

# Bibliography of North American Geology, 1958

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# Bibliography of North American Geology, 1958

By RUTH REECE KING and others

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*This bibliography represents work done jointly  
by Ruth Reece King, Virginia M. Jussen,  
Elisabeth S. Loud, Georgianna D. Conant,  
Mildred Challman Mead, and Eleanor  
H. de Chadenèdes*



UNITED STATES DEPARTMENT OF THE INTERIOR

STEWART L. UDALL, *Secretary*

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Thomas B. Nolan, *Director*

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# BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY

1958

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By RUTH REECE KING and others <sup>1</sup>

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## INTRODUCTION

The current volume lists publications that appeared during 1958 on the geology of the United States (including Alaska and Hawaii), the rest of the North American continent including Greenland, the West Indies, and adjacent islands, and also Guam and other Pacific island possessions—but not the trust territories of the United States. A few articles published before 1958 and not included in previous volumes, are cited also. Articles by American authors published in foreign journals are cited if they deal with North American localities or are of a general nature, but not if they deal only with foreign areas. Articles on North America by foreign authors are included regardless of place of publication while those of a general nature are included only if they appeared in North American journals.

The citations are listed alphabetically by author, with full title and publication data. There follows 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 Margaret E. Barcroft, Yetta C. Millman, Virginia Elizabeth Rees, Florence V. Oftedahl, Lillian B. Dawson, and Lois F. Idleman in the preparation of this volume is gratefully acknowledged. Special appreciation is due also to William H. Heers, Chief Librarian of the Geological Survey, for his advice and guidance during its preparation.

The Bibliography of North American Geology comprises the following bulletins: 746-747 (1785-1918), 823 (1919-28), 937 (1929-39), 1049 (1940-49), 985 (1950), 1025 (1951), 1035 (1952-53), 1054 (1954), 1065 (1955), 1075 (1956), and 1095 (1957).

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<sup>1</sup> This bibliography represents work done jointly by Ruth Reece King, Virginia M. Jussen, Elisabeth S. Loud, Georgianna D. Conant, Mildred Challman Mead, and Eleanor H. de Chadenèdes.



## ORGANIZATION OF THE INDEX

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The index to a bibliography can be used most effectively when the reader is familiar with its organization. The following paragraphs describe the system of headings, subheadings, and entries used in the Index to the Bibliography of North American Geology.

*Headings.*—The headings comprise the main subdivisions of the index and are recognized by their position, that is, flush with the margin of the column. They can be classified into two general types: geographic and subject headings. Typical examples of the headings are Alabama, Alberta, Anticlines, Antimony. Although most of the headings remain the same in each issue of the bibliography, new ones are included 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:

Aquifers. *See* Ground water.

Botany, fossil. *See* Paleobotany.

Mineral maps. *See* Maps, *Mineral*.

Some headings have entries listed under them but also have cross references to other headings of a similar or related nature. Examples are:

Mineral descriptions. *See also* Mineralogy.

Mineral deposits. *See also* Economic geology.

Economic geology. For areal, *see* subheading

*Economic geology* under the states and countries. *See also* Mineral deposits; the more important economic minerals.

*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 like the Atlantic Coastal Plain and the Appalachians. Examples of geographic headings are: Alabama, Alberta, Canada, Dominican Republic, Jamaica, Mexico, Nevada, United States. Canada and United States are headings used to index papers covering the whole of these areas or more than two or three states or provinces. For example, an article on oil and gas exploration in Manitoba would be indexed under Manitoba but one on western Canada's oil and gas potentialities would be indexed only under Canada and not under each province discussed in the paper. Similarly, "Feldspar and mica deposits in the southeastern United States" would be indexed only under United States and not under the individual States described.

*Subject Headings.*—The subject headings deal with the subject of the paper rather than the geographic areas. They include, among others, the general subdivisions of geology, such as Economic geology, Mineralogy, Paleontology, the classes of animals, such as Brachiopoda, Mollusca, the com-

mon economic minerals and metals, such as Copper, Gold, Mica, and Silver, and other geologic entries. A few of the major subject headings and the scope of the entries listed under each are:

<i>Heading</i>	<i>Entries</i>
Bibliography	Subject, area, or individual
Biography	Individual names
Geologic formations	Listed by name of formation; only detailed information indexed
Geologic formations, lists, sections, tables	Area listing of all formation tables and sections
Geologic history	Area
Geologic maps	Area; some sketch maps included
Guidebooks	Areas covered by field trips
History	History of various organizations or geological investigations
Industrial minerals	Subject or area
Mineral deposits	Area; also includes articles discussing origin of minerals or ores
Mineral descriptions	Mineral name listing
Mineral resources	Area; includes more than one mineral; not indexed to individual minerals
Mineralogy	Mineral examinations, origin, etc.; methods of testing and the like
Oil and gas fields	Listed by name of field
Popular and elementary geology	Papers written for the layman
Rock descriptions	Rock names and areas; restricted to new or unusual rocks or detailed descriptions
Surveys	Special activities of U. S. Geological Survey or State and foreign geological surveys
Systems	Chemical rock- or mineral-forming systems; alphabetically by formula or name

*Subheadings.*—Subheadings, in italics and indented two spaces, are used to group entries under the geographic headings and under four of the subject headings. Subheadings used under geographic headings are: *Areas described* (for general descriptions), *Economic geology*, *Geologic maps*, *Ground water*, *Historical geology*, *Mineralogy*, *Paleontology*, *Petrology*, *Physical geology*, *Physiographic geology*. Subheadings are used under the four subject headings for Earth, Maps, Paleontology, and Technique. Subheadings for Earth include *Crust*, *Interior*, and *Temperature*. Subheadings for Maps include *Aeromagnetic*, *Geophysical*, and *Mineral*. The Paleontology subheadings include *General* and the age groups, *Cambrian*, *Ordovician*, etc. Subheadings under Technique include *Apparatus*, *Geophysical*, *Mineralogic*, and *Petrographic*.

*Entries.*—Entries form the main subdivisions of headings, are indented four spaces, and are printed in Roman type, which is also used in the headings. Entries usually follow a subheading, but where they do not fit under any of the subheadings used, they follow the main heading directly. Under both the geographic and subject headings, the entries may be either



geographic, subject, or a combination of the two. Each entry is followed by the name of the author of the paper referring to it. A number following the author's name refers to the paper so numbered in the Bibliography. Examples of entries under geographic and subject headings are as follows:

Illinois.

*Economic geology.*

Petroleum, Illinois Basin: Swann, D. H.

*Historical geology.*

Mississippian, western: Collinson, C. W., 3.

Pennsylvanian, cyclothems: Weller, J. M., 1.

Indexes.

California, geologic maps: Strand, R. G.

Iron.

Alberta, possible sources: Janes, T. H.

Lake Superior type, origin, role of water: Spencer, G. H., Jr.

Minnesota, Fillmore County: Pederson, C. A.

New Jersey, Dover district, magnetite: Sims, P. K., 1.

South Dakota, Black Hills: Gries, J. P.

Transportation and deposition, role of clay minerals: Carroll, D., 3.

United States, northwestern, possibilities: Binon, L. C.

*Use of Index.*—In general, if the paper sought deals with a specific mineral resource from a specific state, province, or country, it should be found under the following entries: a. the heading for the specific geographic area under the subheading *Economic geology*; b. mineral resource heading with an entry under the specific geographic area. For example, a paper on iron deposits in New Jersey might be found under:

New Jersey.

*Economic geology.*

Iron, Dover district, magnetite: Sims, P. K., 1.

Iron.

New Jersey, Dover district, magnetite: Sims, P. K., 1.

However, if a paper discusses iron in a particular state but also covers deposits in several other states, there will be no entry under the specific states discussed but only under the United States. Thus the index would read in such a case:

United States.

*Economic geology.*

Iron, possibilities, northwestern: Binon, L. C.

Iron.

United States, northwestern, possibilities: Binon, L. C.

In other words, papers covering the larger geographic area, of which the area of interest is a part, should also be examined for possible supplementary information on the particular area under study.

In the case of subjects and other special types of entry, a similar situation holds true. Most mineral names will not be indexed with an individual heading but will be found under the headings Mineral descriptions or Mineralogy, or under the Mineralogy subheading for the geographic area in which they are found. In general, items will be included under the larger, more general group heading rather than under an individual entry: that is, a special oil field, under Oil and gas fields; general papers on aeromagnetic surveys under Geophysics or Technique, *Geophysical*; Ordovician trilobites under Trilobita; etc.



## SERIALS

The following list gives the abbreviated title of periodicals and serials most commonly cited in this bibliography. Included also are their complete titles, as used in library catalogs and the "Union List of Serials," and the place of publication. Periodicals cited only infrequently have been omitted from this list, but in the case of those published in foreign countries, the place of publication has been included in the citation in the bibliography proper. Guidebooks, proceedings, and related types of literature prepared for special conferences, congresses, and symposiums are not listed here as serials but are cited in the bibliography proper under the name of the editor or of the issuing society.

- A.I.M.E. Trans.—American Institute of Mining, Metallurgical, and Petroleum Engineers Transactions. New York.
- Acta Crystallographica. Copenhagen.
- Ala. Geol. Survey Inf. Ser.—Alabama Geological Survey Information Series. University, Ala.
- Alberta Research Council Bull.; Prelim. Rept.—Alberta Research Council Bulletin; Preliminary Report. Edmonton, Alberta.
- Alberta Soc. Petroleum Geologists Jour.—Alberta Society of Petroleum Geologists Journal. Calgary, Alberta.
- Am. Antiquity—American Antiquity. Washington, D.C.
- Am. Assoc. Adv. Sci. Pub.—American Association for the Advancement of Science Publication. Washington, D.C.
- 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, D.C.
- Am. Geophys. Union Geophys. Mon.; Trans.—American Geophysical Union Geophysical Monograph; Transactions. Washington, D.C.
- Am. Jour. Botany—American Journal of Botany. Baltimore, Md.
- Am. Jour. Sci.—American Journal of Science. New Haven, Conn.
- Am. Malacolog. Union Ann. Rept.—American Malacological Union Annual Report. Buffalo, N.Y.
- Am. Mineralogist—American Mineralogist. Washington, D.C.
- Am. Mus. Nat. History Bull.—American Museum of Natural History Bulletin. New York.
- Am. Mus. Novitates—American Museum Novitates. New York.
- Am. Philos. Soc. Yearbook—American Philosophical Society Yearbook. Philadelphia, Pa.
- Am. Scientist—American Scientist. New Haven, Conn.
- Am. Soc. Civil Engineers Proc., Jour. Hydraulics Div.; Jour. Soil Mechanics and Found. Div.—American Society of Civil Engineers Proceedings, Journal of the Hydraulics Division; Journal of the Soil Mechanics and Foundations Division. New York.
- Am. Water Works Assoc. Jour.—American Water Works Association Journal. New York.
- Anal. Chemistry—Analytical Chemistry. Washington, D.C.
- Arctic. Montreal, Quebec.
- Ariz. Geol. Soc. Digest—Arizona Geological Society Digest. Tucson, Ariz.
- Ariz. Univ. Bull.—Arizona University Bulletin. Tucson, Ariz.
- Asoc. Mexicana Geólogos Petroleros Bol.—Asociación Mexicana de Geólogos Petroleros Boletín. México, D.F.
- Assoc. Am. Geographers Annals—Association of American Geographers Annals. Washington. D.C.

- Assoc. Canadienne-Française Av. Sci. Annales—Association Canadienne-Française pour l'Avancement des Sciences Annales. Montreal, Quebec.
- Breviora. Cambridge, Mass.
- Brigham Young Univ. Research Studies Geology Ser.—Brigham Young University Research Studies Geology Series. Provo, Utah.
- 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.
- Cahiers Géographie Québec—Cahiers de Géographie de Québec. Quebec, Quebec.
- Calif. Dept. Nat. Res., Div. Mines Bull.; Mineral Inf. Service; Special Rept.—California Department of Natural Resources, Division of Mines Bulletin; Mineral Information Service; Special Report. San Francisco, Calif.
- Calif. Jour. Mines and Geology—California Journal of Mines and Geology. San Francisco, Calif.
- Calif. Oil Fields—California Oil Fields. San Francisco, Calif.
- Calif. Univ. Pubs. Geol. Sci.—California University Publications in Geological Sciences. Berkeley, Calif.
- Canada Dept. Mines and Tech. Surveys, Geog. Br. Geog. Bull.; Mines Br. Research Rept.—Canada Department of Mines and Technical Surveys, Geographical Branch Geographical Bulletin; Mines Branch Research Report. Ottawa.
- Canada Dominion Observatory Pub.—Canada Dominion Observatory Publications. Ottawa.
- Canada Geol. Survey Bull.; Geophysics Paper; Map; Mem.; Paper; Prelim. Ser. Map—Canada Geological Survey Bulletin; Geophysics Paper; Map; Memoir; Paper; Preliminary Series Map. Ottawa.
- Canada Natl. Mus. Nat. History Paper—Canada National Museum Natural History Papers. Ottawa.
- Canadian Alpine Jour.—Canadian Alpine Journal. Banff, Alberta.
- Canadian Geog. Jour.—Canadian Geographical Journal. Ottawa.
- Canadian Geographer. Manotick, Ontario.
- Canadian Inst. Mining and Metallurgy Trans.—Canadian Institute of Mining and Metallurgy Transactions. Montreal, Quebec.
- Canadian Min. Jour.—Canadian Mining Journal. Gardenvale, Quebec.
- Canadian Min. Metall. Bull.—Canadian Mining and Metallurgical Bulletin. Montreal, Quebec.
- Canadian Mineralogist. Ottawa.
- Canadian Oil and Gas Industries. Gardenvale, Quebec.
- Ciencia. México, D.F.
- Colo. School Mines Mineral Industries Bull.; Quart.—Colorado School of Mines Mineral Industries Bulletin; Quarterly. Golden, Colo.
- Columbia Univ. Dept. Geology Tech. Rept.—Columbia University Department of Geology Technical Report. New York.
- Compass—The Compass. Provo, Utah.
- Condor—The Condor. Berkeley, Calif.
- Copeia. Ann Arbor, Mich.
- Cushman Found. Foram. Research Contr.—Cushman Foundation for Foraminiferal Research Contributions. Ithaca, N.Y.
- Dansk Geol. Foren. Meddel.—Dansk Geologisk Forening Meddelelser. Copenhagen.
- Deep-Sea Research. New York.
- Del. Geol. Survey Rept. Inv.—Delaware Geological Survey Report of Investigations. Newark, Del.
- Desert Mag.—Desert Magazine. Palm Desert, Calif.
- Dissert. Abs.—Dissertation Abstracts. Ann Arbor, Mich.
- Earth Science. Chicago, Ill.
- Earthquake Notes. Washington, D.C.
- Ecology. Durham, N.C.
- Econ. Geology—Economic Geology. Urbana, Ill.
- Edmonton Geol. Soc. Quart.—Edmonton Geological Society Quarterly. Edmonton, Alberta.
- Elisha Mitchell Sci. Soc. Jour.—Elisha Mitchell Scientific Society Journal. Chapel Hill, N.C.



- El Salvador Univ. Inst. Tropical Inv. Cient. Comun.—El Salvador Universidad Instituto Tropical de Investigaciones Cientificas Comunicaciones. San Salvador.
- Evolution. Lancaster, Pa.
- Field & Lab.—Field & Laboratory. Dallas, Texas.
- Fieldiana Geology. Chicago, Ill.
- Fla. Acad. Sci. Quart. Jour.—Florida Academy of Sciences Quarterly Journal. Gainesville, Fla.
- Fla. Geol. Survey Inf. Circ.; Rept. Inv.—Florida Geological Survey Information Circular; Report of Investigations. Tallahassee, Fla.
- Footnote Prints. Philadelphia, Pa.
- Ga. Acad. Sci. Bull.—Georgia Academy of Science Bulletin. Emory University, Ga.
- Ga. Geol. Survey Bull.—Georgia Geological Survey Bulletin. Atlanta, Ga.
- Ga. Mineral Newsletter—Georgia Mineral Newsletter. Atlanta, Ga.
- Gems and Gemology. Los Angeles, Calif.
- Gems & Minerals. Mentone, Calif.
- Geochimica et Cosmochimica Acta. New York.
- Geog. Rev.—Geographical Review. New York.
- Geol. Assoc. Canada Proc.—Geological Association of Canada Proceedings. Toronto, Ontario.
- Geol. Soc. America Bull.; Eng. Geology Case Histories; Mem.; Proc.; Special Paper—Geological Society of America Bulletin; Engineering Geology Case Histories; Memoir; Proceedings; Special Paper. New York.
- Geonotes. Kingston.
- Geophys. Soc. Tulsa Proc.—Geophysical Society of Tulsa Proceedings. Tulsa, Okla.
- Geophysics. Tulsa, Okla.
- GeoTimes. Washington, D.C.
- Grønland. Charlottenlund, Denmark.
- Grønlands Geol. Undersøgelse Bull.; Misc. Papers—Grønlands Geologiske Undersøgelse Bulletin; Miscellaneous Papers. Copenhagen.
- Gulf Coast Assoc. Geol. Soc. Trans.—Gulf Coast Association of Geological Societies Transactions. Houston, Texas.
- Harvard Coll. Mus. Comp. Zoology Bull.—Harvard College Museum of Comparative Zoology Bulletin. Cambridge, Mass.
- Herpetologica. San Diego, Calif.
- Houston Geol. Soc. Bull.—Houston Geological Society Bulletin. Houston, Texas.
- Idaho Bur. Mines and Geology Pamph.—Idaho Bureau of Mines and Geology Pamphlet. 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 Circular; Report of Investigations. Urbana, Ill.
- Ind. Acad. Sci. Proc.—Indiana Academy of Science Proceedings. Indianapolis, Ind.
- Ind. Geol. Survey Bull.; Circ.; Rept. Progress—Indiana Geological Survey Bulletin; Circular; Report of Progress. Bloomington, Ind.
- Indus. and Eng. Chemistry—Industrial and Engineering Chemistry. Washington, D.C.
- Ing. Civil—Ingeniería Civil. Havana.
- Inst. Marine Sci. Pub.—Institute of Marine Science Publications. Port Aransas, Texas.
- Internat. Ser. Mons. Earth Sci.—International Series of Monographs on Earth Sciences. London.
- Iowa Acad. Sci. Proc.—Iowa Academy of Science Proceedings. Des Moines, Iowa.
- Jamaica Geol. Survey Dept. Ann. Rept.; Occasional Paper—Jamaica Geological Survey Department Annual Report; Occasional Paper. Kingston.
- Jamaica Geol. Survey Pub.—Jamaica Geological Survey Publication. Kingston.
- Jour. Chem. Physics—Journal of Chemical Physics. Lancaster, Pa.
- Jour. Geol. Education—Journal of Geological Education. St. Louis, Mo.
- Jour. Geology—Journal of Geology. Chicago, Ill.

- Jour. Geophys. Research—Journal of Geophysical Research. Washington, D.C.
- Jour. Mammalogy—Journal of Mammalogy. Lawrence, Kans.
- Jour. Paleontology—Journal of Paleontology. Tulsa, Okla.
- Jour. Petroleum Technology—Journal of Petroleum Technology. Dallas, Texas.
- Jour. Sed. Petrology—Journal of Sedimentary Petrology. Menasha, Wis.
- Kans. Acad. Sci. Trans.—Kansas Academy of Science Transactions. Lawrence, Kans.
- Kans. State Geol. Survey Bull.; Oil and Gas Inv.; Rept.—Kansas State Geological Survey Bulletin; Oil and Gas Investigations; Reports. Lawrence, Kans.
- Kans. Univ. Paleont. Contr.—Kansas University Paleontological Contributions. Topeka, Kans.
- Ky. Geol. Survey, ser. 9, Rept. Inv.; Special Pub.—Kentucky Geological Survey, series 9, Report of Investigations; Special Publication. Lexington, Ky.
- Limnology and Oceanography. Ann Arbor, Mich.
- Maine Geol. Survey GP. and G. Survey [Maps]; Minerals Res. Index—Maine Geological Survey GP. and G. Survey [Maps]; Minerals Resources Index. 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.—Maryland Department of Geology, Mines and Water Resources Bulletin. Baltimore, Md.
- Meddel. om Grønland—Meddelelser om Grønland. Copenhagen.
- México Consejo Rec. Naturales no Renovables Bol.—México Consejo de Recursos Naturales no Renovables Boletín. México, D.F.
- México Inst. Nac. Antropología e Historia, Dirección Prehistoria Pub.—México Instituto Nacional de Antropología e Historia, Dirección de Prehistoria Publicaciones. México, D.F.
- México Univ. Nac., Inst. Geofísica Anales—México Universidad Nacional, Instituto de Geofísica Anales. México, D.F.
- 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.
- Micropaleontology. New York.
- Min. Cong. Jour.—Mining Congress Journal. Washington, D.C.
- Min. Eng.—Mining Engineering. New York.
- Min. World—Mining World. San Francisco, Calif.
- Mineral Industries. University Park, Pa.
- Mineralogist—The Mineralogist. Portland, Oreg.
- Mines Mag.—Mines Magazine. Denver, Colo.
- Miss. State Geol. Survey Bull.—Mississippi State Geological Survey Bulletin. University, Miss.
- Mo. Geol. Survey and Water Res. Rept. Inv.—Missouri Geological Survey and Water Resources Report of Investigations. Rolla, Mo.
- Mont. Bur. Mines and Geology Inf. Circ.—Montana Bureau of Mines and Geology Information Circular. Butte, Mont.
- 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. Geol. Survey Circ.; Misc. Ser.; Rept. Inv.—North Dakota Geological Survey Circular; Miscellaneous Series; Report of Investigation. Grand Forks, N. Dak.
- N. Mex. Bur. Mines and Mineral Res. Bull.; Geol. Map; Mem.; Scenic Trips Geol. Past—New Mexico Bureau of Mines and Mineral Resources Bulletin; Geologic Map; Memoir; Scenic Trips to the Geologic Past. Socorro, N. Mex.
- N. Y. Acad. Sci. Trans.—New York Academy of Sciences Transactions. New York.

- N. Y. State Mus. and Sci. Service Bull.—New York State Museum and Science Service Bulletin. Albany, N.Y.
- Nat. History—Natural History. New York.
- Natl. Acad. Sci. Biog. Mem.—National Academy of Sciences Biographical Memoirs. Washington, D.C.
- Natl. Research Council Canada, Assoc. Comm. Soil and Snow Mechanics Tech. Memo.—National Research Council of Canada, Associate Committee on Soil and Snow Mechanics Technical Memorandum. Ottawa.
- Natl. Research Council, Highway Research Board Special Rept.—National Research Council, Highway Research Board Special Report. Washington, D.C.
- Natl. Research Council Pub.—National Research Council Publication. Washington, D.C.
- Natl. Speleol. Soc. Bull.—National Speleological Society Bulletin. Alexandria, Va.
- Nature Mag.—Nature Magazine. Washington, D.C.
- Nautilus—The Nautilus. Philadelphia, Pa.
- Nebr. Acad. Sci. Proc.—Nebraska Academy of Sciences Proceedings. Lincoln, Nebr.
- Newfoundland Geol. Survey Rept.—Newfoundland Geological Survey Report. St. John's, Newfoundland.
- Nicaragua Servicio Geol. Nac. Bol.—Nicaragua Servicio Geológico Nacional Boletín. Managua.
- 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.
- Ohio Div. Geol. Survey Bull.; Inf. Circ.; Rept. Inv.—Ohio Division of Geological Survey Bulletin; Information Circular; Report of Investigations. Columbus, Ohio.
- Ohio Jour. Sci.—Ohio Journal of Science. Columbus, Ohio.
- Oil and Gas Compact Bull.—Oil and Gas Compact Bulletin. Oklahoma City, Okla.
- 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 Bull.; Circ.; Mineral Rept.—Oklahoma Geological Survey Bulletin; Circular; Mineral Report. Norman, Okla.
- Okla. Geology Notes—Oklahoma Geology Notes. Norman, Okla.
- Ontario Dept. Mines Ann. Rept.; Geol. Circ.—Ontario Department of Mines Annual Report; Geological Circular. Toronto, Ontario.
- Ontario Fuel Board Ann. Rept.—Ontario Fuel Board Annual Report. Toronto, Ontario.
- Ore.-Bin. Portland, Oreg.
- Pa. Acad. Sci. Proc.—Pennsylvania Academy of Science Proceedings. Reading, Pa.
- Pa. Geol. Survey, 4th ser., Bull.; Inf. Circ.; Progress Rept.—Pennsylvania Geological Survey, 4th series, Bulletin; Information Circular; Progress Report. Harrisburg, Pa.
- Pa. State Univ., Mineral Industries Expt. Sta. Bull.; Circ.—Pennsylvania State University, Mineral Industries Experiment Station Bulletin; Circular. University Park, Pa.
- Pacific Science. Honolulu.
- Panhandle Geonews—The Panhandle Geonews. Amarillo, Texas.
- Petróleo Interamericano. Tulsa, Okla.
- Petroleum Engineer. Dallas, Texas.
- Petroleum Rev.—Petroleum Review. Houston, Texas.
- Photogrammetric Eng.—Photogrammetric Engineering. Washington, D.C.
- Phys. Rev.—Physical Review. Lancaster, Pa.
- Plateau. Flagstaff, Ariz.
- Precambrian—The Precambrian. Winnipeg, Manitoba.
- Producers Monthly. Bradford, Pa.
- Pubs. Cerámicas—Publicaciones Cerámicas. México, D.F.

- Quebec Dept. Mines, Geol. Surveys Br. Geol. Rept.; Mineral Deposits Br. Geol. Rept.—Quebec Department of Mines, Geological Surveys Branch Geological Report; Mineral Deposits Branch Geological Report. Quebec, Quebec.
- Quebec Dept. Mines, Geol. Surveys Br. Prelim. Rept.; Mineral Deposits Br. Prelim. Rept.—Quebec Department of Mines, Geological Surveys Branch Preliminary Report; Mineral Deposits Branch Preliminary Report. Quebec, Quebec.
- Rev. Canadienne Géographie—Revue Canadienne de Géographie. Montreal, Quebec.
- Rocks and Minerals. Peekskill, N.Y.
- Rocky Mtn. Oil Reporter—Rocky Mountain Oil Reporter. Denver, Colo.
- Royal Soc. Canada Minutes Proc.; Trans.—Royal Society of Canada Minutes of Proceedings; Transactions. Ottawa.
- S. C. State Devel. Board Div. Geology Bull.—South Carolina State Development Board Division of Geology Bulletin. Columbia, S.C.
- S. Dak. Acad. Sci. Proc.—South Dakota Academy of Science Proceedings. Vermillion, S. Dak.
- S. Dak. Geol. Survey Rept. Inv.—South Dakota Geological Survey Report of Investigations. Vermillion, S. Dak.
- Saskatchewan Dept. Mineral Res. Rept.—Saskatchewan Department of Mineral Resources Report. Regina, Saskatchewan.
- Sci. Am.—Scientific American. New York.
- Science. Lancaster, Pa.
- Seismol. Soc. America Bull.—Seismological Society of America Bulletin. Berkeley, Calif.
- Shale Shaker. Oklahoma City, Okla.
- Smithsonian Inst. Ann. Rept.—Smithsonian Institution Annual Report. Washington, D.C.
- Smithsonian Misc. Coll.—Smithsonian Miscellaneous Collections. Washington, D.C.
- Soc. Cubana Historia Nat. Mem.—Sociedad Cubana de Historia Natural Memorias. Havana.
- Soc. Econ. Paleontologists and Mineralogists Special Pub.—Society of Economic Paleontologists and Mineralogists Special Publication. Tulsa, Okla.
- Soc. Geol. Mexicana Bol.—Sociedad Geológica Mexicana Boletín. México, D.F.
- Soc. Vertebrate Paleontology News Bull.—Society of Vertebrate Paleontology News Bulletin. Cambridge, Mass.
- Soil Sci. Soc. America Proc.—Soil Science Society of America Proceedings. Danville, Ill.
- Soil Science. Baltimore, Md.
- Southern Calif. Acad. Sci. Bull.—Southern California Academy of Sciences Bulletin. Los Angeles, Calif.
- Spectrochimica Acta. New York.
- Tenn. Acad. Sci. Jour.—Tennessee Academy of Science Journal. Knoxville, Tenn.
- Tenn. Dept. Conserv., Div. Geology Rept. Inv.—Tennessee Department of Conservation, Division of Geology Report of Investigations. Nashville, Tenn.
- Texas Board of Water Engineers Bull.—Texas Board of Water Engineers Bulletin. Austin, Texas.
- Texas Jour. Sci.—Texas Journal of Science. San Marcos, Texas.
- Texas Univ., Bur. Econ. Geology Rept. Inv.—Texas University, Bureau of Economic Geology Report of Investigations. Austin, Texas.
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| U. S. Geol. Survey Bull.                                                                                                                                      | United States Geological Survey Bulletin       |
| Circ.                                                                                                                                                         | Circular                                       |
| Coal Inv. Map                                                                                                                                                 | Coal Investigations Map                        |
| Geol. Quadrangle Map                                                                                                                                          | Geological Quadrangle Map                      |
| Geophys. Inv. Map                                                                                                                                             | Geophysical Investigations Map                 |
| Hydrol. Inv. Atlas                                                                                                                                            | Hydrologic Investigations Atlas                |
| Index Geol. Mapping U. S.                                                                                                                                     | Index to Geologic Mapping in the United States |
| Mineral Inv. Field Studies Map                                                                                                                                | Mineral Investigations Field Studies Map       |
| Misc. Geol. Inv. Map                                                                                                                                          | Miscellaneous Geologic Investigations Map      |
| Oil and Gas Inv. Chart                                                                                                                                        | Oil and Gas Investigations Chart               |
| Oil and Gas Inv. Map                                                                                                                                          | Oil and Gas Investigations Map                 |
| Prof. Paper                                                                                                                                                   | Professional Paper                             |
| Water-Supply Paper                                                                                                                                            | Water-Supply Paper                             |
|                                                                                                                                                               | Washington, D.C.                               |
| U. S. Natl. Mus. Proc.—United States National Museum Proceedings.                                                                                             |                                                |
| Washington, D.C.                                                                                                                                              |                                                |
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| Utah Geol. Mineralog. Survey Bull.—Utah Geological and Mineralogical Survey Bulletin. Salt Lake City, Utah.                                                   |                                                |
| Va. Dept. Highways, Div. Tests Geol. Yearbook—Virginia Department of Highways, Division of Tests Geological Yearbook. Richmond, Va.                           |                                                |
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| Va. Jour. Sci.—Virginia Journal of Science. Farmville, Va.                                                                                                    |                                                |
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| Vt. Geol. Survey Bull.—Vermont Geological Survey Bulletin. Montpelier, Vt.                                                                                    |                                                |
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| W. Va. Geol. Survey Bull.; [Rept.]; State Park Ser. Bull.—West Virginia Geological Survey Bulletin; [Reports]; State Park Series Bulletin. Morgantown, W. Va. |                                                |
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- Loma Plata limestone, Cretaceous, Texas, new: Amsbury, D. L.
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- Pansy Lee conglomerate, Cretaceous or Tertiary (?), Nevada: Willden, C. R.
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- Pierre shale, Cretaceous, South Dakota: Collins, S. G., 2.  
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- Pocono formation, Mississippian, Pennsylvania: Pelletier, B. R.
- Pottsville series, Pennsylvanian, Pennsylvania: Williams, E. G., 1.
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- Price River formation, Cretaceous, Colorado-Utah, facies: Young, R. G., 2.
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- Pueblito formation, Recent, Mexico, new: Albritton, C. C., Jr.
- Pulteney shale member of Sonyea formation, Devonian, New York, new: Colton, G. W.
- Puyallup formation, Pleistocene, Washington: Crandell, D. R., 2.
- Rapides shale, Cretaceous, Louisiana, new: Forgetson, J. M.
- Redwall limestone, Mississippian, Arizona: McKee, E. D.
- Rich Butt sandstone, Precambrian, North Carolina-Tennessee, new: King, P. B., 2.
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- Ringold formation, Pleistocene, Washington: Newcomb, R. C., 1.
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- Shely group, Tertiary, Texas, new: Amsbury, D. L.
- Shunda formation, Mississippian, Alberta: Penner, D. G., 1.
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Purcell area: Kellett, C. R.

Oregon, Eugene area, Tertiary: Steere, M. L.

Panama, Barro Colorado Island, portion of land bridge: Woodring, W. P., 2.

Pleistocene, stages: Lougee, R. J., 2.

Rhode Island, Oneco-Voluntown quadrangles, bedrock: Perhac, R. M.

Saskatchewan, northwestern: Buller, J. V.

Texas, Alpine area, Cenozoic: Huang, W. W. T., 5.

Permian basin: Galley, J. E.

Rio Grande, El Paso area: Kottlowski, F. E., 2.

Utah: Barkell, C. A.; Stokes, W. L., 3.

Book Cliffs area: Campbell, G. S.

Cache County: Williams, J. Stewart, 1.

Kaiparowits region, Paleozoic: Heyl-mun, E. B., Jr., 2.

Sheeprock Range: Cohenour, R. E., 1.

Stansbury Mts.: Rigby, J. K., 1.

Vermont, Hanover quadrangle: Lyons, J. B.

Virginia, Lynchburg quadrangle: Brown, W. Randall.

West Virginia, Teays Valley: Rhodehamel, E. C.

Wyoming: Thomas, Horace D.

Beartooth Mts.: Poldervaart, A., 1.

Perimeter, deformation: Foose, R. M., 1.

Dubois area: Reeves, C. C., Jr.

Wind River basin: Thompson, Raymond M.

Geologic mapping. *See also* Technique, *Mapping*.

Alaska, southeastern, progress: Lathram, E. H., 2.

Graphic methods: Donn, W. L.

Marine Sonoprobe system: McClure, C. D.

Radioactivity surveying for lithologic continuity, airborne: Guillou, R. B., 1.

Reconnaissance, aerial-photograph interpretation and aerial observation,

Yukon: Aho, A. E., 1.

Helicopter, Operation Mackenzie, Northwest Territories: Douglas, R. J.

W., 4.

Regional program, California-Nevada-Utah, Southern Pacific Company:

Kiersch, G. A., 3.

South Carolina, problems: Perry, E. S.

Topographic maps used as base, history, 1800-79: Friis, H. R.

Geologic maps. *See also* subheading *Geologic maps* under the states and countries; *Maps, Photogeologic*.

Alabama, Epes quadrangle: Monroe, W. H.

Montgomery County: Reade, H. L., Jr.

Alaska, Alaska Range, central, bedrock:

Wahrhaftig, C. A.

Fairbanks quadrangle: Péwé, T. L.

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## Alaska—Continued

- Juneau quadrangle: Lathram, E. H., 1.  
 Nenana River valley, Healy and Fairbanks quadrangle areas, Quaternary: Wahrhaftig, C. A.  
 Salmon Bay area, sketch: Houston, J. R.  
 Yukon River, lower, generalized: Patton, W. W., Jr.

- Alberta, Beehive Mtn. area: Norris, D. K., 1.  
 Chungo Creek area: Douglas, R. J. W., 1.  
 Galahad district: Bayrock, L. A., 2.  
 Hardisty district: Bayrock, L. A., 2.  
 Livingstone River area: Canada G. S., 21.

- Mt. Head area: Douglas, R. J. W., 2.  
 Nordegg area: Alberta Soc. Petroleum Geologists.

- Arizona, Clarkdale quadrangle: Lehner, R. E.

- Diamond Butte quadrangle, lower Precambrian: Gastil, R. G., 1.  
 Graham and Greenlee Counties: Wilson, Eldred D.

- House Rock Spring NE quadrangle: Wells, J. David.

- Index: Boardman, L., 1.

- Jerome area: Anderson, C. A.

- Lone Pine Reservoir area: Kiersch, G. A., 1.

- Ord mercury mine, Mazatzal Mts.: Faick, J. N., 1.

- Palomas Plain-Dendora Valley area: Armstrong, C. A.

- Peloncillo Mts.: Gillerman, E., 1.

- St. Michaels area, sketch: Du Bois, R. L., 1.

- South-central: Thurmond, R. E.

- Yavapai County: Ariz. Bur. Mines.

- Arkansas, barite districts, generalized: Scull, B. J.

- Bauxite region, Paleocene, paleogeologic: Gordon, M., Jr., 1.

- Surficial: Gordon, M., Jr., 1.

- British Columbia, Beehive Mtn. area: Norris, D. K., 1.

- Charlie Lake area: Canada G. S., 25.

- Dewar Creek area: Canada G. S., 4; Reesor, J. E.

- Fernie area, Rocky Mtn. trench: Leech, G. B.

- Mt. Garibaldi area: Mathews, W. H., 2.

- Prophet-Muskwa Rivers area: Sutherland, P. K.

- British Honduras, southern: Dixon, C. G., 1.

- California, Alturas sheet: Gay, T. E., Jr., 1.

- Boron quadrangle: Dibblee, T. W., Jr., 2.

- Cache Creek, Wilson Valley and Guinda dam sites: Calif. Dept. Water Res. Div. Res. Plan., 1.

- Castle Butte quadrangle: Dibblee, T. W., Jr., 1.

- Contra Costa County: Davis, F. F.

- Cuyama Valley-Caliente Range area, generalized: Hill, M. L., 1.

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## California—Continued

- Darwin quadrangle, mine areas: Hall, Wayne E.

- Death Valley: Calif. Dept. Nat. Res. Div. Mines, 6.

- Death Valley sheet: Kundert, C. J., 1.  
 Index: Strand, R. G.

- Mendocino County, ground-water basins: Calif. Dept. Water Res. Div. Res. Plan., 2.

- Mt. Abbot quadrangle: Sherlock, D. G.

- Pleasanton area: Hall, C. A., Jr., 1.

- Sacramento Valley-Mother Lode area: Geol. Soc. Sacramento.

- San Andreas area: Geol. Soc. Sacramento.

- San Clemente Island: Olmsted, F. H.

- San Fernando quadrangle: Oakeshott, G. B.

- San Fernando-Tujunga quadrangles, anorthosite-gabbro rocks: Oakeshott, G. B.

- San Francisco North quadrangle: Schlocker, J., 1.

- San Luis Obispo sheet: Kundert, C. J., 2.

- Santa Cruz sheet: Jennings, C. W.

- Santa Rosa and Petaluma Valley areas: Cardwell, G. T.

- Santa Ysabel quadrangle: Merriam, R. H., 1.

- Scott Valley: Mack, S., 1.

- Sierra Pelona: Muehlberger, W. R., 3.

- Soledad basin, north-central: Muehlberger, W. R., 2.

- Truckee area: Thompson, G. A.

- Ventura basin, southeastern: Winterer, E. L., 1.

- Canada, bedrock: Canada Dept. Mines and Tech. Surveys, 4.

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- Colorado, Club Mesa area: Boardman, R. L.

- Cuchara Pass area: Beu, R. D.

- Index: Koschmann, A. H., 1.

- Mt. Peale 1 NE quadrangle: Carter, W. D., 1.

- Pennsylvanian outcrops: Rocky Mtn. Assoc. Geologists.

- Pre-Pennsylvanian, paleogeologic, southeastern: Wilson, John M., 2.

- Ralston Buttes quadrangle: Sheridan, D. M.

- Raton Mesa region and Huerfano Park: Johnson, Ross B., 2.

- Sangre de Cristo Mts.: Asquith, D. O.

- Northern: Litsey, L. R.

- Slick Rock area, Morrison formation, relation of uranium-vanadium mines: Phoenix, D. A., 2.

- South Platte River valley: Bjorklund, L. J.

- South-central: Kans. Geol. Soc.

- Uravan area: Joesting, H. R., 2.

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## Colorado—Continued

Walsenburg area: Johnson, Ross B., 1.  
Wellsville area: Gwinn, B. W.

## Colorado Plateau, Grand Wash trough:

Hunt, C. B., 1.

Navajo country, Triassic-Jurassic,  
sketch: Harshbarger, J. W., 1.

Paradox basin region, Cambrian, paleo-  
geologic: Baars, D. L.

Pennsylvanian, paleogeologic: Wengerd,  
S. A., 3.

Connecticut, Danbury quadrangle, bed-  
rock: Clarke, J. W., 1.

Middletown area: Stugard, F., Jr.

Oneco-Voluntown quadrangles, bedrock:  
Perhac, R. M.

Preston region, gabbro and associated  
gneisses: Sclar, C. B., 1.

Cuba, Carlota area: Hill, P. A., 2.

Guaoa area: Hill, P. A., 1.

Manganese districts: Simons, F. S.

Victoria area: Hill, P. A., 2.

Delaware, Delaware River area: Barks-  
dale, H. C.

Florida, Jim Woodruff reservoir area:  
Hendry, C. W., Jr.

Southern: Schroeder, M. C.

Georgia, Haralson-Polk Counties: Webb,  
J. E.

Hart County: Grant, W. H., 1.

Jim Woodruff reservoir area: Hendry,  
C. W., Jr.

Greenland, Staunings Alper-Forsblads  
Fjord: Haller, J.

Ubekendt Ejland, sketch: Drever, H. I.

Haiti, montagnes Noires, northwest part:  
Butterlin, J. A., 2.

Idaho, Ada-Canyon Counties: Savage,  
C. N.

Lemhi Pass area, thorite-rare earth de-  
posits: Anderson, A. L., 1.

Indiana, glacial: Wayne, W. J., 1.

Seelyville quadrangle: Hutchison, H. C.

South-central, Meramec-Chester series,  
Mississippian, and basal Pennsyl-  
vanian: Perry, T. G., 2.

Tippecanoe County, surficial: Rosen-  
shein, J. S.

Iowa, glacial, generalized: Tri-State Geol.  
Field Conf., 1.

Southeastern: Tri-State Geol. Field  
Conf., 1.

Jamaica, Clarendon plains, sketch: Tay-  
lor, S. A. G., 2.

Green Bay-Port Henderson Hill, sketch:  
Chubb, L. J., 1, 8.

North-central: Sweeting, M. M., 2.

St. James Parish, central: Chubb, L. J., 3.

Kansas, Bonner Springs-Lawrence area:  
Dufford, A. E.

Elk County: Verville, G. J.

Generalized: Muilenburg, G.

Logan County: Johnson, C. R.

Morris County: Mudge, M. R.

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## Kansas—Continued

Paleogeologic sketch maps, Mississippian-  
Mesozoic: Jewett, J. M.

Kentucky: Hendrickson, G. E.

Prestonsburg quadrangle, Pennsylvanian:  
Hauser, R. E.

Tiptop quadrangle, Pennsylvanian:  
Welch, S. W., 1.

Labrador: Carr, G. F.

Kaipokok uranium area: Beavan, A. P.

Louisiana, Chestnut dome area: Dinnean,  
R. F.

Maine, Atkinson area: Maine G. S., 2.

Penobscot-Hancock Counties: Wing,  
L. A., 1.

Penobscot-Hancock-Washington Coun-  
ties: Wing, L. A., 2.

Manitoba, Barlow Lake area: Tedlie,  
W. D.

Brandon-Souris area, surficial: Halstead,  
E. C., 3.

Cranberry Portage: Canada G. S., 17.

Ledge Lake area: Canada G. S., 15.

Manitou area, surficial: Halstead, E. C., 1.

Pilot Mound area, surficial: Halstead,  
E. C., 2.

Shethanei Lake area: Taylor, F. C.

Tow Lake area: Hunter, H. E.

Maryland, Brandywine area: Hack, J. T.

Carroll-Frederick Counties: Meyer, G.

Cecil County, crystalline rocks: Over-  
beck, R. M.

Cecil-Kent-Queen Annes Counties, pre-  
Pliocene: Overbeck, R. M.

Massachusetts, Cheshire quadrangle, bed-  
rock: Herz, N.

Lawrence quadrangle, surficial: Castle,  
R. O.

Mexico, Hidalgo, northeastern part:  
Kuegelgen, H. von.

Jurassic regions: Erben, H. K., 1, 2.

México, D. F., to Taxco, Guerrero:  
Internat. Geol. Cong. Mexico, 2.

Mixteca River basin, Oaxaca: Cortés-  
Obregón, S.

Monterrey, Nuevo León, to Monclova  
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Geol. Cong. Mexico, 1.

Quintana Roo, central, sketch: Butter-  
lin, J. A., 3.

San Miguel fault, Baja California, strip  
map: Shor, G. G., Jr., 1.

Michigan: Martin, H. M. M., 1.

Dickinson-Iron Counties, Precambrian:  
Michigan Basin Geol. Soc.

Mackinac County: Vanlier, K. E., 2.

Marquette iron range: Boyum, B. H.

Northern, Cambrian sandstones: Ham-  
blin, W. K.

Minnesota, Cuyuna district, North range:  
Schmidt, R. George, 1, 2.

Mississippi, Kemper County: Hughes,  
R. J., Jr.

Montana: Ross, C. P., 1.

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## Montana—Continued

- Beartooth Mts.: Poldervaart, A., 1.  
 Beartooth uplift: Billings Geol. Soc.  
 Dryhead-Garvin basin: Stewart, John C.  
 Fallon-Glendive area: Moulder, E. A.  
 Park-Sweet Grass Counties, optical calcite source areas: Stoll, W. C.  
 Townsend Valley: Freeman, V. L.  
 Winston area: Becraft, G. E., 1.  
 Nebraska: Reed, E. C., 1.  
 South Platte River valley: Bjorklund, L. J.  
 Nevada, Antler Peak quadrangle, Golconda thrust fault area, generalized: Roberts, R. J.  
 Clark County: Bowyer, B., 1.  
 Jackson Mts., generalized: Willden, C. R.  
 Majuba Hill: Trites, A. F., Jr., 2.  
 Paleozoic assemblages, outcrops, north-central: Roberts, R. J.  
 Pioche Hills: Park, C. F., Jr.  
 Snake Range, southern: Drewes, H. D.  
 Verdi basin: Axelrod, D. I., 3.  
 Virginia City-Mt. Rose area: Thompson, G. A.

New Brunswick, Bathurst-Newcastle area: Canada G. S., 12; Smith, Charles H., 2.

New Hampshire, Canaan area, surficial and bedrock: Denny, C. S.

Hanover quadrangle: Lyons, J. B.

New Jersey, Delaware River area: Barksdale, H. C.

Dover magnetite district: Sims, P. K., 1.

Round Valley reservoir site: Johnson, M. E., 1.

Spruce Run Lake reservoir site: Johnson, M. E., 2.

Sterling Hill zinc deposit: Metsger, R. W.

New Mexico, Animas Valley, lower: Reeder, H. O.

Big Hatchet Mts., reconnaissance: Roswell Geol. Soc.

Cañon Largo quadrangle: Willard, M. E., 2.

Carlsbad Caverns West quadrangle: Hayes, P. T.

Cienega area: Sun, M.-S., 1.

Cochiti mining district: Bundy, W. M.

Coyote district: Tschanz, C. M.

Datil quadrangle: Willard, M. E., 1.

Dog Mts. quadrangle: Zeller, R. A., Jr., 2.

El Paso Gap quadrangle: Boyd, D. W., 1.

Foster Canyon quadrangle: Smith, C. T., 2.

Hueco Mts., sketch: Hardie, C. H.

Index: Boardman, L., 2.

Inscription Rock quadrangle: Smith, C. T., 1.

Las Tablas quadrangle: Barker, F.

Little Hatchet Mts.: Roswell Geol. Soc.

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## New Mexico—Continued

Mesa del Oro quadrangle: Jicha, H. L., Jr., 1.

Peloncillo Mts.: Gillerman, E., 1.

Playas quadrangle: Zeller, R. A., Jr., 1.

Sand Canyon area, Otero County: Bachman, G. O.

Sangre de Cristo Mts., southern drainage basins: Miller, J. P., 2.

Southeastern: Dane, C. H.

New York, Adirondack Mts., northwestern,

Precambrian: Engel, A. E. J., 2.

Albany County, limestone formations,

Silurian-Devonian: Johnsen, J. H.

Emeryville area, Precambrian: Engel, A. E. J., 2.

Gore Mtn. garnet deposit: Bartholomé, P. M.

Peekskill area: N. Y. State Geol. Assoc.

Watertown-Sackets Harbor quadrangles, surficial: Stewart, D. P.

Western, Sonyea formation, Devonian: Colton, G. W.

Newfoundland: Carr, G. F.

Bay of Islands area: Smith, Charles H., 1.

Cape Copper Mines area: Smith, Charles H., 1.

Cow Head Peninsula: Kindle, C. H.

Gander River ultrabasic belt: Jenness, S. E., 1.

Manuels area: Carr, G. F.

Newman Sound area: Jenness, S. E., 2.

St. Lawrence area: Carr, G. F.

Stowbridge chromite deposit: Smith, Charles H., 1.

Sunnyside area: McCartney, W. D.

Nicaragua, Pacific coast: Zoppis Bracci, L., 1.

Río Bocay basin, sketch: Zoppis Bracci, L., 2.

North Carolina: Stuckey, J. L., 1.

Great Smoky Mts., Precambrian-Cambrian: King, P. B., 2.

North Dakota: Friends Pleistocene Midwestern.

Bottineau area, Madison group, Mississippian, paleogeologic: Anderson, S. B., 1.

Pre-Mesozoic, paleogeologic: Maywald, R. H.

Northwest Territories, Aklavik Range, sketch: Jeletzky, J. A.

Fort Enterprise area: Canada G. S., 24.

Hardisty Lake area, west half: Canada G. S., 20.

Mackenzie District: Canada G. S., 5.

Nova Scotia, Baddeck area: Canada G. S., 11.

Cape Breton Island: Kelley, D. G.

Mira area: Canada G. S., 6.

Southwestern: Boyle, R. W., 1.

Truro area: Stevenson, I. M.

Ohio, Akron-Cleveland area: Ohio Acad. Sci. Geology Sec.



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## Ohio—Continued

Athens County: Sturgeon, M. T.  
Franklin County: Schmidt, J. J.  
Morgan County: Norling, D. L.

Oklahoma, Cleveland County, northeast-  
ern, Pennsylvanian, paleogeologic:  
Johnson, R. K.

Hulbert-Parkhill area: Huffman, G. G., 1.

Lake Altus area: Merritt, C. A.

Pryor-Salina area: Huffman, G. G., 1.

Southern, paleogeologic: Schweers, F. P.

Stillwell area: Huffman, G. G., 1.

Tenkiller Ferry area: Huffman, G. G., 1.

Vinita-Pensacola area: Huffman, G. G., 1.

Weatherford-Clinton district, Cloud Chief  
gypsum, Permian: Ham, W. E., 3.

Ontario: Ontario Dept. Mines, 3.

Boston Township iron range: Ratcliffe,  
J. H.

Clarendon-Dalhousie area: Smith, B. L.

Darling-Lavant Townships: Peach, P. A.

Eastern: Rose, E. R., 2.

Eastern iron deposits: Rose, E. R., 2.

Hemlo area: Bartley, M. W., 1.

Hyndman Township: Satterly, J., 1.

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tario Dept. Mines, 2.

Kirkland Lake area: Ratcliffe, J. H.

Melgund Township: Satterly, J., 2.

Munro-Beatty area: Low, J. H.

Nemegosenda alkaline area, generalized:  
Westrick, E. W., 2.

Populus Lake area: Davies, J. C.

Revell Township: Satterly, J., 3.

Southwestern: Canada G. S., 8.

Sudbury area: Canada G. S., 9.

Werner Lake-Rex Lake area: Carlson,  
H. D.

Wollaston granitic pluton, Hastings  
County: Saha, A. K., 1.

Oregon, northeastern: Wagner, N. S., 3.

Panama, Barro Colorado Island: Wood-  
ring, W. P., 2.

Pennsylvania, Chambersburg-Greencastle  
area, St. Paul group, Ordovician:  
Swartz, F. M., 1.

Delaware River area, lower: Barksdale,  
H. C.

Florence quadrangle: Shaffner, M. N.

Lebanon quadrangle: Geyer, A. R.

Minersville-Tremont quadrangles: Wood,  
G. H., Jr.

Mt. Union quadrangle, central part:  
Swain, F. M., Jr., 3.

Richland quadrangle: Gray, C.

South Mtn. area, Triassic north border:  
McLaughlin, D. B.

Puerto Rico: Mitchell, R. C., 2.

Utado pluton: Weaver, J. D.

Quebec, Ahr Lake area: Baragar, W. R. A.

Armstrong area: Marleau, R.-A., 1.

Beaumouchel-Houdet area: Laurin, A. F.

J., 1.

Bignell area: Gilbert, J. E. J.

Boucher-Carignan area: Klugman, M. A.

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Bourget area: Jooste, R. F.

Brock River area: Canada G. S., 7.

Duprat Township: Behr, S. H.

East Megantic area: Marleau, R.-A., 1.

Eric Lake area: McPhee, D. S.

Fiedmont Township, northeast quarter:

Brown, W. G.

Finger Lake area: Bérard, J.

Gabriel Lake area: Gélinas, L., 2.

Honorat West area: Skidmore, W. B.

Index, Department of Mines maps: Que-  
bec Dept. Mines, 1.

Labrador trough, northern: Béland, R.

Lake Orford area: Romer, H. S. de.

Louvigny-Bochart area: Bergeron, R., 1.

Marin-Picquet area: Remick, J. H.,  
3d, 1.

North-central, glacial: Ignatius, H.

Oak Bay area: Béland, J. R.

Rinfret area: Longley, W. W.

Roy Township: Horscroft, F. D. M., 1.

St.-Sylvestre-St. Joseph areas: Benoît,  
F.-W.

Sakami Lake area: Canada G. S., 14.

Thetford Mines-Black Lake area: Low,  
J. H.

Thévenet Lake area, east half: Gélinas,  
L., 1.

Tuttle Lake area: Phillips, L. S.

Uranium mining properties: Shaw,  
D. M., 1.

Rhode Island, Hope Valley quadrangle,  
bedrock: Moore, G. E., Jr.

Oneco-Voluntown quadrangles, bedrock:  
Perhac, R. M.

Saskatchewan, Deschambault Lake area,  
eastern: Kirkland, S. J. T.

Ledge Lake area: Canada G. S., 15.

Pelican Narrows area: Canada G. S., 19.

Planinshek-Brabant Lakes area: Sas-  
katchewan Dept. Mineral Res., 1.

Uranium City area: Canada G. S., 16.

Wollaston Lake area: Canada G. S., 18.

South Carolina, Irmo quadrangle: Heron,  
S. D., Jr., 1.

South Dakota, Brookings area, surficial  
deposits: Lee, K.-Y., 4.

Brookings quadrangle: Lee, K.-Y., 1.

Burdock quadrangles: Schnabel, R. W.,  
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Canning quadrangle: Crandell, D. R., 1.

Dewey quadrangles: Brobst, D. A., 2, 3.

Estelline quadrangle: Steece, F. V., 1.

Florence quadrangle: Tipton, M. J., 1.

Gregory quadrangle: Stevenson, R.  
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Hayti quadrangle: Steece, F. V., 2.

Henry quadrangle: Tipton, M. J., 2.

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Keyapaha quadrangle: Schoon, R. A., 1.

Oahe quadrangle: Crandell, D. R., 1.

Pierre quadrangle: Crandell, D. R., 1.

South Shore quadrangle: Tipton, M. J., 3.

Still Lake quadrangle: Tipton, M. J., 4.

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- Watertown quadrangle: Steece, F. V., 3.  
 Watertown-Estelline area, surficial deposits: Steece, F. V., 5.  
 Wewela quadrangle: Collins, S. G., 1.  
 White quadrangle: Lee, K.-Y., 2.  
 Witten quadrangle: Schoon, R. A., 2.  
 Tennessee, Great Smoky Mts., Precambrian-Cambrian: King, P. B., 2.  
 Ivydell quadrangle: Englund, K. J.  
 Knoxville quadrangle: Cattermole, J. M.  
 Texas, Brown County: San Angelo Geol. Soc.  
 Colorado River Industrial Development Association area: Dietrich, J. W.  
 Del Rio to El Paso, U. S. Highways 90 and 80, strip: West Texas Geol. Soc., 1.  
 Falls City-Tordilla Hill-Fashing areas: South Texas Geol. Soc.  
 Franklin Mts., sketch: West Texas Geol. Soc., 2.  
 Hueco Mts.: West Texas Geol. Soc., 2.  
 Indio Mts.: Soc. Econ. Paleontologists and Mineralogists Permian Basin Sec.  
 Llano region, eastern parts: Texas Univ. Bur. Econ. Geology.  
 Marathon uplift: West Texas Geol. Soc., 1.  
 North-central, Permian(?), Colorado River valley: San Angelo Geol. Soc.  
 Strawn-Canyon boundary, Pennsylvanian: Shelton, J. W.  
 Palmer quadrangle: Pitkin, J. A.  
 Palo Pinto County, Pennsylvanian: North Texas Geol. Soc.  
 Pinto Canyon area: Amsbury, D. L.  
 Real County: Long, A. T.  
 Sierra Pilares, north end: Soc. Econ. Paleontologists and Mineralogists Permian Basin Sec.  
 Tordilla Hill area: Vergie, P. C. de.  
 Trans-Pecos area, Rimrock country: DeFord, R. K., 2.  
 Willoughby wind gap area, Van Horn Mts.: Soc. Econ. Paleontologists and Mineralogists Permian Basin Sec.  
 Wylie Mts. and vicinity, Tertiary, paleogeologic: Soc. Econ. Paleontologists and Mineralogists Permian Basin Sec.  
 Trinidad: Sutton, A. G. A.  
 Los Bajos fault area: Wilson, C. C.  
 United States, Cordilleran foreland, uranium-bearing formations: Finnell, T. L., 1.  
 Earliest, history: Wells, J. W., 4.  
 Utah, Boulder Mtn., Quaternary: Flint, R. F., 1.  
 Cache County, geologic atlas: Williams, J. Stewart, 1.

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- Circle Cliffs quadrangles: Carswell, L. D., 1, 2; Davidson, E. S., 1, 2; Miller, G. A.  
 Clay Hills 2 NE quadrangle: Mullens, T. E.  
 Crater Hill lava flow, Zion National Park: Threet, R. L.  
 Deseret Peak quadrangle: Rigby, J. K., 1.  
 Dutch Peak area: Harris, D.  
 Eastern, Pennsylvanian outcrops: Rocky Mtn. Assoc. Geologists.  
 Elk Ridge quadrangles: Lewis, R. Q., Sr., 1-6.  
 Indian Springs quadrangle: Thomas, G. H.  
 Jomac mine area: Trites, A. F., Jr., 1.  
 La Sal Mts.: Hunt, C. B., 2.  
 Lehi quadrangle: Bullock, R. L.  
 Little Cottonwood intrusive complex, Alta area: Sharp, B. J.  
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648, Lofthouse Lake area: Canada G. S., 10.

649, Bylot area: Canada G. S., 10.

650, Warkworth Creek area: Canada G. S., 10.

651, Salmon Creek area: Canada G. S., 10.

652, Paragon Lake area: Canada G. S., 10.

653, Archer Creek area: Canada G. S., 10.

654, Nares Lake area: Canada G. S., 10.

655, Stanley River area: Canada G. S., 10.

656, Dawes Lake area: Canada G. S., 10.

657, Cromarty area: Canada G. S., 10.

658, Red Head Rapids area: Canada G. S., 10.

659, Wise Lake area: Canada G. S., 10.

660, Knight Lake area: Canada G. S., 10.

661, Condie Lake area: Canada G. S., 10.

662, Allan Lake area: Canada G. S., 10.

663, Broad River area: Canada G. S., 10.

664, Kelsey Creek area: Canada G. S., 10.

665, Fletcher Lake area: Canada G. S., 10.

666, Stony Lake area: Canada G. S., 10.

667, Overby Lake area: Canada G. S., 10.

668, Blyth Lake area: Canada G. S., 10.

669, Ryan Lake area: Canada G. S., 10.

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670, Wilkie Lake area: Canada G. S., 10.

671, Tadoule Lake area: Canada G. S., 10.

720, Legary Lake area: Canada G. S., 10.

721, Cheyne Lake area: Canada G. S., 10.

722, Kinsman Lake area: Canada G. S., 10.

723, Porcupine Rapids area: Canada G. S., 10.

724, Ashley Lake area: Canada G. S., 10.

725, Fox Lake area: Canada G. S., 10.

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*Mineralogy.*

Bernic Lake area, Montgary pegmatite: Hutchinson, R. W.

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- Winnipeg River area, pegmatite dikes:  
Davies, J. F., 2.

*Petrology.*

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W. D.  
Cranberry Portage: Canada G. S., 17.  
Crystalline limestones, occurrence and ori-  
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mann, F. D., 2.  
Shethanei Lake area, Precambrian: Tay-  
lor, F. C.  
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J. A.

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Colin Lake area, 716: Canada G. S., 10.  
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son, J. R., 29.  
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Penobscot-Hancock Counties: Wing,  
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ter-Polk Counties: Books, K. G., 7.  
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New Hampshire, Lake Tarleton area:  
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 New York, Greenwood Lake quadrangle: Henderson, J. R., 2.  
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Oliver Lake area: Saskatchewan Dept. Mineral Res., 33, 35.

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Oskikebuk Lake area, west half: Saskatchewan Dept. Mineral Res., 9.

West half, electromagnetic: Saskatchewan Dept. Mineral Res., 5.

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Adna quadrangle: Henderson, J. R., 26.

Cape Shoalwater quadrangle: Henderson, J. R., 22.

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Grayland quadrangle: Henderson, J. R., 15.

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Illinois, strippable reserves, southwestern counties: Smith, W. Henking.

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Warrick County: Wier, C. E.

Kentucky, Tiptop quadrangle, beds: Welch, S. W., 1.

Mexico, Mixteca River basin, Oaxaca: Cortés-Obregón, S.

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Atlantic Coastal Plain, southern, gravity: Woollard, G. P., 1.

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Garrison Township, magnetic: Conn, H. M. K.

Lake Timagami area: Bergey, W. R.

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Rivière Portneuf-Lac Pauline area, magnetic: Moyd, L. S., 1.

Rouyn Township, Horne mine, spontaneous polarization: Kelly, S. F., 3.



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Saskatchewan, northern, magnetic: Agarwal, R. G.

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magnetic: Petsch, B. C.

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Utah, Ogden Valley, gravity: Stewart, S. W.

Yukon, Vangorda Creek sulfide area: Chisholm, E. O.

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Alabama, Huntsville area: Sanford, T. H., Jr.

Tuscaloosa County: Miller, J. D., Jr., 2.

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Scott Valley: Mack, S., 1.

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Florida, Flagler County: Bermes, B. J., 1.

Manatee County: Peek, H. M.

Putnam County: Leve, G. W.

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Illinois, east-central: Selkregg, L. F.

Preparation: Bergstrom, R. E.

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Kansas, Elk County: Bayne, C. K.

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Montana, Fallon-Glendive area: Moulder, E. A.

Nebraska, South Platte River valley: Bjorklund, L. J.

New Mexico, Animas Valley: Reeder, H. O.

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Oklahoma, Arbuckle Mts. area, reservoirs: Davis, L. V., 1.

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Northwestern, Devonian: Law, James.

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Southern, Cretaceous: Workman, L. E.

Southern plains, Mississippian: Penner, D. G., 2.

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Arizona, Black Mesa basin, Permian: Peirce, H. W.

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Northern: Kuhn, P. J.

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Arkansas, southern, Siligo formation, Cretaceous: Nichols, J. L.

British Columbia, northeastern: Gray, G. L.

California, Islais Creek basin: Radbruch, D. H.

Los Angeles basin, lower Pliocene: Conrey, B. L.

Manhattan Beach area, West Coast ground-water basin, Pleistocene: Zielbauer, E. J.

Canada, Great Plains, southern: Pye, W. D., 1.

Colorado, Belden formation, Pennsylvanian: Brill, K. G., Jr.

Denver basin, Pennsylvanian: Taylor, J. R.

Maroon basin, Eagle evaporites, Pennsylvanian: Katich, P. J., Jr., 2.

Southeastern, Pennsylvanian: Wilson, John M., 2.

Colorado Plateau, Paradox basin, Pennsylvanian formations: Clair, J. R.

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Trinity group, Cretaceous: Forgotson, J. M., Jr., 2.

Illinois, Patoka area, Ordovician-Pennsylvanian formations: Smoot, T. W.

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Louisiana, Acadia-Landry Parishes, Frio sands, Tertiary: Paine, W. R.

Jefferson-Plaquemines-St. Charles Parishes, Tertiary: Vidrine, L. O.

Northern, Bodcaw sand, Jurassic: Sloane, B. J., Jr.

Cretaceous formations: Nichols, J. L.

Mississippi, Cretaceous beds: Mellen, F. F.

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 Nebraska, Cambrian-Mississippian: Svoboda, R. F.  
 North Dakota, Bottineau area, Spearfish formation, Triassic: Anderson, S. B., 1.  
 Nova Scotia, Cape Breton Island, central, Horton group, Mississippian: Kelley, D. G.  
 Oklahoma, Cushing oil field: Riggs, C. H.  
 Kay County: Querry, J. L.  
 McAlester basin, Mississippian-Pennsylvanian formations: Laudon, R. B.  
 Rocky Mts.-Williston basin, Jurassic: Peterson, J. A., 2.  
 Saskatchewan, northwestern, Meadow Lake beds, Devonian: Buller, J. V.  
 Texas, eastern, Sligo formation, Cretaceous: Nichols, J. L.  
 Francitas area, Lower Frio sands, Tertiary: Lewis, J. O., Jr.  
 Gulf coast, northern, Heterostegina-Vicksburg interval, Oligocene: Tolbert, A. M.  
 Southern, Frio sands, Tertiary: Johnson, Ray B.  
 Sutton-Schleicher Counties, Pennsylvanian: Rall, R. W.  
 United States, Great Plains, northern: Pye, W. D., 1.  
 Utah: Stokes, W. L., 3.  
 Aneth field area, Desert Creek and Ismay zones, Pennsylvanian: Carter, K. E., 1.  
 Kaiparowits region: Heylman, E. B., Jr., 2.  
 Paradox basin, Cambrian, Devonian, and Mississippian: Moritz, C. A.  
 Western, Upper Cambrian: Bentley, C. B.  
 Williston basin, Ordovician-Silurian boundary formations: Schultz, E. H.  
 Wyoming, Madison group, Mississippian: Andrichuk, J. M., 1.  
 Powder River basin: Wyo. Geol. Assoc.

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 Uranium: Ariz. Dept. Mineral Res.  
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 California, Contra Costa County: Davis, F. F.  
 Saline deposits: Calif. Dept. Nat. Res. Div. Mines, 2.

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- Alaska, Meade anticline, Cretaceous: Collins, F. R., 3.
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- Sweetgrass arch, structural evolution: Tovell, W. M.
- Arizona, House Rock Spring NE quadrangle: Wells, J. David.
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- Manhattan Beach area, West Coast ground-water basin, Pleistocene: Zielbauer, E. J.
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- Illinois, Patoka area, Ordovician-Pennsylvanian formations: Smoot, T. W.
- Indiana, Precambrian, Middle Ordovician: Henderson, J. R., 29.
- Tippecanoe County, bedrock surface: Rosenshein, J. S.
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- Ostracode, Centerfield limestone member of Ludlowville shale: Kesling, R. V., 6.
- Ohio, Foraminifera, arenaceous, Columbus limestone: Summerson, C. H., 1.
- Oklahoma, brachiopods, Bois d'Arc formation: Amsden, T. W., 7.

## Paleontology—Continued

## Devonian—Continued

## Oklahoma—Continued

- Brachiopods, Frisco formation, Pottawatomie County: Amsden, T. W., 4.  
 Haragan formation, Arbuckle Mts. region: Amsden, T. W., 5.  
 Pelecypod, Haragan formation: Branson, C. C., 6.  
 Tree, Woodford formation, Wapanucka area: Wilson, L. R., 5.  
 Ontario, corals, Upper Abitibi River limestone: Cranswick, J. S.  
 Invertebrates, Thedford-Arkona region, check list, Middle: Stumm, E. C., 1.  
 Stromatoporoids, southern: St. Jean, J., Jr., 1.  
 Pennsylvania, Hamilton group, Rockville area: Cramer, H. R.  
 United States, conodonts, northeastern and central, faunal zones, Late: Hass, W. H., 1.  
 Utah, fishes, Water Canyon formation: Denison, R. H.  
 West Virginia, sponges, Chemung formation: Rice, N. E.  
 Wyoming, conodonts, Darby formation, Wind River Mts.: Klapper, G.  
 Fishes, Bighorn formation, Johnson County: Ørvig, T.

## Jurassic.

- Arctic America: Frebold, H. W. L., 3.  
 British Columbia, plants, Vancouver Island, west coast: Fry, W. L.  
 Canada, mollusks, Fernie group, Rocky Mts. and foothills: Frebold, H. W. L., 1.  
 Northern: Frebold, H. W. L., 3.  
 Mexico, ammonoids, Early: Erben, H. K., 1.  
 Northwest Territories, ammonoids, Wilkie Point formation, Prince Patrick Island: Frebold, H. W. L., 2.  
 Pelecypods, Wilkie Point formation, Prince Patrick Island: Frebold, H. W. L., 2.  
 South Dakota, ostracodes, Morrison formation, Black Hills: Sohn, I. G., 1.  
 Utah, dinosaur, *Camarasaurus*, braincase: White, T. E.  
 Dinosaurs, Morrison formation, Dinosaur National Monument, popular: Good, J. M.  
 Wyoming, Powder River basin, southern margin: Love, J. D.

## Mesozoic.

- Ammonoids, review of literature: Haas, O.  
 Mississippian.

- Alberta, megafaunal zones: Harker, P., 1.  
 Belemnoids: Flower, R. H., 3.  
 California, goniatites: Gordon, M., Jr., 2.  
 Canada, brachiopods, zones, Mt. Head-Etherington formations: Nelson, S. J., 1.  
 Corals, lithostrotionid, southern Rocky Mts., zones: Nelson, S. J., 2.

## Paleontology—Continued

## Mississippian—Continued

## Canada—Continued

- Ostracode zones, western: Loranger, D. M., 2.  
 Conodonts, Valmeyer series and late Chester series, homeomorphs: Rexroad, C. B., 2.  
 Illinois, conodonts, Glen Dean formation: Rexroad, C. B., 1.  
 Conodonts, State Pond area, Devonian-Mississippian, list: Collinson, C. W., 2.  
 Ostracodes, Hannibal-Springville formations, Union County: Benson, R. H.  
 Indiana, cephalopods, Salem-St. Louis formations, transition zone: Bieber, C. L.  
 Conodonts, Glen Dean formation: Rexroad, C. B., 1.  
 Kentucky, Clore and Kinkaid limestones, lists: Jillson, W. R., 2.  
 Conodonts, Glen Dean formation, western: Rexroad, C. B., 1.  
 Nautiloid, Clore limestone: Collinson, C. W., 5.  
 Mexico, Caborca area, Sonora: Easton, W. H.  
 Mississippi, conodonts, High Resistivity shale, Monroe County: Stanley, E. A.  
 Mississippi Valley, conodonts, upper: Scott, A. J.  
 Missouri, ammonoids, Burlington limestone: Miller, A. K., 2.  
 Brachiopods, infant, Louisiana limestone, attachment loops: Unklesbay, A. G., 2.  
 Bryozoans, Chouteau group, central: Koenig, J. W., 2.  
 Nevada, brachiopod, Diamond Peak formation: Lintz, J., Jr., 2.  
 Nautiloid, White Pine shale, northeastern: Lintz, J., Jr., 2.  
 New Mexico, Foraminifera, endothyroid, Arroyo Peñasco formation: Armstrong, A. K., 2.  
 Kelly formation, west-central: Armstrong, A. K., 1.  
 Nova Scotia, amphibian jaw, Point Edwards formation, Sydney area: Romer, A. S., 3.  
 Windsor limestone, Truro area, faunal distribution: Stevenson, I. M.  
 Ohio, northern, Cuyahoga formation: Szmuc, E. J.  
 Oklahoma, invertebrates, Redoak Hollow formation: Elias, M. K., 1, 2.  
 Pelecypods, *Conocardium*: Branson, C. C., 4.  
 Pennsylvania, plants, anthracite area, zones: Wood, G. H., Jr.  
 United States, echinoids, new: Kier, P. M., 1.  
 Utah, Foraminifera, endothyroid, central, zonation: Woodland, R. B.

Paleontology—Continued

Mississippian—Continued

Utah—Continued

Long Trail shale, Oquirrh Mts., dwarfed fauna, paleoecology: Zeller, R. P.

Wyoming, Foraminifera, Hartville formation, zones: Henbest, L. G., 2.

Ordovician.

Arizona, El Paso limestone, southeastern: Epis, R. C.

Canada, fish, isolated plates: Sinclair, G. W., 3.

Ostracode, Pamela beds, Ottawa area: Copeland, M. J.

Gastropods, *Ceratopea*, Early, south-central United States: Yochelson, E. L., 2.

Iowa, conodonts, Galena formation: Ethington, R. L., 2.

Graptolite, Maquoketa shale, internal structure: Tasch, P., 4.

Maquoketa shale, pellet formation, conodont control: Tasch, P., 2.

Michigan, trilobites, calymenid: Stumm, E. C., 3.

Minnesota, conodonts, Galena formation: Ethington, R. L., 2.

Missouri, graptolites, Maquoketa shale, Castlewood area, unpressed: Werner, C.

Mollusks, monoplacophoran, Early: Yochelson, E. L., 1.

Nautiloids, Endoceratida, classification and evolution: Flower, R. H., 2.

Nevada, trilobites, Valmy formation: Ross, R. J., Jr.

New Jersey, conodonts, Middle: Ethington, R. L., 1.

Newfoundland, Cow Head area, lists: Kindle, C. H.

Oklahoma, catalog, Middle and Late: Amsden, T. W., 2.

Chitinozoans, Sylvan shale, Davis area: Wilson, L. R., 3.

Cystoid, Bromide formation, Fittstown area: Branson, C. C., 7.

Ontario, Nipissing-Deux Rivières area, outliers, faunal lists and correlation tables: Colquhoun, D. J.

Pennsylvania, Conestoga limestone, Henderson quarry, list: Richards, H. G., 5.

Early, lists: Willard, B., 2.

Tennessee, scaphopod, Murfreesboro limestone: Fisher, D. W.

Utah, graptolites, western, Early: Rigby, J. K., 4.

Virginia, trilobites, Martinsburg shale, cephalon growth: Whittington, H. B.

Paleozoic.

Alaska, gastropods, northern: Yochelson, E. L., 3.

Eurypteridae, Ordovician-Devonian, reclassification: Kjellesvig-Waering, E. N., 2.

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Paleozoic—Continued

Foraminifera, faunal analysis method, late: Cummings, R. H.

Hydrozoans, Mississippian-Permian, western United States: Rigby, J. K., 2.

Indiana, edriasteroid, Crawfordsville area, Silurian (?), holotype of type species: Kesling, R. V., 8.

Iowa, spores: Wilson, L. R., 4.

Kentucky, Barren County: Jillson, W. R., 1.

New Brunswick, pre-Carboniferous, northern and central: Cumming, L. M.

New York, corals, tabulate, forgotten species: Wells, J. W., 2.

Oklahoma, Ozark uplift flanks, lists: Huffman, G. G., 1.

Ostracodes, *Bairdia*, restudy: Sohn, I. G., 3.

Beyrichiidae, morphologic features: Kesling, R. V., 1.

Catalog: Ellis, B. F., 2.

Trilobites, Lichacea, distribution and nomenclature: Tripp, R. P.

United States, algae, midcontinent: Parks, J. M., Jr.

Washington, coral burrows, Eagle Mtn. sandstone, Stevens County: Howell, B. F., 4.

Pennsylvanian.

Ammonoids, Schistoceratidae, Middle: Miller, A. K., 1.

California, goniatites: Gordon, M., Jr., 2.

Canada, brachiopods, zones, Etherington formation: Nelson S. J., 1.

Colorado: Chronic, B. J., Jr., 2.

Fountain formation, marine fauna: Ellis, H.

Molas formation, southwestern, faunal lists: Merrill, W. M.

Colorado Plateau, bryozoans and fusulinids, Paradox basin, zones: Welsh, J. E.

Idaho, fusulinids, Sublett Range: Thompson, M. L.

Illinois, calamitean cones, McLeansboro group, Berryville area: Arnold, C. A., 2.

Cephalopod anaptychus, Carbondale group, Peoria County: Collinson, C. W., 4.

Plants, pteridosperm, McLeansboro group: Delevoryas, T.

Wilmington coal flora: Langford, G.

Western, faunal characteristics and distribution, lists: Wanless, H. R.

Indiana, spores, Pottsville coalbeds: Guenel, G. K.

Kansas, amphibian, Garnett area, Late: Peabody, F. E., 2.

Lycopods, arborescent, Fleming coal: Andrews, H. N., Jr.

Pteridosperm seeds, Fleming coal: Stewart, W. N.

Spores, Cabaniss group, coal-seam correlations: Wilson, L. R., 2.

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*Pennsylvanian*—Continued

- Kentucky, holothurians, Kendrick shale, eastern: Summerson, C. H., 2.
- Maryland, Ames and Brush Creek shales of Conemaugh formation: Lintz, J., Jr., 1.
- Mollusks, Ames and Brush Creek shales of Conemaugh formation: Lintz, J., Jr., 1.
- Missouri, cephalopods, Burgner formation: Unklesbay, A. G., 1.
- Myriapods: Baird, D.
- New Mexico, brachiopods, Des Moines and Derry series: Gehrig, J. L.
- Oklahoma, Foraminifera, sessile on algae, McAlester area, limestone nodules: Henbest, L. G., 4.
- Pelecypod, marine, coal seam, Porter area: Branson, C. C., 5.
- Spores, Cabaniss group, coal-seam correlations: Wilson, L. R., 2.
- Tiawah limestone, paleoecology: Parker, C. A.
- Tree stump, McAlester-Savanna formations, sand cast: Branson, C. C., 3.
- Pennsylvania, plants, anthracite area, zones: Wood, G. H., Jr.
- Western, Pottsville and Allegheny groups, zones, correlation: Williams, E. G., 2.
- Plants, lycopod cones and spores: Chaloner, W. G.
- Sphenopsis species, North America: Abbott, M. L.
- Texas, Foraminifera, boundary significance, north-central: Henbest, L. G., 3.
- Fusulinids, Strawn series, upper, central: Stewart, W. J.
- Thrifty formation, central: Myers, D. A.
- Invertebrate megafossils, Strawn and Canyon series, nomenclature: Heuer, E.
- United States, coal basins, floral lists and zones: Bode, H.
- Echinoids, new: Kier, P. M., 1.
- Utah, fusulinids, Oquirrh formation, zonation: Nygreen, P. W.
- Wyoming, Foraminifera, Hartville formation, zones: Henbest, L. G., 2.

*Permian*.

- Alberta, megafaunal zones: Harker, P., 1.
- Amphibians, *Eryops*, early, extended to Late Pennsylvanian: Vaughn, P. P., 3.
- Appalachian basin, plants, Dunkard series, cf. Pennsylvanian floras: Cross, A. T.
- Arizona, ammonoid, Kaibab formation, Coconino County: Miller, A. K., 3.
- Kaibab formation, fauna of gamma member: Brady, L. F., 2.

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*Permian*—Continued

- Colorado Plateau, bryozoans and fusulinids, Paradox basin, zones: Welsh, J. E.
- Idaho, fusulinids, Sublett Range: Thompson, M. L.
- Kansas, brittle star, Americus limestone: Miller, H. W., Jr., 3.
- Crustaceans, conchostracan, Harvey and Sedgwick Counties: Tasch, P., 6.
- Conchostracan, Jester Creek section, Harvey County, paleoecology: Tasch, P., 1, 3.
- Fishes, Council Grove and Chase groups, bradyodont teeth: Miller, H. W., Jr., 1.
- Grenola limestone, Cowley-Elk Counties, zones: Lane, N. G.
- Holothurian sclerites, Florena shale: Kornicker, L. S., 2.
- Myriapods: Baird, D.
- New Mexico, Guadalupe Mts.: Boyd, D. W., 1.
- Northwest Territories, Grinnell Peninsula: Harker, P., 3.
- Oklahoma, fish, Americus limestone, bradyodont tooth: Miller, H. W., Jr., 1.
- Reptile, Hennessey formation: Vaughn, P. P., 2.
- Pelycosaur, Fort Sill area: Vaughn, P. P., 1, 4.
- Tree fern, Wolfcamp formation, Osage County: Vosburg, D. L.
- Pelecypods, crassatellid, dentition and nomenclature: Newell, N. D., 2.
- Texas, burrows, Waldrip shale, not amphibian tracks: Pogue, J. B.
- Echinoids, western: Kier, P. M., 2.
- Foraminifera, boundary significance, north-central: Henbest, L. G., 3.
- Vertebrates: Romer, A. S., 2.
- Vale and Choza formations: Olson, E. C., 2.
- United States, coal basins, floral lists and zones: Bode, H.
- Gastropods, southwestern: Batten, R. L., 2.
- Wyoming, Foraminifera, Hartville formation, zones: Henbest, L. G., 2.
- Precambrian*.
- Ontario, protozoans, Keewatin cherts, Schreiber area: Madison, K. M.
- Quaternary*.
- Arctic America, pinnipeds, biogeography, Pleistocene: Davies, J. L., 1.
- Arizona, capybara, 111 Ranch, Pleistocene: Lance, J. F., 2.
- Horse, Santa Cruz County, Pleistocene: Quinn, J. H., 1.
- Arkansas, snakes, Conard Fissure, Ozark Plateau, Pleistocene: Dowling, H. G.
- Bahamas, ostracodes, Bimini area, ecology: Kornicker, L. S., 4.
- Birds: Wetmore, A.

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## Quaternary—Continued

- California, birds, Newport Bay Mesa, Pleistocene: Howard, H., 2.
- Foraminifera, Santa Cruz basin, Recent, ecology and fossil contamination: Resig, J. M.
- Mollusks, Cayucos area, late Pleistocene faunal province, cf. Recent: Valentine, J. W.
- San Pedro basin, Recent faunas, trends: Bandy, O. L.
- Connecticut, mollusks, Pleistocene faunas: Frankel, L., 2.
- Cuba, bat, Lamas Cave, Pleistocene: Koopman, K. F.
- Florida, Caloosahatchee marl and Fort Thompson formation, Pleistocene, Caloosahatchee River area: Du Bar, J. R., 2.
- Lemming, Pleistocene: Olsen, S. J., 6.
- Mammals, Melbourne area, Pleistocene: Ray, C. E.
- Reptiles and amphibians, Saber-tooth Cave, Pleistocene: Holman, J. A.
- Turtles, Pleistocene, correlation: Auffenberg, W., 3.
- Vertebrates, Caloosahatchee marl, Pleistocene: Du Bar, J. R., 3.
- Guam, crabs, Apra Harbor: Kesling, R. V., 9.
- Gulf of Mexico, Stetson Bank, Pleistocene (?), faunal list: Neumann, A. C.
- Idaho, birds, Hagerman lake beds, Pliocene or Pleistocene: Brodkorb, P., 2.
- Weasel, Hagerman formation, Pleistocene: Hibbard, C. W., 3.
- Illinois, plants, Mankato age, Hutchins Creek basin: Kaesler, M.
- Indiana, mastodon, Wisconsin age, Michigan City area: Turnbull, W. D., 1.
- Mollusks, Kansan-Yarmouth age, list: Wayne, W. J., 2.
- Jamaica, coastal formations, fauna: Robinson, E., 1.
- Kansas, birds, Shorts Creek, Pleistocene: Stettenheim, P.
- Cat, Barber County, Pleistocene: Galbreath, E. C.
- Fishes, Butler Spring fauna, Pleistocene, Meade County: Smith, C. L.
- Lizards, Cragin Quarry fauna, Pleistocene: Etheridge, R.
- Mammals, Pleistocene, North America, local faunas, summary: Hibbard, C. W., 1.
- Massachusetts, pollen analysis, Petersham area: Davis, M. B.
- Mexico, bats, San Josecito Cave, Nuevo León, Pleistocene: Jones, J. K., Jr.
- Invertebrates, Punta Baja, Baja California, Pleistocene: Emerson, W. K., 2.
- Mammals, Lago de Chapala area, Pleistocene, cf. Rancho La Brea: Downs, T., 1.

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## Quaternary—Continued

## Mexico—Continued

- Rodents and lagomorphs, San Josecito cave, Nuevo León, Pleistocene: Jakway, G. E.
- Michigan, moose, Pleistocene: Hibbard, E. A.
- Nebraska, plant cover, Pleistocene loess deposits: Frankel, L., 1.
- Nevada, amphibians and reptiles, Gypsum Cave: Brattstrom, B. H., 1.
- Bird, Crypt Cave, Lake Winnemucca sediments: Howard, H., 3.
- New York, Foraminifera, Staten Island, paleoecology: Grekulinski, E. F.
- North Dakota, conifer, Kidder County, Pleistocene: Moir, D. R.
- Nova Scotia, pollen analysis, Gillis Lake, Cape Breton Island: Livingstone, D. A., 2.
- Ohio, forests, Pleistocene, western: Burns, G. W.
- Oklahoma, fishes, Berends and Doby Springs faunas, Pleistocene, Beaver and Harper Counties: Smith, C. L.
- Saber-tooth cat, Logan County, Pleistocene: Kitts, D. B., 2.
- Pacific coast, mollusks, P. P. Carpenter types: Palmer, K. E. H. V. W., 3.
- Pennsylvania, pollen analysis, Marsh area, Pleistocene taiga-tundra: Martin, P. Schultz, 2.
- Pollen profiles, Hartstown bog area, Pleistocene: Walker, P. C.
- Pleistocene ecology and biogeography, North America: Martin, P. Schultz, 1.
- Prince Edward Island, Foraminifera (?), Pleistocene, microfossil residues: Terasmae, J., 3.
- Texas, Lewisville site, Pleistocene, fauna and artifacts: Crook, W. W., Jr.
- Vertebrates, Ingleside barrier chain, Pleistocene: Price, W. A.
- Turtle, *Chrysemys picta*, evolution: Bleakney, S.
- United States, vertebrates, southern, zoogeography, Pleistocene ecologic changes: Blair, W. F.
- West Indies, amphibian and reptiles, Barbuda, late Pleistocene: Auffenberg, W., 4.
- Silurian.*
- Brachiopods, new genera: Boucot, A. J., 2.
- Spiriferid genera, revision: Boucot, A. J., 1.
- Graptolites, Late, North America, correlations: Berry, W. B. N., 3.
- Indiana, eurypterid, Kokomo dolomite: Kjellesvig-Waering, E. N., 1.
- Michigan, ostracode, Hendricks dolomite: Kesling, R. V., 4.
- New England, metamorphosed fossils, Bernardston and Clough formations, age(?): Boucot, A. J., 3.

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## Silurian—Continued

- New Hampshire, Clough formation, sillimanite zone: Boucot, A. J., 4.
- Ohio, eurypterids, Tymochtee dolomite, Fayette County: Leutze, W. P.
- Oklahoma, brachiopods, Bois d'Arc formation: Amsden, T. W., 7.
- Brachiopods, *Dictyonella*, stratigraphic range in Hunton group: Amsden, T. W., 3.
- Henryhouse formation: Amsden, T. W., 1.
- Pelecypod, Keel member of Chimneyhill formation: Branson, C. C., 6.
- Ontario, trilobites, Lockport dolomite, upper, local population: Best, R. V.
- Ostracodes, *Bolbineossia*, new genus, cf. *Chilobolbina*: Kesling, R. V., 3.
- Pennsylvania, Bloomsburg formation, central: Hoskins, D. M.
- Tennessee, bryozoans, Brownsport formation: Perry, T. G., 4.

## Tertiary.

- Alabama, Coastal Plain, faunal zones, west-central: LaMoreaux, P. E.
- Alberta, conifer woods, Cretaceous boundary, central: Campbell, John D.
- Horse, Hand Hills conglomerate, Pliocene(?): Russell, L. S., 1.
- Arizona, camel, Wellton area, Miocene: Wood, P. A.
- Miocene lake and flood-plain sediments, southwestern: Lance, J. F., 3.
- Arkansas, bauxite region, lists: Gordon, M., Jr., 1.
- Birds: Wetmore, A.
- California, birds, San Diego formation, Pliocene: Miller, L. H.
- Diatoms, Lompoc area, Miocene: Okuno, H., 1.
- Echinoids, *Scutellaster* and *Dendraster*, Jacalitos formation, Pliocene: Durham, J. W., 2.
- Foraminifera, Danian stage, Paleocene, Cheney Range well: Loeblich, A. R., Jr.
- Discocyclinids, Eocene: Cole, W. S., 4.
- Los Angeles and Ventura basins, shell-form variations in laminated and massive sediments: Hendrix, W. E.
- Insects, Calico Mts., Miocene: Pierce, W. D., 2.
- Mollusks, Pleasanton area: Hall, C. A., Jr., 1.
- Orocopia Mts., Eocene fauna: Susuki, T.
- Ostracodes, Fig-Tree Gulch, Marysville Buttes, Eocene: Marianos, A. W.
- Colorado, carnivore, DeBeque formation, Mesa County: Patterson, B., 2.
- Grasses, Florissant beds: Beetle, A. A.
- Florida, carnivore, Thomas Farm, Miocene: Olsen, S. J., 3.
- Carnivores, Miocene: Olsen, S. J., 4.
- Fish teeth, Haile area, Pliocene: Caldwell, D. K.

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## Tertiary—Continued

## Florida—Continued

- Gastropods, Crystal River formation, Eocene: Palmer, K. E. H. V. W., 1.
- Tethyan faunal relations, Eocene: Palmer, K. E. H. V. W., 1.
- Mastodon, Bone Valley formation: Olsen, S. J., 1.
- Mustelid, Thomas Farm, Miocene: Olsen, S. J., 2.
- Panhandle, Miocene lists: Vernon, R. O.
- Foraminifera, camerinids, names and variations: Cole, W. S., 3.
- Larger, names and variations: Cole, W. S., 1.
- Georgia, shark teeth, Coastal Plain, Eocene: Richards, H. G., 7.
- Guam, crabs, Apra Harbor: Kesling, R. V., 9.
- Haiti, Foraminifera, Oligocene(?) limestones, chert deposits: Butterlin, J. A., 1.
- Idaho, birds, Hagerman lake beds, Pliocene or Pleistocene: Brodkorb, P., 2.
- Jamaica, Buff Bay beds, Miocene(?): Robinson, E., 2.
- Coastal formations: Robinson, E., 1.
- Madro-Tertiary geoflora, evolution: Axelrod, D. I., 1.
- Mammals, Leporidae, Eocene-Pliocene: Dawson, M. R.
- Pantodont, Paleocene: Simons, E. L.
- Mexico, Foraminifera, large, Yucatan Peninsula, Eocene: Butterlin, J. A., 3.
- Foraminifera, Nuevo León, basal Paleocene index fossil: Obregón de la Parra, J.
- Invertebrates, Quintana Roo, Miocene, distribution lists: Butterlin, J. A., 3.
- Montana, floras, Oligocene, Ruby River basin: Becker, H. F.
- Mammals, Anceney fauna, Miocene: Dorr, J. A., Jr., 1.
- Bitterroot Valley, Pliocene: Konizski, R. L., 2.
- Sage Creek area: Hough, M. J.
- Snake, Madison Valley formation, Miocene: Auffenberg, W., 1.
- Vertebrates, Cabbage Patch beds, Miocene: Konizski, R. L., 1.
- Loup Fork beds, Neocene, western: Douglass, E.
- Western and southwestern, lists: Kay, J. L.
- Nebraska, lizard, Chimney Rock area, Brule formation, Oligocene: Brattstrom, E. H., 3.
- Nevada, diatoms, Fallon area, Miocene-Pliocene: Okuno, H., 2.
- Diatoms, Miocene, western: Okuno, H., 3.
- Mammal, fossorial, Esmeralda formation, Miocene: Reed, C. A.
- Verdi flora, Coal Valley formation, Pliocene: Axelrod, D. I., 3.

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## Tertiary—Continued

- North America, mammals, insectivores, classification, cf. Greater Antilles, Recent: McDowell, S. B., Jr.
- North Carolina, echinoid, Castle Hayne marl, Eocene: Paulson, O. L., Jr.
- Ostracodes, Coastal Plain: Brown, P. M., 1.
- North Dakota, crabs, Cannonball formation, Paleocene: Holland, F. D., Jr.
- Oklahoma, cat, Arnett fauna, Pliocene, cf. California and Texas: Kitts, D. B., 3.
- Horses, Roger Mills County: Kitts, D. B., 1.
- Oregon, birds, McKay area, Pliocene: Brodkorb, P., 1.
- Diatoms, Terrebonne area, Miocene: Okuno, H., 2.
- Eugene area, localities: Steere, M. L.
- Mammals, Pliocene, intercommunity relations: Shotwell, J. A., 1.
- Pelecypods, Oligocene-Pliocene(?), Shumard's types: Trumbull, E. J.
- Rujada flora, western: Lakhnopal, R. N.
- Ostracodes, catalog: Ellis, B. F., 2.
- Pacific basin, northern, plant distribution: Chaney, R. W.
- Pacific coast, mollusks, P. P. Carpenter types: Palmer, K. E. H. V. W., 3.
- Panama, Barro Colorado Island, Oligocene, lists: Woodring, W. P., 2.
- Primates, Eocene, North America, classification, revision: Gazin, C. L., 1.
- Reptiles, champsosaur, giant forms: Langston, W., Jr.
- Rodents, aplodontid and mylagaulid, evolution and biogeography: Shotwell, J. A., 2.
- Heteromyidae, western North America: Reeder, W. G.
- South Dakota, mammals, Bijou Hills, Miocene: Green, M., 1.
- Rhinoceroses, Arikaree formation, Miocene: Green, M., 3.
- Spores and pollen, catalog: Kremp, G. O. W.
- Texas, Burkeville area, Miocene paleoecology: Floyd, D. N.
- Crustacean gastroliths, Claiborne group: Frizzell, D. L., 2.
- Fish ossiculiths, Claiborne group: Frizzell, D. L., 3.
- Mammals, Pliocene, intercommunity relations: Shotwell, J. A., 1.
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 Forsterite-diopside-silica-albite: Schairer, J. F.  
 Gd<sub>2</sub>O<sub>3</sub>-Fe<sub>2</sub>O<sub>3</sub>: Warshaw, I.  
 IgS-Na<sub>2</sub>S-H<sub>2</sub>O and HgS-Na<sub>2</sub>S-Na<sub>2</sub>O-H<sub>2</sub>O: Dickson, F. W., 1.  
 Iron oxide-TiO<sub>2</sub>: Mac Chesney, J. B.  
 Kaolinite-mullite: Brindley, G. W., 4.  
 K<sub>2</sub>O-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>-H<sub>2</sub>O: Hemley, J. J.  
 Kyanite-sillimanite: Clark, S. P., Jr.

## Systems—Continued

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 MgCO<sub>3</sub>-CaCO<sub>3</sub>, solid solubility: Graf, D. L., 1.  
 MgO-CO<sub>2</sub>-A: Harker, R. I., 1.  
 MgO-H<sub>2</sub>O, equilibria, restudy: Fyfe, W. S., 2.  
 MgO-MnO-SiO<sub>2</sub>: Glasser, F. P., 4.  
 Mg<sub>2</sub>SiO<sub>4</sub>-Mg<sub>2</sub>GeO<sub>4</sub>: Dachille, F.; Ringwood, A. E., 3.  
 Mn-O-OH: Klingsberg, C.  
 MnO-SiO<sub>2</sub>: Glasser, F. P., 1.  
 Montmorillonite-organic material-water: Brindley, G. W., 5.  
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 NaHCO<sub>3</sub>-Na<sub>2</sub>CO<sub>3</sub>-H<sub>2</sub>O: Eugster, H. P.  
 Nepheline-kalsilite: Tuttle, O. F., 1.  
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- Technique.
- Apparatus.
- Abbe prism refractometer, accurate use: Fisher, D. J., 4.  
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 Chart showing radii and valences of atoms and ions: Remick, J. H., 3d, 2.  
 Core barrel for unconsolidated oil sands: Hildebrandt, A. B.  
 Core sampler, portable, for lake deposits: Mackereth, F. J. H.  
 Densilog: Werner, H. J.  
 Dip-direction indicator: Pryor, W. A., 1.  
 Electromagnetic prospecting: Brubaker, D. G.

## Technique—Continued

## Apparatus—Continued

- Electromagnetic surveying, vertical of horizontal transmitting coil: Ward, S. H., 1.
- Electron microscope, use in correlation: Moore, C. A.
- Geiger and scintillation counters, reliability: Townsend, R. C.
- Gem-testing instruments, popular: Parsons, C. J., 2.
- Goniometer head, double-arc, crystal orientation, sawing, and grinding: Giardini, A. A., 1.
- Graticule for microscope, sand-grain roundness measurement: Robson, D. A.
- High-temperature furnace for use with X-ray diffraction: Kulbicki, G.
- Iris diaphragm device for microscope: Sabine, P. A.
- Jacob staff, refined: Bergstrom, J. R.
- Liquid-heating stage, low-temperature: Virgin, W. W., Jr.
- Macro-point-counting stage: Emerson, D. O., 1.
- Magnetometer, astatic: Du Bois, R. L., 2.
- Marine Sonoprobe system, geologic mapping: McClure, C. D.
- Mechanical analysis by decantation, settling tube: Prokopovich, N.
- Miller volumeter modified, new uses: Yalovsky, R., 2.
- Modal analysis, medium- and coarse-grained rocks, special stage: Emerson, D. O., 2.
- Optical-analog gravity computer: Baltoser, R. W.
- Phase-equilibrium studies: Boyd, F. R.
- Photogeologic measurements: Hemphill, W. R., 1.
- Porosimeter, clay minerals, petroleum reservoirs: Brooks, C. S.
- Portable rock-mechanics laboratory, dam-site exploration: McClure, C. R., Jr.
- Precision sectioning instrument for microfossils: Arnold, Z. M.
- Pressure measurement, subsurface formation fluids: Poolen, H. K. van.
- Punched-card systems, geochemical problems: Breger, I. A., 1.
- Radiation-detection equipment: Vaughn, W. W., 1.
- Radioactivity scanner for drill-core samples: Vaughn, W. W., 2.
- Radon measurements: Rogers, A. S.
- Sedimentation stream table and tank: Bissell, H. J., 3.
- Seismograph system, long-period: Press, F., 2.
- Seismometer, portable: Robertson, E. C., 2.
- Sorting device for microfossils: McGugan, A.
- Specimen holder for focusing-type X-ray spectrometer: Buerger, M. J., 1.

## Technique—Continued

## Apparatus—Continued

- Spectrochemical analysis, closed chamber for Stallwood jet: Shaw, D. M., 3.
- Strike and dip recording, extra compass needle: Landes, K. K.
- Subbottom depth recorder: Beckmann, W. C.
- Subsurrex, geophysical exploration: Padberg, L. R., Jr.
- Thermoluminescence study: Ashby, G. E.
- Universal stage, ice-fabric study: Langway, C. C., Jr.
- Uranium exploration, borehole logging: Casey, R. D.
- Well logging, supplemental tools: Hamilton, R. G.
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- Bastnaesite rare earths, spectrographic, X-ray emission: Lytle, F. W.
- Beryllium, nuclear detection, laboratory: Cantwell, T.
- Black shales, mineral, organic, and trace-element composition: Strahl, E. O.
- Carbon, in sedimentary rocks, spectrographic: Dennen, W. H.
- Carbonaceous substances, lead determination, wet- and dry-ashing: Cuttitta, F.
- Carbonate rock, analysis, titration method: Herrin, E. T., Jr.
- Celestite, determination of Ba, Ca, Sr, flame photometry: Doyle, D. M.
- Clay mineral-organic system, gas chromatography: Legate, C. E.
- Coal, ultraviolet and visible spectra, quantitative: Friedel, R. A.
- Copper, extraction from plutonic rocks, prospecting guide: Warren, H. V., 3.
- Field determination, rubeanic acid: Warren, H. V., 2.
- Soil and sediment, cold-acid field determination: Canney, F. C., 1.
- Dolomite, thermal decomposition: Graf, D. L., 1.
- Gamma-ray spectral analysis, neutron-induced, earth materials: Muench, N. L.
- Heavy metals, dithizone indicator: Mukherjee, N. R., 1.
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- Liquid inclusions, extraction and partial chemical analysis: Roedder, E. W.
- Manganese nodules, lead-isotope determination, spectrometric: Chow, T. J.
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- Meteorites and tektites, cosmic-ray-induced radioactivity: Ehmann, W. D., 1.
- Pelagic sediments, analysis: Goldberg, E. D., 1.
- Petroleum, colloidal fraction, ultracentrifuge: Witherspoon, P. A., Jr.
- Exploration, applicable methods: Molina Berbey, R., 3.
- Punched-card systems: Breger, I. A., 1.
- Radioactive disequilibrium, measurement: Rosholt, J. N., Jr.
- Radon measurements: Rogers, A. S.
- Selenium, determination, spectrochemical: Waring, C. L.
- Sodium and potassium, determination, neutron activation: Winchester, J. W.
- Separation, ion-exchange resins: Reichen, L. E.
- Soil analysis, textbook: Jackson, M. L.
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- Powdered ores: Rusanov, A. K.
- Successive additions method, standard rocks G-1 and W-1: McKenzie, R. M.
- X-ray, trace elements in soil, water, plants: Salmon, M. L.
- X-ray fluorescence, rocks: Chodos, A. A.
- Thorium, determination in igneous rocks: Levine, H.
- Thorium-uranium, in sedimentary rocks, methods compared: Adams, J. A. S., 1.
- Tin, in soils and rocks, spectrophotometric field method: Marranzino, A. P.
- Titanium, tantalite-columbite-ilmenite ores, differential spectrophotometry: Guedes de Carvalho, R. A.
- Uranium, apatite and phosphorite deposits: Clarke, R. S., Jr.
- Uranium exploration, advances 1955-58: Page, L. R.
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- Vanadium-calcium spectral line coincidence, effect on vanadium data: Shaw, D. M., 2.
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*Geologic age determination.*

- Beryllium-10 method: Merrill, J. R.
- Carbonaceous substances, lead determination, wet- and dry-ashing: Cuttitta, F.

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*Geologic age determination—Continued*

- Granitic rocks, potassium-argon cf. geologic data, accuracy: Curtis, G. H., 2.
- Ionium method, deep-sea sediments: Goldberg, E. D., 3.
- Lead-alpha method: Larsen, E. S., Jr., 2.
- Meteorites and tektites cosmic-ray-induced radioactivity: Ehmann, W. D., 1.
- Obsidian, hydrated layer thickness: Friedman, I. I., 4.
- Pleistocene, pollen analysis: Terasmae, J., 1.
- Potassium-argon method, Pleistocene volcanic rocks: Evernden, J. F., 1.
- Sedimentary rocks: Curtis, G. H., 1; Lipson, J. I.
- Radioactivity dating of bones, adsorbed uranium: Oakley, K. P.
- Radiocarbon dates, differences, significance: Spaulding, A. C.
- Radiocarbon dating, sample contamination problems: Olson, E. A., 1.
- Saskatchewan, gas proportional-counting methods: Dyck, W. J.
- Sedimentary rocks, glauconites, rubidium-strontium analysis: Herzog, L. F., 2d.
- Thermoluminescence, limestones: Daniels, F.
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- Aeromagnetic mapping, correction of data for diurnal variation: Hoylman, H. W.
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- Gamma-radiation patterns: Gregory, A. F.
- Low-level: Boyle, T. L.
- Beryllium exploration, field detector: Brownell, G. M., 2.
- Borehole logging, Lake Superior region: Zablocki, C. J.
- Buried-channel exploration: Black, R. A.
- Electrical, resistivity: Seigel, H. O., 1.
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- Magnetic, AFMAG: Ward, S. H., 6.
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- Compass and magnet: Wahl, W. G., 1.
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- Magnetic anomalies, astatic magnetometer: Du Bois, R. L., 2.



## Technique—Continued

*Geophysical—Continued*

## Magnetic anomalies—Continued

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Henderson, R. G.

Sun-compass traverses, azimuth chart:  
Milligan, G. C.

Magnetic interpretation of geologic structure: Andreassen, G. E., 4.

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Airborne cf. ground: Koulomzine, T.

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Broding, R. A.

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Vaughn, W. W., 1.

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Levin, F. K.

Signal generating, oscillatory: Gold, T., 2.

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Seismic refraction, introductory: Brown, P. D.

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Casey, R. D.

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Drouillard, R. F.

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*Mapping.*

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Block diagrams and other graphic methods: Lobeck, A. K.

Construction materials, granular landforms, aerial photographs: Mollard, J. D., 1.

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*Mapping—Continued*

Facies: Forgotson, J. M., Jr., 2.

Errors, statistical analysis: Krumbein, W. C., 1.

Jacob staff, refined: Bergstrom, J. R.

Landslides: Philbrick, S. S.

Photogeologic, Canada: Fuenning, P.

Fracture traces: Lattman, L. H., 1, 2.

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Yukon: Aho, A. E., 1.

Helicopter, Operation Mackenzie, Northwest Territories: Douglas, R. J. W., 4.

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Stratigraphic and facies analysis, high-speed digital computers: Krumbein, W. C., 2.

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Structure contour and isopach maps, photogeology: Brundall, L.

Subsurface: Sebring, L., Jr.

Application of landform knowledge, three-dimensional drawings: McKee, E. M.

Types, and illustrations: Low, J. W., 2.

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Aerial photographic analysis, factors in patterns: Cheney, T. A.

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Beryllium, geophysical detector: Brownell, G. M., 2.

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## Technique—Continued

*Mineral exploration—Continued*

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- Stream sediments: Hawkes, H. E., Jr., 1, 2.
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- Lead-zinc, geochemical, Nevada: Miesch, A. T., 1.
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- Methods: Alvarez, M., Jr., 2.
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- Nickel, geochemical and biogeochemical, tests: Miller, C. Parker.
- Geochemical field method: Bloom, H., 2.
- Prospector vs. airborne geophysics: Lundberg, H. T. F., 2.
- Pyrite habit changes, zone indicators: Amstutz, G. C., 7.
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- Scanner for drill-core samples: Vaughn, W. W., 2.
- Surveying of boreholes: Broding, R. A.
- Radon concentration in drill holes, meteorological influence: Tanner, A. B., 2.
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- Stibnite, spontaneous polarization: Kelly, S. F., 4.
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*Mineral exploration—Continued*

## Uranium—Continued

- Radon measurements in boreholes: Tanner, A. B., 1.
- Water and soil analysis: Illsley, C. T.
- Mineralogic.*
- Calcite-dolomite determination, gasometric: Wolfe, John A.
- Carnotite crystals, synthesis: Barton, P. B., Jr., 1.
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- Crystal-model making, punching goniometer: Smith, D. K., Jr.
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- Electron microscope replicas, orientation, amethyst quartz: Rice, R. V.
- Garnets, composition from physical properties, diagrams: Winchell, H., 1.
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- Plagioclase determination, by fusion from thin section: Gradwell, R.

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*Mineralogic*—Continued

## Plagioclase determination—Continued

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Pyrite, polishing method, minimum deformation: Stanton, R. L., 1.

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Block diagrams and other graphic methods: Lobeck, A. K.

Desert terrain comparison, analog maps: Van Lopik, J. R.

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Landslide investigations, field and laboratory: Philbrick, S. S.

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Subsurface maps and illustrations: Low, J. W., 2.

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Coal-ball plants, peel-section preparation: Collins, H. R.

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*Paleobotanic*—Continued

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Plant microslides, location marking: Traverser, A. F., Jr.

Pollen analysis: Leopold, E. B.

Spores and pollen, argillaceous rocks, separation and study: Enciso de Castro, M. T.

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Chitinozoans, sampling and study: Wilson, L. R., 3.

Crinoids, photography: Kier, P. M., 3.

Foraminifera, late Paleozoic, faunal analysis method: Cummings, R. H.

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Carbonate rocks, analysis, titration method: Herrin, E. T., Jr.

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Iris diaphragm device for microscope: Sabine, P. A.

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- Norm calculation, igneous rocks, digital computer: Thornton, C. P., 2.
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- Formation-fluid pressure measurements: Poolen, H. K. van.
- Fusain parameter, sedimentary environments: Skolnick, H., 3.
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