandeen, 3; Sidwell, 2; Silver, 6; Smith, C. T., 3; Spiegel, 3; Tonking; Thompson, S., 3; Wilpolt. *See also Manzano group.*
- ### Maps
- Abbott quadrangle, geologic: Wood, G. H.
 Aeromagnetic survey, Grant county: Dempsey.
 Airborne radioactivity anomaly: U. S. Atomic Energy Comm.
 Base maps: Weber, 2.
 Bibliography, through 1950: Burks.
 Black Hawk district, geologic: Gillerman, 7.
 Black Range, geologic: Kuellmer, 2.
 Burro Mountains, geologic: Gillerman, 1, 7.
 Caballo Mountains, geologic: Doyle; Kelley, V. C., 6.
 Capitan quadrangle, geologic: Allen, J. E., 2.
 Cochiti district, geologic: Bundy.
 Colfax County:
 Geologic: Levings; Wood, G. H.
 Petroleum exploration: Bieberman, 10.
 Curry County, petroleum exploration: Foster, R. W., 2.
 De Baca County, petroleum exploration: Foster, R. W., 3.
 Eddy County:
 Geologic: Hendrickson; Johnston, C. H.
 Ground-water: Hendrickson.
 Fierro-Hanover district, geologic: O'Sullivan, 1.
 Geologic: under various areas throughout this section
 Grant County:
 Aeromagnetic survey: Dempsey.
 Geologic: Gillerman, 1, 7; Jicha, 1, 4; Kuellmer, 2; Lovering; O'Sullivan, 1.

Maps (continued)

- Guadalupe County, petroleum exploration: Bieberman, 11.
- Harding County, petroleum exploration: Bieberman, 12.
- Hermosa district, geologic: Jahns, 6.
- Hidalgo County, geologic: Flege.
- Hogback quadrangle, geologic: Beaumont, 2.
- Jornada del Muerto, geologic: Wilpolt.
- Joyita Hills, geologic: Wilpolt.
- Kirtland quadrangle, geologic: Beaumont, 3.
- Koehler quadrangle, geologic: Wood, G. H.
- Lake Valley manganese district, geologic: Creasey.
- Lake Valley quadrangle, geologic: Jicha, 1, 4.
- Las Tablas quadrangle, geologic: Barker.
- Lea County, geologic: Hale, 1.
- Lincoln County, geologic: Allen, J. E., 2.
- Lordsburg quadrangle, geologic: Flege.
- Luna County, geologic: Jicha, 1, 4.
- Magdalena district, geologic: Johnson, J. T.
- Magdalena Mountains, geologic: Kallish.
- Magnetic survey, Grant County: Dempsey.
- McKinley County, geologic: Allen, J. E., 8; O'Sullivan, 2; Smith, C. T., 3.
- Mineral technology: Weber, 2.
- Mining districts: Northrop, 3.
- Mora County:
Geologic: Bachman, G. O., 1.
Petroleum exploration: Bieberman, 13.
- Mount Laughlin quadrangle, geologic: Wood, G. H.
- Naschitti quadrangle, geologic: O'Sullivan, 2.
- Northeastern New Mexico, geologic: Panhandle Geol. Soc., 1, 3.
- Northwestern New Mexico: *see* San Juan Basin
- Oil and gas exploration:
Colfax County: Bieberman, 10.
Curry County: Foster, R. W., 2.
De Baca County: Foster, R. W., 3.
Guadalupe County: Bieberman, 11.
Harding County: Bieberman, 12.
Mora County: Bieberman, 13.
New Mexico: Dixon, 3.
Permian Basin: Bigelow, 2.
- Quay County: Foster, R. W., 4.
- Rio Arriba County: Bigelow, 1.
- Roosevelt County: Foster, R. W., 7.
- San Juan Basin: Bigelow, 1, 3; Waati.
- San Miguel County: Foster, R. W., 5.
- Socorro County: Foster, R. W., 6.
- Union County: Bieberman, 14.
- Oil and gas fields: Cohee; Dixon, 3.
- Otero County, geologic: Otte, 1.
- Palomas district, geologic: Jahns, 6.
- Permian Basin:
Geologic: Hale, 1; Hendrickson; Johnston, C. H.
Petroleum exploration: Bigelow, 2.
Petroleum exploration: *see* Oil and gas exploration
- Picuris Range, geologic: Montgomery, 2.
- Pipelines, oil and gas: Dixon, 3.
- Potash occurrences: Byrd.
- Puertecito quadrangle, geologic: Tonking.
- Quay County, petroleum exploration: Foster, R. W., 4.
- Radioactivity surveys: U. S. Atomic Energy Comm.
- Rio Arriba County:
Geologic: Barker.
Petroleum exploration: Bigelow, 1.
- Rio Grande area, tectonic: Kelley, V. C., 8.
- Rio Grande Valley, geologic: Wilpolt.
- Roosevelt County, petroleum exploration: Foster, R. W., 7.
- Sacramento Mountains, geologic: Otte, 1.
- Sandoval County, geologic: Bundy.
- Sangre de Cristo Mountains, geologic: Bachman, G. O., 1; Montgomery, 2.
- San Juan Basin:
Geologic: Allen, J. E., 8, 10; Beaumont, 1-3; Finch; Hayes, 2; Hunt; Maher, 1; O'Sullivan, 2; Shoemaker, 1; Silver, 3; Smith, C. T., 3; Stokes, 1; Ziegler.
Petroleum exploration: Bigelow, 1, 3; Waati.
Tectonic: Kelley, V. C., 13; Luedke.
Uranium deposits: Finch; Kelley, V. C., 13; Shoemaker, 1.
- San Juan County, geologic: Beaumont, 1-3; Hayes, 2; O'Sullivan, 2; Stokes, 1; Ziegler.
- San Miguel County:
Geologic: Griggs, 1.
Ground-water: Griggs, 1.

- Petroleum exploration: Foster, R. W., 5.
- Santa Fe County, geologic: Stearns, C. E., 3.
- Santa Rita quadrangle, geologic: Lovering.
- Sierra County, geologic: Doyle; Jicha, 1, 4; Kelley, V. C., 6, 15; Kuellmer, 2.
- Socorro County:
- Geologic: Johnson, J. T.; Kalish; Spiegel, 3; Tonking; Wilpolt.
- Ground-water: Spiegel, 3.
- Petroleum exploration: Foster, R. W., 6.
- Southeastern New Mexico: *see* Permian Basin
- Springer quadrangle, geologic: Wood, G. H.
- Taos County, geologic: Montgomery, 2.
- Tectonic: Am. Assoc. Petrol. Geol.
- San Juan Basin: Kelley, V. C., 13; Luedke.
- Upper Rio Grande area: Kelley, V. C., 8.
- Thoreau quadrangle, geologic: Smith, C. T., 3.
- Toadlena quadrangle, geologic: Ziegler.
- Tohatchi quadrangle, geologic: Allen, J. E., 8.
- Topographic: Weber, 2.
- Union County:
- Geologic: Levings.
- Petroleum exploration: Bieberman, 14.
- Uranium deposits: Schnabel.
- San Juan Basin: Finch; Kelley, V. C., 13; Shoemaker, 1.
- Valencia County, geologic: Johnston, H. C.; Smith, C. T., 3.
- White Signal district, geologic: Gillerman, 8; Granger, H. C., 2.
- Mineralogy**
- Aragonite, Carlsbad Caverns: Black, D. M., 4.
- Augite, Cabezon Peak: Brunton.
- Beryl, Harding pegmatite mine: Jahns, 5.
- Bibliography, through 1950: Burks.
- Calcite:
- "Cave pearls," Carlsbad Caverns: Black, D. M., 2, 3.
- "Cave pearls," Organ district: Alfredo, 1.
- Carnotite:
- Grants district: Weeks.
- Shiprock district: Stokes, 1.
- Chalchuite: *see* Turquoise
- Chalcocite, Rio Arriba County: Gabelman, 2.
- Chinoite, Santa Rita mine: Beck, 4, 6; Givens; Guillemin.
- Clay minerals: Gruner, 6; Reynolds, D. H.; Weber, 1.
- Coffinite, Grants district: Gruner, 6.
- Cuprosklodowskite, Grants district: Gruner, 6.
- Descloizite, Lake Valley district: Bachmann, 1, 2.
- Dolomite, pseudomorphs after aragonite: Andrews, D. A.
- Euxenite: Young, R. W.
- Fluorite: Alfredo, 4.
- Burro Mountains: Gillerman, 1, 6.
- Grants district: Kerr, 2.
- Garnet, Elk Mountain: Jaffe.
- General: Genth, 1, 2; Palache, 1, 2.
- Gypsum: Jicha, 3.
- Halite:
- Laguna del Perro: Woods, B., 7.
- Zuni Salt Lake: Alfredo, 5; Woods, B., 4; Woods, C., 2.
- Hematite:
- Grants district: Kerr, 3.
- Oölitic: Kelley, V. C., 1.
- Iddingsite: Ross.
- Johannsenite, at Vanadium: Allen, V. T., 2.
- Kaolinite, Grants district: Gruner, 6.
- Kyanite, Petaca district: Corey.
- Marcasite, Grants district: Gruner, 6.
- Melanovanadite, Shiprock district: Weeks.
- Metaautunite, Grants district: Gruner, 6.
- Metatuyamunite:
- Grants district: Gruner, 6; Weeks.
- Laguna district: Weeks.
- Shiprock district: Weeks.
- Meteorites:
- Breccia: Beck, 1.
- Chico: LaPaz, 3.
- Glorieta Mountain: Beck, 3.
- La Lande: Beck, 2.
- Mines: *see* *Economic Geology*
- Mining districts: For mineralogy of mining districts *see* *Economic Geology*
- Novacekite:
- Grants district: Weeks.
- Laguna district: Weeks.

Mineralogy (continued)

Opal, Chuska Mountains: Wright, H. E., 2.
 Pegmatite minerals: Jahns, 1, 3-5.
 Pleonaste, Caballo Mountains: Beck, 5; Maxwell.
 Potash minerals: Jones, C. L., 2.
 Quartz:
 Grants district: Kerr, 4.
 Organ district: Owens.
 Pecos Valley: Albright, J. L., 1.
 Rhodonite, at Vanadium: Allen, V. T., 1, 2.
 Rossite, Shiprock district: Weeks.
 Sanadine, Permian Basin: Miller, D. N.
 Santafite, Grants district: Sun, 3.
 Smithsonite, Organ district: Alfredo, 3.
 Sodydyte, Grants district: Gruner, 6.
 Staurolite, Picuris Range: Smith, I.
 Thulite: Northrop, 2.
 Turquoise: Blake; Carnot; Foster, E. E.
 Tyuyamunite: Weeks.
 Uranium minerals: Gruner, 1-3, 6;
 Rosenzweig; Stokes, 1; Sun, 3;
 Weber, 3; Weeks.
 Uraninite:
 Grants district: Weeks.
 San Juan Basin: Rosenzweig.
 Uranophane, Grants district: Gruner, 6.
 Vanadium minerals: Weeks.
 Wheelerite: Loew.
 Zircon, in sedimentary rocks: Poldervaart.

Mining Technology

Note: For listing of mining technology subjects by county see *Areas*.

Bayard lead-zinc mine: Anon., 14.
 Bibliography, through 1950: Burks.
 Bland, history: *see* Cochiti district
 Blasting:
 Open pit, big holes: Ballmer, 2.
 Potash: Bruhn.
 Bluewater uranium mill: Argall, 2;
 Swainson.
 Burro Mountains district, history: Gillerman, 1; Harper, C.
 Cerrillos district, history: Knaus.
 Chloride district, history: Alford, 2;
 Anderson, E. C., 3.
 Clay: Weber.
 Cochiti district, history: Bundy; Stevenson, D.
 Concentration: *see* Milling; Refining
 Cooks Peak district, history: Jicha, 4.

Copper:

Mining: Anon., 23; Ballmer, 2; Look.
 Santa Rita mine: Anon., 23; Ballmer, 2; Goodrich; Look.
 Smelting at Hurley: Anon., 22.
 Waste dump leaching, Santa Rita mine: Goodrich.
 Dawson coal mine, history: Secret.
 Deming lead-zinc mill: Anon., 11; Weiss.
 Development, mining: *see* Mining
 Drilling:
 Big blast holes, Santa Rita mine: Ballmer, 2.
 Blast holes, potash: Bruhn.
 Diamond drilling: Soule, 2.
 Uranium exploration: Lynn
 Duval Sulphur and Potash Co. potash mine: Anon., 7; Messer; Tong.
 Duval Sulphur and Potash Co. potash refinery: Atwood, G. E.
 Elizabethtown district, history: Alford, 2; Knaus; Pettit; Wolle.
 Exploration: Schmitt, H. *See also* Mining.
 Diamond drilling, Torpedo copper mine: Soule, 2.
 Drilling for uranium: Lynn.
 Uranium: Wolfe.
 Flotation, potash, Duval Sulphur and Potash Co. refinery: Atwood, G. E.
 General: Anderson, E. C., 1; Conway; Morris; Stubbs.
 Georgetown district, history: Alford, 2; Cannon, J. B.
 "Ghost towns": Alford, 2; Wolle. *See also* History.
 Grants district, history: Towle; Winters, 1.
 Ground Hog lead-zinc mine: Anon., 8.
 Hanover zinc mine: Babcock; Snell.
 Hansonburg district, history: Kottlowski, 2.
 Harding mine:
 History: Jahns, 5.
 Mining methods: Anon., 2; Montgomery, 1.
 Haulage, potash: Bruhn; Chafetz, 4, 5.
 Haystack uranium mine: Anon., 21; Strachan; Waylett.
 Headframe, building then moving over shaft: Anon., 7.
 History:
 Burro Mountains district: Gillerman, 1; Harper, C.

- Chloride district: Alford, 2; Anderson, E. C., 3.
- Cerrillos district: Knaus.
- Cochiti district: Bundy; Stevenson, D.
- Cooks Peak district: Jicha, 4.
- Dawson coal mine: Secrest.
- Elizabethtown district: Alford, 2; Knaus; Pettit; Wolle.
- Georgetown district: Alford, 2; Cannon, J. B.
- Grants district: Towle; Winters, 1.
- Hansonburg district: Kottlowski, 2.
- Harding mine: Jahns, 5.
- Lake Valley district: Creasey; Jicha, 4; Kuellmer, 2.
- Magdalena district: Alford, 2; Harrington, 1; Wolle.
- Mogollon district: Alford, 2; Burridge; Hoover, H. A., 1, 2; Wolle.
- New Mexico: Murphey.
- Organ district: Alford, 2; Raynor; Soule, 1, 2; Wolle.
- Pecos mine: Alford, 1, 2.
- Pinos Altos district: Woods, B., 1.
- Red River district: Knaus.
- San Pedro district: Bullock, 1, 2; James, 2; Wolle; Woods, B., 10.
- Santa Rita mine: Conner.
- Water Canyon district: Smith, T. E., 1.
- White Oaks district: Alford, 2; James, 3; Wiggins; Wolle; Woods, B., 9.
- White Signal district: Gillerman, 5; Granger, H. C., 1, 2.
- Hoisting: Anon., 19.
- Hurley copper smelter: Anon., 22.
- Iron, mining: Kniffin.
- Jackpile uranium mine: Anon., 20; Argall, 3; Colwell; Hough, 4; Waylett.
- Lake Valley district, history: Creasey; Jicha, 4; Kuellmer, 2.
- Laws, state:
- Location of claims: Anderson, E. C., 2.
- Mine safety: N. Mex. State Inspector of Mines.
- Tax: Ripley.
- Leaching, Santa Rita mine waste dumps for copper: Goodrich.
- Lead:
- Milling: Anon., 11, 14; Weiss.
- Mining: Anon., 8, 14.
- Leasing:
- State land: N. Mex. State Land Office, 1, 2; Walker.
- U. S. potash land: Smith, H. I.
- Magdalena district, history: Alford, 2; Harrington, 1; Wolle.
- Milling: *see* also Processing
- Bayard lead-zinc mine: Anon., 14.
- Blewater uranium mill: Argall, 2; Swainson.
- Deming lead-zinc mill: Anon., 11; Weiss.
- Hanover zinc mine: Snell.
- Lead: Anon., 11, 14; Weiss.
- Rare earth ores: Zadra.
- Shiprock uranium mill: Anon., 24, 25, 31; Kennedy; Waylett.
- Uranium: Anon., 24, 25, 31; Argall, 2; Kennedy; Swainson; Towle; U. S. Vanadium Corp.; Waylett.
- Zinc: Anon., 11, 14; Snell; Weiss.
- Mines:
- Directory: Garcia, 1-5.
- Uranium: Anon., 31; Anderson, E. C., 2; Finch; Schnabel.
- Mining:
- Bayard lead-zinc mine: Anon., 14.
- Blasting and drilling, potash: Bruhn.
- Blasting, big drill holes: Ballmer, 2.
- Cerrillos district: Higgins.
- Continuous mining potash: Bruhn; Gardner, H. L.
- Copper: Anon., 23; Ballmer, 2; Look.
- Duval Sulphur and Potash Co. potash mine: Anon., 1; Messer; Tong.
- Electric power: Chafetz, 1.
- Fierro iron mine: Kniffin.
- Ground Hog lead-zinc mine: Anon., 8.
- Hanover zinc mine: Babcock.
- Harding pegmatite mine: Anon., 2; Montgomery, 1.
- Haulage, potash: Bruhn; Chafetz, 4, 5.
- Hoisting: Anon., 19.
- Iron: Kniffin.
- Jackpile uranium mine: Anon., 20; Argall, 3; Colwell.
- Laws, state: N. Mex. State Inspector of Mines; Ripley.
- Lead: Anon., 8, 14.
- Leasing state land: N. Mex. State Land Office, 1, 2.
- Pegmatites: Anon., 2; Montgomery, 1.
- Perlite: Anon., 3-5, 9, 12, 17; Argall, 1; Kutnewsky, 1, 2.
- Pewabic zinc mine: Anon., 10.

Mining Technology (continued)

- Potash: Anon., 19; Bruhn; Chafetz, 1-5; Gardner, H. L.; Harley, 2; Haworth; Herbert; Kurrelmeyer; Kutnewsky, 3; Latz; Messer; Nordyke; Tong.
- Santa Rita mine: Anon., 23; Ballmer, 2; Look.
- Scoria: Avery.
- Shaft sinking: Anon., 7; Harley, 2; Haworth; Herbert; Latz; Tong.
- Socorro perlite mine: Anon., 12; Argall, 1; Kutnewsky, 1, 2.
- Uranium: Anon., 20, 21; Argall, 3; Bruyn; Colwell; Dare; Hough, 2, 4; Huttl, 2; Lowell; Lynn; Richardson; Schnabel; Spurrier, 5; Strachan; Towle; U. S. Vanadium Corp.; Waylett.
- Ventilation: Bruhn.
- Woodrow uranium mine: Argall, 3.
- Zinc: Anon., 8, 10, 14; Babcock; Higgins; Taylor, J. H., 3.
- Mining districts, location: Northrop, 3.
- Mining history: *see* History
- Mogollon district, history: Alford, 2; Burrige; Hoover, H. A., 1, 2; Wolle.
- No Agua perlite mine: Anon., 3-5, 9, 17.
- Open pit mining: *see* Santa Rita mine; Jackpile mine
- Organ district, history: Alford, 2; Raynor; Soule, 1; Wolle.
- Pecos mine, history: Alford, 1, 2.
- Pegmatite, mining: Anon., 2; Montgomery, 1.
- Perlite:
- Mining: Anon., 3-5, 9, 12, 17; Argall, 1; Kutnewsky, 1, 2.
 - No Agua mine: Anon., 3-5, 9, 17.
 - Processing: Anon., 3-5, 9; Argall, 1; Kutnewsky, 1, 2; Weber, 4.
 - Socorro deposit: Anon., 12; Argall, 1; Kutnewsky, 1, 2.
- Pewabic zinc mine: Anon., 10.
- Pinos Altos district, history: Woods, B., 1.
- Potash:
- 1950: Harley, 1; Libbey.
 - 1951: Albright, H. M.; Harley, 3; Huttl, 1.
 - 1952: Chafetz, 2; Harley, 4; Huttl, 1; Ware, 1.
 - 1953: Harley, 5; Ware, 2.
 - 1954: Harley, 6, 7.
 - Bulk storage: Chafetz, 6.
- Developments: *see* Potash, 1950, etc.
- Duval Sulphur and Potash Co. mine and refinery: Anon., 7; Atwood, G. E.; Tong.
- Flotation: Atwood, G. E.
- Haulage: Bruhn; Chafetz, 4, 5.
- International Minerals and Chemical Corp.: Chafetz, 6.
- Mining: Anon., 19; Bruhn; Chafetz, 1-5; Gardner, H. L.; Harley, 2; Haworth; Herbert; Kurrelmeyer; Kutnewsky, 3; Latz; Messer; Nordyke; Tong.
- Potash Co. of America mine: Anon., 19; Harley, 2.
- Refining: Atwood, G. E.; Kutnewsky, 3.
- Southwest Potash Corp. mine: Herbert.
- Potash Co. of America potash mine: Anon., 19; Harley 2.
- Processing: *see* also Milling
- Perlite: Anon., 3-5, 9; Argall, 1; Weber, 4.
 - Pumice: Utley.
- Production: Anderson, E. C., 1; N. Mex. Mining Assoc., 1; Stubbs. *See* also History.
- 1949: Martin, A. J., 1; U. S. Bur. Mines, 3.
- 1950: Anon., 1; Garcia, 1; Martin, A. J., 4; U. S. Bur. Mines, 5.
- 1951: Garcia, 1, 2; Martin, A. J., 2, 5; Taylor, J. H., 1; U. S. Bur. Mines, 6.
- 1952: Garcia, 2, 3; Martin, A. J., 3, 7; Stubbs; Taylor, J. H., 3; U. S. Bur. Mines, 7, 9.
- 1953: Garcia, 3, 4; Martin, A. J., 6; Taylor, J. H., 4.
- 1954: Garcia, 4, 5; Schmitt, H.
- 1955: Garcia, 5.
- Prospecting:
- Central district, bedded deposits: Fowler.
 - Leasing state land: N. Mex. State Land Office, 1, 2.
 - Location of claims: Anderson, E. C., 2.
 - Uranium: Wolfe.
- Pumice, processing for use in soap: Utley.
- Radio communication, Santa Rita mine: Look.
- Red River district, history: Knaus.
- Refining, potash: Atwood, G. E.
- Salt "mining":

- Laguna del Perro: Woods, B., 7.
 Zuni Salt Lake: Woods, B., 4; Woods, C., 2.
 San Pedro district, history: Bullock, 1, 2; James, 2; Wolle; Woods, B., 10.
 Santa Rita copper mine: Anon., 23; Ballmer, 2; Conner; Goodrich; Look.
 Scoria, mining: Avery.
 Shaft sinking: Anon., 7; Herbert; Tong.
 Freezing method: Harley, 2; Harworth; Latz.
 Shiprock uranium mill: Anon., 24, 25, 31; Kennedy; Waylett.
 Smelting, copper, Hurlley: Anon., 22.
 Socorro perlite mine and mill: Anon., 12; Argall, 1; Kutnewsky, 1, 2.
 Southwest Potash Corp. potash mine: Herbert.
 Statistics, mining: *see* Production, 1949-1955.
 Tyrone, history: *see* Burro Mountains district.
 Uranium:
 Bluewater mill: Argall, 2; Swainson.
 Developments: Anon., 13; Barnes, 5.
 Exploration drilling: Lynn.
 Haystack mine: Anon., 21; Strachan; Waylett.
 Jackpile mine: Anon., 20; Argall, 3; Colwell; Hough, 4; Waylett.
 List of mines and prospects: Anon., 31; Anderson, E. C., 2.
 Milling: Anon., 24, 25, 31; Argall, 2; Kennedy; Swainson; Towle; U. S. Vanadium Corp.; Waylett.
 Mining: Anon., 20, 21; Argall, 3; Bruyn; Colwell; Dare; Hough, 2, 4; Huttl, 2; Lowell; Lynn; Richardson; Schnabel; Spurrier, 5; Strachan; Towle; U. S. Vanadium Corp.; Waylett.
 Prospecting and exploration: Wolfe.
 Shiprock mill: Anon.; 24, 25, 31; Kennedy; Waylett.
 Woodrow mine: Argall, 3.
 Ventilation, potash mines: Bruhn.
 Water Canyon district, history: Smith, T. E., 1.
 White Oaks district, history: Alford, 2; James, 3; Wiggins; Wolle; Woods, B., 9.
 White Signal district, history: Gillerman, 5; Granger, H. C., 1, 2.
 Woodrow uranium mine: Argall, 3.
 Zinc:
 Bayard mine: Anon., 14.
 Deming mill: Anon., 11; Weiss.
 Ground Hog mine: Anon., 8.
 Hanover mine: Babcock; Snell.
 Milling: Anon., 11, 14; Snell; Weiss.
 Mining: Anon., 8, 10, 14; Babcock; Higgins; Taylor, J. H., 3.
 Pewabic mine: Anon., 10.
- ### Oil and Gas Technology
- Artificial lift methods, deep wells: Borland.
 Asphalt production: Koonce.
 Bibliography, through 1950: Burks.
 Cementing wells: Ayers.
 Completion methods: Bieberman, 5, 7; Carlson, R. F., 2; Foster, R. W., 1; McGhee, 1.
 Fracturing with water: Anon., 26; Coel; Hurst, 1, 2.
 Lateral drain hole drilling: Eastman.
 Permian Basin: Hurst, 1, 2.
 San Juan Basin: Allen, R. W., 1; Ayers.
 Shooting: Ayers.
 Conservation: Carlson, R. F., 1, 2; Terry.
 Developments: Dixon, 1-3; Lahee, 1-5; Natl. Oil Scouts & Landmen's Assoc., 1-5; N. Mex. Mining Assoc., 1; N. Mex. Oil & Gas Eng. Comm., 1-9; N. Mex. Oil Conservation Comm.; Oil and Gas Jour.; Stubbs; U. S. Bur. Mines, 3, 5, 6, 8, 9; World Oil, 1, 2; Ximenes. *See* also Completion methods; Drilling practice.
 Future possibilities: *see* *Economic Geology*, Oil and gas possibilities
 Jornada del Muerto: Albright, J. L., 2.
 Northeastern New Mexico: Bieberman, 10, 12-14; Gardner, F. J., 2; McCaslin; Rocky Mt. Oil Reporter, 3.
 Permian Basin: Barnes, 4; Bigelow, 2; Little; Murphy; Terry.
 1950: Lahee, 1; Miller, H. A.; Natl. Oil Scouts & Landmen's Assoc., 1.
 1951: Hedden; Ingalls, 3; Lahee, 2; Logan, 1; Natl. Oil Scouts & Landmen's Assoc., 2; N. Mex. Oil & Gas Eng. Comm., 2, 9; N. Mex. Oil Conservation Comm.; Rocky Mt. Oil Reporter, 2; Staley.
 1952: Hoot; Ingalls, 5-7; Lahee, 3; Natl. Oil Scouts & Landmen's

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- Assoc., 3; N. Mex. Oil & Gas Eng. Comm., 4, 9; N. Mex. Oil Conservation Comm.; Rocky Mt. Oil Reporter, 2; Smith, C. W.; Swords, 1; Vertrees.
- 1953: Anderson, K.; Estlow; Ingalls, 10, 11; Kornfield; Lahee, 4; Logan, 2; Martin, R. H.; Natl. Oil Scouts & Landmen's Assoc., 4; N. Mex. Oil & Gas Eng. Comm., 6, 9; N. Mex. Oil Conservation Comm.; Rocky Mt. Oil Reporter, 2; Stead, F. L., 1; Swords, 2.
- 1954: Gardner, 3; Hardison; Lahee, 5; Lockett; Natl. Oil Scouts & Landmen's Assoc., 5; N. Mex. Oil & Gas Eng. Comm., 8, 9; N. Mex. Oil Conservation Comm.; Rocky Mt. Oil Reporter, 2.
- 1955: Rocky Mt. Oil Reporter, 2.
- Raton Basin: *see* Developments, Northeastern New Mexico.
- Rio Grande depression: Albright, J. L., 2.
- Rocky Mountain region: *see* Developments, San Juan Basin
- San Juan Basin: Allen, R. W., 1; Barnes, 2, 3, 6; Bigelow, 1, 3; Budd; Cooper, J. C., 1; Donaldson; Harris, J. J.; King, V. L.; Larsen; Lilly, 1, 2; Macey; Rinehart; Umbach, 1, 5, 6, 13; Zakis.
- 1950: Ingalls, 1, 2, 4; Lahee, 1; Natl. Oil Scouts & Landmen's Assoc., 1; Tatum; Umbach, 2.
- 1951: Birdseye; Goodin; Lahee, 2; Natl. Oil Scouts & Landmen's Assoc., 2; N. Mex. Oil & Gas Eng. Comm., 1, 9; N. Mex. Oil Conservation Comm.; Rocky Mt. Oil Reporter, 1; Umbach, 4.
- 1952: Lahee, 3; Menneer; Natl. Oil Scouts & Landmen's Assoc., 3; N. Mex. Oil & Gas Eng. Comm., 3, 9; N. Mex. Oil Conservation Comm.; Rocky Mt. Oil Reporter, 1; Umbach, 7, 9.
- 1953: Harris, R. W.; Hough, 3; Ingalls, 9, 12; Lahee, 4; Natl. Oil Scouts & Landmen's Assoc., 4; N. Mex. Oil & Gas Eng. Comm., 5, 9; N. Mex. Oil Conservation Comm.; Rocky Mt. Oil Reporter, 1; Umbach, 10.
- 1954: Arnold; Gardner, F. J., 4; Lahee, 5; Mencher, 1; Morrissey; Natl. Oil Scouts & Landmen's Assoc., 5; N. Mex. Oil & Gas Eng. Comm., 7, 9; N. Mex. Oil Conservation Comm.; Rocky Mt. Oil Reporter, 1; Umbach, 11.
- 1955: Dougherty; Gardner, F. J., 5; Mencher, 2; Rocky Mt. Oil Reporter, 1; Umbach, 12.
- Southwestern New Mexico: Sandeen, 1.
- Drilling:
- Activity: *see* Developments
- Practice: *see* Drilling practice
- Drilling practice:
- Completion methods: *see* Completion methods
- Gas drilling: Fuller, 1, 2; Hollis; Hough, 1; Lemmons; Mencher, 3; Nicolson; Owen; Wilson, G. M., 1.
- Lateral drain holes: Eastman.
- Mud: Leland; Mayhew, 1, 2; Schultz, 1, 2.
- Permian; Basin: Bachman, W. S.; Bromell, 1-3; Brown, D. C.; Erwin; Johnson, D.; McGhee, 2; McLaughlin, P. L.; Schultz, 2.
- San Juan Basin: Allen, R. W., 1; Fuller, 1, 2; Hollis; Hough, 1; King, V. L.; Leland; Lilly, 2; Manuel; Mayhew, 1, 2; Mize, 2; Owen; Wilson, G. M., 1.
- Exploration: *see* also Developments
- Geophysical: *see* *Geophysics and Geochemistry*
- Maps: Bieberman, 10-14; Bigelow, 1-4; Dixon, 3; Foster, 2-7; Waati.
- Fracturing with water: Coel; Hurst, 1, 2.
- Future possibilities and developments: *see* *Economic Geology*, Oil and gas possibilities
- Gasoline extraction:
- From gas: *see* Natural-gasoline plants
- From oil: *see* Refining, oil
- Gas treating plants: Atcheson; Cronenberg; Willis, 3.
- Gasoline extraction: *see* Natural-gasoline plants
- Helium extraction: Foster, A. L.
- Sulfur extraction: Fitzpatrick, 2.
- General: Spurrier, 1-4; Stubbs.
- Helium extraction plant: Foster, A. L.
- History: *see* Developments
- Mud, drilling: *see* Drilling practice, Mud

- Natural-gasoline plants: Griffin; Henwood; Macey.
- Oil refineries: *see* Refining, oil
- Pipeline:
- Corrosion: Emerson; Paredes.
- Gas: Barnes, 2; Dixon, 3; Eichelmann, 1, 2; Mize, 1; Perkins, 1, 2; Pierce, 2; Rittmann; Willis, 1; Ximenes.
- Oil: Anon., 18; Dixon, 3.
- Petroleum products: Allen, E. I.
- Pumping, gas: Eichelmann, 1, 2; Miller, W. H.
- Production: *see* also Developments
- Natural gas: Colby.
- Pumping:
- Deep wells: Borland.
- Gas: Eichelmann, 1, 2; Miller, W. H.
- Refining, oil: Jacobs; Kirby, 1-3; Koonce; Oil and Gas Jour.; Withers, 1-3.
- Secondary recovery of oil: Interstate Oil Compact Comm.
- Shooting wells: Ayers.
- Statistics: *see* Developments
- Storage, gas, underground: Wiederkehr.
- Sulfur extraction plant: Fitzpatrick, 2.
- Taxes, state: Loveless; Ripley.
- Treating plants, gas: *see* Gas treating plants
- Well samples, library: Bieberman, 1, 2, 4, 6, 8.
- Paleontology**
- Acanthopecten carboniferous*: Brill, 2.
- Algae, Permian: Newell, 2.
- Ammonoids, Devonian: Miller, A. K.
- Amphibians:
- Permian: Langston, 1, 2.
- Triassic: Olsen.
- Aspideretes*: Allen, J. E., 8.
- Baena*: Allen, J. E., 8.
- Bibliography:
- Through 1950: Burks.
- Vertebrates: Camp.
- Bliss sandstone: Flower, 1-6.
- Brachiopods:
- Devonian: Cooper, G. A., 1, 2.
- Pennsylvanian: Gehrig; Otte, 1.
- Permian: Newell, 2; Otte, 1.
- Buettneria perfecta*: Olsen.
- Cambrian: Flower, 1-3, 6.
- Cephalopods: Flower, 4.
- Cenozoic:
- Plants: Lamotte.
- Vertebrates: Simpson, 3.
- Cephalopods:
- Cambrian: Flower, 4.
- Cretaceous: Cobban, 1, 2.
- Permian: Newell, 2; Otte, 1.
- Cleistopora tyba gorbyi*: Jeffords.
- Clioscaphtites*: Cobban, 1.
- Corals:
- Mississippian: Jeffords.
- Permian: Newell, 2.
- Cretaceous: Allen, J. E., 6, 8; Cobban, 1, 2; Sharp, K. D.; Stearns, C. E., 1.
- Crinoids, Mississippian: Bowsher, 1, 2.
- Cyathaxonia*: Jeffords.
- Devonian:
- Ammonoids: Miller, A. K.
- Brachiopods: Cooper, G. A., 1, 2.
- Dinosaurs: Allen, J. E., 8.
- Diploden*: Allen, J. E., 8.
- Dunbarinella tumida*: Thompson, M. L., 1.
- Edmondia gibbosa*: Brill, 2.
- Falciclymeria bowsheri*: Miller, A. K.
- Fusulinids, Permian: Newell, 2; Otte, 1; Thompson, M. L., 1.
- Gastropods, Permian: Newell, 2; Otte, 1.
- General: Shimer.
- Hyborhynchella bransoni*: Cooper, G. A., 2.
- Lake Valley limestone: Bowsher, 1, 2.
- Lepidosteus*: Allen, J. E., 8.
- Man: Agogino: Antevs, 2; Bryan, 4, 5; Henry; Hibben, 1, 2; Judson, 2, 3; Martin, P. S., 1, 2; McFarland; Muehlberger; Roberts, F. H. H.; Stewart, T. D.
- Microcyclus blairi*: Jeffords.
- Mississippian: Armstrong; Flower, 3.
- Corals: Jeffords.
- Crinoids: Bowsher, 1, 2.
- Mollusks: Yen.
- Nummacrinus mammillatus*: Bowsher, 2.
- Ordovician: Pray, 4.
- Palaeacis*: Jeffords.
- Pelecypods:
- Cretaceous: Allen, J. E., 8.
- Pennsylvanian: Brill, 2.
- Permian: Newell, 2.
- Pennsylvanian: Brill, 1, 2; Flower, 3; Looke; Otte, 1; Szabo; Thompson, M. L., 2; Toomey.
- Brachiopods: Gehrig.
- Percha shale: Cooper, G. A., 1, 2; Miller, A. K.
- Permian: Newell, 2; Otte, 1; Szabo; Toomey.

Paleontology (continued)

- Amphibians: Langston, 1, 2.
 Fusulinids: Newell, 2; Otte, 1;
 Thompson, M. L., 1.
Physetocrinus lobatus: Bowsher, 1.
 Plants, Cenozoic: Lamotte.
 Pollen: Sears, P. B.
Porostictia: Cooper, G. A., 1.
Pseudofusulina: Thompson, M. L., 1.
Pseudoschwagerina: Thompson, M. L.,
 1.
 Quaternary: *see* Cenozoic
Scaphites: Cobban, 1.
Schwagerina: Thompson, M. L., 1.
 Sponges, Permian: Newell, 2.
Syringospira prima: Cooper, G. A., 1.
Teihardella whitakeri: Simpson, 3.
 Tertiary: *see* Cenozoic
 Tohatchi formation: Allen, J. E., 6, 8.
 Triassic, amphibians: Olsen.
 Trilobites, Permian: Newell, 2.
Triticites: Thompson, M. L., 1.
 Turtles: Allen, J. E., 8.

Petrology

Note: See *Historical and Stratigraphic Geology* for unit names or ages of igneous and metamorphic rocks.

- Amphibolite: Montgomery, 2.
 Andesite: Barker; Callaghan, 2, 5;
 Jahns, 8; Jicha, 4; Kuellmer, 2.
 Basalt: Allen, J. E., 3; Balk; Barker;
 Beck, 5; Callaghan, 1, 2, 5; Flege;
 Jahns, 8; Jicha, 4, 7; Kottowski, 6;
 Maxwell; Smith, C. T., 3; Stearns,
 C. E., 2, 3; Sun, 2.
 Basaltic andesite: Kottowski, 8.
 Bibliography, through 1950: Burks.
 Black Range: Kuellmer, 2-4.
 Burro Mountains: Gillerman, 1; Klein-
 hampl, 1.
 Caballo Mountains: Beck, 5; Kelley, V.
 C., 6; Maxwell.
 Capitan quadrangle: Patton.
 Carrizozo lava flow: Allen, J. E., 3.
 Copper Flat (Hillsboro) intrusive:
 Kuellmer, 3, 4.
 Diabase: Kuellmer, 2; Montgomery, 2.
 Dwyer quadrangle: Elston, 2.
 Gneiss: Montgomery, 2.
 Granite: Barker; Dorman; Jahns, 8;
 Kuellmer, 2-4; Montgomery, 2.
 Granodiorite: Barker; Belt; Jicha, 4;
 Kuellmer, 1-4.
 Hanover-Fierro intrusive, Grant Coun-
 ty: Belt.
 Hornfels: Montgomery, 2.
 Intrusive rocks: Callaghan, 2.
 Black Range: Kuellmer, 2-4.
 Capitan quadrangle: Patton.
 Copper Flat (Hillsboro) intrusive:
 Kuellmer, 3, 4.
 Hanover-Fierro stock: Belt.
 Jemez Mountains: Bundy.
 Ladron Mountains: Duschatko, 2.
 Lake Valley quadrangle: Jicha, 4.
 Picuris Range: Montgomery, 2.
 San Juan Basin: Callaghan, 1.
 Santa Rita intrusive: Hernon, 1.
 Sierra Cuchillo: Jahns, 8.
 Tohatchi quadrangle: Balk.
 Ladron Mountains: Duschatko, 2.
 Lake Valley quadrangle: Jicha, 2, 4.
 Las Tablas quadrangle: Barker.
 Latite: Callaghan, 2, 5; Jicha, 4; Kuell-
 mer, 2; Sun 2.
 Limburgite: Stearns, C. E., 2, 3.
 Lordsburg quadrangle: Flege.
 Magdalena Mountains: Johnson, J. T.;
 Kalish.
 Metamorphic rocks:
 Manzano Mountains: Basham.
 Picuris Range: Montgomery, 2.
 Metaquartzite: Barker; Montgomery, 2.
 Metarhyolite: Barker.
 Minette: Balk.
 Monzonite: Sun, 2.
 Pegmatite: Barker; Jahns, 1, 3, 4;
 Montgomery, 2.
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Arroyos: Antevs, 1; Bryan, 5; Dodge; Judson, 1; Leopold, 2; Senter.

Basin and Range province: Atwood, W. W.; Callaghan, 4; Fenneman.

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Black Range: Kuellmer, 2.

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Caballo Mountains: Kelley, V. C., 6; Silver, 6.

Calderas: Shoemaker, 2; Stearns, H. T.

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Dunes: Jicha, 6; Russell; U. S. Natl. Park Service, 2.

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General: Atwood, W. W.; Fenneman.

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 Sedimentation: Hains.
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 Quality, ground-water: Hale, 3; Hendrickson.
 Quality, surface water: Hale, 3.
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 Springs: Hale; Hendrickson.
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Caballo Mountains area: Kelley, V. C., 6.

Canadian River basin: Ark.-White-Red Basins Inter-Agency Comm., 7; Lohman, 1.

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Eddy County: Conover, 2-4, 8, 9, 11; Hale, 3; Hendrickson; Herrick; Theis, 1.

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Mimbres Valley: Conover, 2-4, 8, 9, 11.

Navajo Reservation: Allen, J. E., 8, 10; Bushman, 1; Callahan; Halpenny, 1, 2; Harshbarger, 2-4.

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Mimbres Valley: Conover, 2-4, 8, 9, 11.

Quay County: Conover, 2-4, 8, 9, 11.
Rio Grande Valley: Conover, 12.

Roswell Basin: Conover, 2-4, 8, 9, 11; Hantush.

San Miguel County: Griggs, 1.

Socorro County: Spiegel, 3.

Virden Valley: Conover, 2-4, 8, 9, 11.

Mimbres Valley:

Ground-water levels: Conover, 2-4, 8, 9, 11.

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- Quality, surface water: Hatchett.
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- Stream (flow) measurements: U. S. Geol. Survey, 1, 5, 9, 14, 21, 29.
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- Quality, ground-water:
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- Rio Grande Valley:
- Artesian wells: Kelley, V. C., 6.
- Ground water: Bloodgood; Conover, 10, 12; Kelley, V. C., 6.
- Ground-water levels: Conover, 12.
- Hot springs: Conover, 10; Kelley, V. C., 6; Theis, 2.
- Quality, ground-water: Conover, 10, 12; Kelley, V. C., 6.
- Quality, surface water: Clark, 2; Internat. Boundary & Water Comm., 1-4; U. S. Geol. Survey, 3, 7, 13, 18, 23, 26, 31.
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- Ground water: Bean; Fiedler; Hantush.
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 Ground-water levels: Griggs, 1.
 Quality, ground-water: Griggs, 1.
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6	Mining and Mineral Laws of New Mexico; Charles H. Fowler (Superseded by Bulletin 16).....	1930	Out of print
7	The Metal Resources of New Mexico and Their Economic Features; S. G. Lasky and T. P. Wootton.....	1933	Out of print
8	The Ore Deposits of Socorro County, New Mexico; S. G. Lasky	1932	Out of print
9	The Oil and Gas Resources of New Mexico; Dean E. Winchester (First edition; superseded by Bulletin 18)..	1933	Out of print
10	The Geology and Ore Deposits of Sierra County, New Mexico; G. Townsend Harley.....	1934	Out of print
11	The Geology of the Organ Mountains, with an Account of Dona Ana County, New Mexico; Kingsley Charles Dunham	1935	Out of print
12	The Non-Metallic Mineral Resources of New Mexico and Their Economic Features (Exclusive of Fuels); S. B. Talmage and T. P. Wootton	1936	Out of print
13	Geology and Economic Features of the Pegmatites of Taos and Rio Arriba Counties, New Mexico; Evan Just	1937	Out of print
14	Some New Mexico Fusulinidae; C. E. Needham	1937	.50
15	The Geology and Ore Deposits of Northeastern New Mexico (Exclusive of Colfax County); G. Townsend Harley	1940	Out of print
16	Mining, Oil, and Mineral Laws of New Mexico; C. H. Fowler and S. B. Talmage (Supersedes Bulletin 6).....	1941	.75
17	Pennsylvanian System in New Mexico; M. L. Thompson	1942	Out of print
18	The Oil and Gas Resources of New Mexico; compiled by Robert L. Bates (Second edition; supersedes Bulletin 9)	1942	Out of print
19	Manganiferous Iron-ore Deposits near Silver City, New Mexico; Lawson P. Entwistle.....	1944	Out of print

20	Stratigraphy of the Colorado Group, Upper Cretaceous, in Northern New Mexico; Charles H. Rankin.....	1944	Out of print
21	Fluorspar Resources of New Mexico; H. E. Rothrock, C. H. Johnson, and A. D. Hahn (Supersedes Bulletin 4)	1946	2.50
22	Geologic Literature of New Mexico Through 1944; Robert L. Bates and Marian R. Burks (Superseded by Bulletin 43)	1945	Out of print
23	Stratigraphy and Oil-producing Zones of the Pre-San Andres Formations of Southeastern New Mexico—A Preliminary Report; Robert E. King	1945	Out of print
24	Building Blocks from Natural Lightweight Materials of New Mexico; Donn M. Clippinger.....	1946	.50
25	Mica Deposits of the Petaca District, Rio Arriba County, New Mexico, with Brief Descriptions of the Ojo Caliente District, Rio Arriba County, and the Elk Mountain District, San Miguel County; Richard H. Jahns.....	1946	2.00
26	Geology of the Gran Quivira Quadrangle, New Mexico; Robert L. Bates, Ralph H. Wilpolt, Archie J. MacAlpin, and Georges Vorbe	1947	.60
27	Contributions of New Mexico's Mineral Industry to World War II; compiled by T. D. Benjovsky.....	1947	.50
28	Pumice Aggregate in New Mexico—Its Uses and Potentialities; Donn M. Clippinger and Walter E. Gay.....	1947	Out of print
29	Pre-San Andres Stratigraphy and Oil-producing Zones in Southeastern New Mexico—A Progress Report; E. Russell Lloyd	1949	2.00
30	Pre-Cambrian Geology of the Picuris Range, North-Central New Mexico; Arthur Montgomery.....	1953	1.50
31	Geology of the Thoreau Quadrangle, McKinley and Valencia Counties, New Mexico (includes map); Clay T. Smith	1953	1.00
32	Compilation of State Tax Law Relating to Oil, Gas and Mining Properties in New Mexico; E. P. Ripley (Supersedes Circular 13)	1952	1.50
33	Geologic Section of the Black Range at Kingston, New Mexico; Frederick J. Kuellmer	1954	2.00
34	Geology of the South Manzano Mountains, New Mexico, J. T. Stark	1956	1.25
*36	Mineral Resources of Fort Defiance and Tohatchi Quadrangles, Arizona and New Mexico; John Eliot Allen and Robert Balk	1954	2.50
37	Geology and Mineral Deposits of Lake Valley Quadrangle, Grant, Luna, and Sierra Counties, New Mexico; Henry L. Jicha, Jr.	1954	2.00
39	The Metal Resources of New Mexico and Their Economic Features Through 1954 (Revision of Bulletin 7); Eugene Carter Anderson	1956	In press
40	Cambrian Cephalopods; Rousseau H. Flower.....	1954	1.00
42	Geology of Costilla and Latir Peak Quadrangles, Taos County, New Mexico; Philip F. McKinlay	1956	1.75
43	Bibliography of New Mexico Geology and Mineral Technology through 1950; Marian R. Burks and John H. Schilling	1955	2.00
*44	Mineral Resources of the Navajo Reservation in New Mexico (exclusive of uranium, coal, oil, gas and water); John Eliot Allen	1955	1.00

* Prepared under contract for the Bureau of Indian Affairs.

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| 51 | Geology of the Questa Molybdenum (Moly) Mine Area, Taos County, New Mexico; John H. Schilling | 1956 | 2.50 |
| 52 | Bibliography of New Mexico Geology and Mineral Technology, 1951-1955; Constance F. Schilling and John H. Schilling | 1956 | 2.00 |

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| 1 | Stratigraphic Studies of the San Andres Mountains, New Mexico; Frank E. Kottowski, Rousseau H. Flower, M. L. Thompson, and Roy W. Foster | 1956 | 4.00 |
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GROUND-WATER REPORTS

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| *1 | Geology and Ground-Water Resources of the Eastern Part of Colfax County, New Mexico; Roy L. Griggs | 1948 | Out of print |
| *2 | Geology and Ground-Water Resources of San Miguel County, New Mexico; R. L. Griggs and G. E. Hendrickson | 1951 | 2.00 |
| *3 | Geology and Ground-Water Resources of Eddy County, New Mexico; G. E. Hendrickson and R. S. Jones | 1952 | 2.50 |
| *4 | Geology and Ground-Water Resources of Northeastern Socorro County, New Mexico; Zane Spiegel | 1955 | 2.00 |

OIL AND GAS REPORTS

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| 4-A | New Mexico Oil and Gas Statistical Data for 1948; compiled by E. E. Kinney, Lea County Operators Committee, and New Mexico Oil Conservation Commission | 1949 | 1.00 |
| 4-B | New Mexico Oil and Gas Engineering Data for 1948, compiled by E. E. Kinney, Lea County Operators Committee, and New Mexico Oil Conservation Commission | 1949 | 1.00 |
| 4-C | San Juan Basin, New Mexico, Oil and Gas Data Summary Cumulative to January 1, 1949; compiled by E. E. Kinney | 1949 | Out of print |
| 5-A | New Mexico Oil and Gas Statistical Data for 1949; compiled by E. E. Kinney, Lea County Operators Committee, and New Mexico Oil Conservation Commission | 1950 | Out of print |
| 5-B | New Mexico Oil and Gas Engineering Data for 1949; compiled by E. E. Kinney, Lea County Operators Committee, and New Mexico Oil Conservation Commission | 1950 | Out of print |

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| 1 | An Outline of the Mineral Resources of New Mexico; E. H. Wells | 1930 | Out of print |
| 2 | Geology and Ore Deposits of the Ground Hog Mine, Central District, Grant County, New Mexico; S. G. Lasky | 1930 | Out of print |
| 3 | First, Second, and Third Annual Reports of the Director, and Preliminary Report for the Fourth Year; E. H. Wells | 1931 | Out of print |
| 4 | The Hobbs Field and Other Oil and Gas Areas, Lea County, New Mexico; Dean E. Winchester | 1931 | Out of print |
| 5 | Gold Mining and Gold Deposits in New Mexico; E. H. Wells and T. P. Wootton, 1932; revised by T. P. Wootton | 1940 | No charge |
| 6 | Carbon Dioxide in New Mexico; E. H. Wells and A. Andreas (Superseded by Circular 9) | 1938 | Out of print |

* Prepared in cooperation with the U. S. Geological Survey and the State Engineer of New Mexico.

7	Outlook for Further Ore Discoveries in the Little Hatchet Mountains, New Mexico; S. G. Lasky	1940	Out of print
8	Selected Bibliography on Coal in New Mexico; Robert L. Bates	1943	No charge
9	Carbon Dioxide in New Mexico; Sterling B. Talmage and A. Andreas (Reprinted from Bulletin 18).....	1942	Out of print
10	Natural Light-weight Building-block Materials of New Mexico; T. D. Benjovsky and Donn M. Clippinger.....	1945	Out of print
11	Reconnaissance Survey of the Headstone Mining District, Rio Arriba County, New Mexico; T. D. Benjovsky	1945	Out of print
12	Future Oil Possibilities of New Mexico; Robert L. Bates	1946	Out of print
13	Compilation of State Tax Law Relating to Mineral Properties in New Mexico; E. P. Ripley (Superseded by Bulletin 32)	1946	Out of print
14	Oil and Gas Production Data, Eddy County, New Mexico, 1943-1945; compiled by N. Raymond Lamb and W. B. Macey	1947	Out of print
15	Tables of Fluorescent and Radioactive Minerals; compiled by Robert L. Hershey (Second ed., revised by Ming-Shan Sun)	1955	No charge
16	New Mexico Oil and Gas Production Data for 1946 (Exclusive of Lea County); compiled by N. Raymond Lamb and W. B. Macey	1947	Out of print
17	Caprock Pool Statistical Report, Chaves and Lea Counties, New Mexico; compiled by N. Raymond Lamb and William B. Macey	1947	Out of print
18	Geology and Ore Deposits of Red River and Twining Districts, Taos County, New Mexico—A Preliminary Report; Charles F. Park, Jr., and Philip F. McKinlay.....	1948	Out of print
19-A	New Mexico Oil and Gas Statistical Data for 1947; compiled by N. Raymond Lamb and Lea County Operators Committee	1948	Out of print
19-B	New Mexico Oil and Gas Engineering Data for 1947; compiled by N. Raymond Lamb and Lea County Operators Committee	1948	Out of print
20	New Mexico Oil and Gas Summary Data for 1948; compiled by Lea County Operators Committee	1949	Out of print
21	Barite of New Mexico; compiled by Donn M. Clippinger	1949	No charge
22	Index to Samples from Oil and Gas Well Tests in Library at Socorro, New Mexico; compiled by Robert A. Bieberman and Betty Diddle	1952	Out of print
	Revised to January 1, 1955; compiled by Robert A. Bieberman and Florence B. Crespín	1955	No charge
23	Geology and Ore Deposits of a Part of the Hansonburg Mining District, Socorro County, New Mexico; Frank E. Kottowski	1952	No charge
24	Subsurface Completion Data of Wells Drilled for Oil and Gas During 1952; compiled by Robert A. Bieberman and Florence B. Crespín	1953	No charge
25	Raw Materials for Chemical Industry in New Mexico; Morris F. Stubbs and Robert H. Weber	1954	No charge
26	Water Well Records and Well Water Quality in Southwestern San Agustin Plains, Catron County, New Mexico; F. X. Bushman and C. P. Valentine	1954	No charge
27	Paragenesis of the Ores of the Palomas (Hermosa) District, Southwestern New Mexico; H. L. Jicha, Jr.	1954	Out of print
28	Subsurface Completion Data of Wells Drilled for Oil		

- and Gas During 1953; compiled by Robert A. Bieberman and Florence B. Crespin 1954 Out of print
- 29 Occurrences of Uranium Ores in New Mexico; E. C. Anderson 1954 No charge
- 30 Index to Samples From Oil and Gas Well Tests in Library at Socorro, New Mexico; Robert A. Bieberman and Florence B. Crespin (Revised) 1956 No charge
- 31 Subsurface Completion Data of Wells Drilled for Oil and Gas During 1954; Roy W. Foster and Florence B. Crespin 1955 No charge
- 32 Processing Perlite—The Technologic Problems; Robert H. Weber 1955 No charge
- 33 Possibilities for Discovery of Additional Lead-Silver Ore in the Palomas Camp Area of the Palomas (Hermosa) Mining District, Sierra County, New Mexico; A Preliminary Statement; Richard H. Jahns 1955 No charge
- 34 Geology of a Disseminated Copper Deposit near Hillsboro, Sierra County, New Mexico; Frederick J. Kuellmer 1955 No charge
- 35 Geology of Capitan Coal Field, Lincoln County, New Mexico; Marc W. Bodine, Jr. 1956 No charge
- 36 A Deposit of High-Calcium Lime Rock in Valencia County, New Mexico; Henry L. Jicha, Jr. 1956 No charge
- 37 Ground-Water Data for Dwyer Quadrangle, Grant and Luna Counties, New Mexico; F. X. Bushman 1955 No charge
- 38 Geology of the Luis Lopez Managanese District, Socorro County, New Mexico; Alfred T. Miesch 1956 No charge
- 39 Preliminary Observations on the Mississippian System of Northern New Mexico; Augustus K. Armstrong 1955 No charge
- 40 Lexicon of New Mexico Geologic Names: Part 1, Precambrian and Lower Paleozoic; compiled by Henry L. Jicha, Jr. 1956 No charge
- 41 The Making of a Mine; John Eliot Allen 1956 No charge
- 42 Subsurface Completion Data of Wells Drilled for Oil and Gas During 1955; Roy W. Foster and Constance F. Schilling 1956 No charge

ANNUAL REPORTS

- 1 For the Fiscal Year July 1, 1945-June 30, 1946; E. C. Anderson 1946 Out of print
- 2 For the Fiscal Year July 1, 1946-June 30, 1947 (includes Annual Report of State Inspector of Mines); E. C. Anderson 1947 Out of print
- 3 For the Fiscal Year July 1, 1947-June 30, 1948 (includes Annual Report of State Inspector of Mines); E. C. Anderson 1948 Out of print
- 4 For the Fiscal Year July 1, 1948-June 30, 1949 (includes Annual Report of State Inspector of Mines); E. C. Anderson 1949 Out of print
- 5 For the Fiscal Year Ending June 30, 1950; Eugene Callaghan 1950 Out of print
- 6 For the Fiscal Years Ending June 30, 1951 and 1952; Eugene Callaghan 1952 Out of print
- 7 For the Fiscal Years Ending June 30, 1953 and 1954; Eugene Callaghan 1954 Out of print

MAPS

- Oil and Gas Map of New Mexico; revised and enlarged to Jan. 1, 1949, by Richard C. Northup and Donald D. .75 (paper)

Forrey. Scale about 10½ miles to 1 inch	1949	.75 (cloth)
Map Showing Location of Wells and Springs and the Availability of Ground Water in San Miguel County, New Mexico. (This map is included in Ground-Water Report 2.)	1951	.35
Geology of San Miguel County. (This map is included in Ground-Water Report 2.)	1951	.35
Geologic Map and Section of the Thoreau Quadrangle, New Mexico. (This map is included in Bulletin 31.)	1953	.75
Geologic Section of Black Range at Kingston, New Mexico. (This map is included in Bulletin 33.)	1954	.50
Geologic Map and Sections of Lake Valley Quadrangle, New Mexico. (This map is included in Bulletin 37.) ...	1954	.80
Oil and Gas Map of New Mexico; Dean Winchester (Revised by R. L. Bates). Scale approximately 1 inch to 15 miles	1942	.50
Geologic Map of Boston Hill Manganese Area, Grant County, New Mexico; L. P. Entwistle. Scale 1 inch to 500 feet	1944	Out of print
Mine Location Map, Red River, Taos County, New Mexico; P. F. McKinlay. Scale 1 inch to 1 mile	1948	.10
Wells and Springs and Availability of Ground Water in Eddy County, New Mexico. (This map is included in Ground-Water Report 3.)	1952	.35
Contours on Top of Salt Beds of Salado Formation in Potash Area, Eddy County, New Mexico. (This map is included in Ground-Water Report 3.)	1952	Out of print
Geology of Eddy County, New Mexico. (This map is included in Ground-Water Report 3.)	1952	.35
Geology of Northeastern Socorro County, New Mexico. (This map is included in Ground-Water Report 4.) ..	1955	.35
Geologic Map and Sections of Puertecito Quadrangle, New Mexico. (This map is included in Bulletin 41, to be printed.)	1955	1.00
Block Diagram of the Questa Molybdenum Mine, Taos County, New Mexico. (This map is included in Bulletin 51.)	1956	.35
Geologic Map and Sections, Questa Molybdenum Mine Area, Taos County, New Mexico. (This map is included in Bulletin 51.)	1956	.85
Geologic Map and Sections of Costilla and Latir Peak Quadrangles, New Mexico. (This map is included in Bulletin 42.)	1956	1.25
Geologic Map and Sections, South Manzano Mountains, New Mexico. (This map is included in Bulletin 34.)	1956	.50

PETROLEUM EXPLORATION MAPS

These maps show the location of all tests for oil and gas (both completed and in the process of drilling), section lines, and the larger towns; published as blue line prints at a scale of two miles to the inch; prepared by Robert A. Bieberman and Roy W. Foster—Counties available:

Colfax, Curry, DeBaca, Guadalupe, Harding, Lincoln, Mora, Quay, Roosevelt, San Miguel, Socorro, Torrance, and Union	1955-	1.00 (each county)
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WELL LOGS

More than 6,950 typed drillers' logs of wells drilled in New Mexico	Prices on request
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GUIDEBOOKS

Santa Fe, New Mexico (Scenic Trips to the Geologic Past no. 1); Brewster Baldwin and Frank E. Kottlowski	1955	No charge
Taos-Red River-Eagle Nest, New Mexico, Circle Drive (Scenic Trips to the Geologic Past no. 2); John H. Schilling	1956	No charge

PUBLICATIONS OF THE U. S. GEOLOGICAL SURVEY,
FOR SALE BY THE NEW MEXICO BUREAU OF MINES
AND MINERAL RESOURCES

BULLETINS

973-F	Fluorspar Deposits of Burro Mountains and Vicinity, New Mexico; Elliot Gillerman	1951	1.50
1009-B	Identification and Occurrence of Uranium and Vanadium Minerals from the Colorado Plateaus; A. D. Weeks and M. E. Thompson	1954	.25
1009-K	Uranium-Bearing Nickel-Cobalt-Native Silver Deposits, Black Hawk District, Grant County, New Mexico; Elliot Gillerman and Donald H. Whitebread	1956	.65
1009-L	Radioactive Deposits in New Mexico; T. G. Lovering ..	1956	.70
1009-M	Botanical Prospecting for Uranium on La Ventana Mesa, Sandoval County, New Mexico	1956	.15
1030-A	Search for Uranium in the United States; Vincent C. McKelvey	1955	.25
1027-I	Perlite Resources of the United States; Marion C. Jaster	1956	.50

PROFESSIONAL PAPERS

*200	Geology and Ore Deposits of the Magdalena Mining District, New Mexico; G. F. Loughlin and A. H. Koschmann	1942	2.00
225	Physical Characteristics of Commercial Sheet Muscovite in the Southeastern United States; Richard H. Jahns and Forrest W. Lancaster	1950	1.25
279	Cenozoic Geology of the Colorado Plateau; Charles B. Hunt	1956	.75
282-A	Ephemeral Streams—Hydraulic Factors and Their Relation to the Drainage Net; Luna B. Leopold and John P. Miller	1956	.45
300	Contributions to the Geology of Uranium and Thorium by the U. S. Geological Survey and Atomic Energy Commission for the United Nations International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland (1955)	1956	6.00

CIRCULARS

89	Coal Resources of New Mexico; C. B. Read, R. T. Duffner, G. H. Wood, and A. D. Zapp	1950	No charge
*333	Records of Wells Drilled for Oil and Gas in New Mexico; G. H. Dixon, D. H. Baltz, T. F. Stipp, and R. A. Bieberman	1954	No charge

WATER-SUPPLY PAPERS

1110-C	Quality of Water of Conchas Reservoir, New Mexico; 1939-49; John D. Hem	1952	.25
1230	Ground-water Conditions in the Rincon and Mesilla Valleys and Adjacent Areas in New Mexico; prepared in cooperation with the Elephant Butte Irrigation District	1954	1.50

BOOKLET

	Prospecting for Uranium; published in cooperation with the United States Atomic Energy Commission	1951	.55
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MAPS AND CHARTS

	Geologic Map Index of New Mexico: Leona Boardman and Annabel Brown. Scale 1:750,000	1950	.70
	Index to Topographic Mapping in New Mexico	1955	No charge
	Base Map of New Mexico. Scale 1 inch to 15 miles	1922	.25
	Base Map of New Mexico (without topographic features). Scale about 1 inch to 8 miles	1955	.75
	Topographic Map of New Mexico. Scale about 1 inch to 8 miles	1955	1.00
	Reconnaissance and Elevation Map of Southeastern New Mexico; Walter B. Lang. Scale 4 miles to 1 inch	1953	1.50
	The Uranium Deposits of the United States; compiled by Robert W. Schnabel. Scale 1¼ inches to 100 miles. <i>Map MR 2</i> , Mineral Investigations Resource Appraisals	1955	.50
	Geologic Map of Lake Valley Manganese District, Sierra County, New Mexico; S. C. Creasey and A. E. Granger. Scale 200 feet to 1 inch and 100 feet to 1 inch. <i>Field Studies Map MF 9</i> , Mineral Investigations	1953	.50
	Preliminary Geologic Map Showing the Distribution of Uranium Deposits and Principal Ore-Bearing Formations of the Colorado Plateau Region; W. I. Finch. Scale 1 inch to 8 miles. <i>Field Studies Map MF 16</i> , Mineral Investigations	1955	.50
	Preliminary Geologic Maps of the Ship Rock and Hogback Quadrangles, San Juan County, New Mexico; E. C. Beaumont. Scale about 1¼ inches to 1 mile. <i>Map C 29</i> , Coal Investigations	1955	.50
	Preliminary Geologic Map of the Toadlena Quadrangle, San Juan County, New Mexico; D. L. Ziegler. Scale 1 inch to 1 mile. <i>Map C 30</i> , Coal Investigations	1955	.50
	Preliminary Geologic Map of the Naschitti Quadrangle, San Juan and McKinley Counties, New Mexico; A. E. Burford, P. T. Hayes, and R. B. O'Sullivan. Scale 1 inch to 1 mile. <i>Map C 31</i> , Coal Investigations	1955	.50

* Prepared in cooperation with the New Mexico Bureau of Mines and Mineral Resources.

Preliminary Geologic Map of the Kirtland Quadrangle, San Juan County, New Mexico; E. C. Beaumont and R. B. O'Sullivan. Scale 1 inch to 1 mile. <i>Map C 32</i> , Coal Investigations	1955	.50
Geologic Map of the Gabbs Magnesite and Brucite Deposits, Nye County, Nevada; by Charles J. Vitaliano and Eugene Callaghan. Scale 1 inch to 200 feet. <i>Field Studies Map MF 35</i> , Mineral Investigations	1956	1.75
Uranium and Vanadium Deposits of the Colorado Plateau That Produced More Than 1,000 Tons of Ore Through June 30, 1955; Randall T. Chew III. Scale 1 inch to 10 miles. <i>Field Studies Map MF 54</i> , Mineral Investigations	1956	.50
Stratigraphic Distribution of the Pennsylvanian Fusulinidae in a Part of the Sierra Nacimiento of Sandoval and Rio Arriba Counties, New Mexico; Lloyd G. Henbest and others. <i>Preliminary Chart 2</i> , Oil and Gas Investigations	1944	.25
Maps Showing Thickness and General Character of the Cretaceous Deposits in the Western Interior of the United States; J. B. Reeside, Jr. About 8 miles to 1 inch; contour interval 100. Scale 225 miles to 1 inch. <i>Preliminary Map 10</i> , Oil and Gas Investigations	1944	.25
Geology and Asphalt Deposits of North-central Guadalupe County, New Mexico; Joseph M. Gorman and Raymond C. Robeck. Scale 1 mile to 1 inch. <i>Preliminary Map 44</i> , Oil and Gas Investigations	1946	.60
Lucero Uplift, Valencia, Socorro, and Bernalillo Counties, New Mexico; V. C. Kelley and G. H. Wood. Scale 3 miles to 1 inch. <i>Preliminary Map 47</i> , Oil and Gas Investigations	1946	.60
Stratigraphic Relations of Eocene, Paleocene, and Latest Cretaceous Formations of Eastern Side of San Juan Basin, New Mexico; C. H. Dane. <i>Preliminary Chart 24</i> , Oil and Gas Investigations	1946	.35
Geologic Maps of a Part of the Las Vegas Basin and of the Foothills of the Sangre de Cristo Mountains, San Miguel and Mora Counties, New Mexico; S. A. Northrop, H. H. Sullwold, Jr., A. J. McAlpin, and C. P. Rogers, Jr. Scales, $\frac{2}{3}$ mile to 1 inch and 4 miles to 1 inch. <i>Preliminary Map 54</i> , Oil and Gas Investigations	1946	.60
Geology of Nacimiento Mountains, San Pedro Mountain, and Adjacent Plateaus in Parts of Sandoval and Rio Arriba Counties, New Mexico; S. A. Northrop and G. H. Wood. Scale $1\frac{1}{2}$ miles to 1 inch. <i>Preliminary Map 57</i> , Oil and Gas Investigations	1946	.60
*Geology of Northwestern Quay County, New Mexico; Ernest Dobrovlny, C. H. Summerson, and Robert L. Bates. <i>Preliminary Map 62</i> , Oil and Gas Investigations	1946	.75
Geologic Map of Part of Eastern San Juan Basin, Rio Arriba County, New Mexico; C. H. Dane. <i>Preliminary Map 78</i> , Oil and Gas Investigations	1947	Out of print

* Prepared in cooperation with the New Mexico Bureau of Mines and Mineral Resources.

Stratigraphy and Geologic Structure in the Piedra River Canyon, Archuleta County, Colorado; C. B. Read, G. H. Wood, A. A. Wanek, and Pedro Verastequi Mackee. Scale 1 mile to 2 inches. <i>Preliminary Map</i> 96, Oil and Gas Investigations	1949	.80
Pre-Pennsylvanian Geology of Southwestern Kansas, Southeastern Colorado, and the Oklahoma Panhandle; John C. Maher and Jack B. Collins. <i>Preliminary Map</i> 101, Oil and Gas Investigations	1949	1.00
Geology and Coal Resources of the Durango Area, La Plata and Montezuma Counties, Colorado; A. D. Zapp. Scale 1 mile to 2 inches. <i>Preliminary Map</i> 109, Oil and Gas Investigations	1949	1.00
*Geology of the Region from Socorro and San Antonio East to Chupadera Mesa, Socorro County, New Mexico; R. H. Wilpolt and A. A. Wanek. Scale 1 inch to 1 mile. <i>Map</i> OM 121, Oil and Gas Investigations	1952	.80
Permian and Pennsylvanian Rocks of Southeastern Colorado and Adjacent Areas; John C. Maher and Jack B. Collins. Scale about 11 miles to 1 inch. <i>Map</i> OM135, Oil and Gas Investigations	1953	.75
Geology of a Part of Northwestern Mora County, New Mexico; George O. Bachman. Scale 2 inches to 1 mile. <i>Map</i> OM137, Oil and Gas Investigations	1953	.50
Geology and Stratigraphy of Koehler and Mount Laughlin Quadrangles and Parts of Abbott and Springer Quadrangles, Eastern Colfax County, New Mexico; G. H. Wood, Jr., S. A. Northrop, and R. L. Griggs. Scale 1 inch to 1 mile. <i>Map</i> OM141, Oil and Gas Investigations	1953	1.00
Geology and Fuel Resources of the Upper Cretaceous Rocks of the Barker Dome-Fruitland Area, San Juan County, New Mexico; P. T. Hayes and A. D. Zapp. Scales 1 mile to 1 inch; 1/2 mile to 1 inch. <i>Map</i> OM 144, Oil and Gas Investigations	1955	.50
Geology of the Beautiful Mountain Anticline, San Juan County, New Mexico; E. C. Beaumont. Scale 1 3/8 inches to 1 mile. <i>Map</i> OM147, Oil and Gas Investigations	1954	.50
Geology and Fuel Resources of the Red Mesa Area, La Plata and Montezuma Counties, Colorado; Harley Barnes, E. H. Baltz, Jr., and P. T. Hayes. Scale 1 inch to 1 mile. <i>Map</i> OM149, Oil and Gas Investigations	1954	.50
Geologic Map of the Mesa Verde Area, Montezuma County, Colorado; A. A. Wanek. Scale 1 inch to 1 mile. <i>Map</i> OM152, Oil and Gas Investigations	1954	.50
Tectonic Map of a Part of the Upper Rio Grande Area, New Mexico; V. C. Kelley. Scale 1 inch to 3 miles. <i>Map</i> OM157, Oil and Gas Investigations	1954	.50
Map Showing Geologic Structures of the Southern Part of the San Juan Basin, Including Parts of San Juan, McKinley, Sandoval, Valencia, and Bernalillo Counties, New Mexico; compiled by C. B. Hunt and C. H. Dane. Scale 1 inch to 2 miles. <i>Map</i> OM158, Oil and Gas Investigations	1954	.50

* Prepared in cooperation with the New Mexico Bureau of Mines and Mineral Resources.

*Map of New Mexico Showing Test Wells for Oil and Gas, Oil and Gas Fields, and Pipelines; G. H. Dixon, D. H. Baltz, T. F. Stipp, and R. A. Bieberman. Scale 1:500,000. <i>Map</i> OM159, Oil and Gas Investigations	1955	.75
Geology of the Carrizo Mountains Area in Northeastern Arizona and Northwestern New Mexico; J. D. Strobell, Jr. Scale about $\frac{3}{4}$ mile to 1 inch. <i>Map</i> OM 160, Oil and Gas Investigations	1956	1.00
Total Intensity Aeromagnetic Map of Parts of Guadalupe and De Baca Counties, N. M. (R. 21 E.-R. 26 E. and T. 3 N.-T. 6 N.); W. J. Dempsey and M. E. Hill. Scale 1 inch to 1 mile; contour intervals, 10 gammas. <i>Map</i> GP 15, Geophysical Investigations	1950	.20
Total Intensity Aeromagnetic Map of Parts of Guadalupe and De Baca Counties, N. M. (R. 16 E.-R. 21 E. and T. 3 N.-T. 6 N.); W. J. Dempsey and M. E. Hill. Scale 1 inch to 1 mile; contour interval, 10 gammas. <i>Map</i> GP 16, Geophysical Investigations	1950	.20
Total Intensity Aeromagnetic Map of Parts of San Miguel and Guadalupe Counties, N. M. (R. 21 E.-R. 25 E. and T. 6 N.-T. 12 N.); W. J. Dempsey and M. E. Hill. Scale 1 inch to 1 mile; contour interval, 10 gammas. <i>Map</i> GP 17, Geophysical Investigations	1950	.20
Total Intensity Aeromagnetic Map of Parts of San Miguel and Guadalupe Counties, N. M. (R. 16 E.-R. 21 E. and T. 6 N.-T. 10 N. and part of Anton Chico Grant); W. J. Dempsey and M. E. Hill. Scale 1 inch to 1 mile; contour interval, 10 gammas. <i>Map</i> GP 18, Geophysical Investigations	1950	.20
Topographic maps of approximately 270 quadrangles in New Mexico and adjacent parts of Arizona, Colorado, and Texas. Scales range from 1,000 feet to 1 inch, to 4 miles to 1 inch20 each

PUBLICATION OF THE U. S. ATOMIC ENERGY COMMISSION,
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Prospecting With a Counter; Robert J. Wright	1954	.30
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PUBLICATIONS OF THE UNIVERSITY OF NEW MEXICO,
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Regional Tectonics of the Colorado Plateau and Relationship to the Origin and Distribution of Uranium; Vincent C. Kelley (with map)	1955	2.00

* Prepared in cooperation with the New Mexico Bureau of Mines and Mineral Resources.

MAPS

Mining Districts of New Mexico; Stuart A. Northrop. Scale 20 miles to 1 inch	1942	1.00
Tectonic Map of the Colorado Plateau Showing Uranium Deposits; Vincent C. Kelley. Scale 16 miles to 1 inch	1955	1.00

PUBLICATION OF U. S. SOIL CONSERVATION SERVICE,
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AND MINERAL RESOURCES

New Mexico Land Status Map. Scale 20 miles to 1 inch	1941	1.00
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PUBLICATIONS OF THE NEW MEXICO GEOLOGICAL
SOCIETY

(Checks should be made payable to New Mexico Geological Society
for the following Guidebooks—address Campus Station, Box 27,
Socorro, New Mexico)

Guidebook of the First Annual Field Conference, covering North and East Sides of the San Juan Basin	1950	Out of print
Guidebook of the Second Annual Field Conference, covering South and West Sides of the San Juan Basin, New Mexico & Arizona	1951	Out of print
Guidebook of the Third Annual Field Conference, covering Rio Grande Country—Central New Mexico	1952	5.00
Guidebook of the Fourth Field Conference, covering Southwestern New Mexico	1953	5.00
Guidebook of the Fifth Field Conference, covering Southeastern New Mexico	1954	5.00
Guidebook of the Sixth Field Conference, covering South-Central New Mexico	1955	7.00
Geologic Map of the Sierra County Region, New Mexico; compiled by Vincent C. Kelley (This map accompanies the Guidebook of the Sixth Field Conference)..	1955	1.00

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