Bulletin No. 240 Series G, Miscellaneous, 28

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

BIBLIOGRAPHY AND INDEX

OF

NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY

FOR

THE YEAR 1903

BY

FRED BOUGHTON WEEKS

WASHINGTON
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CONTENTS.

LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
Washington, D. C., June 7, 1904.

SIR: I have the honor to transmit herewith the manuscript of a bibliography and index of North American geology, paleontology, petrology, and mineralogy for the year 1903, and to request that it be published as a bulletin of the Survey.

Very respectfully,

F. B. WEEKS,
Librarian.

Hon. CHARLES D. WALCOTT,
Director United States Geological Survey.

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR THE YEAR 1903.

By Fred Boughton Weeks.

INTRODUCTION.

The arrangement of the material of the Bibliography and Index for 1903 is similar to that adopted for the preceding annual bibliographies, Bulletins Nos. 130, 135, 146, 149, 156, 162, 172 (combined in Bulletins 188 and 189), 203, and 221.

Bibliography.—The bibliography consists of full titles of separate papers, arranged alphabetically by authors' names, an abbreviated reference to the publication in which the paper is printed, and a brief description of the contents, each paper being numbered for index reference.

Index.—The subject headings, their subdivisions and arrangement, are shown in the classified key to the index, which immediately precedes the index. Reference is made in each entry by author's name and number of article in the bibliography.

The series of annual bibliographies has been prepared solely from publications received by the library of the United States Geological Survey. On January 1, 1903, the writer was placed in charge of the library of this organization, and an effort has since been made to procure the publications which were not noticed in the bibliographies of previous years, it being known that there were a considerable number of omissions of geological papers. Many of these are noted in this bulletin.

Mr. John M. Nickles has again assisted in the compilation of this work, and credit is due him for its careful preparation and completeness.

LIST OF PUBLICATIONS EXAMINED.

Alabama Geological Survey: Bulletin no. 7, 1903. Montgomery, Ala.

American Academy of Arts and Sciences: Proceedings, vol. 38, nos. 16–25; vol. 39, nos. 1–12, 1903. Boston, Mass.

American Geographical Society: Bulletin, vol. 35, 1903. New York, N. Y.

American Geologist, vols. 31 and 32, 1903. Minneapolis, Minn.

American Institute of Mining Engineers: Transactions, vol. 33, 1903, and advance papers of 1903 meetings. New York, N. Y.

American Journal of Science: 4th ser., vols. 15 and 16, 1903. New Haven, Conn.

American Museum of Natural History: Bulletin, vol. 19, 1903; Memoirs, vol. 1, pt. 8, 1903; Journal, vol. 3 and supplements, 1903. New York, N. Y.

American Naturalist, vol. 37, 1903. Boston, Mass.

American Paleontology: Bulletins nos. 16–18, 1903. Ithaca, N. Y.

American Philosophical Society: Proceedings, vol. 42, nos. 172–174, 1903. Philadelphia, Pa.

Annales des Mines: Mémoires, 6th ser., tomes 3 and 4, 1903. Paris, France.

Annals and Magazine of Natural History, 7th ser., vols. 11 and 12, 1903. London, England.

Appalachia, vol. 10, no. 2, 1903. Boston, Mass.

Association of Engineering Societies: Journal, vol. 29, 1902; vols. 30 and 31, 1903. Philadelphia, Pa.

Boston Society of Natural History: Proceedings, vol. 31, nos. 1–6, 1903. Boston, Mass.

Botanical Gazette, vols. 35 and 36, 1903. Chicago, Ill.

Buffalo Society of Natural Sciences: Bulletin, vol. 8, nos. 1–3, 1903.

California Academy of Sciences: Memoirs, vol. 3, 1903. San Francisco, Cal.

California, University of, Department of Geology: Bulletin, vol. 3, nos. 7–14, 1903. Berkeley, Cal.

Canada Geological Survey: Summary Report for 1902; Report on Cambrian Rocks of Cape Breton; Mesozoic Fossils, vol. 1, pt. 5, 1903. Ottawa, Canada.

Canada Royal Society: Proceedings and Transactions, 2d ser., vol. 8, 1902. Ottawa, Canada.

Canadian Mining Review, vol. 22, 1903. Ottawa, Canada.

Canadian Record of Science, vol. 9, nos. 1 and 2, 1903. Montreal, Canada.

Carnegie Institution of Washington: Yearbook no. 1, 1903. Washington, D. C.

Carnegie Museum: Annals, vol. 2, nos. 1 and 2, 1903; Memoirs, vol. 2, no. 1, 1903. Pittsburg, Pa.

Centralblatt für Mineralogie, Geologie und Palaeontologie, nos. 1–24, 1903. Stuttgart, Germany.

Colorado School of Mines: Bulletin, vol. 1, 1900–1903; vol. 2, no. 1, 1903. Golden, Colo.

Colorado Scientific Society: Proceedings, vols. 6 and 7, 1902–1903. Denver, Colo.

Columbia University, Geological Department: Contributions, vol. 11, nos. 91–98, 1903. New York, N. Y.

Denison University, Scientific Laboratory: Bulletin, vol. 12, articles 5–8, 1903. Granville, Ohio.

Elisha Mitchell Scientific Society: Journal, vol. 18, pt. 2; vol. 19, pts. 1 and 2, 1903. Chapelhill, N. C.

Engineering and Mining Journal, vols. 75 and 76, 1903. New York, N. Y.

Engineering Association of the South: Transactions, vols. 12 and 13, 1902–1903. Nashville, Tenn.

Engineering Magazine, vol. 24, nos. 4–6; vol. 25, and vol. 26, nos. 1–3, 1903. New York, N. Y.

Engineers Club of Philadelphia: Proceedings, vol. 20, 1903. Philadelphia, Pa.

Field Columbian Museum: Geological Series, vol. 2, nos. 1–4, 1903. Chicago, Ill.

Franklin Institute: Journal, vols. 155 and 156, 1903. Philadelphia, Pa.

Geographical Journal, vols. 31 and 32, 1903. London, England.

Geological Magazine, new series, decade 4, vol. 10, 1903. London, England.

Geological Society of America: Bulletin, vol. 13, pp. 475–583, and vol. 14, pp. 1–494, 1903. Rochester, N. Y.

Geologists' Association: Proceedings, vol. 18, pts. 1–3, 1903. London, England.

Greene (George K.): Contributions to Indiana Paleontology, pts. 11–16, 1903. New Albany, Ind.

Hamilton Scientific Association: Journal and Proceedings, no. 19, 1903. Hamilton, Ontario.

Harvard College, Museum of Comparative Zoology: Bulletin, vol. 38, nos. 6–8; vol. 40, nos. 4–7; vol. 42, nos. 1–4, and vol. 45, no. 1, 1903. Cambridge, Mass.

Illinois State Laboratory of Natural History: Bulletin, vol. 6, no. 2, 1903. Urbana, Ill.

Indiana Academy of Science: Proceedings for 1902, 1903. Indianapolis, Ind.

Indiana, Department of Geology and Natural Resources: 26th and 27th Annual Reports [one volume] 1903. Indianapolis, Ind.

Institution of Mining Engineers: Transactions, vol. 22, pts. 5–6; vol. 23, pts. 6–7; vol. 24, pts. 1–5; vol. 25, pts. 1–4, and vol. 26, pts. 1–2, 1903. Newcastle-upon-Tyne, England.

International Mining Congress: Proceedings 5th Annual Session, 1903. Butte, Mont.

Iowa Academy of Sciences: Proceedings for 1902, vol. 10, 1903. Des Moines, Iowa.

Iowa Geological Survey: Annual Report, vol. 13, 1903. Des Moines, Iowa.

Johns Hopkins University: Circulars, nos. 161–165, 1903. Baltimore, Md.

Journal of Geography, vol. 2, 1903. Lancaster, Pa.

Journal of Geology, vol. 11, 1903. Chicago, Ill.

Kansas Academy of Sciences: Transactions, vol. 18, 1903. Topeka, Kans.

Kansas University Geological Survey, vol. 6, 1900, vol. 7, 1902. Topeka, Kans.

Kansas University: Science Bulletin, vol. 2, nos. 1–9, 1903. Lawrence, Kans.

Lake Superior Mining Institute: Proceedings for 1902, vol. 8, 1903. Ishpeming, Mich.

London Geological Society: Quarterly Journal, vol. 59, 1903. London, England.

McGill University, Department of Geology: Papers, no. 15, 1903. Montreal, Canada.

Manchester Geological Society: Transactions, vol. 28, pts. 1–9, 1903.

Mazama, vol. 1, 1896–97, vol. 2, 1900–1903. Portland, Oreg.

Michigan Academy of Science: Reports 1–3, 1900–1902. Lansing, Mich.

Michigan Geological Survey: vol. 8, pt. 3; vol. 9, pt. 1, 1903. Lansing, Mich.

Michigan Miner, vol. 5, 1903. Saginaw, Mich.

Mines and Minerals, vol. 23, nos. 4–12; vol. 24, nos. 1–5, 1903. Scranton, Pa., and Denver, Colo.

Mining and Scientific Press, vols. 86 and 87, 1903. San Francisco, Cal.

Missouri Geological Survey: Preliminary Report (vol. 13), 1900. Jefferson City, Mo.

Montana University: Bulletin, nos. 16–18, 20, 1903. Missoula, Mont.

National Geographic Magazine, vol. 14, 1903. Washington, D. C.

Nature, vols. 67, 68, and 69, 1903. London, England.
Nautilus, vol. 16, vol. 17, nos. 1–8, 1903. Philadelphia, Pa.
Nebraska Geological Survey, vol. 1 and vol. 2, pt. 1, 1903. Lincoln, Nebr.
Neues Jahrbuch für Mineralogie, Geologie, und Paleontologie (except abstracts), bands 1 and 2, 1903; Beilage band 16, 1903. Berlin, Germany.
New Brunswick Natural History: Bulletin, no. 21 (vol. 5, part 1), 1903. St. John, New Brunswick.
New Jersey Geological Survey: Annual Report for 1902, 1903; Report on Paleontology, vol. 3, 1903. Trenton, N. J.
New York Academy of Sciences: Annals, vols. 14 and 15, pt. 1, 1903. New York, N. Y.
New York Botanical Garden: Bulletin, vol. 2, no. 8, vol. 3, no. 9, 1903; Contributions, nos. 31–46, 1903. New York, N. Y.
New York State Museum: 55th Annual Report, 1903; Bulletins, nos. 60–62, 64–73, 1903; Handbook 19, 1903; Memoirs 5 and 6, 1903. Albany, N. Y.
North of England Institute of Mining and Mechanical Engineers: Transactions, vol. 50, pt. 7, 1903. Newcastle-upon-Tyne, England.
Nova Scotian Institute of Science: Proceedings and Transactions, vol. 10, pt. 4, 1903. Halifax, Nova Scotia.
Ohio Geological Survey: 4th series, Bulletin no. 1, 1903. Columbus, Ohio.
Ohio State Academy of Science: 11th Annual Report, 1903; Special Papers nos. 6 and 7, 1903. Columbus, Ohio.
Ontario Bureau of Mines: Report for 1903. Toronto, Canada.
Ottawa Naturalist, vol. 16, nos. 10–12, and vol. 17, nos. 1–9, 1903. Ottawa, Canada.
Paleontographica, band 49, lief. 4–6 and 50, lief. 1–3, 1903. Stuttgart, Germany.
Philadelphia Academy of Natural Science: Proceedings, vol. 55, pts. 1 and 2, 1903; Journal, vol. 12, pt. 3, 1903. Philadelphia, Pa.
Plant World, vol. 6, 1903. Washington, D. C.
Popular Science Monthly, vol. 62, nos. 3–6, vol. 63 and vol. 64, nos. 1 and 2, 1903. New York, N. Y.
Records of the Past, vol. 2, 1903. Washington, D. C.
Rochester Academy Science: Proceedings, vol. 4, pp. 89–136, 1903. Rochester, N. Y.
St. Louis Academy of Science: Transactions, vol. 13, 1903. St. Louis, Mo.
School of Mines Quarterly, vol. 24 and vol. 25, no. 1, 1903. New York, N. Y.
Science, new series, vols. 17 and 18, 1903. New York, N. Y.
Scientific American, vols. 88 and 89, 1903. New York, N. Y.
Scientific American Supplement, vols. 55 and 56, 1903. New York, N. Y.
Smithsonian Institution: Annual Report for 1902, 1903; Contributions to Knowledge, nos. 1373 and 1413, 1903. Washington, D. C.
Sociedad Cientifica "Antonio Alzate," Memorias y Revista, vol. 18, nos. 3–6, and vol. 19, nos. 1–5, 1902; vol. 19, nos. 6 and 7, vol. 20, nos. 1–4, 1903. City of Mexico.
Società Geologica Italiana: Bulletin, vol. 21, 1902, vol. 22, fasc. 3, 1903. Rome, Italy.
Société Géologique de Belgique: Annals, vol. 30, liv. 1 and 2, 1903. Liege, Belgium.
Société Géologique de France: Bulletin, 4th series, vol. 3, 1903. Paris, France.
Southern California Academy of Sciences, vol. 1, 1902, and vol. 2, 1903. Los Angeles, Cal.
Staten Island Natural Science Association: Proceedings, vol. 8, nos. 19–24 and vol. 9, nos. 1–2, 1903. Staten Island, N. Y.
Stone, vol. 25, nos. 4–6, vol. 26 and vol. 27, nos. 1 and 2, 1903. New York, N. Y.
Technology Quarterly, vol. 16, 1903. Boston, Mass.
Texas Academy of Science: Transactions, vol. 5, 1903. Austin, Tex.
Texas University Mineral Survey: Bulletin, nos. 5 and 6, 1903. Austin, Tex.
Torrey Botanical Club: Bulletin, vol. 30, 1903. Lancaster, Pa.
Torreya, vols. 1, 1901–3, 1903. Lancaster, Pa.

United States Department of Agriculture. Field Operations o the Bureau of Soils: Reports, 1st, 1899–4th, 1902. Washington, D. C.

United States Geological Survey: 24th Annual Report, 1903; Monographs, vols. 42–45, 1903; Professional Papers, nos. 9, 11–19, 1903; Bulletins, nos. 205, 206, 208–221, 1903; Geologic Atlas of the United States, folios nos. 86–100, 1903; Water-Supply Papers, nos. 75–88, 1903. Washington, D. C.

United States National Museum: Annual Report for 1901, 1903; Proceedings, vol. 25, pp. 767–959, and vol. 26, pp. 413–1016, 1903. Washington, D. C.

Victoria Institute: Journal of Transactions, vol. 35, 1903. London, England.

Wagner Free Institute of Science: Transactions, vol. 3, pt. 6, 1903. Philadelphia, Pa.

Washington Academy of Sciences: Proceedings, vol. 5, pp. 1–229, 1903. Washington, D. C.

Washington Biological Society: Proceedings, vol. 11, 1897–vol. 16, 1903. Washington, D. C.

Washington Geological Survey: vol. 2, Annual Report for 1902, 1903. Olympia, Wash.

Washington Philosophical Society: Bulletin, vol. 14, 1903. Washington, D. C.

West Virginia Geological Survey: vol. 2, 1903. Morgantown, W. Va.

Wisconsin Academy of Science, Arts, and Letters: Transactions, vol. 14, pt. 1, 1903. Madison, Wis.

Wisconsin Geological and Natural History Survey: Bulletin, nos. 9 and 10, 1903. Madison, Wis.

Wisconsin Natural History Society: Bulletin, vol. 2, nos. 2–4, 1902, and vol. 3, nos. 1–3, 1903. Milwaukee, Wis.

Wyoming University, School of Mines: Petroleum series, Bulletin no. 6, 1903. Laramie, Wyo.

Yorkshire Geological and Polytechnic Society: Proceedings, new series, vol. 15, pt. 1, 1903. Leeds, England.

Zeitschrift der deutschen Geologische Gesellschaft: band 55, hefte 1–3, 1903. Berlin, Germany.

Zeitschrift für praktische Geologie (except abstracts), 1903. Berlin, Germany.

BIBLIOGRAPHY.

A.

1 **Abbe** (Cleveland, jr.). The physiographic features of Maryland.
Am. Bur. Geog., Bull., vol. 1, pp. 151–157, 242–248, 342–355, figs. 1–2, 1900.

2 **Adams** (Frank D.). Memoir of George M. Dawson.
Geol. Soc. Am., Bull., vol. 13, pp. 497–509, 1903.
Includes a list of publications compiled by H. M. Ami.

3 —— The Monteregian Hills—a Canadian petrographical province.
Jour. Geol., vol. 11, pp. 239–282, figs. 1–7, 1903; McGill Univ., Dept. Geol., Papers, no. 14, 1903.
Describes the geographic extent, character, structure, and origin of the elevations in the Province of Quebec for which the term Monteregian Hills is proposed, and the occurrence, characters, chemical composition, and classification of the rocks composing Mount Johnson, and discusses its structure.

4 **Adams** (George I.). Physiographic divisions of Kansas.
Kans. Acad. Sci., Trans., vol. 18, pp. 109–123, 4 figs., 1903.
Defines the divisions and describes their topographic and geologic features.

5 —— Principles controlling the geologic deposition of the hydrocarbons.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 340–347, 1903.

6 —— Stratigraphic relations of the Red Beds to the Carboniferous and Permian in northern Texas.
Geol. Soc. Am., Bull., vol. 14, pp. 191–200, figs. 1–3, 1903.
Describes occurrence, stratigraphy, and lithologic characters of the Red Beds of Texas, Oklahoma, Indian Territory, and Kansas, and discusses their relationships.

7 —— Zinc and lead deposits of northern Arkansas.
U. S. Geol. Surv., Bull. no. 213, pp. 187–196, 1903.
Gives a brief account of the position, history of development and geologic structure of the field, and describes the occurrence, character, and source of the ores.

8 —— Zinc and lead deposits of northern Arkansas.
Am. Inst. Mg. Engrs., Trans. (Albany meeting, February, 1903). 12 pp.
Describes the geologic position, occurrence, and character of the zinc and lead ore deposits, and discusses their classification and origin.

9 **Adams** (George I.). Origin of bedded breccias in northern Arkansas.
Abstract: Science, new ser., vol. 17, pp. 792–793, 1903.

10 —— **Girty** (George H.), and **White** (David). Stratigraphy and paleontology of the Upper Carboniferous rocks of the Kansas section.
U. S. Geol. Surv., Bull. no. 211, 123 pp., 4 pls., 10 figs., 1903.
Comprises a review of previous work upon the stratigraphy, and a description in detail of the geologic formations, including definition and synonymy, character and extent, and faunal lists of the Upper Carboniferous strata of Kansas and northern Indian Territory, by George I. Adams; a discussion and tabulation of the invertebrate fossils, by George H. Girty, and an annotated list of the fossil plants recorded from the Upper Carboniferous and Permian formations of Kansas, by David White.

11 **Adams** (Thomas K.). Lower productive Coal Measures of the bituminous regions of Pennsylvania; the importance of a knowledge of their characteristic features.
Mines & Minerals, vol. 23, pp. 348–352, 3 figs., 1903.
Describes the geology of the Coal Measures of the bituminous coal regions of Pennsylvania.

12 **Aiken** (P. B.). The mines of Santa Eulalia, Mexico.
Mg. & Sci. Press, vol. 87, p. 402, 1 fig., 1903.
Describes briefly the general geology and the occurrence of the silver-lead ores.

13 **Alden** (William C.). The stone industry in the vicinity of Chicago, Ill.
U. S. Geol. Surv., Bull. no. 213, pp. 357–360, 1903.
Describes the occurrence and utilization of limestone, sand, and gravel in the vicinity of Chicago, Ill.

14 —— **Fuller** (Myron L.) and. Elkland–Tioga folio, Pennsylvania.
See Fuller (M. L.) and Alden (W. C.), 424.

15 —— **Fuller** (Myron L.) and. Gaines folio, Pennsylvania–New York.
See Fuller (M. L.) and Alden (W. C.), 423.

16 **Aldrich** (Truman H.). New species of Tertiary fossils from Alabama, Mississippi, and Florida.
Nautilus, vol. 16, pp. 97–101, pls. 3–4, 1903.

17 —— A new Conus from the Tertiary of Florida.
Nautilus, vol. 16, pp. 131–132, 2 figs., 1903.

18 —— Two new species of Eocene fossils from the Lignitic of Alabama.
Nautilus, vol. 17, pp. 19–20, figs. 1–2, 1903.

19 —— **Smith** (Eugene A.) and. The Grand Gulf formation.
See Smith (E. A.) and Aldrich (T. H.), 1127.

20 **Ami** (Henry M.). Bibliography of Canadian geology and paleontology for the year 1901.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sec. 4, pp. 169–182, 1902.

21 —— Bibliography of Dr. George M. Dawson.
Can. Roy. Soc. Proc. & Trans., 2d ser., vol. 8, sec. 4, pp. 192–201, 1902.

22 —— Paleontology and chronological geology.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 317–335, 1903.
Gives a statement of the paleontological work of the year, discusses records of borings, and gives notes upon the geology of Victoria Cove, Quebec.

23 —— On the Upper Cambrian age of the Dictyonema slates of Angus Brook, New Canaan and Kentville, N. S. [Canada].
Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 447–450, 1903.

24 —— Sketch of the life and work of the late Dr. A. R. C. Selwyn, C. M. G., LL. D., F. R. S., F. G. S., etc., Director of the Geological Survey of Canada from 1869 to 1894.
Am. Geol., vol. 31, pp. 1–21, 1 pl. (por.), 1903.

25 —— Ordovician succession in eastern Ontario.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 517–518, 1903.
Presents a list of the formations and gives their lithologic characters.

26 —— Meso-Carboniferous age of the Union and Riversdale formations, Nova Scotia.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 533–535, 1903.
Contains additional data on the age and relations of these formations.

27 —— The first Eparchæan formation.
Abstract: Science, new ser., vol. 17, p. 290, 1903.

28 —— See Adams (F. D.), 2.

29 **Anderson** (Frank M.). Physiography and geology of the Siskiyou Range.
Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Jour. Geol., vol. 11, p. 100, 1903.

30 **Anderson** (Tempest). Characteristics of recent volcanic eruptions.
Nature, vol. 67, p. 308, 1903.
Describes phenomena exhibited in the eruptions of Soufrière and Mont Pelée.

31 —— Recent volcanic eruptions in the West Indies.
Geog. Jour., vol. 31, pp. 265–279, 13 pls., 1903; Yorkshire Phil. Soc., Ann. Rept. for 1903.
Describes volcanic phenomena and physiographic changes produced by the eruptions of 1902 in St. Vincent and Martinique.

32 **Anderson** (Tempest) and **Flett** (John S.). Preliminary report on the recent eruption of the Soufrière in St. Vincent, and of a visit to Mont Pelée, in Martinique.

Smith. Inst., Ann. Rept. for 1902, pp. 309–330, pls. 1–3, 1903.

See no. 35 of U. S. Geol. Surv., Bull. no. 221, 1903.

33 —— and **Flett** (John S.). Report on the eruptions of the Soufrière, in St. Vincent, in 1902, and on a visit to Montagne Pelée, in Martinique. Part I.

London Roy. Soc., Phil. Trans., ser. A, vol. 200, pp. 353–553, pls. 21–39, 1903.

Describes physiographic features and general geology of St. Vincent, the phenomena of the eruptions of the Soufrière of May, 1902, and geologic and physiographic changes resulting, and discusses and compares the eruption phenomena of the Soufrière and Montagne Pelée.

34 **Andrews** (C. L.). Muir glacier [Alaska].

Nat. Geog. Mag., vol. 14, pp. 441–445, ill., 1903.

Describes the appearance of the glacier in 1903. An appended note by G. K. Gilbert gives data in regard to the glacier.

35 **Argall** (P. H.). Pelée's obelisk.

Eng. & Mg. Jour., vol. 76, p. 420, 1903.

Discusses the formation of the obelisk in the crater of Mt. Pelé.

36 **Argall** (Philip). Notes on the Santa Eulalia mining district, Chihuahua, Mexico.

Colo. Sci. Soc., Proc., vol. 7, pp. 117–126, figs. 1–4, 1903.

Gives observations on the geology and the occurrence and character of the ore deposits.

37 —— The Santa Eulalia [Mexico] ore deposits.

Eng. & Mg. Jour., vol. 76, pp. 350–351, ill., 1903.

Describes the general geology, the igneous intrusions, the occurrence and character of the silver-lead ores, and discusses their origin.

38 **Arnold** (Ralph). The paleontology and stratigraphy of the marine Pliocene and Pleistocene of San Pedro, California.

Cal. Acad. Sci., Mem., vol. 3, pp. 1–420, pls. 1–37, 1903; Leland Stanford jr. Univ., Cont. to Biol. from the Hopkins Seaside Laboratory, 31, pp. 1–420, pls. 1–37, 1903.

Describes the topography and the character and occurrence of Tertiary and Quaternary formations of California bordering the Pacific, and gives lists of fossils by formations showing geographical distribution and relations to existing faunas, and systematic descriptions of the genera and species. Includes descriptions of several new species of corals by T. Wayland Vaughan and of mollusca by W. H. Dall.

39 **Arreola** (José Maria). The recent eruptions of Colima [Mexico].

Jour. Geol., vol. 11, pp. 749–761, figs. 1–8, 1903.

Gives a chronologic record of the activity of the volcano Colima and discusses volcanic phenomena.

40 **Ashley** (George Hall). The geology of the Lower Carboniferous area of southern Indiana.
Ind., Dept. Geol. & Nat. Res., 27th Ann. Rept., pp. 49–122, pls. 1–13, figs. 1–3, 1903.
Describes physiographic and drainage features, the stratigraphy, character, occurrence and geologic relations of Lower Carboniferous formations and economic resources of this area.

41 —— **Fuller** (Myron L.) and. Recent work in the coal field of Indiana and Illinois.
See Fuller (M. L.) and Ashley (G. H.), 425.

42 **Austin** (W. L.). Some tellurium veins in La Plata Mountains [Colorado].
Colo. Sci. Soc., Proc., vol. 6, pp. 87–90 [1902].
Describes the occurrence and character of the veins, and the character of the country rock.

43 —— Some New Mexico copper deposits.
Colo. Sci. Soc., Proc., vol. 6, pp. 91–95 [1902].
Describes the occurrence and discusses the origin of the ore deposits.

44 —— The ore deposits of Cananea [Mexico].
Eng. & Mg. Jour., vol. 76, pp. 310–311, figs. 1–2, 1903.
Describes the character and occurrence of the copper ore deposits.

45 —— [In discussion of paper by Walter Harvey Weed, "Ore-deposits near igneous contacts."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1070–1077, 1903.
Describes occurrences of some ore deposits and their bearing upon the paper discussed.

46 —— [In discussion of paper by Waldemar Lindgren, "The geological features of the gold production of North America."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1079–1081, 1903.
Calls attention to the occurrence of a gold deposit of supposed Cambrian age in Colorado.

B.

47 **Bache** (Franklin). The Arkansas-Indian Territory coal-field.
Eng. & Mg. Jour., vol. 76, pp. 390–392, ill., 1903.
Describes the location and extent of the field, the character and occurrence of the coal seams, and the mining developments.

48 **Bagg** (Rufus M., jr.). The genesis of ore deposits in Boulder County, Colorado.
Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Jour. Geol., vol. 11, p. 100, 1903.

49 —— The veins of Boulder County, Colorado.
Eng. & Mg. Jour., vol. 75, p. 334, 1903.
Discusses the occurrence and the origin of the ore deposits.

50 **Bailey** (Edgar H. S.). Special report on mineral waters [Kansas].
Kans. Univ. Geol. Surv., vol. 7, 343 pp., 38 pls., 1902.

51 **Bailey** (J. Trowbridge). The ore deposits of Contact, Nevada.
Eng. & Mg. Jour., vol. 76, pp. 612–613, ill., 1903.
Describes observations upon the geology of the region and discusses the occurrence and origin of the ore deposits.

52 **Bailey** (L. W.). Geological observations in northern New Brunswick.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 382–388, 1903.
Describes observations upon the geology of the region examined

53 —— Notes on the highlands of northern New Brunswick.
New Brunswick Nat. Hist. Soc., Bull., no. 21 (vol. 5, pt. 1), pp. 93–101, 1903.
Contains observations on the geology of the region.

54 **Baker** (Frank C.). Pleistocene mollusks of White Pond, New Jersey.
Nautilus, vol. 17, pp. 38–39, 1903.
Gives a list of and notes upon the molluscan fauna of this locality.

55 **Bancroft** (Geo. J.). The Yaqui River country of Sonora, Mexico.
Eng. & Mg. Jour., vol. 76, pp. 160–162, ill., 1903.
Contains observations on placer deposits of gold.

56 **Barbour** (Erwin Hinckley). Report of the State geologist.
Nebr. Geol. Surv., vol. 1, 258 pp., 13 pls., 166 figs., 1903.
Describes physiography, hydrography, drainage and water resources, stratigraphy and general geological relations of formations, with lists of fossils contained therein, mineral resources and economic products.

57 —— Present knowledge of the distribution of Daimonelix.
Science, new ser., vol. 18, pp. 504–505, 1903.

58 **Barlow** (Alfred E.). The Sudbury mining district [Ontario].
Can. Geol. Surv., Summ. Rept. for 1902, pp. 252–267, 1903.
Describes petrographic characters of rock types and discusses the occurrence, character, and origin of nickel and copper ore deposits.

59 **Baskerville** (Charles). Kunzite, a new gem.
Science, new ser., vol. 18, pp. 303–304, 1903.
Describes characters of the spodumene obtained from San Diego County, California, and gives to this gem the name of Kunzite.

60 **Bassler** (Ray S.). The structural features of the bryozoan genus Homotrypa, with descriptions of species from the Cincinnatian Group.
U. S. Nat. Mus., Proc., vol. 26, pp. 565–591, pls. 20–25, 1903.

61 **Beasley** (Walter L.). Evolution of the horse.
Sci. Am., vol. 88, pp. 451–452, ill., 1903

62 **Beasley** (Walter L.). A remarkable fossil discovery.
Sci. Am., vol. 89, p. 87, ill., 1903.
Describes the discovery of a large skull of Triceratops, and the probable habits, size, appearance, etc., of the animal.

63 **Beecher** (Charles E.). Observations on the genus Romingeria.
Am. Jour. Sci., 4th ser., vol. 16, pp. 1–11, pls. 1–4, 1903.
Reviews the history of the genus and type species and describes the type and other species.

64 **Beede** (Joshua W.). Carboniferous invertebrates.
Kans. Univ. Geol. Surv., vol. 6, pp. 1–187, pls. 1–22, figs. 1–4, 1900.

65 **Beeler** (Henry C.). A brief review of the South Pass gold district, Fremont County, Wyoming.
12 pp., 1903. [Privately printed?]
Includes a brief account of the geology of the region.

66 **Bell** (Robert). Summary report on the operations of the Geological Survey of Canada for the calendar year 1902.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 1–482, 1903.
Reviews the operations of the year of the Geological Survey of Canada. Includes reports by officials of the survey.

67 **Bell** (Robert N.). Tin ledges in Alaska.
Eng. & Mg. Jour., vol. 76, p. 820, 1903.
Describes the discovery of ledges containing tin ore in the vicinity of Port Clarence, Alaska.

68 —— Tin in Alaska.
Mg. & Sci. Press, vol. 87, p. 351, 1903.
Describes the occurrence of tin-ore deposits.

69 **Bennett** (Frank, jr.) and **Jones** (Grove B.). Soil survey of the Brazoria area, Texas.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 349–364, pls. 19–20, 1903.
Includes a brief account of the physiography and geology.

70 —— **Smith** (W. G.) and. Soil survey of the Lebanon area, Pennsylvania.
See Smith (W. G.) and Bennett (Frank, jr.), 1142.

71 **Bensley** (B. Arthur). On the identification of Meckelian and mylohyoid grooves in the jaws of Mesozoic and recent mammalia.
Toronto Univ. Studies, Biol. ser., no. 3, 9 pp., 1 pl., 1902.

72 **Bergeat** (Alfred). Die Produkte der letzten Eruption am Vulkan S. Maria in Guatemala (Oktober 1902).
Centralbl. f. Min., pp. 112–117, 1903.
Describes character and composition of material ejected by the volcano S. Maria.

73 **Bergeat** (Alfred). Einige weitere Bemerkungen über die Produkte des Ausbruchs am Sta. Maria, Guatemala.
Centralbl. f. Min., pp. 290–291, 1903.
Gives results of investigations upon the composition of ashes ejected by S. Maria, Guatemala.

74 **Berkey** (Charles Peter). A guide to the Dalles of the St. Croix for excursionists and students.
Minneapolis, 40 pp., ill., 1898. (Private publication.)
Describes the geologic history and structure of the region, physiographic and erosion features, and the character and occurrence of Cambrian strata and igneous rocks.

75 **Berry** (Edward W.). New species of plants from the Matawan formation.
Am. Nat., vol. 37, pp. 677–684, figs. 1–9, 1903.

76 —— The flora of the Matawan formation (Crosswicks clays).
N. Y. Bot. Garden, Bull., vol. 3, no. 9, pp. 45–103, pls. 43–57, 1903.
Discusses occurrence and lithologic characters of the Matawan formation and its subdivisions in New Jersey, the character and relationships of the flora collected near Cliffwood, New Jersey, and gives detailed descriptions of the plants.

77 —— Aralia in American paleobotany.
Bot. Gaz., vol. 36, pp. 421–428, 1903.
Discusses leaf characters in fossil species of Aralia.

78 **Beyer** (S. W.) and **Young** (L. E.). Geology of Monroe County [Iowa].
Iowa Geol. Surv., vol. 13, pp. 355–422, pls. 9–10, figs. 54–73, 1903.
Describes topography and drainage, the character, occurrence, and geologic relations of Carboniferous strata and glacial deposits, the character and occurrence of coal seams and coal mining operations in the county, and other economic resources.

79 **Billups** (A. C.). Fossil land shells of the old forest bed of the Ohio River.
Nautilus, vol. 16, pp. 50–52, 1902.
Describes the occurrence and gives a list of and notes upon the species identified.

80 **Blackwelder** (Eliot), **Salisbury** (Rollin D.) and. Glaciation in the Bighorn Mountains.
See Salisbury (R. D.) and Blackwelder (Eliot), 1054.

81 **Blake** (John Charles). A mica-andesite of west Sugarloaf Mountain, Boulder County, Colorado.
Colo. Sci. Soc., Proc., vol. 7, pp. 1–17, 1901.
Describes occurrence, megascopic and microscopic characters, and composition.

82 —— Some relations of tetrahedral combinations to crystalline form.
Colo. Sci. Soc., Proc., vol. 7, pp. 19–21, figs. 1–4, 1901

83 **Blake** (William P.). Arizona diatomite.
Wis. Acad. Sci., Trans., vol 14, pt. 1, pp. 107–111, pls. 3–8, 1903.
Gives notes upon and lists of species of diatoms obtained from deposits of diatomaceous earth in the valley of the San Pedro, Arizona.

84 —— Diatom-earth in Arizona.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 38–45, 1903.
Describes occurrence and character of diatomaceous deposits, and discusses their origin and economic value.

85 —— Origin of pebble-covered plains in desert regions.
Eng. & Mg. Jour., vol. 75, p. 632, 1903; Am. Inst. Mg. Engrs., Trans. (Albany meeting, February, 1903).

86 —— Tombstone and its mines, a report upon the past and present condition of the mines of Tombstone, Cochise County, Arizona, to the Development Company of America.
New York. 83 pp., ill., 1902.
Describes the general geology of the region, the character and occurrence of the stratified rocks and geologic structure, and the occurrence of the ore deposits of precious metals, and discusses their origin.

87 —— Tombstone and its mines.
Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903). 3 pp.
Gives observations on the occurrence of ore deposits and discusses the origin of certain manganiferous ores.

88 —— Geology of Arizona.
Rept. of the governor of Ariz. to the Secretary of the Interior for the year ended June 30, 1903, pp. 126–135, 1903.
Gives a general outline of the geology of Arizona.

89 **Blatchford** (John). The Postdam formation of Bald Mountain district [South Dakota.]
Mg. & Sci. Press, vol. 87, p. 167, 1903.
Describes the occurrence of the ore deposits.

90 **Blatchley** (W. S.). The mineral waters of Indiana: their location, origin, and character.
Ind. Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 11–158, pls. 1–19, 1903.

91 —— On the petroleum industry in Indiana in 1901.
Ind. Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 303–331, 1903.

92 —— Gold and diamonds in Indiana.
Ind. Dept. Geol. & Nat. Res., 27th Ann. Rept., pp. 11–47, pls. 1–4, figs. 1–3, 1903.
Describes glacial history in Indiana and discusses the occurrence of gold and diamonds in glacial drift deposits.

93 —— and **Sheak** (W. H.). Trenton rock petroleum.
Sci. Am. Suppl., vol. 55, p. 22775, 1903.
Discusses occurrence and origin of petroleum in Trenton rock.

94 **Boehmer** (Max). Some practical suggestions concerning the genesis of ore-deposits.
Am. Inst. Mg. Engrs., Trans. (British Columbia meeting, July, 1903). 6 pp.

95 [**Bogdanovitch**, K. I.]. [Sketch of Nome [Alaska]].
St. Petersburg, 116 pp., ill., 1901. [Russian]

96 **Böggild** (O. B.). On some minerals from the nephelite-syenite at Julianehaab, Greenland (erikite and schizolite).
Meddelelser om Grönland, vol. 26, pp. 93–139, figs, 1–19, 1903; Copenhagen Univ., Min. and Geol. Mus., Contr. to Min., no. 2, 1903.
Describes occurrence, constitution, crystallography, and properties of erikite, a new mineral, and schizolite from Greenland.

97 —— Samples of the sea-floor along the coast of east Greenland 74½–70 N. L.
Meddelelser om Grönland, vol. 28, pp. 19–95, pls. 1–9, 1903; Copenhagen Univ., Min. & Geol. Mus., Contr. to Min., no. 3, 1903.

98 **Bolton** (L. L.). Round Lake to Abitibi River [Ontario].
Ontario Bur. Mines [12th] Rept. pp. 173–190, 1903.
Contains observations on the geography, geology, petrology, and resources of the region traversed.

99 **Bonney** (T. G.). Notes on specimens collected by Professor Collie, F. R. S., in the Canadian Rocky Mountains.
Geol. Mag., new ser., dec. 4, vol. 10, pp. 289–297, pl. 17, fig. 1, 1903.
Discusses occurrence and character of rock specimens from Canadian localities.

100 —— Note on rock specimens from the Canadian Rocky Mountains.
Geog. Jour., vol. 31, pp. 498–499, 1903.

101 —— March dust from the Soufrière.
Nature, vol. 67, p. 584, 1903.
Describes character of volcanic dust from an eruption of the Soufrière of St. Vincent.

102 **Bonsteel** (Jay A.). Soil survey of St. Mary County, Md.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept. pp. 125–145, 901.
Includes a brief account of the physiography and geology.

103 —— and **Burke** (R. T. Avon). Soil survey of Calvert County, Md.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 147–171, 1901.
Includes an account of the physiography and geology.

104 —— Soil survey of Kent County, Md.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 173–186, 1901.
Includes a brief account of the geology and physiography.

105 **Bonsteel** (Jay A.) and **Taylor** (F. W.). Soil survey of the Salem area, New Jersey.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 125–148, 1902.
Includes a brief account of the physiography and geology.

106 —— and party. Soil survey of Prince George County, Maryland.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 173–210, pls. 21–25, 1902.
Includes an account of the physiography and geology.

107 —— and party. Soil survey of the Yazoo area, Mississippi.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 359–388, pls. 44–52, 1902.
Includes an account of the physiography and geology.

108 —— and party. Soil survey of Tazewell County, Illinois.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 465–489, 1903.
Includes a short account of the physiography and geology.

109 —— and party. Soil survey of Clinton County, Illinois.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 491–505, 1903.
Includes a short account of the physiography and geology.

110 —— Soil survey of the Janesville area, Wisconsin.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 549–570, pls. 30–32, 1903.
Includes a short account of the physiography and geology.

111 —— **Dorsey** (Clarence W.) and. Soil survey of Cecil County, Md.
See Dorsey (C. W.) and Bonsteel (J. A.), 313.

112 —— **Dorsey** (Clarence W.) and. Soil survey in the Connecticut Valley.
See Dorsey (C. W.) and Bonsteel (J. A.), 310.

113 —— **Mooney** (Charles N.) and. Soil survey of the Albemarle area, Virginia.
See Mooney (C. N.) and Bonsteel (F. E.), 917.

114 **Böse** (Emilio). Breve noticia sobre el estado actual de volcan de Tacana (Chiapas) [Mexico].
Soc. Cient. Ant. Alz., Mem. y Rev., vol. 18, pp. 267–270, pl. 15, 1902.
Describes the present condition of this volcano.

115 **Boutwell** (J. M.). Progress report on the Park City mining district, Utah.
U. S. Geol. Surv., Bull. no. 213, pp. 31–40, 1903.
Contains a general account of the geology and ore deposits of the region.

116 **Boutwell** (J. M.). Ore deposits of Bingham, Utah.
U. S. Geol. Surv., Bull. no. 213, pp. 105–122, 1903.
Describes the history of mining developments at this locality, the character and occurrence of sedimentary and igneous rocks, the geologic structure, and the occurrence and character of the ore deposits.

117 **Bownocker** (John Adams). The central Ohio natural gas fields.
Am. Geol., vol. 31, pp. 218–231, pl. 14, 1903; Ohio St. Univ. Bull., ser. 7, no. 13 (Geol. Ser. no. 5), 1903.
Describes location and area, history and development, geological structure of the natural gas fields and sections of the wells bored, and the production and composition of the gas.

117 a —— The occurrence and exploitation of petroleum and natural gas in Ohio.
Ohio Geol. Surv., 4th ser., Bull. no. 1, pp. 9–320, pls. 1–6, and 9 maps., 1903.
Gives a detailed account of the oil and gas producing horizons of Ohio rocks, records of borings, history, development, and production of the various fields, including the stratigraphy and geologic structure.

118 **Branner** (John C.). A topographic feature of the hanging valleys of the Yosemite [California].
Jour. Geol., vol. 11, pp. 547–553, figs. 1–5, 1903.
Gives an explanation for the position of the falls.

119 —— Notes on the geology of the Hawaiian Islands.
Am. Jour. Sci., 4th ser., vol. 16, pp. 301–316, pl. 15, figs. 1–13, 1903.
Describes topographic features and discusses their origin.

120 **Brauns** (R.). Asche des Vulkans Sta. Maria in Guatemala.
Centralblatt für Min., pp. 132–134, 1903.
Describes the composition of ashes ejected by St. Maria in Guatemala.

121 —— Ueber die Asche des Vulkans Sta. Maria in Guatemala.
Centralbl. f. Min., p. 290, 1903.
Discusses differences and their explanation, in composition of volcanic ashes from St. Maria in Guatemala found by several investigators.

122 **Breed** (Robert S.). "The Sunset trachyte," from near Sunset, Boulder County, Colorado.
Colo. Sci. Soc., Proc., vol. 7, pp. 216–230 [1902].
Describes the occurrence, the megascopic and microsopic characters, and the composition.

123 **Breeze** (Fred J.). Some topographic features in the lower Tippecanoe Valley [Indiana].
Ind. Acad. Sci., Proc., 1902, pp. 198–200, 1 fig., 1903.
Describes some physiographic features of the region.

124 **Brent** (Charles). Notes on the gold ores of western Ontario.
Can. Mg. Rev., vol. 22, pp. 33–35, 1903.
Gives notes on the geology of the region and the occurrence of gold ores.

125 **Brewer** (William M.). The rock-slide at Frank, Alberta Territory, Canada.
Inst. Mg. Engrs., Trans., vol. 26, pp. 34–39, figs. 1–2, 1903.
Describes the landslide which occurred at Frank, in Alberta Territory, on April 29, 1903.

126 —— White Horse district, in Yukon Territory—history, geology, present conditions and future prospects of the mining district.
Mines & Minerals, vol. 24, pp. 28–31, 1903.
Describes the general geology of the region and the occurrence of copper ore and coal deposits.

127 —— Mineral resources of southeastern Alaska.
Mg. & Sci. Press, vol. 86, p. 315, 1903.
Gives observations upon the geology and occurrences of ore deposits.

128 —— Mount Sicker mining district, British Columbia.
Mg. & Sci. Press, vol. 87, pp. 7–8, 2 figs., 1903.
Gives observations on the geology of the district and the occurrence of the copper ores.

129 **Bridgford** (John). Analysis of volcanic dust from La Soufrière.
Chemical News, vol. 87, pp. 233–234, 1903.

130 **Broadhead** (G. C.). Bituminous and asphalt rocks of the United States.
Am. Geol., vol. 32, pp. 59–60, 1903.
Calls attention to the literature giving occurrences of bitumen and bituminous rocks in Missouri.

131 **Brock** (R. W.). Preliminary report on the Boundary Creek district, British Columbia.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 90–136, 1903.
Describes physiographic features, general geology, character, occurrence, and origin of igneous rocks, the occurrence and origin of the copper, gold, and silver ore deposits, and the mining operations.

132 **Brooks** (Alfred Hulse). Placer gold mining in Alaska in 1902.
U. S. Geol. Surv., Bull. no. 213, pp. 41–48, 1903.
Describes the occurrence of placer gold in different parts of Alaska.

133 —— Stream tin in Alaska.
U. S. Geol. Surv., Bull. no. 213, pp. 92–93, 1903.

134 **Brown** (Barnum). A new genus of ground sloth from the Pleistocene of Nebraska.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 569–583, pls. 50, 51, 1903.

135 **Brumell** (H. P. H.). Canadian graphite.
Eng. & Mg. Jour., vol. 75, p. 485, 1903.
Describes character and occurrence of graphite deposits in Canada.

136 **Buckley** (Ernest Robertson). Highway construction in Wisconsin.
Wis. Geol. Nat. Hist. Surv., Bull. no. 10, xvi, 339 pp., 106 pls., 1903.
Discusses occurrence and character of road-making materials.

137 **Buffet** (Edward P.). Some glacial conditions and recent changes on Long Island [New York].
Jour. Geog., vol. 2, pp. 95–101, figs. 1–6, 1903.
Describes physiographic features and the occurrence of drift boulders.

138 **Burgess** (James L.) **Fippin** (Elmer O.) and. Soil survey of Howell County, Missouri.
See Fippin (Elmer O.) and Burgess (J. L.), 401.

139 **Burgess** (John D.). Secondary enrichment.
Eng. & Mg. Jour., vol. 76, p. 153, 1903.

140 —— Recent discoveries in Arizona.
Eng. & Mg. Jour., vol. 76, p. 936, 1903.
Describes geologic structure in the region of the Santa Catalina Mountains, and the discovery of gold ores.

141 **Burk** (William E.). Asphalt rock in Kentucky.
Eng. & Mg. Jour., vol. 75, pp. 969–970, 1 fig., 1903.
Describes the occurrence and character of the rock producing asphalt.

142 **Burke** (R. T. Avon) and **Marean** (Herbert W.). Soil survey of the Westfield area, New York.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 75–92 pls. 2–6, 1902.
Includes a brief account of the topography and geology.

143 —— and **Marean** (Herbert W.). Soil survey of Cobb County, Georgia.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 317–327, 1902.
Includes a brief account of the physiography and geology.

144 —— and **Wilder** (Henry J.). Soil survey of the Trenton area, New Jersey.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 163–186, 1903.
Includes a brief account of the physiography and geology.

145 —— and party. Soil survey of Perry County, Alabama.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 309–323, 1903.
Includes a brief account of the physiography and geology.

146 —— **Bonsteel** (Jay A.) and. Soil survey of Calvert County, Md.
See Bonsteel (J. A.) and Burke (R. T. A.), 103.

147 **Bush** (Lucy P.). Note on the dates of publication of certain genera of fossil vertebrates.
Am. Jour. Sci., 4th ser., vol. 16, pp. 96–98, 1903.

148 **Butts** (Charles). Fossil faunas of the Olean quadrangle.
N. Y. State Mus., Bull. 69, pp. 990–995, 1903.
Gives lists of fossils, showing their distribution by zones in th Devonian and Carboniferous formations of this quadrangle.

149 **Byrne** (P.). Marble formations of the Cahaba River, in Alabama.
Eng. Assoc. South, Trans., 1901, vol. 12, pp. 48–59, figs. 1–3 [1902].
Describes occurrence and character of marble in this region.

C.

150 **Caballero** (G. de J.). Le cobalt au Mexique.
Soc. Cient. Ant. Alz., Mem. y Rev., vol. 18, pp. 197–201, 1902.
Describes the occurrence and character of cobalt-bearing ore deposits in Mexico.

151 **Caine** (Thomas A.). Soil survey of the Hickory area, North Carolina.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 239–258, pl. 8, 1903.
Includes a brief account of the geology and physiography.

152 —— and **Mangum** (A. W.). Soil survey of the Mount Mitchell area, North Carolina.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 259–271, pls. 9–11, 1903.
Includes a short account of the physiography and geology.

153 —— **Dorsey** (Clarence W.), **Mesmer** (Louis), and. Soil survey from Arecibo to Ponce, Porto Rico.
See Dorsey (C. W.), Mesmer (Louis), and Caine (T. A.), 315.

154 —— **Mooney** (Charles N.) and. Soil survey of the Prince Edward area, Virginia.
See Mooney (C. N.) and Caine (T. A.), 916.

155 —— **Mooney** (Charles N.), Martin (J. O.) and. Soil survey of the Bedford area, Virginia.
See Mooney (C. N.), Martin (J. O.), and Caine (T. A.), 915.

156 **Calkins** (Frank C.). Soils of the wheat lands of Washington.
Abstract: Science, new ser., vol. 17, p. 669, 1903.
Discusses the origin of the soils.

157 **Calvin** (Samuel). Artesian wells in Iowa.
Iowa State Institutions, Bull., vol. 4, pp. 402–408, 1902.
Discusses the general conditions for artesian wells and the underground formations of Iowa as sources for artesian water.

158 —— Geology of Howard County [Iowa].
Iowa Geol. Surv., vol. 13, pp. 21–79, figs. 1–15, 1903.
Describes topography and drainage, the lithologic and faunal characteristics and occurrence of Devonian and Ordovician strata and their geologic relations, the surficial deposits, and the economic resources.

159 **Calvin** (Samuel). Geology of Chickasaw County [Iowa].
Iowa Geol. Surv., vol. 13, pp. 255–292, figs. 32–41, 1903.
Describes topography and drainage, the occurrence, character, and geologic relations of Devonian strata and Glacial deposits and the economic resources.

160 —— Geology of Mitchell County [Iowa].
Iowa Geol. Surv., vol. 13, pp. 293–338, figs. 42–53, 1903.
Describes physiographic features, the character, occurrence, and geologic relations of Devonian strata and Glacial deposits and the economic resources.

161 —— Physiography of Iowa.
Iowa Weather and Crop Service, Ann. Rept. for 1902, Appendix, pp. 3–11, 1 pl., 1903.
Describes topography and drainage. Includes an account of the distribution of the drift deposits and their relation to physiographic features.

162 **Camsell** (Charles). The region southwest of Fort Smith, Slave River, N. W. T.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 149–167, 1903.
Contains observations on the geology of the region examined.

163 **Campbell** (H. D.) and **Howe** (James Lewis). A new (?) meteoric iron from Augusta Co., Virginia.
Am. Jour. Sci., 4th ser., vol. 15, pp. 469–471, 1 fig., 1903.

164 **Campbell** (Marius R.). Brownsville-Connellsville folio, Pennsylvania.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 94, 1903.
Describes geographic, physiographic, and geologic relations to Appalachian province, surface features and drainage, physiographic history, geologic structure, character and occurrence of the Carboniferous strata and Quaternary deposits, character and occurrence of the coal beds and other economic resources. The section on natural gas is contributed by Myron L. Fuller.

165 —— Geographic development of northern Pennsylvania and southern New York.
Geol. Soc. Am., Bull., vol. 14, pp. 277–296, fig. 1, 1903.
Describes physiographic features of this region and discusses the mode and time of their origin.

166 —— Variation and equivalence of the Charleston sandstone.
Jour. Geol., vol. 11, pp. 459–468, 1903.
Reviews the divergent views as to the correlation of the sandstone of West Virginia, which the writer named the Charleston sandstone, with the Mahoning sandstone of Pennsylvania, and presents additional evidence for the author's view as to their distinctness.

167 —— Recent work in the bituminous coal field of Pennsylvania.
U. S. Geol. Surv., Bull. no. 213, pp. 270–275, 1903.
Refers to recent field work in this region and discusses the general structure and relations of the coal, natural gas, and oil bearing beds.

168 **Campbell** (Marius R.). Borax deposits of eastern California.
U. S. Geol. Surv., Bull. no. 213, pp. 401–405, 1903.
Describes the occurrence and utilization of borax deposits in this area.

169 —— Basin-range structure in the Death Valley region of southeastern California.
Abstract: Science, new ser., vol. 17, p. 302, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903; Am. Geol., vol. 31, pp. 311–312, 1903.

170 —— Pocono rocks in the Allegheny Valley.
Abstract: Science, new ser., vol. 17, p. 942, 1903.

171 **Carmony** (F. A.). Jefferson County [Nebraska].
Nebr. Geol. Surv., vol. 1, pp. 235–241, figs. 157–166, 1903.
Describes topography and drainage, and stratigraphic and economic geology.

172. **Carney** (Frank). A type case in diversion of drainage.
Jour. Geog., vol. 2, pp. 115–124, figs. 1–7, 1903.
Discusses physiographic features and drainage changes in Cortland and Tompkins counties, New York.

173 **Carter** (William T., jr.), **Smith** (William G.) and. Soil survey of the Smedes area, Mississippi.
See Smith (W. G.) and Carter (W. T.), 1146.

174 **Case** (E. C.). The osteology of Embolophorus dollovianus, Cope, with an attempted restoration.
Jour. Geol., vol. 11, pp. 1–28, figs. 1–23, 1903.

175 —— New or little-known vertebrates from the Permian of Texas.
Jour. Geol., vol. 11, pp. 394–402, figs. 1–10, 1903.

176 —— The structure and relationships of the American Pelycosauria.
Am. Nat., vol. 37, pp. 85–102, figs. 1–10, 1903.

177 **Casey** (Thomas L.). A new genus of Eocene Eulimidæ.
Nautilus, vol. 16, pp. 18–19, fig., 1902.

178 —— Notes on the Conrad collection of Vicksburg fossils, with descriptions of new species.
Phila. Acad. Nat. Sci., Proc., vol. 55, pp. 261–283, 1903.

179 **Catlett** (Charles). Geological relations of the manganese ore-deposits of Georgia. [In discussion of paper of Thomas L. Watson.]
Am. Inst. Mg. Engrs., Trans. (Albany meeting, February, 1903). 2 pp.
Discusses character, occurrence, and origin of manganese ores.

180 **Chalmers** (Robert). Artesian borings, surface deposits, and ancient beaches in Ontario.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 268–279, 1903.
Describes work upon surface deposits, exploration for natural gas and oil, determination of ancient shore lines of the Great Lakes, and the occurrence and utilization of peat.

181 **Chamberlin** (Thomas C.). The criteria requisite for the reference of relics to a glacial age.
Jour. Geol., vol. 11, pp. 64–85, fig. 1, 1903.

182 —— Distribution of the internal heat of the earth.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 530–531, 1903.
Brief note on the character of the paper.

183 —— Has the rate of rotation of the earth changed appreciably during geological history?
Abstract: Geol. Soc. Am., Bull., vol. 13, p. 531, 1903.
Brief note on the theory of a high rate of terrestrial rotation in early geologic times.

184 —— The origin of ocean basins on the planetessimal hypothesis.
Abstract: Am. Geol., vol. 32, p. 14, 1903; Science, new ser., vol. 17, pp. 300–301, 1903.

185 **Church** (John A.). The Tombstone, Arizona, mining district.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 3–37, figs. 1–12, 1903.
Describes the character and occurrence of sedimentary strata, the geologic structure, the character and occurrence of eruptive rocks, and the position and relations of the ore bodies of gold, silver, and manganese.

186 —— [In discussion of paper by Walter P. Jenney, "The chemistry of ore-deposition."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1065–1070, 1903.
Discusses occurrences of ore deposits and their bearing upon the subject of the paper under discussion.

187 **Cirkel** (Fritz). Vorkommen und Gewinnung von Asbest in Canada.
Zeitsch. f. prak. Geol., vol. 11, pp. 123–131, figs. 33–35, 1903.
Describes occurrence and character of asbestos deposits in Quebec and the mining developments.

188 **Clapp** (F. G.), **Fuller** (M. L.) and. Marl-loess of the lower Wabash valley.
See Fuller (M. L.) and Clapp (F. G.), 426.

189 **Clark** (P. Edwin), **Van Ingen** (Gilbert) and. Disturbed fossiliferous rocks in the vicinity of Rondout, N. Y.
See Van Ingen (Gilbert) and Clark (P. E.), 1240.

190 **Clark** (W. B.). The Cretaceous-Eocene boundary in the Atlantic coastal plain.
Abstract: Science, new ser., vol. 17, p. 293, 1903.

191 **Clarke** (C. H.). Notes on the Michipicoten gold-belt.
Eng. & Mg. Jour., vol. 76, pp. 735–736, 1903.
Describes the occurrence of gold ores and the mining developments.

192 **Clarke** (Frank Wigglesworth). Mineral analyses from the laboratories of the United States Geological Survey, 1880 to 1903, tabulated by F. W. Clarke, Chief Chemist.
U. S. Geol. Surv., Bull. no. 220, 119 pp., 1903.

193 **Clarke** (Frank Wigglesworth). A pseudo-serpentine from Stevens County, Washington.
Am. Jour. Sci., 4th ser., vol. 15, pp. 397–398, 1903.

194 —— The composition of glauconite and greenalite.
U. S. Geol. Surv., Mon., vol. 43, pp. 243–247, 1903.

195 **Clarke** (John Mason). Report of the State paleontologist, 1902.
N. Y. State Mus., Bull. 69, pp. 851–891, 1903.
Gives a review of the work of the office of the State paleontologist of New York for the year 1901–2.

196 —— Mastodons of New York.
N. Y. State Mus., Bull. 69, pp. 921–933, pls. 1–2, 1903.
Describes occurrences of mastodon remains in the State of New York.

197 —— Construction of the Olean rock section.
N. Y. State Mus., Bull. 69, pp. 996–999, 1903.
Discusses the discrepancy of results obtained by stratigraphic and paleontologic work in the Olean quadrangle of New York and the geologic position of the Cattaraugus beds.

198 —— Torsion of the lamellibranch shell, an illustration of Noetling's law.
N. Y. State Mus., Bull. 69, pp. 1228–1233, figs. 1–7, 1903.

199 —— Some Devonic worms.
N. Y. State Mus., Bull. 69, pp. 1234–1238, pls. 37–38, 1903.

200 —— Naples fauna in western New York.
N. Y. State Mus., Mem. 6, pp. 199–454, pls. A–F, 1–20, figs. 1–16, 1903.
Discusses conditions of sedimentation and the distribution of land and water prevailing in the area of western New York in later Devonian times, and the stratigraphy of the Portage and character of the fauna, and gives systematic descriptions of the species and tables of distribution and comparison with faunas of other regions.

201 —— Classification of New York series of geologic formations.
N. Y. State Mus., Handbook 19, 28 pp., 1903.
Discusses the nomenclature and classification of the New York series of geologic formations. Includes a table showing the geologic position and geographic distribution of formations in the State of New York.

202 —— Origin of the limestone faunas of the Marcellus shales of New York.
Abstract: Geol. Soc. Am., Bull., vol. 13, p. 535, 1903.

203 —— (assisted by Ruedemann, Rudolph). Catalogue of type specimens of Paleozoic fossils in New York State Museum.
N. Y. State Mus., Bull. 65, 847 pp., 1903.

204 —— and **Ruedemann** (Rudolf). Guelph fauna in the State of New York.
N. Y. State Mus., Mem. 5, 195 pp., 21 pls., 1903.
Describes stratigraphy, occurrence, and geologic relations of the Guelph formation in New York, gives systematic descriptions of the fauna, and discusses the conditions of life and sedimentation during the prevalence of the Guelph fauna and its distribution.

205 **Clarke** (John Mason). See Ruedemann (Rudolf), 1044.

206 **Claypole** (Edward W.). The Devonian era in the Ohio basin.

Am. Geol., vol. 32, pp. 15–41, pls. 4–10, pp. 79–105, pls. 16–18, pp. 240–250, 312–322, 335–353, 1903.

Discusses occurrence, lithologic, stratigraphic, and faunal features of Devonian formations in the Ohio basin, geographic and hypsographic conditions prevailing in Devonian times, and geologic and geographic distribution of the invertebrate and vertebrate faunas, and describes briefly species of Cladodus and Monocladodus.

207 **Cleland** (Herdman Fitzgerald). A study of the Hamilton formation of the Cayuga Lake section in central New York.

U. S. Geol. Surv., Bull. no. 206, 112 pp., 5 pls., 3 figs., 1903.

Describes the general geology of the Cayuga Lake region in New York and the history, correlation, and faunal zones of the Hamilton formation in this region, and gives a classified list of species found, with notes on their occurrence, general observations and conclusions, and a table showing vertical distribution and relative abundance of Hamilton species.

208 —— Further notes on the Calciferous (Beekmantown) formation of the Mohawk Valley, with descriptions of new species.

Am. Pal., Bull. no. 18, pp. 31–50, pls. 1–4, 1903.

Describes character, occurrence, and fossil contents of Calciferous strata in the Mohawk Valley, and gives detailed descriptions of the new species of fossils.

209 **Clements** (J. Morgan). The Vermilion iron-bearing district of Minnesota.

U. S. Geol. Surv., Mon., vol. 45, 463 pp., 13 pls., 23 figs., with an atlas of 26 sheets, 1903.

Reviews the literature regarding the district, describes its physiography, the character, occurrence, and relations of the Archæan, Huronian, and Keweenawan rocks and drift, and the occurrence, character, and origin of the ore deposits.

210 —— Ellipsoidal structure in pre-Cambrian rocks of Lake Superior region.

Abstract: Geol. Soc. Am., Bull., vol. 14, p. 8, 1903.

211 —— Vermilion district of Minnesota.

Abstract: Geol. Soc. Am., Bull., vol. 14, p. 9, 1903.

Gives a brief outline of the geology.

212 **Cobb** (Collier). Origin of the sandhill topography of the Carolinas.

Abstract: Science, new ser., vol. 17, pp. 226–227, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

213 —— Recent changes in the North Carolina coast, with special reference to Hatteras Island.

Abstract: Science, new ser., vol. 17, p. 227, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

214 **Cockerell** (T. D. A.). A new fossil Ashmunella.
Nautilus, vol. 16, p. 105, 1903.

215 **Coffey** (George N.) and **Hearn** (W. Edward). Soil survey of Alamance County, North Carolina.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 297–310, pls. 32–34, 1902.
Includes a brief account of the physiography and geology.

216 —— and **Hearn** (W. Edward). Soil survey of the Cary area, North Carolina.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 311–315, pl. 35, 1902.
Describes the soils of this area.

217 —— and party. Soil survey of St. Clair County, Illinois.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 507–532, pls. 27–28, 1903.
Includes a brief account of the physiography and geology.

218 —— and party. Soil survey of Clay County, Illinois.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 533–548, pl. 29, 1903.
Includes a brief account of the physiography and geology.

219 —— **Dorsey** (Clarence W.) and. Soil survey of Montgomery County, Ohio.
See Dorsey (C. W.) and Coffey (G. N.), 312.

220 **Cohen** (E.). Über ein neues Meteoreisen von Locust Grove, Henry Co., Nord-Carolina, Vereinigte Staaten.
Preus. Akad. d. Wissen. zu Berlin, Sitzungsb., pp. 76–81, 1897.
Describes the character and constitution of this meteorite.

221 —— Das Meteoreisen von Forsyth Co., Georgia, Vereinigte Staaten.
Preus. Akad. d. Wissen. zu Berlin, Sitzungsb., pp. 386–396, figs. 1–2, 1897.
Describes the occurence, characters, and constitution of this meteorite from Forsyth County, Georgia.

222 —— Über das Meteoreisen von Cincinnati, Vereinigte Staaten.
Preus. Akad. d. Wissen. zu Berlin, Sitzungsb., pp. 428–430, 1898.
Describes the characters and constitution of this meteorite.

223 **Cole** (Leon J.). The delta of the St. Clair River.
Mich. Geol. Surv., vol. 9, pt. 1, pp. 1–28, pls. 1–4, 1903.

224 **Coleman** (A. P.). The classification of the Archæan.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 135–148, 1902.
Reviews the work upon the Archean and the differences of interpretation, and compares and discusses the different schemes of classification proposed.

225 **Coleman** (A. P.). The Sudbury [Ontario] nickel deposits.
Ontario Bur. Mines, [12th] Rept., pp. 235–299, 16 pls., 25 figs., 1903.
Describes topography and geology of the region, the occurrence of ore bodies and mining operations, and discusses the character, occurrence, and origin of the ore deposits.

226 —— Types of iron-bearing rocks in Ontario.
Eng. & Mg. Jour., vol. 75, pp. 294–295, 1903.

227 **Collie** (George Lucius). Physiography of Wisconsin.
Am. Bur. Geog., Bull., vol. 2, pp. 270–287, 9 figs., 1901.

228 —— Ordovician section near Bellefonte, Pennsylvania.
Geol. Soc. Am., Bull., vol. 14, pp. 407–420, pl. 59, 1903.
Describes position, character, stratigraphy, and fauna of Ordovician formations in Center County, Pennsylvania, and describes some new species of Ordovician fossils.

229 **Collier** (Arthur J.). The coal resources of the Yukon, Alaska.
U. S. Geol. Surv., Bull. no. 218, 71 pp., 6 pls., 3 figs., 1903.
Describes the general geology and the occurrence and character of the coal deposits along the Yukon River.

230 —— The Glenn Creek gold mining district, Alaska.
U. S. Geol. Surv., Bull. no. 213, pp. 49–56, 1903.
Describes placer deposits and developments in this region.

231 —— Coal resources of the Yukon Basin, Alaska.
U. S. Geol. Surv., Bull. no. 213, pp. 276–284, 1903.
Describes the occurrence of coal and gives notes on the character of the coals and the mining developments.

232 —— Tin in the York region, Alaska.
Eng. & Mg. Jour., vol. 76, pp. 999–1000, ill., 1903.
Describes the occurrence of deposits of tin ore.

233 —— Coal-bearing series of the Yukon.
Abstract: Science, new ser., vol. 17, p. 668, 1903.
Discusses the geologic age of the coal-bearing formations.

234 **Collins** (G. E.). Vein-structure at the Reynolds mine, Georgia.
Inst. Mg. & Met., Trans., vol. 9, pp. 365–371, pls. 12–16, 1901.
Discusses the vein phenomena in the auriferous crystalline rocks of the region.

235 **Comstock** (Frank M.). A small esker in western New York.
Am. Geol., vol. 32, pp. 12–14, figs. 1–3, 1903.

236 **Comstock** (Theodore B.). Memoir of Edward Waller Claypole.
Geol. Soc. Am., Bull., vol. 13, pp. 487–497, 1903.
Includes a list of publications.

237 **Concannon** (Michael). Relation [regarding the discovery of the Lansing, Kansas, skeleton.]
Memoirs of Exploration in the Basin of the Mississippi, vol. 7, Kansas, pp. 92–93, 1903.
Details the circumstances of the finding of the fossil human remains near Lansing, Kansas.

238 **Condra** (George Evart). The Coal Measure bryozoa of Nebraska.
Nebr. Geol. Surv., vol. 2, pt. 1, pp. 11–168, pls. 1–21, 1903.
Reviews literature bearing on the subject, gives list of Coal Measure bryozoa in the United States, table of geographic distribution in Nebraska, and systematic descriptions of genera and species.

239 —— On Rhombopora lepidodendroides Meek.
Am. Geol., vol. 31, pp. 22–24, pl. 2, 1903.
Describes characters and occurrence in the Permian of Nebraska.

240 —— An old Platte channel [Nebraska].
Am. Geol., vol. 31, pp. 361–369, figs. 1–2, 1903.
Describes situation, stratigraphic and physiographic features of the valley to which the name Todd Valley is given, and the evidences of its containing a buried channel formerly occupied by the Platte River.

241 **Coste** (Eugene). Volcanic origin of natural gas and petroleum.
Eng. & Mg. Jour., vol. 75, p. 439, 1903.
Abstract from paper read before the Can. Mg. Inst., March, 1903.

242 **Cowles** (Henry C.). The influence of underlying rocks on the character of the vegetation.
Am. Bur. Geog., Bull., vol. 2, pp. 163–176, 376–388, figs. 1–10, 1901.

243 **Crane** (W. R.). Asphalt refining. Methods employed in the Tar Springs Asphalt Co.'s refinery, near Comanche, Ind. T.
Mines & Minerals, vol. 23, pp. 337–341, figs. 1–4, 1903.
Contains observations on the character and occurrence of asphalt deposits.

244 —— Coal fields of Kansas. Recent discoveries and developments in the Cretaceous formation in the northern central portion of the State.
Mines & Minerals, vol. 24, p. 94, 1 fig., 1903.
Describes the occurrence of a workable coal seam and gives a section of the strata penetrated by a shaft.

245 —— Coal mining in the Indian Territory—the southwestern field.
Eng. & Mg. Jour., vol. 76, pp. 577–581, figs. 1–7, 1903.
Describes the character and occurrence of the coal seams and the methods of mining.

246 **Crevecœur** (F. F.). List of fossil plants collected in the vicinity of Onaga, Kans.
Kans. Acad. Sci., Trans., vol. 18, pp. 124–128, 3 figs., 1903.
Describes the stratigraphy and occurrence of fossils at this locality.

247 **Crosby** (William O.). The hanging valleys of Georgetown, Colorado.
Am. Geol., vol. 32, pp. 42–48, pls. 11–13, 1903; Tech. Quart., vol. 16, pp. 41–50, figs. 1–4, 1903.
Describes certain geographic and physiographic features and discusses their origin.

248 **Crosby** (William O.). A study of the geology of the Charles River estuary and Boston Harbor, with special reference to the building of the proposed dam across the tidal portion of the river.

Tech. Quart., vol. 16, pp. 64–92, 1903.

Describes the geologic formations of the vicinity, the bedded rock and glacial deposits, and the processes and conditions of sedimentation prevailing now and in the recent past.

249 —— Structure and composition of the delta plains formed during the Clinton stage in the Glacial lake of the Nashua Valley.

Tech. Quart., vol. 16, pp. 240–254, figs. 1–9, map, 1903.

250 **Cross** (Whitman). Observations on Hawaiian geology.

Abstract: Science, new ser., vol. 17, p. 740, 1903.

251 —— **Iddings** (Joseph P.), **Pirsson** (Louis V.), **Washington** (Henry S.). Quantitative classification of igneous rocks based on chemical and mineral characters, with a systematic nomenclature.

University of Chicago Press, 286 pp., 1903.

A review of the development of systematic petrography in the nineteenth century, by Whitman Cross, is followed by a discussion of the principles of classification of igneous rocks and an exposition of the new system of classification and nomenclature proposed by the authors and methods of calculation for determining the position of a rock in their system of classification.

252 **Crowther** (Henry M.). The copper deposits of the Beaver River Range, Utah.

Eng. & Mg. Jour., vol. 75, p. 965, 1903.

Describes the geologic structure and the occurrence of the ores.

253 **Culbertson** (Glenn). Ripple marks in Hudson limestone of Jefferson County, Indiana.

Ind. Acad. Sci., Proc., 1902, pp. 202–205, 1903.

254 **Cumings** (Edgar Roscoe). The morphogenesis of Platystrophia; a study of the evolution of a Paleozoic brachiopod.

Am. Jour. Sci., 4th ser., vol. 15, pp. 1–48, 121–136, figs. 1–27, 1903.

255 **Curtis** (George Carroll). Secondary phenomena of the West Indian volcanic eruptions of 1902.

Jour. Geol., vol. 11, pp. 199–215, figs. 1–12, 1903.

Describes phenomena connected with volcanic eruptions of 1902 in the West Indies and discusses the character and cause of the eruptions within stream valleys.

256 —— Note on the West Indian eruptions of 1902.

Am. Geol., vol. 31, pp. 40–43, 1903.

Describes and gives an explanation of eruptions in stream beds.

257 —— Modern rational relief of the earth's surface.

Am. Geol., vol. 32, pp. 178–182, 2 figs., 1903.

258 **Cushing** (H. P.). Accessions to the library [of the Geological Society of America] from June, 1901, to June, 1902.
Geol. Soc. Am., Bull., vol. 13, pp. 547–556, 1903.

259 —— Petrography and age of the Northumberland rock.
N. Y. State Mus., 55th Ann. Rept., pp. r24–r29, 1903.
Describes the petrologic characters and discusses the correlation of the igneous rock discovered near Schuylerville, New York. See Woodworth, J. B., 1352.

D.

260 **Dale** (T. Nelson). The slate industry at Slatington, Pa., and Martinsburg, W. Va.
U. S. Geol. Surv., Bull. no. 213, pp. 361–364, 1903.
Describes the character and occurrence of the slates at these localities.

261 **Dall** (William Healey). Contributions to the Tertiary fauna of Florida, with especial reference to the silex beds of Tampa and the Pliocene beds of the Caloosahatchie River, including a complete revision of the generic groups treated of and their American Tertiary species. Part VI. Concluding the work.
Wagner Free Inst. Sci. Phila., Trans., vol. 3, pp. 1219–1654, pls. 48–60, 1903.
Gives systematic descriptions of the fauna, including emendatory notes upon the previous parts of the work, and describes the geologic history of the region, and the character, occurrence, and faunal features of the several Tertiary formations.

262 —— The Grand Gulf formation.
Science, new ser., vol. 18, pp. 83–85, 1903.
Discusses stratigraphic position and geologic age of the Grand Gulf formation.

263 —— See Diller (J. S.), 302.

264 —— See Arnold (Ralph), 38.

265 **Daly** (Reginald Aldworth). The geology of Ascutney Mountain, Vermont.
U. S. Geol. Surv., Bull. no. 209, 122 pp., 7 pls., 1 fig., 1903.
Describes physiography and general geology, and the character and occurrence of metamorphic and eruptive rocks, and discusses their origin.

266 —— The mechanics of igneous intrusion.
Am. Jour. Sci., 4th ser., vol. 15, pp. 269–298; vol. 16, pp. 107–126, figs. 1–3, 1903.
Discusses origin of igneous rocks.

267 —— Variolitic pillow lava from Newfoundland.
Am. Geol., vol. 32, pp. 65–78, pls. 14–15, figs. 1–3, 1903.
Describes occurrence and character of pillow lava and discusses origin of variolite and pillow structure.

268 **Daly** (Reginald Aldworth). Geology of the western part of the international boundary (49th parallel).
Can. Geol. Surv., Summ. Rept. for 1902, pp. 136–147, 1903.
Describes physiographic features and general geology of the region.

269 —— Report on geology. In report of the Brown-Harvard expedition to Nachvak, Labrador, in the year 1900.
Phila. Geog. Soc., Bull., vol. 3, pp. 206–208, 1902.
Gives observations on the geology of Labrador.

270 **Darton** (Nelson Horatio). Preliminary report on the geology and water resources of Nebraska west of the one hundred and third meridian.
U. S. Geol. Surv., Professional Paper no. 17, 69 pp., 43 pls., 23 figs., 1903.
This is a reprint of the paper with the above title in the Nineteenth Annual Report of the Director of the U. S. Geological Survey, Part IV, 1899, with a few corrections in some of the maps and a few minor changes in statements regarding geology. See no. 1328 of U. S. Geol. Surv., Bull. no. 188.

271 —— Camp Clarke folio, Nebraska.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 87, 1903.
Describes geography, topographic features and drainage, general geologic relations, and character and occurrence of formations of Tertiary age; gives a brief geologic history of the central Great Plains region, and discusses the supplies of underground waters and irrigation.

272 —— Scotts Bluff folio, Nebraska.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 88, 1903.
Describes geography, topography and drainage, general geologic relations, and character and occurrence of Tertiary and Quaternary formations; gives a brief geologic history of the central Great Plains region, and discusses underground waters and irrigation.

273 —— Some relations of Tertiary formations of the northern Great Plains.
Abstract: Science, new ser., vol. 17, p. 218, 1903.

274 —— Comparison of stratigraphy of the Big Horn Mountains, Black Hills, and Rocky Mountain Front Range.
Abstract: Science, new ser., vol. 17, p. 292, 1903.

275 **Davis** (C. A.). A contribution to the natural history of marl.
Mich. Geol. Surv., vol. 8, pt. 3, pp. 65–96, 1903.
Discusses sources and theories of formation, character, and composition of marl, and the rôle of Chara in marl formation.

276 **Davis** (William Morris). Current notes on physiography.
Science, new ser., vol. 17, pp. 115–117, 1903.
Gives an outline of Fairchild's work on the "Pleistocene geology of western New York."

277 —— Current notes on physiography.
Science, new ser., vol. 17, pp. 193–195, 1903.
Discusses the physiographic divisions of Kansas.

278 **Davis** (William Morris). Current notes on physiography.
Science, new ser., vol. 17, pp. 354–356, 1903.
Contains a discussion of abandoned channels of the Monongahela.

279 —— Current notes on physiography.
Science, new ser., vol. 17, pp. 434–435, 1903.
Discusses overthrust mountains of northern Montana.

280 —— Current notes on physiography.
Science, new ser., vol. 17, pp. 550–552, 1903.
Contains observations on the physiography of the southern Appalachian region.

281 —— Current notes on physiography.
Science, new ser., vol. 17, pp. 672–673, 1903.
Discusses physiographic features of the Snake River lava plains in Idaho.

282 ——An excursion to the plateau province of Utah and Arizona.
Harvard Coll., Mus. Comp. Zool., Bull., vol. 42, pp. 1–50, pls. 1–7, figs. 1–14, 1903.
Describes physiographic features of this region.

283 —— The mountain ranges of the Great Basin.
Harvard Coll., Mus. Comp. Zool., Bull., vol. 42, pp. 129–177, pls. 1–7, figs. 1–18, 1903.
Discusses the explanations offered for the formation of the mountain ranges of the Great Basin, describes observations made, and reaches the conclusion that the Basin ranges are examples of dissected fault-block mountains.

284 —— The development of river meanders.
Geol. Mag., new ser., dec. 4, vol. 10, 1903.

285 —— The stream contest along the Blue Ridge.
Phila. Geog. Soc., Bull., vol. 3, pp. 213–244, pls. 1–4, 1903.
Describes physiographic features and stream capture in the Blue Ridge region of North Carolina.

286 —— Effect of shore line on waves.
Abstract: Geol. Soc. Am., Bull., vol. 13, p. 528, 1903.

287 —— Walls of the Colorado Canyon.
Abstract: Geol. Soc. Am., Bull., vol. 13, p. 528, 1903.
Contains brief notes.

288 —— The fresh-water Tertiaries at Green River, Wyoming.
Abstract: Science, new ser., vol. 17, pp. 220–221, 1903.

289 —— Block mountains of the Basin Range province.
Abstract: Science, new ser., vol. 17, p. 301, 1903; Eng. & Mg. Jour., vol. 75, p. 153, 1903.
Discusses the mode of their origin.

290 **Day** (David T.). Experiments on the diffusion of crude petroleum through fuller's earth.
Abstract: Science, new ser., vol. 17, pp. 1007–1008, 1903.

291 **Day** (David T.). [In discussion of paper by George I. Adams, "Principles controlling the geologic deposition of the hydrocarbons."]

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1053–1055, 1903.

Discusses passage of petroleum through fuller's earth, and its bearing upon the subject of Mr. Adams's paper.

292 **Dean** (Bashford). The early development of sharks from a comparative standpoint.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 45–46, 1903.

293 **Deckert** (Emil). Die Erdbebenherde und Schüttergebiete von Nord-Amerika in ihren Beziehungen zu den morphologischen Verhältnissen.

Berlin Ges. für Erdkunde, Zeitsch., 1902, no. 5, pp. 367–389, 1902.

A general discussion of the occurrences of earthquakes in North America with reference to their morphological relationships.

294 **De Cou** (Ralph E.), **Downer** (R. H.) and. A description of the working mines of Ouray County, Colorado.

See Downer (R. H.) and De Cou (R. E.), 322.

295 **Dennis** (W. B.). The quicksilver deposits of Oregon.

Eng. & Mg. Jour., vol. 76, pp. 539–541, 1903.

Describes the occurrence, character, and geologic relations of the quicksilver ore deposits of Oregon and the mining developments.

296 **Dickinson** (Harold T.). Quarries of bluestone and other sandstones in the upper Devonian of New York State.

N. Y. State Museum, Bull. 61, 112 pp., 20 pls., 1903.

Describes the character, occurrence, and quarrying.

297 **Dickson** (Charles William). The ore deposits of Sudbury, Ontario.

Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 91, 65 pp., figs. 1–26, 1903; Am. Inst. Mg. Engrs, Trans. (Albany meeting, February, 1903), 65 pp.

Contains a discussion of the origin of the Sudbury nickeliferous ores. Includes a bibliography of the subject.

298 —— Note on the condition of platinum in the nickel-copper ores from Sudbury [Ontario].

Am. Jour. Sci., 4th ser., vol. 15, pp. 137–139, 1903.

Describes occurrence and crystallographic characters.

299 **Diller** (Joseph Silas). The Klamath Mountains.

Mazama, vol. 1, no. 1, pp. 104–108, 1896.

Describes briefly the geologic history of the Klamath Mountains region.

300 —— The geology of Crater Lake.

Mazama, vol. 1, no. 2, pp. 161–170, pls. 20–23, 1897.

Describes geologic structure and history of Crater Lake on Mount Mazama, Oregon.

301 **Diller** (Joseph Silas). Port Orford folio, Oregon.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 89, 1903.
Describes topography, geologic history, character and occurrence of pre-Cretaceous, Cretaceous, Tertiary, and surficial deposits and igneous rocks, coal, gold, and platinum minerals.

302 —— Klamath Mountains section, California.
Am. Jour. Sci., 4th ser., vol. 15, pp. 342–362, 1903.
Describes general distribution and structural relations of Paleozoic, Mesozoic, and Cenozoic formations of the Klamath Mountains and occurrence and characters of eruptive rocks. Contains reports on fossils by Charles Schuchert, George H. Girty, Wm. M. Fontaine, David White, F. H. Knowlton, T. W. Stanton, and W. H. Dall.

303 —— Copper deposits of the Redding region, California.
U. S. Geol. Surv., Bull. no. 213, pp. 123–132, 1903.
Describes sedimentary and igneous rocks of the region and their geologic relations and character and occurrence of the ore deposits.

304 —— Iron ores of the Redding quadrangle, California.
U. S. Geol. Surv., Bull. no. 213, pp. 219–220, 1903.
Describes character and occurrence of iron ores in this area.

305 —— Limestone of the Redding district, California.
U. S. Geol. Surv., Bull. no. 213, p. 365, 1903.

306 **Divers** (Edward). Suggested nature of the phenomena of the eruption of Mont Pelée on July 9. Observed by the Royal Society Commission.
Nature, vol. 67, p. 126, 1902.
Discusses the phenomena and their explanation.

307 **Dixon** (J. D.), **Nolan** (A. W.) and. Geology of St. Helen's Island [Quebec].
See Nolan (A. W.) and Dixon (J. D.), 934.

308 **Dodge** (Richard E.). An interesting landslide in the Chaco Cañon, New Mexico.
Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 49–50, 1903.

309 —— Arroyo formation.
Abstract: N. Y. Acad. Sci., Ann., vol. 15, p. 50, 1903.

310 **Dorsey** (Clarence W.) and **Bonsteel** (J. A.). Soil survey in the Connecticut Valley.
U. S. Dept. Agric., Field Oper. Div. Soils, 1899, pp. 125–140, pls. 21–27, 1900.
Includes a brief account of the geology and topographic features.

311 —— A soil survey around Lancaster, Pa.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 61–84, pls. 1–4, 1901.
Includes a brief account of the topography and geology.

312 **Dorsey** (Clarence W.) and **Coffey** (George N.). Soil survey of Montgomery County, Ohio.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 85–102, pls. 5–7, 1901.
Includes a short account of the geology and physiography.

313 —— and **Bonsteel** (Jay A.). Soil survey of Cecil County, Md.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 103–124, 1901.
Includes a short account of the geology.

314 —— and party. Soil survey of the Statesville area, North Carolina.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 273–295, 1902.
Includes a brief account of the physiography and geology.

315 —— **Mesmer** (Louis) and **Caine** (Thomas A.). Soil survey from Arecibo to Ponce, Porto Rico.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 793–839, pls. 57–60, 1903.
Includes an account of the physiography and geology.

316 **Douglass** (Earl). Astropecten? montanus—a new star-fish from the Fort Benton; and some geological notes.
Carnegie Mus., Ann., vol. 2, pp. 5–8, fig. 1, 1903.

317 —— New vertebrates from the Montana Tertiary.
Carnegie Mus., Ann., vol. 2, pp. 145–199, pl. 2, figs. 1–37, 1903.
A brief account of the stratigraphy of the formations from which the fossils were obtained precedes detailed generic and specific descriptions.

318 **Dowlen** (Walton E.). The Turtle Mountain rock slide [Alberta, Canada].
Eng. & Mg. Jour., vol. 76, pp. 10–12, ill., 1903.
Describes a rock slide and the geologic conditions which produced it.

319 **Dowling** (D. B.). Eastern Assiniboia and southern Manitoba.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 180–190, 1903.
Describes observations upon the geology and economic resources of the region examined.

320 —— Notes to accompany a contoured plan of the lower slope of Turtle Mountain, Manitoba.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 191–201, 1903.
Gives geologic notes on the occurrence of coal.

321 **Downer** (R. H.). Ore deposits of the American–Nettie mine, Ouray, Colo.
Colo. Sch. Mines, Bull., vol. 1, pp. 104–107, 2 figs., 1901.
Describes the character and occurrence of the ore bodies.

322 **Downer** (R. H.) and **De Cou** (Ralph E.). A description of the working mines of Ouray County, Colorado.
Colo. Sch. Mines, Bull., vol. 1, pp. 242–259, 1901.
Includes observations on the geology and on the character, occurrence, and origin of the ore bodies.

323 **Drake** (N. F.), **Lindgren** (Waldemar) and. Silver City folio—Idaho.
See Lindgren (Waldemar) and Drake (N. F.), 806.

324 **Dresser** (John A.). On the physical geography of a northern section of the Appalachian mountain system.
Am. Bur. Geog., Bull., vol. 1, pp. 275–279, 1900.

325 —— An investigation of the copper-bearing rocks of the eastern townships, Province of Quebec.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 302–316, 1903.
Discusses the occurrence, geologic position, and character of copper ore deposits.

326 **Dryer** (Charles R.). The use of the word "geest" in geology.
Science, new ser., vol. 17, p. 234, 1903.
Discusses nomenclature of surficial deposits and suggests the use of the term "mantle rock."

327 **Duerden** (J. E.). A method of studying the septal sequence in Paleozoic corals.
Elisha Mitchell Sci. Soc., Jour., vol. 19, pp. 32–33, 1903.

328 —— The morphology of the Madreporaria.
Ann. & Mag. Nat. Hist., 7th ser., vol. 11, pp. 141–155, figs. 1–7, 1903.

329 **Dumble** (Edwin T.). Physical geography, geology, and resources of Texas.
A Comprehensive History of Texas, published by W. G. Scarff, Dallas, Tex., vol. 2, chap. 4, pp. 471–516, ill., 1898.
Includes a brief account of the geologic history and structure of the State, and describes geographic and physiographic features and mineral resources.

330 —— Geology of the Beaumont oil field.
Houston Post, 5 pp., 1901. (Private publication.)
Describes geologic structure of the region and discusses the geologic horizon of the oil.

331 —— The iron ores of east Texas.
Houston Post, 4 pp., 1901. (Private publication.)
Describes the occurrence of iron ores in eastern Texas and processes necessary for their development.

332 —— Geology of southwestern Texas.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 913–987, figs. 1–2, 1903.
Describes the topography, and the character, occurrence, and geologic relations of formations of Tertiary and Pleistocene age in southwestern Texas.

333 **Duryee** (Edward). Cement investigations in Arizona.
U. S. Geol. Surv., Bull. no. 213, pp. 372–380, 1903.

E.

334 **Eakle** (Arthur S.). Note on the identity of palacheite and botryogen.
Am. Jour. Sci. 4th ser., vol. 16, pp. 379–380, 1903.
Describes composition, characters, and occurrence.

335 —— Palacheite.
Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 231–236, pl. 20, 1903.
Describes occurrence, crystallographic characters, physical and chemical properties of this mineral discovered near Knoxville, California.

336 **Easter** (S. E.). Jade.
Nat. Geog. Mag., vol. 14, pp. 9–17, 1903.
Describes characters, occurences, and uses.

337 **Eastman** (Charles R.). Carboniferous fishes from the central Western States.
Harvard Coll., Mus. Comp. Zool., Bull., vol. 39, pp. 163–226, pls. 1–4, figs. 1–17, 1903.
A short account of the stratigraphy of the Upper Carboniferous of Kansas and Nebraska precedes the systematic descriptions.

338 —— A peculiar modification amongst Permian dipnoans.
Am. Nat., vol. 37, pp. 493–495, figs. 1–2, 1903.

339 —— Devonian fish fauna of Iowa.
Abstract: Geol. Soc. Am. Bull., vol. 13, p. 537, 1903.

340 **Eaton** (G. F.). Notes on the collection of Triassic fishes at Yale.
Am. Jour. Sci., 4th ser., vol. 15, pp. 259–268, pls. 5–6, 1903.
Gives descriptions and figures of some of the material.

341 —— The characters of Pteranodon.
Am. Jour. Sci., 4th ser., vol. 16, pp. 82–86, pls. 6–7, 1903.

342 **Eckel** (Edwin C.). The Portland cement industry in New York.
Eng. News, vol. 45, pp. 365–367, 1901.
Describes the development of the industry and the character and occurrence of the raw materials, and discusses the processes of manufacture employed.

343 —— Summaries of the literature of structural materials. III.
Jour. Geol., vol. 11, pp. 86–92, 1903.

344 —— Summaries of the literature of economic geology.
Jour. Geol., vol. 11, pp. 716–719, 1903.

345 —— The materials and manufacture of Portland cement.
Cement Resources of Alabama. 58th Cong., 1st sess., Sen. Doc. no. 19, pp. 1–11, 1903.
Describes character of materials required and processes of manufacture with particular reference to the industry in Alabama.

346 —— Molding sand: its uses, properties, and occurrence.
N. Y. State Mus., 55th Ann. Rept., pp. r91–r96, 1903.

347 **Eckel** (Edwin C.). The Dahlonega gold district of Georgia.
Eng. & Mg. Jour., vol. 75, pp. 219–220, 1903.
Describes the general geology of the region, and the character and occurrence of the ore deposits.

348 —— Gold and pyrite deposits of the Dahlonega district, Georgia.
U. S. Geol. Surv., Bull. no. 213, pp. 57–63, 1903; Mines & Minerals, vol. 23, pp. 493–494, 1903.
Gives a general account of the geology of the region and the character and occurrence of gold and pyrite deposits.

349 —— Utilization of iron and steel slags.
U. S. Geol. Surv., Bull. no. 213, pp. 221–231, 1903.

350 —— Stoneware and brick clays of western Tennessee and northwestern Mississippi.
U. S. Geol. Surv., Bull. no. 213, pp. 382–391, 1903.
Describes occurrence, character, and utilization of clay deposits in this region.

351 —— Salt and gypsum deposits of southwestern Virginia.
U. S. Geol. Surv., Bull. no. 213, pp. 406–416, 1903.
Describes briefly the stratigraphy and geologic structure of the region, and the occurrence of salt and gypsum deposits and their development.

352 —— The white phosphates of Decatur County, Tenn.
U. S. Geol. Surv., Bull. no. 213, pp. 424–425, 1903.
Describes occurrence of phosphate deposits in this area.

353 —— Dahlonega mining district, Georgia.
Abstract: Science, new ser., vol. 17, p. 793, 1903.
Gives observations upon the geology of the region.

354 —— **Hayes** (C. W.) and. Iron ores of the Cartersville district, Georgia.
See Hayes (C. W.) and Eckel (E. C.), 529.

355 —— **Hayes** (C. W.) and. Occurrence and development of ocher deposits in the Cartersville district, Georgia.
See Hayes (C. W.) and Eckel (E. C.), 530.

356 **Eisele** (Martin A.). Report of the superintendent of the Hot Springs Reservation.
Dept. of the Interior, Ann. Rept. for the year ended June 30, 1902 (57th Cong., 2d sess., H. R. Doc. no. 5), pp. 499–526, 6 pls., 1902.
Gives chemical analyses of the water and a brief extract from W. H. Weed's report as to the source of the heat.

357 **Eisen** (Gustav.). The earthquake and volcanic eruption in Guatemala in 1902.
Am. Geog. Soc., Bull., vol. 35, pp. 325–352, 4 figs., 1903.
Describes the earthquake of April, 1902, and its effects, the volcanoes and their eruptions, more particularly that of Santa Maria of Oct. 24, 1902, the character of the ejected material and the physiographic changes produced.

358 **Eldridge** (George H.). Origin and distribution of asphalt and bituminous rock deposits in the United States.
U. S. Geol. Surv., Bull. no. 213, pp. 296–305, 1903.
Describes classification, character, occurrence, origin and distribution of asphalts and bituminous rocks of the United States.

359 —— The petroleum fields of California.
U. S. Geol. Surv., Bull. no. 213, pp. 306–321, 1903.
Describes briefly the location and extent of the oil fields and their topographic and geologic structure and production.

360 **Elftman** (A. H.). The Highland range in Minnesota.
Eng. & Mg. Jour., vol. 75, pp. 447–448, 1903.
Describes the geology of the range.

361 —— Keewatin and Laurentide ice-sheets in Minnesota.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 536–537, 1903.
Notes on the ice invasion.

362 **Ellis** (Mary). Index to publications of the New York State Natural History Survey and New York State Museum 1837–1902; also including other New York publications on related subjects.
N. Y. State Mus., Bull. 66, 653 pp., 1903.
Includes a list of the publications, an alphabetic author and subject index, and an index to descriptions of genera and species of fossils, compiled under the direction of John M. Clarke, State paleontologist.

363 **Ells** (R. W.). The progress of geological investigation in Nova Scotia.
Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 433–446, 1903.

364 —— The oil fields of Gaspé [Quebec].
Can. Geol. Surv., Summ. Rept. for 1902, pp. 338–361, 1903.
Describes the geologic structure of the field, the conditions requisite for oil production, and the explorations for oil.

365 —— The Albert shale deposits of Albert and Westmorland Counties, New Brunswick.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 361–367, 1903.
Describes the occurrence and character of the oil shales.

366 —— Report on the geology of Prince Edward Island with reference to proposed borings for coal.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 367–377, 1903.

367 —— Notes on some interesting rock-contacts in the Kingston district, Ontario.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 4, pp. 97–108, 1903.
Describes observations upon the character, occurrence, and geologic relations of formations of Cambrian and Ordovician age in Quebec and Ontario.

368 **Elrod** (Morton John). The physiography of the Flathead Lake region [Montana].
Mont. Univ., Bull. no. 16 (?), pp. 197–203, ill., 1903.

369 **Emerson** (Benjamin K.). Glacial cirques and rock-terraces on Mount Toby, Massachusetts.
Abstract: Science, new ser., vol. 17, p. 224, 1903.

370 —— A plumose diabase containing sideromelan and spherulites of calcite and blue quartz.
Abstract: Science, new ser., vol. 17, p. 296, 1903.

371 —— **Perry** (Joseph H.) and. The geology of Worcester, Massachusetts.
See Perry (J. H.) and Emerson (B. K.), 971.

372 **Emmons** (Samuel Franklin). The Little Cottonwood granite body of the Wasatch Mountains.
Am. Jour. Sci., 4th ser., vol. 16, pp. 139–147, 1 fig., 1903.
Discusses the geologic relations and age of this granitic mass.

373 —— **Hayes** (C. W.), Geologists in charge. Contributions to economic geology, 1902.
U. S. Geol. Surv., Bull. no. 213, 449 pp., 1903.
Contains reports by different members of the staff of the U. S. Geological Survey of the economic results of investigations made by the Geological Survey, and bibliographies of the subjects treated.

374 —— Investigation of metalliferous ores.
U. S. Geol. Surv., Bull. no. 213, pp. 15–28, 1903.
Describes the character and scope of the economic work of the U. S. Geological Survey, gives brief outlines of economic publications on metalliferous deposits by the Survey during 1901, and enumerates by geographic areas the work in hand.

375 —— Platinum in copper ores in Wyoming.
U. S. Geol. Surv., Bull. no. 213, pp. 94–97, 1903.
Gives a brief account of the topography and geology of the Medicine Bow Range in Wyoming and the occurrence of platinum in the copper ores of the New Rambler mine.

376 —— [In discussion of paper by W. P. Jenney, "The mineral crest, or the hydrostatic level attained by the ore-depositing solutions in certain mining districts of the Great Salt Lake Basin."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1062–1063, 1903.

377 —— The drainage of the valley of Mexico.
Abstract: Science, new ser., vol. 17, p. 309, 1903.

378 —— Genetic classification of ore deposits.
Abstract: Science, new ser., vol. 17, pp. 541–542, 1903.

379 **Evans** (H. F.). Canadian geology.
Mg. & Sci. Press, vol. 86, pp. 299–300, 1903.
Gives a general account of the geology of Canada.

380 **Evans** (H. F.). The Adams Lake series, British Columbia.
Mg. & Sci. Press, vol. 86, pp. 348–349, 1903.
Describes the occurrence of this formation and the strata associated with it, and discusses its geologic relations and age.

381 **Evans** (Nevil Norton). Native arsenic from Montreal.
Am. Jour. Sci., 4th ser., vol. 15, pp. 92–93, 1903.

F.

382 **Fairbanks** (Harold W.). The physiography of California.
Am. Bur. Geog., Bull., vol. 2, pp. 232–252, 329–353, 10 figs., 1901.

383 —— The physiography of southern Arizona and New Mexico.
Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Jour. Geol., vol. 11, pp. 97–99, 1903.

384 **Fairchild** (Herman Le Roy). Elements of geology: a text-book for colleges and the general reader by Joseph Le Conte. Revised and partly rewritten by Herman Le Roy Fairchild.
See Le Conte (Joseph), 781.

385 —— Latest and lowest pre-Iroquois channels between Syracuse and Rome.
N. Y. State Mus., 55th Ann. Rept., pp. r31–r47, pls. 7–31, 1903.
Describes the occurrence and formation of river channels formed during the Glacial period in central New York.

386 **Fall** (Delos). Marls and clays in Michigan.
Mich. Geol. Surv., vol. 8, pt. 3, pp. 343–353, 1903.
Discusses occurrence, composition, and character of marls and clays in Michigan with especial reference to their use in the manufacture of Portland cement.

387 **Faribault** (E. Rodolphe). Nova Scotia gold fields.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 399–427, 1903.
Describes geologic investigations made in the gold-producing districts of Nova Scotia.

388 **Farrington** (Oliver Cummings). Catalogue of the collection of meteorites, May 1, 1903.
Field Col. Mus., Geol. ser., vol. 2, pp. 79–124, pls. 30–39, 1903.
The alphabetic list of meteorites includes notes on the character and source of the specimens, some of which are figured.

389 —— An occurrence of free phosphorus in the Saline Township meteorite.
Am. Jour. Sci., 4th ser., vol. 15, pp. 71–72, 1903.

390 —— Meteorites of northwestern Kansas.
Abstract: Geol. Soc. Am., Bull., vol. 14, p. 6, 1903.

391 **Felix** (J.). Geologiai úti vázlatok észak-amerikából. Geologische Reiseskizzen aus Nord-amerika.

Földtani Közlöny, vol. 25, pp. 5–29, 69–94, pl. 1 and 1 fig., 1895.

Gives observations of a geological nature made during a tour through the United States and Canada, particularly upon the glaciers and petrography of the Cascade Mountains.

392 **Fenneman** (N. M.). The Boulder, Colo., oil field.

U. S. Geol. Surv., Bull. no. 213, pp. 322–332, 1903.

Describes location, general geologic structure and development of the field, the character and occurrence of the oil-bearing strata and the production of oil.

393 **Fernie** (W. Blakemore). The Frank disaster [Alberta].

Can. Mg. Rev., vol. 22, pp. 121–122, 1903.

Discusses the cause of the landslide.

394 **Finlay** (George Irving). Geology of the San Pedro district, San Luis Potosi, Mexico.

School of Mines Quart., vol. 25, pp. 60–69, ill., 1903; Columbia Univ., Dept. Geol., Contr., vol. 12, no. 101, 1903.

Describes the general geology of the region, the character and occurrence of the rocks and ore deposits, chiefly gold, silver, and lead, and discusses the origin of the latter.

395 —— Geological observations along the northern boundary of Montana.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 68–69, 1903.

396 —— The geology of the nephelite syenite area at San José, Tamaulipas, Mexico.

Abstract: Am. Geol., vol. 32, pp. 63–64, 1903; Science, new ser., vol. 18, pp. 17–18, 1903.

397 —— and **Kemp** (J. F.). The nephelite syenite area of San Jose, Tamaulipas, Mexico.

Abstract: Science, new ser., vol. 17, p. 295, 1903.

398 **Finlay** (J. R.). The mining industry of the Cœur d'Alenes, Idaho.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 235–271, figs. 1–21, 1903.

Describes the geologic structure of the region, the occurrence and character of the veins and ore deposits, chiefly lead, and the mining operations.

399 —— Mining and milling in the Cœur d'Alene, Idaho.

Eng. & Mg. Jour., vol. 75, p. 87, 1903.

Describes the general geology of the region and the occurrence of ore bodies.

Abstract of a paper read at the New York and Philadelphia meeting of the American Institute of Mining Engineers.

400 **Fippin** (Elmer O.). Soil survey of the Dubuque area, Iowa.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 571–592, 1903.
Includes an account of the physiography and geology.

401 —— and **Burgess** (James L.). Soil survey of Howell County, Missouri.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 593–609, pls. 33–34, 1903.
Includes a brief account of the physiography and geology.

402 —— and **Rice** (Thomas D.). Soil survey of Allegan County, Michigan.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 93–124, pls. 7–16, 1902.
Includes a brief account of the physiography and geology.

403 **Fletcher** (Hugh). Surveys and explorations in Richmond, Cape Breton, Kings, Cumberland and other counties of Nova Scotia.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 388–399, 1903.
Describes geologic work in the coal fields of Nova Scotia.

404 **Flett** (John S.), **Anderson** (Tempest) and. Preliminary report on the recent eruption of the Soufrière in St. Vincent, and of a visit to Mont Pelée, in Martinique.
See Anderson (Tempest) and Flett (John S.), 32.

405 —— **Anderson** (Tempest) and. Report on the eruptions of the the Soufrière, in St. Vincent, in 1902, and on a visit to Montagne Pelée, in Martinique.
See Anderson (Tempest) and Flett (J. S.), 33.

406 **Fluker** (W. H.). Gold mining in McDuffie County, Georgia.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 119–125, 1903.
Describes the occurrence of gold ore and the mining operations.

407 **Foerste** (August F.). The Cincinnati group in western Tennessee, between the Tennessee River and the Central Basin.
Jour. Geol., vol. 11, pp. 29–45, 1 fig., 1903.
Discusses the subdivisions of the Cincinnati group in Ohio, names and describes the subdivisions in Tennessee, and gives localities of outcrops and notes on characteristic fossils.

408 —— Silurian and Devonian limestones of western Tennessee.
Jour. Geol., vol. 11, pp. 554–583, figs. 1–6, pp. 679–715, figs. 7–10, 1903.
Describes character, occurrence and correlation of Silurian strata along the western side of the Cincinnati geanticline in southern Indiana, Kentucky, and northern Tennessee, and of Silurian and Devonian strata in the Tennessee River Valley and discusses evidences for the age of the Cincinnati geanticline and gives lists of fossils with brief descriptions of some forms.

409 **Foerste** (August F.). The Richmond Group along the western side of the Cincinnati anticline in Indiana and Kentucky.
Am. Geol., vol. 31, pp. 333–361, pls. 20–22, 1903.
Discusses occurrence and lithologic, stratigraphic and faunal features of the subdivisions of the Cincinnati series, the decrease in thickness of the Richmond group in Indiana and Kentucky, and conditions prevailing in the region of the Cincinnati anticline in Ordovician times.

410 —— Use of the terms Linden and Clifton limestones in Tennessee geology.
Abstract: Geol. Soc. Am., Bull., vol. 13, p. 531, 1903.
Brief note on the naming of these formations.

411 —— Bearing of Clinton and Osgood formations on age of Cincinnati anticline.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 531–532, 1903.
Brief note on the stratigraphic relations of the region.

412 **Fontaine** (Wm. M.). See Diller (J. S.), 302.

413 **Ford** (Frederick L.). The trap rock of the Connecticut Valley.
Stone, vol. 26, pp. 130–133, 1903.
Describes the character, occurrence and geologic history of the trap rock in the vicinity of Hartford, Conn.

414 **Ford** (W. E.). Rickardite, a new mineral.
Am. Jour. Sci., 4th ser., vol. 15, pp. 69–70, 1903; Sci. Am. Suppl., vol. 55, pp. 22777–22778, 1903; Chemical News, vol. 87, pp. 56–57, 1903.
Describes occurence and chemical composition.

415 —— On the chemical composition of axinite.
Am. Jour., Sci., 4th ser., vol. 15, pp. 195–201, 3 figs., 1903.

416 **Foster** (Ernest Le Neve). The Colorado Central lode, a paradox of the mining law.
Colo. Sci. Soc., Proc., vol. 7, pp. 41–53, ill., 1902.
Includes some discussion of the occurrence of the ores.

417 **Frazer** (Persifor). J. Peter Lesley.
Am. Geol., vol. 32, pp. 133–136, pl. 19 (por.), 1903.

418 —— History of the Caribbean Islands from a petrographic point of view. (Abstract).
Phil. Acad. Nat. Sci., Proc., vol. 55, pp. 396–400, 1903.
Discusses briefly the petrology of Cuba and Anglesey and its bearing on the geologic history of the Antillean region.

419 **Frech** (Fritz). Die geographische Verbreitung und Entwickelung des Cambrium.
Cong. Geol. Intern., Compte rendu de la VII Sess., St. Petersburg, pp. 127–151, 1899.
Includes in the discussion the distribution and development of the Cambrian in North America.

420 **Fuller** (Myron L.). Asphalt, oil, and gas in southwestern Indiana.
U. S. Geol. Surv., Bull. no. 213, pp. 333–335, 1903.
Describes occurrence and production of oil, natural gas and asphalt in southwestern Indiana.

421 —— Probable pre-Kansan and Iowan deposits of Long Island, N. Y.
Am. Geol., vol. 32, pp. 308–312, 1903.

422 —— The Horseheads outlet of the Glacial lakes of central New York.
Abstract: Science, new ser., vol. 17, p. 26, 1903.
Discusses Glacial deposits and terraces in this region.

423 —— and **Alden** (William C.). Gaines folio, Pennsylvania-New York.
U. S. Geol. Surv., Geol. Atlas of U. S,, folio no. 92, 1903.
Describes topography and drainage, character and occurrence of Devonian, Carboniferous, and Quaternary deposits, the geologic structure and history, physiography and glacial history, economic products, and discovery and development of the Gaines oil field.

424 —— and **Alden** (William C.). Elkland-Tioga folio, Pennsylvania.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 93, 1903.
Describes topography and drainage, character and occurrence of Devonian, Carboniferous, and Quaternary deposits, the geologic structure, geologic, physiographic, and glacial history and economic resources.

425 —— and **Ashley** (George H.). Recent work in the coal field of Indiana and Illinois.
U. S. Geol. Surv., Bull. no. 213, pp. 284–293, 1903.
Describes the character and occurrence of the coals in this area, and thickness and relations of the coal seams.

426 —— and **Clapp** (F. G.). Marl-loess of the lower Wabash Valley.
Geol. Soc. Am., Bull., vol. 14, pp. 153–176, pls. 14–15, 1903; Am. Geol., vol. 31, p. 158, 1903.
Describes character and occurrence of loess deposits in this region and discusses evidences showing their origin.

427 —— and **Veatch** (A. C.). Results of the resurvey of Long Island, New York.
Science, new ser., vol. 18, pp. 729–731, 1903.
Discuss the occurrence of Cretaceous and Quaternary deposits and the source of the water of artesian wells.

428 —— See Campbell (M. R.), 164.

G.

429 **Gallaher** (John A.). Preliminary report on the structural and economic geology of Missouri.
Mo. Bur. Geol. & Mines (Mo. Geol. Surv., vol. 13), Prel. Rept., 251 pp., 63 pls., figs. 1–6, and sections, 1900.

430 **Ganong** (W. F.). Notes on the natural history and physiography of New Brunswick.
New Brunswick Nat. Hist. Soc., Bull., no. 21 (vol. 5, pt. 1), pp. 35–92, ill., 1903.

431 **Gardiner** (J. Stanley). The origin of coral reefs as shown by the Maldives.
Am. Jour. Sci., 4th ser., vol. 16, pp. 203–213, fig. 1, 1903.

432 **Gardner** (Frank D.) and **Stewart** (John). A soil survey in Salt Valley, Utah.
U. S. Dept. Agric., Field Oper. Div. Soils, 1899, pp. 77–114, pls. 10–20, 1900.
Includes an account of physiographic features.

433 —— and **Jensen** (Charles A.). Soil survey in Weber County, Utah.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 207–242, pl. 16, 1901.
Includes an account of physiographic features.

434 —— and **Jensen** (Charles A.). Soil survey in the Sevier Valley, Utah.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 243–285, pls. 17–23, 1901.
Includes an account of physiographic features.

435 —— **Means** (Thomas H.) and. A soil survey in the Pecos Valley, New Mexico.
See Means (T. H.) and Gardner (F. D.), 872.

436 **Gaudry** (Albert). Observations paléontologiques dans l'Alaska.
Acad. des Sci. [Paris], Compt. rend., vol. 137, pp. 553–554, 1903.
Notes the occurrence of Quaternary mammalian remains in Alaska.

437 **Gautier** (Armand). A propos de la composition des gaz des fumerolles du Mont Pelé. Remarques sur l'origine des phénomènes volcaniques.
Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 16–20, 1903.
Discusses the constitution of gases from the fumaroles of Mont Pelé and the cause of volcanic phenomena.

438 **Gidley** (J. W.). A new three-toed horse.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 465–476, 1903.

439 —— On two species of Platygonus from the Pliocene of Texas.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 477–481, figs. 1–5, 1903.

440 —— The fresh-water Tertiary of northwestern Texas. American Museum expeditions of 1899–1901.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 617–635, pls. 52–58, figs. 1–4, 1903.
Describes explorations in the Tertiary beds of northwestern Texas, and the character, occurence, and fossil contents of Pleistocene, Pliocene, and Miocene formations.

441 **Gilbert** (Grove Karl). John Wesley Powell: a memorial to an American explorer and scholar. Comprising articles by Mrs. M. D. Lincoln (Bessie Beach), Grove Karl Gilbert, Marcus Baker, and Paul Carus. Edited by Grove Karl Gilbert. (Reprinted from "The Open Court.")
Chicago, The Open Court Publishing Company, 75 pp., 4 pls. (por.), 1903.

442 —— Powell as a geologist.
Wash. Acad. Sci., Proc., vol. 5, pp. 113–118, 1903.

443 —— Proposed investigation of subterranean temperatures and gradients.
Carnegie Inst. Wash., Yearbook no. 1, 1902, pp. 285–286, 1903.
Presents a proposition for a deep boring and states results to be obtained thereby.

444 —— John Wesley Powell.
Smith. Inst., Ann. Rept. for 1902, pp. 633–640, por., 1903.
Revised by the author from article published in Science, October 10, 1902. See no. 403 of U. S. Geol. Surv., Bull. no. 221, 1903.

445 —— Joint veins.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 521–522, 1903.
Contains brief note on joint structures in the House range, Utah.

446 —— A highly viscous eruption of rhyolite.
Abstract: Science, new ser., vol. 17, p. 221, 1903.

447 —— Physiographic belts in western New York.
Abstract: Science, new ser., vol. 17, p. 221, 1903; Sci. Am. Suppl., p. 22647, 1903.

448 —— Origin of Basin ranges.
Abstract: Science, new ser., vol. 17, p. 301, 1903.

449 —— Statics of a tidal glacier.
Abstract: Science, new ser., vol. 17, pp. 739–740, 1903.
Discusses the statics of tidal glaciers and their bearing upon the origin of fiords.

450 **Gillette** (Halbert Powers). Osmosis as a factor in ore formation.
Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903). 5 pp.

451 **Gillot** (H.). Sur la composition chimique des poussières volcaniques de la Martinique.
Soc. Geol. de Belgique, Ann., vol. 30, pp. B49–51, 1903.
Discusses the chemical composition of volcanic ash from Martinique.

452 **Gilmore** (Charles W.). Discovery of dental grooves and teeth in the type of Baptanodon (Sauranodon) Marsh.
Science, new ser., vol. 17, p. 750, 1903.

453 **Giraud** (J.). Sur l'age des formations volcaniques anciennes de la Martinique.

Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 1377–1379, 1902.

Discusses the geologic age of volcanic formations on the island of Martinique.

454 —— **Lacroix** (A.), **Rollet de l'Isle** and. Sur l'eruption de la Martinique.

See Lacroix (A.), Rollet de l'Isle and Giraud, 727.

455 **Girty** (George H.). The Carboniferous formations and faunas of Colorado.

U. S. Geol. Surv., Professional Paper no. 16, 546 pp., 10 pls., 1903.

Reviews in chronologic order the literature bearing upon the subject and includes a bibliography. Gives a résumé of the literature upon the stratigraphic geology of the Carboniferous area of Colorado. Describes the character and occurrence of the Paleozoic formations, discusses the occurrence and correlation of the Carboniferous fossil faunas by geographic areas and localities, with lists of species, and gives systematic descriptions of the species.

456 —— Tabulated list of invertebrate fossils from the Carboniferous section of Kansas.

U. S. Geol. Surv., Bull. no. 211, pp. 73–83, 1903.

457 —— See Diller, J. S., 302.

458 —— See Washburne (Chester), 1265.

459 **Glenn** (L. C.). Devonic and Carbonic formations of southwestern New York, with stratigraphic map of the Olean quadrangle.

N. Y. State Mus., Bull. 69, pp. 967–989, pls. 1–2, 1903.

Describes occurrence, character, and geologic relations of Devonian and Carboniferous strata of this region and discusses the geologic age of the formations.

460 **Goldschmidt** (Victor) and **Nicol** (William). New forms of sperrylite.

Am. Jour. Sci., 4th ser., vol. 15, pp. 450–458, figs. 1–5, 1903.

Describes crystallographic characters.

461 **Goldthwait** (James Walter), **Huntington** (Ellsworth) and. The hurricane fault in southwestern Utah.

See Huntington (Ellsworth) and Goldthwait (J. W.), 623.

462 **Goode** (John Paul). The piracy of the Yellowstone.

Am. Bur. Geog., Bull., vol. 2, pp. 177–187, ill., 1901.

See no. 2047 in U. S. Geol. Surv., Bull. no. 188.

463 **Gottschalk** (A. L. M.). Gold fields of eastern Nicaragua.

U. S. Dept. Comm. and Labor, Daily Consular Reports, no. 1774, pp. 2–9, 1903.

Describes the occurrence and production of gold.

464 **Grabau** (Amadeus W.). Notes on the development of the biserial arm in certain crinoids

Am. Jour. Sci., 4th ser., vol. 16, pp. 289–300, figs. 1–8, 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 97, 1903.

465 —— Stratigraphy of Becraft Mountain, Columbia County, N. Y.

N. Y. State Mus., Bull. 69, pp. 1030–1079, figs. 1–13, 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 98, 1903.

Reviews literature of the region and describes character, occurrence, and fauna of the Ordovician, Silurian, and Devonian strata of Becraft Mountain.

466 —— Paleozoic coral reefs.

Geol. Soc. Am., Bull., vol. 14, pp. 337–352, pls. 47–48, 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 96, 1903.

Describes coral reefs in the Devonian of Michigan and New York, in the Silurian of Wisconsin and Gotland, and in the Devonian and Carboniferous of Belgium, discusses their formation, and names and describes varieties of reef limestone, and gives a classification of limestones.

467 —— Studies of Gastropoda. II. Fulgur and Sycotypus.

Am. Nat., vol. 37, pp. 515–539, figs. 1–19, 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 95, 1903.

Describes developmental stages, relationships, and phylogeny of Fulgur and Sycotypus.

468 —— Recent contributions to the problem of Niagara.

Abstract: N. Y. Acad. Sci., Ann., vol. 14, p. 139, 1902.

469 —— Limestone regions of Michigan.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, p. 81, 1903.

470 —— The phylogeny of the Fusidæ.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 86–87, 1903.

471 —— Traverse group of Michigan.

Abstract: Geol. Soc. Am., Bull., vol. 13, p. 519, 1903.

472 —— **Kemp** (J. F.) and. The Washington meeting of the Geological Society of America, December 30, 31, 1902, January 1 and 2, 1903.

See Kemp (J. F.) and Grabau (A. W.), 676.

473 **Grant** (C. C.). Geological notes.

Hamilton Sci. Assoc., Jour. & Proc., no. 19, pp. 111–127, 5 figs., 1903.

Contains notes on the occurrence of Ordovician and Silurian fossils.

474 —— The origin of petroleum.

Hamilton Sci. Assoc., Jour. & Proc., no. 19, pp. 142–145, 1903.

475 **Grant** (Ulysses Sherman). Preliminary report on the lead and zinc deposits of southwestern Wisconsin.

Wis. Geol. Nat. Hist. Surv., Bull. no. 9, 103 pp., 4 pls., 8 figs., 1903.

Describes topography and general geology of the region and the character, occurrence, and origin of the ore deposits.

476 **Grant** (Ulysses Sherman). Geological excursion in the Pittsburg region.
Geol. Soc. Am., Bull., vol. 14, pp. 3–4, 1903.
Gives a short summary of the stratigraphic, economic, physiographic, and glacial geology of this region.

477 **Graton** (Louis Caryl). On the petrographical relations of the Laurentian limestones and the granite in the township of Glamorgan, Haliburton County, Ontario.
Can. Rec. Sci., vol. 9, pp. 1–38, 1903.

478 —— Up and down the Mississaga [Ontario].
Ont. Bur. Mines [12th] Rept., pp. 157–172, 3 pls., 1903.
Contains observations on the geography, topography, geology, petrography, and resources of the region traversed.

479 **Green** (Raoul). The Frank disaster [Alberta].
Can. Mg. Rev., vol. 22, pp. 103–110, ill., 1903.
Describes the landslide at Frank, Alberta, and discusses its cause.

480 **Greene** (George K.). Contribution to Indiana Paleontology. Part XI.
New Albany, Ind., pp. 98–109, pls. 31–33, 1903.
Includes descriptions of Silurian and Devonian corals and echinoderms, the latter described by Rowley.

481 —— Contribution to Indiana Paleontology. Part XII.
New Albany, Ind., pp. 110–129, pls. 34–36, 1903.
Contains descriptions of Devonian corals and Devonian and Carboniferous echinoderms, the latter by Rowley.

482 —— Contribution to Indiana Paleontology. Part XIII.
New Albany, Ind., pp. 130–136, pls. 37–39, 1903.
Contains descriptions of Devonian corals and echinoderms, the latter by Rowley.

483 —— Contribution to Indiana Paleontology. Part XIV.
New Albany, Ind., pp. 138–145, pls. 40–42, 1903.
Contains descriptions of Devonian corals by Greene and Devonian echinodermata by Rowley.

484 —— Contribution to Indiana Paleontology. Part XV.
New Albany, Ind., pp. 146–155, pls. 43–45, 1903.
Contains descriptions of Devonian corals by Greene and of Devonian echinodermata by Rowley.

485 —— Contribution to Indiana Paleontology. Part XVI.
New Albany, Ind., pp. 156–167, pls. 46–48, 1903.
Contains descriptions of Devonian corals by Greene and of Devonian and Carboniferous echinodermata by Rowley.

486 **Griffith** (William). The anthracite of the Third Hill Mountain, West Virginia; the effect of crushing movements on the quality of the coal.
Mines & Minerals, vol. 23, pp. 293–294, 1 fig., 1903.
Describes the general geology of the region.

487 **Griffiths** (A. B.). The volcanic dust of Mont Pelée.
Chemical News, vol. 88, p. 231, 1903.

488 **Grimsley** (G. P.). Economic geology of Iola [Kansas] and vicinity.
Kans. Acad. Sci., Trans., vol. 18, pp. 78–82, 1 pl., 1903.
Describes production of natural gas and the mineral industries of this locality.

489 **Griswold** (W. T.) Structural work during 1901 and 1902 in the eastern Ohio oil fields.
U. S. Geol. Surv., Bull. no. 213, pp. 336–344, 1903.
Describes factors controlling accumulation of oil, the method used in constructing a map of the oil sand, the structure of the Berea grit, and the development of the field.

490 **Gulliver** (F. P.). Cuttyhunk Island.
Abstract: Geol. Soc. Am., Bull., vol. 13, p. 538, 1903.

H.

491 **Halberstadt** (Baird). Obituary notice of J. Peter Lesley.
Mines & Minerals, vol. 23, p. 556, por., 1903.

492 **Hale** (David J.). Marl (bog lime) and its application to the manufacture of Portland cement.
Mich. Geol. Surv., vol. 8, pt. 3; pp. 1–399, pls. 1–23, figs. 1–44, 1903.
Describes occurrence and character of marl (bog lime) and discusses the theories of its origin.

493 **Hall** (C. M.), **Todd** (J. E.) and. Alexandria folio, South Dakota.
See Todd (J. E.) and Hall (C. M.), 1211.

494 **Hall** (Christopher Webber). The geography and geology of Minnesota.
Minneapolis, The H. W. Wilson Company. xii, 299 pp., 5 pls., 163 figs., 1903.

495 —— The geology of Minnesota. A description of the various formations in the State, and an account of their products which are of economic value.
Mines & Minerals, vol. 23, pp. 532–534, 1903.
Describes the distribution, lithology, and economic products of the several geologic systems present in the State.

496 **Hallock** (William). An ascent of Mt. Whitney, California, with notes on the geology.
Abstract: Science, new ser., vol. 17, p. 505, 1903.

497 **Halse** (Edward). Some silver-bearing veins of Mexico.
Inst. Mg. Engrs., Trans., vol. 18, pp. 370–384, 1900; vol. 21, pp. 198–213, pls. 9–10, 1901; vol. 23, pp. 243–257, pls. 14–15, 1902; vol. 24, pp. 41–60, 1903.
Contains observations upon the geology and occurrence of silver ores.

498 **Hambach** (Gustav). Revision of the blastoideæ, with a proposed new classification, and description of new species.
St. Louis Acad. Sci., Trans., vol. 13, pp. 1–67, pls. 1–5, figs. 1–15, 1903.

499 **Hanbury** (David T.). Through the barren ground of northeastern Canada to the Arctic coast.
Geog. Jour., vol. 32, pp. 178–191, ill., 1903.
Contains a brief account of the geology of the region traversed.

500 **Harrington** (B. J.). George Mercer Dawson.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 183–192, 1902.

501 —— On the composition of some Canadian amphiboles.
Am. Jour. Sci., 4th ser., vol. 15, pp. 392–394, 1903.

502 —— On the formula of bornite.
Am. Jour. Sci., 4th ser., vol. 16, pp. 151–154, 1903.

503 **Harrington** (Daniel). Coal mining at Sunnyside, Utah.
Colo. Sch. Mines, Bull., vol. 1, pp. 227–235, 1901.
Describes the general geology, the occurrence of the coal in the Laramie group and the mining operations.

504 **Harris** (Gilbert D.). Eocene outcrops in central Georgia.
Am. Pal., Bull. no. 16, pp. 1–7, 1902.
Describes occurrence of Eocene formations in Georgia.

505 **Hartnagel** (C. A.). Preliminary observations on the Cobleskill ("Coralline") limestone of New York.
N. Y. State Mus., Bull. 69, pp. 1109–1175, pls. 1–2, figs. 1–5, 1903.
Discusses the geologic position, geographic extent and outcrops of the "Coralline" limestone, the distribution and stratigraphic relations of its fauna, giving lists of species by localities, its relations to other Silurian formations, its correlation and nomenclature, and the geographic conditions prevailing in Silurian times.

506 **Harwood** (F. H.). The fluorspar and zinc mines of Kentucky.
Mg. & Sci. Press, vol. 86, pp. 87–88, 101–102, 1903.
Describes the occurrence, character, and mining of the fluorspar and zinc deposits in western Kentucky and southern Illinois.

507 **Hatcher** (J. B.). Osteology of Haplocanthosaurus, with description of a new species, and remarks on the probable habits of the Sauropoda and the age and origin of the Atlantosaurus beds.
Carnegie Mus., Mem., vol. 2, no. 1, pp. 1–72, pls. 1–6, figs. 1–28, 1903.

508 —— Additional remarks on Diplodocus.
Carnegie Mus., Mem., vol. 2, no. 1, pp. 72–75, figs. 1–2, 1903.

509 —— Discovery of remains of Astrodon (Pleurocœlus) in the Atlantosaurus beds of Wyoming.
Carnegie Mus., Ann., vol. 2, pp. 9–14, figs. 1–6, 1903.
Includes with the description a discussion of the synonymy and the age of the beds in which it occurs.

510 **Hatcher** (J. B.). Relative age of the Lance Creek (Ceratops) beds of Converse County, Wyoming, the Judith River beds of Montana, and the Belly River beds of Canada.
Am. Geol., vol. 31, pp. 369–375, 1903.

511 —— A new sauropod dinosaur from the Jurassic of Colorado.
Wash. Biol. Soc., Proc., vol. 16, pp. 1–2, 1903.

512 —— The Judith River beds.
Science, new ser., vol. 17, pp. 471–472, 1903.
Discusses the stratigraphic position of the Judith River beds.

513 —— and **Stanton** (T. W.). The stratigraphic position of the Judith River beds and their correlation with the Belly River beds.
Science, new ser., vol. 18, pp. 211–212, 1903.

514 **Hay** (Oliver Perry). On some recent literature bearing on the Laramie formation.
Am. Geol., vol. 32, pp. 115–120, 1903.

515 —— Description of a new genus and species of tortoise from the Jurassic of Colorado.
Carnegie Mus., Ann., vol. 2, pp. 201–203, pl. 3, 1903.

516 —— Two new species of fossil turtles from Oregon.
Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 237–241, figs. 1–6, 1903.

517 —— On certain genera and species of North American Cretaceous actinopterous fishes.
Am. Mus. Nat. Hist., Bull., vol. 19, pp, 1–95, pls. 1–95, figs. 1–72, 1903.

518 —— The composition of the shells of turtles.
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 111–112, 1902.

519 —— The snout-fishes of Kansas.
Abstract: N. Y. Acad. Sci., Ann., vol. 15, p. 15, 1903.

520 —— On an important but not well-known locality furnishing Cretaceous fishes.
Abstract: Science, new ser., vol. 17, p. 219, 1903.

521 **Haycock** (Ernest). Geology of the west coast of Vancouver Island.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 74–90, 1903.
Describes physiographic features, the general geology, the character and occurrence of igneous rocks, and the economic resources.

522 **Hayes** (Charles Willard). Introduction to contributions to economic geology, 1902.
U. S. Geol. Surv., Bull. no. 213, pp. 9–14, 1903.
Describes the publications of the U. S. Geological Survey in which papers treating of economic subjects appear.

523 **Hayes** (Charles Willard). Investigation of nonmetalliferous economic minerals.
U. S. Geol. Surv., Bull. no. 213, pp. 29–30, 1903.
Describes character and scope of work done by the U. S. Geological Survey in the investigation of nonmetalliferous minerals.

524 —— Manganese ores of the Cartersville district, Georgia.
U. S. Geol. Surv., Bull. no. 213, p. 232, 1903.
Describes briefly the character and occurrence of the manganese ores in this district.

525 —— Coal fields of the United States.
U. S. Geol. Surv., Bull. no. 213, pp. 257–269, 1903.
Describes distribution of coal in the United States, the geologic relations of the coal fields, fuel values of coals, and their development, production, and marketing.

526 —— Oil fields of the Texas–Louisiana Gulf Coastal Plain.
U. S. Geol. Surv., Bull. no. 213, pp. 345–352, 1903.
Describes topography, stratigraphy, and geologic structure of the region, and the occurrence, character, and utilization of the oil.

527 —— Asphalt deposits of Pike County, Arkansas.
U. S. Geol. Surv., Bull. no. 213, pp. 353–355, 1903.
Describes the character and occurrence of deposits of asphalt in sands of the Trinity group in Arkansas.

528 —— Origin and extent of the Tennessee white phosphates.
U. S. Geol. Surv., Bull. no. 213, pp. 418–423, 1903.
Describes varieties of white phosphate, the origin and extent of the deposits, and possible extensions of the field.

529 —— and **Eckel** (E. C.). Iron ores of the Cartersville district, Georgia.
U. S. Geol. Surv., Bull. no. 213, pp. 233–242, 1903.
Describes the stratigraphy and geologic structure of this district and the character and occurrence of the iron ores.

530 —— and **Eckel** (E. C.). Occurrence and development of ocher deposits in the Cartersville district, Georgia.
U. S. Geol. Surv., Bull. no. 213, pp. 427–432, 1903.

531 —— **Emmons** (S. F.). Contributions to economic geology, 1902.
See Emmons (S. F.), Hayes (C. W.), 373.

532 —— and **Kennedy** (William). Oil fields of the Texas–Louisiana Gulf Coastal Plain.
U. S. Geol. Surv., Bull. no. 212, 174 pp., 11 pls., 12 figs., 1903.
Describes topography and drainage of the Gulf Coastal Plain of Texas and Louisiana, the occurrence and character of Tertiary, Quaternary, and Recent formations, giving numerous sections and records of borings, and the location and development of the oil pools; discusses the origin of petroleum, conditions of accumulation, and structural features in this field, and the constitution, properties, and utilization of the oil.

533 **Hayes** (Charles Willard) and **Ulrich** (Edward O.). Columbia folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 95, 1903.

Describes general relations and topography, character and occurrence of Ordovician, Silurian, Devonian, and Carboniferous strata, geologic structure and history and mineral resources, including the occurrence, character, and origin of the phosphates. Includes a correlation table of Paleozoic formations and a generalized faunal chart for the western side of the Middle Tennessee Basin.

534 **Haywood** (J. K.). Report of an analysis of the waters of the hot springs on the Hot Springs Reservation, Hot Springs, Garland County, Arkansas.

57th Cong., 1st Sess., Sen. Doc. no. 282, Washington, pp. 11–78, figs. 1–2, 1902.

535 **Headden** (W. P.). Mineralogical Notes.

Colo. Sci. Soc., Proc., vol. 7, pp. 141–150, 1903.

Describes the occurrence of tellurium and tellurite in Colorado, and the characters of cuprodescloizite from Arizona.

536 —— Significance of silicic acid in waters of mountain streams.

Am. Jour. Sci., 4th ser., vol. 16, pp. 169–184, 1903.

537 **Hearn** (W. Edward). Soil survey of the Lyons area, New York.

U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 143–162, pls. 3–4, 1903.

Includes a short account of the physiography and geology.

538 —— **Coffey** (George N.) and. Soil survey of Alamance County, North Carolina.

See Coffey (G. N.) and Hearn (W. E.), 215.

539 —— **Coffey** (George N.) and. Soil survey of the Cary area, North Carolina.

See Coffey (G. N.) and Hearn (W. E.), 216.

540 —— **Mesmer** (Louis) and. Soil survey of the Bigflats area, New York.

See Mesmer (Louis) and Hearn (W. E.), 894.

541 **Heileman** (W. H.) and **Mesmer** (Louis). Soil survey of the Lake Charles area, Louisiana.

U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 621–647, 1902.

Includes a short account of the physiography and geology.

542 —— **Lapham** (Macy H.) and. Soil survey of the Hanford area, California.

See Lapham (M. H.) and Heileman (W. H.), 772.

543 —— **Lapham** (Macy H.) and. Soil survey of the lower Salinas Valley, California.

See Lapham (Macy H.) and Heileman (W. H.), 773.

544 **Heilprin** (Angelo). Mont Pelée and the tragedy of Martinique.
Philadelphia, J. B. Lippincott Company. xiii, 325 pp., ill., 1903.

545 —— The activity of Mont Pelée.
Science, new ser., vol. 17, p. 546, 1903.

546 —— The ascending obelisk of the Montagne Pelée.
Pop. Sci. Monthly, vol. 63, pp. 467–468, 1 fig., 1903.

547 —— The ascending obelisk of the Montagne Pelée.
Science, new ser., vol. 18, pp. 184–185, 1903.

548 —— Mont Pelée—the eruptions of August 24 and 30, 1902.
Abstract: Science, new ser., vol. 17, p. 226, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

549 **Henderson** (Junius). The overturns in the Denver basins [Colorado].
Jour. Geol., vol. 11, pp. 584–586, figs. 1–2, 1903.
Gives an explanation of the overturning of strata in this region.

550 **Henderson** (David B.). Powell as a soldier.
Wash. Acad. Sci., Proc., vol. 5, pp. 100–105, 1903.

551 **Henry** (Carl D.). The white country granite of West Sugar Loaf or Bald Mountain, Boulder County, Colorado.
Colo. Sci. Soc., Proc., vol. 7, pp. 112–116, 1903.
Describes the occurrence, the megascopic and microscopic characters, and the composition of this rock.

552 **Herrick** (C. L.). Secondary enrichment of mineral veins in regions of small erosion.
Mg. & Sci. Press, vol. 87, p. 97, 1903.

553 **Hershey** (Oscar H.). Some evidence of two glacial stages in the Klamath Mountains in California.
Am. Geol., vol. 31, pp. 139–156, 1903.
Describes occurrence of remains of a fossil elephant in glacial deposits, the character and occurrence of glacial deposits, the terrace formations, and gorges in this region.

554 —— Structure of the southern portion of the Klamath Mountains, California.
Am. Geol., vol. 31, pp. 231–245, 1903.
Describes the general geologic structure and geologic history of the region.

555 —— The Sierran valleys of the Klamath region, California.
Jour. Geol., vol. 11, pp. 155–165, 1903.
Describes physiographic features and discusses physiographic history of the region.

556 —— The relation between certain river terraces and the Glacial series in northwestern California.
Jour. Geol., vol. 11, pp. 431–458, 1903.
Describes location, materials, and characteristics of river terraces, and discusses their relation to the stages of the Glacial series and the climatic conditions and causes of glaciation.

557 **Hershey** (Oscar H.). Certain river terraces of the Klamath region, California.
Am. Jour. Sci., 4th ser., vol. 16, pp. 240–250, 1903.
Describes river terraces in the region and discusses their formation and relation to the Glacial series.

558 **Hessler** (Robert). The medicinal properties and uses of Indiana mineral water.
Ind., Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 159–226, 1903.

559 **Heurteau** (Ch. E.). Les charbons gras de la Pennsylvanie et de la Virginie occidentale.
Ann. des Mines, 10th ser., vol. 3, pp. 379–475, figs. 1–12, 1903.
Describes the general geology of the bituminous coal regions of Pennsylvania and West Virginia, the occurrence of the coal seams, the composition and fuel values of the coals, and the mining, transportation, and sale of coal.

560 —— L'industrie du pétrole en Californie.
Ann. des Mines, 10th ser., vol. 4, pp. 215–249, pl. 9, figs. 1–4, 1903.
Describes the location and general geology of the petroleum field of southern California, and the character, production, and utilization of the petroleum, and compares it with that produced in Texas.

561 **Hewett** (G. C.). Notes on southwestern Utah and its iron ores.
Colo. Sci. Soc., Proc., vol. 7, pp. 55–66, figs. 1–11, 1902.
Contains observations on the geology and occurrence of the iron ores.

562 —— The age of the Homestake lode, South Dakota.
Eng. & Mg. Jour., vol. 75, pp. 563–564, 1903.
Discusses the occurrence and the origin of the gold.

563 —— [In discussion of paper by W. H. Weed, "Section across the Sierra Madre Occidental of Mexico."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1059–1060, 1903.
Adds observations upon the geology of the region.

564 **Hice** (Richard R.). Northward flow of ancient Beaver River.
Geol. Soc. Am., Bull., vol. 14, pp. 297–304, pls. 32–36, fig. 1, 1903.
Describes history of Beaver River and discusses evidence of potholes for showing direction of flow.

565 **Hilgard** (E. W.). The Grand Gulf formation.
Science, new ser., vol. 18, pp. 180–182, 1903.
Describes lithologic and other characteristics of the Grand Gulf formation.

566 —— The valley of southern California.
Abstract: Jour. Geol., vol. 11, p. 96, 1903.

567 **Hill** (Benj. F.). The occurrence of the Texas mercury minerals.
Am. Jour. Sci., 4th ser., vol. 16, pp. 251–252, 1903.

568 **Hill** (Robert T.). The Beaumont oil-field, with notes on other oil-fields of the Texas region.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 363–405, figs. 1–2, 1903.
Discusses origin and occurrence of oil, describes geography, occurrence and character of sedimentary strata of southeastern Texas, the situation, extent, and production of different oil fields, the discovery, development, geology, and structural features of the Beaumont field, and discusses the origin of its oil.

569 —— The Santa Eulalia district, Mexico.
Eng. & Mg. Jour., vol. 76, pp. 158–160, ill., 1903.
Describes the general geology and the character and occurrence of the ore bodies.

570 —— The ore deposits of Cananea [Mexico].
Eng. & Mg. Jour., vol. 76, p. 421, 1903.
Gives observations upon the general geology, structural features, and the origin of the ores.

571 —— Cananea revisited.
Eng. & Mg. Jour., vol. 76, pp. 1000–1001, 1903.
Describes the geology of the region, the occurrence and sequence of the igneous rocks, the fissuring and faulting, and the occurrence and origin of the copper ore deposits.

572 —— The geologic and physiographic history of the Lesser Antilles.
Abstract: Science, new ser., vol. 17, pp. 225–226, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

573 **Hillebrand** (W. F.). Critical review of the second series of analyses of materials for the Portland cement industry made under the auspices of the New York section of the Society of Chemical Industry.
Am. Chem. Soc., Jour., vol. 25, pp. 1180–1208, 1903.

574 —— and **Penfield** (S. L.). Beiträge zur Kenntniss der Alunit-Jarositgruppe.
Zeitschrift für Krystallographie, vol. 36, pp. 545–554, 1902.
This is a translation of the paper noted as no. 509 in U. S. Geol. Surv., Bull. no. 221.

575 **Hills** (R. C.). The Oscuro Mountain meteorite [New Mexico].
Colo. Sci. Soc., Proc., vol. 6, pp. 30–33, ill. [1902].
Describes the occurrence and the characters of this meteorite.

576 **Hitchcock** (C. H.). Mohokea caldera on Hawaii.
Geol. Soc. Am., Bull., vol. 14, pp. 6–8, 1903.

577 —— Notice of a species of Acidaspis from a boulder of Marcellus shale, found in drift, at West Bloomfield, New Jersey.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 97–98, pl. 6, 1903.

578 **Hitchcock** (C. H.). The story of Niagara.
Amer. Antiquarian, vol. 23, pp. 1–24, ill., 1901.
Describes the geological history of the region about Niagara Falls, the geological history of the Niagara Cataract and River, and discusses the rate of recession of the falls and the estimates of age in years.

579 —— Protection of terraces in the upper Connecticut River.
Abstract: Science, new ser., vol. 17, p. 224, 1903.

580 **Hobbs** (William Herbert). The geological structure of the southwestern New England region.
Am. Jour. Sci., 4th ser., vol. 15, pp. 437–446, 1903.
Discusses structural features of the region and their origin.

581 —— Meteorite from Algoma, Wisconsin.
Geol. Soc. Am., Bull., vol. 14, pp. 97–116, pls. 3–7, 1903.
Describes surface, composition and texture.

582 —— Tungsten mining at Trumbull, Conn.
U. S. Geol. Surv., Bull. no. 213, p. 98, 1903.
Describes the occurrence of the ore and methods employed in mining and extracting the metal.

583 —— The frontier of physiography.
Science, new ser., vol. 18, pp. 538–540, 1903.

584 —— Edward Orton.
Wis. Acad. Sci., Trans., vol. 13, pt. 2, pp. 610–613, por., 1902.

585 —— Geology of the river channels about Manhattan Island.
Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 74–76, 1903.

586 —— A record of post-Newark depression and subsequent elevation within the area of southwestern New England.
Abstract: Science, new ser., vol. 17, p. 223, 1903.

587 —— Evidences of post-Newark normal faulting in the crystalline rocks of southwestern New England.
Abstract: Science, new ser., vol. 17, p. 223, 1903.

588 —— Configuration of the rock floor of the vicinity of New York.
Abstract: Science, new ser., vol. 17, p. 298, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

589 **Hoen** (A. B.). Discussion of the requisite qualities of lithographic limestone, with report on tests of the lithographic stone of Mitchell County, Iowa.
Iowa Geol. Surv., vol. 13, pp. 339–352, pl. 8, 1903.

590 **Hogarty** (Barry). The andesite of Mount Sugar Loaf, Boulder County, Colorado.
Colo. Sci. Soc., Proc., vol. 6, pp. 171–185 [1902].
Describes the occurrence, the megascopic and microscopic characters, and the composition of the rock.

591 **Hollick** (Arthur). Fossil ferns from the Laramie group of Colorado.
Torreya, vol. 2, pp. 145–148, 1902; N. Y. Bot. Garden, Contr., no. 28, pp. 145–148, pls. 3–4, 1902.

592 —— A fossil petal and a fossil fruit from the Cretaceous (Dakota group) of Kansas.
Torrey Bot. Club, Bull., vol. 30, pp., 102–105, figs. A–B, 1903; N. Y. Bot. Garden, Contr., no. 31, pp. 102–105., 1903.

593 —— Field work during 1901 in the Cretaceous beds of Long Island.
N. Y. State Mus., 55th Ann. Rept., pp. r48–r51, 1903.
Gives a list of Cretaceous fossil plants collected in the vicinity of Glencove on Long Island; New York.

594 —— Two additions to our list of drift fossils.
Staten Island Nat. Sci. Assoc., Proc., vol. 8, p. 53, 1903.
Notes occurrence of drift bowlders containing Devonian fossils.

595 **Holmes** (J. Garnett). Soil survey around Santa Ana, Cal.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 385–412, pls. 44–51, 1901.
Includes an account of the geology and physiographic features.

596 —— Soil survey of the San Gabriel area, California.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 559-586, pls. 85–86, 1902.
Includes a brief account of the geology and physiography.

597 —— Soil survey of the Walla Walla area, Washington.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 711–728, pl. 42, 1903.
Includes a brief account of the physiography and geology.

598 —— Soil survey of the Yuma area, Arizona.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 777–791, pls. 54–56, 1903.
Includes a brief account of the physiography and geology.

599 —— and **Mesmer** (Louis). Soil survey of the Ventura area, California.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 521–557, pls. 73–74, 1902.
Includes a brief account of the physiography and geology.

600 —— **Means** (Thomas H.) and. Soil survey around Imperial, California.
See Means (T. H.) and Holmes (J. G.), 874.

601 —— **Means** (Thomas H.) and. Soil survey around Fresno, California.
See Means (T. H.) and Holmes (J. G.), 873.

602 **Holmes** (W. H.). Fossil human remains found near Lansing, Kansas.

Smith. Inst., Ann. Rept. for 1902, pp. 455–462, pls. 1–3, 1903.

Reprinted by permission from the American Anthropologist, new ser., vol. 4, October–December, 1902. See no. 526 of U. S. Geol. Surv., Bull. no. 221, 1903.

603 **Hopkins** (Thomas C.). Glacial climate.

Onondaga Acad. Sci., Proc., vol. 1, pp. 74–81, 1903.

Discusses the causes assigned for the climate of Glacial times, especially the hypothesis of the variation in amount of carbon dioxide in the atmosphere.

604 —— Lower Carboniferous area in Indiana.

Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 519–521, 1903.

Describes briefly the Carboniferous formations of the region.

605 —— **Smallwood** (W. M.) and. A discussion of the origin of some anticlinal folds near Meadville, Pennsylvania.

See Smallwood (W. M.) and Hopkins (T. C.), 1122.

606 **Hovey** (Edmund Otis). [Abstracts of papers on geology and geography read before Section E of the American Association for the Advancement of Science at the Washington meeting.]

Science, new ser., vol. 17, pp. 217–229, 1903.

607 —— The annual meeting of the Geological Society of America, and geology and geography at the convention of the American Association for the Advancement of Science.

Sci. Am. Suppl., vol. 55, pp. 22646–22648, 22665–22667, 1903.

608 —— The new cone of Mont Pelé and the gorge of the Rivière Blanche, Martinique.

Am. Jour. Sci., 4th ser., vol 16, pp. 269–281, figs. 1–9, 1903.

609 —— Martinique and St. Vincent revisited.

Am. Mus. Jour., vol. 3, pp. 41–55, ill., 1903.

Describes phenomena connected with the eruptions of Mont Pelé and La Soufrière.

610 —— 'Mount Pelee.'

Science, new ser., vol. 17, p. 1010, 1903.

Discusses the proper form of the name of this volcano.

611 —— Mont Pelé from May to October, 1903.

Science, new ser., vol. 18, pp. 633–634, 1903.

Describes changes in the spine of Mont Pelé.

612 —— The marvelous obelisk of Mont Pelé.

Sci. Am., vol. 89, p. 407, ill., 1903; Sci. Am. Suppl., vol. 56, pp. 23354–23355, 1903.

Describes the appearance, character, and formation of the "spine" and other volcanic phenomena.

613 **Hovey** (Edmund Otis). The volcanoes of the Caribbean Islands. Appearance of Mont Pelé, Martinique, and La Soufrière, St. Vincent, one year after the great eruption.
Sci. Am. Suppl., vol. 56, pp. 23011–23014, ill., 1903.

614 —— The inner cone of the Mont Pelée crater and its relation to the destruction of Morne Rouge.
Abstract: Science, new ser., vol. 17, p. 226, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

615 —— Some erosion phenomena on Mont Pelée and Soufrière.
Abstract: Science, new ser., vol. 17, p. 226, 1903; Sci. Am. Suppl., vol. 55, pp. 22647–22648, 1903.

616 —— Notes on the Triassic and Jurassic strata of the Black Hills of South Dakota and Wyoming.
Abstract: N. Y. Acad. Sci., Ann., vol. 14, p. 152, 1902.

617 **Howarth** (O. H.). Geological features of the Azores; interesting illustrations of peculiar volcanic effects, both past and present.
Mines & Minerals, vol. 23, pp. 385–388, figs. 1–4, 1903.

618 **Howe** (Ernest). Recent tuffs of the Soufrière, St. Vincent.
Am. Jour. Sci., 4th ser., vol. 16, pp. 317–322, 1903.
Describes character and occurrence of deposits of volcanic ejecta.

619 **Howe** (James Lewis), **Campbell** (H. D.) and. A new (?) meteoric iron from Augusta Co., Virginia.
See Campbell (H. D.) and Howe (J. L.), 163.

620 **Howley** (James P.). Report of geological exploration in the district of White Bay, N. F., during the season of 1902.
Newfoundland Geol. Surv. 28 pp., 1903.
Describes observations upon the geology of northern Newfoundland.

621 **Hrdlička** (Aleš). The Lansing skeleton.
Am. Anthropologist, new ser., vol. 5, pp. 323–330, fig. 8, 1903.
Gives a detailed description of the skeleton and its parts, and a comparison with that of the American Indian.

622 **Hunter** (A. F.). The Algonquin shore line in Simcoe County, Ontario.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 279–302, 1903.

623 **Huntington** (Ellsworth) and **Goldthwait** (James Walter). The Hurricane fault in southwestern Utah.
Jour. Geol., vol. 11, pp. 46–63, figs. 1–10, 1903.
Gives a table showing the succession of formations in the region and describes physiographic features and its geologic history.

624 **Hurley** (Thomas Jefferson). Famous gold nuggets of the world.
64 pp., ill., 1900. (Private publication.)

625 **Hyatt** (Alpheus). Pseudoceratites of the Cretaceous. Edited by T. W. Stanton.

U. S. Geol. Surv., Mon. vol. 44, 351 pp., 47 pls., 1903.

Discusses briefly structural details of Jurassic Ammonites and gives systematic descriptions of genera and species of Cretaceous Pseudoceratites from North America and other parts of the world.

I.

626 **Iddings** (Joseph Paxson). Chemical composition of igneous rocks expressed by means of diagrams with reference to rock classification on a quantitative chemico-mineralogical basis.

U. S. Geol. Surv., Professional Paper no. 18, 98 pp., 8 pls. (diagrams), 1903.

Reviews the use of diagrams in representing the composition of igneous rocks, discusses the purpose and construction of the diagrams employed by the writer, gives a classified list of analyses used in constructing the diagrams, and a general discussion of igneous rocks as to occurrence, composition, correlation, and classification.

627 —— and others. Quantitative classification of igneous rocks.

See Cross (Whitman) and others, 251.

628 **Ihlseng** (Magnus C.). The road making materials of Pennsylvania.

Pa. Dept. Agric., Bull. no. 69, 104 pp., ill., 1900.

Includes notes on the composition and occurrence of rocks suitable for road making materials.

629 **Ingall** (E. D.). Geology of the Bruce Mines district [Ontario].

Can. Geol. Surv., Summ. Rept. for 1902, pp. 242–252, 1903.

Describes the character and occurrence of rocks, the occurrence of copper and iron ore deposits, and the mining operations.

630 **Irving** (John Duer). Ore deposits of the northern Black Hills.

Mg. & Sci. Press, vol. 87, pp. 166–167, 187–188, 205, 221–222, 1903.

Describes the general geology of the region and the character and geologic occurrence of the gold ore deposits.

J.

631 **Jackson** (J. F.). Copper mining in Upper Michigan, a description of the region, the mines, and some of the methods and machinery used.

Mines & Minerals, vol. 23, pp. 535–540, figs. 1–9, 1903.

Contains observations on the occurrence of the copper ore deposits.

632 **Jacobs** (E.). Ore quarrying in the Boundary district of British Columbia.

Eng. Mag., vol. 26, pp. 236–249, ill., 1903.

Describes briefly the occurrence and character of copper ore deposits.

633 **J[aggar]**, T. A. Professor Heilprin on Mont Pelée.

Science, new ser., vol. 17, pp. 423–425, 1903.

Reviews the "Mont Pelée and the tragedy of Martinique" of Angelo Heilprin, and discusses phenomena connected with the eruptions.

634 **Jefferson** (Mark S. W.). Mount Pelee.
Science, new ser., vol. 17, p. 909, 1903.
Discusses the proper writing of the name of this volcano.

635 **Jefferson** (S. W.). Some shore features of Lake Huron.
Abstract: Science, new ser., vol. 17, p. 221, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

636 **Jenney** (Walter P.). The mineral crest, or the hydrostatic level attained by the ore-depositing solutions, in certain mining districts of the Great Salt Lake Basin.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 46–50, 1903.

637 —— The chemistry of ore-deposition.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 445–498, 1903.
Discusses the action of carbon and hydrocarbons in the formation of ore deposits.

638 —— Deposition of ores in limestone.
Mg. & Sci. Press, vol. 86, pp. 317–318, 1903.

639 **Jennings** (E. P.). The copper deposits of the Kaibab Plateau, Arizona.
Am. Inst. Mg. Engrs. (New York meeting, October, 1903), 3 pp.
Describes the general geology and occurrence of the ore deposits, containing copper chiefly.

640 **Jensen** (Charles A.) and **Olshausen** (B. A.). Soil survey of the Yakima area, Washington.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 389–419, pls. 53–63, 1902.
Includes a brief account of the physiography and geology.

641 —— and **Olshausen** (B. A.). Soil survey of the Boise area, Idaho.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 421–446, pls. 64–68, 1902.
Includes a brief account of the geology and physiography.

642 —— and **Neill** (N. P.). Soil survey of the Billings area, Montana.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 665–687, pls. 39–41, 1903.
Includes a brief account of the physiography and geology of the area.

643 —— and **Neill** (N. P.). Soil survey of the Grand Forks area, North Dakota.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 643–663, pls. 35–38, 1903.
Includes a short account of the physiography and geology.

644 —— **Gardner** (Frank D.) and. Soil survey in the Sevier Valley, Utah.
See Gardner (F. D.) and Jensen (C. A.), 434.

645 **Jensen** (Charles A.), **Gardner** (Frank D.) and. Soil survey in Weber County, Utah.

See Gardner (F. D.) and Jensen (C. A.), 433.

646 **Johnson** (Douglas Wilson). Geology of the Cerrillos Hills, New Mexico. Part I. General geology.

School of Mines Quart., vol. 24, pp. 303–350, pls. A–G, figs. 1–7; pp. 456–500, pls. H–P, figs. 8–14, 1903.

Describes the geographic and physiographic features, reviews previous geologic work upon the district, gives a detailed account of the stratigraphy, mainly Cretaceous and Tertiary, areal geology and intrusive rocks, discusses the physiographic and general geologic history, and describes the character, occurrence, and production of coal and turquoise.

647 —— The geology of the Cerrillos Hills, New Mexico. Part II. Paleontology.

School of Mines Quart., vol. 24, pp. 173–246, pls. 1–14, 1903.

Gives a brief description of the geologic formations and faunal lists by localities, and systematic descriptions of the fossils collected.

648 —— The geology of the Cerillos Hills, New Mexico. Part III. Petrography.

School of Mines Quart., vol. 25, pp. 69–98, pls. Q–U, 1903.

Describes the occurrence and characters, megascopic and microscopic, of the igneous rocks of this region.

649 —— Block mountains in New Mexico.

Am. Geol., vol. 31, pp. 135–139, pl. 12, 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 93, 1903.

Gives observations on faulting in the block mountains of New Mexico.

650 —— Notes on the geology of the saline basins of central New Mexico.

Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 161–162, 1902.

651 **Johnson** (J. E., jr.). Origin of the Oriskany limonites [Virginia].

Eng. & Mg. Jour., vol. 76, pp. 231–232, 1903.

Describes the general geologic structure of the region and the occurrence and origin of the iron ores.

652 **Johnson** (William H.). The lead and zinc fields of the Ozark uplift.

Am. Bur. Geog., Bull., vol. 2, pp. 59–73, ill., 1901.

Gives a general account of the development of the Missouri-Arkansas-Kansas lead and zinc mining district, and discusses briefly the general geology and the formation and character of the ores.

653 **Jones** (Alfred W.). Further studies in the Mentor beds [Kansas].

Kans. Acad. Sci., Trans., vol. 18, pp. 104–105, 1903.

654 **Jones** (Grove B.), **Bennett** (Frank, jr.) and. Scil survey of the Brazoria area, Texas.

See Bennett (Frank, jr.) and Jones (G. B.), 69.

655 **Jones** (T. Rupert). On some Isochilinæ from Canada and elsewhere in North America.
Geol. Mag., new ser., dec. 4, vol. 10, pp. 300–304, figs. 1–3, 1903.
Includes a catalogue of the known Isochilinæ, giving geologic occurrence and citation to description.

656 **Julien** (Alexis A.). Genesis of the amphibole schists and serpentines of Manhattan Island, New York.
Geol. Soc. Am., Bull., vol. 14, pp. 421–494, pls. 60–63, figs. 1–9, 1903.
Describes the character, occurrence, and origin of these rocks and their metamorphic phases and contact alterations.

657 —— Erosion by flying sand on the beaches of Cape Cod.
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 152–153, 1902.

K.

658 **Keith** (Arthur). Topography and geology of the southern Appalachians.
Message from the President of the United States, transmitting a report of the Secretary of Agriculture in relation to the forests, rivers, and mountains of the southern Appalachian region (Senate Doc. no. 84, 57th Cong., 1st sess.), pp. 111–123, pls. 58–68, 1902.
Contains a brief account of the general geology of the region.

659 —— Cranberry folio, North Carolina-Tennessee.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 90, 1903.
Describes geographic and topographic features, general geologic relations and structure, character and occurrence of Archean, Algonkian, Cambrian, and Juratrias (?) rocks, and mineral resources.

660 —— Iron-ore deposits of the Cranberry district, North Carolina-Tennessee.
U. S. Geol. Surv., Bull. no. 213, pp. 243–246, 1903.
Describes the character and occurrence of the iron ores of this region.

661 —— Tennessee marbles.
U. S. Geol. Surv., Bull. no. 213, pp. 366–370, 1903.
Describes the occurrence and character of marble deposits in eastern Tennessee, and locations suitable for quarrying.

662 —— Talc deposits of North Carolina.
U. S. Geol. Surv., Bull. no. 213, pp. 433–438, 1903.
Describes character, occurrence, and methods of mining the talc deposits.

663 **Kemp** (James Furman). The anthracite situation and problem.
Eng. Co. Am., Bull. no. 1, 22 pp., 1903.
Contains a brief account of the character and occurrence of anthracite and the geologic structure of the anthracite fields of Pennsylvania.

664 —— Memoir of Theodore Greely White.
Geol. Soc. Am., Bull., vol. 13, pp. 516–517, 1903.
Includes a list of publications.

665 **Kemp** (James Furman). Igneous rocks and circulating waters as factors in ore-deposition.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 699–714, 1903.

666 —— Platinum in the Rambler mine, Wyoming.
Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 93, 7 pp., pl. 1, fig. 1, 1903.
Describes the general geology of the vicinity of the mine and the occurrence of the platinum-bearing ores.

667 —— A new spheroidal granite.
Science, new ser., vol. 18, pp. 503–504, 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 93, 1903.
Describes character and occurrence of spheroidal granite in a bowlder found near Charlevoix, Michigan.

668 —— On the differentiation of igneous magmas and the formation of ores.
Eng. & Mg. Jour., vol. 76, pp. 804–805, 1903.

669 —— The Cambro-Ordovician outlier at Wellstown, Hamilton County, New York.
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 113–115, 1902.

670 —— A new asbestos region in northern Vermont.
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 140–141, 1902.

671 —— Notes on the physiography of Lake George.
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 141–142, 1902.

672 —— Theodore G. White (Obituary).
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 148–149, 1902.

673 —— Comments on the geology of Bingham Canyon, Utah.
Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 76–77, 1903.

674 —— The leucite hills of Wyoming.
Abstract: Science, new ser., vol. 17, p. 505, 1903.

675 —— Genetic classification of ore deposits.
Abstract: Science, new ser., vol. 17, p. 542, 1903.

676 —— and **Grabau** (A. W.). The Washington meeting of the Geological Society of America, December 30, 31, 1902, January 1 and 2, 1903.
Science, new ser., vol. 17, pp. 290–303, 1903.
Gives abstracts of papers read.

677 —— and **Knight** (W. C.). Leucite hills of Wyoming.
Geol. Soc. Am., Bull., vol. 14, pp. 305–336, pls. 37–46, 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 94, 1903.
Reviews previous work, describes the geographic situation and general character of the region, the general geology, and in detail the twenty-two leucite hills with especial reference to physiographic features and petrographic character.

678 **Kemp** (James Furman), **Finlay** (George I.) and. The nephelite syenite area of San Jose, Tamaulipas, Mexico.
See Finlay (G. I.) and Kemp (J. F.), 397.

679 **Kennedy** (William), **Hayes** (C. W.) and. Oil fields of the Texas-Louisiana Gulf coastal plain.
See Hayes (C. W.) and Kennedy (William), 532.

680 **Keyes** (Charles Rollin). Geological structure of New Mexican bolson plains.
Am. Jour. Sci., 4th ser., vol. 15, pp. 207–210, 3 figs., 1903.
Describes the characters of these plains and the geologic history of the region.

681 —— Ephemeral lakes in arid regions.
Am. Jour. Sci., 4th ser., vol. 16, pp. 377–378, 1903.

682 —— Some recent aspects of the Permian question in America.
Am. Geol., vol. 32, pp. 218–223, 1903.
Discusses questions of nomenclature and taxonomic rank.

683 —— A remarkable silver pipe.
Eng. & Mg. Jour., vol. 76, p. 805, 1903.
Discusses the occurrence and origin of "pipe-veins," and an occurrence in central New Mexico.

684 —— Geology of the Apache Cañon placers [New Mexico].
Eng. & Mg. Jour., vol. 76, pp. 966–967, ill., 1903.
Describes the location of the placers, the discovery of the placer gold, the geology of the Sierra de los Caballos Mountains, and the occurrence of fissure veins.

685 —— Significance of the occurrence of minute quantities of metalliferous minerals in rocks.
Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 99–103, 1903.

686 —— Genesis of certain cherts.
Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 103–105, 1903.

687 —— Comparative values of different methods of geologic correlation in the Mississippi Basin.
Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 105–107, 1903.

688 **Kilham** (John T.). The oil wells of the United States.
Onondaga Acad. Sci., Proc., vol. 1, pp. 136–148, 1903.
An historical account of the discovery of oil and the development of the oil industry.

689 **Kindle** (Edward M.). The Niagara domes of northern Indiana.
Am. Jour. Sci., 4th ser., vol. 15, pp. 459–468, figs. 1–4, 1903.
Discusses general structure and deformation of Niagara strata.

690 **Kinzie** (Robert A.). The Treadwell group of mines, Douglas Island, Alaska.
Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903), 53 pp., 14 figs.
Includes a brief description of the geology of the district.

691 **Kinzie** (Robert A.). Mining at the Alaska Treadwell.
Eng. & Mg. Jour., vol. 76, pp. 583–587, ill., 1903.
Describes the occurrence of the ore and the methods of mining.

692 **Kirby** (Edmund B.). Methods of testing and sampling placer deposits.
Colo. Sci. Soc., Proc., vol. 6, pp. 186–199 [1902].
Describes the method of examination of gravel deposits for gold.

693 **Kirsopp** (John, jr.). The coal fields of Cook Inlet, Alaska, U. S. A., and the Pacific coast.
Inst. Mg. Engrs. [England], Trans., vol. 21, pp. 516–566, pls. 16–17, 1903.
Describes geologic occurrence of coal in Alaska and distribution of coal in Alaska, British Columbia, and Washington.

694 **Knight** (Nicholas). Apatite crystals, Antwerp, New York.
Am. Geol., vol. 31, p. 62, 1903.

695 **Knight** (Wilbur Clinton). Coal fields of southern Uinta County, Wyoming.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 542–544, 1903.
Describes briefly the Cretaceous strata of the region and gives chemical analyses of the coal.

696 —— Some notes on the genus Baptanodon, with a description of a new species.
Am. Jour. Sci., 4th ser., vol. 16, pp. 76–81, figs. 1–3, 1903.

697 —— and **Slosson** (E. E.). The Bonanza, Cottonwood, and Douglas oil fields.
Wyo. Univ., Sch. of Mines, Petroleum series, no. 6, 30 pp., 1903.
Describes geographic location and geologic structure of these fields, the character of the oil, and the possibilities of production.

698 —— **Kemp** (J. F.) and. Leucite hills of Wyoming.
See Kemp (J. F.) and Knight (W. C.), 677.

699 **Knowlton** (F. H.). Description of a new fossil species of Chara.
Torreya, vol. 2, pp. 71–72, 1 fig., 1902.

700 —— See Diller (J. S.), 302.

701 **Knox** (Newton Booth). Dredging and valuing dredging-ground in Oroville, California.
Can. Mg. Rev., vol. 22, pp. 211–213, 1903.
Contains observations on the occurrence of gold in the placer deposits.

702 **Kofoid** (C. A.). The plankton of the Illinois River, 1894–1899, with introductory notes upon the hydrography of the Illinois River and its basin. Part I. Quantitative investigations and general results.
Ill. State Lab. Nat. Hist., Bull., vol. 6, pp. 95–629, pls. 1–50, 1903.
Includes a brief account of geologic and hydrographic features of the Illinois River Basin.

703 **Kolderup** (Carl Fred). The rock name anorthosyte.
Am. Geol., vol. 31, pp. 392–393, 1903.

704 **Kümmel** (Henry B.). Administrative report [of the State geologist of New Jersey].
N. J. Geol. Surv., Ann. Rept. for 1902, pp. 5–24, 1903.
Reviews the work of the New Jersey Geological Survey during the year ending October 31, 1902.

705 —— The iron and zinc mines [New Jersey].
N. J. Geol. Surv., Ann. Rep. for 1902, pp. 115–122, 1903.
Describes the occurrence of the ores and the mining operations.

706 —— A summary of the work of the Geological Survey of New Jersey, with a subject index to its reports.
N. J. Geol. Surv., Summary and Index to Repts., 27 pp., 1903.

707 **Kunz** (George Frederick). On a new lilac-colored transparent spodumene.
Am. Jour. Sci., 4th ser., vol. 16, pp. 264–267, pl. 10, 1903.
Describes occurrence and characters.

708 —— Californite (vesuvianite), a new ornamental stone.
Am. Jour. Sci., 4th ser., vol. 16, pp. 397–398, 1903.
Describes occurrence, characters, and composition.

709 —— Native bismuth and bismite from Pala, California.
Am. Jour. Sci., 4th ser., vol. 16, p. 398, 1903.

710 —— On a new lilac-colored transparent spodumene.
Science, new ser., vol. 18, p. 280, 1903.
Describes character and occurrence of spodumene from San Diego County, California.

L.

711 **Lacroix** (A.) Mission de la Martinique.
Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 147–150, 1902.
Describes observations upon Mont Pelé and the surrounding country after the eruptions.

712 —— Sur les roches rejetées par l'éruption actuelle de la Montagne Pelée.
Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 451–454, 1902.
Discusses the character of rocks ejected by Mont Pelé.

713 —— Les enclaves des andésites de l'éruption actuelle de la Montagne Pelée.
Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 470–472, 1902.
Discusses the composition of rocks ejected by Mont Pelé.

714 —— Nouvelles observations sur les éruptions volcaniques de la Martinique.
Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 672–674, 1902.
Records observations upon the effects of the volcanic eruptions in Martinique.

715 **Lacroix** (A.). Sur l'état actuel du volcan de la Montagne Pelée, à la Martinique.

Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 771–773, 1902.

Gives observations upon conditions prevailing at the summit of Mont Pelé at the time of the writer's visit.

716 —— État actuel du volcan de la Martinique.

Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 992–997, 1902.

Gives observations made during an ascent of Mont Pelé by the writer on November 8, 1902.

717 —— Quelques observations minéralogiques faites sur les products de l'incendie de Saint-Pierre (Martinique).

Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 1068–1071, 1902.

Describes effects of the conflagration at St. Pierre upon the andesites used in buildings.

718 —— Nouvelles observations sur les éruptions volcaniques de la Martinique.

Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 1301–1307, 1902.

Describes observations upon volcanic phenomena of Mont Pelé during November and December of 1902.

719 —— Les éruptions des nuages denses de la Montagne Pelée.

Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 216–218, 1903.

Describes eruptive phenomena of Mont Pelé.

720 —— L'éruption de la Montagne Pelée en janvier, 1903.

Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 442–443, 1903.

Describes an eruption of Mont Pelé that took place in January of 1903.

721 —— Sur l'état actuel de la Soufrière de la Guadeloupe.

Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 656–659, 1903.

Describes the volcanic activity of Soufrière in Guadeloupe.

722 —— Sur une éruption du volcan de Saint Vincent.

Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 803–807, 1903.

Describes observations upon the volcano Soufrière in the Island of St. Vincent.

723 —— Principaux résultats de la mission de la Martinique.

Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 871–876, 1903.

Discusses volcanic phenomena observed on the Island of Martinique.

724 —— La cordiérite dans les produits éruptifs de la Montagne Pelée et de la Soufrière de Saint Vincent.

Acad. des Sci. [Paris], Compt. rend., vol. 137, pp. 145–147, 1903.

Describes the composition and mode of formation of some eruptive products of Mont Pelé and the Soufrière of St. Vincent.

725 —— Les enclaves basiques des volcans de la Martinique et de Saint Vincent.

Acad. des Sci. [Paris], Compt. rend., vol. 137, pp. 211–213, 1903.

Discusses the composition of some eruptive products of Mont Pelé (1902) and of the Soufrière of St. Vincent.

726 **Lacroix** (A.). Les dernières éruptions de Saint-Vincent.
Ann. de Geog., Paris, no. 63, 12e Année, pp. 261–268, pls. 10–12, 1903.
Describes observations upon volcanic phenomena in the Island of St. Vincent.

727 —— **Rollet de l'Isle** and **Giraud** (J.). Sur l'éruption de la Martinique.
Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 377–391, 419–431, 1902.
Gives a general account of the eruptions of Mont Pelé, with observations upon various volcanic phenomena, topographic changes, and the character and occurrence of the ejectamenta.

728 **Lakes** (Arthur). Aguilar coal and oil district. A description of the geology, the thickness and quality of the coal veins, and the indications of oil.
Mines & Minerals, vol. 23, pp. 196–198, 4 figs., 1903.

729 —— The soils of Colorado in relation to their geological origin and surroundings, and their availability for irrigation.
Mines & Minerals, vol. 23, pp. 207–209, 1903.

730 —— The La Plata Mountains. Observations on their formations and the influence of the different igneous rocks upon mineralization.
Mines & Minerals, vol. 23, pp. 222–223, 2 figs., 1903.

731 —— Recent earth movements. An account of some movements in the Rocky Mountains as shown by effects on streams and mines.
Mines & Minerals, vol. 23, p. 228, 1903.

732 —— Summit County placers of Colorado; a description of the great hydraulic works now nearing completion near Breckenridge.
Mines & Minerals, vol. 23, pp. 241–244, 6 figs., 1903.
Describes the general geology and the occurrence of placer gold.

733 —— Redcliff ore deposits. Not unlike in some respects to the ore deposits of the Mancos contact and the American Nettie at Ouray [Colorado].
Mines & Minerals, vol. 23, pp. 252–253, 1903.
Describes the occurrence of the gold ore deposits.

734 —— The Bellevue mining district of Idaho; the geological peculiarities of the veins as shown in the Minnie Moore and the Queen of the Hills mines.
Mines & Minerals, vol. 23, pp. 271–272, 4 figs., 1903.

735 —— Secondary enrichment of ore deposits—its causes and effects—the conclusions of various authorities.
Mines & Minerals, vol. 23, p. 347, 1903.

736 **Lakes** (Arthur). The Silver Lake mine, near Silverton, San Juan County, Colo. An instance of successful operation of a large mine at high altitude.
Mines & Minerals, vol. 23, pp. 389–390, 2 figs., 1903.
Includes notes on the occurrence and geologic relations of the silver-lead ores.

737 —— The present oil situation in Colorado; a review of the histories of the several regions, and the discoveries which have been made.
Mines & Minerals, vol. 23, pp. 399–401, 2 figs., 1903.
Includes an account of the geology of the Boulder oil field.

738 —— Geology and economics along the line of the new Moffat railway, to be built from Denver to Salt Lake City.
Mines & Minerals, vol. 23, pp. 418–419, 1 fig., 1903.
Gives observations on the geology of the region.

739 —— Creede mining camp. Valuable mines opened through the Nelson and Humphreys tunnels. A description of the Humphreys mill.
Mines & Minerals, vol. 23, pp. 433–435, 2 figs., 1903.
Describes briefly the general geology and occurrence of the silver-lead ores.

740 —— A trip to Chihuahua, old Mexico. A description of the Descubidoro mine, with some impressions of the country, the people, and the mines.
Mines & Minerals, vol. 23, pp. 446–447, 3 figs., 1903.
Contains observations on the geology and the occurrence of the silver and gold ores.

741 —— Zinc deposits: their geology and origin as shown in Wisconsin, Arkansas, Missouri, and Tennessee.
Mines & Minerals, vol. 23, p. 468, 1903.

742 —— Peculiar mines and ore deposits of the Rosita and Silver Cliff mining district of Colorado. Ore deposits in a volcanic throat.
Mines & Minerals, vol. 23, pp. 487–489, figs. 1–4, 1903.

743 —— Santa Eulalia mines. A trip to the ancient and very rich silver-lead mines in the Santa Eulalia Mountains, near Chihuahua, Mexico.
Mines & Minerals, vol. 23, pp. 529–531, figs. 1–5, 1903.
Describes the general geology and the occurrence of the silver-lead ore deposits.

744 —— A remarkable occurrence in the depths of a fissure vein.
Mines & Minerals, vol. 23, p. 534, 1 fig., 1903.
Describes the occurrence of a carbonized tree in a fissure vein of quartz.

745 **Lakes** (Arthur). Geologizing by the seaside. Illustrations of geological phenomena related to mining as shown in the sea cliffs and caves at La Jolia, near San Diego, Cal.
Mines & Minerals, vol 23, pp. 543–545, figs. 1–6, 1903.
Describes observations upon the geology and geologic phenomena of the region.

746 —— The sea and mining. Illustrations shown at seacoast of manner of making and destruction of rocks by action of shellfish and erosion.
Mines & Minerals, vol. 24, pp. 12–14, figs. 1–6, 1903.
Describes erosion and sedimentation processes and the destructive action of boring sea shells.

747 —— Mud volcanoes. Present-day illustrations of mudflows and formations resembling some older ones in which mineral deposits have been found.
Mines & Minerals, vol. 24, p. 33, 2 figs., 1903.

748 —— Bonanzas and pockets of ore. Some of the causes of their deposition and origin as illustrated in various mines.
Mines & Minerals, vol. 24, pp. 52–53, figs. 1–3, 1903.
Describes the formation of ore deposits.

749 —— Coal and asphalt deposits along the Moffat railway. Geological conditions shown which promise valuable deposits at workable depths.
Mines & Minerals, vol. 24, pp. 134–136, 4 figs., 1903.
Describes the general geology and the occurrence and character of coal and asphalt deposits.

750 —— The geology of the oil fields of Colorado.
Colo. Sch. Mines, Bull., vol. 1, pp. 221–226, 1901.
Describes the stratigraphy and geologic structure of the oil fields and the occurrences of oil.

751 **Lambe** (Lawrence M.). The lower jaw of Dryptosaurus (Cope).
Ottawa Nat., vol. 17, pp. 133–139, pls. 1–3, 1903.

752 —— Stegoceras and Stereocephalus.
Science, new ser., vol. 18, p. 60, 1903.

753 **Landes** (Henry) and **Ruddy** (C. A.). Coal deposits of Washington.
Wash. Geol. Surv., vol. 2, Ann. Rept. for 1902, pp. 165–277, pl. 23, figs. 1–46, 1903.
Describes character, geographic distribution, and geologic relations of the coal beds of Washington, the occurrence, thickness, and value of the coal seams, and constitution and fuel value of the coals.

754 **Lane** (Alfred C.). Queneau on size of grain in igneous rocks.
Am. Jour. Sci., 4th ser., vol. 14, pp. 393–396, 1902.

755 **Lane** (Alfred C.). Recent work of the Geological Survey [Michigan].
Mich. Acad. Sci., 3d Rept., pp. 38–39, 1902.

756 —— Notes on the origin of Michigan boglimes.
Mich. Geol. Surv., vol. 8, pt. 3, pp. 199–223, pl. 16, figs. 16–20, 1903.

757 —— List of localities and mills [manufacturing Portland cement].
Mich. Geol. Surv., vol. 8, pt. 3, pp. 224–342, 1903.
Includes notes on the occurrence of marls and clays and analyses of materials used in the manufacture of cements.

758 —— Studies of the grain of igneous intrusives.
Geol. Soc. Am., Bull., vol. 14, pp. 369–384, pls. 54–58, 1903.
Discusses the grain of augite in a group of chemically similar diabases.

759 —— Porphyritic appearance of rocks.
Geol. Soc. Am., Bull., vol. 14, pp. 385–406, 1903.
Discusses the origin of variation in texture of igneous rocks as the margin is approached.

760 —— Report on certain lands leased for oil and gas near Cannel City, Morgan County, Kentucky.
Lansing, 12 pp., 1902. (Private publication.)
Gives an account of the geologic structure of the region.

761 —— Annual report of the Geological Survey of Michigan.
Mich. Miner, vol. 5, no. 2, pp. 16–26, 1903; reprinted as separate, 26 pp., 1903.
Discusses the occurrence and utilization of various economic products found in Michigan.

762 —— Geological changes now going on.
Mich. Eng., pp. 102–105, 1903.
Describes erosion on lake shores and changes in elevation.

763 —— The economic geology of Michigan.
Abstract: Eng. & Mg. Jour., vol. 75, p. 152, 1903; Science, new ser., vol. 17, p. 218, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

764 —— Variation of geothermal gradient in Michigan.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 528–529, 1903.
Presents data regarding underground variations of temperature.

765 **Langley** (S. P.). Powell as a man.
Wash. Acad. Sci., Proc., vol. 5, pp. 127–130, 1903.

766 —— The greatest flying creature.
Sci. Am. Suppl., vol. 55, pp. 22644–22645, ill., 1903.
Discusses flight in the Ornithostoma, introducing a paper by F. A. Lucas [see no. 817] with the same title.

767 **Lapham** (J. E.) and party. Soil survey of the Vernon area, Texas.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 365–381, 1903.
Includes a short account of the physiography and geology.

768 **Lapham** (J. E.). Soil survey of the Stuttgart area, Arkansas.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 611–622, 1903.
Includes a short account of the physiography and geology.

769 —— and **Miller** (M. F.). Soil survey of Montgomery County, Tennessee.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 341–357, pls. 39–43, 1902.
Includes a short account of the physiography and geology.

770 —— and **Olshausen** (B. A.). Soil survey of the Wichita area, Kansas.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 623–642, 1903.
Includes an account of the physiography and geology.

771 **Lapham** (Macy H.). Soil survey of the lower Arkansas Valley, Colorado.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 729–776, pls. 43–53, 1903.
Includes an account of the physiography and geology.

772 —— and **Heileman** (W. H.). Soil survey of the Hanford area, California.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 447–480, pl. 59, 1902.
Includes a short account of the geology and physiography.

773 —— and **Heileman** (W. H.). Soil survey of the lower Salinas Valley, California.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 481–519, pls. 73–77, 1902.
Includes a short account of the physiography and geology.

774 **Lawson** (Publius V.). Preliminary notice of the forest beds of the lower Fox [River, Wisconsin].
Wis. Nat. Hist. Soc., Bull., vol. 2, pp. 170–173, 1902.
Describes the occurrence and character of forest beds in Quaternary deposits.

775 **Lawson** (Andrew C.). Plumasite, an oligoclase-corundum rock.
Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 219–229, 1903.
Discusses occurrence of corundiferous rocks, and describes the occurrence and characters of this corundum rock discovered on Spanish Peak in Plumas County, California.

776 —— Geological section of the middle coast ranges of California.
Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 544–545, 1903.
In a table gives the names of the formations and their lithologic characters and thickness.

777 **Leach** (J. C.). Report of the State natural gas supervisor.
Ind., Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 426–444, 1903.

778 **Leach** (J. C.). Annual report of the State natural gas supervisor
Ind., Dept. Geol. & Nat. Res., 27th Ann. Rept., pp. 477–493, 1903.

779 **Leach** (W. W.). The Blairmore-Frank coal fields.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 167–179, 1903.
Describes the geologic structure of the area.

780 **Le Conte** (Joseph). The autobiography of Joseph Le Conte, edited by William Dallam Armes.
New York, D. Appleton and Company, xvii, 337 pp., 1903.

781 —— Elements of geology: a text-book for colleges and for the general reader. Revised and partly rewritten by Herman Le Roy Fairchild. Fifth edition.
New York, D. Appleton and Company, xii, 667 pp., 1002 figs., 1903.

782 —— The origin of transverse mountain valleys and some glacial phenomena in those of the Sierra Nevada.
[Cal.] Univ. Chronicle, vol. 1, pp. 479–497, figs. 1–14, 1898.
Describes the geologic history of the Sierra Nevada, the origin of certain mountain valleys, and the glacial phenomena in these valleys.

783 **Lee** (Harry A.). Colorado: Report of the State Bureau of Mines, Denver, U. S. A. For the years 1901–2.
Denver, 310 pp., map, 1903.
Gives a history of precious metal mining by counties in Colorado, with notes upon the geologic occurrence, production, etc., of precious metals and other minerals.

784 **Lee** (Willis T.). The canyons of northeastern New Mexico.
Jour. Geog., vol. 2, pp. 63–82, figs. 1–14, 1903.
Includes sections of the strata cut by some of the canyons described and gives a general account of the formations exposed.

785 —— Age of the Atlantosaurus beds.
Abstract: Science, new ser., vol. 17, pp. 292–293, 1903.

786 **Leith** (Charles Kenneth). The Mesabi iron-bearing district of Minnesota.
U. S. Geol. Surv., Mon., vol. 43, 316 pp., 33 pls., 12 figs., 1903.
Describes geography and topography, gives a brief history of the opening and development of the district and reviews the literature bearing on the geology of the region. Describes the lithologic character, occurrence, structure, and geologic relations of Archean, Huronian, Keweenawan, Cretaceous, and Quaternary deposits and discusses the geologic history of the region, the correlation of the formations, the distribution, character, and geologic occurrence of the iron ores, their petrographic relations to adjacent rocks and origin, and the development of the mining industry of the district.

787 —— Geologic work in the Lake Superior iron district during 1902.
U. S. Geol. Surv., Bull. no. 213, pp. 247–250, 1903.
Gives observations on the character and occurrence of the iron ores.

788 **Leith** (Charles Kenneth). Moose Mountain Iron Range [Ontario].
Ont. Bur. Mines, [12th] Rept., pp. 318–321, 1 fig., 1903.
Describes geologic features of the range and discusses the origin of the ore.

789 —— Summaries of pre-Cambrian literature for 1902–1903.
Jour. Geol., vol. 12, pp. 52–62, 1903.

790 —— A comparison of the origin and development of the iron ores of the Mesabi and Gogebic iron ranges.
Lake Sup. Mg. Inst., Proc. for 1902, vol. 8, pp. 75–81 [1903].

791 **Leverett** (Frank). Old channels of the Mississippi in southeastern Iowa.
Annals of Iowa, 3d ser., vol. 5, pp. 38–51, 1901.
Describes the extent and history of the glaciation, the old drainage of the upper Mississippi, and the changes produced by the glaciation.

792 —— Summary of the literature of North American Pleistocene geology, 1901 and 1902.
Jour. Geol., vol. 11, pp. 420–428, 498–515, 587–611, 1903.

793 —— Glacial features of Lower Michigan.
Abstract: Science, new ser., vol. 17, p. 224, 1903.

794 **L'Hame** (Wm. E.). Thunder Mountain district [Idaho]. A description of the peculiarities of geology and situation of the various regions comprised in the district.
Mines & Minerals, vol. 24, pp. 207–209, 1903.
Describes the general geology and the occurrence of gold ore deposits.

795 **Liddell** (Charles A.), **Parsons** (H. F.) and. The coal and mineral resources of Routt County [Colorado].
See Parsons (H. F.) and Liddell (C. A.), 959.

796 **Lindgren** (Waldemar). Neocene rivers of the Sierra Nevada.
U. S. Geol. Surv., Bull. no. 213, pp. 64–65, 1903.
Gives a brief outline of work upon the Neocene gravels of the Sierra Nevada.

797 —— Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana.
U. S. Geol. Surv., Bull. no. 213, pp. 66–70, 1903.
Describes briefly the geography and general geology of the region, and the character and distribution of the ore deposits.

798 —— Copper deposits at Clifton, Ariz.
U. S. Geol. Surv., Bull. no. 213, pp. 133–140, 1903.
Describes topographic features and geologic structure, the character and occurrence of ore deposits and occurrences of gold-bearing gravels.

799 —— The water resources of Molokai, Hawaiian Islands.
U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 77, 62 pp., 4 pls., 1903.
Includes observations on the geology of the island.

800 **Lindgren** (Waldemar). The gold production of North America, its geological derivation, and probable future.
Intern. Mg. Cong., Proc. 5th sess., pp. 29–36 [1903].
Discusses the occurrence and production of gold.

801 —— The copper deposits of Clifton, Arizona.
Eng. & Mg. Jour., vol. 75, pp. 705–707, 3 figs., 1903.
Describes the geological structure and the character and occurrence of the deposits of copper ore.

802 —— The geological features of the gold production of North America.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 790–845, 1903.
Discusses the occurrence and geologic relations of gold-bearing veins and deposits and production of gold in general and in the several gold-producing States, Alaska, Canada, and Mexico.

803 —— [Classification of ore deposits.]
Abstract: Science, new ser., vol. 17, pp. 274–275, 1903.

804 —— Notes on the geology of Molokai, Hawaiian Islands.
Abstract: Science, new ser., vol. 17, p. 309, 1903.

805 —— Metallic sulphides from Steamboat Springs, Nevada.
Abstract: Science, new ser., vol. 17, p. 792, 1903.

806 —— and **Drake** (N. F.). Silver City folio—Idaho.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 104, 1903.
Describes geography, topography and drainage, the general geologic history and structure, the character and occurrence of igneous rocks and sedimentary deposits of Tertiary and Quaternary age, and the economic resources, chiefly precious metals.

807 **Lobley** (J. Logan). Volcanic action and the West Indian eruptions of 1902.
Victoria Inst., Jour. Trans., vol. 35, pp. 208–225, 1903.
Describes volcanic phenomena in general and more particularly those of the West Indian eruptions of 1902, and discusses geologic and geographic conditions, and the causes and results of volcanic action.

808 **Loomis** (Frederic B.). Die Anatomie und die Verwandschaft der Ganoid- und Knochen-fische aus der Kreide-formation von Kansas, U. S. A.
Paleontographica, vol. 46, pp. 213–284, pls. 19–27, 1900.
Discusses anatomy and relationships of the ganoid and teleost fishes from the Cretaceous strata of Kansas and gives systematic descriptions of a considerable number of forms.

809 —— The dwarf fauna of the pyrite layer at the horizon of the Tully limestone in western New York.
N. Y. State Mus., Bull. 69, pp. 892–920, pls. 1–5, 1903.
Describes character and occurrence of the fauna, discusses the causes of its dwarfing, and gives descriptions and figures of the species determined.

810 **Louderbach** (George D.). Some gypsum deposits of northwestern Nevada.
Abstract: Jour. Geol., vol. 11, p. 99, 1903.
Describes occurrence and character.

811 —— A structural section of a Basin range.
Abstract: Jour. Geol., vol. 11, pp. 102–103, 1903.
Describes the geologic structure and stratigraphic features of Humboldt Lake Range.

812 **Lovewell** (J. T.). Gold in Kansas shales.
Kans. Acad. Sci., Trans., vol. 18, pp. 129–133, 1 pl., 1903.
Describes the stratigraphy and discusses the evidence for the presence of gold in these shales.

813 —— Gold in Kansas.
Kans. Acad. Sci., Trans., vol. 18, pp. 134–137, 1 pl., 1903.
Describes experiments to determine amount of gold in Kansas shales.

814 **Lucas** (Frederic A.). Notes on the osteology and relationship of the fossil birds of the genera Hesperornis, Hargeria, Baptornis, and Diatryma.
U. S. Nat. Mus., Proc., vol. 26, pp. 545–556, figs. 1–8, 1903.

815 —— A skeleton of Hesperornis.
Smith. Misc. Coll., vol. 45, p. 95, pl. 27, 1903.

816 —— A new plesiosaur.
Smith. Misc. Coll., vol. 45, p. 96, pl. 27, 1903.

817 —— The greatest flying creature, the great pterodactyl Ornithostoma.
Sci. Am. Suppl., vol. 55, pp. 22645–22646, ill., 1903.
Discusses flight in birds and in the Ornithostoma as indicated by its anatomy.

818 **Lull** (Richard Swan). Skull of Triceratops serratus.
Am. Mus. Nat. Hist., vol. 19, pp. 685–695, pl. 59, 1 fig., 1903.

819 **Luquer** (Lea McI.), **Moses** (Alfred J.) and. Notes on recent mineralogical literature.
See Moses (Alfred J.) and Luquer (L. I.), 920.

820 **Luther** (D. Dana). Stratigraphy of Portage formation between the Genesee Valley and Lake Erie.
N. Y. State Mus., Bull. 69, pp. 1000–1029, figs. 1–13, 1903.
Describes character, occurrence, and geologic relations of Devonian strata in the Genesee Valley and other localities in western New York.

821 **Lyman** (Benjamin Smith). The original southern limit of the Pennsylvania anthracite beds.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 561–567, 1 fig., 1903.
Discusses topographic and other evidences that show that the anthracite region of Pennsylvania could never have extended far south of its present limits.

822 **Lyman** (Benjamin Smith). Biographical notice of J. Peter Lesley.
Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903), 35 pp., por.

M.

823 **Mabery** (Charles F.). A résumé of the composition and occurrence of petroleum.
Am. Phil. Soc., Proc., vol. 42, pp. 36–54, 1903.
Discusses composition, occurrence in Ohio, Canada, California, and Texas, and the natural formation of petroleum.

824 **Macbride** (Thomas H.). Geology of Kossuth, Hancock, and Winnebago counties [Iowa].
Iowa Geol. Surv., vol. 13, pp. 81–122, pls. 2–3, figs. 16–18, 1903.
Describes topography and drainage, deposits of Quaternary age, soils and economic resources.

825 **McCaffery** (Richard S.), **Yung** (Morrison B.) and. The ore deposits of the San Pedro district, New Mexico.
See Yung (M. B.) and McCaffery (R. S.), 1367.

826 **McCallie** (S. W.). An erratic bowlder from the Coal Measures of Tennessee.
Am. Geol., vol. 31, pp. 46–47, 1903.
Describes the occurrence of a bowlder of rhyolite in a coal seam near Chattanooga, Tenn.

827 —— Sandstone dikes near Columbus, Georgia.
Am. Geol., vol. 32, pp. 199–202, pls. 25–28, 1903.
Describes occurrence and character of sandstone dikes in Cretaceous clays.

828 —— The Barboursville oil-field, Kentucky.
Eng. & Mg. Jour., vol. 76, pp. 12–13, 1903.
Gives a brief sketch of the physiography and general geology of the region and the character and occurrence of the oil.

829 **McCaskey** (H. D.). Report on a geological reconnoissance of the iron region of Angat, Bulacan [Philippine Islands].
[Phil. Ilds.] Mg. Bur., Bull. no. 3, 62 pp., 41 pls., 1903.
Describes observations upon the geology, the occurrence of iron ore deposits, and the mining operations.

830 **McConnell** (R. G.). The Macmillan River, Yukon District.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 20–36, 1903.
Describes observations upon the physical features, general geology, and Glacial deposits of the region.

831 **MacDonald** (Bernard). The ore deposits of Rossland, British Columbia.
Eng. & Mg. Jour., vol. 76, pp. 198–199, ill., 1903.
Describes the geologic structure of the region and the occurrence and origin of the gold-copper ores.

832 **McGee** (W J). Powell as an anthropologist.
Wash. Acad. Sci., Proc., vol. 5, pp. 118–126, 1903.

833 **McInnes** (William). Region on the northwest side of Lake Nipigon.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 206–211, 1903.
Gives observations on the topography and geology of the region examined.

834 **Mackenzie** (George L.). A quick way of preparing sections of rocks.
Eng. & Mg. Jour., vol. 76, pp. 348–349, 1903.

835 **McLaughlin** (J. E.). Barela Mesa coal field [Colorado].
Mines & Minerals, vol. 24, p. 139, 1 fig., 1903.
Describes the occurrence and character of the coal seams, and gives a section of the associated strata.

836 **Madsen** (Victor). On Jurassic fossils from East-Greenland.
Meddelelser om Grönland, vol. 29, pp. 157–210, pls. 6–10, 1903; Copenhagen Univ., Mus. Min. & Geol., Comm. Paleont., no. 6, 1903.

837 **Mangum** (A. W.), **Caine** (Thomas A.) and. Soil survey of the Mount Mitchell area, North Carolina.
See Caine (T. A.) and Mangum (A. W.), 152.

838 **Manson** (Marsden). Evolution of climates.
Revised, enlarged, and reprinted from The American Geologist, vol. 24, nos. 2–4, 1899, 86 pp., 7 pls., 1903.

839 —— [On the length of post-Glacial time.]
Am. Geol., vol. 32, pp. 128–130, 1903.

840 **Marbut** (Curtis F.). The sandstones of the Ozark region in Missouri.
Abstract: Science, new ser., vol. 17, p. 291, 1903.

841 **Marean** (Herbert W.). Soil survey of the Covington area, Georgia.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 329–340, pls. 36–38, 1902.
Includes a brief account of the physiography and geology.

842 —— Soil survey of Union County, Kentucky.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 425–440, 1903.
Includes a short account of the physiography and geology.

843 —— Soil survey of Posey County, Indiana.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 441–463, pls. 25–26, 1903.
Includes a short account of the physiography and geology.

844 —— **Burke** (R. T. Avon) and. Soil survey of the Westfield area, New York.
See Burke (R. T. A.) and Marean (H. W.), 142.

845 **Marean** (Herbert W.), **Burke** (R. T. A.) and. Soil survey of Cobb County, Georgia.
See Burke (R. T. A.) and Marean (H. W.), 143.

846 **Martin** (D. S.). Geological notes on the neighborhood of Buffalo [New York].
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 162–163, 1902.

847 **Martin** (J. O.). Soil survey of the Willis area, Texas.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 607–619, 1902.
Includes a brief account of the physiography and geology.

848 —— and **Caine** (Thomas A.), **Mooney** (Charles N.). Soil survey of the Bedford area, Virginia.
See Mooney (C. N.), Martin (J. O.), and Caine (T. A.), 915.

849 —— **Smith** (W. G.) and. Soil survey of Harford County, Maryland.
See Smith (W. G.) and Martin (J. O.), 1143.

850 **Mathews** (Edward Bennett). Abstract of criticism of the quantitative classification of igneous rocks.
Am. Geol., vol. 31, pp. 399–400, 1903.

851 —— The practical working of the quantitative classification.
Abstract: Science, new ser., vol. 17, pp. 668–669, 1903.
Discusses the classification of igneous rocks.

852 —— See Merrill (G. P.), 890.

853 **Mathez** (Auguste). Geology of the Cananeas [Mexico].
Mg. & Sci. Press, vol. 86, pp. 352–353, 1903.
Describes the geology of the region and the occurrence of the copper ore deposits.

854 **Matthew** (George F.). Notes on Cambrian faunas. No. 5. Oboloid shells of the Cambrian system in Canada and their relationship.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 93–98, pl. 1, 1902.

855 —— Notes on Cambrian faunas. No. 6. Development in size of the inarticulate brachiopods of the basal Cambrian.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 99–105, 1902.
Describes the increase in size in successive Cambrian terranes of shells belonging to the genera Acrotreta, Acrothyra, Leptobolus, Lingulepis, Lingulella, and Obolus.

856 —— Notes on Cambrian faunas. No. 7. Did the upper Etcheminian fauna invade eastern Canada from the southeast?
Can. Roy. Soc., Proc & Trans., 2d ser., vol. 8, sect. 4, pp. 105–107, 1902.
Discusses migrations of faunas in Cambrian times.

857 **Matthew** (George F.). Notes on Cambrian faunas. No. 8. Cambrian brachiopoda and mollusca of Mt. Stephen, B. C., with the description of a new species of Metoptoma.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 107–114, pl., 1902.

858 —— Report on the Cambrian rocks of Cape Breton.
Can. Geol. Surv., Rept. Camb. Rocks Cape Breton, 246 pp., 18 pls., 1903.
Gives a detailed description of the occurrence, fossil contents, and stratigraphic relations of the Cambrian rocks of Cape Breton Island and systematic descriptions of the fossils.

859 —— New genera of Batrachian footprints of the Carboniferous system in eastern Canada.
Can. Rec. Sci., vol. 9, pp. 99–111, figs. 1–6, 1903.

860 —— Note in reference to Batrachian footprints.
New Brunswick Nat. Hist. Soc., Bull. no. 21 (vol. 5, pt. 1), p. 102, 1903.

861 —— On batrachian and other footprints.
New Brunswick Nat. Hist. Soc., Bull. no. 21 (vol. 5, pt. 1), pp. 103–108, pl. 2, 1903.

862 —— How long ago was America peopled.
Am. Geol., vol. 32, pp. 195–196, 1903.
Describes evidences for the length of post-Glacial time

863 **Matthew** (William D.). The fauna of the Titanotherium beds at Pipestone Springs, Montana.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 197–226, figs. 1–19, 1903.

864 —— A fossil hedgehog from the American Oligocene.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 227–229, fig. 1, 1903.

865 —— The evolution of the horse.
Am. Mus. Jour., vol. 3, no. 1, supplement, 30 pp., ill., 1903.

866 —— The collection of fossil vertebrates. A guide leaflet to the exhibition halls of vertebrate palæontology in the American Museum of Natural History.
Am. Mus. Jour., vol. 3, no. 5, supplement, 32 pp., ill., 1903.

867 —— Recent zoopaleontology. Concerning the ancestry of the dogs.
Science, new ser., vol. 17, pp. 912–913, 1903.

868 **Mead** (Charles S.). [Report on] Field geology in Ohio State University.
Am. Geol., vol. 32, pp. 261–263, 1903.
Contains observations on geological formations in central Ohio.

869 **Means** (Thomas H.). A reconnoissance in Sanpete, Cache, and Utah counties, Utah.
U. S. Dept. Agric., Field Oper. Div. Soils, 1899, pp. 115–120, 1900.
Includes a brief account of physiographic features in a report upon the soils.

870 —— A reconnoissance in the Cache a la Poudre Valley, Colorado.
U. S. Dept. Agric., Field Oper. Div. Soils, 1899, pp. 121–124, 1900.
Describes the soils.

871 —— Soil survey in Salt River Valley, Arizona.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 287–332. pls. 24–27, 1901.
Includes a brief account of the geology and topography.

872 —— and **Gardner** (Frank D.). A soil survey in the Pecos Valley, New Mexico.
U. S. Dept. Agric., Field Oper. Div. Soils, 1899, pp. 36–76, pls. 2–9, 1900.
Includes a brief account of the geology and physiographic features of this area.

873 —— and **Holmes** (J. Garnett). Soil survey around Fresno, Cal.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 333–384, pls. 28–43, 1901.
Includes an account of the geology and topography of the area surveyed.

874 —— and **Holmes** (J. Garnett). Soil survey around Imperial, California.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 587–606, pls. 87–95, 1902.
Describes the soils and includes a short account of the topography.

875 **Melander** (Axel Leonard). Some additions to the Carboniferous terrestrial arthropod fauna of Illinois.
Jour. Geol., vol. 11, pp. 178–198, pls. 5–7, 1903.

876 **Mendenhall** (Walter C.). The Chistochina gold field, Alaska.
U. S. Geol. Surv., Bull. no. 213, pp. 71–75, 1903.
Describes briefly the general geology of the region and the occurrence and origin of gold in the placer deposits of this gold field.

877 —— The Wrangell Mountains, Alaska.
Nat. Geog. Mag., vol. 14, pp. 395–407, ill., 1903.
Includes observations on the physiography, structure, and glaciers of the mountains.

878 —— A Carboniferous section in the upper Copper River Valley, Alaska.
Abstract: Science, new ser., vol. 17, pp. 25–26, 1903.

879 —— Chitina copper deposits, Alaska.
Abstract: Science, new ser., vol. 17, p. 387, 1903.

880 **Mendenhall** (Walter C.) and **Schrader** (Frank C.). The mineral resources of the Mount Wrangell district, Alaska.
U. S. Geol. Surv., Professional Paper no. 15, 71 pp., 10 pls., 5 figs., 1903.
Gives a résumé of the previous explorations in this region, and describes the general geology and physiography and occurrences of copper, gold, and other minerals of the region.

881 —— and **Schrader** (Frank C.). Copper deposits of the Mount Wrangell region, Alaska.
U. S. Geol. Surv., Bull. no. 213, pp. 141–148, 1903.
Gives a brief account of the geology and occurrences of copper-bearing ores in this region and the mining developments.

882 **Merriam** (John C.). New Ichthyosauria from the upper Triassic of California.
Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 249–263, pls. 21–24; 1903.

883 —— The Pliocene and Quaternary Canidæ of the Great Valley of California.
Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 277–290, pls. 28–30, 1903.

884 —— Recent literature on Triassic Ichthyosauria.
Science, new ser., vol. 18, pp. 311–312, 1903.

885 —— Primitive characters of the Triassic Ichthyosaurus.
Abstract: Science, new ser., vol. 17, p. 297, 1903.

886 —— and **Sinclair** (William J.). The correlation of the John Day and the Mascall.
Abstract: Jour. Geol., vol. 11, pp. 95–96, 1903.
Discusses the age of the beds from a study of the fauna.

887 **Merrill** (Frederick J. H.). Report of the director of the State Museum and State geologist for the year 1901.
N. Y. State Mus., 55th Ann. Rept., pp. r5–r166, 1903.
Reviews the administrative and scientific work of the year.

888 **Merrill** (George Perkins). A newly found meteorite from Mount Vernon, Christian County, Kentucky.
Am. Geol., vol. 31, pp. 156–158, 1903.

889 —— John Wesley Powell.
Am. Geol., vol. 31, pp. 327–333, pl. 19 (por.), 1903.

890 —— The quantitative classification of igneous rocks.
Am. Geol., vol. 32, pp. 48–54, 1903.
Gives an outline of the nomenclature and classification used in the "Quantitative Classification of Igneous Rocks" of Cross, Iddings, Pirsson, and Washington, see no. 251. Includes a table by E. B. Mathews showing the new nomenclature and terminology as applied to some of the better known igneous rocks.

891 **Merrill** (George Perkins). On the Glacial pothole in the National Museum.
Smith. Misc. Coll., vol. 45, pp. 100–103, pl. 31, 1903.
Describes a pothole brought from Maine and the method employed in removing it from its matrix.

892 —— Stones for building and decoration. Third edition.
New York, John Wiley & Sons, xi, 551 pp., 33 pls., 24 figs., 1903.

893 **Mesmer** (Louis). Soil survey of the Lewiston area, Idaho.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 689–709, 1903.
Includes an account of the physiography and geology.

894 —— and **Hearn** (W. E.) Soil survey of the Bigflats area, New York.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 125–142, pls. 1–2, 1903.
Includes a short account of the physiography and geology.

895 —— and **Caine** (Thomas A.), **Dorsey** (Clarence W.) Soil survey from Arecibo to Ponce, Porto Rico.
See Dorsey (C. W.), Mesmer (Louis), and Caine (T. A.), 315.

896 —— **Heileman** (W. H.) and. Soil survey of the Lake Charles area, Louisiana.
See Heileman (W. H.) and Mesmer (Louis), 541.

897 —— **Holmes** (J. Garnett) and. Soil survey of the Ventura area, California.
See Holmes (J. G.) and Mesmer (Louis), 599.

898 **Meunier** (Stanislaus). Remarque sur l'origine de l'activité volcanique.
Acad. des Sci. [Paris] Compt. rend., vol. 136, pp. 123–124, 1903.
Discusses the cause of volcanic phenomena.

899 **Miers** (Henry A.). Gold mining in Klondike.
Roy. Inst. Gt. Brit., Proc., vol. 17, pp. 72–81, 1903.
Describes physiographic features, general geology, occurrence of placer gold, mining operations, and prospects in the Klondike region.

900 **Miller** (Arthur M.) A new meteorite (Bath Furnace) from Kentucky.
Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Science, new ser., vol. 17, p. 228, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

901 —— Additional facts concerning the Bath Furnace meteoric fall of November 15, 1902.
Science, new ser., vol. 18, pp. 243–244, 1903.

902 **Miller** (Elmer I.). A week in the Mt. Lassen and cinder cone region of northern California.
Am. Bur. Geog., Bull., vol. 2, pp. 150–156, 1901.
Describes physiographic features of this region and discusses the evidences for determining the time of the volcanic activity of Mount Lassen.

903 **Miller** (G. W.). The Verde mining district, Yavapai County, Arizona.
Mg. & Sci. Press, vol, 86, pp. 70–71, 3 figs., 1903.
Gives an account of the geology of the district and the occurrence of the copper ore deposits.

904 **Miller** (M. F.), **Lapham** (J. E.) and. Soil survey of Montgomery County, Tennessee.
See Lapham (J. E.) and Miller (M. F.), 769.

905 **Miller** (Willet G.). Nepheline syenite in western Ontario.
Am. Geol., vol. 32, pp. 182–185, 1903.
Describes occurrence and composition.

906 —— Cobalt-nickel arsenides and silver in Ontario.
Eng. & Mg. Jour., vol. 76, pp. 888–890, 1903.
Describes the occurrence and character of these ore bodies.

907 —— Iron ranges of northern Ontario.
Ont. Bur. Mines, [12th] Rept., pp. 304–317, 4 figs., 1903.
Describes occurrences of iron ores.

908 —— [In discussion of paper by Waldemar Lindgren, "The geological features of the gold production of North America."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1077–1079, 1903.
Discusses occurrences of gold in Canada and conditions under which they can be worked.

909 **Mills** (Frank S.). River terraces and reversed drainage [New York].
Jour. Geol., vol. 11, pp. 670–678, figs. 1–3, 1903.
Describes physiographic features in the Catatonk River Valley in southern New York and their bearing upon pre-Glacial drainage conditions.

910 —— The delta-plain at Andover, Mass.
Am. Geol., vol. 32, pp. 162–170, pls. 22–24, 1903.
Describes glacial and physiographic features of this locality.

911 **Milne** (J.). West Indian volcanic eruptions.
Nature, vol. 67, pp. 91–92, 1902.
Discusses volcanic phenomena and their causes with especial reference to the volcanoes Pelé and St. Vincent.

912 **Moffet** (Fred H.). The copper mines of Cobre, Santiago de Cuba.
Abstract: Am. Geol., vol. 32, p. 64, 1903; Science, new ser., vol. 18, p. 18, 1903.

913 **Moissan** (Henri). Sur la présence de l'argon, de l'oxyde de carbone et des carbures d'hydrogène dans les gaz des fumerolles du Mont Pelé à la Martinique.
Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 1085–1088, 1902.
Describes investigations upon the constitution of gases collected from a fumarole of Mont Pelé.

914 **Montessus de Ballore** (D. de). Les États-Unis sismiques.
Arch. des Sci. Phys. et Nat., 4th ser., vol. 5, pp. 201–216, pl. 3, 1898.
Gives notes upon and lists of earthquakes that have occurred in various parts of the United States.

915 **Mooney** (Charles N.), **Martin** (J. O.), and **Caine** (Thomas A.). Soil survey of the Bedford area, Virginia.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 239–257, pls. 26–31, 1902.
Includes a brief account of the physiography and geology.

916 —— and **Caine** (Thomas A.). Soil survey of the Prince Edward area, Virginia.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 259–271, 1902.
Includes a brief account of the physiography and geology.

917 —— and **Bonsteel** (F. E.). Soil survey of the Albemarle area, Virginia.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 187–238, pls. 5–7, 1903.
Includes a brief account of the physiography and geology.

918 **Morris** (Henry G.). Hydro-thermal activity in the veins at Wedekind, Nevada.
Eng. & Mg. Jour., vol. 76, pp. 275–276, ill., 1903.
Discusses the geologic structure and the origin of the ores.

919 **Moses** (Alfred J.). Eglestonite, terlinguaite, and montroydite, new mercury minerals from Terlingua, Texas.
Am. Jour. Sci., 4th ser., vol. 16, pp. 253–263, figs. 1–6, 1903.
Describes crystallographic and other characters and composition.

920 —— and **Luquer** (Lea McI.). Notes on recent mineralogical literature.
School of Mines Quart., vol. 24, pp. 247–266, 1903.

921 **Moudy** (R. B.), **Slosson** (E. E.) and. The Laramie cement plaster.
See Slosson (E. E.) and Moudy (R. B.), 1120.

922 **Mügge** (O.). Ueber die Structur des grönländischen Inlandeises und ihre Bedeutung für die Theorie der Gletscherbewegung.
Neues Jahrb. f. Min., Jahrg. 1899, bd. 2, pp. 123–136, 1899.
Discusses the structure and movement of ice in the interior of Greenland and its bearing upon the theory of the movement of glaciers.

923 —— Weitere Versuche über die Translationsfähigkeit des Eises, nebst Bemerkungen über die Bedeutung der Structure des grönländischen Inlandeises.
Neues Jahrb. f. Min., Jahrg. 1900, bd. 2, pp. 80–98, 1900.
Discusses the plasticity of ice, and the significance of the structure of the ice-mass in Greenland.

924 **Myers** (E. W.), **Pressey** (H. A.) and. Hydrography of the southern Appalachians.

See Pressey (H. A.) and Myers (E. W.), 977.

N.

925 **Neill** (N. P.), **Jensen** (Charles A.) and. Soil survey of the Billings area, Montana.

See Jensen (C. A.) and Neill (N. P.), 642.

926 —— **Jensen** (Charles A.) and. Soil survey of the Grand Forks area, North Dakota.

See Jensen (C. A.) and Neill (N. P.), 643.

927 **Nelson** (Aven). Wilbur Clinton Knight.

Science, new ser., vol. 18, pp. 406–409, 1903.

Gives a short account of his life and work, and a chronologic list of his papers.

928 **Nevius** (J. Nelson). The Sain Alto tin deposits [Mexico].

Eng. & Mg. Jour., vol. 75, p. 929, 1903.

Describes the occurrence of tin.

929 **Newsom** (John Flesher). A geologic and topographic section across southern Indiana from the Ohio River at Hanover to the Wabash River at Vincennes, with a discussion of the general distribution and character of the Knobstone group in the State of Indiana.

Ind. Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 227–302, pls. 1–7, figs. 1–19, 1903.

Describes topographic and drainage features, the stratigraphy, character, and geological relations of formations of Ordovician, Silurian, Devonian, and Carboniferous age, and discusses the geologic history of the region.

930 —— Clastic dikes.

Geol. Soc. Am., Bull., vol. 14, pp. 227–268, pls. 21–31, figs. 1–19, 1903.

Describes location, geologic relations, character, and origin of clastic dikes, chiefly those of California, and gives references to literature in which clastic dikes are described.

931 **Nicholson** (Frank). The Wisconsin zinc-fields.

Eng. & Mg. Jour., vol. 76, pp. 847–849, ill., 1903.

Describes the general geology of the region and the occurrence and character of the zinc and lead ore deposits and the mining operations.

932 **Nickles** (John M.). The Richmond group in Ohio and Indiana and its subdivisions, with a note on the genus Strophomena and its type.

Am. Geol., vol. 32, pp. 202–218, 1903.

933 **Nicol** (William), **Goldschmidt** (Victor) and. New forms of sperrylite.

See Goldschmidt (Victor) and Nicol (William), 460.

934 **Nolan** (A. W.) and **Dixon** (J. D.). Geology of St. Helen's Island [Quebec].
Can. Rec. Sci., vol. 9, pp. 53–66, figs. 1–5, 1903.
Discusses the character and occurrence of Ordovician and Devonian strata, the character, occurrence, and origin of the breccia formation of the island, and the petrography of the intersecting dikes.

O.

935 **O'Brien** (Charles J.). Igneous rocks: How to identify them.
Mg. & Sci. Press, vol. 87, p. 50, 1903.

936 **O'Brien** (M. E.). Geology of the district west of Redding, Cal.
Mg. & Sci. Press, vol. 86, p. 349, 1903.
Describes the character and occurrence of the rock formations and ore deposits.

937 **Olshausen** (B. A.), **Lapham** (J. E.) and. Soil survey of the Wichita area, Kansas.
See Lapham (J. E.) and Olshausen (B. A.), 770.

938 —— **Jensen** (Charles A.) and. Soil survey of the Boise area, Idaho.
See Jensen (C. A.) and Olshausen (B. A.), 641.

939 —— **Jensen** (Charles A.) and. Soil survey of the Yakima area, Washington.
See Jensen (Charles A.) and Olshausen (B. A.), 640.

940 **Olsson-Seffer** (Pehr). Examination of organic remains in post-Glacial deposits.
Am. Nat., vol. 37, pp. 785–797, figs. 1–2, 1903.
Discusses methods of collecting and examining plant remains from Quaternary deposits, particularly from peat-bogs.

941 **Ordoñez** (Ezequiel). Le Xinantacatl ou volcan Nevado de Toluca [Mexico].
Soc. Cient. Ant. Alz., Mem. y Rev., vol. 18, pp. 83–112, pls. 5–9, 1902.
Describes physiographic features, the character and occurrence of igneous rocks, and the history of its volcanic activity, and compares its physical features with those of other Mexican volcanoes.

942 —— El Sahcab de Yucatan.
Soc. Cient. Ant. Alz., Mem. y Rev., vol. 18, pp. 217–223, 1902.
Describes the character and occurrence of some geologic formations in this part of Mexico.

943 —— Los volcanes de Zacapu, Michoacan [Mexico].
Soc. Cient. Ant. Alz., vol. 18, pp. 257–265, pl. 14, 1902.
Describes physiographic features of the volcanoes of this region and the character and occurrence of igneous rocks.

944 —— Les dernières éruptions du volcan de Colima [Mexico].
Soc. Cien. Ant. Alz., Mem. y Rev., vol. 20, pp. 99–104, pls. 3–4, 1903.
Describes eruption phenomena and eruptive products of this volcano.

944a **Orton** (Edward, jr.). The organization and work of the Geological Survey of Ohio.
Ohio Geol. Surv., 4th ser., Bull. no. 1, pp. i–xxi, 1903.
Gives an outline of the work and publications of the preceding and present organizations of the geological survey of Ohio.

945 **Osborn** (Henry Fairfield). Ornitholestes hermanni, a new compsognathoid dinosaur from the upper Jurassic.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 459–464, figs. 1–3, 1903.

946 —— Glyptotherium texanum, a new glyptodont, from the lower Pleistocene of Texas.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 491–494, pl. 43, 1903.

947 —— The skull of Creosaurus.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 697–701, figs. 1–2, 1903.

948 —— The reptilian subclasses Diapsida and Synapsida and the early history of the Diaptosauria.
Am. Mus. Nat. Hist., Mem., vol. 1, pt. 8, pp. 451–507, pl. 40, figs. 1–24, 1903.
Discusses classification, anatomy, and phylogeny of fossil reptiles and defines the major classification groups and genera.

949 —— Recent zoopaleontology.
Science, new ser., vol. 17, pp. 312–314, 1903.
Includes a brief discussion of the age of the Fort Union beds and related formations.

950 —— Recent zoopaleontology.
Science, new ser., vol. 17, pp. 356–357, 1903.
Discusses the age of the typical Judith River beds.

951 —— Recent zoopaleontology.
Science, new ser., vol. 17, pp. 673–674, 1903.
Gives a comparison of the European and American Eocene horses.

952 —— Evolution of the Proboscidea in North America.
Abstract: Science, new ser., vol. 17, p. 249, 1903.

953 —— On recent models and restorations of a number of extinct animals, with a discussion of their probable habits and mode of life.
Abstract: Science, new ser., vol. 17, p. 978, 1903.

954 —— Vertebrate paleontology in the United States Geological Survey.
Science, new ser., vol. 18, pp. 835–837, 1903.
Describes the work being done to complete Professor Marsh's monographs on the Titanotheres, Ceratopsia, Stegosauria, and Sauropoda.

955 **Owen** (Luella A.). More concerning the Lansing skeleton.
Bibliotheca Sacra, 73d yr., pp. 572–578, 1903.
Reviews the discussion as to the geological age of the Lansing skeleton.

P.

956 **Palmer** (Charles M.). Chrysocolla: a remarkable case of hydration.

Am. Jour. Sci., 4th ser., vol. 16, pp. 45–48, 1903.

Gives composition and describes absorption of water.

957 **Parks** (William Arthur). Region lying northeast of Nipigon Lake.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 211–220, 1903.

Gives observations upon the physiography, geology, and economic resources of the region examined.

958 —— Fossiliferous rocks of southwest Ontario.

Ont. Bur. Mines [12th] Rept., pp. 141–156, 1903.

Describes location, lithologic and stratigraphic features of outcrops of Silurian and Devonian strata of southwest Ontario, and gives lists of fossils obtained and discusses economic resources.

959 **Parsons** (H. F.) and **Liddell** (Charles A.). The coal and mineral resources of Routt County [Colorado].

Colo. Sch. Mines, Bull., vol. 1, no. 4, pp. 47–59, ill., 1903.

Describes the geology, the location of the coal districts, the character and occurrence of the Cretaceous coals, and the occurrence of other mineral deposits, chiefly gold.

960 **Patton** (Horace B.). Synopsis of paper on the development of pseudomorphs.

Colo. Sci. Soc., Proc., vol. 7, pp. 103–107, figs. 1–7, 1903.

Discusses the methods of alteration of minerals and describes dolomite and calcite crystals from Colorado.

961 **Peale** (A. C.). The classification of mineral waters with especial reference to the characteristics and geographic distribution of the medicinal springs of the United States.

Cohen's System of Physiologic Therapeutics, vol. 9, pp. 299–365, 1902.

962 **Pearce** (Richard). Notes on the occurrence of selenium with pyrite rich in gold and silver [from Mexico], and remarks on a gold nugget from Montana.

Colo. Sci. Soc., Proc., vol. 6, pp. 157–159 [1902].

963 **Pearson** (Karl). The fossil man of Lansing, Kansas.

Nature, vol. 68, p. 7, 1903.

Discusses in the light of measurements of the bones the height of the individual.

964 **Peck** (Frederick B.). The basal conglomerate in Lehigh and Northampton counties, Pennsylvania.

Abstract: Science, new ser., vol. 17, p. 291, 1903; Eng. & Mg. Jour., vol. 75, p. 154, 1903.

Describes its occurrence and characters.

965 **Penfield** (S. L.). Tables of minerals, including the uses of minerals and statistics of the domestic production.

New Haven, Conn., 77 pp., 1903.

966 **Penhallow** (D. P.). Osmundites skidegatensis n. sp.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 3–30, pls. 1–6, figs. 1–3, 1902.
Describes megascopic characters and microscopic structure of this fossil plant.

967 —— Notes on Cretaceous and Tertiary plants of Canada.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 31–92, pls. 7–16, figs. 1–8, 1902.

968 —— Notes on Tertiary plants.
Can. Roy. Soc., Trans., 2d ser., vol. 9, sect. 4, pp. 33–71, 29 figs., 1903.
Gives descriptions of plants, especially of internal structure as revealed by microscopic sections, of early Tertiary age, based upon material obtained by the British North American Boundary Commission.

969 **Penrose** (R. A. F., jr.). Present condition of gold mining in Arctic America.
Eng. & Mg. Jour., vol. 76, pp. 807–809, 852–853, ill., 1903.

970 **Perry** (Joseph H.). Notes on the geology of Mount Kearsarge, New Hampshire.
Jour. Geol., vol. 11, pp. 403–412, figs. 1–2, 1903.
Describes the petrologic characters of the rocks composing this mountain.

971 —— and **Emerson** (Benjamin K.). The geology of Worcester, Massachusetts.
Worcester Nat. Hist. Soc., 166 pp., ill., 1903.
Describes character, occurrence and relations of rocks of Worcester and gives an account of the general geology of the surrounding region.

972 **Pirsson** (Louis V.) and others. Quantitative classification of igneous rocks.
See Cross (Whitman) and others, 251.

973 **Poole** (Henry S.). Notes on Dr. Ami's paper on Dictyonema slates of Angus Brook, New Canaan, and Kentville, N. S.
Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 451–454, 1903.

974 —— Notes on the geology of Anthracite, Alberta.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 147–149, 1903.
Describes geologic features developed by the coal mining operations.

975 —— The Carboniferous rocks of Chignecto Bay.
Can. Geol. Surv., Summ. Rept. for 1902, pp. 377–382, 1903.
Describes results of geologic examination of the Carboniferous area of this region.

976 —— A submerged tributary to the great pre-Glacial river of the Gulf of St. Lawrence.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 4, pp. 143–147, 1 fig., 1903.

977 **Pressey** (H. A.) and **Myers** (E. W.). Hydrography of the southern Appalachians.

Message from the President of the United States, transmitting a report of the Secretary of Agriculture in relation to the forests, rivers, and mountains of the southern Appalachian region (Senate Doc. no. 84, 57th Cong., 1st sess.), pp. 123–142, pls. 69–78, 1902.

Describes physiographic features of the region.

978 **Prest** (Walter H.). Supplementary notes on drift ice as a transporting agent.

Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 455–457, 1903.

979 **Preston** (H. L.). Reed City [Michigan] meteorite.

Jour. Geol., vol. 11, pp. 230–233, figs. 1–2, 1903; Rochester Acad. Sci., Proc., vol. 4, pp. 89–91, pl. 12, 1903.

980 **Prichard** (W. R.). Observations on Mother Lode gold deposits, California.

Eng. & Mg. Jour., vol. 76, pp. 125–127, 1903; Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903), 13 pp.

Describes the geologic structure and occurrence of the ore deposits.

981 **Probert** (Frank H.). Secondary enrichment.

Eng. & Mg. Jour., vol. 76, pp. 958–959, figs. 1–5, 1903.

Describes the general geology and the origin of the copper-ore deposits of the Clifton-Morenci district in Arizona.

982 **Prosser** (Charles S.). The nomenclature of the Ohio geological formations.

Jour. Geol., vol. 11, pp. 519–546, 1903; Ohio State Univ. Bull., ser. 8, no. 3 (Geol. ser., no. 6), 1903.

Gives a table of the formations of the geological scale in Ohio and discusses their nomenclature and correlations.

983 —— Notes on the geology of eastern New York.

Am. Geol., vol. 32, pp. 381–384, 1903.

Discusses relations and nomenclature of Silurian and Devonian formations in eastern New York.

984 **Purdue** (A. H.). The saddle-back topography of the Boone chert region, Arkansas.

Abstract: Science, new ser., vol. 17, p. 222, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

985 **Purington** (Chester Wells). The Contact, Nevada, quaquaversal.

Colo. Sci. Soc., Proc., vol. 7, pp. 127–138, figs. 1–5, 1903.

Describes physiographic features and the geologic structure of the region and the occurrence of ore bodies.

986 —— The Camp Bird mine, Ouray, Colorado, and the mining and milling of the ore.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 499–528, figs. 1–10, 1903.

Describes the general geology of the region, the system of veins and fissures, the occurrence of the ores, principally galena, and discusses the origin of the ore deposits.

987 **Purington** (Chester Wells). Secondary enrichment.
Eng. & Mg. Jour., vol. 75, pp. 472–473, 1903.

988 —— The geological structure of the Camp Bird vein [Colorado].
Eng. & Mg. Jour., vol. 75, pp. 820–822, figs. 1–2, 1903.
Describes the veins and fissures and their rock contents, and the character and occurrence of the gold and silver ores.

989 —— Observations on gold deposits.
Eng. & Mg. Jour., vol. 75, pp. 854–855, 893–894, 929–931, 1903.
Discusses occurrence and origin of gold deposits in various regions of the world.

990 —— Geology of the Virginius mine [Colorado].
Eng. & Mg. Jour., vol. 76, p. 458, 1903.
Discusses the occurrence and origin of the gold ores.

R.

991 **Ransome** (Frederick Leslie). Geology of the Globe copper district, Arizona.
U. S. Geol. Surv., Professional Paper no. 12, 168 pp., pls. 1–27, figs. 1–10, 1903.
Gives an outline of the physiography of Arizona and topography and general geology of the Globe quadrangle, and describes the character and occurrence of igneous rocks and sedimentary strata of Cambrian, Devonian, Carboniferous, Eocene (?), and Quaternary age, the character, occurrence, and origin of the ores, chiefly gold, silver, and copper, and the mining operations.

992 —— Copper deposits of Bisbee, Ariz.
U. S. Geol. Surv., Bull. no. 213, pp. 149–157, 1903.
Describes the general geology of the region, the occurrence and origin of the ores, and the mining operations.

993 —— The copper deposits of Bisbee, Arizona.
Eng. & Mg. Jour., vol. 75, pp. 444–445, 2 figs., 1903.
Describes the geologic structure of the region and the character and occurrence of the ore deposits.

994 —— The geology and copper deposits of Bisbee, Arizona.
Am. Inst. Mg. Engrs., Trans. (Albany meeting, February, 1903), 26 pp.
Describes the geography and general geology, the character, occurrence, and relations of the Paleozoic and Mesozoic sedimentary strata, the intrusions and deformation, the character, occurrence, and origin of the copper-ore deposits, and the mining operations.

995 —— Genetic classification of ore deposits.
Abstract: Science, new ser., vol. 17, p. 542, 1903.

996 **Ravn** (J. P. J.). The Tertiary fauna at Kap Dalton in East Greenland.
Meddelelser om Groenland, vol. 29, pp. 93–140, pls. 3–5, 1903: Copenhagen Univ., Mus. Min. et Geol., Comm., Paléont., no. 4, 1903.
Reviews discoveries of fossils in Greenland and the geologic age of the formations from which they were obtained, describes a fauna, mainly molluscan, obtained from East Greenland and discusses its geologic horizon.

997 **Raymond** (Percy E.). The faunas of the Trenton at the type section and at Newport, N. Y.
Am. Pal., Bull., no. 17, pp. 13–26, 1903.
Discusses the occurrence and range of faunules in Trenton sections.

998 **Raymond** (R. W.). Biographical notice of Clarence King.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 619–650, por., 1903.

999 **Raymond** (William J.). Writings of James G. Cooper, M. D., on conchology and paleontology, with list of species described by him.
Nautilus, vol. 17, pp. 6–12, 1903.

1000 **Read** (Thomas T.). Preliminary note upon the rare metals in the ore from the Rambler mine, Wyoming.
Am. Jour. Sci., 4th ser., vol. 16, p. 268, 1903.

1001 —— Nodular-bearing schists near Pearl, Colorado.
Jour. Geol., vol. 11, pp. 493–497, figs. 1–2, 1903.
Gives observations on the petrology of the area.

1002 **Reade** (T. Mellard). The evolution of earth structure, with a theory of geomorphic changes.
London, Longmans, Green & Co., xv, 342 pp., 40 pls., 1903.
Includes papers by the author on "Denudation of the two Americas" and "The north atlantic as a geological basin," reprinted from the Proceedings of the Liverpool Geological Society, vol. 5, pts. 1 and 2, 1885 and 1886.

1003 **Reagan** (Albert B.). Geology of the Jemez-Albuquerque region, New Mexico.
Am. Geol., vol. 31, pp. 67–111, pls. 4–10, 1903.
Describes general geologic relations and structure, character, and occurrence of strata of Carboniferous, Mesozoic, Tertiary, and Quaternary age, geographic and physiographic features, and economic resources of this region.

1004 —— Age of the lavas of the plateau region [New Mexico and Arizona].
Am. Geol., vol. 32, pp. 170–177, 1903.
Gives stratigraphic sections of strata of Permo-Carboniferous, Tertiary, and Quaternary age of this region and discusses age of included lava sheets.

1005 —— Geology of the Fort Apache region in Arizona.
Am. Geol., vol. 32, pp. 265–308, pls. 29–30, 1 fig., 1903.
Describes geography, physiography, drainage, and general geological structure, occurrence and character of strata of Archean, Algonkian, Silurian, Devonian, Tertiary, and Quaternary age, and intrusive rocks, and discusses origin of Quaternary and Tertiary deposits, and the economic resources of the region.

1006 —— The Jemez coal fields [New Mexico].
Ind. Acad. Sci. Proc., 1902, pp. 197–198, 1903.
Gives a short account of the geology and the occurrence and character of the coal strata.

1007 **Redway** (Jacques W.). A great lava flood.
Am. Bur. Geog., Bull., vol. 2, pp. 157–163, figs. 1–3, 1901.
Defines types of volcanic outflows and describes the Tertiary lava flows of the Pacific region.

1008 **Reid** (Harry Fielding). [The variation of glaciers in North America.]
Arch. d. Sci. phys. et nat., vol. 14, pp. 301–302, 1902.

1009 —— The variation of glaciers VIII.
Jour. Geol., vol. 11, pp. 285–288, 1903.
Gives a summary of the seventh annual report of the International Committee on Glaciers and reports on the glaciers of the United States for 1902.

1010 —— Glaciers.
Mazama, vol. 2, no. 3, pp. 119–122, 1903.
Describes formation and phenomena of glaciers.

1011 —— Notes on Mounts Hood and Adams and their glaciers.
Abstract: Geol. Soc. Am. Bull., vol. 13, p. 536, 1903.

1012 **Rice** (Thomas D.) and **Taylor** (F. W.). Soil survey of the Darlington area, South Carolina.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 291–307, pls. 12–15, 1903.
Includes a short account of the physiography and geology.

1013 —— **Fippin** (Elmer O.) and. Soil survey of Allegan County, Michigan.
See Fippin (E. O.) and Rice (T. D.), 402.

1014 —— **Taylor** (F. W.) and. Soil survey of the Abbeville area, South Carolina.
See Taylor (F. W.) and Rice (T. D.), 1198.

1015 **Richardson** (George Burr). The upper Red Beds of the Black Hills.
Jour. Geol., vol. 11, pp. 365–393, 4 figs., 1903.
Describes physical characters, geographic extent, general geological relations, and stratigraphy of the Red Beds in the Black Hills, and discusses the orgin of their color.

1016 **Rickard** (Edgar). Tin deposits of the York region, Alaska.
Eng. & Mg. Jour., vol. 75, pp. 30–31, 1903.
Describes the geology of the region and the occurrence of tin.

1017 **Rickard** (T. A.). Across the San Juan Mountains.
New York, The Engineering and Mining Journal, 115 pp., ill., 1903; appeared serially in the Eng. & Mg. Jour., vol. 76, pp. 7–10, 45–46, 82–84, 118–119, 154–155, 230, 269–270, 307–308, 346, 385–387, 423–424, 461–463, ill., 1903.
Contains observations on the geologic structure, ore deposits, and mining operations of southwestern Colorado.

1018 **Rickard** (T. A.). The lodes of Cripple Creek [Colorado].
Eng. & Mg. Jour., vol. 75, pp. 179–181, figs. 1–5, 1903.
Discusses the occurrence of ore bodies.

1019 —— Water in veins—a theory.
Eng. & Mg. Jour., vol. 75, pp. 402–403, 1903.
Discusses the distribution of water under ground and its bearing upon the origin of ore deposits.

1020 —— The syncline as a structural type.
Eng. & Mg. Jour., vol. 75, p. 746, figs. 1–6, 1903.
Discusses the syncline in relation to ore deposits.

1021 —— The veins of Boulder and Kalgoorlie.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 567–577, figs. 1–5, 1903.
Describes the occurrence, character, and structure of gold-bearing veins of Boulder, Colorado, and Kalgoorlie, West Australia.

1022 —— The lodes of Cripple Creek [Colorado].
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 578–618, figs. 1–23, 1903.
Describes the general geology of the region, the occurrence and character of the lodes and veins, and the position of the ore bodies.

1023 —— Genetic classification of ore deposits.
Abstract: Science, new ser., vol. 17, p. 542, 1903.

1024 **Ries** (Heinrich). The clays of the United States east of the Mississippi River.
U. S. Geol. Surv., Professional Paper no. 11, 298 pp., 9 pls., 11 figs., 1903.
Discusses origin, geographic and geologic distribution of clays in the United States east of the Mississippi River, and their properties, composition, and utilization.

1025 —— Uses of peat and its occurrence in New York.
N. Y. State Mus., 55th Ann. Rept., pp. r53–r90, pls. 32–36, 1903.
Describes origin and nature of peat, its utilization, and its occurrence in the State of New York.

1026 —— Magnetite deposits at Mineville, New York, and a description of the new electric concentrating plant.
Mines & Minerals, vol. 24, pp. 49–51, figs. 1–5, 1903.
Describes the character and occurrence of the iron ore deposits.

1027 —— The coal mines at Las Esperanzas, Mexico.
Mich. Miner, vol. 5, no. 2, pp. 13–15, figs. 1–5, 1903.
Describes the character, geologic occurrence, and mining of the Cretaceous coal beds.

1028 **Riggs** (Elmer S.). Brachiosaurus altithorax, the largest known dinosaur.
Am. Jour. Sci., 4th ser., vol. 15, pp. 299–306, figs. 1–7, 1903.
Gives a description of this Jurassic fossil and discusses its relationships.

1029 —— Structure and relationships of Opisthocœlian dinosaurs. Part I. Apatosaurus Marsh.
Field Col. Mus., Geol. ser., vol. 2, pp. 165–196, pls. 46–53, figs. 1–18, 1903.

1030 **Riggs** (Elmer S.). The vertebral column of Brontosaurus.
Science, new ser., vol. 17, pp. 393–394, 1903.

1031 —— The use of pneumatic tools in the preparation of fossils.
Science, new ser., vol. 17, pp. 747–749, 1903.

1032 **Robbins** (F.). Ore occurrence at Leadville, Colo.
Mg. & Sci. Press, vol. 86, p. 168, 1903.
Describes the general stratigraphy of the region and the occurrence of the ore bodies.

1033 **Roberts** (Milnor). Note on the action of frost on soil.
Jour. Geol., vol. 11, pp. 314–317, figs. 1–4, 1903.

1034 **Rockstroh** (Edwin). Recent earthquakes in Guatemala.
Nature, vol. 67, pp. 271–272, 1903.

1035 **Rogers** (Austin F.). The minerals of the Joplin, Mo., lead and zinc district.
Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 60–61, 1903.

1036 **Rohn** (Oscar). The Baraboo iron range [Wisconsin].
Eng. & Mg. Jour., vol. 76, pp. 615–617, ill., 1903.
Describes the general geology of the area and the occurrence and character of the iron ore.

1037 **Rollet de l'Isle et Giraud, Lacroix** (A.). Sur l'éruption de la Martinique.
See Lacroix (A.), Rollet de l'Isle et Giraud (J.), 727.

1038 **Rowe** (Jesse Perry). Some volcanic ash beds of Montana.
Mont. Univ., Bull. no. 17 (Geol. ser. no. 1), 32 pp., 9 pls., 1903.
Discusses the origin of the volcanic ash of Montana; describes its composition and properties and distribution in the State by counties; gives a list and figures of fossil leaves from the ash of Missoula County.

1039 —— Some Montana coal fields.
Am. Geol., vol. 32, pp. 369–380, pls. 31–32, 1903.
Describes the bituminous and lignite coal resources of Montana and the geographic distribution, by counties, of coal deposits.

1040 **Rowley** (R. R.). See Greene (George K.), 480–485.

1041 **Ruddy** (C. A.), **Landes** (Henry) and. Coal deposits of Washington.
See Landes (Henry) and Ruddy (C. A.), 753.

1042 **Ruedemann** (Rudolf). The Cambric Dictyonema fauna in the slate belt of eastern New York.
N. Y. State Mus., Bull. 69, pp. 934–958, pls. 1–4, 1903.
Describes occurrence, character, geologic position, and paleontology of Upper Cambrian strata in Rensselaer County, New York, and discusses the relations of the Dictyonema beds of Scandinavia, Great Britain, and North America, and the bearing of the latter upon paleogeography.

1043 **Ruedemann** (Rudolf). Noetling on the morphology of the pelecypods.

Am. Geol., vol. 31, pp. 34–40, pl. 3, 1903.

Gives a summary of Noetling's views on the "law of torsion" in pelecypod shells and the relations of the animal and the position of its shell.

1044 —— Professor Jaekel's theses on the mode of existence of Orthoceras and other cephalopods.

Am. Geol., vol. 31, pp. 199–217, 1903.

Gives a translation of Professor Jaekel's theses and some of the discussion following (Zeitschrift der Deutschen geologischen Gesellschaft, 54 Bd., 2 Heft, Protokolle, pp. 67–101, 1902), and discusses these propositions. Includes "Annotations" by John M. Clarke.

1045 —— **Clarke** (John M.). Guelph fauna in the State of New York.

See Clarke (J. M.) and Ruedemann (Rudolf), 204.

1046 —— See Clarke (J. M.), 203.

1047 **Ruhm** (H. D.). The present and the future of the Mount Pleasant phosphate field.

Eng. Assoc. South., Trans., 1902, vol. 13, pp. 42–64 [1903].

Describes discovery, occurrence, and production of phosphate rock in the Mount Pleasant phosphate field of Tennessee.

1048 **Russell** (Israel C.). Notes on the geology of southwestern Idaho and southeastern Oregon.

U. S. Geol. Surv., Bull. no. 217, 83 pp., 18 pls., 2 figs., 1903.

Describes climatic conditions, topography, hydrography, recent and Tertiary volcanic formations, and the geologic structure of this region, and discusses conditions of origin and accumulation of petroleum.

1049 —— Preliminary report on artesian basins in southwestern Idaho and southeastern Oregon.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 78, 51 pp., 2 pls., 3 figs., 1903.

Includes a short account of the general geology of the region.

1050 —— Volcanic eruptions on Martinique and St. Vincent.

Smith. Inst., Ann. Rept. for 1902, pp. 331–349, pls. 1–11, 1903.

Reprinted by permission, after revision by the author, from the National Geographic Magazine, vol. 13, no. 12, December, 1902. See no. 922 of U. S. Geol. Surv., Bull. no. 221, 1903.

1051 —— Glacier cornices.

Jour. Geol., vol. 11, pp. 783–785, fig. 1, 1903.

Describes glacier cornices and discusses their origin.

1052 —— The Pelé obelisk.

Science, new ser., vol. 18, pp. 792–795, 1903.

S.

1053 **Salisbury** (Rollin D.). The surface formations in southern New Jersey.

N. J. Geol. Surv., Ann. Rept. for 1900, pp. 33–40, 1901.

Describes the character and occurrence of the surface formations of pre-Pleistocene and Pleistocene ages in southern New Jersey.

1054 —— and **Blackwelder** (Eliot). Glaciation in the Bighorn Mountains.

Jour. Geol., vol. 11, pp. 216–223, figs. 1–2, 1903.

Describes distribution of glaciers in the region, and character, occurrence, and age of the glacial deposits.

1055 **Sapper** (Karl). Der Ausbruch des Vulkans Santa Maria in Guatemala (Oktober, 1902).

Centralbl. f. Min., pp. 33–44, fig. 1; pp. 65–70, figs. 1–3, 1903.

Describes phenomena connected with the volcanic eruption of Santa Maria in Guatemala in October, 1902.

1056 —— Weitere Mittheilungen über den Ausbruch des Vulkans St. Maria in Guatemala.

Centralbl. f. Min., pp. 71–72, 1903.

Gives further observations upon the eruption of the volcano St. Maria in Guatemala.

1057 —— Die jüngsten Ereignisse am Vulkan Izalco (Salvador).

Centralbl. f. Min., pp. 103–111, 1 fig., 1903.

Describes volcanic phenomena in Salvador.

1058 —— Ein Besuch der Insel Grenada.

Centralbl. f. Min., pp. 182–186, 1903.

Gives observations upon volcanic deposits of this island.

1059 —— Bericht über einen Besuch von St. Vincent.

Centralbl. f. Min., pp. 248–258, figs. 1–5, 1903.

Gives observations upon the geology and volcanic phenomena of St. Vincent.

1060 —— Zur Kenntniss der Insel S. Lucia in Westindien.

Centralbl. f. Min., pp. 273–278, figs. 1–2, 1903.

Gives observations upon the geology and sulphur springs of the island.

1061 —— Ein Besuch der Insel Montserrat (Westindien).

Centralbl. f. Min., pp. 279–283, 1 fig., 1903.

Gives observations upon the geology of the island.

1062 —— Ein Besuch von Dominica.

Centralbl. f. Min., pp. 305–314, figs. 1–3, 1903.

Gives observations upon geologic features of the island.

1063 —— Ein Besuch von S. Eustatius und Saba.

Centralbl. f. Min., pp. 314–318, figs. 1–3, 1903.

Gives observations upon the geology of these islands.

1064 —— Ein Besuch von Guadeloupe.

Centralbl. f. Min., pp. 319–323, figs. 1–2, 1903.

Gives observations upon the geology and fumaroles of the island.

1065 **Sapper** (Karl). Ein Besuch von Martinique.
Centralbl. f. Min., pp. 337–358, figs. 1–7, 1903.
Describes observations upon the geology of the island and the phenomena connected with the eruptions of Mont Pelé.

1066 —— Der Krater der Soufrière von St. Vincent.
Centralbl. f. Min., pp. 369–373, figs. 1–2, 1903.
Describes the crater of the Soufrière of St. Vincent.

1067 —— Ein Besuch der Inseln Nevis und S. Kitts (S. Christopher) [West Indies].
Centralbl. f. Min., pp. 384–387, figs. 1–2, 1903.
Gives observations upon the geologic formations of the island.

1068 **Sardeson** (Frederick W.). Observations on the genus Romingeria, by Charles E. Beecher.
Am. Geol., vol. 32, pp. 260–261, 1903.

1069 —— The phylogenic stage of the Cambrian gastropoda.
Jour. Geol., vol. 11, pp. 469–492, pls. 1–2, 1903.

1070 **Sarle** (Clifton J.). A new Eurypterid fauna from the base of the Salina of western New York.
N. Y. State Mus., Bull. 69, pp. 1080–1108, pls. 6–26, 1903.

1071 **Savage** (T. E.). Geology of Tama County [Iowa].
Iowa Geol. Surv., vol. 13, pp. 185–253, figs. 19–31, 1903.
Describes topography and drainage, the character, occurrence, and geologic relations of Devonian and Carboniferous strata and Glacial and post-Glacial deposits, and the economic resources.

1072 —— The Toledo lobe of Iowan drift.
Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 123–129, 1903.
Describes the geographic position, physiographic features, and component materials of this portion of the drift sheet, and the distribution of drift deposits in the lobe, and the sequence of geologic events producing them.

1073 **Schaller** (Waldemar T.). Minerals from Leona Heights, Alameda Co., California.
Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 191–217, pl. 19, 1903.

1074 —— Spodumene from San Diego Co., California.
Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 265–275, pls. 25–27, 1903.
Describes occurrence, crystallization, physical properties, and composition.

1075 **Schmeckebier** (Laurence F.). Catalogue and index of the publications of the Hayden, King, Powell, and Wheeler surveys, namely: Geological and Geographical Survey of the Territories, Geological Exploration of the Fortieth Parallel, Geographical and Geological Surveys of the Rocky Mountain region, Geographical Surveys west of the One Hundredth Meridian.
U. S. Geol. Surv., Bull. no. 222, 208 pp., 1903.

1076 **Schmidt** (C.). Ueber vulkanische Asche, gefallen in San Cristobal L. C. (Süd-Mexiko) am 25 Oktober 1902.
Centralbl. f. Min., p. 131, 1903.
Discusses the composition of volcanic ashes.

1077 **Schneider** (Philip F.). Notes on the geology of Onondaga County, N. Y.
Syracuse, N. Y., 47 pp., 1894. (Privately printed.)
Describes the character, occurrence, and geologic relations of the formations of Silurian and Devonian age in this county, and gives observations upon the occurrence of fossils.

1078 —— Limestones in central New York.
Onondaga Acad. Sci., Science ser., no. 1, 16 pp., 1897.
Describes the occurrence, character, and utilization of the limestones in central New York.

1079 —— The Marcellus fault.
Onondaga Acad. Sci., Science ser., no. 2, 7 pp., 1899.
Describes faulting in the vicinity of Marcellus, N. Y.

1080 —— The whetstone industry.
Onondaga Acad. Sci., Proc., vol. 1, pp. 20–31, 1903.
Describes the occurrence and character of the Labrador whetstone in the Portage group in the vicinity of Syracuse, N. Y.

1081 —— The geology of the serpentines of central New York.
Onondaga Acad. Sci., Proc., vol. 1, pp. 110–117, 1903.
Describes the occurrence and petrologic characters of dikes at Syracuse, N. Y.

1082 —— Notes on some eruptive dikes near Ithaca [New York].
Onondaga Acad. Sci., Proc., vol. 1, pp. 130–136, 1903.

1083 **Schottler** (W.). Bemerkung über die in San Cristobal (S.-Mexico) am 25 Okt. 1902 gefallene Asche.
Centralbl. f. Min., pp. 286–289, 1903.
Describes petrographic characters of volcanic ashes from San Cristobal, in southern Mexico.

1084 **Schrader** (Frank Charles) and **Spencer** (Arthur Coe). The geology and mineral resources of a portion of the Copper River district, Alaska.
U. S. Geol. Surv., Special reports, 94 pp., 13 pls., 1901.
See no. 941 of U. S. Geol. Surv., Bull. no. 221.

1085 —— **Mendenhall** (Walter C.) and. Copper deposits of the Mount Wrangell region, Alaska.
See Mendenhall (W. C.) and Schrader (F. C.), 881.

1086 —— **Mendenhall** (Walter C.). The mineral resources of the Mount Wrangell district, Alaska.
See Mendenhall (W. C.) and Schrader (F. C.), 880.

1087 **Schuchert** (Charles). Morse on living brachiopods.
Am. Geol., vol. 31, pp. 112–121, 1903.
Reviews "Observations on living brachiopods," by Edward S. Morse, especially such parts as have a direct bearing on fossil forms. Includes observations on paleozoic forms.

1088 —— The I. H. Harris collection of invertebrate fossils in the United States National Museum.
Am. Geol., vol. 31, pp. 131–135, pl. 11 (por.), 1903.
Gives a sketch of the life of Mr. I. H. Harris and an account of the collection which he accumulated.

1089 —— On the Manlius formation of New York.
Am. Geol., vol. 31, pp. 160–178, 3 figs., 1903.
Discusses stratigraphic position of the Coralline limestone of the New York series and gives notes upon its fauna, with descriptions of some species.

1090 —— On the faunal provinces of the middle Devonic of America and the Devonic coral sub-provinces of Russia, with two paleographic maps.
Am. Geol., vol. 32, pp. 137–162, pls. 20–21, 1903.
Gives a summary of Lebedew's work on the corals of Russia, describes the faunal provinces of the American middle Devonic and relations of their faunas with one another and with the faunas of European provinces, and tabulates the distribution of American corals in the Mississippian and Dakota seas.

1091 —— On new Siluric cystoidea and a new Camarocrinus.
Am. Geol., vol. 32, pp. 230–240, 1903.

1092 —— On the lower Devonic and Ontaric formations of Maryland.
U. S. Nat. Mus., Proc., vol. 26, pp. 413–424, 1903.
Describes character, occurrence, faunal contents, and geologic relationships of Silurian and Devonian strata in Allegany County, Maryland, and vicinity.

1093 —— See Diller (J. S.), 302.

1094 **Seely** (Henry M.). Sketch of the life and work of Charles Baker Adams.
Am. Geol., vol. 32, pp. 1–12, pl. 1 (por.), 1903.

1095 **Sellards** (E. H.). Some new structural characters of Paleozoic cockroaches.
Am. Jour. Sci., 4th ser., vol. 15, pp. 307–315, pls. 7–8, 1903.
Discusses structural features and immature stages, and describes several forms of Carboniferous cockroaches.

1096 —— Codonotheca, a new type of spore-bearing organ from the Coal Measures.
Am. Jour. Sci., 4th ser., vol. 16, pp. 87–95, pl. 8, 1903.

1097 —— Discovery of fossil insects in the Permian of Kansas.
Am. Jour. Sci., 4th ser., vol. 16, pp. 323–324, 1903.

1098 **Shattuck** (George Burbank). The mollusca of the Buda limestone, with an appendix on the corals of the Buda limestone.
U. S. Geol. Surv., Bull. no. 205, 94 pp., 27 pls., 1 fig., 1903.
Gives a short account of the geology of the Buda limestone in Texas and descriptions of the molluscan fauna found therein.

1099 **Sheak** (W. H.), **Blatchley** (W. S.) and. Trenton rock petroleum.
See Blatchley (W. S.) and Sheak (W. H.), 93.

1100 **Shedd** (Solon). The building and ornamental stones of Washington.
Wash. Geol. Surv., vol. 2, Ann. Rept. for 1902, pp. 1–163, pls. 1–22, 1903.
Discusses physical properties required in building stones and describes character, occurrence, and utilization of stone deposits of Washington suitable for building and decorative purposes.

1101 **Sheldon** (George) and **Sheldon** (J. M. Arms). Newly exposed geologic features within the old "8,000 Acre Grant."
New York, 21 pp., 12 pls., 1903. (Private publication.)
Describes peculiar structural features in sand and clay deposits and columnar trap formations and discusses their origin.

1102 **Sheldon** (J. M. Arms), **Sheldon** (George) and. Newly exposed geologic features within the old "8,000 Acre Grant."
See Sheldon (George) and Sheldon (J. M. A.), 1101.

1103 **Sherwin** (R. S.) Notes on the geology of the Antelope Hills [Oklahoma].
Kans. Acad. Sci., Trans., vol. 18, pp. 83–84, 1903.
Gives a brief account of the geology of this region.

1104 —— Notes on the theories of origin of gypsum deposits.
Kans. Acad. Sci., Trans., vol. 18, pp. 85–88, 1903.
Discusses the origin of the gypsum deposits of Kansas and Oklahoma.

1105 **Shimek** (B.). The loess and the Lansing man.
Am. Geol., vol. 32, pp. 353–369, 1903.
Discusses the character of the fossil shells occurring in the loess and their bearing upon the question of the origin of the loess.

1106 —— Living plants as geological factors.
Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 41–48, pls. 2–13, 1903.
Discusses the action of plants in the disintegration and formation of deposits.

1107 —— See Udden (J. A.), 1220.

1108 **Shimer** (Hervey W.). [Report of] Fall excursions of the Geological Department, Columbia University.
Am. Geol., vol. 31, pp. 62–64, 1903.
Contains notes on the geology and petrology of Manhattan Island and localities in the vicinity of New York City.

1109 **Shimer** (Hervey W.). [Field work at Larrabee's Point, Vermont.]
Am. Geol., vol. 32, pp. 130–131, 1903.

1110 —— [Report of] Columbia University Geological Department.
Am. Geol., vol. 32, pp. 259–260, 1903.
Describes observations in northeastern New Jersey.

1111 **Silver** (L. P.). Petrography of some igneous rocks of the Kettle River mining division, British Columbia.
Ottawa Nat., vol. 17, pp. 85–91, 1903.
Describes their characters and occurrence.

1112 **Simmersbach** (B.). Die Steinkohlengebiete von Pennsylvanien und Westvirginien.
Zeitsch. f. prak. Geol., vol. 11, pp. 413–423, fig. 96, 1903.
Gives a general account of the Appalachian coal field, describing its geographic extent, and the succession, thickness, character, and distribution of the geologic formations.

1113 **Simonds** (Frederic W.). The minerals and mineral localities of Texas.
Tex. Univ., Min. Surv., Bull. no. 5, pp. 3–95, 1902.
Describes characters and occurrences of minerals found in Texas.

1114 **Simpson** (Howard E.). The accretion of flood plains by means of sand bars.
Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 54–56, 1903.

1115 **Sinclair** (William J.). A preliminary account of the exploration of the Potter Creek cave, Shasta County, California.
Science, new ser., vol. 17, pp. 708–712, 1903.
Describes the situation of the cave, the deposits in it, and the occurrence of vertebrate remains, with a list of the forms identified.

1116 —— Mylagaulodon, a new rodent from the upper John Day of Oregon.
Am. Jour. Sci., 4th ser., vol. 15, pp. 143–144, 1 fig., 1903.
Describes the characters and relations of a new genus and species.

1117 —— A new tortoise from the auriferous gravels of California.
Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 243–248, figs. 1–2, 1903.

1118 —— **Merriam** (John C.) and. The correlation of the John Day and the Mascall.
See Merriam (J. C.) and Sinclair (W. J.), 886.

1119 **Skinner** (W. W.). The underground waters of Arizona—their character and uses.
Ariz. Univ. Agric. Exp. Sta., Bull, no. 46, pp. 273–296, 1 pl., 1903.

1120 **Slosson** (E. E.) and **Moody** (R. B.). The Laramie cement plaster.
Wyo. Univ., Agr. Coll., 10th Ann. Rept., 18 pp., 1 pl., 1900.
Describes the occurrence of gypsum beds and the composition and manufacture of cement plaster.

1121 **Slosson** (E. E.), **Knight** (W. C.) and. The Bonanza, Cottonwood, and Douglas oil fields.
See Knight (W. C.) and Slosson (E. E.), 697.

1122 **Smallwood** (W. M.) and **Hopkins** (T. C.). A discussion of the origin of some anticlinal folds near Meadville, Pennsylvania.
Syracuse Univ., Bull., ser. 4, no. 1, pp. 18–24, 1903.
Describes drainage and geological structure of this region.

1123 **Smith** (Alva J.). Geology of Lyon County, Kansas.
Kans. Acad. Sci., Trans., vol. 18, pp. 99–103, 1903.
Describes the stratigraphy.

1124 **Smith** (D. T.). A geological reconnoissance of the region of the upper main Walker River, Nevada.
Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Jour. Geol., vol. 11, pp. 94–95, 1903.

1125 **Smith** (Eugene A.). Carboniferous fossils in 'Ocoee' slates in Alabama.
Science, new ser., vol. 18, pp. 244–246, 1903.
Discusses the determinations of the age of the Ocoee slates and related formations and the occurrence in them of Carboniferous plants in Clay County, Alabama.

1126 —— The Portland cement materials of central and southern Alabama.
Cement Resources of Alabama. 58th Cong., 1st sess., Sen. Doc. no. 19, pp. 12–23, map, 1903.
Describes character and distribution of Cretaceous and Tertiary limestones suitable for use in the manufacture of Portland cement. Includes a map showing the distribution of these limestones and the coal of northern Alabama.

1127 —— and **Aldrich** (Truman H.). The Grand Gulf formation.
Science, new ser., vol. 18, pp. 20–26, 1903.
Discusses stratigraphic position of the Grand Gulf formation.

1128 **Smith** (Frank B.). The Frank disaster [Alberta].
Can. Mg. Rev., vol. 22, pp. 102–103, 1903.
Describes the landslide and attendant disasters at Frank, Alberta.

1129 **Smith** (George). [In discussion of paper by S. F. Emmons, "The secondary enrichment of ore-deposits."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1055–1059, 1903.
Discusses formation of certain ore-deposits.

1130 **Smith** (George Otis). The geology of Mount Rainier.
Mazama, vol. 2, no. 1, pp. 18–24, 1900.
Describes geologic history of Mount Rainier and the character and occurrence of its igneous rocks.

1131 **Smith** (George Otis). Ellensburg folio, Washington.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 86, 1903.
Describes geographic features, drainage and water supply of the Ellensburg quadrangle, the geologic history of the Cascade Mountains and of the Ellensburg quadrangle, and the character and occurrence of Miocene strata and igneous rocks, and discusses character and origin of structural and physiographic features and economic resources of the quadrangle.

1132 —— Geology and physiography of central Washington.
U. S. Geol. Surv., Professional Paper no. 19, pp. 9–39, pls. 1–7, fig. 1, 1903.
Reviews previous work upon the region, describes the character, extent, and relations of igneous rocks and sedimentary strata of pre-Eocene, Eocene, and Miocene age, the geologic history and structure, and physiographic features and history.

1133 —— Gold mining in central Washington.
U. S. Geol. Surv., Bull. no. 213, pp. 76–80, 1903.
Describes occurrence of gold in gravel deposits and quartz veins, and the mining operations in the district.

1134 —— Anticlinal mountain ridges in central Washington.
Jour. Geol., vol. 11, pp. 166–177, fig. 1, 1903.
Reviews previous work in the area and describes its geological structure.

1135 —— [In discussion of paper by W. P. Jenney, "The mineral crest, or the hydrostatic level attained by the ore-depositing solutions in certain mining districts of the Great Salt Lake Basin."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1060–1062, 1903.
Gives geologic observations bearing upon the subject of the paper discussed.

1136 —— Abandoned stream gaps in northern Washington.
Abstract: Science, new ser., vol. 17, pp. 387–388, 1903.

1137 **Smith** (James Perrin). The Carboniferous ammonoids of America.
U. S. Geol. Surv., Mon., vol. 42, 211 pp., 29 pls., 1903.
Reviews briefly the occurrence of ammonoids in the different Carboniferous formations of America, gives tables of the correlation of Carboniferous formations, discusses the classification and phylogeny, and describes and figures American genera and species.

1138 **Smith** (W. S. Tangier). Hartville folio, Wyoming.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 91, 1903.
Describes geographic and topographic features, character, and occurrence of igneous rocks and sedimentary deposits of Algonkian, Carboniferous, Juratrias, Cretaceous, Tertiary, and Quaternary systems, the geologic history and economic products.

1139 **Smith** (W. S. Tangier). Lead and zinc deposits of the Joplin district, Missouri-Kansas.
U. S. Geol. Surv., Bull. no. 213, pp. 197–204, 1903.
Describes briefly the stratigraphy and geologic structure of the region and the character, occurrence, and origin of the ores.

1140 —— **Ulrich** (E. O.) and. Lead, zinc, and fluorspar deposits of western Kentucky.
See Ulrich (E. O.) and Smith (W. S. T.), 1223.

1141 **Smith** (William G.). Soil survey from Raleigh to Newbern, N. C.
U. S. Dept. Agric., Field Oper. Div. Soils, 1900, 2d Rept., pp. 187–205, pls. 8–15, 1901.
Includes observations on physiographic features.

1142 —— and **Bennett** (Frank, jr.). Soil survey of the Lebanon area, Pennsylvania.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 149–171, pls. 17–20, 1902.
Includes a brief account of the physiography and geology.

1143 —— and **Martin** (J. O.). Soil survey of Harford County, Maryland.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1901, 3d Rept., pp. 211–237, 1902.
Includes a short account of the physiography and geology.

1144 —— Soil survey of the Toledo area, Ohio.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 383–402, pls. 21–23, 1903.
Includes a brief account of the physiography and geology.

1145 —— Soil survey of the Columbus area, Ohio.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 403–423, pl. 24, 1903.
Includes a short account of the physiography and geology.

1146 —— and **Carter** (William T., jr.). Soil survey of the Smedes area, Mississippi.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 325–348, pls. 16–18, 1903.
Includes a short account of the physiography and geology.

1147 **Smyth** (C. H., jr.). The Rossie lead veins [New York].
School of Mines Quart., vol. 24, pp. 421–429, 1 fig., 1903.
Describes the character and occurrence of the rocks and galena-bearing veins, and discusses the origin and age of the vein-filling materials.

1148 **Spencer** (Arthur Coe.) Pacific mountain system in British Columbia and Alaska.
Geol. Soc. Am., Bull., vol. 14, pp. 117–132, pls. 8–13, 1903.
Describes physiographic features and discusses their origin.

1149 **Spencer** (Arthur Coe). Mineral resources of the Encampment copper region, Wyoming.

U. S. Geol. Surv., Bull. no. 213, pp. 158–162, 1903.

Gives an account of the general geology of this region and the character and occurrence of the deposits of copper ores.

1150 —— Reconnoissance examination of the copper deposits at Pearl, Colo.

U. S. Geol. Surv., Bull. no. 213, pp. 163–169, 1903.

Gives a brief account of the geography and geology of this region and describes the mining developments.

1151 —— Manganese deposits of Santiago, Cuba.

U. S. Geol. Surv., Bull. no. 213, pp. 251–255, 1903.

Describes briefly the geologic structure of the region and the occurrence and probable output of manganese ores.

1152 **Spencer** (Joseph William Winthrop). On the geological relationship of the volcanoes of the West Indies.

Victoria Inst., Jour. Trans., vol. 35, pp. 198–207, 1 fig., 1903.

Discusses physiographic features and changes of the West Indies islands and the submerged plateau upon which they rest, the place of their igneous formations in geologic history and the evidences of the geologic age of the volcanic activity and its relations to physical changes in the Antillean region.

1153 —— Geological age of the West Indian volcanic formations.

Am. Geol., vol. 31, pp. 48–51, 1 fig., 1903.

Discusses the geologic history of the region.

1154 —— Submarine valleys off the American coast and in the North Atlantic.

Geol. Soc. Am., Bull., vol. 14, pp. 207–226, pls. 19–20, figs. 1–2, 1903.

Describes the submerged Atlantic coastal plain from Cape Hatteras to Newfoundland and the channels traversing it, discusses geological data and evidences of the age of the submerged valleys and describes submerged valleys of the North Atlantic and adjacent Arctic basins.

1155 **Spurr** (Josiah Edward). Descriptive geology of Nevada south of the Fortieth Parallel and adjacent portions of California.

U. S. Geol. Surv., Bull. no. 208, 229 pp., 8 pls., 25 figs., 1903.

Describes physiographic features, character and occurrence of sedimentary and igneous rocks and ore deposits and structure of the region, including résumé of previous publications and unpublished data furnished by C. D. Walcott, H. W. Turner, F. B. Weeks, R. B. Rowe, G. H. Girty, and E. O. Ulrich.

1156 —— The determination of the feldspars in thin section.

Am. Geol., vol. 31, pp. 376–383, 1903.

1157 —— Ore deposits of Tonopah and neighboring districts, Nevada.

U. S. Geol. Surv., Bull. no. 213, pp. 81–87, 1903.

Describes the history of the development of the field, the topography, general geology, and character and occurrence of the ore deposits.

1158 **Spurr** (Josiah Edward). The ore deposits of Tonopah, Nevada (preliminary report).
U. S. Geol. Surv., Bull. no. 219, 34 pp., pl. 1, figs. 1–4, 1903.
Gives a brief history of the discovery and development of this mining district, and describes the geologic structure and history of the region, the periods and nature of mineralization, and the occurrence of the ores and their relation to the geologic structure.

1159 —— Relation of rock segregation to ore deposition.
Eng. & Mg. Jour., vol. 76, pp. 54–55, 1903.
Discusses the origin of ore deposits.

1160 —— The ore deposits of Tonopah, Nevada.
Eng. & Mg. Jour., vol. 76, pp. 769–770, ill., 1903.
Describes the geologic structure of the region and the occurrence of the ore deposits of precious metals.

1161 —— A consideration of igneous rocks and their segregation or differentiation as related to the occurrence of ores.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 288–340, 1903.
Discusses the relations of igneous rocks and ore deposits, and the origin of the latter.

1162 —— [In discussion of paper by Waldemar Lindgren, "The geological features of the gold production of North America."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1081–1083, 1903.
Discusses the age of certain gold deposits in Alaska.

1163 —— The application of geology to mining.
Intern. Mg. Cong., Proc. 5th sess., pp. 80–86 [1903].

1164 —— [Genetic classification of ore deposits.]
Abstract: Science, new ser., vol. 17, p. 274, 1903.

1165 —— The relation of faults to topography.
Abstract: Science, new ser., vol. 17, p. 792, 1903.

1166 **Stanton** (Timothy W.). A new fresh-water molluscan faunule from the Cretaceous of Montana.
Am. Phil. Soc., Proc., vol. 42, pp. 188–199, pl. 4, 1903.
Discusses the stratigraphic horizon of this faunule, and the occurrence of Cretaceous formations and their correlation, and describes six new species of fresh-water mollusks.

1167 —— Alpheus Hyatt.
Washington Acad. Sci., Proc., vol. 5, pp. 389–391, 1903.

1168 —— See Diller (J. S.), 302.

1169 —— See Hyatt (Alpheus), 625.

1170 —— See Washburne (Chester), 1265.

1171 **Starbird** (H. B.). Secondary enrichment in arid regions.
Eng. & Mg. Jour., vol. 75, pp. 702–703, 1903.
Describes occurrence and origin of gold and copper ores.

1172 **Stead** (Geoffrey). Notes on the surface geology of New Brunswick.
New Brunswick Nat. Hist. Soc., Bull. no. 21 (vol. 5, pt. 1), pp. 5–13, 1903.
Describes the process of formation of shore deposits along the coast of New Brunswick.

1173 **Steel** (A. A.). The ore deposits of La Cananea [Mexico].
Eng. & Mg. Jour., vol. 76, pp. 458–460, ill., 1903.
Gives observations upon the geology and the character and occurrence of the copper ore deposits.

1174 **Steele** (James H.): The Joplin zinc district of southwestern Missouri.
Colo. Sch. Mines, Bull., vol. 1, pp. 43–50, ill., 1900.
Gives observations upon the geology and describes the occurrence of the ores and the mining operations.

1175 **Sternberg** (Charles H.). Experiences with early man in America.
Kans. Acad. Sci., Trans., vol. 18, pp. 89–93, 1903.
Describes association of human relics with fossil bones of animals and discusses evidence as to their age.

1176 —— The Permian life of Texas.
Kans. Acad. Sci., Trans., vol. 18, pp. 94–98, 1903.
Describes the occurrence of fossil remains and physical characters of the Permian Red Beds in Baylor County, Texas.

1177 —— Elephas columbi and other mammals in the swamps of Whitman County, Washington.
Science, new ser., vol. 17, pp. 511–512, 1903.
Describes the occurrence of mammalian remains.

1178 —— Notes on the Judith River group.
Science, new ser., vol. 17, pp. 870–872, 1903.
Discusses the occurrence of vertebrate fossils and the stratigraphic position of the Judith River beds.

1179 **Stevens** (Blamey). Geology of some copper deposits in Alaska.
Eng. & Mg. Jour., vol. 75, p. 782, figs. 1–2, 1903.

1180 —— Relation of rock segregation to ore deposition.
Eng. & Mg. Jour., vol. 76, p. 574, 1903.

1181 **Stevens** (E. A.). Basaltic zones as guides to ore-deposits in the Cripple Creek district, Colorado.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 686–698, figs. 1–4, 1903.
Describes the character and occurrence of igneous rocks and the relations of the dikes, fissures, and ore-deposits.

1182 **Stevenson** (John J.). Lower Carboniferous of the Appalachian basin.
Geol. Soc. Am., Bull., vol. 14, pp. 15–96, 1903.
Describes occurrence, stratigraphy, lithologic characters and geologic relations of Lower Carboniferous formations in the Appalachian region and discusses their nomenclature and correlation, and the physiographic conditions prevailing during their deposition.

1183 —— J. Peter Lesley.
Science, new ser., vol. 18, pp. 1–3, 1903.

1184 —— Joseph Le Conte (obituary).
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 150–151, 1902.

1185 **Stevenson** (Robert). The deposition of ores from an igneous magma.
Eng. & Mg. Jour., vol. 76, p. 882, 1903.

1186 **Stewart** (Alban). Teleosts of the Upper Cretaceous.
Kans. Univ. Geol. Surv., vol. 6, pp. 257–390, pls. 33–73, 1900.

1187 **Stewart** (John), **Gardner** (Frank D.) and. A soil survey in Salt Lake Valley, Utah.
See Gardner (F. D.) and Stewart (John), 432.

1188 **Stoess** (P. C.). The Kayak coal and oil fields of Alaska.
Mg. & Sci. Press, vol. 87, p. 65, 1903.
Describes the general geology of the region and the occurrence of coal and petroleum.

1189 **Stone** (G. H.). [Discovery of coal on Turkey Creek, Colorado.]
Am. Geol., vol. 32, p. 132, 1903.

1190 **Storms** (W. H.). Some structural features of the California gold belt.
Mg. & Sci. Press, vol. 87, pp. 112, 129, 149, 165, 183, 202, 216–217, ill., 1903.
Describes the character and occurrence of the lodes and veins yielding gold ore.

1191 **Stose** (George W.). The structure of a part of South Mountain, Pennsylvania.
Abstract: Science, new ser., vol. 17, p. 387, 1903.

T.

1192 **Taff** (Joseph A.). Tishomingo folio, Indian Territory.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 98, 1903.
Describes geography, physiography, general relations, pre-Cambrian igneous rocks, Cambrian, Ordovician, Siluro-Devonian, Carboniferous and Cretaceous sedimentary rocks and Quaternary deposits, geologic structure of the Arbuckle Mountain region, and the mineral resources.

1193 **Talbot** (Mignon). A contribution to the list of the fauna of the Stafford limestone of New York.
Am. Jour. Sci., 4th ser., vol. 16, pp. 148–150, 1903.

1194 **Tarr** (Ralph S.). New physical geography.
New York, The MacMillan Company, xiii, 457 pp., 568 figs., 1903.

1195 —— Post-Glacial and Inter-Glacial (?) changes of level at Cape Ann, Massachusetts.
Harvard Coll. Mus. Comp. Zool., Bull., vol. 42, pp. 181–191, pls. 1–13, 1903.
Describes physiographic features and discusses evidences of changes of level.

1196 **Taylor** (Frank Bursley). The correlation and reconstruction of recessional ice borders in Berkshire County, Massachusetts.
Jour. Geol., vol. 11, pp. 323–364, figs. 1–10, 1903.
Describes topographic and drainage features and moraines, and discusses the evidences as to the movements of the ice sheet and general relations of the ice front to the land relief.

1197 —— Studies in the glaciation of the Berkshire Hills, Massachusetts.
Abstract: Science, new ser., vol. 17, p. 225, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

1198 **Taylor** (F. W.) and **Rice** (Thomas D.). Soil survey of the Abbeville area, South Carolina.
U. S. Dept. Agric., Field Oper. Bur. Soils, 1902, 4th Rept., pp. 273–289, 1903.
Includes a short account of the physiography and geology.

1199 —— **Bonsteel** (Jay A.) and. Soil survey of the Salem area, New Jersey.
See Bonsteel (J. A.) and Taylor (F. W.), 105.

1200 —— **Rice** (Thomas D.) and. Soil survey of the Darlington area, South Carolina.
See Rice (T. D.) and Taylor (F. W.), 1012.

1201 **Teggart** (Frederick J.). Literature available in the [Mechanics' Institute] Library [San Francisco, California] on petroleum with some references on asphaltum.
Mechanics' Inst. Lib., San Francisco, Cal., Tech. Ref. List no. 1, 24 pp., 1903.

1202 **Thierry** (—). Sur l'éruption volcanique du 8 mai à la Martinique.
Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 71–72, 1902.
Describes phenomena witnessed during an eruption of Mont Pelé.

1203 **Tight** (W. G.). Drainage modifications in southeastern Ohio and adjacent parts of West Virginia and Kentucky.

U. S. Geol. Surv., Professional Paper no. 13, 111 pp., 17 pls., 1 fig., 1903.

Discusses the present drainage of the region under consideration, the pre-Glacial drainage of adjacent regions, the general topographic features and their relation to the Tertiary peneplain, the characters of the present river valleys, the reconstruction of the old drainage system, relations of present and former drainage systems to one another and to the geologic structure, and the geologic events which caused the drainage changes.

1204 **Titcomb** (H. A.). The Camp Bird gold mine and mills [Colorado].

School of Mines Quart., vol. 24, pp. 56–67, figs. 1–7, 1902.

Gives a general account of the geology and the occurrence of the gold ore deposits and of the mining operations.

1205 **Todd** (James E.). Concretions and their geological effects.

Geol. Soc. Am., Bull., vol. 14, pp. 353–368, pls. 49–53, 1903.

Discusses character, occurrence, and modes of growth of concretions and their influence in producing topographic forms.

1206 —— Building stones of South Dakota.

Stone, vol. 26, pp. 20–27, ill., 1903.

Describes the character and geologic occurrence of building stones.

1207 —— A newly discovered rock at Sioux Falls, South Dakota.

Stone, vol. 27, pp. 46–48, 1903.

Describes the occurrence and character of an igneous rock discovered in this vicinity.

1208 —— Olivet folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 96, 1903.

Describes geography and topography, general geology, character and occurrence of Algonkian, Cretaceous and Quaternary deposits, geologic history, economic and water resources.

1209 —— Parker folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 97, 1903.

Describes geography, general geology, and character and occurrence of Algonkian and Cretaceous strata and Quaternary deposits, the geologic history and economic resources, including underground waters.

1210 —— Mitchell folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 99, 1903.

Describes geography, general geology, the character and occurrence of deposits belonging to the Algonkian, Cretaceous, and Quaternary systems, the geologic history and economic resources, more particularly the underground waters.

1211 —— and **Hall** (C. M.). Alexandria folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 100, 1903.

Describes geography, general geology, Algonkian, Cretaceous and Quaternary deposits, the geologic history, and economic and artesian water resources of the Alexandria quadrangle.

1212 **Todd** (James E.). See Winchell (N. H.), 1342.

1213 **Transeau** (Edgar N.). On the geographic distribution and ecological relations of the bog plant societies of northern North America.

Bot. Gaz., vol. 36, pp. 401–420, figs. 1–3, 1903.

Includes a discussion of pre-Glacial distribution and Glacial and later migrations of these plant societies.

1214 **Turner** (Henry W.). Post-Tertiary elevation of the Sierra Nevada.

Geol. Soc. Am., Bull., vol. 13, pp. 540–541, pl. 58, 1903.

Discusses the age of the Sierra Nevada uplift.

1215 —— The copper-deposits of the Sierra Oscura, New Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 678–681, fig. 1, 1903.

Describes the geographic features and geologic structure of the region and the occurrence of copper-bearing reefs.

1216 —— The Cretaceous auriferous conglomerate of the Cottonwood mining district, Siskiyou County, California.

Eng. & Mg. Jour., vol. 76, pp. 653–654, ill., 1903.

Discusses the character, occurrence, and geological relations of the rock formations, and the source of the gold contained in the conglomerate.

1217 —— Notes on contact-metamorphic deposits in the Sierra Nevada Mountains.

Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903), 2 pp.

Describes occurrences of deposits additional to those noted by Mr. Lindgren (Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 230–231).

1218 —— Observations on Mother Lode gold deposits, California. [In discussion of paper of W. A. Prichard.]

Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903), 2 pp.

Discusses the time-relations of the diorite intrusions and the fissuring.

1219 **Tyrrell** (J. B.). A peculiar artesian well in the Klondike.

Eng. & Mg. Jour., vol. 75, p. 188, 1 fig, 1903.

Describes geologic structure of the region and the conditions producing the artesian flow of water.

U.

1220 **Udden** (Johan August). Geology of Mills and Fremont counties [Iowa].

Iowa Geol. Surv., vol. 13, pp. 123–183, pls. 4–7, 1903.

Describes topography and drainage, character, occurrence and geologic relations of Carboniferous and Cretaceous strata and surficial deposits, and economic resources. Includes a report by Prof. B. S. Shimek on the fossils from the loess of these counties.

1221 —— Foraminiferal ooze in the Coal Measures of Iowa.

Jour. Geol., vol. 11, pp. 283–284, 1903.

1222 **Udden** (Johan August). Note to the article on "Foraminiferal ooze in the Coal Measures of Iowa."
Jour. Geol., vol. 11, p. 430, 1903.
Notes the occurrence of a bed of foraminiferal ooze in the upper Carboniferous of Texas.

1223 **Ulrich** (Edward Oscar) and **Smith** (W. S. Tangier). Lead, zinc, and fluorspar deposits of western Kentucky.
U. S. Geol. Surv., Bull. no. 213, pp. 205–213, 1903.
Describes the mining development and geologic structure of the region and the character and occurrence of the veins and vein minerals.

1224 —— **Hayes** (C. Willard) and. Columbia folio, Tennessee.
See Hayes (C. W.) and Ulrich (E. O.), 533.

1225 **United States Geological Survey.** Geology, etc., of the Coosa Valley, Alabama.
56th Cong., 2d sess., Senate Doc. no. 65, 4 pp., 1901.
A letter from the Director of the United States Geological Survey submitting a brief sketch of the geology and natural resources of the Coosa Valley, in the State of Alabama.

1226 **Upham** (Warren). Valley loess and the fossil man of Lansing, Kansas.
Am. Geol., vol. 31, pp. 25–34, 1903.
Discusses distribution and origin of loess deposits and the evidences for the age of the fossiliferous remains found near Lansing, Kansas.

1227 —— The life and work of Professor Charles M. Hall.
Am. Geol., vol. 31, pp. 195–198, pl. 13 (por.), 1903.

1228 —— How long ago was America peopled?
Am. Geol., vol. 31, pp. 312–315, 1903.
Discusses time estimates of Glacial and post-Glacial periods and evidences of antiquity of man in America.

1229 —— Glacial Lake Nicolet and the portage between the Fox and Wisconsin rivers.
Am. Geol., vol. 32, pp. 105–115, 1903.

1230 —— The antiquity of the fossil man of Lansing, Kansas.
Am. Geol., vol. 32, pp. 185–187, 1903.

1231 —— The glacial lakes Hudson-Champlain and St. Lawrence.
Am. Geol., vol. 32, pp. 223–230, 1903.

1232 —— Glacial Lake Jean Nicolet.
Am. Geol., vol. 32, pp. 330–331, 1903.
As the name Lake Nicollet had been previously used by Winchell, the writer amends his name Lake Nicolet to the form given above.

1233 —— Geology of Prairie Island [Minnesota].
Memoirs of Exploration in the Basin of the Mississippi, vol. 6, Minnesota, pp. 34–38, 1903.

1234 —— The past and future of Niagara Falls.
State Reservation at Niagara, Comm. 19th Ann. Rept., pp. 231–254, 1903.

V.

1235 **Van Diest** (P. H.). A mineralogical mistake.
Colo. Sci. Soc., Proc., vol. 6, pp. 150–156, 1 pl. [1902].
Contains observations on occurrence of rocks and ores, and describes the efforts to find tin in the Greenhorn Mountains of Colorado.

1236 **Van Hise** (Charles Richard). Geological work in the Lake Superior region.
Lake Sup. Mg. Inst., Proc. for 1902, vol. 8, pp. 62–69 [1903].
Discusses the difficulties of geologic work in this region and gives an historical review of the work that has been done.

1237 —— Powell as an explorer.
Wash. Acad. Sci., Proc., vol. 5, pp. 105–112, 1903.

1238 —— Genetic classification of ore deposits.
Abstract: Science, new ser., vol. 17, pp. 542–543, 1903.

1239 **Van Ingen** (Gilbert). A method of facilitating photography of fossils.
Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 115–116, 1902.

1240 —— and **Clark**, (P. Edwin). Disturbed fossiliferous rocks in the vicinity of Rondout, N. Y.
N. Y. State Mus., Bull. 69, pp. 1176–1227, pls. 1–13, 1903.
Describes location, stratigraphy, paleontology, and structural features of Silurian and Devonian strata in the city of Rondout, New York, and its vicinity.

1241 **Vaughan** (T. Wayland). An addition to the coral fauna of the Aquia Eocene formation of Maryland.
Wash. Biol. Soc., Proc., vol. 15, pp. 205–206, 1902.

1242 —— A redescription of the coral Platytrochus speciosus.
Wash. Biol. Soc., Proc., vol. 15, pp. 207–209, 1902.

1243 —— Corrections to the nomenclature of the Eocene fossil corals of the United States.
Wash Biol. Soc., Proc., vol. 16, p. 101, 1903.

1244 —— The corals of the Buda limestone.
U. S. Geol. Surv., Bull. no. 205, pp. 37–40, pl. 27, 1903.

1245 —— Fuller's earth deposits of Florida and Georgia.
U. S. Geol. Surv. Bull. no. 213, pp. 392–399, 1903.
Describes geographic and geologic occurrence and character of deposits of fuller's earth in these States.

1246 —— See Arnold (Ralph), 38.

1247 **Veatch** (Arthur C.). The diversity of the Glacial period on Long Island.
Jour. Geol., vol. 11, pp. 762–776, figs. 1–6, 1903.
Discusses character, occurrence, geologic position, and correlation of glacial deposits on Gardiners and Long Islands, New York.

1248 **Veatch** (Arthur C.). Notes on the geology of Long Island.
Science, new ser., vol. 18, pp. 213–214, 1903.
Discusses the occurrence of Quaternary formations and their relation to pre-Glacial topography.

1249 **Villarello** (Juan D.). Genesis de los yacimientos mercuriales de Palomas y Huitzuco, en los estados de Durango y Guerrero de la Republica Mexicana.
Soc. Cien. Ant. Alz., Mem. y Rev., vol. 20, pp. 95–136, 1903.
Discusses origin of mercury-bearing ore deposits.

1250 **Von Rosenberg** (Leo). Report on the properties of the Summit Coal Company, situated in Marshall County, State of West Virginia.
New York, 12 pp., 9 pls., 1903. (Privately printed.)
Contains geologic sections of Carboniferous strata and data bearing on coal production.

1251 **Voyle** (Joseph). Aurite, and a general theory of gold ore genesis.
Mg. & Sci. Press, vol. 86, pp. 382–383, 1903.

W.

1252 **Wagner** (George). Observations on Platygonus compressus Le Conte.
Jour. Geol., vol. 11, pp. 777–782, figs. 1–4, 1903.

1253 **Walcott** (Charles D.). New term for the Upper Cambrian series.
Jour. Geol., vol. 11, pp. 318–319, 1903.
Proposes the term Saratogian for Upper Cambrian, and gives a list of formations referred to it.

1254 —— John Wesley Powell.
Wash. Acad. Sci., Proc., vol. 5, pp. 99–130, pl. 1 (por.), 1903.

1255 —— Twenty-fourth annual report of the Director of the United States Geological Survey to the Secretary of the Interior, 1902–3.
Washington, 302 pp., 26 pls., 1903.
Gives an account of the work of the U. S. Geological Survey for the year 1902–3. Includes a biographical sketch of J. W. Powell.
The rules governing the nomenclature and classification of geologic formations promulgated in the Tenth Annual Report, pp. 63–79, have been recently revised and, as revised, are given in this report on pp. 21–27.

1256 **Waldo** (C. A.). Dikes in the Oklahoma Panhandle.
Abstract: Eng. & Mg. Jour., vol. 75, p. 153, 1903; Science, new ser., vol. 17, p. 220, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

1257 **Walker** (Bryant). On the shells of marls.
Mich. Geol. Surv., vol. 8, pt. 3, pp. 97–102, 1903.
Describes the occurrence of gastropodous shells in Michigan marl deposits.

1258 **Ward** (Henry A.). Catalogue of the Ward-Coonley collection of meteorites.
Chicago, 99 pp., 6 pls., 1900; 28 pp., 1901. (Private publication.)
Contains notes on the character and occurrence of meteorites.

1259 —— The Bath Furnace [Kentucky] meteorite.
Am. Jour. Sci., 4th ser., vol. 15, pp. 316–319, 1 fig., 1903.
Describes fall and characters.

1260 —— The Andover [Maine] meteorite.
Am. Jour. Sci., 4th ser., vol. 15, pp. 395–396, 1 fig., 1903.

1261 **Ward** (Lester F.). Correlation of the Potomac formation in Maryland and Virginia.
Abstract: Science, new ser., vol. 17, pp. 941–942, 1903.

1262 **Warman** (Philip Creveling). Catalogue and index of the publications of the United States Geological Survey, 1901 to 1903.
U. S. Geol. Surv., Bull. no. 215, 234 pp., 1903.

1263 —— Catalogue of the published writings of John Wesley Powell.
Wash. Acad. Sci., Proc., vol. 5, pp. 131–187, 1903.

1264 **Warren** (C. H.). Mineralogical notes. I. Native arsenic from Arizona. II. Anthophyllite with the fayalite from Rockport, Mass. III. Cerussite and phosgenite from Colorado.
Am. Jour. Sci., 4th ser., vol. 16, pp. 337–344, 1903.
Describes occurrence and characters of these minerals.

1265 **Washburne** (Chester). Notes on the marine sediments of eastern Oregon.
Jour. Geol., vol. 11, pp. 224–229, 1903.
Describes occurrence of fossiliferous limestone of Carboniferous age and gives notes on the occurrence of strata and fossils of Triassic, Jurassic, and Cretaceous age. Includes reports by George H. Girty on the fossils collected from the Carboniferous limestone and by T. W. Stanton on fossils from the Chico formation.

1266 **Washington** (Henry Stephens). Chemical analyses of igneous rocks published from 1884 to 1900, with a critical discussion of the character and use of analyses.
U. S. Geol. Surv., Professional Paper no. 14, 495 pp., 1903.
Discusses character of chemical analyses of igneous rocks, the construction and nomenclature of the new quantitative classification and its correlation with the qualitative system, and methods of calculation employed, and gives tables embracing nearly all published analyses of igneous rocks arranged according to the new system.
NOTE.—These chemical analyses have not been separately listed in the index.

1267 —— The calculation of center-points in the quantitative classification of igneous rocks.
Abstract: Science, new ser., vol. 17, p. 668, 1903.

1268 **Washington** (Henry Stephens). The quantitative distribution of rock magmas.

Abstract: Eng. & Mg. Jour., vol. 75, p. 153, 1903.

1269 —— and others. Quantitative classification of igneous rocks.

See Cross (Whitman) and others, 251.

1270 **Watson** (Thomas Leonard). Copper-bearing rocks of Virgilina copper district, Virginia and North Carolina.

Denison Univ., Sci. Lab., Bull., vol. 12, pp. 97–127, pls. 7–9, fig. 1, 1903.

Reviews previous work and describes the occurrence, petrographic characters, and composition of igneous rocks, and the occurrence and character of the deposits of copper ores.

1271 —— The yellow ocher deposits of the Cartersville district, Bartow County, Georgia.

Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903), 24 pp.

Gives an account of the geology and topography of the district and describes the occurrence, composition and mining of the ocher deposits.

1272 —— Geological relations of the manganese ore deposits of Georgia.

Am. Inst. Mg. Engrs., Trans. (Albany meeting, February, 1903), 47 pp. Discussion, 3 pp.

Describes the stratigraphy and geologic structure and the character and occurrence of the manganese ores of the Paleozoic and crystalline rocks of northern Georgia and discusses the origin of the ore deposits.

1273 **Webster** (Arthur). Geology of the west coast of Vancouver Island.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 52–74, 1903.

Describes observations upon the physical features, general geology, and economic resources of the region.

1274 **Weed** (Walter Harvey). Geological sketch of the Hot Springs district, Arkansas.

57th Cong., 1st Sess., Sen. Doc. no. 282, Washington, pp. 79–94, pls. 1–10, 1902.

Describes location, topography, and general geology of the region, and the source, character, and geologic relations of the hot springs, and discusses the origin of their heat.

1275 —— Gold mines of the Marysville district, Montana.

U. S. Geol. Surv., Bull. no. 213, pp. 88–89, 1903.

Gives a brief history of the development of the field, its geological features, and the occurrence of the ore bodies.

1276 —— Tin deposits at El Paso, Tex.

U. S. Geol. Surv., Bull. no. 213, pp. 99–102, 1903.

Describes briefly the geologic structure and formation of the Franklin Mountains, the character and occurrence of the ores, and the mining developments.

1277 **Weed** (Walter Harvey). Ore deposits at Butte, Mont.
U. S. Geol. Surv., Bull. no. 213, pp. 170–180, 1903.
Describes the mining development of the region, the character and occurrence of the rocks and structural features of the district, and the character, occurrence, and origin of the ore deposits and the vein systems.

1278 —— Copper deposits of the Appalachian States.
U. S. Geol. Surv., Bull. no. 213, pp. 181–185, 1903.
Describes the occurrence of deposits of copper ores in New Jersey, Maryland, Virginia, North Carolina, and Tennessee.

1279 —— Copper deposits of New Jersey.
N. J. Geol. Surv., Ann. Rept. for 1902, pp. 125–139, 1903.
Describes the occurrence, character, and structural conditions of the copper ores and the mining operations, and discusses the origin of the ores.

1280 —— Ore deposits near igneous contacts.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 715–746, fig. 1, 1903.
Gives a genetic classification of ore deposits, discusses formation of ores in contact zones, and especially the origin of contact metamorphic deposits.

1281 —— Ore deposition and vein enrichment by ascending hot waters.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 747–754, 1903.

1282 —— Secondary enrichment at Cripple Creek [Colorado].
Eng. & Mg. Jour., vol. 75, pp. 553–554, 1 fig., 1903.

1283 —— Cross vein ore shoots and fractures.
Eng. & Mg. Jour., vol. 76, p. 193, 1903.
Describes vein structure and discusses its origin.

1284 —— The Cananea ore deposits [Mexico].
Eng. & Mg. Jour., vol. 76, p. 383, 1903.
Gives observations upon the geology and the occurrence of the copper ore deposits.

1285 —— [Classification of ore deposits].
Abstract: Science, new ser., vol. 17, pp. 273–274, 1903.

1286 **Weeks** (Fred Boughton). Bibliography and index of North American geology, paleontology, petrology, and mineralogy for the year 1902.
U. S. Geol. Surv., Bull. no. 221, 200 pp., 1903.

1287 —— Tungsten ore in eastern Nevada. U. S. Geol. Surv., Bull. no. 213, p. 103, 1903.
Describes the character and occurrence of hübnerite in the Snake Mountains, Nevada.

1288 **Weeks** (Fred Boughton). Occurrence of Paleozoic rocks in the southern portion of the Great Basin region.

Abstract: Science, new ser., vol. 17, p. 26, 1903.

Describes briefly the occurrence and character of pre-Cambrian, Cambrian, Silurian, Devonian, and Carboniferous strata and the general geologic structure.

1289 **Weidman** (S.). The pre-Potsdam peneplain of the pre-Cambrian of north-central Wisconsin.

Jour. Geol., vol. 11, pp. 289–313, pl. 1, and text figs. 1–8, 1903.

Describes physiographic features and general structure of the peneplain, and discusses its formation, evidences as to its age, and its subsequent history.

1290 —— Note on the amphibole hudsonite previously called a pyroxene.

Am. Jour. Sci., 4th ser., vol. 15, pp. 227–232, 2 figs., 1903.

Describes microscopic and chemical characters.

1291 **Weller** (Stuart). The Paleozoic faunas [New Jersey].

N. J. Geol. Surv., Rept. on Paleont., vol. 3, 462 pp., 53 pls., 1903.

Describes the Paleozoic formations of New Jersey, gives lists of their included fossils and discusses the characteristics of the faunas and their correlation with those of other areas. Gives systematic descriptions and figures of the fossils of the several formations described.

1292 **Wells** (J. Walter). Molybdenite—its occurrence, concentration, and uses.

Can. Mg. Rev., vol. 22, pp. 113–118, figs. 1–4, 1903.

1293 **Wheelock** (C. E.). The Oriskany sandstone.

Onondaga Acad. Sci., Proc., vol. 1, pp. 39–44, 1903.

Describes distribution, character, and fossil contents of the Oriskany sandstone in Onondaga County, N. Y.

1294 **Whitaker** (Milton C.). An olivinite dike of the Magnolia district [Colorado] and the associated picrotitanite.

Colo. Sci. Soc., Proc., vol. 6, pp. 104–119 [1902].

Describes the occurrence, the megascopic and microscopic characters, and composition of olivinite, and the characters and composition of the associated picrotitanite.

1295 **White** (David). Memoir of Ralph Dupuy Lacoe.

Geol. Soc. Am., Bull., vol. 13, pp. 509–515, 1903.

Includes a list of publications.

1296 —— Summary of the fossil plants recorded from the upper Carboniferous and Permian formations of Kansas.

U. S. Geol. Surv., Bull. no. 211, pp. 85–117, 1903.

1297 —— Permian elements in the Dunkard flora.

Abstract: Science, new ser., vol. 17, p. 298, 1903.

1298 **White** (David). An anthracite coal field three and a half hours west of Washington.
Abstract: Science, new ser., vol. 17, p. 387, 1903.
Describes observations upon the geology and age of the Sleepy Creek Mountain coal basin of West Virginia.

1299 —— Age of the Mercer group.
Abstract: Science, new ser., vol. 17, p. 942, 1903.

1300 —— See Diller (J. S.), 302.

1301 **White** (I. C.). The Appalachian coal field [West Virginia].
W. Va. Geol. Surv., vol. 2, pp. 81–716, 1903.
Gives a detailed account of the Carboniferous system in West Virginia, including geologic sections, the extent, character, and geologic position of the various formations, and the character, occurrence, constitution, and fuel value of the coals.

1302 **Whiteaves** (J. F.). Description of a fossil Cyrena from Alberta.
Ottawa Nat., vol. 16, pp. 231–233, pl. 4, 1903.

1303 —— Crania of extinct bisons from the Klondike Creek gravels.
Ottawa Nat., vol. 16, pp. 240–241, 1903.

1304 —— Description of a new species of Matheria, from the Trenton limestone at Ottawa.
Ottawa Nat., vol. 17, pp. 32-34, fig. 1, 1903; Geol. Mag., new ser., dec. 4, vol. 10, pp. 358–359, fig. 1, 1903.

1305 —— Description of a species of Cardioceras from the Crows Nest coal fields.
Ottawa Nat., vol. 17, pp. 65–67, fig. 1, 1903.

1306 —— Notes on some Canadian specimens of "Lituites undatus."
Ottawa Nat., vol. 17, pp. 119–122, 1903.
Reviews literature bearing on the subject and discusses the generic placement and relationships of Canadian specimens.

1307 —— Additional notes on some Canadian specimens of "Lituites undatus."
Ottawa Nat., vol. 17, pp. 161–163, 1903.

1308 —— Mesozoic fossils. Part 5. On some additional fossils from the Vancouver Cretaceous, with a revised list of the species therefrom.
Can. Geol. Surv., Mesozoic Fossils, vol. 1, pp. 309–415, pls. 40–51, figs. 15–27, 1903.

1309 **Whitfield** (R. P.). Notice of six new species of Unios from the Laramie group.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 483-487, pls. 38–40, 1903.

1310 —— Observations on a remarkable specimen of Halysites and description of a new species of the genus.
Am. Mus. Nat. Hist., Bull., vol. 19, pp. 489–490, pls. 41–42, 1903.

1311 **Whitlock** (H. P.). List of New York mineral localities.
N. Y. State Mus., Bull. 70, 108 pp., 1903.
Tabulates the occurrence and geologic association of minerals found in the State of New York.

1312 **Whittemore** (Charles A.). The sub-Carboniferous limestone exposure at Grand Rapids, Mich.
Mich. Acad. Sci., 1st Rept., pp. 62–65, 1900.
Describes the occurrence and character, and notes the fossils occurring therein.

1313 **Wieland** (G. R.) Notes on the marine turtle Archelon: 1, on the structure of the carapace; 2, associated fossils.
Am. Jour. Sci., 4th ser., vol. 15, pp. 211–216, 1 fig., 1903.
Describes the rib series of Archelon ischyros from new material.

1314 —— Polar climate in time the major factor in the evolution of plants and animals.
Am. Jour. Sci., 4th ser., vol. 16, pp. 401–430, 1903.

1315 —— Extent and progress of cycad investigation.
Science, new ser., vol. 17, pp. 352–353, 1903.

1316 **Wilder** (Frank A.). The age and origin of the gypsum of central Iowa.
Jour. Geol., vol. 11, pp. 723–748, figs. 1–3, 1903.
Describes occurrence, character, and geologic position of the gypsum deposits, and discusses their age and mode of formation.

1317 —— Possible origin for the lignites of North Dakota.
Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 129–135, 1903.
Describes occurrence and characters of lignite beds in North Dakota and Montana and offers an explanation of their origin.

1318 **Wilder** (Henry J.), **Burke** (R. T. A.) and. Soil survey of the Trenton area, New Jersey.
See Burke (R. T. A.) and Wilder (H. J.), 144.

1319 **Williams** (E. G.). The manganese industry of the Department of Panama, Republic of Colombia.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 197–234, figs. 1–9, 1903.
Discusses the character and occurrence of the manganese ore deposits and the mining operations.

1320 **Williams** (Henry Shaler). Shifting of faunas as a problem of stratigraphic geology.
Geol. Soc. Am., Bull., vol. 14, pp. 177–190, pl. 16, 1903.
Discusses relationships of faunas in different types of sediments in the Devonian of New York, Pennsylvania, and Ohio and their shifting, and gives rules for the use of fossils in stratigraphy.

1321 **Williams** (Henry Shaler). The correlation of geological faunas, a contribution to Devonian paleontology.
U. S. Geol. Surv., Bull. no. 210, 147 pp., 1903.
Discusses faunas of upper Devonian, with especial reference to the statistics of the species, the evidences for the shiftings of faunas and the consequences thereof, and the value and use of fossils in correlation work.

1322 **Willis** (Bailey). Physiography and deformation of the Wenatchee-Chelan District, Cascade Range [Washington].
U. S. Geol. Surv., Professional Paper no. 19, pp. 41–97, pls. 8–20, figs. 2–3, 1903.
Describes physiographic features of the region and their history.

1323 —— Ames Knob, North Haven, Maine.
Geol. Soc. Am., Bull., vol. 13, pp. 201–206, pls. 17–18, 1903; Am. Geol., vol. 31, p. 159, 1903.
Describes physiographic and glacial evidences showing submergence and re-elevation.

1324 —— Post-Tertiary deformation of the Cascade Range.
Abstract: Science, new ser., vol. 17, p. 740, 1903.

1325 **Williston** (Samuel W.). North American plesiosaurs. Part I.
Field Col. Mus., Geol. Ser., vol. 2, pp. 1–77, pls. 1–29, figs. 1–13, 1903.

1326 —— On the osteology of Nyctosaurus (Nyctodactylus), with notes on American pterosaurs.
Field Col. Mus., Geol. Ser., vol. 2, pp. 25–163, pls. 40–44, figs. 1–2, 1903.

1327 —— On the structure of the plesiosaurian skull.
Science, new ser., vol. 17, p. 980, 1903.

1328 —— Some osteological terms.
Science, new ser., vol. 18, pp. 829–830, 1903.

1329 —— The fossil man of Lansing, Kansas.
Pop. Sci. Monthly, vol. 62, pp. 463–473, ill., 1903.
Describes the occurrence of the human remains and discusses the evidences of their age.

1330 —— Cretaceous fishes, Selachians and Pycnodonts.
Kans. Univ. Geol. Surv., vol. 6, pp. 237–256, pls. 23–32, 1900.

1331 —— See Winchell (N. H.), 1342.

1332 **Wilson** (Alfred W. G.). The Laurentian peneplain.
Jour. Geol., vol. 11, pp. 615–669, figs. 1–14, 1903; McGill Univ., Papers from Dept. Geol., no. 15, 1903.
Describes location, physiographic control, topographic and drainage features, and discusses the origin of the Laurentian peneplain and some of its features.

1333 **Wilson** (Alfred W. G.). A geological reconnoissance about the headwaters of the Albany River [Canada].

Can. Geol. Surv., Summ. Rept. for 1902, pp. 201–206, 1903.

Gives observations upon the topography and geology of the region examined.

1334 —— The theory of the formation of sedimentary deposits.

Can. Rec. Sci., vol. 9, pp. 112–132, figs. 1–4, 1903; McGill Univ., Papers from the Dept. Geol., no. 16, 1904.

Discusses the conditions and processes of sedimentation and their bearing upon the character and correlation of some Ordovician and Silurian formations of Canada.

1335 **Wilson** (John D.). Fauna of the Agoniatite limestone of Onondaga County, N. Y.

Onondaga Acad. Sci., Proc., vol. 1, pp. 84–88, 1903.

Describes the occurrence, character, and fossils of the Agoniatite limestone of the Marcellus shale in Onondaga County, N. Y.

1336 **Wilson** (W. J.). Reconnoissance surveys of Four Rivers southwest of James Bay.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 220–239, 1903.

Contains observations upon the geology of the region examined.

1337 **Winchell** (Alexander N.). Note on titaniferous pyroxene.

Am. Geol., vol. 31, pp. 309–310, 1903.

Discusses composition and optic angle.

1338 —— [In discussion of paper by J. E. Spurr, "A consideration of igneous rocks and their segregation or differentiation as related to the occurrence of ores."]

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1063–1064, 1903.

Discusses an example of ore concentration in Madison County, Montana.

1339 **Winchell** (Horace V.). Synthesis of chalcocite and its genesis at Butte, Montana.

Geol. Soc. Am., Bull., vol. 14, pp. 269–276, 1903; Eng. & Mg. Jour., vol. 75, pp. 782–784, 1903.

Discusses occurrence and experiments to determine origin of chalcopyrite.

1340 —— The Mesabi iron range [Minnesota].

Eng. & Mg. Jour., vol. 76, pp. 343–344, 1903.

Discusses geologic work upon the Mesabi iron range.

1341 **Winchell** (Newton H.). Some results of the late Minnesota Geological Survey.

Am. Geol., vol. 31, pp. 246–253, 1903.

Gives a brief summary of the results of this survey.

1342 **Winchell** (Newton H.) The Pleistocene geology of the Concannon farm, near Lansing, Kansas.
Am. Geol., vol. 31, pp. 263–308, pls. 15–18, 1903.
Summarizes and discusses Professor Chamberlain's paper on "The geologic relations of the human relics of Lansing, Kansas" (Jour. Geol., vol. 10, pp. 745–779, 1902), describes the general geologic relations and character of the deposits where the human remains were found, and discusses their age and mode of formation. Includes contributions by S. W. Williston, J. E. Todd, and G. Frederick Wright.

1343 —— Regeneration of clastic feldspar.
Geol. Soc. Am., Bull., vol. 13, pp. 522–525, 1903.
Reviews previous literature on the subject and discusses three phases of the changes through which feldspars pass.

1344 —— Was man in America in the Glacial period?
Geol. Soc. Am., Bull., vol. 14, pp. 133–152, fig. 1, 1903.
Describes conditions prevailing in North America during Tertiary times, discusses character of the pre-Glacial geest covering, the advent of the ice sheets, origin of the loess, and the occurrence and character of the Lansing skeleton.

1345 —— Metamorphism of the Laurentian limestones of Canada.
Am. Geol., vol. 32, pp. 385–392, 1903.
A review of a paper by Louis Caryl Graton "On the petrographical relations of the Laurentian limestones and the granite in the township of Glamorgan, Haliburton County, Ontario" (Can. Rec. Sci., vol. 9, pp. 1–38, 1903).

1346 —— Granite. Address at unveiling of the Coronado obelisk at Logan Grove, Kansas, Aug. 12, 1902.
Memoirs of Exploration in the Basin of the Mississippi, vol. 7, Kansas, pp. 87–91, 1903.
Includes a discussion of Archean geologic history and the origin of granite.

1347 **Winterton** (J.). The volcanic eruptions in Guatemala.
Sc. Am., vol. 89, p. 84, ill., 1903.

1348 **Wolff** (J. E.). Zinc and manganese deposits of Franklin Furnace, N. J.
U. S. Geol. Surv., Bull. no. 213, pp. 214–217, 1903.
Describes the character, geologic occurrence, and origin of the zinc deposits.

1349 **Woodward** (H.). Note on some fragmentary remains of fossils from the upper part of Mount Noyes (Canadian Rockies).
Geol. Mag., new ser., dec. 4, vol. 10, pp. 297–298, figs. 1–3, 1903.

1350 **Woodward** (R. S.) and others. Report of advisory committee on geophysics.
Carnegie Inst. Wash., Yearbook no. 1, 1902, pp. 26–70, 1903.
Discusses problems of geophysics and methods of investigation.

1351 **Woodworth** (Jay B.). On the sedentary impression of the animal whose trail is known as Climactichnites.
N. Y. State Mus., Bull. 69, pp. 959–966, pls. A–B, figs. 1–3, 1903.
Describes occurrence and character of the trails known as Climatichnites and discusses their formation.

1352 —— The Northumberland volcanic plug.
N. Y. State Mus., 55th Ann. Rept., pp. r17–r24, pls. 2–6, figs. 1–3, 1903.
Describes the occurrence, character and geologic relations of an igneous rock mass discovered near Schuylerville, New York, to which the name Stark's Knob is given.

1353 —— Note on the elevated beaches of Cape Ann, Mass.
Harvard Coll., Mus. Comp. Zool., Bull., vol. 42, pp. 191–194, 1903.

1354 **Woolman** (Lewis). Report on artesian wells [New Jersey].
N. J. Geol. Surv., Ann. Rept. for 1902, pp. 61–95, 1903.

1355 **Wortman** (J. L.). Studies of Eocene mammalia in the Marsh collection, Peabody Museum. Part II, Primates.
Am. Jour. Sci., 4th ser., vol. 15, pp. 163–176, figs. 100–104; pp. 399–414, 419–436; vol. 16, pp. 345–368, figs. 105–119, pls. 16–17, 1903.
Discusses characters, relationships, classification, origin, and distribution of primates and gives descriptions of forms belonging to the Cheiromyidæ.

1356 **Wright** (Frederick Bennett). The mastodon and mammoth contemporary with man.
Records of the Past, vol. 2, pp. 243–253, ill., 1903.

1357 **Wright** (George Frederick). The age of the Lansing skeleton.
Records of the Past, vol. 2, pp. 119–124, ill., 1903.

1358 —— Glacial man.
Records of the Past, vol. 2, pp. 259–271, ill., 1903.

1359 —— The Lansing skull and the early history of mankind.
Bibliotheca Sacra, 73d yr., pp. 28–32, 1903.

1360 —— The revision of geological time.
Bibliotheca Sacra, 73d yr., pp. 578–582, 1903.
Reviews and discusses the evidence for the length of post-Glacial time.

1361 —— The problem of the loess in the Missouri Valley compared with that in Europe and Asia.
Abstract: Science, new ser., vol. 17, pp. 227–228, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

1362 —— See Winchell (N. H.), 1342.

1363 **Wuensch** (A. F.). The Arizpe meteorite [Mexico].
Colo. Sci. Soc., Proc., vol. 7, pp. 67–68, ill., 1903.

Y.

1364 **Yates** (J. A.). The Ottawa [Kansas] gas wells.

Kans. Acad. Sci., Trans., vol. 18, pp. 106–108, 1903.

Describes the exploration for natural gas and gives a record of the borings.

1365 **Yates** (Lorenzo Gordin). Prehistoric California.

So. Cal. Acad. Sci., Bull., vol. 1, pp. 81–86, 3 pls.; pp. 97–100, pls. 4–7; pp. 113–118, pls. 1–2; pp. 129–137, pls. 3–4, 1902; vol. 2, pp. 145–155, 2 pls.; pp. 17–22, figs. 1–3; pp. 44–51, pls. 1–4; pp. 74–75, pl. 5; pp. 87–93, pls. 6–8; pp. 97–101, pls. 9–10; pp. 113–118, pls. 11–12, 1903.

Describes physiography and general geologic structure and history of southern California, and the character of the flora and fauna during Tertiary time, and gives lists and figures of and notes upon fossil plants and animals.

1366 **Young** (L. E.), **Beyer** (S. W.) and. Geology of Monroe County, Iowa.

See Beyer (S. W.) and Young (L. E.), 78.

1367 **Yung** (Morrison B.) and **McCaffery** (Richard S.). The ore deposits of the San Pedro district, New Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 350–362, figs. 1–7, 1903; Eng. & Mg. Jour., vol. 75, pp. 297–299, figs. 1–4, 1903.

Describes the general geology of the region, and the occurrences, geologic relations, and character of the copper, silver-lead, and gold deposits.

ADDENDA TO BIBLIOGRAPHIES FOR PREVIOUS YEARS.

1894	1895	1896	1897	1898
1077	391	299	220	74
			221	222
			300	329
			1078	782
				914

1899	1900			
419	1	429	628	872
922	64	432	808	923
1079	310	497	869	1120
	324	624	870	1130

1901	1902			
81	20	356	672	858
82	21	402	692	874
95	42	416	699	911
102	43	453	711	915
103	50	468	712	916
104	71	497	713	941
227	79	500	714	942
234	86	504	715	943
242	105	518	716	961
311	106	534	717	962
312	107	541	718	966
313	114	561	719	967
321	122	575	727	977
322	142	584	754	1008
330	143	590	755	1113
331	149	591	760	1142
342	150	596	769	1143
382	157	599	772	1184
433	177	616	773	1202
434	215	640	774	1204
462	216	641	841	1235
497	224	650	846	1239
503	234	657	847	1241
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radula var. aspera n. var., Matthew, 858.
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Lingulepis Hall, Matthew, 858.
gregwa, Matthew, 858.
gregwa var. robusta n. var., Matthew, 858.
longinervis n. sp., Matthew, 858.
pumila n. sp., Matthew, 858.
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starri var., Matthew, 858.
starri mut. exigua n. mut., Matthew, 858.
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Linuparus canadensis Whiteaves, Whiteaves, 1308.
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Liospira micula (Hall), Weller, 1291.
strigata n. sp., Collie, 228.
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Osmeroides Agassiz, Loomis, 808.
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polymicrodus Stewart, Loomis, 808.
Osmundites skidegatensis n. sp., Penhallow, 966.
skidegatensis Penh., Penhallow, 967.
Ostrea (Linné) Lamarck, Arnold, 38.
anomioides var. nanus n. var., Johnson, 647.
eduliformis Schlotheim, Madsen, 836.
lugubris Conrad, Johnson, 647.
lurida Carpenter, Arnold, 38.
sp., Shattuck, 1098.
Ovula symmetrica n. sp., Aldrich, 16.
Oxydiscus cristatus Safford, Hayes and Ulrich, 533.
subacutus Ulrich, Weller, 1291.
Pachydiscus binodatus n. sp., Whiteaves, 1308.
haradai Jimbo, Whiteaves, 1308.
multisulcatus n. sp., Whiteaves, 1308.
neevesii n. sp., Whiteaves, 1308.
newberryanus Meek sp., Whiteaves, 1308.
otacodensis Stoliczka sp., Whiteaves, 1308.
(haradai? var.) perplicatus, Whiteaves, 1308.
suciensis Meek sp., Whiteaves, 1308.
Pachydesma Conrad, Dall, 261.
Pachymya austinensis (?) Shumard, Shattuck, 1098.
Pachypoma Gray, Arnold, 38.
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Pachyrhizodus Agassiz, Hay, 517.
Pachyrhizodus Dixon, Loomis, 808.
Pachyrhizodus Dixon, Stewart, 1186.
caninus Cope, Hay, 517.
caninus Cope, Loomis, 808.
caninus, Cope, Stewart, 1186.
curvatus n. sp., Loomis, 808.
ferox Stewart, Loomis, 808.
latimentum Cope, Loomis, 808.
latimentum ? Cope, Stewart, 1186.
leptognathus Stewart, Loomis, 808.
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leptopsis Cope, Hay, 517.
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leptopsis Cope, Stewart, 1186.
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Palæolagus brachyodon, n. sp., Matthew, 863.
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Palæomeryx? borealis?, Douglass, 317.
Palæoneilo brevicula n. sp., Clarke, 200.
constricta Conrad, Clarke, 200.
constricta Conrad mut. pygmæa nov., Clarke, 809.

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Palæoneilo emarginata (Con.), Weller, 1291.
linguata n. sp., Clarke, 200.
muricata n. sp., Clarke, 200.
petila n. sp., Clarke, 200.
plana Hall, mut. pygmæa nov., Loomis, 809.
Palæotrochus Hall, Clarke, 200.
præcursor Clarke, Clarke, 200.
Paliurus integrifolius Hollick (?), Berry, 76.
Paludestrina d'Orbigny, Arnold, 38.
curta n. sp., Arnold, 38.
stokesi n. sp., Arnold, 38.
Pandora, Arnold, 38.
Pandora Hwass, Dall, 261.
(Kennerleyia) arctica n. sp., Dall, 261.
(Kennerleyia) arenosa Conrad, Dall, 261.
(Kennerlia) bicarinata Carpenter, Arnold, 38.
(Clidiophora) crassidens Conrad, Dall, 261.
(Kennerleyia) dodona n. sp., Dall, 261.
(Kennerlia) filosa Carpenter, Arnold, 38.
(Clidiophora) gouldiana Dall, Dall, 261.
(Kennerleyia) lata n. sp., Dall, 261.
(Heteroclidus) punctata Conrad, Dall, 261.
(Clidiophora) trilineata Say, Dall, 261.
Panomya Gray, Arnold, 38.
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Panopea Ménard, Arnold, 38.
concentrica Gabb, var., Whiteaves, 1308.
generosa Gould, Arnold, 38.
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Parabolinella? cf. limitis Brög., Matthew, 858.
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Paracardium Barrande, Clarke, 200.
delicatula n. sp., Clarke, 200.
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Paracyathus granulosus Vaughan, Vaughan, 1243.
pedroensis Vaughan n. sp., Arnold, 38.
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Paralegoceras Hyatt, Smith, 1137.
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utah (Marcou), Beede, 64.
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Puncturella Lowe, Arnold, 38.
cucullata Gould, Arnold, 38.
galeata Gould, Arnold, 38.
Purpura Bruguière, Arnold, 38.
crispata Chemnitz, Arnold, 38.
saxicola Valenciennes, Arnold, 38.
Pyramidella Lamarck, Arnold, 38.
conica Adams, var. variegata Carpenter, Arnold, 38.
Pyrgisculus Monterosato, Arnold, 38.
Pyrgiscus Philippi, Arnold, 38.
Pyrgolampros Sacco, Arnold, 38.
Quercus hollickii n. sp., Berry, 76.
holmesii Lesq., Berry, 76.
? sp., Johnson, 647.
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Rafinesquina alternata (Emm.), Weller, 1291.
alternata var. ponderosa, Hayes and Ulrich, 533.
Ranella Lamarck, Arnold, 38.
californica Hinds, Arnold, 38.
Raphistoma columbiana n. sp., Weller, 1291.
peracutum U. & S., Weller, 1291.
Receptaculites occidentalis Salter, Weller, 1291.
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Retecograptus geinitzianus Hall, Weller, 1291.
Reticularia bicostata (Vanuxem), Weller, 1291.
fimbriata (Con.), Weller, 1291.
perplexa (McChesney), Beede, 64.
Rhamnacinium porcupinianum n. sp., Penhallow, 968.
triseriatim n. sp., Penhallow, 968.
Rhamnus novæ-Cæsareæ n. sp., Berry, 76.
Rhinellus tenuirostris (Cope), Hay, 517.
Rhinidictya sp. undet., Weller, 1291.
Rhinoclama Dall and Smith, Dall, 261.
Rhipidomella eminens (Hall), Weller, 1291.
sp. cf. musculosa (Hall), Weller, 1291.
oblata (Hall), Weller, 1291.
pecosi (Marcou), Beede, 64.
pecosi Marcou, Girty, 455.
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pulchella Herrick, Girty, 455.
vanuxemi (Hall), Weller, 1291.
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Rhombopteria clathratus n. sp., Weller, 1291.
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salpinx n. sp., Dall, 261.
semiplicata (Con.), Weller, 1291.
suciensis Whiteaves, Whiteaves, 1308.
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formosa Hall, Weller, 1291.
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formosa (Hall), Weller, 1291.
formosa (Hall)?, Weller, 1291.
inæquivalvis (Castel.), Weller, 1291.
increbescens (Hall), Hayes and Ulrich, 533.
Rhynchotreta cuneata americana Hall, Clarke and Ruedemann, 204.
transversa n. sp., Weller, 1291.
Ribeiria parva n. sp., Collie, 228.
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? trentonensis n. sp., Weller, 1291.
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pertenuis n. sp., Eastman, 338.
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Salix mattewanensis n. sp., Berry, 76.
proteæfolia flexuosa (Newb.) Lesq., Berry, 76.
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Sandalodus carbonarius Newberry and Worthen, Eastman, 337.
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Sapindus morrisoni Lesq., Berry, 76.
Sardinius? imbellis n. sp., Hay, 517.
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Saurocephalus Harlan, Stewart, 1186.
broadheadi Stewart, Loomis, 808.
dentatus Stewart, Stewart, 1186.
goodeanus (Cope), Hay, 517.
lanciformis Harlan, Hay, 517.
lanciformis Harlan, Loomis, 808.

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Solen Linné, Arnold, 38.
cuneatus Gabb ?, Johnson, 647.
rosaceus Carpenter, Arnold, 38.
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radiata Meek and Worthen, Beede, 64.
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Solenopleura bretonensis n. sp., Matthew, 858.
jerseyensis Weller, Weller, 1291.
Somphospongia Beede, Beede, 64.
multiformis Beede, Beede, 64.
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fletcheri, Matthew, 858.
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americana n. sp., Dall, 261.
Sphenodiscus Meek, Hyatt, 625.
beccheri n. sp., Hyatt, 625.
lenticularis (Owen), Hyatt, 625.
lenticularis var. mississippiensis, Hyatt, 625.
lenticularis var. splendens, Hyatt, 625.
lobatus (Tuomey), Hyatt, 625.
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stantoni n. sp., Hyatt, 625.
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audaculus (Con.) ?, Weller, 1291.
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concinnus Hall, Weller, 1291.
corallinensis Grabau, Grabau, 465.
crispus (Hisinger) Hall, Clarke and Ruedemann, 204.
cyclopterus Hall, Weller, 1291.
eriensis Grabau, Schuchert, 1089.
eriensis Grabau var., Grabau, 465.
fimbriatus Conrad, mut. pygmæus nov., Loomis, 809.
fimbriatus Conrad, mut. simplicissimus nov., Loomis, 809.
granulosus Conrad, mut. pluto Clarke, Loomis, 809.
macropleurus (Con.), Weller, 1291.
macrothyris Hall, Weller, 1291.
marcyi Hall, mut. pygmæus nov., Loomis, 809.
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modestus corallinensis (Grabau), Schuchert, 1089.
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nearpassi n. sp., Weller, 1291.
octocostatus Hall, Weller, 1291.
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peculiaris Shumard ?, Girty, 455.
rockymontanus Marcou, Girty, 455.
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vanuxemi Hall, Weller, 1291.
vanuxemi Hall, var. minor n. var., Weller, 1291.
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sp. undet., Weller, 1291.
Spiriferina campestris White, Girty, 455.
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kentuckyensis Shumard, Girty, 455.
solidirostris White?, Girty, 455.
Spiroglyphus lituella Mörch, Arnold, 38.
Spirorbis arietina Dawson, Girty, 455.
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Spisula Gray, Arnold, 38.
Spondylus (sp. uncertain), Whiteaves, 1308.
sp., Shattuck, 1098.
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gemmiformis Hall, Rowley, 480.
hammelli Miller, Rowley, 480.
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quinquepartitus n. sp., Rowley, 480.
Sterculia cliffwoodensis n. sp., Berry, 76.
mucronata Lesq., Berry, 76.
snowii bilobata var. nov., Berry, 76.
Stereosternum Cope, Osborn, 948.
Stethacanthus Newberry, Eastman, 337.
altonensis (St. John and Worthen), Eastman, 337.
depressus (St. John and Worthen), Eastman, 337.
erectus n. sp., Eastman, 337.
productus Newberry, Eastman, 337.
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