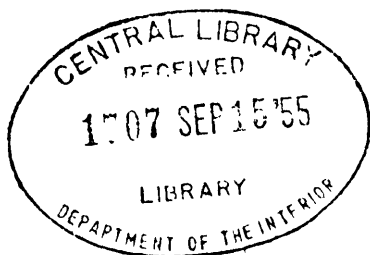


Bibliography of North American Geology, 1951

GEOLOGICAL SURVEY BULLETIN 1025



Bibliography of North American Geology, 1951

By RUTH REECE KING, VIRGINIA M. JUSSEN, JOHN S. POMEROY,
and VSEVOLOD L. SKITSKY

G E O L O G I C A L S U R V E Y B U L L E T I N 1 0 2 5



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BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY 1951

By RUTH REECE KING, VIRGINIA M. JUSSEN, JOHN S. POMEROY
and VSEVOLOD L. SKITSKY

INTRODUCTION

The current annual volume of the bibliographic series lists publications that have appeared during 1951 in the literature concerning the geology of the North American continent, including Greenland, the West Indies and other adjacent islands, and Hawaii, Guam, and other island possessions, but not the trust territories of the United States. In addition a few articles published before 1951, but not included in previous volumes of the series, are cited. Articles by American authors published in foreign journals are cited if they deal with North American localities or are of a general character, but not if they deal with foreign areas. Articles by foreign authors on North America are included regardless of place of publication; those of a general character are included if they appeared in North American journals.

The citations are listed alphabetically by author, with full title and publication data. The author section of the volume is followed by a subject index to the papers cited. Geologic names in the index are those used by the individual authors, and their listing here does not imply approval by the Geological Survey.

Assistance of Marjorie Hooker, Jane R. Cruise, Miriam B. Ketchum, Barbara L. Stringfield, Howard R. Cramer, Elisabeth S. Loud, and Jean G. Selby in preparation of the volume is acknowledged.

The following U. S. Geological Survey bulletins comprise the issues of the Bibliography of North American Geology: 746-747 (1785-1918), 823 (1919-28), 937 (1929-39), 938 (1940-41), 949 (1942-43), 952 (1944-45), 958 (1946-47), 968 (1948), 977 (1949), and 985 (1950).

ORGANIZATION OF THE INDEX

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 the Index to the Bibliography of North American Geology is described in the following section.

Headings.—The headings are the main subdivisions of the index and are placed flush with the margin. Headings are of two general types: geographic and subject. Typical examples are Alaska, Alberta, Anthozoa, Anticlines. Although most of the headings remain the same in each issue of the Bibliography, new ones are introduced and others are discontinued as the need arises.

Headings with cross references.—Some headings have a cross reference only, that is, no entries are listed under the heading and the reader is referred to another heading. Examples are—

Dinosauria. *See* Reptilia.

Miocene. *See* Tertiary.

Ore deposits, origin. *See* Economic geology; Mineral deposits, origin.

Some of the headings that have entries listed under them also have cross references to other headings of a similar or related nature. General headings have cross references to specific ones more commonly than the reverse. Examples are—

Mollusca. *See also* Cephalopoda, Gastropoda, Invertebrata, Pelecypoda.

Mineral resources. *See also* the subheading *Economic geology* under the various states and countries.

Geographic headings.—The geographic headings are names of countries and colonial possessions in North America, the states, territories, and possessions of the United States, the provinces of Canada, and well-known physiographic areas such as Appalachians, Gulf Coast. Examples of geographic headings are Alabama, Alberta, Arctic America, Canada, Dominican Republic, Jamaica, Mexico, Nevada, North America, Ontario, United States. The headings Canada and United States are used to index papers covering the entire countries or more than two or three states or provinces. For example, the paper "Coal resources of Wyoming" is indexed under Wyoming, but "Coking-coal deposits of the western United States" is indexed under United States and not under each state discussed. A paper covering a geographic area is also indexed under the subject headings most appropriate to that paper—for the above examples, Coal.

Subject headings.—The subject headings deal with the subject of the paper rather than the geographic area. They include the general subdivisions of geology, such as Economic geology, Mineralogy, Paleontology; the phyla and more important classes of animals; the eras and periods of geologic time; the important economic mineral groups, such as Copper, Petroleum, Uranium; geologic features and processes, such as Faults and faulting, Glaciation; and other geologic subjects. Papers that do not cover any geographic area are necessarily indexed under subject headings only; most papers, however, are indexed under counterbalancing geographic and subject headings. A few of the subject headings and the general scope of the entries under them are—

<i>Heading</i>	<i>Entries</i>
Artificial minerals-----	Names of minerals or systems.
Bibliography-----	Subject, area, or individual.
Biography-----	Individual names
Construction materials-----	Chiefly area.
Correlations-----	Area and age; some geologic formations.
Engineering geology-----	Subject and area.
Experimental investigations-----	Subject; includes laboratory investigations.
Geologic formations-----	Name of formation; only detailed information indexed.
Geologic formations, lists, sections, tables-----	Area.
Geologic maps-----	Area.
Geologic time-----	Chiefly subject.
Geophysical investigations-----	Area and subject.
Guidebooks-----	Areas covered in detail by field trips; exploration guides.
History-----	Subject or area; history of organizations or geological investigations.
Igneous rocks-----	Chiefly area.
Industrial minerals-----	Subject or area.
Mineral deposits-----	Area and mineral; descriptions of economic deposits.
Mineral deposits, origin-----	Area and mineral; origin of minerals or ores.
Mineral descriptions-----	Mineral name; includes new minerals.
Mineral resources-----	Area; complete resources of area, not indexed to individual minerals.
Nomenclature-----	Subject; chiefly paleontologic, but includes some mineralogic, stratigraphic, etc. Restricted to extensive or unusual changes in names.
Oil and gas fields-----	Name of field.
Paleoecology-----	Subject and area.
Photogeology-----	Subject or area; application of aerial photography to geology.
Popular and elementary geology-----	Papers written for the layman.
Radioactive minerals-----	Area or mineral name; economic or mineralogic.
Rock descriptions-----	Rock name and area; restricted to new or unusual rocks, or very detailed description.
Sedimentation-----	Subject or area; process.
Study and teaching-----	Subject or organization; all papers on education in geology.
Submarine geology-----	Area and subject.
Surveys-----	Activities of the U. S. Geological Survey and of other surveys.
Systems-----	Chemical rock- or mineral-forming systems; formulas or names.
Well and drill-hole logs-----	Chiefly area; few or no data on geologic formations or ages.

Subheadings.—Subheadings, in italics and indented two spaces from the margin, are used to group the entries under the geographic headings and under four of the subject headings. Under the geographic headings, these subheadings are used: *Areas described*, *Economic geology*, *Geologic maps*, *Ground water*, *Historical geology*, *Mineralogy*, *Paleontology*, *Petrology*, *Physical geology*, *Physiographic geology*. *Areas described* is used only for a general description of an area, without enough emphasis to warrant indexing under the other subheadings. The relatively few entries that do not fit under any of the above subheadings are placed directly under the geographic heading, with the necessary information contained in the entry.

The subject headings Earth, Maps, Paleontology, and Technique have subheadings. Earth has the subheadings *Age*, *Crust*, *Interior*, *Temperature*. Paleontology has subheadings for the age divisions *Cambrian*, *Carboniferous*, etc., in alphabetical order. The heading Maps (exclusive of Geologic maps, which is a separate heading) has the subheadings *Aeromagnetic*, *Geophysical*, *Mineral*, etc. Technique has the subheadings *Apparatus*, *Geophysical*, *Mapping*, etc.

Entries.—The entries are indented four spaces from the margin and are printed in the same roman type as the headings. Each entry is followed by the name of the author. A number following the author's name refers to the paper so numbered in the Bibliography if more than one paper is listed under an author's name.

The beginning of the entry can be either subject or geographic. Under geographic headings the entries may be additional geographic breakdowns, subject alone, or a combination of geographic and subject. The order within the entry depends partly on the nature of the subheading: for example, entries under the subheadings *Economic geology* and *Mineralogy* more commonly begin with the subject, whereas entries under *Geologic maps* and *Historical geology* almost always begin with the area. Under subject headings, the entries can begin with either subject or area, depending on the nature of the heading and of the paper indexed. The following are typical entries under geographic and subject headings:

California.

Economic geology.

Chromite, El Dorado County : Cater, F. W., Jr.

Healdsburg quadrangle : Gealey, W. K.

Mercury, New Almaden mines, Santa Clara County : Bailey, E. H.

San Francisco Bay counties : Bowen, O. E., Jr., 3

Mineral resources, Fresno County : Logan, C. A.

Geologic maps.

Bitterwater Creek area : Heikkila, H. H.

Healdsburg quadrangle : Gealey, W. K.

Los Angeles Basin, outcrop areas, Cretaceous : Schoellhamer, J. E.

Rincon pegmatite district : Hanley, J. B.

Cambrian.

Maryland, Sugarloaf Mtn. area : Scotford, D. M.

Tennessee, Great Smoky fault : Abbott, W. O.

Classification.

Algae, Upper Paleozoic : Johnson, J. H., 1

Coal, petrographic : Hacquebard, P. A., 1

Patterned ground, Arctic America : Washburn, A. L.

SERIALS

The following list gives both the abbreviated citation and the full name of periodicals and serials that have been most commonly cited in this bibliography. A few of the less common ones, which list the place of publication as well as the citation within the bibliography proper, have not been included here. Publications that include many articles, such as guide-books, conferences, congresses, symposia, etc., may be entered under either the editor or the society which sponsored them, with full information given there. Papers contained in them may also be cited individually in the abbreviated form, which refers the reader to the editor or author, where full information is given. Such material will not be found in this list.

- Acad. Nat. Sci. Philadelphia Proc.—Academy of Natural Sciences of Philadelphia Proceedings. Philadelphia.
- Acta Crystallographica.—Cambridge, England.
- Ala. Geol. Survey Bull.; Special Rept.—Alabama Geological Survey Bulletin; Special Reports. University, Ala.
- Alaskan Sci. Conf. Proc.—Alaskan Science Conference Proceedings. Washington.
- Alberta Research Council Rept.—Alberta Research Council Reports. Edmonton, Alberta.
- Am. Antiquity—American Antiquity. Menasha, Wis.
- Am. Assoc. Petroleum Geologists Bull.—American Association of Petroleum Geologists Bulletin. Tulsa, Okla.
- Am. Ceramic Soc. Bull.; Jour.—American Ceramic Society Bulletin; Journal. Columbus, Ohio.
- Am. Geol. Inst. Rept.—American Geological Institute Report. Washington.
- Am. Geophys. Union Trans.—American Geophysical Union Transactions. Washington.
- A. I. M. E. Trans.—American Institute of Mining and Metallurgical Engineers Transactions. New York City.
- Am. Jour. Botany—American Journal of Botany. Lancaster, Pa.
- Am. Jour. Sci.—American Journal of Science. New Haven, Conn.
- Am. Midland Naturalist—American Midland Naturalist. Notre Dame, Ind.
- Am. Mineralogist—American Mineralogist. Ann Arbor, Mich.
- Am. Mus. Nat. History Bull.—American Museum of Natural History Bulletin. New York City.
- Am. Mus. Novitates—American Museum Novitates. New York City.
- Am. Philos. Soc. Proc.; Yearbook—American Philosophical Society Proceedings; Yearbook. Philadelphia.
- Am. Scientist—American Scientist. New Haven, Conn.
- Am. Water Works Assoc. Jour.—American Water Works Association Journal. New York City.
- Arctic. Montreal.

- Ariz. Bur. Mines Bull., Geol. Ser.; Mineral Technology Ser. 46; Technology Ser.—Arizona Bureau of Mines Bulletin, Geological Series; Mineral Technology Series; Technology Series. Tucson, Ariz.
- Ark. Res. Devel. Comm., Div. Geology Inf. Cir.—Arkansas Resources and Development Commission, Division of Geology Information Circular. Little Rock, Ark.
- Asoc. Mex. Geólogos Petroleros Bol.—Asociación Mexicana de Geólogos Petroleros Boletín. Mexico City.
- Assoc. Am. Geographers Annals—Association of American Geographers Annals. Lancaster, Pa.
- Assoc. Canadienne-Française Ay. Sci. Annales—Association Canadienne-Française pour l'Avancement des Sciences Annales. Montreal.
- Bol. Historia Nat.—Boletín de Historia Natural. Havana, Cuba.
- Bot. Gaz.—Botanical Gazette, Chicago.
- Bot. Rev.—Botanical Review. Lancaster, Pa.
- British Columbia Dept. Mines Ann. Rept.—British Columbia Department of Mines Annual Report. Victoria, British Columbia.
- Bull. Am. Paleontology—Bulletins of American Paleontology. Ithaca, N. Y.
- Butler Univ. Bot. Studies—Butler University Botanical Studies. Indianapolis, Ind.
- Calif. Dept. Nat. Res., Div. Mines Bull.; Special Rept.—California Department of Natural Resources, Division of Mines Bulletin; Special Report. San Francisco.
- Calif. Inst. Technology Tech. Rept.—California Institute of Technology Technical Reports. Pasadena, Calif.
- Calif. Jour. Mines and Geology—California Journal of Mines and Geology. Sacramento, Calif.
- Calif. Oil Fields—California Oil Fields. San Francisco.
- Calif. Univ. Pubs., Dept. Geol. Sci. Bull.—California University Publications, Department of Geological Sciences Bulletin. Berkeley, Calif.
- Calif. Univ., Scripps Inst. Oceanography Submarine Geology Rept.—California University, Scripps Institution of Oceanography Submarine Geology Report. La Jolla, Calif.
- Calif. Univ. Seismog. Sta. Bull.—California University, Seismographic Stations Bulletin. Berkeley, Calif.
- Canada Dept. Mines and Tech. Surveys, Mines Br. Memo. Ser.—Canada Department of Mines and Technical Surveys, Mines Branch Memorandum Series. Ottawa.
- Canada Dominion Observatory Pubs.—Canada Dominion Observatory Publications. Ottawa.
- Canada Geol. Survey Bull.; Geophysics Paper; Map; Mem.; Paper; Water Supply Paper—Canada Geological Survey Bulletin; Geophysics Paper; Maps; Memoirs; Papers; Water Supply Papers. Ottawa.
- Canada Natl. Mus. Bull.—Canada National Museum Bulletin. Ottawa.
- Canadian Field-Naturalist. Ottawa.
- Canadian Inst. Mining and Metallurgy Trans.—Canadian Institute of Mining and Metallurgy Transactions. Montreal.
- Canadian Min. Jour.—Canadian Mining Journal. Gardenvale, Quebec.
- Canadian Min. Metall. Bull.—Canadian Mining and Metallurgical Bulletin. Montreal.
- Canadian Pacific Synopsis. Montreal, Winnipeg, Calgary, Canada.
- Ciencia. Mexico City.

- Coastal Engineering Conf. Proc.—Coastal Engineering Conference Proceedings. Berkeley, Calif.
- Colo. School Mines Quart.—Colorado School of Mines Quarterly. Golden, Colo.
- Colo. Sci. Proc.—Colorado Scientific Society Proceedings. Denver, Colo.
- Colo. Univ. Studies, Gen. Ser.—Colorado University Studies, General Series. Boulder, Colo.
- Columbia Univ., Lamont Geol. Observatory Tech. Rept.; Tech. Rept. Seismology—Columbia University, Lamont Geological Observatory Technical Report; Technical Report on Seismology. New York City.
- Compass—The Compass. Austin, Texas.
- Condor—The Condor. Berkeley, Calif.
- Conn. Geol. Nat. History Survey Bull.; Misc. Ser.—Connecticut Geological and Natural History Survey Bulletin; Miscellaneous Series. Hartford, Conn.
- Copeia. Ann Arbor, Mich.
- Copenhagen Univ., Mineralog. Geol. Mus. Contr. Mineralogy—Copenhagen University, Mineralogical and Geological Museum, Contributions to Mineralogy. Copenhagen, Denmark.
- Copenhagen Univ., Mus. Minéralogie at Géologie Commun. Géol.; Commun. Paléont.—Copenhagen Université, Muséum de Minéralogie et de Géologie, Communications Géologiques; Communications Paléontologiques. Copenhagen, Denmark.
- Cushman Found. Foram. Research Contr.—Cushman Foundation for Foraminiferal Research Contributions. Washington.
- Dansk Geol. Foren. Meddel.—Dansk Geologisk Forening Meddelelser. Copenhagen, Denmark.
- Denison Univ. Sci. Lab. Jour.—Denison University Scientific Laboratories Journal. Granville, Ohio.
- Earth Sci. Digest—Earth Science Digest. Revere, Mass.
- Earthquake Notes. Washington, D. C.
- Ecol. Mon.—Ecological Monographs. Durham, N. C.
- Econ. Geology—Economic Geology. Urbana, Ill.
- Elisha Mitchell Sci. Soc. Jour.—Elisha Mitchell Scientific Society Journal. Chapel Hill, N. C.
- Eng. Min. Jour.—Engineering and Mining Journal. New York City.
- Eng. and Sci.—Engineering and Science. Pasadena, Calif.
- Evolution. Lancaster, Pa.
- Field & Lab.—Field & Laboratory. Dallas, Texas.
- Fieldiana Geology. Chicago.
- Fla. Geol. Survey Bull.; Rept. Inv.—Florida Geological Survey Bulletin; Report of Investigations. Tallahassee, Fla.
- Fondren Sci. Ser.—Fondren Science Series. Dallas, Texas.
- Gems and Gemology. Los Angeles.
- Geochimica et Cosmochimica Acta. London, England.
- Geog. Rev.—Geographical Review. New York City.
- Geol. Assoc. Canada Proc.—Geological Association of Canada Proceedings. Toronto, Ontario.
- Geol. Soc. America Annot. Bibliography Econ. Geology—Geological Society of America Annotated Bibliography of Economic Geology. Urbana, Ill.
- Geol. Soc. America Bull.; Interim Proc.; Mem.; Proc.—Geological Society of America Bulletin; Interim Proceedings; Memoirs; Proceedings. New York City.

Geophysics. Austin, Texas.

Ga. Geol. Survey Bull.—Georgia Geological Survey Bulletins. Atlanta.

Ga. Mineral News Letter—Georgia Mineral News Letter. Atlanta.

Grønlands Geol. Undersøgelse Bull.: Misc. Paper—Grønlands Geologiske Undersøgelse Bulletin; Miscellaneous Papers. Copenhagen, Denmark.

Gulf-Coast Assoc. Geol. Socs. Ann. Mtg.—Gulf-Coast Association of Geological Societies Annual Meeting. New Orleans, La.

Hopper—The Hopper. Norman, Okla.

Idaho Bur. Mines and Geology Pamph.—Idaho Bureau of Mines and Geology Pamphlets. Moscow, Idaho.

Ill. State Acad. Sci. Trans.—Illinois State Academy of Science Transactions. Springfield, Ill.

Ill. State Geol. Survey Circ.; Rept. Inv.—Illinois State Geological Survey Circulars; Report of Investigations. Urbana, Ill.

Ill. State Water Survey Div. Bull.—Illinois State Water Survey Division Bulletin. Urbana, Ill.

Ing. Civil—Ingeniería Civil. Havana, Cuba.

Ing. Hidrául. México—Ingeniería Hidráulica en México. Mexico City.

Iowa Acad. Sci. Proc.—Iowa Academy of Science Proceedings. Des Moines.

Jamaica Geol. Survey Dept. Bull.; Pub.—Jamaica Geological Survey Department Bulletin; Publication. Kingston, Jamaica.

Jour. Geol. Education—Journal of Geological Education. Appleton, Wis.

Jour. Geology—Journal of Geology. Chicago.

Jour. Mammalogy—Journal of Mammalogy. Baltimore, Md.

Jour. Paleontology—Journal of Paleontology. Tulsa, Okla.

Jour. Petroleum Technology—Journal of Petroleum Technology. Dallas, Tex.

Jour. Sed. Petrology—Journal of Sedimentary Petrology. Menasha, Wis.

Kans. Acad. Sci. Trans.—Kansas Academy of Science Transactions. Topeka, Kans.

Kans. State Geol. Survey Bull.; Rept.—Kansas State Geological Survey Bulletin; Reports. Lawrence, Kans.

Kans. Univ. Sci. Bull.—Kansas University Science Bulletin. Lawrence, Kans.

Ky. Geol. Survey, ser. 9, Bull.; Inf. Circ.; Rept. Inv.—Kentucky Geological Survey, series 9, Bulletin; Information Circular; Report of Investigations. Lexington, Ky.

Los Angeles County Museum Quart.—Los Angeles County Museum Quarterly. Los Angeles.

Maine Geol. Survey Rept. State Geologist—Maine Geological Survey Report of The State Geologist. Augusta, Maine.

Manitoba Dept. Mines and Nat. Res., Mines Br. Pub.—Manitoba Department of Mines and Natural Resources, Mines Branch Publication. Winnipeg, Manitoba.

Md. Dept. Geology, Mines, and Water Res. Bull.; County Rept.—Maryland Department of Geology, Mines, and Water Resources Bulletin; County Reports. Baltimore, Md.

Mass. Inst. Technology, Dept. Geology Tech. Rept.—Massachusetts Institute of Technology, Department of Geology Technical Report. Cambridge, Mass.

Meddel. om. Grønland—Meddelelser om Grønland. Copenhagen, Denmark.

Meteorit. Soc. Contr.—Meteoritical Society Contributions. Los Angeles.

México Univ. Nac., Inst. Geología Anales; Bol.—México Universidad Nacional, Instituto de Geología Anales: Boletín. Mexico City.

- Mich. Acad. Sci. Papers—Michigan Academy of Science, Arts, and Letters, Papers. Ann Arbor, Mich.
- Mich. Geol. Survey Progress Rept.—Michigan Geological Survey Progress Reports. Lansing, Mich.
- Mich. Univ. Mus. Paleontology Contr.—Michigan University Museum of Paleontology Contributions. Ann Arbor, Mich.
- Micropaleontologist—The Micropaleontologist. New York City.
- Military Engineer. Washington.
- Mineralogist—The Mineralogist. Portland, Oreg.
- Mines Mag.—Mines Magazine. Golden, Colo.
- Min. Cong. Jour.—Mining Congress Journal. Washington.
- Min. Eng.—Mining Engineering. New York City.
- Minn. Geol. Survey Bull.; Summary Rept.—Minnesota Geological Survey Bulletin; Summary Report. Minneapolis, Minn.
- Miss. Geol. Survey Bull.—Mississippi Geological Survey Bulletin. University, Miss.
- Mo. Geol. Survey and Water Res. Rept. Inv.—Missouri Geological Survey and Water Resources Reports of Investigations. Rolla, Mo.
- Mo. Univ., School Mines and Metallurgy Bull., Tech. Ser.—Missouri University, School of Mines and Metallurgy Bulletin, Technical Series. Rolla, Mo.
- Natl. Research Council, Comm. Paleobotany; Highway Research Board Bull.—National Research Council Committee on Paleobotany; Highway Research Board Bulletin. Washington.
- Natl. Speleol. Soc. Bull.—National Speleological Society Bulletin. Washington.
- Natl. Speleol. Soc., Stanford Grotto Monthly Rept.—National Speleological Society, Stanford Grotto Monthly Report. Stanford, Calif.
- Nat. History—Natural History. New York City.
- Nature Mag.—Nature Magazine. Washington.
- Naturaliste Canadien—Le Naturaliste Canadien. Quebec City.
- Nev. State Engineer's Office, Water Res. Bull.—Nevada State Engineer's Office, Water Resources Bulletin. Carson City, Nev.
- Nev. Univ. Bull., Geology and Mining Ser.—Nevada University Bulletin, Geology and Mining Series. Reno, Nev.
- N. J. Dept. Conserv. Geol. Ser. Bull.—New Jersey Department of Conservation and Development Geologic Series Bulletin. Trenton, N. J.
- N. Y. Acad. Sci. Trans.—New York Academy of Sciences Transactions. New York City.
- N. Y. State Mus. Bull.—New York State Museum Bulletin. Albany, N. Y.
- N. Y. Water Power and Control Comm. Bull.—New York Water Power and Control Commission Bulletin. Albany, N. Y.
- N. C. Dept. Conserv. Devel., Div. Mineral Res. Bull.—North Carolina Department of Conservation and Development Division of Mineral Resources Bulletin. Raleigh, N. C.
- N. Dak. Acad. Sci. Proc.—North Dakota Academy of Science Proceedings. Grand Forks, N. Dak.
- N. Dak. Geol. Survey Ground-Water Studies; Rept. Inv.—North Dakota Geological Survey Ground-Water Studies; Report of Investigations. Grand Forks, N. Dak.
- Northwest Science. Cheney, Wash.
- Nova Scotia Dept. Mines Ann. Rept.—Nova Scotia Department of Mines Annual Report. Halifax, Nova Scotia.

- Nova Scotian Inst. Sci. Proc.—Nova Scotian Institute of Science Proceedings. Halifax, Nova Scotia.
- Nuclear Science Abstracts. Oak Ridge, Tenn.
- Ohio Geol. Survey Bull.; Rept. Inv.—Ohio Geological Survey Bulletin; Reports of Investigations. Columbus, Ohio.
- Ohio Jour. Sci.—Ohio Journal of Science. Columbus, Ohio.
- Ohio State Univ., Eng. Expt. Sta. News—Ohio State University, Engineering Experiment Station News. Columbus, Ohio.
- Oil and Gas Jour.—Oil and Gas Journal. Tulsa, Okla.
- Oil in Canada. Winnipeg, Manitoba.
- Okla. Acad. Sci. Proc.—Oklahoma Academy of Science Proceedings. Norman, Okla.
- Okla. Geol. Survey Circ.—Oklahoma Geological Survey Circulars. Norman, Okla.
- Ontario Dept. Mines Ann. Rept.; Indus. Mineral Circ.; Prelim. Rept.—Ontario Department of Mines Annual Report; Industrial Mineral Circular; Preliminary Report. Toronto.
- Oreg. Dept. Geology and Mineral Industries Misc. Paper—Oregon Department of Geology and Mineral Industries Miscellaneous Paper. Portland, Oreg.
- Pacific Discovery. San Francisco.
- Pa. Acad. Sci. Proc.—Pennsylvania Academy of Science Proceedings. Harrisburg, Pa.
- Pa. Geol. Survey, 4th ser., Bull.; Progress Rept.; Special Bull.—Pennsylvania Geological Survey, 4th series, Bulletin; Progress Report; Special Bulletin. Harrisburg, Pa.
- Pa. State Coll., Mineral Industries Expt. Sta. Bull.; Tech. Rept.—Pennsylvania State College, Mineral Industries Experiment Station Bulletin; Technical Report. State College, Pa.
- Photogrammetric Eng.—Photogrammetric Engineering. Washington. Plateau. Flagstaff, Ariz.
- Pop. Astronomy—Popular Astronomy. Northfield, Minn.
- Precambrian—The Precambrian. Winnipeg, Manitoba.
- Producers Monthly. Bradford, Pa.
- Quebec Dept. Mines Geol. Rept.; Prelim. Rept.—Quebec Department of Mines Geological Report; Preliminary Report. Quebec City.
- Rev. Minera y Petrolera—Revista Minera y Petrolera. Mexico City.
- R. I. Port Indus. Devel. Comm. Geol. Bull.—Rhode Island Port and Industrial Development Commission Geological Bulletin. Providence, R. I.
- Rochester Acad. Sci. Proc.—Rochester Academy of Science Proceedings. Rochester, N. Y.
- Rocks and Minerals. Peekskill, N. Y.
- Royal Soc. Canada Proc.; Trans.—Royal Society of Canada Proceedings; Transactions. Ottawa.
- San Diego Soc. Nat. History Trans.—San Diego Society of Natural History Transactions. San Diego, Calif.
- Saskatchewan Geol. Survey Rept.—Saskatchewan Geological Survey Report. Regina, Saskatchewan.
- Science. Lancaster, Pa.
- Sci. Am.—Scientific American. New York City.

- Sci. Monthly—Scientific Monthly. Washington.
- Seismol. Soc. America Bull.—Seismological Society of America Bulletin. Berkeley, Calif.
- Shale Shaker. Oklahoma City.
- Sierra Club Bull.—Sierra Club Bulletin. San Francisco.
- Smithsonian Inst. Ann. Rept.—Smithsonian Institution Annual Report. Washington.
- Soc. Cubana Historia Nat. Mem.—Sociedad Cubana de Historia Natural Memorias. Havana.
- Soc. Cubana Ingenieros Rev.—Sociedad Cubana de Ingenieros Revista. Havana.
- Soc. Econ. Paleontologists and Mineralogists Special Pub.—Society of Economic Paleontologists and Mineralogists Special Publication. Tulsa, Okla.
- Soc. Mexicana Historia Nat. Rev.—Sociedad Mexicana de Historia Natural Revista. Mexico City.
- Soil Science. Baltimore, Md.
- S. Dak. Acad. Sci. Proc.—South Dakota Academy of Science Proceedings. Vermillion, S. Dak.
- S. Dak. Geol. Survey Quadrangle Maps—South Dakota Geological Survey Quadrangle Maps. Vermillion, S. Dak.
- Southern Calif. Acad. Sci. Bull.—Southern California Academy of Sciences Bulletin. Los Angeles, Calif.
- Stanford Univ. Abs. Dissert.—Stanford University Abstracts of Dissertations. Stanford, Calif.
- State Geologists' Jour.—State Geologists' Journal. San Francisco, Calif.
- Tenn. Dept. Conserv., Div. Geology Bull.—Tennessee Department of Conservation, Division of Geology Bulletin. Nashville, Tenn.
- Texas Archeol. Paleont. Soc. Bull.—Texas Archeological and Paleontological Society Bulletin. Abilene, Tex.
- Texas Jour. Sci.—Texas Journal of Science. San Marcos, Tex.
- Texas Univ., Bur. Econ. Geology Pub.; Rept. Inv.—Texas University, Bureau of Economic Geology Publications; Reports of Investigations. Austin, Texas.
- Torrey Bot. Club Bull.—Torrey Botanical Club Bulletin. Menasha, Wis.
- Tulsa Geol. Soc. Digest—Tulsa Geological Society Digest. Tulsa, Okla.
- U. N. Sci. Conf. Conserv. and Utiliz. Res. Proc.—United Nations Scientific Conference on the Conservation and Utilization of Resources Proceedings. Lake Success, N. Y.
- U. S. Beach Erosion Board Tech. Memo.—United States Beach Erosion Board Technical Memorandum. Washington.
- U. S. Bur. Mines Inf. Circ.; Materials survey; Rept. Inv.—United States Bureau of Mines Information Circular; Materials survey; Reports of Investigations. Washington.
- U. S. Geol. Survey Bull.; Circ.; Coal Inv. Map; Geol. Quadrangle Map; Geophys. Inv. Map; Index to Geol. Mapping U. S.; Mineral Inv. Field Studies Map; Oil and Gas Inv. Chart; Oil and Gas Inv. Map; Prof. Paper; Water-Supply Paper—United States Geological Survey Bulletin; Circular; Coal Investigations Map; Geologic Quadrangle Map; Geophysical Investigations Map; Index to Geologic Mapping in the United States; Mineral Investigations Field Studies Map; Oil and Gas Investigations Chart; Oil and Gas Investigations Map; Professional Paper; Water-Supply Paper. Washington.

- U. S. Interagency Comm. Arkansas-White-Red Basins, Minerals and Geology Work Group—United States Interagency Committee on the Arkansas-White-Red Basins, Minerals and Geology Work Group. [Pittsburgh, Pa.?]
- U. S. Natl. Mus. Proc.—United States National Museum Proceedings. Washington.
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- Calcium chloride, Bristol Dry Lake, San Bernardino County: Gale, H. S.

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Clays and shales: Plummer, N. V.

Cloud County: Buck, L. P.

Mitchell County: Byrne, F. E.

Rawlins County: Beck, H. V., 2.

Sheridan County: Beck, H. V., 1.

Limestone, eastern United States: Ames, J. A.

Mexico, Tula area, perlite: Lozano García, R., 4.

New York: Hartnagel, C. A.

Clays and shales: Brownell, W. E.

Ohio, southeastern: Bengston, R. J.

Oregon, Klamath Indian Reservation, pumice: Walker, G. W.

Construction materials—Continued

Pennsylvania, Berks County, dolomite and limestone: Gray, C.

Pozzolans, natural, United States: Mielenz, R. C.

South Dakota, Yankton area, cement materials: Curtiss, R. E., 3.

Virginia, Highland County: Parrott, W. T., 1.

West Indies, St. Vincent Island: Stacey, F. R.

Contact metamorphism. *See* Metamorphism. Continental drift.

General: Engel, A. E. J., 1.

Gravitational fission theory: Baker, H. B., 1.

Hemispherical segregation of sial, theory: Daly, R. A., 2.

Land bridges, species distribution: Mayr, E.

Relation to climatic change: Brooks, C. E. P.

Continental shelf.

Gulf of Mexico, petroleum: Weaver, P., 2.

Petroleum exploration: Aguilar Saldívar, F.

Louisiana, Atchafalaya Bay, physiography and sediments: Thompson, Warren C.

Nature, oil reserves: Lees, G. M., 1.

North Atlantic Coastal Plain: Anderson, J. L., 1.

Shelf-break, origin: Dietz, R. S., 3.

Origin, sedimentation and abrasion theories: Dietz, R. S., 1.

Continental slope, Gulf of Mexico, Florida, topography: Jordan, G. F.

Continents.

Continental blocks, growth in geologic time: Wilson, J. T., 2.

Growth, contracting earth theory, failure of spherical shells: Wilson, J. T., 1.

Microselsms, two-second frontal, source: Lynch, J. J.

Transmission: Carder, D. S., 2.

Origin, radioactivity: Hurley, P. M., 1.

Segregation of sial, theory: Daly, R. A., 2.

Structure: Gutenberg, B., 3.

Sialic layer, surface waves: Press, F.

Copper.

Alaska, Kasma Creek prospect: Warfield, R. S.

Arizona, Castle Dome area, Gila County: Peterson, N. P.

Dragoon Mts. area: Wilson, E. D., 3.

Emerald Isle deposit: Thomas, B. E. Johnson mining district: Cooper, J. R., 2.

Wallapai mining district: Dings, M. G.

Copper—Continued

Arsenates, natural hydrous and basic: Berry, L. G., 1.

British Columbia, Copper Mtn. mine: Fahrni, K. C.

California, Iron Mountain, Shasta County: Kinkel, A. R., Jr., 1.

Shasta King mine, Shasta County: Kinkel, A. R., Jr., 2.

West Belt mines: Wiebelt, F. J.

Canada, resources: McClelland, W. R. Geochemical anomalies in soil near veins: Huff, L. C., 2.

Geochemical prospecting: Roberts, E. E. Mexico, Michoacán: Gonzalez Reyna, J.

Michigan, Keweenaw lavas, origin: Cornwall, H. R., 2.

Lava, paragenesis: Cornwall, H. R., 1. Minerals, formation: Tunell, G.

Montana, Canyon Ferry quadrangle: Mertie, J. B., Jr.

New Mexico, Torpedo mine: Soulé, J. H.

Newfoundland, Burlington Peninsula: Baird, D. M., 1.

Quebec, Abitibi and Témiscamingue Counties, mining properties: Claveau, J., 2.

Chibougamau area: Graham, R. B., 2. Gaspé peninsula, Holland Township: Bell, A. M.

St. Pierre and Miquelon: Aubert de la Rüe, E.

Utah, Tintic area: Almond, H., 1.

Vermont, Elizabeth mine: McKinstry, H. E.

Coral reefs. *See* Reefs.Cores. *See also* Well and drill-hole logs.

Alaska, Taku Glacier, petrofabric analyses: Miller, M. M.

California, oil-bearing formations, clay-mineral identification: Nahin, P. G.

Carbonate reservoirs, analysis: Rose, W. D.

Deep-sea sands, Hudson Canyon region: Ericson, D. B.

Edwards limestone, capillary properties: Whitting, R. L.

Gulf Coast sands, analysis: Elmdahl, B. A.

Preservation: Hvorslev, M. J.

Texas, East Basin, Washita-Fredericksburg section: Eaton, R. W.

Well cuttings, examination: Low, J. W. Examination and logging methods: Muir, J. L.

Correlations. *See also* Geologic formations, lists, sections, tables; Historical geology.

Alaska, Yakataga area, Tertiary: Miller, D. J., 1.

Alberta, Carbondale River area: Clow, W. H. A.

Pierre Greys Lakes map area: Irish, E. J. W.

Correlations—Continued

- Alberta—Continued
 Rocky Mts. and foothills, Devonian :
 Fox, F. G., 1.
 Appalachian Basin, bituminous shale
 formations, Devonian-Mississippian :
 Rich, J. L., 3.
 Arizona, Glen Canyon group, Jurassic(?) :
 Callahan, J. T., 1.
 Permian : Winters, S. S.
 Pre-Cambrian, older : Anderson, C. A.
 San Juan Basin, Cretaceous : Silver,
 C., 1.
 Arizona-New Mexico, Jurassic, Defiance
 monocline : Wright, H. E., Jr., 1.
 Arizona-Utah, Zion Park region : Gregory,
 H. E., 1.
 Arkansas, Arkansas novaculite, Devonian-
 Mississippian : Hass, W. H.
 Athens shale, Ordovician, age : Decker,
 C. E., 1.
 Atlantic Coastal Plain, Cretaceous-
 Tertiary : Richards, H. G., 1.
 Atlantic Ocean, deep-sea sediments, glacial
 stages, North America-Europe : Gignoux,
 M.
 California, Coast Ranges, post-Jurassic
 diastrophism : Gealey, W. K.
 Mt. Diablo to Sacramento Valley, Cenozoic :
 Clark, E. W.
 Mt. Lincoln - Castle Peake area, volcanic
 series, Tertiary : Hudson, F. S.
 San Joaquin Valley, Fresno and Merced
 Counties : Payne, M. B.
 San Jose - Mount Hamilton area, Jurassic-
 Recent : Crittenden, M. D., Jr., 2.
 Santa Barbara area, Jurassic-Miocene :
 Page, B. M., 1.
 Sobrante sandstone, Miocene : Lutz, G. C.
 Ventura Basin oil fields : Am. Assoc. Petroleum
 Geologists, Pacific Sec.
 Canada, electrical logging, use in oil fields :
 Tixier, M. P.
 Western, Cretaceous : Wickenden, R. T. D.,
 2.
 Western plains, Cambrian-Tertiary : Webb,
 J. B.
 Chesapeake Bay, soils and land forms : Carter,
 G. F., 2.
 Colorado, Debeque oil-shale area, Tertiary :
 Waldron, F. R.
 Front Range, pre-Pennsylvanian : Maher,
 J. C.
 Colorado-New Mexico, Raton Mesa region,
 Cenozoic : Levings, W. S.
 Cretaceous, Upper, Gulf Coast, Mexico, and
 Austria : Noth, R.
 Deep-sea cores : Kulp, J. L., 3.
 Devonian, lithologic units, Northern Rocky
 Mts. and Great Plains : Andrichuk, J. M.

Correlations—Continued

- Devonian—Continued
 Wyoming-Montana-Alberta-Saskatchewan :
 Sloss, L. L., 5.
 Devonian-Mississippian black shales, eastern
 United States : Cross, A. T., 4.
 Dunkard Basin, Ohio - West Virginia -
 Pennsylvania : Cross, A. T., 1.
 Florida, Citrus and Levy Counties : Vernon,
 R. O.
 Foraminifera, Cretaceous, Rocky Mtn. area :
 Crowley, A. J., 2.
 Geological vs. geophysical data : Alvarez,
 M., Jr., 1.
 Georgia, Dalton quadrangle : Munyan, A. C.,
 1.
 Greenland, eastern, Cambrian-Ordovician :
 Poulsen, C., 3.
 Thule area, pre-Cambrian(?) : Kurtz, V. E.
 Gulf Coastal Plain, Ark.-La.-Tex. area, Mesozoic-
 Cenozoic : Bryan, C. L.
 Illinois, Pennsylvanian, graphic logs : Cady,
 G. H., 1.
 Ste. Genevieve-Chester contact, Mississippian :
 Sutton, A. H.
 Indiana, coal, spore analysis : Guennel, G. K.
 Iowa, Mystic coal bed, Carboniferous, with
 eastern United States, upper Allegheny :
 Schemel, M. P.
 Kansas, Cherokee group, Pennsylvanian, southeastern :
 Howe, W. B.
 Peoria loess, Pleistocene : Leonard, A. B.
 Pleistocene : Frye, J. C., 2, 3.
 Kansas-Iowa, Pennsylvanian : Baxter, R. W.,
 1.
 Kentucky, Ste. Genevieve - Chester contact,
 Mississippian : Sutton, A. H.
 Manitoba, Interlake area, Silurian : Baillie,
 A. D.
 Pre-Cambrian : Harrison, J. M., 1.
 Maryland, Coastal Plain, Cretaceous-Tertiary :
 Darton, N. H., 3.
 St. Paul group, Middle Ordovician, adjacent
 states : Neuman, R. B., 1.
 Sugarloaf Mt. area : Scottford, D. M.
 Mexico, Isthmian saline basin - Tabasco re-
 entrant : Alvarez, M., Jr., 3.
 Mesozoic : Mullerried, F. K. G., 1.
 Tabasco and northern Chiapas, Cretaceous
 and Tertiary : Salas G., G. P., 1.
 Tampico-Tuxpan area, Cretaceous : Nigra,
 J. O.
 Michigan, Detroit River group, Devonian :
 Landes, K. K., 2.
 Devonian, southeastern : Ehlers, G. M., 1.
 Minnesota, pre-Cambrian rocks, regional :
 Grout, F. F., 2.

Correlations—Continued

- Mississippi, Fearn Springs member, Wilcox formation, Tertiary: Mellen, F. F.
- Missouri, Platin group, Ordovician: Larson, E. R., 1.
- Montana, Colorado group, Cretaceous, with Colorado-Wyoming: Young, K. P.
- Cretaceous, northwestern, central, and Black Hills: Cobban, W. A., 4.
- Generalized chart: Billings Geol. Soc.; Hadley, H. D., 1.
- Paleozoic, southwestern, with Rocky Mtn. region: Sloss, L. L., 4.
- Triassic-Jurassic, southwestern: Moritz, C. A.
- Montana-Wyoming-Idaho, Lower Cretaceous: Yen, T. -C., 1.
- Nebraska, Pleistocene: Condra, G. E., 2.
- Western, with Laramie Range, Hartville uplift, and Black Hills: Condra, G. E., 1.
- New Brunswick, Minto coal seam, Pennsylvanian: Muller, J. E.
- New Hampshire, White Mtn. magma series, with Nigeria: Greenwood, R.
- Woodsville quadrangle, Ordovician (?) - Devonian: White, W. S.
- New Jersey, Rondout limestone, Silurian: Herpers, H. F., Jr., 2.
- New Mexico, Bliss sandstone, Cambrian: Kelley, V. C., 2.
- Permian: Winters, S. S.
- San Juan Basin, Cretaceous: Silver, C., 1.
- Socorro-Chupadera Mesa area, Permian: Wilpolt, R. H.
- New York, Batavia quadrangle, Devonian: Sutton, R. G.
- Champlain Valley, Chazy reef facies, Ordovician: Oxley, P.
- Newfoundland, southwestern, Carboniferous: Baird, D. M., 2.
- North America, Pleistocene, with Europe: Stout, T. M., 1.
- Tertiary floras: Barghoorn, E. S., Jr.
- Northwest Territories, District of Mackenzie: Lord, C. S.
- Nova Scotia, Cape Breton Island, coal seams: Hacquebard, P. A., 2.
- Ohio, Devonian, northwestern: Ehlers, G. M., 1.
- Devonian-Mississippian, with Pennsylvania: de Witt, W., Jr.
- Oklahoma, northern, Cherokee formation, Pennsylvanian: Howe, W. B.
- Illinois River valley, Ordovician: Montgomery, J. H.
- Lawrence uplift area, Mississippian: Huffman, G. G., 3.
- Northeastern, pre-Cambrian-Pennsylvanian: Huffman, G. G., 1.
- Northern and southern: Disney, R. W.

Correlations—Continued

- Oklahoma—Continued
- Stonewall area, Lawrence uplift, Carboniferous: Barker, J. C.
- Stonewall-Atoka quadrangles, Carboniferous: Kuhleman, M. H.
- Wewoka formation equivalents, Pennsylvanian: Oakes, M. C., 2.
- Oklahoma-Tennessee, Silurian: Amsden, T. W., 2.
- Ontario-Ohio, Middle Devonian: Ehlers, G. M., 3.
- Ordovician, Appalachian region: Woodward, H. P.
- Pennsylvania, Devonian-Mississippian, with Ohio: de Witt, W., Jr.
- Middle Ordovician, with New York-Ontario: Tasch, P., 2.
- Mt. Carmel quadrangle, Pennsylvanian coal beds: Rothrock, H. E., 1.
- Quaternary events, by paleoclimate and level changes: Russell, R. J., 1.
- Rocky Mtn. region: Petroleum Inf.
- Saskatchewan, Cypress Hills, Cretaceous-Tertiary: Russell, L. S., 2.
- Cypress Lake map area: Furnival, G. M.
- Silurian-Devonian, Central Interior Basin: Freeman, L. B.
- Stratigraphic, use of seismic velocity data: Krumbein, W. C., 5.
- Subsurface, technique: Vance, H. J.
- Texas, Brazos-Colorado River Valleys, fusulinid correlation, Pennsylvanian: Thackrey, E. L.
- Brazos-Colorado River Valleys, Pennsylvanian: Cheney, M. G.; Quigley, J. A.
- Cretaceous: Adkins, W. S.
- Maness formation, Cretaceous: Lozo, F. E., Jr., 2.
- Trinidad, Jurassic-Recent, with eastern Venezuela: Kugler, H. G.
- United States, geologic map: Whitcomb, L., 1.
- Southeastern, and Europe, temperature measurements, Cretaceous: Urey, H. C., 3.
- Western interior, Cretaceous: Cobban, W. A., 5.
- Utah, Brazer formation, Mississippian: Parks, J. M., Jr., 1.
- Cedar Hills area: Schoff, S. L., 3.
- Colorado Plateau region, Lower Cretaceous faunal zones: Katich, P. J., Jr.
- Confusion Range, Devonian: Donovan, J. T.
- Devonian-Pennsylvanian: Ogden, L.
- Pennsylvanian: Kraetsch, R. B.
- Dugway area, Pleistocene, sediments and shorelines: Ives, R. L., 4.
- Garden City formation, Ordovician: Ross, R. J., Jr., 1.

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Utah—Continued

- House Range, Cambrian sequence:
Wheeler, H. E., 1.
Paunsaugunt region, Mesozoic-Cenozoic: Gregory, H. E., 2.
Pogonip faunal facies, Ordovician: Hintze, L. F., 2.
Southeastern, subsurface stratigraphy: Smith, W. L.
Vermont, Champlain Valley, Chazyan reef facies, Ordovician: Oxley, P.
Woodsville quadrangle, Ordovician(?)—Devonian: White, W. S.
Virginia, Coastal Plain, Cretaceous-Tertiary: Darton, N. H., 3.
Rivanna River sediments: Horowitz, A. S., 2.
Slate River sediments: Oref, W. R.
Washington, McIntosh formation, Eocene: Snively, P. D., Jr., 2.
Willapa Valley, Tertiary: Rau, W. W.
Wyoming, Petroleum Inf.
Big Horn Basin, oil and gas penetration chart: Anonymous, 5.
Eden Valley, regional, Quaternary: Holmes, G. W.
Hanna Basin, Cretaceous-Tertiary: Knight, S. H.
Mesaverde formation, Cretaceous: Bergstrom, J. R.
Powder River Basin, Upper Cretaceous: Wilson, J. B.
Sinclair area, Frontier formation, Cretaceous: Cobban, W. A., 1.
Southwestern: Rubey, W. W., 2.
Spread Creek-Gros Ventre River area: Love, J. D., 2.
Wind River Mts., and midcontinent glacial events, Quaternary: Moss, J. H., 2.

Corundum.

- Emery deposits, United States, origin: Friedman, G. M., 1.
Idaho, Valley County: Fryklund, V. C., Jr., 3.
Sapphires and rubies, star, synthetic, properties: Frondel, C., 4.

Costa Rica.

- Calcareous tuff, Liberia: Dóndoli, C., 1.
Construction materials, Colima-Río Virilla quarries: Dóndoli, C., 3.
Hydrogeology, Palmares area: Segura Paguaga, A.
Lacustrine soil, Palmares area: Dóndoli, C., 4, 5.
Springs, Escazú area: Dóndoli, C., 2.

Craters.

- Nevada, Duckwater area, meteorite: Rinehart, J. S.
Quebec, Chubb Crater, meteoritic origin: Meen, V. B.

Cretaceous. *See also* Paleontology, *Cretaceous*.

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- Alaska, northern, reclassification: Gryc, G., 3.
Alberta, Athabaska tar sands, origin of bitumen: Link, T. A., 1.
Blairmore formation, ostracode zone: Loranger, D. M.
Carbondale River area: Clow, W. H. A.
Peace River, sections: Wickenden, R. T. D., 1.
St. Mary River formation, Spring Coulee-Magrath area: Williams, E. P.
Stettler oil field: Lockwood, R. P.
Arizona, Black Mesa: Williams, G. A.
San Juan Basin: Silver, C., 1.
Atlantic Coastal Plain, cross section: Richards, H. G., 1.
California, Cuyamaca Peak quadrangle, batholith: Everhart, D. L., 1.
San Diego area, offshore: Butcher, W. S., 2.
Southern, batholith and associated rocks: Larsen, E. S., Jr., 2.
Canada, bitumen, possible origin: Hume, G. S., 2.
Western: Wickenden, R. T. D., 2.
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Northeastern, subsurface: Blair, R. W.
Florida, Citrus and Levy Counties: Vernon, R. O.
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Jamaica: Hose, H. R.
Kansas, Mitchell County: Byrne, F. E.
Maryland, Calvert County: Overbeck, R. M.
Coastal Plain, structural relations: Darton, N. H., 3.
Mexico, Baja California, Punta San Isidro area: Kirk, M. V.
Chihuahua, San Antonio mines: Hewitt, W. P.
Classification systems, comparison: Mullerried, F. K. G., 1.
Tamaulipas, San José de las Rusias-Sabino Gordo region: Díaz-Gonzalez, T. E.
Tampico-Tuxpan area: Nigra, J. O.
Montana, Colorado shale and equivalent rocks: Cobban, W. A., 4.
Frontier formation: Young, K. P.
New Mexico, San Juan Basin: Silver, C., 1.
North Carolina, Black Creek formation: Powers, M. C.
North Dakota, Emmons County: Fisher, S. P.
Saskatchewan, Cypress Hills: Russell, L. S., 2.

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 Lloydminster area, Manville formation: Edmunds, F. H.
 South Dakota, Black Hills, Newcastle sandstone: Crowley, A. J., 1.
 Texas, Barrilla Mts.: Eifler, G. K., Jr.
 Eagle Ford quadrangle: Turner, W. L.
 Maness formation, eastern: Lozo, F. E., Jr., 2.
 Waco area: Adkins, W. S.; Lozo, F. E. Jr., 1.
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 Paunsaugunt region: Gregory, H. E., 2.
 Virginia, Coastal Plain: Cederstrom, D. J.
 Coastal Plain, structural relations: Darton, N. H., 3.
 Wyoming, Black Hills, Newcastle sandstone: Crowley, A. J., 1.
 Hanna Basin: Knight, S. H.
 Powder River Basin, Sussex sandstone: Wilson, J. B.
 Teton County, sections: Love, J. D., 3.
 Crinoidea. *See also* Echinodermata.
 Kansas, Carboniferous, new species: Strimple, H. L., 3.
 Pennsylvanian, new species: Strimple, H. L., 2.
 Nomenclature: Peck, R. E., 2.
 Oklahoma, Carboniferous, new genus: Strimple, H. L., 3.
 Chester series, Mississippian, new: Strimple, H. L., 6, 7.
 Oologah formation, Pennsylvanian, new: Strimple, H. L., 4.
 Pitkin formation, Mississippian, new: Strimple, H. L., 5.
 Texas, Carboniferous, new species: Strimple, H. L., 3.
 Lake Bridgeport shale, Pennsylvanian, new: Strimple, H. L., 1.
 Crustacea. *See also* Arthropoda; Ostracoda; Trilobita.
 California, Los Angeles area, Pleistocene crabs: Menzies, R. J.
 Cryopedology. *See* Permafrost.
 Crystal structure.
 Albite, in base exchange weathering mechanism: Frederickson, A. F.
 Allanite, California: Hutton, C. O., 2.
 Aluminum and silicon in garnets: Yoder, H. S., Jr., 1.
 Amphiboles, structural transformations: Wittels, M., 3.
 Synthetic: Comeforo, J. E.

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- Analysis: Buerger, M. J., 1.
 Anorthite: Laves, F., 3.
 Atoms, photographs: Buerger, M. J., 2.
 Bandyllite: Collin, R. L.
 Beryl, Maine: Hurlbut, C. S., Jr., 2.
 Brucite, dehydrated, twinning: Garrido, J.
 Carnotite, tyuyamunite and related compounds, synthetic: Murata, K. J.
 Chalcantinite, X-ray studies: Fisher, D. J., 3.
 Childrenite, eosphorite: Barnes, W. H., 2.
 Chloritoid, Pennsylvania: Hietanen, A. M., 2.
 Claudetite: Frueh, A. J., Jr., 1.
 Clay, and related materials: Bradley, W. F.
 Minerals, classification: Weaver, C. E., 2.
 Structure, relation to plasticity: Nieto Casas, L.
 Montmorillonitic, magnesium content: Foster, M. D.
 Copper arsenates, natural: Berry, L. G., 1.
 Cryolite, twinning: Donnay, J. D. H.
 Crystal growth, surface structure: Weyl, W. A.
 Crystals, optic angle, determination: Fairbairn, H. W., 3.
 Veil formation: Zerfoss, S.
 Davidite, thermal analysis: Kerr, P. F., 6.
 Determination, intensity relations: Lukesh, J. S., 2.
 Dolomite, Ontario: Robertson, F. S., 1.
 Dumortierite, Montana: Graham, C. E.
 Empressite and "stuetzite": Thompson, R. M., 1.
 Fluorine-micas, synthesis: Hatch, R. A.
 Fluorite: Zapffe, C. A., 2.
 Formation temperatures: Grogan, R. M., 2.
 Fractography: Zapffe, C. A., 1.
 Galena, lattice measurements: Wasserstein, B.
 Glaucochroite, unit cell: O'Mara, J. H.
 Halloysite, dehydrated: Murray, H. H.
 Hessite: Rowland, J. F.
 Huttonite, monoclinic thorium silicate, new: Hutton, C. O., 1; Pabst, A., 1.
 Hydromagnesite, unit cell: Murdoch, J., 3.
 Ice, petrofabrics: Bader, H.
 Washington, Emmons Glacier: Rigsby, G. P.
 Iron lazulite: Katz, L.
 Isomorphism, bond types: Fyfe, W. S.
 Kaolinite: Murray, H. H.
 Decomposed: Dragsdorf, R. D.
 Lanarkite, Binnie, W. P.
 Linarite, unit cell: Berry, L. G., 2.
 Livingstonite: Gorman, D. H.

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- Luzonite-famatinitite series: Gaines, R. V.
 Magnetoplumbite: Berry, L. G., 3.
 Matildite, aramayoite, miargyrite: Graham, A. R., 1.
 Method of computing structure factors: Donnay, G., 1.
 Mica, fluosilicates, crystal growth: Insley, H.
 Minerals, formation: Tunell, G.
 Occurring in guano: Winchell, H., 2.
 Montmorillonite: McConnell, D., 2.
 Nasonite: Frondel, C., 1.
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 Optic axial angle, computation: Wright, F. E., 3.
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 Plagioclase, twinning, laws: Turner, F. J., 2.
 Pyrite minerals, measurements: Gordon, R. B.
 Sabugalite, aluminum-autunite, new: Frondel, C., 2.
 Saléite and novacekite: Frondel, C., 3.
 Sapphires and rubies, star, synthetic, properties: Frondel, C., 4.
 Schairerite, unit cell: Wolfe, C. W., 1.
 Serpentine minerals: Bates, T. F., 1.
 Silicon carbide, type 10H: Ramsdell, L. S.
 Sphalerite, Ontario: Robertson, F. S., 1.
 Spinel, red, synthetic: Crowningshield, G. R.
 Teaching, importance in mineralogy: Henderson, D. M.
 Triplite, analysis: Heinrich, E. W., 1.
 Urano-uranic oxide: Milne, I. H., 2.
 Uranothorite, X-ray examination: Pabst, A., 2.
 Vandenbrandeite: Milne, I. H., 1.
 Xanthophyllite, valuevite: Forman, S. A.
 Zeolites, luminescence, artificially induced: Claffy, E. W.
 Zeunerite: Frondel, J. W., 1.
- Crystallization.
 Beryl and quartz, fluid inclusions: Cameron, E. N., 5.
 Clay and related materials: Bradley, W. F.
 Crystal growth, surface structure: Weyl, W. A.
 Crystals, veil formation: Zerfoss, S.
 Ice: Schaefer, V. J.
 Ionic salts, unseeded solutions, rock textures: Jones, C. L.
 Minerals, formation: Tunell, G.
 Plagioclase twins, petrological studies: Gorai, M.
 Silicates, liquid immiscibility: Roedder, E. W., 2.

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- Amphiboles, structural transformations: Wittels, M., 3.
 Buerger precession instrument, precision: Barnes, W. H., 1.
 Clay and related materials: Bradley, W. F.
 Copper arsenates, natural: Berry, L. G., 1.
 Crystal structure, determination, intensity relations: Lukesh, J. S., 2.
 Crystals, optic angle, determination: Fairbairn, H. W., 3.
 Physics: Gravenor, C. P., 2.
 Synthesis, low temperatures: Waesche, H. H.
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 Refractive index, calculation: Winchell, H., 1.
 Silicates, layer-lattice, morphology and structure: Bates, T. F., 2.
 Teaching, for engineers: Grawe, O. R.
 Indiana University: Mason, B. H., 3.
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 Debeque oil-shale area, Tertiary: Waldron, F. R.
 Dove Creek area: Finley, E. A.
 Four Corners area, Paleozoic: Tatum, J. L.
 Front Range, pre-Pennsylvanian: Maher, J. C.
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 Mesozoic, northeastern, subsurface: Blair, R. W.
 Rangely oil field, Pennsylvanian-Cretaceous: Cupps, C. Q.
 South Fork to California Mtn., cross section: Burbank, W. S.
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 Stonewall-Tercio area: Wood, G. H.
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 District of Columbia, subsurface: Darton, N. H., 1.
 Dunkard Basin, Ohio-West Virginia-Pennsylvania: Cross, A. T., 1.
 El Salvador, Jurassic-Recent: Sayre, A. N.
 Florida: McGlothlin, T.
 Citrus and Levy Counties: Vernon, R. O.
 Tertiary and Quaternary: Black, A. P.
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 Georgia, Dalton quadrangle: Munyan, A. C., 1.
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 Cambrian-Ordovician, eastern: Poulsen, C., 3.
 Disko Island: Münther, V.
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 Idaho, Horseshoe Creek district: Kiilsgaard, T. H.
 Lost River Range area: Baldwin, E. M.
 Illinois, Champaign-Urbana area: Foster, J. W.

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- Pennsylvanian, coal and limestone: Du Bois, E. P., 1.
 Graphic logs: Cady, G. H., 1.
 Peoria region: Horberg, C. L., 1.
 Southern: Siever, R., 1.
 White County: Harrison, J. A.
 Indiana, Pennsylvanian, west-central: Wier, C. E., 2.
 Richmond group, Ordovician: Branson, E. B., 2.
 Iowa, Devonian: Stainbrook, M. A., 1.
 Jamaica: Chubb, L. J.; Zans, V. A.
 Kingston district: Matley, C. A.
 Kansas: Moore, R. C., 2.
 Chase County, Cambrian-Permian: O'Connor, H. G., 1.
 Cherokee group, Pennsylvanian, southeastern: Howe, W. B.
 Cloud County, Cretaceous-Recent: Buck, L. P.
 Lane County: Prescott, G. C., Jr.
 Lyon County: Jewett, J. M., 1.
 Melrose zinc-lead district, Carboniferous: Brichta, L. C., 2.
 Mitchell County: Byrne, F. E.
 Ogallala formation, Meade County, Pliocene: Hibbard, C. W., 4.
 Permian: Schoewe, W. H., 1.
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 Rawlins County: Beck, H. V., 2.
 Sheridan County, Cretaceous-Recent: Beck, H. V., 1.
 Southeastern: Hahn, A. D.
 Wabunsee County: Smith, R. K.
 Kentucky, Devonian: Freeman, L. B.
 Henderson County, Carboniferous: Walker, F. H., 1.
 Hermon pool, Ordovician-Mississippian: Settle, H. W.
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 Interlake area, Silurian: Baillie, A. D.
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Mystery Lake area: Gill, J. C., 1.
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Maryland: Anderson, J. L., 1.

Calvert County: Overbeck, R. M.
Coastal Plain, Cretaceous-Tertiary: Darton, N. H., 3.

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Oaxaca, Mesozoic-Tertiary: Oliván Palacín, F., 6.

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Tamaulipas, San José de las Rusias-Sabino Gordo region: Díaz-Gonzalez, T. E.

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 Middle Devonian, central: Oliver, W. A., Jr.
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 Saratoga Springs area: Fisher, D. W., 3.
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 Mohall area: Akin, P. D.
 Neche area, Pembina County: Paulson, Q. F.
 Souris River valley: Akin, P. D.
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 Cape George area, Paleozoic: Alderman, S. S., Jr.
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- Tatamagouche area, Paleozoic: Young, E. J.
 Ohio, Cincinnati area: Kerr, S. D., Jr.
 Devonian, northwestern: Ehlers, G. M., 1.
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 Cherokee formation, Pennsylvanian, northern: Howe, W. B.
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 Illinois River valley, Ordovician: Montgomery, J. H.
 Nemaha Granite Ridge area: Bale, H. E.
 Paleozoic, northeastern: Huffman, G. G., 2.
 Pre-Cambrian-Pennsylvanian, northeastern: Huffman, G. G., 1.
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 Stonewall area, Lawrence uplift, Carboniferous: Barker, J. C.
 Ontario, Cornwall-Cardinal area: Owen, E. B., 3.
 Eastern: Caley, J. F.
 Emily Township: Hatfield, W. T.
 James Bay region: Caley, J. F.
 Keith-Muskego Townships area: Prest, V. K.
 Kerr-Addison gold mine: Kerr-Addison Gold Mines, Ltd., Staff, 1.
 Lanark County, North Burgess Township: Currie, J. B.
 McElroy Township, pre-Cambrian: Abraham, E. M., 1.
 Paleozoic, southern: Hewitt, D. F., 1.
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 Rama Township: Deane, R. E.
 Silurian-Devonian, southwestern: Mich. Geol. Soc.
 Uxbridge Township: Gadd, N. R.
 Oregon, Umpqua formation, Bonanza-Nonpareil district, Eocene: Brown, R. E.
 Willamette Valley, Tertiary-Quaternary: Vokes, H. E.

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 Pennsylvania, Devonian-Mississippian :
 Appalachian Geol. Soc.
 Devonian-Mississippian, northwest-
 ern : de Witt, W., Jr.
 Leidy gas field : Ebright, J. R., 1.
 Mt. Carmel quadrangle, Pennsylvanian coal beds : Rothrock, H. E., 1, 2.
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 Quebec, Bignell area, pre-Cambrian : Gilbert, J. E. J., 2.
 Caché Lake area, pre-Cambrian : Graham, R. B., 1.
 Dalquier-Figuery Townships : Weber, W. W. L., 1.
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 Gaspé, eastern : Caley, J. F.
 Johan Beetz area, pre-Cambrian : Cooper, G. E.
 La Morandière Township, pre-Cambrian : Weber, W. W. L., 3.
 Normetal mine area, Abitibi-West County : Tolman, C.
 Palmarolle - Poularies-Duparquet-Destor Townships, pre-Cambrian : Lee, B., 2.
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 Pascalis Township, pre-Cambrian : McDougall, D. J., 1.
 Queylus area, pre-Cambrian : Imbault, P. E.
 St. Lawrence Lowlands : Caley, J. F.
 St. Siméon area : Miller, M. L., 2.
 Southern : Cooke, H. C.
 Takwa River area : Neilson, J. M.
 Rock formations, age : Daly, R. A., 1.
 Rocky Mtn. region : Rocky Mtn. Assoc. Geologists
 Saskatchewan, Black Lake area : Hriskevich, M. E.
 Cypress Hills, Cretaceous-Tertiary : Russell, L. S.
 Cypress Lake map area : Furnival, G. M.
 Goldfields region : Dawson, K. R.
 South Carolina : McGlothlin, T.
 South Dakota, Angostura Dam area : Robb, G. L.
 Black Hills : Condra, G. E., 1 ; Gries, J. P., 1.
 Well records, formation thicknesses : Baker, C. L., 3.
 Tennessee, Del Rio district : Ferguson, H. W.

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 Great Falls Dam, Mississippian : Weber, A. H.
 Great Smoky Mts. : Neuman, R. B., 2.
 Tennessee to West Virginia : Appalachian Geol. Soc.
 Texas, Apache Mts. : DeFord, R. K.
 Belton Reservoir area : Colligan, J.
 Brazos-Colorado River Valleys, fusulinid correlation, Pennsylvanian : Thackrey, E. L.
 Pennsylvanian : Cheney, M. G., 2 ; Quigley, J. A. ;
 Cretaceous, eastern : Lozo, F. E., Jr., 2.
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 East Texas Basin, cross sections : Bell, J. S.
 Glen Rose formation, Foraminifera, Cretaceous : Stead, F. L.
 Gulf Coast : Houston Geol. Soc.
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 McLennan County, Cretaceous : Price, J. C.
 Midland Basin, Pennsylvanian : Adams, J. E., 2.
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 South Liberty salt dome, Tertiary : Halbouty, M. T.
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 Waco area, Cretaceous : Adkins, W. S. ; Lozo, F. E., Jr., 1.
 Walker County : Winslow, A. G.
 Whitney Reservoir area : Hull, A. M.
 Trinidad, Jurassic—Recent : Kugler, H. G.
 South : Barr, K. W., 1.
 United States, Colorado group, Cretaceous, western interior : Cobban, W. A., 2.
 Cretaceous—Miocene, ostracodes : Sexton, J. V.
 East-central interior, Devonian-Mississippian black shales : Cross, A. T., 4.
 Eastern Interior Basin, cross section : Swann, D. H., 1.
 Four Corners region, southwestern : Wengerd, S. A., 3.
 James limestone, Cretaceous, southern : Crawford, F. C.
 Mesozoic : Colomo, J.

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Northern Rocky Mts. and Great Plains, Devonian : Andrichuk, J. M.
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Utah, Brazer formation, Mississippian : Parks, J. M., Jr., 1.

Burbank Hills, Paleozoic : Rush, R. W., 2.

Canyon Range : Christiansen, F. W., 1.

Cedar Hills area, Pennsylvanian—Recent : Schoff, S. L., 3.

Confusion Range : Campbell, G. S., 1.
Devonian : Donovan, J. T.
Devonian-Pennsylvanian : Ogden, L.
Ordovician : Hintze, L. F., 1.

Pennsylvanian : Kraetsch, R. B.
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Dugway area, Pleistocene valley sediments : Ives, R. L., 4.

Garden City formation, Ordovician : Ross, R. J., Jr., 1.

Gunnison quadrangle : Gilliland, W. N.

House Range : Campbell, G. S., 1.
Cambrian sequence : Wheeler, H. E., 1.

Lake Mountain : Bullock, K. C.

Moon Lake area : Huddle, J. W.

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North Selma Hills area : Williams, F. E.

Ordovician, western : Hintze, L. F., 2.

Paunsaugut region, Mesozoic-Cenozoic : Gregory, H. E., 2.

San Juan Canyon, Pennsylvanian—Permian : Wengerd, S. A., 1.

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Vermont, Champlain Valley, Chazyan reef facies, Ordovician : Oxley, P.

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Virginia, Coastal Plain, Cretaceous-Tertiary : Darton, N. H., 3.

Sallings Ridge area, Cambrian : Bloomer, R. O.

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Vesuvius quadrangle, Lower Cambrian : Werner, H. J.

Washington, Centralia-Chehalis coal district, Tertiary-Quaternary : Snively, P. D., Jr., 1.

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Western : Am. Assoc. Petroleum Geologists, Pacific Sec.

Willapa River valley, Tertiary : Rau, W. W.

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West Virginia, Ordovician : Woodward, H. P.

Wisconsin, Prairie du Chien group : Heyl, A. V.

Wyoming, Big Sandy area : Veronda, G. R., 4.

Bonanza oil field : Ziegler, V.

Grenville Dome : Jenkins, C. E.

Hanna Basin, Cretaceous-Tertiary : Knight, S. H.

Hartville uplift : Condra, G. E., 1.

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Paintrock irrigation project area : Swenson, F. A.

Powder River Basin, Upper Cretaceous : Wilson, J. B.

Simpson Ridge, Pennsylvanian-Cretaceous : Veronda, G. R., 3.

Sinclair area, Cretaceous : Cobban, W. A., 1.

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Mesozoic : Curtis, B. F.

Spread Creek-Gros Ventre River area : Love, J. D., 2.

Tertiary, southern : McGrew, P. O.
Teton County, Cretaceous : Love, J. D., 3.

Wind River Basin : Church, R. R.

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Rich, J. L., 4.

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Mt. Lincoln-Castle Peak area, Cenozoic : Hudson, F. S.

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 Rocky Mtn. geosyncline: Warren, P. S., 2.
 Western, Cretaceous: Wickenden, R. T. D., 2.
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 El Salvador: Sayre, A. N.
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 Massachusetts, Mount Toby quadrangle: Willard, M. E.
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 Ordovician, western: Hintze, L. F., 2.
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- Wyoming, Grand Teton National Park: Fryxell, F. M.
 Gros Ventre buttes, Jackson Hole: Scopel, L. J.
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 Alabama, Choctaw County: Toulmin, L. D., Jr.
 Hillabee sill area: Griffin, R. H.
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 Grand Canyon, eastern, pre-Cambrian: Van Gundy, C. E.
 Red Bluff prospect, pre-Cambrian: Kaiser, E. P., 1.
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 Seventy-Nine mine area: Kiersch, G. A., 2.
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 Wallapai mining district, Mohave County: Dings, M. G.
 Arizona-Utah, Zion Park region: Gregory, H. E., 1.
 Arkansas, Magnet Cove area, titanium deposits: Fryklund, V. C., Jr., 1.
 Northwestern, Paleozoic: Brewster, E. B.
 Southeastern, Jacksonian outcrop area, Eocene, sketch: Wilbert, L. J., Jr.
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Tyughton Lake area, Jurassic, sketch : Frebold, H. W. L., 1.

Ymir area : McAllister, A. L.

California, Bitterwater Creek area : Heikkila, H. H.

Bristol Dry Lake, San Bernardino County : Gale, H. S.

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El Dorado County, Flagstaff Hill area : Cater, F. W., Jr.

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- Lepidolite, age determination, strontium method: Ahrens, L. H., 5.
- North Carolina, Bryson City district: Cameron, E. N., 1.
- Ontario, Lanark County: Currie, J. B.
- United States, deposits: Gwinn, G. R.
- Occurrence in pegmatites, uses: Jahns, R. H., 2.
- Xanthophyllite, valuevite: Forman, S. A.
- Michigan.
- Highway construction: Stokstad, O. L.
- Economic geology.*
- Clays, Escanaba-Stonington area: Hussey, R. C.
- Copper, Keweenawan lavas, origin: Cornwall, H. R., 2.
- Iron, Iron River district: James, H. L., 2.
- Iron River district, origin: James, H. L., 1.
- Oil and gas: Cohee, G. V., 2.
- Petroleum, Detroit River Group, Devonian: Landes, K. K., 2.
- Geologic maps.*
- Bessemer area: Brown, E. A.
- Carboniferous: Cohee, G. V., 2.
- Devonian: Cohee, G. V., 2.
- Iron River district, pre-Cambrian: James, H. L., 2.
- Keweenawan Peninsula: Cornwall, H. R., 2.
- Ground water.*
- Bessemer area, glacial deposits: Brown, E. A.
- Northern: Stuart, W. T.
- Historical geology.*
- Carboniferous: Cohee, G. V., 2.
- Detroit River group, Devonian, subsurface correlation: Landes, K. K., 2.
- Devonian: Cohee, G. V., 2.
- Southeastern: Ehlers, G. M., 1.
- Escanaba-Stonington area, Ordovician: Hussey, R. C.
- Iron-bearing formations, facies: James, H. L., 3.
- Iron River district, pre-Cambrian: James, H. L., 2.
- Menominee district, pre-Cambrian: Trow, J. W.
- Mineralogy.*
- Copper district, lava: Cornwall, H. R., 1.
- Paleontology.*
- Corals, Traverse group, Devonian: Ehlers, G. M., 2.
- Escanaba-Stonington area, Ordovician: Hussey, R. C.
- Invertebrates, Traverse group, Devonian, list: Stumm, E. C., 2.
- Ostracodes, Bell shale, Devonian: Kesling, R. V., 3.

Michigan—Continued

Paleontology—Continued

Ostracodes—Continued

Traverse group, Devonian : Kesling, R. V., 1.

Pine pollen, Heart Lake sediments, Quaternary : Cain, S. A.

Petrology.

Copper district, lava : Cornwall, H. R., 1.

Greenstone flow, differentiation trends : Cornwall, H. R., 3.

Iron formation, Iron River district : James, H. L., 1.

Keweenaw lavas, differentiation : Cornwall, H. R., 2.

Physical geology.

Iron River district, faults : James, H. L., 2.

Lake Michigan, underlying structure : Emery, K. O., 4.

Menominee district, pre-Cambrian weathering : Trow, J. W.

Structure : Cohee, G. V., 2.

Physiographic geology.

Lake Michigan, sediments and underlying structure : Emery, K. O., 4.

Saginaw Basin, glacial lake stages : Bretz, J. H., 1.

Micropaleontology.

Coal correlation, plant microfossils : Cross, A. T., 2.

Plant microfossils, Appalachian Basin : Cross, A. T., 3.

Comparison microscope, potentialities of use : McLean, J. D., Jr., 1.

Foraminifera, test-wall microstructure : Bandy, O. L., 3.

Microfossils as environment indicators in marine shales : Ellison, S. P., Jr., 2.

Planktonic microfossils, zonal value : Stainforth, R. M.

Military geology, underground installations, resistance to explosions, geologic factors : Kiersch, G. A., 1.

Mineragraphy.

Gold grain-count study, Nevada, Getchell mine ; Joralemon, P., 2.

Immersion media, influence on rotation properties of minerals : Cameron, E. N., 3.

Michigan, copper district, lava : Cornwall, H. R., 1.

Minerals, opaque, Kentron microhardness tester : Robertson, F. S., 2.

Ore minerals, identification, polarization figures : Cameron, E. N., 4.

Tables for microscopic identification : Uytendogaardt, W.

Ores, textures and structures, terminology : Schwartz, G. M., 2.

Mineral collecting.

Agate, handbook : Dake, H. C.

Lake Superior region : Vanasse, T. C.

Mineral collecting—Continued

California, borates : Vonsen, M.

Crestmore area : Schwartz, J.

Mono County andalusite mine : Woodhouse, C. D.

San Benito County, serpentine area : Pabst, A., 3.

San Francisco Bay counties, unusual minerals : Crippen, R. A., Jr., 2.

Colorado : Pearl, R. M., 1.

Rhodochrosite : Roots, R. D.

Gems, guidebook : MacFall, R. P.

General : Switzer, G. S., 3.

Greenland, Disko Island, zeolites : Boucot, A. J.

Illinois, Rosiclare district, fluorite, associated minerals : Schraut, J. A.

Warsaw area, geodes : McClure, S. M.

Zinc-lead region : McClure, S. M.

Maryland, Baltimore, Powder Mill dump : Kepper, J.

New Jersey, Franklin, micro specimens : Perloff, L.

Paterson area, pectolite : Hayes, W. H.

New York, Dutchess County, turgite : Zodac, P., 3.

Herkimer County, quartz crystals : Smith, C. H.

Nyack area, pectolite : Zodac, P., 2.

Peekskill area, thomsonite : Zodac, P., 1.

Saratoga Springs : Rowley, E. B.

New York City vicinity, localities : Sinkankas, J.

Pennsylvania, Wood's Chrome mine : Duersmith, L. J.

Virginia, Goose Creek, Arlington quarry : Morgan, F.

Mineral deposits.

Alaska, Kasna Creek prospect, copper : Warfield, R. S.

South-central, coal : Barnes, F. F., 1.

Alberta, Elkwater Lake area, clay : Crockford, M. B. B.

Arizona, Banner district : Kiersch, G. A., 2.

Bunker Hill district : Kuhn, T. H.

Carrizo Mts. area, carnotite : Stokes, W. L., 1.

Castle Dome district : Wilson, E. D., 2.

Copper : Peterson, N. P.

Dragoon Mts. area : Wilson, E. D., 3.

Empire district : Wilson, E. D., 4.

Eureka district : Wilson, E. D., 7.

Fluorspar : Wilson, E. D., 1.

Huachuca Mts. area : Wilson, E. D., 5.

Oro Blanco district : Fowler, G. M., 1.

Silver district : Wilson, E. D., 7.

Swissheim district : Galbraith, F. W., 3d.

Mineral deposits—Continued

Arizona—Continued

- Wallapai mining district: Dings, M. G.
 Arkansas, clay: Williams, N. F.
 British Columbia, Copper Mtn. mine, copper: Fahrni, K. C.
 Field area, lead-zinc: Ney, C. S.
 Uraninite in gold-bearing metallic veins: Stevenson, J. S.
 California, Cape San Martin-Plaskett region, nephrite: Crippen, R. A., Jr., 1.
 Clear Creek area, jadeite: Yoder, H. S., Jr., 3.
 Contra Costa County: Davis, F. F.
 El Dorado County, chromite: Cater, F. W., Jr.
 Fluorspar: Crosby, J. W., 3d.
 Fresno County: Logan, C. A.
 Healdsburg quadrangle: Gealey, W. K.
 Inyo County: Norman, L. A., Jr.
 Iron Mountain, Shasta County: Kinkel, A. R., Jr., 1.
 Massa Hill area, nephrite: Chesterman, C. W., 1.
 Mono County andalusite mine: Woodhouse, C. D.
 Northern, glaucophane schists: Switzer, G. S., 1.
 Pala district, gem- and lithium-bearing pegmatites: Jahns, R. H., 3.
 Red Mountain district, magnesite: Bodenlos, A. J.
 San Diego County, pegmatites: Hanley, J. B.
 San Luis Obispo County, chromite: Smith, M. C.
 Santa Monica Mountains: Neuerberg, G. J., 1.
 Shasta King mine, Shasta County, copper: Kinkel, A. R., Jr., 2.
 Talc: Page, B. M., 2.
 West Belt mines, copper-zinc: Wiebelt, F. J.
 Canada, copper: McClelland, W. R.
 Uranium: Anonymous, 12.
 Exploration: Buffam, B. S. W., 1.
 Colorado, Blue River area, Summit County: Singewald, Q. D.
 Colorado Plateau area, uranium and thorium minerals: Paterson, W. C.
 Connecticut, Middletown district, pegmatites, beryl and quartz: Cameron, E. N., 5.
 Georgia, Dalton quadrangle: Munyan, A. C., 1.
 Greenland, recent investigations: Bøgvad, R., 4.
 Siorarsuit, dunite: Bøgvad, R., 2.
 Idaho, Coeur d'Alene district, Silver Belt, shallow expressions of ore: Sorenson, R. E.
 Pumice-perlite: Staley, W. W.

Mineral deposits—Continued

- Jamaica: Zans, V. A.
 Kansas, Melrose district, zinc-lead: Brichta, L. C., 2.
 Labrador, iron: Retty, J. A.
 Maine, asbestos: Wing, I. A., 1.
 Knox County, limestone: Allen, H. W.
 Manitoba, Beau-Cache Lake area, gold: Milligan, G. C.
 Manigotagan - Rice River area: Davies, J. F.
 Mystery Lake area, lead-zinc and nickel: Gill, J. C., 1.
 Waskaiowaka Lake area, gold and nickel: Gill, J. C., 2.
 Mexico, Chihuahua, San Antonio mines: Hewitt, W. P.
 Colima: Oliván Palacín, F., 5.
 Iron: Oliván Palacín, F., 4.
 Huahuaxtla district, mercury: Anonymous, 10.
 Iron: Flores Reyes, T., 1.
 Mezquitic area, potassium nitrate fillings in lava: Lozano García, R., 2.
 Metals: Clendenin, T. P.
 Oaxaca, coals: Oliván Palacín, F., 6.
 Iron: Oliván Palacín, F., 7.
 Pachuca silver district, tectonic analysis: Wissner, E. H., 1.
 Rio Tepalcatepec area: Gonzalez Reyna, J.
 San Vicente and San Marcos Valleys: Lozano García, R., 1.
 Tula area, perlite: Lozano García, R., 4.
 Michigan, Iron River district, iron: James, H. L., 2.
 Minnesota, Cuyuna district, iron sulfides: Schwartz, G. M., 1.
 Titaniferous magnetites: Grout, F. F., 1.
 Mississippi, Webster County, iron: Vestal, F. E.
 Missouri: Forrester, J. D.
 Canyon Diggings deposit, zinc-lead: Brichta, L. C., 1.
 Common rocks and minerals, popular: Keller, W. D., 2.
 Montana, Broadwater County: Reed, G. C., 1.
 Cascade County: Robertson, A. F., 1.
 Dumortierite, Ruby Range, near Dillon: Graham, C. E.
 Gallatin County: Reed, G. C., 2.
 Hardin area: Richards, P. W.
 Judith Basin County: Robertson, A. F., 2.
 Norwich mine, manganese: Cole, J. W.
 Pioneer district, gold, placer: Pardee, J. T.
 Nevada, Antler Peak quadrangle: Roberts, R. J.
 Copper Canyon mine, lead-zinc: Trenslove, R. R.

Mineral deposits—Continued

Nevada—Continued

Current Creek district, magnesite :
Vitaliano, C. J.

Humboldt County, uraniferous opal :
Staatz, M. H., 1.

Nye County : Kral, V. E.

New Jersey, Clinton Point area, man-
ganese : Thurston, W. R.

New Mexico, Carrizo Mts. area, carno-
tite : Stokes, W. L., 1.

Southwestern, oölitic hematite : Kel-
ley, V. C., 2.

Torpedo mine, copper : Soulé, J. H.

New York : Hartnagel, C. A.

Shawangunk mine, Sullivan County,
zinc-lead : Sims, P. K., 1.

Newfoundland : Weeks, L. J.

Bell Island, Wabana iron deposits :
Anson, C. M.

North Carolina, Bryson City district,
feldspar and mica : Cameron, E. N.,
1.

Industrial minerals : Stuckey, J. L.

Sillimanite : Hash, L. J.

Northwest Territories, Baffin Island,
mineral possibilities : Kranck,
E. H., 2.

Nova Scotia, Forest Hill district, gold :
Seibert, W. E., Jr., 1.

Walker mine, molybdenum : Cameron,
J. R.

Walton deposit, barite : Tenny, R. E.

Oklahoma, resources : Harris, R. L.

Ontario, Dome Township, Cochenour
Willans gold mine : Christopher,
I. C.

Keith-Muskego Townships area :
Prest, V. K.

McElroy Township, gold : Abraham,
E. M., 1.

McKenzie Red Lake mine, gold :
Smith, T. S.

Munro and Beatty Townships, asbes-
tos : Hendry, N. W.

Rouyn-Noranda district, gold and sul-
fides : Robinson, W. G.

Oregon, Bonanza-Nonpareil district,
mercury : Brown, R. E.

Grant County, Greenhorn district,
gold : Allen, R. M., Jr., 1.

Hobart Butte area, high-alumina
clay : Allen, V. T., 2.

Map and key : Oreg. Dept. Geology
and Mineral Industries

Tungsten : Wolfe, H. D.

Quebec, Abitibi and Témiscamingue
Counties, mining properties : Claveau,
J., 2.

Caché Lake area, gold-copper-iron :
Graham, R. B., 1.

Eastern Townships : Cooke, H. C.

Gaspé Peninsula, copper : Bell, A. M.

Iron : McGerrigle, H. W.; Retty, J. A.
Johan Beetz area : Cooper, G. E.

Mineral deposits—Continued

Quebec—Continued

Rouyn-Noranda district, gold and sul-
fides : Robinson, W. G.

St. Pierre and Miquelon : Aubert de la
Rüe, E.

Saskatchewan, Black Lake area : Hriske-
vich, M. E.

Charlebois Lake area, radioactive
minerals : Mawdsley, J. B., 2.

Goldfields region, pitchblende : Daw-
son, K. R.

Stanley map area, radioactive min-
erals : Mawdsley, J. B., 1.

Waddy Lake area, gold : Byers, A. R.

Windrum Lake area, gold : Miller,
M. L., 1.

Tennessee, eastern, zinc : Johnson, W. M.

Texas, ceramic materials, sample data :
Pence, F. K.

Jeff Davis County, Medley kaolinite
deposit : Shurtz, R. F., 1.

United States, mica : Gwinn, G. R.

Pegmatites : Jahns, R. H., 2.

Reference clay localities : Kerr, P. F.,
2.

Uranium : Anonymous, 12.

Western, coking coal : Berryhill, L. R.,
2.

Utah, Cougar Spar mine, fluorite :
Everett, F. D.

Lake Mountain, calcite : Okerlund,
M. D.

Marysville area, uranium : Gruner,
J. W., 1.

Uinta Basin, solid bitumens : Davis,
L. M.

Western, manganese deposits : Crit-
tenden, M. D., Jr., 1.

Vermont, talc : Chidester, A. H.

Wisconsin, Prairie du Chien group, zinc-
lead : Heyl, A. V.

Wyoming, Bull Lake, sodium sulfate :
Young, W. A., Jr.

Seminole-Shirley Mts. area : Finnell,
T. L.

Yukon, Keno-Galena Hills area, silver-
lead-zinc : Johnston, A. W., 2.

Mineral deposits, origin.

Arizona, Carrizo Mts. area, carnotite :
Stokes, W. L., 1.

Castle Dome area, copper : Peterson,
N. P.

Emerald Isle copper, hypogene the-
ory : Thomas, B. E.

Johnson mining district, copper, lead,
and zinc : Cooper, J. R., 2.

Wallapai mining district : Dings,
M. G.

Arkansas, Magnet Cove area, titanium :
Fryklund, V. C., Jr., 1.

British Columbia, Copper Mtn. mine,
copper : Fahrni, K. C.

Field area, lead-zinc : Ney, C. S.

Mineral deposits, origin—Continued

British Columbia—Continued

- Mining areas : British Columbia Dept. Mines, 1.
 Uraninite in gold-bearing metallic veins : Stevenson, J. S.
 Ymir area, gold : McAllister, A. L.
 California, Cape San Martin-Plaskett region, nephrite : Crippen, R. A., Jr., 1.
 Clear Creek area, jadeite : Yoder, H. S., Jr., 3.
 Gold : Raucq, P.
 Iron Mountain, Shasta County : Kinkel, A. R., Jr., 1.
 Los Banos area, San Joaquin Valley, jarosite. Tertiary : Briggs, L. I., Jr.
 Massa Hill area, nephrite : Chesterman, C. W., 1.
 Mono County andalusite mine : Woodhouse, C. D.
 New Almaden deposits, quicksilver : Bailey, E. H.
 Northern, glaucophane schists : Switzer, G. S., 1.
 Pala district, gem- and lithium-bearing pegmatites : Jahns, R. H., 3.
 Red Mountain district, magnesite : Bodenlos, A. J.
 San Francisco Bay counties, manganese and quicksilver : Bowen, O. E., Jr., 3.
 Shasta King mine, Shasta County, copper : Kinkel, A. R., Jr., 2.
 Talc : Page, B. M., 2.
 Canada, uranium and thorium : Lang, A. H.
 Canadian Shield, gold deposition : Little, W. H.
 Colorado, Blue River area, Summit County : Singewald, Q. D.
 Caribou mine, uranium : Wright, H. D.
 San Juan County : Burbank, W. S.
 Colorado Plateau, uranium : Russell, W. L., 2.
 Connecticut, Hebron gneiss : Aitken, J. M.
 Middletown district, pegmatites, fluid inclusions : Cameron, E. N., 5.
 Mylonite : Sclar, C. B., 1.
 Crystallization, processes : Tunell, G.
 Dolomite, replacement theory : McKinley, M. E.
 Formation of deposits : Bateman, A. M., 1.
 Gold, solubility : Krauskopf, K. B., 2.
 Idaho, metallogenic epochs : Anderson, A. L., 1.
 Stibnite area, tungsten, antimony, gold : Cooper, J. R., 1.
 Labrador, iron : Retty, J. A.
 Limestones, organic, petrographic study : Johnson, J. H., 2.

Mineral deposits, origin—Continued

- Maine, Stoneham, Lord Hill pegmatite : Woodard, H. H., 2.
 Manitoba, Flin Flon-Snow Lake mineral belt, structural control : Harrison, J. M., 3.
 Mercury, transportation in vein fluids : Krauskopf, K. B., 1.
 Mexico, Chihuahua, San Antonio mines : Hewitt, W. P.
 Coahuila, coals : Oliván Palacín, F., 1.
 Iron : Flores Reyes, T., 1.
 Mezquitic area, potassium nitrate fillings in lava : Lozano García, R., 2.
 Michoacán, nitrates : Oliván Palacín, F., 3.
 Pachuca silver district, tectonic analysis : Wissner, E. H., 1.
 San Vicente and San Marcos Valleys, evaporites : Lozano García, R., 1.
 Zimapán mining district : Simons, F. S.
 Michigan, copper district, lava : Cornwall, H. R., 1.
 Iron River district, iron : James, H. L., 1.
 Keweenaw lavas, copper : Cornwall, H. R., 2.
 Minnesota, titaniferous magnetites : Grout, F. F., 1.
 Mississippi Valley, upper, lead-zinc deposits : Bailey, S. W.,
 Montana, Butte copper ores : Sales, R. H.
 Pioneer district, gold, placer : Pardee, J. T.
 Nasonite : Frondel, C., 1.
 Nevada, Getchell mine, gold : Joralemon, P., 2.
 New Jersey, Clinton Point area, manganese : Thurston, W. R.
 Dover area, magnetite : Sims, P. K., 2.
 New Mexico, Carrizo Mts. area, carnotite : Stokes, W. L., 1.
 Grants area, uranium in Todilto limestone : Gruner, J. W., 2.
 Southwestern, oolitic hematite : Kelley, V. C., 2.
 New York, Shawangunk mine, Sullivan County, zinc-lead : Sims, P. K., 1.
 North Carolina, Bryson City district, feldspar and mica : Cameron, E. N., 1.
 Northwest Territories, District of Mackenzie : Lord, C. S.
 Giant-Yellowknife mines, gold in ice lens : Boyle, R. W.
 Nova Scotia, Forest Hill district, gold : Seibert, W. E., Jr., 1.
 Walton deposit, barite : Tenny, R. E.
 Oklahoma, Wichita Mts., titaniferous magnetite : Chase, G. W.

Mineral deposits, origin—Continued

Ontario, Kerr-Addison gold mine: Kerr-Addison Gold Mines, Ltd., Staff, 1.
Lanark County, North Burgess Township, mica and apatite: Currie, J. B.

Munro and Beatty Townships, asbestos: Hendry, N. W.

Rouyn-Noranda district, gold and sulfides: Robinson, W. G.

Sioux Lookout area, gold: Chisholm, E. O.

Sudbury district, platinum and palladium: Hawley, J. E., 2.

Ontario-Quebec mining region, gold, temperature-pressure gradients: Smith, F. G.

Ore deposition, relation to present topography, examples: Reid, J. A.

Oregon, Bonanza-Nonpareil district, mercury: Brown, R. E.

Greenhorn district, Grant County, gold: Allen, R. M., Jr., 1.

Hobart Butte area, high-alumina clay: Allen, V. T., 2.

Horse Heaven district, quicksilver: Waters, A. C.

Oxide ores, late magmatic: Bateman, A. M., 3; White, C. H.

Permeability, influence on deposits, limestone and dolomite: Ohle, E. L., Jr., 1.

Pitchblende-bearing veins, selected deposits: Everhart, D. L., 2.

Quebec, Bachelor Lake area: Longley, W. W., 1.

Caché Lake area, types, gold-copper-iron: Graham, R. B., 1.

Chibougamau area: Graham, R. B., 2.
Iron: Retty, J. A.

Kilmar mine, magnesite: Bray, W. T.
Rouyn-Noranda district, gold and sulfides: Robinson, W. G.

Salt, thick-bedded deposits: Landes, K. K., 3.

Saskatchewan, Beaverlodge area, pitchblende: Bichan, W. J., 1; Buffam, B. S. W., 2.

Goldfields region, pitchblende: Dawson, K. R.

Radioactive rocks, pre-Cambrian: Conybeare, C. E. B.

South Carolina, York County, Henry Knob, kyanite: Smith, L. L.

Tennessee, Del Rio district, barite: Ferguson, H. W.

Zinc: Brokaw, A. L.

Texas, Jeff Davis County, Medley kaolinite deposit: Shurtz, R. F., 1.

Triplite, analysis: Heinrich, E. W., 1.
United States, emery: Friedman, G. M., 1.

Pegmatites: Jahns, R. H., 2.

Utah, Lake Mountain calcite deposits: Okerlund, M. D.

Mineral deposits, origin—Continued

Utah—Continued

Marysville area, uranium: Gruner, J. W., 1.

Uinta Basin, solid bitumens: Davis, L. M.

Western, manganese: Crittenden, M. D., Jr., 1.

Vein deposition theory: Aguilar Revoredo, J. F.

Vermont, Elizabeth mine, copper: McKinsty, H. E.

Talc: Chidester, A. H.

Virginia, Timberville area, lead-zinc ores: Green, J., 2.

Washington, antimony: Purdy, C. J., Jr.

Yukon, Keno-Galena Hills area, silver-lead-zinc: Johnston, A. W.

Mineral descriptions. *See also* Mineralogy.

Actinolite, Missouri: Allen, V. T., 5.

Agate, varieties, Lake Superior region: Vanasse, T. C.

Allanite, California: Hutton, C. O., 2.

Amphibole, synthetic: Comeforo, J. E.
Andalusite, California: Woodhouse, C. D.

Andersonite, Arizona: Axelrod, J. M.

Anorthite, crystal structure: Laves, F., 3.

Anthophyllite, magnesian: Wittels, M., 3.

Aphthitalite: Winchell, H., 2.

Aramayoite: Graham, A. R., 1.

Asbestos: Badollet, M. S.

X-ray study: Beatty, S. van D.

Attapulgit: Amero, R. C.

Aurostibite: Graham, A. R., 2.

Bandylite, crystal structure: Collin, R. L.

Bastnaesite, California: Pray, L. C.

Bayleyite, Arizona: Axelrod, J. M.

Bitumens, solid, Utah: Davis, L. M.

Borates, California: Vonsen, M.

Brookite, New Jersey: Gordon, S. G.

Brucite, dehydrated, twinning: Garrido, J.

Bystromite, new: Mason, B. H., 1.

Calculi found in mammals: Milton, C., 1.

Carnotite, tyuyamunite, and related compounds, synthetic: Murata, K. J.

Childrenite: Barnes, W. H., 2.

Chloritoid, Pennsylvania: Hietanen, A. M., 2.

Chrysoberyl, New York: Navias, R. A.

Claudetite: Frueh, A. J., Jr., 1.

Clay, Wilcox group, Arkansas: Allen, V. T., 1.

Conichalcite: Berry, L. G., 1.

Cooperite: Buddhue, J. D., 3.

Copper phosphate mineral, New Mexico, new: Beck, C. W., 7.

Cornwallite: Berry, L. G., 1.

Mineral descriptions—Continued

Crystals in volcanic rocks, Alaska :
 Scheffer, V. B.
 Cuprosklodowskite : Hogarth, D. D.
 Davidite : Kerr, P. F., 6.
 Dumortierite, Montana : Graham, C. E.
 Empressite : Thompson, R. M., 1.
 Eosphorite : Barnes, W. H., 2.
 Euchroite : Berry, L. G., 1.
 Fluorite, formation temperatures : Grogan, R. M., 2.
 Gaylussite, California : Murdoch, J., 1.
 Glaucocroite : O'Mara, J. H.
 Gunnbjarnite, Greenland, new : Bøggild, O. B.
 Halloysite, dehydrated, crystal structure : Murray, H. H.
 Hanksite, California : Murdoch, J., 1.
 Hemimorphite : Faust, G. T.
 Hessite : Rowland, J. F.
 Hoegbomite : Friedman, G. M., 2.
 Hummerite, Colorado, new : Weeks, A. D.
 Hurlbutite : Mrose, M. E., 2.
 Huttonite, new : Hutton, C. O., 1 ; Pabst, A., 1.
 Hydromagnesite, unit cell : Murdoch, J., 3.
 Isemannite, Oregon : Staples, L. W., 2.
 Iron minerals, Quebec : Clark, T. H.
 Jadeite, California : Wolfe, C. W., 3.
 Jarosite, California : Briggs, L. I., Jr.
 Jordisite, Oregon : Staples, L. W., 2.
 Kaolinite, crystal structure : Murray, H. H.
 Kasolite : Hogarth, D. D.
 Kornerupite, Quebec : Mauffette, P.
 Kyanite, Pennsylvania : Dike, P. A.
 South Carolina : Smith, L. L.
 Lanarkite, crystal structure : Binnie, W. P.
 Laumontite, California : Gilbert, C. M.
 Laurite : Buddhue, J. D., 3.
 Leconteite : Winchell, H., 2.
 Linarite : Berry, L. G., 2.
 Liroconite : Berry, L. G., 1.
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- Ostracode zone, Blairmore formation: Loranger, D. M.
- Ammonites, Mowry shale, Colorado-Wyoming-Montana: Cobban, W. A., 3.

Paleontology—Continued

Cretaceous—Continued

- Arkansas, Foraminifera, species variations: Hussey, K. M., 2.
- Aves, *Hesperornis*, evolution, lower jaw: Gregory, J. T., 3.
- Belemnites, temperature indicators, oxygen isotope method: Urey, H. C., 3.
- California, Foraminifera, Carlsbad area: Bandy, O. L., 2.
- Moreno formation, San Joaquin Valley: Payne, M. B.
- Canada, coccoliths, Colorado shale, western: Goodman, A. J., 3.
- Foraminifera, Peace River area: Stelck, C. R.
- Cephalopod, *Dunveganoceras*: Haas, O., 2.
- Cuba, pelecypods, pachydont: Muller-ried, F. K. G., 2.
- Greenland, western, faunas: Rosenkrantz, A., 2.
- Mexico, Tampico-Tuxpan area: Nigra, J. O.
- Montana, ammonites, new species: Cobban, W. A., 5.
- Colorado shale and equivalent rocks, faunal zones and lists: Cobban, W. A., 4.
- Foraminifera, Frontier formation: Young, K. P.
- Mollusks, Kootenai formation, new species: Yen, T.-C., 1.
- Pelecypods, near Pryor: Yen, T.-C., 2.
- Nebraska, Foraminifera, Pierre shale: Dietrich, E. S.
- North America, ostracodes, new species: Sexton, J. V.
- Ophiuroidea, classification problems: Rasmussen, H. W.
- Reptilia, mosasaurs, evolution, lower jaw: Gregory, J. T., 3.
- Rocky Mtn. area, Foraminifera: Crowley, A. J., 2.
- South Dakota, ammonites, new species: Cobban, W. A., 5.
- Tennessee, turtle: Collins, R. E. L.
- Texas, ammonites, East Basin: Eaton, R. W.
- Coral, Eagle Ford shale: Perkins, B. F., 1.
- Foraminifera, Glen Rose formation: Stead, F. L.
- Heterohelcidae: Loeblich, A. R., Jr.
- Mammals, near Forestburg: Patterson, B.
- Maness formation, Foraminifera and Ostracoda, eastern: Lozo, F. E., Jr., 2.
- Rudistid reefs, Edwards formation: Matthews, W. H.
- Waco area: Adkins, W. S.

Paleontology—Continued

Cretaceous—Continued

Trinidad, Foraminifera: Bolli, H. M., 2.
Foraminifera, Lizard Springs formation: Cushman, J. A.

United States, ammonites, Western Interior, Colorado group, new species: Cobban, W. A., 2.

Utah, Castle Dale area, index fossil list: Katich, P. J., Jr.

Wyoming, insectivores, Lance formation: Simpson, G. G., 4.

Mollusks, Leeds Creek area, new species: Yen, T.-C., 1.

Ostracodes, Bear River formation, new genus: Peck, R. E., 3.

Sinclair area, Frontier formation: Cobban, W. A., 1.

Devonian.

Alaska, Brooks Range: Dutro, J. T., Jr., 1.

Alberta, Rocky Mts. and foothills: Fox, F. G., 1.

Amphibians, limbs, origin: Eaton, T. H., Jr.

Arkansas, conodonts, Arkansas novaculite: Hass, W. H.

Maine, mollusks, Spencer Lake area: Woodard, H. H., 1.

Manitoba, brachiopod, *Atrypa*: Leith, E. I.

Michigan, corals, Traverse group: Ehlers, G. M., 2.

Ostracodes, Bell shale: Kesling, R. V., 3.

Traverse group: Kesling, R. V., 1.

Traverse group, invertebrates, list: Stumm, E. C., 2.

Montana, southwestern: Holland, F. D., Jr.

New Jersey, conularid, Esopus formation: Herpers, H. F., Jr., 1.

New Mexico, ammonoid, Percha shale: Miller, A. K., 3.

New York, bryozoan, New Scotland formation: Fritz, M. A., 2.

Cephalopod, new: Flower, R. H., 2.

Coral beds: Oliver, W. A., Jr.

Ludlowville formation, marcasite fauna: Fisher, D. W., 1.

North America, Tetracoralla, types: Stumm, E. C., 1.

Ohio, shark, Cleveland shale: Harris, J. E.

Ontario, Columbus limestone, faunal lists: Ehlers, G. M., 3.

Quebec, fishes, acanthodians: Russell, L. S., 3.

Fishes, arthrodire, Scaumenac Bay, new genus: Ørvig, T.

United States, east-central interior, Devonian-Mississippian black shales, flora: Cross, A. T., 4.

Western, fresh-water fishes: Denison, R. H.

Paleontology—Continued

Devonian—Continued

Utah, northeastern: Holland, F. D., Jr.
Vertebrates, bone and dentine, origin: Ørvig, T.

Jurassic.

Alberta, ammonites, Fernie group: Frebold, H. W. L., 3.

Carbondale River area: Clow, W. H. A.

British Columbia, ammonites, Tyaughton Lake area: Frebold, H. W. L., 1.

Ammonites, Whitesail Lake area: Frebold, H. W. L., 2.

Colorado, fossil footprints, Navajo(?) sandstone: Faul, H., 2.

Mexico, Nuevo León, algae, *Chondrites*: Maldonado-Koerdell, M., 3.

South Dakota, ostracodes, Redwater shale: Swain, F. M., 3.

Mesozoic.

Alaska, Foraminifera, index species: Tappan, H. N., 2.

Arizona, crocodilian, Triassic-Jurassic(?): Colbert, E. H., 1.

British Columbia, fish, near Fernie: Russell, L. S., 1.

Dinosaurs, evolution and adaptation: Colbert, E. H., 3.

Mexico, fossil zones: Mullerried, F. K. G., 1.

Nevada, ammonoid, Lake Tahoe: Larson, E. R., 2.

Plant microfossils, significance: Just, T. K., 3.

Mississippian.

Arkansas, conodonts, Arkansas novaculite: Hass, W. H.

California, nautiloid, Tin Mtn. area: Peck, J. H., Jr.

Corals, cuneate, new genus: Easton, W. H., 2.

Indiana-Kentucky, New Albany shale flora, new genera: Hoskins, J. H.

Iowa, conodonts, Wassonville dolomite: Youngquist, W. L., 5.

Missouri, ammonoids: Miller, A. K., 2.

Montana, southwestern: Holland, F. D., Jr.

Nevada, goniatites, White Pine shale: Youngquist, W. L., 3.

Ohio, scolecodonts: Bowen, A. S.

Oklahoma, crinoids, Chester series, new: Strimple, H. L., 6, 7.

Crinoids, Pitkin formation: Strimple, H. L., 5.

United States, east-central interior, Devonian-Mississippian black shales, flora: Cross, A. T., 4.

Utah, corals, Brazer formation: Parks, J. M., Jr.

Northeastern: Holland, F. D., Jr., 1.

Paleontology—Continued

Ordovician.

- Georgia, Dalton quadrangle : Munyan, A. C., 1.
 Graptolites, Athens shale, age : Decker, C. E., 1.
 Illinois, ostracode, instars : Scott, H. W., 2.
 Indiana, conodonts, Richmond group : Branson, E. B., 2.
 Kentucky, Burkesville limestone, fossil list : Jillson, W. R., 4.
 Conodonts, Richmond group : Branson, E. B., 2.
 Maryland, St. Paul group : Neuman, R. B., 1.
 Missouri, ostracodes, Maquoketa shale, new species : Keenan, J. E.
 Platin group, faunules : Larson, E. R., 1.
 New York, edrioasteroid, Larrabee limestone, new genus : Fisher, D. W., 2.
 Trilobites, Trenton : Evitt, W. R., 2d, 3.
 Ohio, eurypterid : Caster, K. E.
 Oklahoma, graptolites, *Didymograptus*, index : Decker, C. E., 2.
 Graptolites, Viola limestone : Decker, C. E., 3.
 Ontario, cystids, paleoecology : Sinclair, G. W., 3.
 Gastropods and conularids, Ottawa-St. Lawrence Lowland : Wilson, A. E., 1.
 Pelecypod, Dundas formation, new species : Fritz, M. A., 1.
 Pennsylvania, trilobite, Nealmont formation, Rodman member, new species : Tasch, P., 2.
 Quebec, cystids, paleoecology : Sinclair, G. W., 3.
 Gastropods and conularids, Ottawa-St. Lawrence Lowland : Wilson, A. E., 1.
 Trilobite, Quebec City formation : Laverdière, J. W.
 Utah, Pogonip group, faunal zones, western : Hintze, L. F., 2.
 Trilobites, Garden City formation : Ross, R. J., Jr., 1, 2.
 Virginia, trilobites, Lincolnshire limestone, new subfamily : Evitt, W. R., 2d, 1.

Paleozoic.

- Blastoids, paleoecology : Cline, L. M.
 Cephalopods, paleoecology : Miller, A. K., 1.
 Foraminifera, fusulinid wall structures : Thompson, M. L., 3.
 Greenland, eastern, flora : Witzig, E.
 Maryland, Washington County : Amsden, T. W., 1.
 New York, Saratoga Springs area : Fisher, D. W., 3.

Paleontology—Continued

Paleozoic—Continued

- Ostracodes, *Coryellina*, evolution : Sohn, I. G., 3.
 Stratigraphic range : Sohn, I. G., 2.

Pennsylvanian.

- Illinois, gymnosperm seeds, coal balls, new : Neely, F. E.
 Fish, Mazon Creek : Gregory, J. T., 1.
 Lepidodendron, new : Evers, R. A.
 McLeansboro group, *Bowmanites* cone, new : Andrews, H. N., Jr., 2.
Medullosa, new : Stewart, W. N., 1.
 Indiana, fern, new : Baxter, R. W., 2.
 Iowa, cordaitan leaf : Reed, F. D.
 Fossiliferous concretions : Condit, C.
 Kansas, crinoids, new species : Strimble, H. L., 2.
 Ohio, Fusulinidae : Smyth, P.
 Pottsville series, microfauna : Marple, M. F.
 Silicified wood, Pennsylvanian(?), southeastern : Mitchell, R. H., 1.
 Oklahoma, crinoids, Oologah formation : Strimble, H. L., 4.
 Pennsylvania, Mill Creek limestone : Chow, M. M.
 Texas, crinoids, Lake Bridgeport shale : Strimble, H. L., 1.

Permian.

- British Columbia, fusulinids : Thompson, M. L., 1.
 Fusulinids, Kamloops, area : Thompson, M. L., 2.
 Foraminifera, fusulinid, new genera : Thompson, M. L., 4.
 Idaho, conodonts, Phosphoria formation, new species : Youngquist, W. L., 4.
 Nevada, fish, Elko County : Larson, E. R., 3.
 Reptiles, evolution of astragalus : Peabody, F. E.
 Texas, algae, Apache Mts. : Johnson, J. H., 1.
 Vertebrates, Choza formation : Olson, E. C., 2, 3.
 Vale formation : Olson, E. C., 3.
 Vertebrates, bone and dentine : Ørvig, T.
 Washington, fusulinids : Thompson, M. L., 1.

Pre-Cambrian.

- Arizona, jellyfish, Nankoweap group, Grand Canyon : Van Gundy, C. E.

Quaternary.

- Alaska, Foraminifera, index species : Tappan, H. N., 2.
 Vertebrates, Pleistocene, collecting : Geist, O. W.
 Arizona, vertebrates, Ventana Cave : Bryan, K.
 California, crabs, Los Angeles area, Pleistocene : Menzies, R. J.

Paleontology—Continued

Quaternary—Continued

California—Continued

Foraminifera, Pleistocene, new genus:

Riccio, J. F.

Man, Death Valley, Pleistocene:

Clements, T. D.

Vertebrates, San Francisco Bay area:

Savage, D. E., 1.

Cuba, sloths: Alvarez Conde, J.

Idaho, bison, Pleistocene: Hopkins, M. L.

Iowa, mastodon teeth, Henry County: Sutton, K.

Kansas, mollusks, Peoria loess, Pleistocene: Leonard, A. B.

Mollusks, Sanborn formation, Pleistocene: Frye, J. C., 3.

Rodent, Greeley County, late Pleistocene: Hibbard, C. W., 2.

Vertebrates, Stump Arroyo member, Pleistocene: Hibbard, C. W., 5.

Louisiana, Foraminifera, Recent: Andersen, H. V.

Maine, pollen diagrams, Aroostook County: Deevey, E. S., Jr., 1.

Massachusetts, bison, Harvard, late Wisconsin: Romer, A. S.

Mexico, Tepexpan man: Arellano, A. R. V., 1.

Tepexpan man, validity: Jennings, J. D., 1.

Yucatán, Quintana Roo, Lake Chichankanab: Maldonado Koerdell, M., 1.

Michigan, pine pollen, Heart Lake sediments: Cain, S. A.

Mississippi, Natchez man, age: Richards, H. G., 4; Stewart, T. D.

Nebraska, Pleistocene mammals, distribution chart: Schultz, C. B., 3.

Webster County, Red Cloud sand and gravel, Kansas: Schultz, C. B., 4.

New Jersey, sloth: Richards, H. G., 3. Vertebrates: Richards, H. G., 2.

North America, early man: Macgowan, K.

Gastropods, cowries, distribution: Ingram, W. M.

Nova Scotia, mastodon tooth: Livingstone, D.

Ohio, duck, Pleistocene: Howard, H., 2.

Ontario, whale, Ottawa Valley, Pleistocene: Sternberg, C. M., 3.

Pennsylvania, Pittsburgh area, shells and mastodon: MacMillan, G. K.

Quebec, mollusks, Lake St. John area: Laverdière, C.

South Dakota, elephant, Wisconsin drift, Pleistocene, Edmunds County: Macdonald, J. R., 2.

Tennessee, jaguars: McCrady, E.

United States, man, associated with elephants: Gross, H.

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Quaternary—Continued

Utah, gastropod, Pleistocene: Roscoe, E. J.

Washington, bison, Whitman County: Tipper, H. W.

Mastodon, Port Angeles area, Pleistocene: Danner, W. R.

West Indies, lizard, *Aristelliger*, new species: Hecht, M. K.

Wyoming, bison, Eden Valley, Finley site: Schultz, C. B., 2.

Man, Eden Valley: Moss, J. H., 1.

Pollen analysis, Eden Valley: Hansen, H. P.

Silurian.

Indiana, ostracode, Waldron shale, new genus: Morris, R. W.

Manitoba, Interlake area, fossil lists: Baillie, A. D.

New Jersey, Rondout limestone: Herpers, H. F., Jr., 2.

Oklahoma, brachiopods, Henryhouse formation: Amsden, T. W., 2.

Tertiary.

Alabama, Foraminifera, Cocoa sand, Eocene: Bronnimann, P., 6.

Gastropod, Tallahatta formation, Eocene: Gardner, J. A.

Pelecypod, Tallahatta formation, Eocene: Gardner, J. A.

Lisbon formation, Eocene: MacNeil, F. S., 1.

Arizona, arthropods, Bonner quarry: Pierce, W. D.

Arkansas, Hope area, Foraminifera and Ostracoda, Paleocene: Harris, R. W.

Atlantic Coastal Plain, Foraminifera, Paleocene: McLean, J. D., Jr., 2.

Atlantic continental slope, Cape Cod, Foraminifera, Eocene: Northrop, J., 1.

Barbados, Foraminifera, Eocene: Bronnimann, P., 5.

California, Foraminifera, Eocene: Fulmer, C. V.

Foraminifera, Lodo formation, Paleocene and Eocene, new species: Israelsky, M. C.

Los Angeles, Pliocene: Crouch, R. W., 1.

Mammals, Contra Costa County, Pliocene: Savage, D. E., 2.

Mollusks, Sobrante sandstone, Miocene: Lutz, G. C.

Petrel, Miocene, new: Miller, L. H.

Pine cone, Ventura County, Pliocene: Wiggins, I. L.

San Joaquin Valley, Eocene: Payne, M. B.

Silicoflagellates, Eocene: Mandra, Y. T.

Vertebrates, San Francisco Bay area: Savage, D. E., 1.

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Tertiary—Continued

- Carnivore, Miocene: Gregory, J. T., 2.
- Colorado, amphisbaenid reptiles, Oligocene: Taylor, E. H.
- Quail, Oligocene: Tordoff, H. B.
- Cuba, Camagüey Province, Echinodermata: Sánchez Roig, M., 2.
- Florida, echinoids, Moodys Branch formation, Eocene: Fischer, A. G., 2.
- Gastropod, St. Petersburg: Fargo, W. G.
- Ostracodes, Levy County, new: Howe, H. V., 1.
- Pelecypods, Ocala limestone, new species: Harris, G. D.
- Toad, Thomas Farm, Miocene: Tihen, J. A.
- Georgia, pelecypods, Ocala limestone, new species: Harris, G. D.
- Sawfish, upper Eocene: Dunkle, D. H.
- Greenland, northwestern, Paleocene(?) flora: Koch, E.
- Western, faunas: Rosenkrantz, A., 2.
- Gulf Coast, Foraminifera, Claiborne index fossils, Eocene: Hussey, K. M., 3.
- Foraminifera, Paleocene: Cushman, J. A., 1.
- Kansas, fish, Ogallala formation: Hubbs, C. L.
- Mastodon, Meade County, Pliocene, new: Hibbard, C. W., 4.
- Rodent, Rexroad formation, Upper Pliocene, new species: Hibbard, C. W., 3.
- Mexico, echinoids, Chiapas, Palenque area: Mullerried, F. K. G., 3.
- Foraminifera, Veracruz, Oligocene: Limon-Gutierrez, L.
- Molluscs, Veracruz, San Andrés Tuxtla, Miocene: Masson, P.
- Nueva León, Aldamas Sur region, Eocene: López Vázquez, A.
- Tabasco, Vernet and Amate-Morales area, Miocene-Pliocene: Lesser-Jones, H.
- Veracruz, San Sebastián Hacienda, Oligocene-Miocene: Salas G., G. P., 2.
- Missouri, radiolaria, Porters Creek formation, new species and nomenclature revision: Frizzell, D. L., 2.
- Mollusca, migration distance: Durham, J. W., 3.
- Montana, rodent, Miocene, new species: Wood, A. E.
- Nevada, horse, Pliocene: Stock, C.
- New Mexico, Eocene, early surveys, E. D. Cope: Simpson, G. G., 1.
- North America, floras: Barghoorn, E. S., Jr.
- Gastropods, cowries, distribution: Ingram, W. M.

Paleontology—Continued

Tertiary—Continued

North America—Continued

- Ostracodes, Miocene, new species: Sexton, J. V.
 - North Carolina, ostracodes from wells, new species: Swain, F. M., 1.
 - Oklahoma, antelope, Laverne formation, Pliocene: Hibbard, C. W., 1.
 - Oregon, Mascall fauna, Miocene: Downs, T.
 - Rodents, evolution: Wilson, R. W.
 - South Carolina, pelecypod, Tallahatta formation, Eocene: Gardner, J. A.
 - South Dakota, mammals, Whitneyan fauna, Oligocene, new species: MacDonald, J. R., 1.
 - Trinidad, Foraminifera: Bronnimann, P., 4.
 - Foraminifera, internal structure: Bronnimann, P., 8.
 - Lizard Springs formation: Cushman, J. A., 2.
 - Miocene, new genera: Bronnimann, P., 2, 7.
 - Mount Moriah formation, Eocene: Bronnimann, P., 6.
 - Oligocene: Bronnimann, P., 1.
 - Oligocene-Miocene: Bronnimann, P., 9.
 - Rotalid, coiling: Bolli, H. M., 3.
 - Utah, mollusks, Flagstaff formation: La Rocque, J. A. A.
 - Washington, Foraminifera: Rau, W. W.
 - Rhinoceros mold, Blue Lake: Chappell, W. M.
 - Wilcox flora, Eocene, modern existence: Sharp, A. J.
 - Wyoming, amphisbaenid reptiles, Oligocene: Taylor, E. H.
 - Mammals, south-central: McGrew, P. O.
 - Ostracode, Green River formation, Eocene, new species: Scott, H. W., 3.
- Triassic.*
- Alaska, Foraminifera, northern: Tappan, H. N., 1.
 - Arizona, gastropods, Echo Cliffs area: Yen, T.-C., 4.
 - Nevada, belemnoid, Gabbs formation, Triassic: Fischer, A. G., 3.
 - New Mexico, amphibians, Gunter bone bed: Olsen, R.
 - Texas, Potter County: Maxwell, E. L., 2.
- Paleotemperatures.
- Oxygen-isotope measurement method: Urey, H. C., 3.
 - Isotopic temperature scale: Epstein, S.
- Paleozoic.
- Alabama, subsurface: Applin, P. L.
 - Arizona, northwestern: McNair, A. H.
 - Sedimentary basins, isopach patterns: McKee, E. D., 2.

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- Arkansas, Coastal Plain : Sigma Gamma Epsilon.
 Northwestern : Brewster, E. B.
 Ouachita Mts. : Sigma Gamma Epsilon.
 Ozark Plateaus-Arkansas Valley : Sigma Gamma Epsilon.
 Canada, Western Plains, geologic history : Webb, J. B.
 Climate : Brooks, C. E. P.
 Florida, subsurface : Applin, P. L. ; Herrick, S. M.
 Georgia, northwestern : Munyan, A. C., 2.
 Subsurface : Applin, P. L. ; Herrick, S. M.
 Great Basin, Nevada-Utah : Stokes, W. L., 2.
 Greenland, Ella Island : Poulsen, C., 1.
 Franklinian geosyncline, northern : Troelsen, J. C.
 Illinois, Peoria region : Horberg, C. L., 1.
 Kansas : Moore, R. C., 2.
 Kentucky, Cumberland County : Jillson, W. R., 2.
 Maryland, Washington County : Cloos, E., 2.
 Missouri : Branson, E. B., 1.
 Montana, Canyon Ferry quadrangle : Mertie, J. B., Jr.
 Southwestern : Sloss, L. L., 4.
 Nevada, southeastern : McNair, A. H.
 New Hampshire, Woodsville quadrangle : White, W. S.
 New York, Saratoga Springs area, revision : Fisher, D. W., 3.
 North America : King, P. B., 1.
 Northwest Territories, South Nahanni River area : Kingston, D. R.
 Oklahoma, northeastern, pre-Atokan : Huffman, G. G., 1.
 Ozark uplift : Huffman, G. G., 2.
 Oregon, Klamath Mts., northern : Wells, F. G., 2.
 Sediments, magnetization by deformation : Graham, J. W.
 United States, Eastern Interior Basin : Swann, D. H., 1.
 Ouachita folded belt, unmetamorphosed beds, new discovery : Morgan, H. J., Jr.
 Utah, Burbank Hills : Rush, R. W., 2.
 Confusion Range area : Campbell, G. S., 1.
 House Range : Campbell, G. S., 1.
 Lake Mountain : Bullock, K. C.
 Tintic Mts. : Lovering, T. S., 3.
 Vermont, Irasburg quadrangle : Doll, C. G.
 Memphremagog quadrangle : Doll, C. G.
 Woodsville quadrangle : White, W. S.
 West Virginia : Woodward, H. P.

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- Wyoming, Rawlins area : Thomas, H. D., 1.
 Wyoming-Colorado, Sierra Madre : Ritzma, H. R.
 Palladium, Ontario, Sudbury district : Hawley, J. E., 2.
 Paragenesis. *See also* Mineral deposits, origin.
 Lava, Keweenawan series, opaque minerals : Cornwall, H. R., 1.
 Pitchblende-bearing veins, selected deposits : Everhart, D. L., 2.
 Peat. *See also* Bogs ; Paleobotany ; Pollen analysis.
 Manitoba, Churchill area, pollen analysis : Radforth, N. W.
 Radiocarbon analysis, sampling for : Deevey, E. S., Jr., 2.
 Radiocarbon datability : Bartlett, H. H.
 Wyoming, Eden Valley, pollen analysis, Quaternary : Hansen, H. P.
 Pebbles.
 California, Ventura Basin, deposition : Natland, M. L.
 Colorado-New Mexico, Raton Mesa region, Cenozoic : Levings, W. S.
 Pediments.
 Colorado-New Mexico, Raton Mesa region, Cenozoic : Levings, W. S.
 South Dakota, Badlands, small-scale : Smith, K. G.
 Pedology. *See* Soils.
 Pegmatites.
 Allanite, California, Yosemite : Hutton, C. O., 2.
 California, Jurupa Mts., petrology : MacKevett, E. M.
 Pala district : Jahns, R. H., 3.
 Rincon district : Hanley, J. B.
 Colorado, Quartz Creek district, intrusions, shape : Staatz, M. H., 2.
 Connecticut, beryl and quartz, fluid inclusions, Middletown district : Cameron, E. N., 5.
 Maine, Lord Hill pegmatite, Stoneham : Woodard, H. H., 2.
 Radioactivity : Ordway, R. J.
 Minerals, formation : Tunell, G.
 Occurrence and uses : Jahns, R. H., 2.
 North Carolina, Bryson City district : Cameron, E. N., 1.
 Franklin-Sylva district : Heinrich, E. W., 2.
 Nova Scotia, Walker mine : Silpp, R. M.
 Ontario, minerals, geothermometry : Peach, P. A., 2.
 Pennsylvania, Safe Harbor : Tomlinson, W. H.
 Saskatchewan, Black Lake area : Hriskevich, M. E.
 Texas, Van Horn Mts., Mica Mine area : Flawn, P. T., 1.
 Triplite, analysis : Heinrich, E. W., 1.
 United States, deposits : Jahns, R. H., 2.

Pelecypoda. *See also* Mollusca.

Alabama-South Carolina, *Anodontia*?,
Tallahatta formation, Eocene :
Gardner, J. A.

Cuba, pachydont, Upper Cretaceous :
Mullerried, F. K. G., 2.

Florida-Georgia, Ocala limestone, Ter-
tiary, new species : Harris, G. D.
Montana, Pryor, Cloverly formation,
Cretaceous : Yen, T.-C., 2.

Nomenclature : North, F. K. ; Yen, T.-
C., 3.

Nucula, Alabama, Lisbon formation,
Eocene, new species : MacNeil, F.
S., 1.

Texas, Edwards formation, rudistid
reefs, Cretaceous : Matthews, W. H.

Trinidad, beaches, sorting of valves :
Martin-Kaye, P.

?*Vlasta americana*, Ontario, Dundas
formation, Ordovician, new species :
Fritz, M. A., 1.

Pennsylvania.

Aeromagnetic survey, Appalachian
Plateau : Vacquier, V.

Electrical resistivity surveys, Pennsyl-
vania Turnpike : Scharon, H. L.

Geology instruction in universities : Wil-
lard, B.

Areas described.

Pennsylvania Turnpike, extensions :
Scharon, H. L.

Economic geology.

Coal, anthracite, Mt. Carmel quad-
rangle : Rothrock, H. E., 1, 2.

Armstrong County, coking reserves :
Dowd, J. J., 2.

Fayette County, coking reserves :
Dowd, J. J., 4.

Westmoreland County, coking re-
serves : Dowd, J. J., 3.

Chromite, Wood's Chrome mine : Duer-
smith, L. J.

Dolomite, Berks County : Gray, C.

Fire clay, Mercer, north-central : Weitz,
J. H.

Iron : Jensen, H., 2.

Limestone : Ames, J. A.

Berks County : Gray, C.

Natural gas, Leidy field : Ebright, J. R.,
1, 2.

New Florence quadrangle : Shaffner,
M. N.

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- Silicate melt equilibria, textbook : Eitel, W.

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- California, Inyo County : Page, B. M., 2.
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- Blackboard, tilting, structural geology teaching : Turner, D. S.
- Buerger precession instrument, precision : Barnes, W. H., 1.
- Chromograph, field test for cobalt : Almond, H., 2.
- Coal, reflectivity measurement : Sherlock, E.
- Coastal sedimentation studies, hydraulic models : Simmons, H. B.
- Comparison microscope, potentialities of use : McLean, J. D., Jr., 1.

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- Electrical well-logging equipment, Iowa Geological Survey : Hershey, H. G.
- Faulting in sand, experiment : Hubbert, M. K.
- Fossil-measuring instrument, new : Sloan, R. E.
- Fumaroles, volcanic gases, measurement : Ayres, F. D.
- Gamma-ray counter, field : Slack, H. A.
- Gamma-ray detectors : Russell, W. L., 2.
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- Goniometer, stereographic technique : Fisher, D. J., 1.
- Ground water, exploration, electric logging : Jones, P. H.
- Hotchkiss Superdip, use as vertical intensity magnetometer : Longacre, W. A.
- Hydrothermal-differential pressure equipment, rock metamorphism : Fairbairn, H. W., 2.
- Ice, petrofabrics : Bader, H.
- Impact-loading device, rock failure tests : Livingston, C. W.
- Kentron microhardness tester, opaque minerals : Robertson, F. S., 2.
- Magnetic well logging : Broding, R. A.
- Magnetometer, use in geologic mapping : Buck, W. K.
- Mass spectrometer, geologic age determination by lead method : Collins, C. B., 1.
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- Microscope, for atoms in crystal structures : Buerger, M. J., 2.
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- Microscope goniometer : Fisher, D. J., 4.
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- Mineral grains, microseparation, heavy liquids : Rodda, J. L.
- Separation : Senftle, F. E.
- Thin sections, preparation : Brison, R. J.
- Minerals, solubility in superheated steam : Morey, G. W., 2.
- Monochromator : Hurlbut, C. S., Jr., 3.
- Mortar, "diamond", improved : Oke, W. C.
- Permeameter, permeability tests : Ohle, E. L., Jr., 1.
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- Quartz, high-low inversion temperature change : Yoder, H. S., Jr., 4.
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- Sampler, jet, for submarine cores : Barr, K. W., 2.
- Sand classifier : Uppal, H. L.
- Seismic, transient elastic wave study : Kaufman, S.
- Seismographs : Benioff, V. H., 5 ; Luskin, B.
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- Seismometer, calibration : Neumann, F., 1.
- Thermal analysis, differential : McConnell, D., 1.
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- Thin sections, analysis, point counter : Chayes, F., 1.
- Large size : Lang, A. J., Jr.
- Thickness, determination : Anderson, J. L., 2.
- Washer for microfossils : Campbell, C. B.
- Wave velocities in rocks, elastic, measurement : Hughes, D. S., 2.
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- Interpretation : Vacquier, V.
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- Mineral exploration, modern methods : Lundberg, H. T. F.
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- Magnetometer, use in geologic mapping : Buck, W. K.
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- Magnetic prospecting for asbestos, Quebec : Low, J. H.
- Metals, heavy, field test : Huff, L. C., 1.
- Mexico, Pachuca silver district, tectonic analysis : Wissler, E. H., 1.
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- Amphiboles, structural transformations : Wittels, M., 3.
- Autoradiographic applications, meteorites : LaPaz, L.
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- Cleaning of specimens : Jensen, D. E.
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- Crystallography of rotation and Weissenberg photographs : Donnay, G., 2.
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- Synthesis, low temperatures : Waesche, H. H.
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- Etching experiments, meteorites : Buddhue, J. D., 2.
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- Models, subsurface, construction : Vance, H. J.
- Natural-gas reserves, estimation : Davis, R. E.
- Northwest Territories, Giant Yellowknife gold mine, geology in mining : Bateman, J. D.
- Paleotemperatures, measurement, oxygen isotope method, scale : Epstein, S.
- Measurement in belemnites, oxygen isotope method : Urey, H. C., 3.
- Permafrost study : Black, R. F., 3.
- Photogeology, formational thickness, measurement : Desjardins, L. H.
- Rock fractures, orientation data, statistical methods : Pincus, H. J., 2.
- Shearing stress and faults, geometry : Wallace, R. E.
- Soil stabilization tests : Winterkorn, H. F.
- Soils, anisotropic, permeability measurement : Reeve, R. C.
- Clay fraction, physico-chemical and electron-microscopic analyses : Agullera H., N.
- Structural analysis of linears, multiple-surface method : Harrington, J. W., 2.
- Structural geology, orthographic projections : Gabriel, V. G., 2.
- Subsurface studies by geologist : Nichols, P. B.
- Well cuttings, examination : Low, J. W.
- Examination and logging methods : Muir, J. L.
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- Archeological field methods, fossil man : Helzer, R. F.
- Coal balls, preparation for study : Baxter, R. W., 1.
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- Foraminifera, cutting with acid : Plummer, H. J.
- Large, storing method for variation study : Said, R.
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- Paleotemperatures, measurement in belemnites, oxygen isotope method : Urey, H. C., 3.
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- Plant microfossils, coal correlation : Cross, A. T., 2, 3.
- Radiolaria, extraction from siliceous rocks : Frizzell, D. L., 2.
- Relative growth, method of analysis : Olson, E. C., 1.
- Sample preparation equipment : Hussey, K. M., 1.
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