Annotated Bibliography of North American Geology, 1950

By MARJORIE HOOKER

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ANNOTATED BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY

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INTRODUCTION

The current annual volume of the bibliographic series lists publications concerning the geology of the North American continent, including adjacent islands, Hawaii, and Guam, that have appeared in the literature during 1950. In addition, a few items published prior to 1950 and not included in previous volumes are cited. Articles by American authors published in foreign journals are cited if they deal with North American localities or are of a general character, but not if they deal with foreign areas. Articles by foreign authors on North America are included regardless of place of publication; those of a general character are included if they appeared in North American journals.

The citations are listed alphabetically by author, with full title and publication data. Beginning with this volume, brief annotations are given indicating the scope of the paper and, where possible, the principal facts and conclusions. Annotations are not given for abstracts or citations with self-explanatory titles. The author section of the volume is followed by a subject index to the papers cited. The organization of the index is described on page 2 and suggestions are made concerning its use.

Geologic names in the notes are those employed by the individual authors, and their use here does not imply approval by the Geological Survey.

Assistance by V. L. Skitsky in the preparation of a part of the annotations, and by Ruth R. Dunaven, Marie F. Wandel, and Jane Reger in the preparation of the volume is gratefully acknowledged.

The following U. S. Geological Survey bulletins comprise the issues of the Bibliography of North American Geology: 746–747 (1785–1918), 823 (1919–1928), 937 (1929–1939), 938 (1940–1941), 949 (1942–1943), 952 (1944–1945), 958 (1946–1947), 968 (1948), 977 (1949).

ORGANIZATION OF THE INDEX

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

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

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

Dinosauria. *See* Reptilia.
Footprints. *See* Tracks and trails.
Miocene. *See* Tertiary.

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

Mollusca. *See also* Cephalopoda, Gastropoda, Invertebrata, Pelecypoda, Scaphopoda.
Mineral resources. *See also* the subheading *Economic geology* under the various states and countries.

Geographic Headings.—The geographic headings are names of countries and colonial possessions in North America, the states, territories, and possessions of the United States, the provinces of Canada, and well-known physiographic areas (e. g. Appalachians, Gulf Coast). Examples of geographic headings are: Alabama, Alberta, Canada, Dominican Republic, Jamaica, Mexico, Mississippi Valley, Nevada, Ontario, United States. Canada and the United States are headings used to index papers covering these areas or more than two or three states or provinces. For example, the article "Oil and gas exploration in Manitoba" is indexed under Manitoba, but "Western Canada's oil and gas potentialities" is indexed under Canada and *not* under each of the provinces discussed. Similarly, "Feldspar and mica deposits of southeastern United States" is indexed under United States and not under each state.

Subject Headings.—The subject headings deal with the subject of the paper rather than the geographic areas. They include, among others, the general subdivisions of geology, such as Economic geology, Mineralogy, Paleontology, the classes of animals, such as Porifera, Brachiopoda, Mollusca, the common economic mineral groups, such as Copper, Gold, Silver, and other geologic subjects. A few of the subject headings and the scope of the entries listed under each are:

Heading	*Entries*
Artificial minerals	Names of minerals or systems.
Bibliography	Subject, area, or individual.
Biography	Individual names.
Construction materials	Chiefly areas.
Correlations	Chiefly geographical; some age.
Engineering geology	Subject and area.
Experimental investigations	Subject.
Geologic formations	Listed by name of formation, and only detailed information indexed.
Geologic formations, lists, sections, tables.	Area listing of all formation tables and sections.
Geologic history	Area.
Geologic maps	Area; sketch maps included.
Geologic thermometry	Subject.
Geologic time	Subject.
Guidebooks	Areas covered by field trips.
History	History of various organizations or geological investigations.
Industrial minerals	Subject or area.
Mineral collecting	Area.
Mineral deposits	Area; includes only descriptive articles.
Mineral deposits, origin	Area; includes articles discussing origin of minerals or ores.
Mineral descriptions	Mineral name listing.
Mineral resources	Area; includes articles dealing with several minerals not indexed individually.
Nomenclature	All types, mineralogic, paleontologic, etc.
Oil and gas fields	Listed by name of field.
Paleoclimatology	Subject and area.
Paleoecology	Subject and area.
Paleogeography	Subject and area.
Permafrost	Subject and area.
Photogeology	Articles on the application of aerial photography to geology.
Popular and elementary	Articles written for the layman.
Rock descriptions	Listed by rock names and areas.
Study and teaching	Articles dealing with the educational aspects of geology.
Submarine geology	Subject and area.
Surveys	Articles on the activities of the U. S. Geological Survey and of other surveys.
Systems	Articles on the chemical rock-forming systems; listed alphabetically.

Subheadings.—Subheadings are used under the geographic headings and under four of the subject headings to group the entries. Subheadings are in italic type and indented two spaces from the margin. The following subheadings are used: *Areas described* (used for monographs), *Economic geology*, *Geologic maps*, *Ground water*, *Historical geology*, *Mineralogy*, *Paleontology*, *Petrology*, *Physical geology*, *Physiographic geology*. Index entries that do not fall in any of these categories are placed directly under the geographic heading without any subheading.

The subject headings, Earth, Maps, Paleontology, and Technique, have subheadings. The heading Earth has subheadings *Crust*, *Interior*, and *Temperature*. The heading Paleontology has sub-headings *General*, and the age groups, *Cambrian*, *Ordovician*, etc. The heading Maps (exclusive of Geologic Maps, which is a separate heading) contains such subheadings as are needed to group the various entries. Typical subheadings for Maps are *Aeromagnetic*, *Geophysical*, *Mineral*, *Paleogeographic*, *Tectonic*. The heading Technique also has such subheadings as are needed to group the entries. Typical subheadings under Technique are *Apparatus*, *Geophysical*, *Mineralogic*, *Petrographic*, *Photographic*.

Entries.—The entries constitute the main subdivisions of the headings. They are indented four spaces from the margin and are printed in Roman type similar to that used for the headings. The entries can be either subject or geographic. Under geographic headings the entries may be additional geographic breakdowns or a combination of subject and geographic breakdowns as shown by the following examples:

Ontario
  Economic geology
    Beatty Township
    Garrison Township
    Gold, Kenogami Lake area
      Porcupine area
    Natural gas
    Olden-Bedford area

Under subject headings, the entries may be either subject or geographic depending on the character of the articles indexed. The notes under Entries in the list given above indicate how they may differ. Each entry in the index is followed by the name of the author to whose paper reference is made. A number following the author's name refers to the paper so numbered in the Bibliography if more than one paper is listed under an author's name. Initials are given with authors' names only if more than one author has the same last name. A typical section of the index follows:

Gems and gem materials.
    Canada, Baffin Island : Field, D. S. M. 3
    Emerald, absorption spectrum : Anderson, B. W.
    Diamond, Slijper : Kohn
      Twinning : Slawson 1
    Idaho : Carpenter, J. T. ; Dake 1
    Jadeite, Clear Creek, California : Inman, W. U.
    Maryland, Williamsite : Raymond, C. L.
    Montana : Dake 1

HOW TO USE THE INDEX

The following examples and suggestions may aid the reader in his use of the index.

Let us suppose that references on petroleum in New York State are sought. A definite geographic locality is concerned, therefore the first heading to look under is a geographic one. In this case it is New York. Petroleum articles fall under the subheading *Economic geology*. The entry then reads Petroleum, and is followed by additional data if any are indicated.

Thus one finds the following:

New York.
  Economic geology.
    Petroleum, Cambro-Ordovician : Swartz

The same reference appears under the subject heading Petroleum, and reads as follows:

Petroleum.
    New York, Cambro-Ordovician : Swartz

For the second example, let us suppose that one is interested in Ordovician trilobites. The first heading to consult is Trilobita under which are found, among others, the following entries:

Trilobita.
    Montana, Big Snowy Mts., Ordovician : Lochman 3
    Ordovician, genotypes : Whittington 1
    Protaspid, Ordovician, ontogenetic development : Ross, R. J.

Other references might be found by looking under the heading Paleontology, subheading *Ordovician*, which will contain not only the references to trilobites but other classes of animals as well.

For the third example, let us suppose that general articles on mineralogy are desired. The heading Mineralogy will have entries to such articles. For example:

Mineralogy.
    Abrasion hardness : Jaggar
    Atomic models for teaching : Henderson, D. M. 1
    Calcium carbonate, solution rate : Garrels
    Carbonate rocks, mineral and chemical characteristics : Gault 2

On the other hand, specific items, such as the description of a new mineral, are found under the heading Mineral descriptions.

In looking for any particular item in the index, it is helpful to remember that most of the individual items are grouped under larger headings rather than indexed separately. The San Ardo oil field is not found under S, but in its proper alphabetical place under the heading Oil and gas fields. Long Island is not under L, but under New York. Frozen mammoth is not under F, but under Mammalia or Vertebrata. The mineral cancrinite is not under C, but under Mineral descriptions or the locality heading.

SERIALS

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

Acad. Nac. Cienc. Mem. Rev.——Academia Nacional de Ciencias, Memorias y Revista. Mexico City.

Acad. Nat. Sci. Phila. Notulae Naturae; Proc.——Academy of Natural Sciences of Philadelphia Notulae Naturae; Proceedings. Philadelphia.

Acta Crystallographica. Cambridge, England.

Ala. Geol. Survey Bull.; Circ.——Alabama Geological Survey Bulletin; Circular. University, Ala.

Alberta Research Council Contr.; Rpt.——Alberta Research Council Contribution; Reports. Edmonton, Alberta.

Am. Acad. Arts and Sci. Proc.——American Academy of Arts and Sciences Proceedings. Boston, Mass.

Am. Alpine Jour.——American Alpine Journal. New York.

Am. Antiquity——American Antiquity. Menasha, Wis.

Am. Assoc. Petrol. Geol. Bull.——American Association of Petroleum Geologists Bulletin. Tulsa, Okla.

Am. Ceramic Soc. Bull; Jour.——American Ceramic Society Bulletin; Journal. Columbus, Ohio.

Am. Geol. Inst. Rpt.——American Geological Institute Report. Washington.

Am. Geophys. Union Trans.——American Geophysical Union Transactions. Washington.

Am. Jour. Botany——American Journal of Botany. Lancaster, Pa.

Am. Jour. Sci.——American Journal of Science. New Haven, Conn.

Am. Midland Naturalist——American Midland Naturalist. Notre Dame, Ind.

Am. Mineralogist——American Mineralogist. Ann Arbor, Mich.

Am. Mus. Nat. History Bull.; Novitates——American Museum of Natural History Bulletin; Novitates. New York.

Am. Philos. Soc. Proc.; Trans.; Yearb.——American Philosophical Society Proceedings; Transactions; Yearbook. Philadelphia.

Am. Scientist——American Scientist. New Haven, Conn.

Am. Water Works Assoc. Jour.——American Water Works Association Journal. New York.

Annals Ky. Nat. History——Annals of Kentucky Natural History. Louisville, Ky.

Appalachia. Boston, Mass.

Arctic. Montreal.

Ariz. Bur. Mines Bull., Geol. Ser.——Arizona Bureau of Mines Bulletin, Geological Series. Tucson, Ariz.

Ark. Res. Dev. Comm., Div. Geology, Bull.; Inf. Circ.——Arkansas Resources and Development Commission, Division of Geology, Bulletin; Information Circular. Little Rock, Ark.

Ark. Univ., Inst. Science and Technology, Research Ser.——Arkansas University, Institute of Science and Technology, Research Series. Fayetteville, Ark.

Asoc. Mex. Geól. Petrol. Bol.—Asociación Mexicana de Geólogos Petroleros Boletín. Mexico City.

Assoc. Am. Geographers Annals—Association of American Geographers Annals. Lancaster, Pa.

Assoc. Canadienne-Française Av. Sci. Annales—Association Canadienne-Française pour l'Avancement des Sciences Annales. Montreal.

Auk—The Auk. Lancaster, Pa.

Beach Erosion Board, Tech. Memo.—Beach Erosion Board, Technical Memorandum. Washington.

Bol. Historia Nat.—Boletín de Historia Natural. Habana.

Bot. Gaz.—Botanical Gazette. Chicago.

Bot. Rev.—Botanical Review. Lancaster, Pa.

British Columbia Dept. Mines Ann. Rpt.; Bull.—British Columbia Department of Mines Annual Report; Bulletin. Victoria, B. C.

Bull. Am. Paleontology—Bulletin of American Paleontology. Ithaca, N. Y.

Butler Univ. Bot. Studies—Butler University Botanical Studies. Indianapolis, Ind.

Calif. Acad. Sci. Proc.—California Academy of Sciences Proceedings. San Francisco.

Calif. Dept. Nat. Res., Div. Mines Bull.; Spec. Rpt.—California Department of Natural Resources, Division of Mines Bulletin; Special Report. San Francisco.

Calif. Dept. Public Works, Water Res. Div. Bull.—California Department of Public Works, Water Resources Division Bulletin. Sacramento, Calif.

Calif. Jour. Mines and Geology—California Journal of Mines and Geology. Sacramento, Calif.

Calif. Oil Fields—California Oil Fields. San Francisco.

Calif. Univ., Scripps Inst. Oceanography, Submarine Geology Rpt.—California University, Scripps Institution of Oceanography, Submarine Geology Report. La Jolla, Calif.

Calif. Univ. Seismog. Sta. Bull.—California University Seismographic Station Bulletin. Berkeley, Calif.

Canada Dept. Mines and Tech. Surveys, Mines Br., Memo. ser.—Canada Department of Mines and Technical Surveys, Mines Branch, Memorandum series. Ottawa.

Canada Dominion Observatory Pubs.—Canada Dominion Observatory Publications. Ottawa.

Canada Geol. Survey Bull.; Geophysics Paper; Mem.; Paper—Canada Geological Survey Bulletin; Geophysics Paper; Memoir; Paper. Ottawa.

Canada Natl. Mus. Bull.—Canada National Museum Bulletin. Ottawa.

Canadian Alpine Jour.—Canadian Alpine Journal. Banff, Alberta.

Canadian Field-Naturalist. Ottawa.

Canadian Geog. Jour.—Canadian Geographical Journal. Montreal.

Canadian Inst. Mining and Metallurgy Trans.—Canadian Institute of Mining and Metallurgy Transactions. Montreal.

Canadian Min. Jour.—Canadian Mining Journal. Gardenvale, Quebec.

Canadian Min. Met. Bull.—Canadian Mining and Metallurgical Bulletin. Montreal.

Carnegie Inst. Washington Pubs.—Carnegie Institution of Washington Publications. Washington.

Chicago Acad. Sci. Bull.—Chicago Academy of Science Bulletin. Chicago.

Chronica Botanica. Waltham, Mass.
Ciencia. Mexico City.
Colo. School of Mines Quart.——Colorado School of Mines Quarterly. Golden, Colo.
Colo. Water Conserv. Bd., Ground Water Ser. Circ.——Colorado Water Conservation Board, Ground Water Series Circular. Denver, Colo.
Colo.-Wyo. Acad. Sci. Jour.——Colorado-Wyoming Academy of Science Journal. Boulder, Colo.
Columbia Univ., Lamont Geol. Observatory, Tech. Rpt.——Columbia University, Lamont Geological Observatory, Technical Report. New York.
Compass——The Compass. Menasha, Wis.
Condor——The Condor. Berkeley, Calif.
Conn. Acad. Arts Sci. Trans.——Connecticut Academy of Arts and Sciences Transactions. New Haven, Conn.
Conn. Geol. Nat. History Survey Bull.; Misc. Ser.——Connecticut Geological and Natural History Survey Bulletin; Miscellaneous Series. Hartford, Conn.

Dansk Geol. Føren. Meddelelser——Dansk Geologisk Førening Meddelelser. Copenhagen, Denmark.
Denison Univ. Sci. Lab. Jour.——Denison University Scientific Laboratories Journal. Granville, Ohio.
Desert Mag.——Desert Magazine. El Centro, Calif.

Earth Sci. Digest—Earth Science Digest. Revere, Mass.
Earthquake Notes. Washington.
Ecol. Mon.——Ecological Monographs. Durham, N. C.
Ecology. Brooklyn, N. Y.
Econ. Geology——Economic Geology. Urbana, Ill.
Elisha Mitchell Sci. Soc. Jour.——Elisha Mitchell Scientific Society Journal. Chapel Hill, N. C.
Eng. Jour.——Engineering Journal. Montreal.
Eng. Min. Jour.——Engineering and Mining Journal. New York.
Engineering and Science. Pasadena, Calif.
Evolution. Lancaster, Pa.

Field & Lab.——Field & Laboratory. Dallas, Texas.
Fieldiana; Botany. Chicago.
Fieldiana; Geology. Chicago.
Fieldiana; Zoology. Chicago.
Fieldiana; Zoology Mem.——Fieldiana; Zoology Memoirs. Chicago.
Fla. Acad. Sci., Quart. Jour.——Florida Academy of Sciences, Quarterly Journal. Gainesville, Fla.
Fla. Geol. Survey Inf. Circ.——Florida Geological Survey Information Circular. Tallahassee, Fla.
Fondren Science Ser.——Fondren Science Series. Dallas, Texas.
Frontiers. Philadelphia.

Ga. Geol. Survey Bull.; Circ.——Georgia Geological Survey Bulletin; Circular. Atlanta, Ga.
Gems and Gemology. Los Angeles.
Geochimica et Cosmochimica Acta. London.
Geog. Rev.——Geographical Review. New York.
Geol. Assoc. Canada Proc.——Geological Association of Canada Proceedings. Canada.

Geol. Soc. Am. Bull.; Interim Proc.; Mem.; Proc.——Geological Society of America Bulletin; Interim Proceedings; Memoir; Proceedings. New York.

Geophysics. Austin, Texas.

Harvard Coll. Mus. Comp. Zoology Bull.——Harvard College Museum of Comparative Zoology Bulletin. Cambridge, Mass.

Harvard Univ. Bot. Mus. Leaflets——Harvard University Botanical Museum Leaflets. Cambridge, Mass.

Hopper——The Hopper. Norman, Okla.

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

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

Ill. State Geol. Survey Bull.; Circ.; Ill. Petrol.; Rpt. Inv.——Illinois State Geological Survey Bulletin; Circular; Illinois Petroleum; Report of Investigations. Urbana, Ill.

Ill. State Water Survey Div. Bull.; Rpt. Inv.——Illinois State Water Survey Division Bulletin; Report of Investigations. Urbana, Ill.

Ill. Univ. Eng. Expt. Sta. Circ.——Illinois University Engineering Experiment Station Circular. Urbana, Ill.

Ind. Acad. Sci. Proc.——Indiana Academy of Science Proceedings. Indianapolis, Ind.

Ind. Dept. Conserv., Div. Geology Bull.—Indiana Department of Conservation, Division of Geology Bulletin. Bloomington, Ind.

Ind. Dept. Conserv., Div. Water Res. Bull.—Indiana Department of Conservation, Division of Water Resources Bulletin. Indianapolis, Ind.

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

Internat. Geol. Cong., 18th, Great Britain, Rpt.——International Geological Congress, 18th, Great Britain, Report. London.

Johns Hopkins Univ. Studies in Geology——Johns Hopkins University Studies in Geology. Baltimore, Md.

Jour. Geology——Journal of Geology. Chicago.

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

Jour. Marine Research——Journal of Marine Research. New Haven, Conn.

Jour. Metals——Journal of Metals. New York.

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

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

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

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

Kans. Univ. Paleont. Contr.——Kansas University Paleontological Contributions. Lawrence, Kans.

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

Kans. Univ., State Geol. Survey Bull.——Kansas University, State Geological Survey Bulletin. Lawrence, Kans.

Ky. Acad. Sci. Trans.——Kentucky Academy of Science Transactions. Lexington, Ky.

Ky. Geol. Survey Bull.; Rpt. Inv.; Reprint Ser.——Kentucky Geological Survey Bulletin; Report of Investigations; Reprint Series. Lexington, Ky.

Los Angeles County Mus. Quart.; Science Ser. [Paleontology Pub.]——Los Angeles County Museum Quarterly; Science Series [Paleontology Publication]. Los Angeles.

Maine Technology Expt. Sta. Paper——Maine Technology Experiment Station Paper. Orono, Maine.

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

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

Maryland Naturalist. Baltimore, Md.

Mazama. Portland, Oregon.

Meddelelser om Grønland. Copenhagen, Denmark.

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

México Inst. Nac. Inv. Rec. Miner. Bol.—México Instituto Nacional para la Investigación de los Recursos Minerales de México Boletín. Mexico City.

México (City) Univ. Nac., Inst. Geología Bol.——México (City) Universidad Nacional, Instituto de Geología Boletín. Mexico City.

Mich. Acad. Sci. Papers——Michigan Academy of Science, Arts and Letters Papers. Ann Arbor, Mich.

Mich. Univ., Lake Hydraulics Lab., Research Pub.——Michigan University, Lake Hydraulics Laboratory, Research Publication. Ann Arbor, Mich.

Mich. Univ. Mus. Paleontology Contr.——Michigan University Museum of Paleontology Contributions. Ann Arbor, Mich.

Micropaleontologist——The Micropaleontologist. New York.

Military Engineer. Washington.

Min. Cong. Jour.——Mining Congress Journal. Washington.

Min. Eng.——Mining Engineering. New York.

Min. Met. Soc. Am. Bull.——Mining and Metallurgical Society of America Bulletin. New York.

Mineral Industries. State College, Pa.

Mineralogist——The Mineralogist. Portland, Oreg.

Mines Mag.——Mines Magazine. Golden, Colo.

Miss. Geol. Survey Bull.——Mississippi Geological Survey Bulletin. Jackson, Miss.

Mo. Bot. Garden Annals——Missouri Botanical Garden Annals. Fulton, Mo.

Mo. Geol. Survey and Water Res. Inf. Circ.; Rpt. Inv.——Missouri Geological Survey and Water Resources Information Circular; Report of Investigations. Rolla, Mo.

Mo. Univ., School of Mines and Metallurgy Bull., Tech. Ser.——Missouri University, School of Mines and Metallurgy Bulletin, Technical Series. Rolla, Mo.

Mont. Bur. Mines and Geology Mem.; Misc. Contr.——Montana Bureau of Mines and Geology Memoirs; Miscellaneous Contributions. Butte, Mont.

Natl. Acad. Sci. Biog. Mem.; Proc.——National Academy of Sciences, Biographical Memoirs; Proceedings. Washington.

Natl. Research Council, Div. Geol. and Geog.; Committee Rpts.——National Research Council, Division of Geology and Geography; Committee Reports. Washington.

Natl. Speleol. Soc. Bull.——National Speleological Society Bulletin. Washington.

Nat. History——Natural History. New York.

Naturaliste Canadien——Le Naturaliste Canadien. Quebec City.

Nature Mag.——Nature Magazine. Washington.

Nautilus——The Nautilus. Philadelphia.

Nebr. Acad. Sci. Proc.——Nebraska Academy of Sciences Proceedings. Lincoln, Nebr.

Nebr. Univ. Studies——Nebraska University Studies. Lincoln, Nebr.

Nev. State Engineer's Office, Water Res. Bull.——Nevada State Engineer's Office, Water Resources Bulletin. Carson City, Nev.

Nev. Univ. Bull., Geology and Mining Ser.——Nevada University Bulletin, Geology and Mining Series. Reno, Nev.

N. H. State Plan. Dev. Comm., Mineral Res. Survey——New Hampshire State Planning and Development Commission, Mineral Resource Survey. Concord, N. H.

N. J. Dept. Conserv., Misc. Geol. Paper——New Jersey Department of Conservation, Division of Forestry, Geology, Parks and Historic Sites, Miscellaneous Geologic Paper. Trenton, N. J.

N. Mex. Univ. Pub. Geology; Meteoritics——New Mexico University Publications in Geology; Meteoritics. Albuquerque, N. Mex.

N. Y. Acad. Sci. Annals; Trans.——New York Academy of Sciences Annals; Transactions. New York.

N. Y. State Mus. Circ.——New York State Museum Circular. Albany, N. Y.

N. Y. Water Power and Control Comm. Bull.——New York Water Power and Control Commission Bulletin. Albany, N. Y.

N. C. Dept. Conserv. Dev., Div. Mineral Res. Bull.——North Carolina Department of Conservation and Development, Division of Mineral Resources Bulletin. Raleigh, N. C.

N. Dak. Acad. Sci. Proc.——North Dakota Academy of Science Proceedings. Grand Forks, N. Dak.

N. Dak. Geol. Survey Ground-water Studies——North Dakota Geological Survey Ground-water Studies. Grand Forks, N. Dak.

Northwest Science. Cheney, Wash.

Nova Scotia Dept. Mines Ann. Rpt.——Nova Scotia Department of Mines Annual Report. Halifax, N. S.

Nova Scotian Inst. Sci. Proc.——Nova Scotian Institute of Science Proceedings. Halifax, N. S.

Ohio Geol. Survey Inf. Circ.——Ohio Geological Survey Information Circular. Columbus, Ohio.

Ohio Jour. Sci.——Ohio Journal of Science. Columbus, Ohio.

Ohio State Univ. Eng. Expt. Sta. News——Ohio State University Engineering Experiment Station News. Columbus, Ohio.

Ohio Water Res. Bd. Bull.——Ohio Water Resources Board Bulletin. Columbus, Ohio.

Oil and Gas Jour.——Oil and Gas Journal. Tulsa, Okla.

Okla. Acad. Sci. Proc.——Oklahoma Academy of Science Proceedings. Norman, Okla.

Okla. Geol. Survey Bull.; Circ.; Mineral Rpt.——Oklahoma Geological Survey Bulletin; Circular; Mineral Report. Norman, Okla.

Ontario Dept. Mines Ann. Rpt.; Indus. Mineral Circ.; Prelim. Rpt.——Ontario Department of Mines Annual Report; Industrial Mineral Circular; Preliminary Report. Toronto.

Oreg. Dept. Geology and Mineral Industries Bull.; G. M. I. Short Paper——Oregon Department of Geology and Mineral Industries Bulletin; G. M. I. Short Paper. Portland, Oreg.

Pacific Discovery. San Francisco.
Pacific Science. Honolulu.
Palaeontographica Americana. Ithaca, N. Y.
Pa. Acad. Sci. Proc.——Pennsylvania Academy of Science Proceedings. Harrisburg, Pa.
Pa. Dept. Int. Affairs Monthly Bull.——Pennsylvania Department of Internal Affairs Monthly Bulletin. Harrisburg, Pa.
Pa. Geol. Survey, 4th ser., Bull.; Prog. Rpt.——Pennsylvania Geological Survey, 4th series, Bulletin; Progress Report. Harrisburg, Pa.
Pa. State Coll. Mineral Industries Expt. Sta. Bull.; Circ.——Pennsylvania State College Mineral Industries Experiment Station Bulletin; Circular. State College, Pa.
Petróleo Interamericano. Tulsa, Okla.
Petróleos Mexicanos. Mexico City.
Petroleum Engineer. Dallas, Texas.
Photogrammetric Engineering. Washington.
Plateau. Flagstaff, Ariz.
Pop. Astronomy——Popular Astronomy. Northfield, Minn.
Postilla. New Haven, Conn.
Precambrian——The Precambrian. Winnipeg, Manitoba.
Producers Monthly. Bradford, Pa.

Quebec Dept. Mines Geol. Rpt.; Prelim. Rpt.——Quebec Department of Mines Geological Report; Preliminary Report. Quebec City.

Raw Materials Survey Resource Rpts.——Raw Materials Survey Resource Reports. Portland, Oreg.
Rev. Soc. Haïtienne Hist. Géog. Géol.——Revue de la Société Haïtienne d'Histoire, de Géographie et de Géologie. Port-au-Prince.
Rev. Soc. Malacológica——Revista de la Sociedad Malacológica. Habana.
R. I. Port Indus. Dev. Comm., Geol. Bull.; Sci. Contr.——Rhode Island Port and Industrial Development Commission, Geological Bulletin; Scientific Contribution. Providence, R. I.
Rochester Acad. Sci. Proc.——Rochester Academy of Science Proceedings. Rochester, N. Y.
Rocks and Minerals. Peekskill, N. Y.
Royal Canadian Inst. Proc.; Trans.——Royal Canadian Institute Proceedings; Transactions. Toronto.
Royal Ontario Mus. Paleontology Contr.——Royal Ontario Museum of Paleontology Contributions. Toronto.
Royal Soc. Canada Proc.; Trans.——Royal Society of Canada Proceedings; Transactions. Ottawa.

Science. Washington.
Sci. Am.——Scientific American. New York.
Sci. Monthly——Scientific Monthly. New York.
Seismol. Soc. Am. Bull.——Seismological Society of America Bulletin. Berkeley, Calif.
Shore and Beach. Newark, N. J.
Sierra Club Bull.——Sierra Club Bulletin. San Francisco.
Smithsonian Inst. Ann. Rpt.; Misc. Coll.——Smithsonian Institution Annual Report; Miscellaneous Collections. Washington.
Soc. Cubana Historia Nat., Mem.——Sociedad Cubana de Historia Natural, Memorias. Habana.

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(and Le Conte, Joseph). Recent development in Tejon Ranch area [Calif.] [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2377, Dec. 1950.

Armstrong, Herbert Stoker.

Geology of Echo Township: Ontario Dept. Mines Ann. Rpt., v. 59, pt. 5, 1950, 40 p., illus. incl. geol. maps, 1951. Echo Township, in western Ontario, is an area of pre-Cambrian volcanics, sediments, and intrusives. The geologic history of the area is described and the petrologic relationships of the rocks are discussed. Gold occurs in quartz veins and alteration zones. Several properties are described briefly. The colored geologic map of the area is on a scale of 1 inch to 1000 feet; that of the Newlund mine is on a scale of 1 inch to 500 feet.

Armstrong, John Edward.

Preliminary map, Vancouver North (east half), British Columbia: Canada Geol. Survey Paper 50–26, 1950. The area is one of Mesozoic and Cenozoic volcanics, intrusives, and sediments. Descriptive notes are given with the geologic map (scale, 1 inch to ½ mile).

Arnold, Chester Arthur.

Megaspores from the Michigan coal basin: Mich. Univ. Mus. Paleontology Contr., v. 8, no. 5, p. 59–111, illus., June 2, 1950. Contains systematic descriptions of 15 species of spores, six of which are new, from the coals and shales of the Saginaw and Grand River groups of Pennsylvanian age. Sections on the classification and terminology of spores and on the technique of examination are included.

Arnold, Emery. *See* Barnes, F. C.

Arnott, Ronald J.

X-ray diffraction data on some radioactive oxide minerals: Am. Mineralogist, v. 35, nos. 5–6, p. 386–400, illus., May–June 1950. X-ray diffraction data for members of three series, uraninite-thorianite, pyrochlore-microlite, and euxenite-polycrase, are given. The cell dimensions, possible space-groups, and probable cell content of euxenite are calculated from the powder data.

Ash, S. H.

Buried valley of the Susquehanna River, anthracite region of Pennsylvania: U. S. Bur. Mines Bull. 494, 27 p., illus. incl. geol. sketch map, 1950. A study is made of the extent and physical conditions of the valley-fill deposits in the vicinity of Wilkes-Barre, northeastern Pennsylvania, and their bearing on the coal-mine workings.

Ashley, George Hall, 1866–1951.

Bituminous coal reserves of Pennsylvania, *in* Symposium on mineral resources of Pennsylvania: Pa. Acad. Sci. Proc., v. 24, p. 198–202, 1950. The estimates previously made are summarized, and new factors are discussed. The most recent estimate (1943) shows 28 billion tons of recoverable bituminous coal, and a mining life of about 240 years.

Asociación Mexicana Geólogos Petroleros.

Carta geológica de la República mexicana, Reynosa hoja. Scale 1:500,000 or 1 inch to about 8 miles. [1950?]. The Reynosa area map shows Cretaceous, Tertiary, and Quaternary strata.

Atherton, Elwood. *See* Workman, L. E., 2.

Auger, Paul Emile.

1. Preliminary report on Belleterre area (Sheet no. 4), Guillet Township: Quebec Dept. Mines, Mineral Deposits Br., Prelim. Rpt. 240, 7 p. (‡), geol. map, 1950. Brief notes on the pre-Cambrian volcanics and intrusives of a part of the Belleterre area in western Quebec. Notes on the gold mineralization are included.

Auger, Paul Emile—Continued

2. Structure of the Quebec City "formations" [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 226, 1950.

Averitt, Paul.

1. Status of coal resources surveys: Min. Cong. Jour., v. 36, no. 2, p. 86–88, illus., Feb. 1950. Current surveys of coal resources in the United States are reviewed, noting the trend toward detailed mapping of coal beds and estimation of reserves. State investigations and special studies are briefly described. V. S.
2. (and Berryhill, Louise Russell). Coal resources of the United States; a progress report, November 1, 1950: U. S. Geol. Survey Circ. 94, 33 p. (‡), illus., Dec. 1950. Continued work has resulted in a re-appraisal of coal reserves, with more detailed estimates of the reserves of Michigan, Montana, New Mexico, North Carolina, and Wyoming. As of January 1, 1950, total reserves are placed at 2,425,566 million tons, half of which is regarded as ultimately recoverable.

Axelrod, Daniel I.

1. Classification of the Madro-Tertiary flora: Carnegie Inst. Washington Pub. 590, Contr. Paleontology, p. 1–22, Dec. 27, 1950. Defines and discusses the components, elements, and complexes of the Madro-Tertiary flora, characteristic of middle and late Tertiary time in southwestern North America.
2. A Sonoma florule from Napa, California: Carnegie Inst. Washington Pub. 590, Contr. Paleontology, p. 23–71, illus., Dec. 27, 1950. The Napa area is located north of San Francisco Bay. The florule consists of 24 fossil plants, 3 conifers and 21 angiosperms, of which 23 have been previously described. In the descriptions of the species, one new name is made (*Salix*), two new combinations are made (in *Cercocarpus* and *Holodiscus*), and one new species (*Arctostaphylos fergusoni*) is described. The age of the florule is Late Pliocene.
3. Further studies of the Mount Eden flora, southern California: Carnegie Inst. Washington Pub. 590, Contr. Paleontology, p. 73–117, illus., Dec. 27, 1950. The Mount Eden formation, a Middle Pliocene continental deposit exposed in the San Jacinto Mts. of southern California, was reexamined for new fossil flora material. Seventeen additional species were collected and are described. In addition, nomenclatural changes have been made for some previously described species.
4. The Anaverde flora of southern California: Carnegie Inst. Washington Pub. 590, Contr. Paleontology, p. 119–158, illus., Dec. 27, 1950. A new fossil flora of Pliocene age has been found in the Anaverde formation near Palmdale, in the desert region of southeastern California. The Anaverde formation is briefly described and a measured section given. The flora consists of 21 species distributed among 17 genera and 12 families. *Peraphyllum mohavensis* and an unnamed species are described as new, and two new names are assigned.
5. The Piru Gorge flora of southern California: Carnegie Inst. Washington Pub. 590, Contr. Paleontology, p. 159–214, illus., Dec. 27, 1950. A fossil flora was recently discovered in the Piru Gorge sandstone of the Ridge Basin group (Pliocene) in the Piru Creek area of southern California. The stratigraphy is discussed, a measured section given, and new names proposed. The composition, age, and physical conditions of the flora, which consists of 23 previously recorded species, are described.
6. Evolution of desert vegetation in western North America: Carnegie Inst. Washington Pub. 590, Contr. Paloentology, p. 215–306, illus., Dec. 27, 1950. The age and derivation of modern desert environments are discussed, and the thesis is proposed that desert vegetation of the present time developed during the Tertiary period by the gradual adaptation of plants to a slowly expanding dry climate. The features of the development are described in detail and shown diagrammatically.
7. Appendix; systematic revisions of fossil plants: Carnegie Inst. Washington Pub. 590, Contr. Paleontology, p. 307–311, Dec. 27, 1950. A list of the nomenclatural changes that have been made in connection with descriptions of the Sonoma, Mount Eden, Anaverde, and Piru Gorge floras in papers contained in Carnegie Inst. Washington Pub. 590 (*see* Axelrod 2, 3, 4, 5).

Axelrod, Joseph Meyer. *See* Fahey, J. J., 2; Stadnichenko, T.

Ayres, Eugene.

Our supplemental petroleum reserves, *in* Fanning, L. M., ed., Our oil resources, 2d ed., p. 203–264, illus., 1950. Notes on the geologic occurrence, availability, and yield of petroleum from coal, oil shale, tar sands, natural gas, and agricultural materials.

Bacon, Charles Sumner, Jr.

Geology of the Cleveland region; summary [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1561, Dec. 1950.

Bader, Henri.

The significance of air bubbles in glacier ice: Jour. Glaciology, v. 1, no. 8, p. 443–451, illus., Oct. 1950. A hypothesis is proposed by which an analysis of the relation of air bubbles and associated water in glacial ice is used to determine the maximum depth from which the ice has emerged. The apparatus and procedure are described. The experimental work was carried out on ice from the foot of the Malaspina Piedmont Glacier in Alaska.

Bagley, C. T.

Subsurface study of glacial deposits at Cleveland, Ohio [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1561–1562, Dec. 1950.

Bailey, Edgar Herbert.

(and Myers, W. Bradley). Quicksilver and antimony deposits of the Stayton district, California: Calif. Dept. Nat. Res. Div. Mines Bull. 147, p. 37–60, illus. incl. geol. maps, Oct. 1949. The occurrence, origin, and mineralogy of the mercury and antimony ores of the Stayton district, in the northwestern part of the Quien Sabe quadrangle, are described. Stibnite veins, occurring mainly in basalt along faults, contain ore averaging 1.5 percent Sb. The cinnabar ore occurs in fractures and averages about 0.5 percent Hg. There are reserves of more than 1,000 flasks.

Bailey, Leslie F.

The development and use of nomographs in epicenter location [abs.]: Earthquake Notes, v. 21, nos. 1–2, p. 13, Mar.–June 1950.

Baillie, Andrew D.

Devonian geology of Lake Manitoba-Lake Winnipegosis area, Manitoba: Manitoba Dept. Mines and Nat. Res., Mines Br., Pub. 49–2, 72 p., illus. incl. geol. map, 1950. Describes in detail the Devonian strata (Elm Point, Winnipegosan, and Manitoban formations) that outcrop in a northwest-trending belt in southern Manitoba. Sections, faunal lists, and correlations within the area and with northern Canadian areas are included.

Bailly, René J.

1. Prismatic cleavage of molybdenite; Acta Crystallographica, v. 3, pt. 6, p. 477, illus., Nov. 1950. In parallel infrared light, (0001) sections of molybdenite show hexagonal cracks which are explained as prismatic, vertical cleavage.
2. (and Holke, Kenneth A.). Microscope and refractometer for infra-red light [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 277–278, Mar.–Apr. 1950.

Bain, George William.

1. Geology of the fissionable materials: Econ. Geology, v. 45, no. 4, p. 273–323, illus., June–July 1950. Discussion by C. L. Sagui, v. 46, no. 1, p. 86, Jan.–Feb. 1951. The geology of uranium and thorium is discussed according to types of occurrence, mineralogy, characteristic distribution in relation to the broader geologic structures, and geographic distribution. Deposits are classified under primary, sedimentary, and oxidized types. The resources of both producing and potential producing countries are described.

Bain, George William—Continued

2. "Mineralizer" localization in the Treasure Mountain granite, Colorado [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1441–1442, Dec. 1950.

Baird, David M.

Fogo Island map-area, Newfoundland (report and map): Canada Geol. Survey Paper 50–22, 56 p. (‡), geol. map, 1950. Discusses the physiography, glaciation, stratigraphy, and petrology of Fogo Island and nearby islands off the north coast of Newfoundland. The rocks are Ordovician and Silurian intercalated sediments and volcanics, and intrusives.

Baird, Donald.

Revision of the Pennsylvania and Permian footprints *Limnopus*, *Allopus*, and *Baropus* [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1442, Dec. 1950.

Baker, Charles Laurence.

Role of bentonite in Great Plains and Rockies: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1897–1899, Sept. 1950. Describes briefly occurrences and characteristics of bentonite in the Great Plains and Rocky Mountain regions. V. S.

Baker, Roger Crane. *See* Hewitt, F. A.; Klein, H.

Baldwin, Ewart Merlin. *See also* Snavely, P. D., Jr.

Summary of the structure and geomorphology of the Columbia River basalt: Northwest Sci., v. 24, no. 2, p. 59–64, May 1950. A review of present information and pertinent problems concerning compressional folds and faults, regional warping, and geomorphology of the Columbia River basalt area in Oregon, Washington, and Idaho.

Baldwin, Thomas Armet.

San Ardo—a stratigraphic analysis of a California oil field: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 10, p. 1981–1989, illus., Oct. 1950. The San Ardo oil field in the Salinas Valley, California, is a stratigraphic trap in the upper Miocene Lombardi sand. The oil accumulated in Pliocene time, and synclinal warping occurred in the early Pleistocene. The stratigraphy is discussed; three Pliocene units are considered as equivalent facies and termed the "San Ardo group."

Ball, Sydney Hobart, 1877–1949.

A Roman book on precious stones. 338 p., illus. Gemological Institute of America, 541 South Alexandria, Los Angeles 5, California. 1950. The book is in three sections: (1) Introductory chapters dealing with gems and jewelry in the time of Pliny (23–79 A.D.); (2) a modernized version of Philemon Holland's translation of Pliny's 37th Book of the Natural History of the World, and two chapters from the 36th Book; and (3) notes on section (2).

Balster, C. A. *See* Thomas, L. A., 2.

Balter, B. M.

Electronics applied to oil exploration: World Oil, v. 131, no. 1, p. 72, 77, illus., July 1, 1950. An electronic field is now produced in the ground by truck-mounted equipment, and its distortion by the insulating property of hydrocarbons is measured in "voltrons," mapped, and interpreted to estimate local oil productivity. The field procedure, test surveys in Texas, and limitations of the method are discussed. V. S.

Bandy, Orville Lee.

Some later Cenozoic Foraminifera from Cape Blanco, Oregon: Jour. Paleontology, v. 24, no. 3, p. 269–281, illus., May 1950. "The lithology and significant fossils of the Cenozoic formations exposed at Cape Blanco, Oregon, are discussed briefly. Twenty-four species of Foraminifera are described, figured, and analyzed; four new species and two new varieties are reported. Information is introduced which raises a question as to the correlation of the terrace beds at the cape with the Elk River beds just north of Elk River."

Banks, Harlan Parker.

Some Upper Devonian plants [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 672, Oct. 1950.

Banks, Joseph Edwin.

Particle-type well logging: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1729–1736, illus., Aug. 1950. "A multi-column log form is proposed for recording and analyzing the abundant lithologic information available from well samples. The recording method is unique in that particle types instead of rock types are plotted. Illustrations are presented, and the method of plotting is explained."

Bannerman, Harold MacColl.

(and Pecora, William Thomas). Training geologists; a United States Geological Survey viewpoint: U. S. Geol. Survey Circ. 73, 6 p. (‡), Mar. 1950. Sets forth the requirements essential to a career as a geologist with the Survey.

Barger, Ralph M.

(and Zulberti, J. L.). San Ardo oil field: Calif. Oil Fields, v. 35, no. 2, p. 15–20, illus., July–Dec. 1949. Brief notes on the stratigraphy of the San Ardo oil field, Monterey County, California.

Barghoorn, Elso Sterrenberg, Jr.

(and Spackman, William, Jr.). Geological and botanical study of the Brandon lignite and its significance in coal petrology: Econ. Geology, v. 45, no. 4, p. 344–357, illus., June–July 1950. Lignite of Tertiary age occurs at Brandon, Vermont, in a restricted area associated with kaolin, ocher, and iron oxide ore. Recognizable plant tissues consist entirely of hardwood tree and shrub remains and suggest that the deposit formed in a humid and warm environment. The original organic composition of plant tissues is found to exert a strong influence on physical and chemical changes accompanying coalification. V. S.

Barksdale, Julian Devreau.

Shonkin Sag laccolith revisited [Mont.] [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1442, Dec. 1950.

Barlow, James A., Jr.

Significance of the arcuate structures of the northeast flank of the Laramie Range [Wyo.] [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1549, Dec. 1950.

Barnes, Augustine E., Jr.

Roby pool, Fisher County, Texas: Abilene Geol Soc., Geol. Contr., p. 60–61, illus., 1950. Brief notes on the structure of the field.

Barnes, Frank Charles.

(and Arnold, Emery). Proved and potential oil and gas traps of the San Juan Basin, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 90–100, illus., 1950. Ninety-three structures are listed, together with location and remarks. The illustrations include a structural map, oil and gas field map, and columnar section.

Barnes, F. Q. *See* Lord, C. S.

Barnes, Virgil Everett.

1. (and Mathis, Robert W., and Romberg, Frederick). Gravity prospecting for lead and zinc, New Mexico: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 5, p. 5–15, illus. incl. geol. map. 1950; abs., Volume of titles and abstracts, p. 24, 1948. Gravity investigations at the Houston-Thomas prospect in the Pinos Altos mining district near Silver City, New Mexico, are described. The results indicate that the use of a gravity meter in rugged terrain for the location of lead-zinc ore bodies is practicable.

Barnes, Virgil Everett—Continued

2. (and Shock, D. A., and Cunningham, William A.). Utilization of Texas serpentine: Texas Univ. Bur. Econ. Geology Pub. 5020, 52 p., illus. incl. geol. maps, Oct. 15, 1950. Various sections deal with the geologic occurrence of serpentine, mineralogy and crystal structure, experimental data on heat treatment, solubility, and siliceous residues, and possible industrial uses.

Barnes, William Howard.

An electron microscopic examination of synthetic tourmaline crystals: Am. Mineralogist, v. 35, nos. 5–6, p. 407–411, illus., May–June 1950. "Representative electron micrographs illustrating the forms of tourmaline crystals synthesized by Frondel, Hurlbut, and Collette are reproduced. A few measurements on the sizes of the crystals are given and the behavior of the crystals during fusion in the electron beam is illustrated."

Barnetche, Alfonso.

(and Aguilar, Manuel Rodríguez). Las reservas petroleras de la República mexicana: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 2, p. 89–94, Feb. 1950; Petróleos Mexicanos, no. 78, p. 82–86, Feb. 1950. The petroleum reserves of Mexico as of 1949 are estimated at 1,270 million barrels. The gas reserves are placed at 1,180,000 million cubic feet.

Barr, Kenneth William.

(and others). The crude oils of Trinidad. Part 3, Relationship of crude oils and stratigraphy in the Morne Diablo-Quinam field: Inst. Petroleum Jour. (London), v. 35, no. 310, p. 675–704, illus., Oct. 1949. Describes in detail the chemical characteristics of crude oils from the Forest, Upper Cruse, and Middle Cruse sand zones of the Morne Diablo-Quinam, and discusses the data in relation to the source of the oil. It is concluded that impregnation of the sands by migration from the Los Bajos fault is unlikely.

Barshad, Isaac.

The effect of the interlayer cations on the expansion of the mica type of crystal lattice: Am. Mineralogist, v. 35, nos. 3–4, p. 225–238, illus., Mar.–Apr. 1950. "The ionic radii, the valency, and the total charge of the interlayered cations, as well as the nature of the interlayered substance seem to determine the extent of the interlayer expansion of the mica type of crystal lattice."

Barthelmes, Albert J.

Geophysical prospecting in western Canada: World Petroleum, v. 21, no. 7, p. 47–51, illus., July 1950. Reviews the regional geology and structure of the sedimentary basin between the Rocky Mts. and the pre-Cambrian shield and indicates the changes in methods of geophysical prospecting used in the area.

Bartley, Jerald Howard.

•1. (and Haigh, Berte Rolph). Prospective Pennsylvanian reef and non-reef areas of west Texas: World Oil, v. 131, no. 4, p. 73, 76–80, Sept. 1950. Two types of oil reservoirs are distinguished in the Pennsylvanian limestone of the Permian basin of western Texas: The reef, developed in a belt extending along the eastern platform and south of the Matador uplift, and the non-reef in the Midland basin. Their distribution is mapped and discussed, with special attention to the Strawn and Canyon sections of the Scurry reef trend, and local Pennsylvanian production is outlined with tabulation of fields. V. S.

2. (and Cox, Robert T.). Types of oil and gas traps in west Texas and southeast New Mexico [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 119, Apr. 27, 1950.

Barton, Cecil L.

(and Sampson, Norman N.). Placerita oil field: Calif. Oil Fields, v. 35, no. 2, p. 5–14, illus., July–Dec. 1949. Brief description of the stratigraphy and structure of the Placerita oil field, Los Angeles County, California.

Bartram, John Greer.

(and Imbt, William C., and Shea, Edward F.). Oil and gas in Arbuckle and Ellenburger formations, Mid-Continent region: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 4, p. 682–700, illus. incl. geol. maps, Apr. 1950; abs., Oil and Gas Jour., v. 46, no. 52, p. 110, Apr. 29, 1948. The lithology, thickness, distribution, and structures of the Arbuckle formation of Cambro-Ordovician age are compared for the areas where they are oil- and gas-bearing. The conditions of accumulation, shown on regional structure and isopach maps and by cross sections, are discussed. V. S.

Bass, Nathan Wood.

1. Pre-Pennsylvanian Paleozoic rocks in western Colorado and southeastern Utah, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 56–57, illus., 1950. Brief notes on the Cambrian, Ordovician, Devonian, and Mississippian rocks, with several columnar sections.
2. (and Northrop, Stuart Alvord). South Canyon Creek dolomite member, a unit of Phosphoria age in Maroon formation near Glenwood Springs, Colorado: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1540–1551, illus., July 1950. A stratigraphic study of the South Canyon Creek dolomite member of the Maroon formation, Pennsylvanian (?) and Permian (?), cropping out west of Glenwood Springs, Colorado. A preliminary study of the fossils has yielded a tentative list of pelecypods, scaphopods, and gastropods, which appear to be Permian. V. S.

Bassett, Ann Bradley.

pH data, *in* Analytical data on reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 7, p. 59–61, July 1950.

Bassett, John S.

Jud pool, Haskell County, Texas: Abilene Geol. Soc., Geol. Contr., p. 31–33, illus., 1950. Notes on the discovery and producing horizons of the field.

Bassler, Ray Smith.

1. New genera of American Middle Ordovician "Cystoidea": Washington Acad. Sci. Jour., v. 40, no. 9, p. 273–277, illus., Sept. 15, 1950. Describes 11 new genera and 10 new species of Middle Ordovician cystoids occurring chiefly in the Benbolt and Bromide formations in Tennessee and Oklahoma.
2. Faunal lists and descriptions of Paleozoic corals: Geol. Soc. Am. Mem. 44, 315 p., illus., Nov. 10, 1950. Reference lists of Paleozoic corals of North America, Europe, Asia, Africa, Australia, and South America. Fifty pages are devoted to descriptions and classification of Ordovician corals, in which the classification by families is revised.

Bastin, Edson Sunderland.

1. Significant replacement textures at Cobalt and South Lorraine, Ontario, Canada: Econ. Geology, v. 45, no. 8, p. 808–817, illus., Dec. 1950. "Results of a restudy of superior polished specimens of representative nickel-cobalt-silver ores from Cobalt and South Lorraine, Ontario, are presented in 17 paragenetic diagrams." Textural and genetic relations of the ore components are described and discussed.
2. Interpretation of ore textures: Geol. Soc. Am. Mem. 45, 101 p., illus., Dec. 5, 1950. Descriptions, illustrations, and interpretation of microscopic ore textures. The chapters cover textures of magmatic, colloidal, replacement, and sedimentary ores, paragenesis, and microscopic inclusions.

Basurto García, Jesús.

(and Islas Leal, Juventino). El método sismológico de refracción en la Cuenca Salina del Istmo: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 7, p. 461–472, illus., July. 1950. Briefly describes seismic refraction work in various parts of the Salina Basin of the Isthmus of Tehuantepec, Mexico.

Bateman, Alan Mara.

Economic mineral deposits. 2d ed. xi, 916 p., illus. New York, John Wiley & Sons, Inc. 1950.

Bateman, John Danvers.

The function of a mine geological department [abs.]: Econ. Geology, v. 45, no. 4, p. 390–391, June–July 1950.

Bateman, Paul C.

(and Erickson, Max Perry, and Proctor, Paul Dean). Geology and tungsten deposits of the Tungsten Hills, Inyo County, California: Calif. Jour. Mines and Geology, v. 46, no. 1, p. 23–42, illus., Jan. 1950. The hills are formed by a fault block composed mainly of plutonic igneous rocks enclosing small metamorphic bodies. The deposits are of the contact-metamorphic type. The only tungsten-bearing mineral is scheelite. The origin of the deposits is discussed.

Bates, Thomas Fulcher.

1. (and Sand, Leonard B., and Mink, John F.). Tubular crystals of chrysotile asbestos: Science, v. 111, no. 2889, p. 512–513, illus., May 12, 1950. Chrysotile forms tubular crystals similar to those of endellite, as shown on electron micrographs. The theory of different unit cell dimensions in sheet structure, previously developed to explain such crystal formation in halloysite and endellite, is applied to antigorite and chrysotile. V. S.
2. (and Hildebrand, Fred A., and Swineford, Ada). Morphology and structure of endellite and halloysite: Am. Mineralogist, v. 35, nos. 7–8, p. 463–484, illus., July–Aug. 1950; abs., v. 34, nos. 3–4, p. 274, Mar.–Apr. 1949, with title Electron mircoscopy of the kaolin minerals; Geol. Soc. Am. Bull., v. 59, no. 12, pt. 2, p. 1310–1311, Dec. 1948. "Deals with the morphology of kaolinite, halloysite (metahalloysite), and endellite (halloysite) and proposes a structural relationship to explain the physical and chemical properties and behavior of these minerals. The data were obtained by electron microscope and *x*-ray diffraction studies of 83 specimens from 66 localities."
3. (and Mink, John F.). Morphology and structure of the serpentine minerals antigorite and chrysotile [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1442–1443, Dec. 1950.

Bauer, W. H.

(and Gordon, I., and Moore, Charles Henkel, Jr.). Flame fusion synthesis of mullite single crystals: Am. Ceramic Soc. Jour., v. 33, no. 4, p. 140–143, illus., Apr. 1, 1950; abs., Am. Mineralogist, v. 35, nos. 1–2, p. 128, Jan.–Feb. 1950. Describes the equipment and materials used in the synthesis, and gives optical and X-ray data for the crystals. The largest mullite boule to date has been 2 cm long and 1 cm at its thickest point. The flame fusion technique is considered feasible for the study of anhydrous silicates under certain conditions.

Baulig, Henri.

William Morris Davis; master of method: Assoc. Am. Geographers Annals, v. 40, no. 3, p. 188–195, Sept. 1950. An analysis of Davis's contributions to the development of the science of geomorphology.

Baxter, Robert W.

Peltastrobus reedae, a new sphenopsid cone from the Pennsylvanian of Indiana: Bot. Gaz., v. 112, no. 2, p. 174–182, illus., Dec. 1950. Gives a detailed description of a new genus and species of sphenopsid fructifications from coal balls collected at a mine near Booneville, Indiana. Evidence points to a closer relationship to the Sphenophyllales than to the Calamitales.

Bayless, John C.

A geologic reconnaissance of the post-Laramide geology of the southeastern Snake River plains and adjacent mountain ranges in Idaho: Mich. Acad. Sci. Papers, v. 34 (1948), p. 209–226, illus. incl. geol. sketch map, 1950. The sediments, volcanics, glacial deposits, and alluvium, of Tertiary, Pleistocene, and Recent ages, and the structure of the area are discussed.

Bayne, G. W. *See* Wheeler, H. E., 1.

Bays, Carl Andrew.

Geophysical methods, *in* Prospecting for ground water: Am. Water Works Assoc. Jour., v. 42, no. 10, p. 947–956, illus., Oct. 1950. Describes the various methods applied to prospecting for ground water, as radioactivity, gravity, seismic, magnetic, electrical, geothermal, and electromagnetic, and evaluates their usefulness.

Beach, Hugh Hamilton.

Geology and the petroleum engineer, with special reference to western Canada: World Oil, v. 131, no. 7, p. 250–252, 255–256, 258, illus., Dec. 1950. Discusses the phases in petroleum exploration where the fields of the petroleum geologist and the petroleum engineer overlap. The exploratory work on reefs that has been done in western Canada is used in illustration of the value of geology to the petroleum engineer. A brief summary of reef development is given.

Beales, Francis William.

The late Palæozoic formations of southwestern Alberta (report and table): Canada Geol. Survey Paper 50–27, 72 p. (‡), table, 1950. Gives detailed measured sections in the Banff and Mount Head areas, including type sections of the Banff, Rundle, and Rocky Mtn. formations, and a table of published sections.

Beams, Robert Jess.

Geology of Elk City field [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 626, Mar. 1950.

Bean, Ernest F.

Engineering geology of highway location, construction, and materials, *in* Application of geology to engineering practice, Berkey Volume, p. 181–193, illus., Geol. Soc. Am., New York, 1950. The use of geological information in the location of highways, bridge foundations, classification of excavation materials, grading problems, control of landslides, and investigation of road materials is discussed.

Bearman, Charles Henry. *See* Byrne, F. E., 4.

Beatty, Suzanne van Dijke.

X-ray diffraction patterns of asbestos: Am. Mineralogist, v. 35, nos. 7–8, p. 579–589, July–Aug. 1950. Data for the X-ray diffraction patterns of 10 asbestos specimens, including chrysotile, crocidolite, and anthophyllite, are given. Features for identification of the pattern are obtained both from powder and fiber samples. Patterns of chrysotile show a considerable amount of variation in the number, sharpness, and *d* values of the reflections.

Beaumont, Edward C.

(and Read, Charles Brian). Geologic history of the San Juan Basin area, New Mexico and Colorado, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 49–52, 1950. A brief summary of geologic events during the Paleozoic, Mesozoic, and Cenozoic eras.

Beck, A. F.

Western Canadian plains, a new challenge to geophysics: Canadian Min. Met. Bull. no. 455, p. 132–135, illus., Mar. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 82–85, 1950. The use of electrical, gravitational, magnetic, and seismic methods for oil search in the plains region is outlined, and local problems of technique and interpretation are indicated. V. S.

Beck, Carl W.

1. (and LaPaz, Lincoln). The Albuquerque, Bernalillo County, New Mexico, siderite: Pop. Astronomy, v. 58, no. 2, p. 85–89, illus., Feb. 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 245–249, illus., 1950. Mineralogical, chemical, and radiochemical data are given for a meteorite found approximately 15 miles southwest of Albuquerque, New Mexico. The specimen weighs 157.3 gm; ECN=+1068,350. The data indicate that it is not a part of the Canyon Diablo fall.
2. An amplifier for differential thermal analysis: Am. Mineralogist, v. 35, nos. 7–8, p. 508–524, illus., July–Aug. 1950; correction, nos. 11–12, p. 1090, illus., Nov.–Dec. 1950. "An amplifier to be used with pen and ink recorders in the differential thermal analysis studies of minerals is described. . . . Curves for 14 analyzed minerals recorded with a pen and ink recorder are compared with photographically recorded curves obtained by Speil (1945) on the same minerals." The correction concerns errors in the wiring diagram of the apparatus.
3. Differential thermal analysis curves of carbonate minerals: Am. Mineralogist, v. 35, nos. 11–12, p. 985–1013, illus., Nov.–Dec. 1950. Presents and discusses thermal analysis data for forty-eight carbonate minerals.

Beck, Henry Vorhees. *See* Byrne, F. E., 3, 4.

Beebe, Byron Warren.

Geologic responsibility in seismic exploration [abs.]: Geophysics, v. 15, no. 1, p. 150–151, Jan. 1950; Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 623–624, Mar. 1950.

Beers, Roland Frank.

Geophysical problems in applied sedimentation, *in* Applied sedimentation, p. 72–92, 1950. The various branches of geophysics, such as pure science, exploration for oil and minerals, engineering, geologic mapping, development of oil and minerals, and application to military and naval problems, are described. Problems for future research are noted. An annotated list of reference texts and periodicals is given.

Behre, Charles Henry, Jr.

1. Problems of the genesis of mineral deposits of the southeastern states, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 26–41, illus., 1950. A genetic classification including the following types—igneous, contact metamorphic, pegmatitic, hypothermal, mesothermal, and epithermal veins, sedimentary deposits, and residual concentrates—is proposed. Certain genetic problems, such as the origin of zinc and lead ore-bearing solutions, of the Ducktown copper ores, and of the sedimentary iron ores, are discussed briefly.
2. (and Heyl, Allen Van, Jr., and McKnight, Edwin Thor). Zinc and lead deposits of the Mississippi Valley, *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 51–69, illus., 1950; abs., Volume of titles and abstracts, p. 40–41, 1948. Describes the occurrence, mineralogy, paragenesis, and origin of the deposits in the Mississippian limestones in the Tri-State region, in the Cambrian dolomites of southeast Missouri, in the Mississippian strata of the Illinois-Kentucky fluorite district, and in the Ordovician strata of the Upper Mississippi Valley.

Béland, René.

1. Taibi Lake area, Abitibi-East County: Quebec Dept. Mines, Geol. Surveys Br., Geol. Rpt. 40, 19 p., illus. incl. geol. map, 1950. Describes the general and structural geology of an area of pre-Cambrian volcanics and intrusives in northern Quebec.
2. Le synclinal du Lac Wakeham et la fosse du Labrador: Naturaliste Canadien, v. 77, nos. 9–10, p. 291–304, illus., Sept.–Oct. 1950. Proposes that the metasediments of the Wakeham Lake area, on the north shore of the St. Lawrence River in eastern Quebec, and the metasediments of the Lake Gabbro area 200 miles to the northwest can be correlated and are of early Huronian age. If the two are considered correlative, then the Huronian and the Grenville are not of the same age.

Bell, Gordon Leon.

Mirabilite deposits at the south end, Great Salt Lake, Utah [abs.]: Utah Acad. Sci. Proc., v. 25, p. 183, 1948.

Bell, Mendell McClellan. *See* Crawford, A. L., 3; Hager, D., 2.

Bell, Wallace G.

Problems of the structure and stratigraphy of the upper Sweetwater Valley, west-central Wyoming [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1549–1550, Dec. 1950.

Bell, William Charles.

1. Stratigraphy; a factor in paleontologic taxonomy: Jour. Paleontology, v. 24, no. 4, p. 492–496, July 1950. A discussion of the relations of superposition of strata to faunal succession, emphasizing the dependence of faunal development and distribution on depositional environment. It is concluded that "the logical approach to paleontologic taxonomy is to regard it as a method of expressing stratigraphic (time and geographic) relationships among organisms."
2. (and Berg, R. R.). Franconia formation of Minnesota and Wisconsin [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1443, Dec. 1950.

Bellen, Robert Carel, van.

A pitfall of paleontologic "Latin": Jour. Paleontology, v. 24, no. 4, p. 504, July 1950. Explains that a varietal name should be feminine even though attached to masculine or neuter generic and specific names. V. S.

Belser, Carl. *See* Duncan, D. C.

Bemrose, John.

(and others). Bahamas airborne magnetometer survey: Geophysics, v. 15, no. 1, p. 102–109, illus., Jan. 1950. A brief account of the problems, organization, and technical operations of the Bahamas aeromagnetic survey, conducted jointly by five oil companies. V. S.

Benavides G., Luis.

1. Geología de la región de Tenosique, Tab.: Asoc. Mex. Geól. Petrol. Bol., v. 1, no. 1, p. 5–26, illus. incl. geol. map, Nov. 1949. The Tenosique area, in the southeastern part of Tabasco Province, Mexico, bordering on Guatemala, is characterized by Tertiary and Quaternary sandstones and limestones. In the southern part southeast-trending anticlines of Eocene and Oligocene strata form the Coba and Santa Rosa ridges. In the northern part Miocene to Pleistocene strata constitute a northward-sloping monocline. V. S.
2. El anticlinal del Cerro Pelón, Municipio de Minatitlán, Veracruz: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 10, p. 599–616, illus. incl. geol. sk. map, Oct. 1950. The stratigraphy, structure, and geologic history of the Cerro Pelón area, near Minatitlán, southeastern Veracruz, are described. The structure is anticlinal and faulting is present. The strata are Jurassic, Cretaceous, Eocene, and Oligocene.

Bench, Bernard Mayes.

Aerial photography gives a "bird's-eye view": Petróleo Interamericano, v. 8, no. 6, p. 40–42, illus., June 1950. (Spanish and English). Discusses briefly the uses of aerial photography in oil exploration, especially in tropical regions, clues to the identification of structures and rocks on photographs, and ground checks. V. S.

Benfield, Adalbert Edwin.

1. The temperature in an accreting earth: Am. Geophys. Union Trans., v. 31, no. 1, p. 53–57, Feb. 1950. "The temperature at the surface of an accreting earth is discussed; it is concluded that the surface is likely to be molten during the later stages of the process. The effect of pressure alone in raising the temperature in the deep interior is also considered; this effect appears to be inadequate to cause melting, but no definite conclusion is drawn, as numerous uncertainties enter into this calculation."

Benfield, Adalbert Edwin—Continued

2. The earth's heat: Sci. Am., v. 183, no. 6, p. 54–57, illus., Dec. 1950. A general article on the origin, measurement, and significance of the heat of the earth.

Benioff, Hugo.

1. Earthquakes and rock creep [abs.]: Science, v. 109, no. 2835, p. 438, Apr. 29, 1949; (continued) Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1936–1937, Dec. 1949.
2. Earthquakes and rock creep [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1543, Dec. 1950. Not the same as Benioff 1, above.
3. Preliminary report on two capacity transducer seismographs [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1543, Dec. 1950.

Bennett, William Alfred Glenn.

Salines at Carbonate Lake, Grant County, Washington [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1520, Dec. 1950.

Benninghoff, William S.

1. Use of aerial photographs in mapping vegetation and surficial geology in subarctic regions: Photogrammetric Engineering, v. 16, no. 3, p. 428–429, June 1950. The aerial photographs are useful for orientation in poorly mapped areas, planning ground sampling, plotting of sample localities, interpreting areas between sampled areas.
2. Late Quaternary vegetation on No Mans Land Island, Massachusetts [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1443–1444, Dec. 1950.

Benson, W. T.

Investigation of Black Rock manganese deposits, Esmeralda County, Nev.: U. S. Bur. Mines Rpt. Inv. 4717, 5 p. (‡), illus. incl. geol. sketch map, Aug. 1950. In the Black Rock deposits of Esmeralda County, Nevada, manganese oxide occurs as lenses and laminae in calcareous sinter deposited by thermal waters in fractured zones in tuff. The geology, ore bodies, and manganese content of ores are described. V. S.

Benson, William Edward Barnes.

(and Golder, Charles R.). Paleocene deformation in North Dakota [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1444, Dec. 1950.

Berg, R. R. *See* Bell, W. C., 2.

Berger, Philip. *See* Leet, L. D., 3.

Bermúdez, Pedro Joaquin.

1. Contribución al estudio del Cenozoico cubano: Soc. Cubana Historia Nat. Mem., v. 19, no. 3, p. 205–375, May 26, 1950. The Cenozoic stratigraphy is outlined on the basis of the Foraminifera and the species identified in each formation are listed. A chart shows the stratigraphic distribution of 1,500 species. Formations are correlated with the Cenozoic of Florida, Mexico, and Hispaniola. An extensive bibliography is included.
2. Foraminiferos forjadores de mundos: Bol. Historia Nat., v. 1, no. 3, p. 101–103 (‡), illus., Nov. 1950; Petróleos Mexicanos, no. 85, p. 7–11, illus., Sept. 1950. A popular account of Foraminifera, their role in the formation of the earth's crust, and their use in geologic studies and the search for oil. V. S.

Bernhagen, Ralph John.

The interrelation between geology and stream flow: Ohio State Univ., Eng. Expt. Sta. News, v. 22, no. 2, p. 16, 36–38, illus., Apr. 1950. Studies of the Licking River and Mahoning River basins in Ohio have shown that a definite relationship can be established between stream flow and the geologic characteristics of the area traversed. A comparative table is given for several Ohio streams.

Berry, Edward Willard.

1. Exploration for petroleum and natural gas in North Carolina, *in* The mining industry in North Carolina from 1937 to 1945: N. C. Dept. Conserv. Dev., Div. Mineral Res., Econ. Paper no. 65, p. 55–57, [1950?]. The exploration drilling of various companies is outlined briefly.
2. Conglomerate in the "Carolina slates" [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1444, Dec. 1950.
3. A Cretaceous log-jam [abs.]: N. C. Acad. Sci. Proc. *in* Elisha Mitchell Sci. Soc. Jour., v. 66, no. 2, p. 116, Dec. 1950.

Berry, Leonard Gascoigne.

1. On pseudomalachite and cornetite: Am. Mineralogist, v. 35, nos. 5–6, p. 365–385, illus., May-June 1950. Physical and optical properties and X-ray data are given for pseudomalachite, $Cu_5(PO_4)_2(OH)_4$, and cornetite, $Cu_3PO_4(OH)_3$.
2. (and Thornton, F. M.). On cenosite [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 228, 1950.

Berryhill, Henry Lee, Jr.

(and others). Coal resources of Wyoming: U. S. Geol. Survey Circ. 81, 78 p. (‡), illus., Sept. 1950. The Wyoming coal reserves, of Cretaceous and Eocene age, are appraised at 121,553,850,000 short tons of bituminous and sub-bituminous coal. Classes of reserves, method of estimation, and the ten major areas are described. Maps, cross sections, statistical data, and a bibliography are given. V. S.

Berryhill, Louise Russell. *See* Averitt, P., 2.

Bertrand, Didier.

The biogeochemistry of vanadium: Am. Mus. Nat. History Bull., v. 94, art. 7, p. 405–455, 1950. A portion of this paper is devoted to vanadium in the geosphere, with sections on its occurrence in rocks and sediments, water, arable soils, coals, petroleum, petroliferous schists, bitumens, and asphaltites. A bibliography is given.

Beveridge, Thomas R.

Thrust faulting in southwestern Missouri [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1444–1445, Dec. 1950.

Beyer, Arthur F.

Additions to the fossil flora of Specimen Ridge, Yellowstone National Park, Wyoming [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 672, Oct. 1950.

Bichan, W. James.

1. Reported radioactive occurrences in Saskatchewan: Western Miner, v. 23, no. 3, p. 47–51, illus., Mar. 1950. The mechanics of fracturing, shear, and erosion, applied to the pre-Cambrian-Paleozoic contact, and the known host rocks, channelways, and deposits of uranium minerals in the region suggest that radioactive occurrences exist not only near the present margin of the Canadian Shield, where they have been found so far, but throughout its fracture pattern. V. S.
2. Saskatchewan, the uranium province: Geol. Assoc. Canada Proc., v. 2, p. 57–59, Apr. 1950. A brief review of the recent uranium discoveries in Saskatchewan, including a discussion of the geologic factors bearing on the occurrence of pitchblende.

Bieber, Charles Leonard.

Distribution patterns of sand and gravel pits in northwestern Indiana: Ind. Acad. Sci. Proc., v. 59, p. 221–224, illus., 1950. The location of gravel pits in northwestern Indiana is indicative of the drainage pattern rather than the morainic pattern. The pit pattern is interpreted and shown on a map.

Bieberman, Doris Franz. *See* Esarey, R. E., 1, 2.

Bieberman, R. A. *See* Esarey, R. E., 2.

Billings, Marland Pratt.

1. Stratigraphy and the study of metamorphic rocks: Geol. Soc. Am. Bull., v. 61, no. 5, p. 435–448, illus., May 1950. The importance of stratigraphy, sedimentation, and paleogeography in the study and mapping of metamorphic rocks is stressed, particularly in view of the recent emphasis that has been placed on petrographic and chemical work. The place of sedimentary facies, time surfaces, lithology, paleogeography, and field geology is discussed. Cartographic representation of stratigraphy and lithology in areas of progressive metamorphism is illustrated by a map, and a bibliography is given.
2. (and White, Walter Stanley). Metamorphosed mafic dikes of the Woodsville quadrangle, Vermont and New Hampshire: Am. Mineralogist, v. 35, nos. 9–10, p. 629–643, illus., Sept.-Oct. 1950. "Metamorphosed mafic dikes, probably late Devonian, intrude metasedimentary and metavolcanic rocks ranging from Middle Ordovician to Early Devonian. The grade of metamorphism in the intruded rocks ranges from low-grade (chlorite zone) to high-grade (sillimanite zone). The dikes, presumably diabases before metamorphism, now show seven principal mineral assemblages as well as several transitional types."
3. Field and laboratory methods in the study of metamorphic rocks: N. Y. Acad. Sci. Trans., ser. 2, v. 13, no. 2, p. 44–51, illus., Dec. 1950. Discusses various significant points in the study and mapping of metamorphic rocks, as rock classification, minor folds and their relation to major structure, shear folds, flexure folds, lineation, boudinage, and direction of movement. Comments on the use of petrofabric studies in a regional investigation of metamorphic rocks are included.

Billings Geological Society.

[Guidebook] First annual field conference, September 15–17, 1950. 90 p., illus. incl. geol. maps. Billings, Montana. 1950. Guidebook for the three-day field trip of the Billings Geological Society, covering the following itinerary: Billings, Big Timber, Bozeman, Lewis & Clark Cavern State Park, Boulder, Helena, Townsend, White Sulphur Springs, Lavina, and Billings. Numerous photographs, sections, and maps are included.

Billingsley, Granville Alton. *See* Hewitt, F. A.; Klein, H.

Billingsley, Harold Ray.

Sholem Alechem pool presents complex geological picture: World Oil, v. 130, no. 2, p. 61–66, illus. incl. geol. maps, Feb. 1950; abs. with title, Stratigraphic and structural history of Sholem Alechem oil field, southern Oklahoma, Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 624, Mar. 1950. Gives the stratigraphy, structure, and geologic history of the Sholem Alechem oil field, an anticline of Pennsylvanian strata near the northwest-southeast trending Anadarko-Ardmore geosyncline. V. S.

Birch, Albert Francis.

1. Flow of heat in the Front Range, Colorado: Geol. Soc. Am. Bull., v. 61, no. 6, p. 567–630, illus., June 1950; abs., v. 59, no. 12, pt. 2, p. 1312, Dec. 1948. A detailed report on the temperature observations made in the Alva B. Adams Tunnel under Rocky Mtn. Natl. Park to test the hypothesis that a greater flow of heat can be expected in mountains than in lowlands. The observed heat flow is consistent with the doctrine of mountain roots and with an approximately uniform distribution of radioactivity throughout the "granitic" layer.
2. A simple technique for the study of the elasticity of crystals: Am. Mineralogist, v. 35, nos. 9–10, p. 644–650, illus., Sept.–Oct. 1950. "A brief review is given of the use of the composite piezoelectric oscillator for determination of the elastic constants of small samples. A few preliminary results for single crystals have been obtained, for comparison with older measurements."
3. Elasticity and composition of the earth's interior [abs.]: Science, v. 112, no. 2912, p. 453, Oct. 20, 1950.

Birkenhauer, Henry Francis.

Fifty years of Jesuit seismology: Earthquake Notes, v. 21, nos. 1–2, p. 11–13, Mar.–June 1950. Brief biography of Frederick L. Odenbach, founder of Jesuit seismology in the United States.

Birks, L. S.

(and Schulman, James Herbert). The effect of various impurities on the crystallization of amorphous silicic acid: Am. Mineralogist, v. 35, nos. 11–12, p. 1035–1038, illus., Nov.–Dec. 1950. Five added impurities, the carbonates of magnesium, calcium, strontium, barium, and manganese, were found effective in the transformation of amorphous silicic acid to quartz several hundred degrees above its stability limit. The action is not explained.

Bissell, Harold Joseph. *See also* Thompson, M. L.

Carboniferous and Permian stratigraphy of the Uinta Basin area, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 71–96, illus., 1950. The lithology, thickness, and distribution of the Mississippian, Pennsylvanian, and Permian strata in the vicinity of the Uinta Basin, Colorado and Utah, are described. Tentative correlations are made. Paleogeographic conditions are described.

Black, Robert Foster.

Permafrost, *in* Applied sedimentation, p. 247–275, illus., 1950. The points covered include the origin and general character of permafrost; geologic, engineering and biologic significance; factors affecting and various practical problems associated with permafrost such as construction, water supply, agriculture, mining, and military operations; and the need for future research. A bibliography is given.

Blackhall, John A. *See* Allen, W. B.

Blackman, Doris H.

Geologic guides to carnotite deposits on the Colorado Plateau [abs.]: Min. Cong. Jour., v. 36, no. 10, p. 84, Oct. 1950.

Blackwelder, Eliot.

1. Pleistocene geology, the Green River Basin, Wyoming; Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 81–85, illus., 1950. Briefly describes glaciation of the Green River basin area, and river terraces, and gives a tentative correlation table of glacial stages and erosion cycles.
2. [Bailey Willis, 1857–1949]: Geol. Soc. London, Quart. Jour., v. 105, pt. 3, no. 419, p. lvi–lviii, Sept. 1950.

Blake, Daniel B.

Gosport Eocene Ostracoda from Little Stave Creek, Alabama: Jour. Paleontology, v. 24, no. 2, p. 174–184, illus., Mar. 1950. Twenty-four species of ostracodes, eleven new, and one new genus, collected from the Gosport sand of the Claiborne Eocene, are described and figured. Some of them occur in the Gosport formation at Claiborne Bluff on the Alabama River. V. S.

Blake, Donald A. W.

Preliminary report on Waswanipi Lake area (east half) Abitibi-East County: Quebec Dept. Mines, Geol. Surveys Br., Prelim. Rpt. 233, 7 p. (‡), geol. map, 1949. A brief report on the pre-Cambrian rocks and structure of part of the Waswanipi Lake area in northern Quebec. Three small exposures of limestone contain a variety of fossils and are probably of Middle Ordovician age.

Blankenship, R. R. *See* Schneider, R.

Blanpied, Bernerd William.

Howard Nelson Spofford (1881–1950): Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1613–1614, port., July 1950.

Bliss, Jack E. *See* Locke, L. C.

Bloomer, Robert Oliver.

1. The Blue Ridge Mountains, *in* The James River Basin, past, present and future, p. 498–513, Va. Acad. Sci., 1950. Discusses the pre-Cambrian and Cambrian stratigraphy of the Blue Ridge area in Virginia. Brief sections on the topography, structure, and mineral resources are included.
2. Late pre-Cambrian or Lower Cambrian formations in central Virginia: Am. Jour. Sci., v. 248, no. 11, p. 753–783, illus. incl. geol. maps, Nov. 1950. Discusses the stratigraphic field relations, age relations, and nomenclature of the Lynchburg, Swift Run, and Catoctin formations and the Chilhowee series in the Blue Ridge province northeast of Roanoke, Virginia. It is proposed that there is a continuous sequence from the base of the Lynchburg into the Chilhowee, and that apparent unconformities are due, not to erosion intervals, but to location of the sections with respect to the margin of overlap. Relationship of the Wissahickon formation in the Piedmont province is discussed.

Boardman, Leona.

1. (and Watson, Elaine). Geologic map index of Alabama: U. S. Geol. Survey Index to geologic mapping in the United States. Scale 1: 1,000,000 or about 1 inch to 16 miles. 1950.
2. Geologic map index of Arizona: U. S. Geol. Survey Index to geologic mapping in the United States. Scale 1:1,000,000 or about 1 inch to 16 miles. 1950.
3. (and Brown, Annabel, and Watson, Elaine). Geologic map index of Indiana: U. S. Geol. Survey Index to geologic mapping in the United States. Scale 1: 750,000 or about 1 inch to 12 miles. 1950.
4. Geologic map index of Louisiana: U. S. Geol. Survey Index to geologic mapping in the United States. Scale 1:1,000,000 or about 1 inch to 16 miles. 1950.
5. Geologic map index of Mississippi: U. S. Geol. Survey Index to geologic mapping in the United States. Scale 1:1,000,000 or about 1 inch to 16 miles. 1950.
6. (and Brown, Annabel). Geologic map index of New Mexico: U. S. Geol. Survey Index to geologic mapping in the United States. Scale 1: 750,000 or about 1 inch to 12 miles. 1950.
7. (and Watson, Elaine). Geologic map index of North Carolina: U. S. Geol. Survey Index to geologic mapping in the United States. Scale 1: 750,000 or about 1 inch to 12 miles. 1950.
8. Geologic map index of South Carolina: U. S. Geol. Survey Index to geologic mapping in the United States. Scale 1:1,000,000 or about 1 inch to 16 miles. 1950.

Boardman, Robert Leland. *See* McKelvey, V. E., 3.

Bodenlos, Alfred John.

Geology of the Red Mountain magnesite district, Santa Clara and Stanislaus Counties, California: Calif. Jour. Mines and Geology, v. 46, no. 2, p. 223–278, illus, incl. geol. maps, Apr. 1950. The magnesite deposits are located in the serpentinized shear zones of an ultramafic sill intruded into the Franciscan formation of Upper Jurassic (?) age. The mineralization and conditions of deposition are described, with reference to the various mines. Geologic maps and a bibliograpy are given. V. S.

Bøgvad, Richard.

Nepheline syenite and iron ore deposits in Greenland: Arctic, v. 3, no. 2, p. 86–94, illus., Aug. 1950. Nepheline syenite has been found at three localities, the most promising of which is Kangerdluarsuk on the east coast, which is described briefly. Iron occurs in insignificant quantities. Ore at one locality, Grønnedal, in Arsuk fiord near Ivigtut, southern Greenland, contains 24–46.7 percent iron (average) but is high in phosphorus.

Bolander, Louis Phillip, Jr., 1887–1950.

1. New California mineral, perovskite: Mineralogist, v. 18, no. 2, p. 65, illus., Feb. 1950. Notes the occurrence of perovskite at the Gem mine, San Benito County, California. V. S.

Bolander, Louis Phillip, Jr.—Continued

2. First jadeite discovery [in] America: Mineralogist, v. 18, no. 4, p. 186, 188, Apr. 1950. The mineral has been found as a stream boulder near the Gem mine, San Benito County, California. V. S.

Bold, W. A., van den.

A checklist of Cuban Ostracoda: Jour. Paleontology, v. 24, no. 1, p. 107–109, Jan. 1950. The occurrence of 48 Tertiary and Cretaceous ostracodes is reported with differentiated chronologic assignment, in amplification and correction of a previous study (Utrecht Univ. thesis, 1946). V. S.

Bolli, Hans.

Disintegration of indurated siliceous rocks: Micropaleontologist, v. 4, no. 3, p. 20–21, July 1950. Crushing to 1–10 mm and boiling in a solution of 20 percent NaOH in water is recommended for disintegrating rocks resistant to the gasoline and hydrogen peroxide methods.

Bond, Walter L.

Nomographs for triclinic cell computations: Am. Mineralogist, v. 35, nos. 3–4, p. 239–244, illus., Mar.–Apr. 1950. Three types of charts are shown that are useful in the solution of problems involving equations for computing constants of triclinic cells. Two types of problems are used as illustrations; one with the cell edge ratios and angles given to make a gnomonic projection, and the other with atomic plane spacings given for computation of the cell edges and angles.

Bonifield, Henry Lease.

Millican field, Coke County, Texas: Abilene Geol. Soc., Geol. Contr., p. 34–35, illus., 1950. Brief notes on the discovery, stratigraphy, and structure of the field.

Boos, Charles Maynard.

Source beds for oil near coral reefs: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 2, p. 313, Feb. 1950. Though the marine environment of reefs is well suited for the growth of organic life requisite for oil formation, its great scavenger population makes an additional condition necessary, the prompt burial of organic matter. V. S.

Boos, Margaret Fuller.

Structure in the Precambrian west of Denver [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1550, Dec. 1950.

Booth, Verne H.

Stratigraphy and structure of the Oak Hill succession in Vermont: Geol. Soc. Am. Bull., v. 61, no. 10, p. 1131–1168, illus. incl. geol. map, Oct. 1950. The Oak Hill succession, between the Champlain Lowlands and the Green Mountains, northwestern Vermont, consists of 9 Cambrian formations that have been highly folded and thrust faulted. The stratigraphy and structure are discussed in detail. V. S.

Borax, Eugene. *See* Hazzard, J. C., 1, 4.

Bornhauser, Max.

Oil and gas accumulation controlled by sedimentary facies in Eocene Wilcox to Cockfield formations, Louisiana Gulf Coast: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1887–1896, illus., Sept. 1950. The facies problems of the Eocene formations ranging from Wilcox to Cockfield are discussed and illustrated and the structural type, producing formations, and reservoir characteristics described briefly. Petroleum accumulation appears to be controlled by the presence of marine shale bodies, and a possible relationship between oil types and sedimentary facies seems to be indicated. V. S.

Bostock, Hugh Samuel.

Potential mineral resources of Yukon Territory (report and figure): Canada Geol. Survey Paper 50–14, 29 p. (‡), map, 1950; reprinted in part in Earth Sci. Digest, v. 5, no. 3, p. 3–17, map, Oct. 1950. Mineralization in Yukon Territory is mainly associated with a belt of pre-Cambrian rocks which reaches from northwestern United States and British Columbia into Alaska. Eleven mineralized areas, mainly gold-, copper-, silver-, and lead-bearing, and numerous coal and oil areas are mapped and described briefly. V. S.

Boucher, F. G.

(and Hildebrandt, A. B., and Hagen, H. B.). New dip-logging method: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 10, p. 2007–2026, illus., Oct. 1950. Describes a method of determining the dip and strike of subsurface formations from a triple-profile log in a single bore hole. The basis of the method is that drilling erodes some formations more than others. Field tests of dips ranging from zero to 75° are reported. V. S.

Boulter, George W.

Placer deposits of Last Chance Gulch, Helena, Montana: Billings Geol. Soc., First Annual Field Conference, Sept. 15–17, 1950, p. 72–73, 1950. Brief general comments on the gold-bearing placer gravels in the Helena, Montana, area.

Bowditch, Samuel I.

[Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 280, 283–284, Jan. 1950.

Bowen, Norman Levi. *See also* Tuttle, O. F., 2.

1. Presentation of the Roebling Medal of the Mineralogical Society of America to Herbert E. Merwin: Am. Mineralogist, v. 35, nos. 3–4, p. 255–257, port., Mar.–Apr. 1950.
2. Charles Whitman Cross [1854–1949]: Geol. Soc. London, Quart. Jour., v. 105, pt. 3, no. 419, p. lv–lvi, Sept. 1950.
3. (and Tuttle, Orville Frank). The system $NaAlSi_3O_8$–$KAlSi_3O_8$–H_2O: Jour. Geology, v. 58, no. 5, p. 489–511, illus., Sept. 1950; abs., Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1874–1875, Dec. 1949; Am. Mineralogist, v. 35, nos. 3–4, p. 278, Mar.–Apr. 1950. Experimental investigations of crystallization equilibrium of the alkali feldspars are described and discussed, and the results are evaluated from the petrologic standpoint.
4. The making of a magmatist: Am. Mineralogist, v. 35, nos. 9–10, p. 651–658, Sept.–Oct. 1950. "Professor Larsen's studies of lavas, minor intrusions, and batholiths in the San Juan region of Colorado and in southern California are presented as the basis of his development of magmatist views. Anti-magmatist views on the formation of batholiths are discussed, and also the magmatist view that batholiths are formed by refusion in a tectogene."
5. (and Tuttle, Orville Frank). Serpentine and talc equilibria [abs.]: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 2, p. 36, 1950; Volume of titles and abstracts, p. 4, 1948. Published in full as "The system MgO–SiO_2–H_2O" in Geol. Soc. Am. Bull., v. 60, no. 3, p. 439–460, illus., Mar. 1949.
6. Petrologic-cosmogonic dilemma [abs.]: Science, v. 112, no. 2912, p. 453–454, Oct. 20, 1950.

Bowen, Oliver E., Jr. *See* Hutton, C. O., 1.

Bowles, Oliver.

Varieties and uses of asbestos: Asbestos, v. 32, no. 3, p. 4, 6, 8, 10–12, Sept. 1950. The composition, properties, occurrence, and principal uses of asbestos are described briefly. V. S.

Bowsher, Arthur Leroy.

(and Dutro, J. Thomas, Jr.). Stratigraphy and paleontology of the Mississippian rocks in the central part of the Brooks Range, Alaska [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1445, Dec. 1950.

Boyle, R. W. *See* Kennedy, G. C., 2.

Bradish, Beverly B.

1. (and Mills, N. K.). Generalized nomenclature chart, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 48, 1950. Generalized columnar sections of northeastern Arizona, southeastern Utah, southwestern Colorado, and areas in New Mexico.
2. (and Mills, N. K.). Pennsylvanian rocks of the San Juan Basin, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 58–61, illus., 1950. Brief notes on the Pennsylvanian strata, paleogeography, and correlation.

Bradley, Charles Crane. *See* Emmons, R. C.

Bradley, John Samuel.

Upper Cretaceous-Eocene(?) Nanaimo group of the San Juan Islands, Washington [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1520, Dec. 1950.

Bradley, William Frank.

The alternating layer sequence of rectorite: Am. Mineralogist, v. 35, nos. 7–8, p. 590–595, illus., July–Aug. 1950; abs., nos. 3–4, p. 278, Mar.–Apr. 1950; Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1875, Dec. 1949. "Rectorite is a complex layer type hydrous alumino-silicate related to the better known mica-like minerals. The structural scheme of rectorite consists of contiguous pairs of pyrophyllite-like units separated by pairs of layers of water molecules."

Bramlette, Milton Nunn. *See* Woodring, W. P.

Brannock, Walter Wallace. *See* Switzer, G.; White, D. E., 2.

Branson, Delmar O.

Blackfoot field, Anderson County, Texas: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1750–1755, illus., Aug. 1950. Describes briefly the stratigraphy and structure of the Blackfoot oil field, Anderson County, Texas.

Brant, Russell A. *See* Cohee, G. V.

Brashears, Maurice Lyman, Jr.

Bibliography, geology and ground-water conditions on Long Island, New York: N. Y. Water Power and Control Comm. Bull. GW–18, p. 207–212, 1949. The 69 references are arranged chronologically.

Brater, Ernest Frederick.

Beach erosion in Michigan: Mich. Univ., Lake Hydraulics Lab., Research Pub. 2, 39 p., illus., Nov. 1, 1950. General comments and notes on beach erosion processes, waves, currents, protective and remedial measures, and research at the Lake Hydraulics Laboratory, with particular attention to the problems of Michigan shore lines.

Braunstein, Jules.

Subsurface stratigraphy of the Upper Cretaceous in Mississippi, *in* Mississippi Geological Society Guidebook, Eighth Field Trip, October 13–15, 1950, p. 13–21, illus., 1950. Describes the Tuscaloosa group, Eagle Ford and Eutaw formations, and the Selma group.

Bray, Ellis E.

(and Stevens, Nelson Pierce). The preparation of clay samples for infrared absorption measurement, *in* Infrared spectra of reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 8, p. 73–104, July 1950.

Bredig, M. A.

Polymorphism of calcium orthosilicate: Am. Ceramic Soc. Jour., v. 33, no. 6, p. 188–192, illus., June 1950. The forms of calcium orthosilicate, their crystal structure, temperature range of stability, previous designations, and relationships are discussed. The α′ phase has been found as the mineral bredigite.

Breger, Irving A. *See* Whitehead, W. L., 1.

Bressler, C. T.

Garnet deposits near Wrangell, southeastern Alaska: U. S. Geol. Survey Bull. 963–C, p. 81–93, illus. incl. geol. maps, 1950. The sizable almandite garnet crystals which occur disseminated in schist north of Wrangell, Alaska, resulted from the intrusion of a quartz diorite stock. The igneous and metamorphic rocks are described. Data on the mineralogy and mining of the garnets is given briefly.

Bretz, J Harlen.

1. Glacial Lake Merrimac: Ill. State Acad. Sci. Trans., v. 43, p. 132–136, illus., 1950. The geologic history of glacial Lake Merrimac and glacial Lake Wisconsin, in the Baraboo area of Wisconsin, is outlined, with particular reference to the torrential delta formed at the head of Lake Merrimac by the waters of Lake Wisconsin. The Lake Merrimac delta is compared to a bouldery delta at the head of Franz Josef fiord, East Greenland.
2. Origin of the filled sink-structures and circle deposits of Missouri: Geol. Soc. Am. Bull., v. 61, no. 8, p. 789–833, illus., Aug. 1950. "More than 1,000 roofless solution cavities, filled with clay, shale, sandstone, and mineral and dolomitic debris, lie on the western and northern slopes of the Ozark dome. Of several theories of origin, the 3 favored concepts are: 1, original surface sink holes; 2, collapsed caves; 3, gradual subsidence of overlying rocks with solutional removal of subjacent calcareous rock. The circular cavities are collapsed caves, but concept (3) is esential to explain the compressional deformation which the fills and cavity walls exhibit."

Bridge, Josiah.

Bauxite deposits of the southeastern United States, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 170–201, illus. incl. geol. map, 1950. Summarizes the results of bauxite investigations in Alabama, Georgia, Mississippi, Tennessee, and Virginia, made by the U. S. Geological Survey and U. S. Bureau of Mines, between 1941 and 1944. The deposits are classified into those of the Coastal Plain and of the Ridge and Valley province. Data on the age, deposition, source, and distribution of the bauxite, are presented and a theory of origin is outlined. General data on development, production, reserves, grades and uses, are also given.

Brill, Kenneth Gray, Jr.

Pennsylvanian correlation in south-central Colorado and northern New Mexico [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1445–1446, Dec. 1950.

British Columbia Department of Mines.

Metal-mining (lode): British Columbia Dept. Mines Ann. Rpt. 1949, p. 59–226, illus. incl. geol. maps, 1950. Short geologic and mineralogic notes on approximately 200 mines and prospects in British Columbia. Several geologic maps are included.

Broadhurst, William L.

Ground-water resources of Gregg County, Texas: U. S. Geol. Survey, Water-Supply Paper 1079–B, p. 63–105, illus., 1950. Ground water occurs in the Wilcox group, Carrizo sand, and Mount Selman formation, all of Eocene age. The strata and structure are described briefly. V. S.

Brodermann y Vignier, Jorge.

1. Significación estratigráfica de los equinodermos fósiles de Cuba: Paleontología Cubana, I, p. 305–330, 1949. Tables show the stratigraphic range of the genera and species of echinoderms in Cuba.
2. Breve noticia geológica sobre una perforación para petroleo en la Bahia de Cárdenas: Bol. Historia Nat., v. 1, no. 4, p. 169–170, Dec. 1950. Brief note on the strata encountered in the Hicacos No. 1 well drilled by the Cuban Gulf Oil Co. in the Bay of Cárdenas on the north shore of Cuba.

Brodie, Gerson Herzl.

Structure-forming role of limestone reefs in eastern platform area of west Texas [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 118, Apr. 27, 1950.

Brokaw, Arnold Leslie.

Geology and mineralogy of the East Tennessee zinc district, *in* Dunham, K. C., ed., Symposium on. . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 70–76, illus., 1950; abs, Volume of titles and abstracts, p. 42, 1948. Describes the zinc ore bodies that occur as bedding-replacement deposits and replacements along faults in the Kingsport limestone (Lower Ordovician) in the Appalachian Valley of northeastern Tennessee. The zinc mineral is sphalerite associated with dolomite, quartz, and pyrite.

Bronnimann, Paul.

The genus *Hantkenina* Cushman in Trinidad and Barbados, B. W. I.: Jour. Paleontology, v. 24, no. 4, p. 397–420, illus., July 1950. "The *Hantkenina* species of Trinidad and Barbados are described and their stratigraphic significance discussed. A new subgenus, *Hantkeninella* with *H. primitiva* Cushman and Jarvis as subgenotype, is introduced and three new species, *H.* (*Applinella*) *trinitatensis*, *H.* (*Hantkenina*) *thalmanni*, and *H.* (*Hantkenina*) *suprasuturalis* are proposed."

Brooks, Benjamin Talbott.

Catalysis and carbonium ions in petroleum formation: Science, v. 111, no. 2894, p. 648–650, June 16, 1950. A review of the experimental evidence from industrial catalytic cracking, applied to petroleum formation, indicates that hydrocarbon reactions involving carbonium ions and initiated by the catalytic action of acid silicate minerals, particularly clays, explain the great diversity of hydrocarbons in petroleum better than the mechanism of free radicals. V. S.

Broscoe, A. J.

Asymmetrically located longitudinal subsequent streams in the Ridge and Valley Province of western Virginia and southern Pennsylvania [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1446, Dec. 1950.

Brosgé, William P. *See* Miller, R. L., 1.

Broughton, John Gerard.

Observations on the intrusion of rock salt by peridotite: Am. Geophys. Union Trans., v. 31, no. 2, pt. 1, p. 229–233, illus., Apr. 1950. "One of the narrow peridotite dikes of central New York [Ithaca area] has been observed cutting rock salt at a depth of 0.4 mile. It follows one of the regional cross joints and is probably post-Appalachian in age. Structural relationships show mutual intrusion of the peridotite and salt and suggest that the temperature of the tenuous igneous magma only slightly exceeded the melting point of the halite."

Brown, Andrew. *See* Berryhill, H. L., Jr.; Cohee, G. V.

Brown, Annabel. *See* Boardman, L., 3, 6.

Brown, Carl Barrier.

Effects of soil conservation, *in* Applied sedimentation, p. 380–406, illus., 1950. Discusses erosion and sediment production on watersheds, the rate and sources of sediment production, its relation to the use of land and water resources, and methods of control. An extensive bibliography is given.

Brown, Donald Marvin. *See* Berryhill, H. L., Jr.

Brown, Edwin Augustus.

Ground-water resources of Boone County, Indiana: Ind. Dept. Conserv. Div. Water Res. Bull. 4, 152 p. (‡), illus. incl. geol. map, 1949. The ground water occurs chiefly in the glacial deposits which attain a thickness of 350 feet, although some is obtained from the Paleozoic bedrock. The characteristics of both the glacial deposits and the bedrock are described, and a map showing surficial geology is included. Various phases of the ground-water occurrence are discussed, and well logs and analyses are tabulated.

Brown, Howard E. *See* Monnett, V. E.

Brown, Irvin Cecil. *See also* Henderson, J. F., 1, 2, 3.

1. Preliminary map, Reliance, Northwest Territories (map and descriptive notes): Canada Geol. Survey Paper 50–15, 8 p. (‡), geol. map, 1950. Describes the pre-Cambrian sedimentary rocks, volcanics, and intrusives in the area of Fort Reliance, at the end of the east arm of Great Slave Lake.
2. Preliminary map, Christie Bay, Northwest Territories (map and descriptive notes): Canada Geol. Survey Paper 50–21, 8 p. (‡), geol. map, 1950. Describes the pre-Cambrian sedimentary rocks, volcanics, and intrusives of the Christie Bay area, eastern Great Slave Lake region. The area lies west of the Reliance map-area.
3. Preliminary map, Fort Resolution, Northwest Territories (map and descriptive notes): Canada Geol. Survey Paper 50–28, 8 p. (‡), geol. map, 1950. The map area covers the western end of the eastern arm of Great Slave Lake. Pre-Cambrian sediments, volcanics, and intrusives are described.

Brown, John Stafford.

1. Underground water in Haiti: Assoc. Internat. Hydrol. Sci., Réunion, Washington, 1939, C. R. tome 2, Comm. des Eaux Souterraines, Enquete, Rapport 9, 2 p. [1948?]. General comments.
2. An alternative to the hydrothermal theory of ore genesis: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 2, p. 37–44, illus., 1950; abs., Volume of titles and abstracts, p. 4–5, 1948. A theory of origin of ore deposits is formulated that relates paragenesis to specific gravity and employs volatilization as the chief means of transport of elements and minerals. The zoning achieved in blast furnace smelting is compared to paragenetic sequences in ore deposits. The concept of a single source magma for an ore sequence is rejected in favor of separate sources for silicates, oxides, and sulfides.
3. Sedimentary rocks, as hosts for ore deposits, *in* Applied sedimentation, p. 524–536, illus., 1950. A general discussion of the factors that bear on the development in sedimentary rocks of three types of ore deposits: residual concentrations, vein deposits, and replacement deposits. Specific attention is given to lead-zinc replacement deposits in limestone.

Brown, P. L.

Occurrence and genesis of trona in Sweetwater and Uinta Counties, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 136–137, 1950. Two deposits of calcium carbonate in Wyoming are described. They occur in the Westvaco area, near Green River, and in the Church Buttes gas field area, twenty miles to the southeast. Mineralogic data are reviewed and the origin is discussed.

Brown, Ralston.

(and Mead, Robert Everett). Bronte field, Coke County, Texas: Abilene Geol. Soc., Geol. Contr., p. 9–10, illus., 1950. Brief notes on structure and development of the field.

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Brown, Richmond Flint.

Ground water in the vicinity of Brush, Colorado: Colo. Water Conserv. Bd., Ground Water ser., Circ. 2, 27 p. (‡), illus., Feb. 1950. The Brush area, Morgan County, Colorado, is underlain by Cretaceous Pierre shale, covered by Quaternary alluvial deposits of the South Platte River and Big Beaver Creek, in turn mantled by dune sands in the south. The dune sands are the best source of ground water. V. S.

Brown, Roland Wilbur.

1. (and Pecora, William Thomas). Paleocene and Eocene strata in the Bearpaw Mountains, Montana: Science, v. 109, no. 2837, p. 487–489, May 13, 1949. "In summary, the evidence here submitted establishes the existence in the Bearpaw Mountain region of coal-bearing strata of the Fort Union formation (Paleocene); of variegated and conglomeratic strata of the Wasatch formation (early Eocene); and of volcanic rocks of probable middle Eocene age."
2. Ecology of nonalgal marine plants: Natl. Research Council, Report of the Committee on a treatise on marine ecology and paleoecology, 1948–1949, no. 9, p. 105–110, Dec. 1949. The spread of land plants along shores of salt-water bodies, and even into brackish and marine waters, is discussed briefly; their usefulness in ecologic studies is indicated; and an annotated bibliography is given. V. S.
3. Cretaceous plants from southwestern Colorado: U. S. Geol. Survey Prof. Paper 221–D, p. 45–66, illus., 1950. "In southwestern Colorado a sequence of strata between the Jurassic carnotite-bearing Morrison formation (McElmo) and the Upper Cretaceous marine Mancos shale contains fossil plants that are described here and used for determining the most likely position of the Lower Cretaceous-Upper Cretaceous boundary. The plants fall into two groups . . . indicating Lower Cretaceous age, and . . . early Upper Cretaceous. The boundary is probably at the top of the unit that Coffin called Post-McElmo and at the base of his overlying Dakota."
4. Cretaceous fish egg capsule from Kansas: Jour. Paleontology, v. 24, no. 5, p. 594–600, illus., Sept. 1950. Describes the first fossilized sharklike egg case from Cretaceous strata in Kansas and the youngest spirally-twisted kind reported from anywhere. Associated land plants suggest an early Late Cretaceous age. V. S.
5. An Oligocene evergreen cherry from Oregon: Washington Acad. Sci. Jour., v. 40, no. 10, p. 321–324, illus., Oct. 15, 1950. Describes a new species, *Prunus pristina*, occurring in nonmarine Oligocene beds near Sweet Home, Oregon, and associated with species of sequoia, hydrangea, laurel, sycamore, and sweetgum. The specimens appear to be the first on record of the evergreen group to show glands within the blades of the leaves.

Brown, William Randall.

The Piedmont province, *in* The James River Basin, past, present and future, p. 482–497, Va. Acad. Sci., 1950. Describes briefly the igneous, sedimentary, and metamorphic rocks, the structure, geologic history, and mineral resources of the Piedmont province in Virginia.

Brownell, George McLeod.

1. Prospecting with a scintillometer: Precambrian, v. 23, no. 3, p. 23–29, illus., Mar. 1950. Four radiation surveys over pitchblende veins in Saskatchewan are described to illustrate the use of the scintillometer in exploring for radioactive deposits. The principle of the instrument, distinctive features of results, and advantages over the Geiger counter are discussed. V. S.
2. Radiation surveys with a scintillation counter: Econ. Geology, v. 45, no. 2, p. 167–174, illus., Mar.–Apr. 1950. The scintillation counter, a new instrument for radiation surveys more effective than the Geiger counter, is described, and its use is illustrated by four trial surveys over pitchblende deposits in Saskatchewan. Possible causes of radioactive anomalies are discussed. V. S.

Bruce, Clemont Hughes.

Geology of the Utica oil field: Ky. Geol. Survey Bull. ser. 9, no. 1, 14 p., illus., 1949. The structure and stratigraphy of the Utica field in western Kentucky is described. Production is obtained from five horizons in Mississippian strata. Oil accumulation is controlled by both structure and lithology.

Bruce, V.

Graphical method for solving vibration problems of a single degree of freedom [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1543–1544, Dec. 1950.

Bruet, Edmond.

La Soufrière de la Guadeloupe; contribution à l'étude des édifices volcaniques péléens: Annales de Géophysique, tome 6, no. 1, p. 51–64, illus., 1950. The examination of the Soufrière volcano in Guadeloupe, West Indies, makes doubtful the existence of a "dome" in pelean structures.

Brundall, Laurence.

(and Wasem, Adam Richard). Photogeology's place in petroleum exploration, Parts 1–2: World Petroleum, v. 21, no. 3, p. 51–54, illus., Mar. 1950; no 4, p. 41–44, illus., Apr. 1950. The application of aerial photography to geologic mapping and interpretation in petroleum exploration is discussed and illustrated by photographs and contour maps. V. S.

Brunette, C. E. *See* Risi, J.

Bryan, Joseph Jefferson. *See* Hazzard, J. C., 1, 4.

Bryan, Kirk, 1888–1950.

1. (arranger). Symposium on geomorphology in honor of the 100th anniversary of the birth of William Morris Davis: Assoc. Am. Geographers Annals, v. 40, no. 3, p. 171–236, illus., Sept. 1950. The symposium was held at Clark University, Worcester, Mass., April 6, 1950. Papers by Lawrence Martin, C. A. Cotton, Henri Baulig, Kirk Bryan, A. N. Strahler, and L. C. Peltier, were presented.
2. The place of geomorphology in the geographic sciences: Assoc. Am. Geographers Annals, v. 40, no. 3, p. 196–208, Sept. 1950. The relation of geomorphology to both geology and geography is discussed. A section on the training of geographers is included, with discussion by G. H. Smith.

Bucher, Walter Hermann.

1. The crust of the earth: Sci. Am., v. 182, no. 5, p. 32–41, illus., May 1950. Changes in fundamental conceptions of the deep crust, brought about by new methods of geophysical and geological investigation, are summarized. Consideration is given to the structure of continents and ocean basins, formation of continents, process and significance of granitization, and the Atlantic Ocean Basin. V. S.
2. Megatectonics and geophysics: Am. Geophys. Union Trans. v. 31, no. 4, p. 495–507, Aug. 1950. The development of three basic concepts is considered: (1) geosynclines as loci of orogenic deformation, (2) ultramafics as initial products of orogeny, and (3) metamorphism and granite as products of mature orogeny. Synthesis of relations implied in these concepts leads to considering orogeny as the fundamental factor in the dynamics of the earth's crust.

Buckham, A. F.

1. (and Latour, B. A.). The Groundhog coalfield, British Columbia: Canada Geol. Survey Bull. 16, 82 p., illus. incl. geol. map, 1950. The Groundhog coalfield, Cassiar District, British Columbia, is underlain by folded Upper Jurassic and Lower Cretaceous rocks of the Hazelton group, which contain anthracite interbedded with sandstone, shale, and conglomerate. Stratigraphy, structure, and coal occurrences are described, and columnar sections, geologic map, and coal analyses are given. V. S.

Buckham. A. F.—Continued

2. (and Cockfield, William Egbert). Gullies formed by sinking of the ground: Am. Jour. Sci., v. 248, no. 2, p. 137–141, Feb. 1950. W. W. Rubey's theory of gully formation in semi-arid regions is supported by the authors' observations of gullies and sinkholes in Pleistocene silts at Kamloops, British Columbia. The holes are apparently formed by the washing out of fine subsurface material, development of tunnels, and caving, as postulated in the theory. V. S.

Buddenhagen, H. J.

Oregon, *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2382, Dec. 1950.

Buddhue, John Davis.

1. Meteoritic dust: N. Mex. Univ. Pub. Meteoritics no. 2, 102 p., illus., 1950. The discussion includes sections on previous work, methods of collecting dust, types and size of particles, physical and chemical tests, origin, rate of fall, annual variation, and other aspects. A bibliography is included.
2. New chemical analyses of the Canyon Diablo, Arizona, and Arispe, Sonora, Mexico, siderites: Pop. Astronomy, v. 58, no. 4, p. 190, Apr. 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 258–259, 1950.
3. Radioactivity of Sweetwater agates: Mineralogist, v. 18, no. 10, p. 458–459, Oct. 1950. The fluorescent agates with yellow inclusions, from Sweetwater, Wyoming, are tested with a Geiger counter and show 300–350 average counts per minute.
4. Synthetic schreibersite: Pop. Astronomy, v. 58, no. 8, p. 405–407, Oct. 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 290–291, 1950. "A simple preparation of two synthetic nickel-iron phosphides is described. One has the physical properties and chemical composition of schreibersite. The other is non-magnetic, is almost insoluble in acids, and has an analysis similar to three anomalous analyses of phosphide from the Canyon Diablo, Arizona, siderites."

Buddington, Arthur Francis.

Composition and genesis of pyroxene and garnet related to Adirondack anorthosite and anorthosite-marble contact zones: Am. Mineralogist, v. 35, nos. 9–10, p. 659–670, illus., Sept.–Oct. 1950. "The genesis of some pyroxenes and garnets related to Adirondack anorthosite, anorthosite-marble contact zones and their metamorphic equivalent are discussed on the basis of 10 clinopyroxenes whose chemical analyses as related to optical properties have recently been presented by Hess, and upon one new orthopyroxene analysis and 7 new garnet analyses given here."

Buerger, Martin Julian. *See also* Donnay, G. H.; Washken, E.

1. Vector sets: Acta Crystallographica, v. 3, pt. 2, p. 87–97, illus., Mar. 1950; correction, pt. 3, p. 243, May 1950. The theory of vector sets, the set of points at the ends of vectors between the points of the fundamental set, and their relations to the fundamental set are discussed. The space groups of the two sets are compared. The application of the theory of vector sets to the solving of a crystal structure is shown.
2. The crystallographic symmetries determinable by X-ray diffraction: Natl Acad. Sci. Proc., v. 36, no. 5, p. 324–329, May 1950.
3. Some new functions of interest in X-ray crystallography: Natl. Acad. Sci. Proc., v. 36, no. 7, p. 376–382, illus., July 1950. The discussion of the theory of vector sets (Acta Crystallographica, v. 3, pt. 2, p. 87–97, Mar. 1950) is continued and extended to sets of weighted points and to density maps.
4. Tables of the characteristics of the vector representations of the 230 space groups: Acta Crystallographica, v. 3, pt. 6, p. 465–471, Nov. 1950.
5. Crystallographic symmetry in reciprocal space and in vector space [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 122, Jan.–Feb. 1950.
6. General aspects of disorder in minerals [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 278–279, Mar.–Apr. 1950.
7. Photographs of the atoms in the structures of minerals [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1446, Dec. 1950.

Buffam, Basil Scott Whyte.
The Precambrian Shield: Canadian Min. Met. Bull. no. 454, p. 91–93, Feb. 1950. Discussion of the Institute Jubilee Volume, Structural geology of Canadian ore deposits.

Buford, Thomas Bernard. *See* Jones, P. H.

Buie, Bennett Frank.
(and Robinson, Gilbert C.). The distribution and properties of the shales of South Carolina: S. C. Research Plan. Dev. Bd. Bull. 19, 58 p., geol. sketch map, 1949. The geographic and geologic distribution of shales in South Carolina are briefly described. The major part of the article is devoted to the results of laboratory testing of the ceramic properties with a view to the development of the shales for use in structural products.

Bullock, Kenneth C.
Experiments in low-angle thrusting: Utah Acad. Sci. Proc., v. 25, p. 135–143, illus., 1948. Describes briefly the apparatus, materials, and nature of the experiments. Various mixtures of sand, clay, and plaster of paris, arranged in competent and incompetent layers, were subjected to horizontal pressures. The results are discussed and conclusions reached on the influence of bedding planes and the competency of strata.

Bulman, Oliver Meredith Boone.
1. Graptolites from the *Dictyonema* shales of Quebec: Geol. Soc. London Quart. Jour., v. 106, pt. 1, no. 421, p. 63–99, illus., 1950. Describes in detail graptolitic material contained in several collections from the vicinity of Matane, Quebec, along the south shore of the St. Lawrence River. A new family, the Anisograptidae, to include the genera *Anisograptus*, *Bryograptus*, *Staurograptus*, *Triograptus*, *Radiograptus*, *Clonograptus*, and *Adelograptus*, formerly in the Dichograptidae, is set up under the Dendroidea. Five new species of *Dictyonema* are described. The fauna is considered of Tremadoc (Cambrian) age.
2. The structure and relations of *Cyclograptus* Spencer: Jour. Paleontology, v. 24, no. 5, p. 566–570, illus., Sept. 1950. "The species *Cyclograptus rotadentatus* Spencer is redescribed on the basis of syntype material . . . and the relations of the genus *Cyclograptus* are discussed. It is confirmed that the genus is closely related to *Galeograptus* Wiman and should be placed with that genus and *Discograptus* Wiman in Kozlowski's Family Idiotubidae, (Order, Tuboidea)."

Bunte, Arnold S. *See* Kaufmann, G. F.

Buranek, Alfred M. *See also* Crawford, A. L., 1, 3.
Fluorite in Utah, its occurrence, extent, and significance to Utah industry: Utah Dept. Pub. and Indus. Dev. Circ. 36, 25 p. (‡), map, Dec. 1948. Deposits occur as groups of veins or masses related to igneous intrusions and are found mainly in the districts of Topaz Mountain, Wildcat Mountains, and Indian Peak and Wah Wah Range, in the western counties. Occurrences in these districts and elsewhere and fluorite economics are described. V. S.

Burbank, Wilbur Swett.
1. Problems of wall-rock alteration in shallow volcanic environments, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 287–319, illus., Jan. 1950. The origin and characteristics of the two types of rock alteration, sericite-quartz and clay mineral-quartz, associated with ores and volcanic rocks in several Colorado mining districts, are discussed. Alteration as a guide to ore is evaluated and it is concluded that clay-type alteration effects in themselves are not indicative in shallow volcanic environments.
2. [Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 322, 324–325, Jan. 1950.

Burchard, Ernest Francis.

Memorial to William Clifton Phalen [1877-1949]: Geol. Soc. Am. Proc. 1949, p. 213-216, port., June 1950.

Bureau, René.

Monseigneur Joseph-Clovis K.-Laflamme, géologue [1876-1910]: Naturaliste Canadien, v. 77, nos. 7-8, p. 185-221, July-Aug. 1950.

Burgess, Laurie R., d. 1951.

Instrumental notes: Earthquake Notes, v. 21, no. 3, p. 22-23, Sept. 1950. Notes on the adjustment of the spot focus and its importance in the production of readable seismograms.

Burkhardt, W. *See* Wheeler, G. V.

Burns, Ruth N. *See* Cohee, G. V.

Burr, Alexander C.

(and Magnusson, Adelynn). Sulphur in North Dakota lignite: N. Dak. Acad. Sci. Proc., v. 4, 1950, p. 49-52, Nov. 1950. Continuation of the original study by Magnusson reported in the Proceedings, v. 3, p. 18-21, 1950. The average sulfur content of North Dakota lignite, on the basis of 1017 samples, ranges from 0.4 to 7.5 percent, with a mean of 1.0 percent. The determinations are tabulated by counties. The distribution of sulfur by form, that is, organic, sulfate, and pyritic, is tabulated for 17 samples.

Bursch, Jacobus George.

The range chart as an aid in foraminiferal correlation: Jour. Paleontology, v. 24, no. 4, p. 479-481, illus., July 1950. Criteria for recognition of horizons of marked faunal change and their relative significance in stratigraphy are discussed. Particular associations of criteria may provide reliable markers where a single criterion does not. The usefulness of a range chart depends largely on the arrangement, which must take into account such factors as sedimentary sequence, kind of collecting, and speed of the investigation.

Burton, R. P.

Composite Schlumberger electric log, western Green River Basin [Wyo.]: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, 1950.

Burwell, Edward Bouldin, Jr.

1. (and Roberts, George Daniel). The geologist in the engineering organization, *in* Application of geology to engineering practice, Berkey Volume, p. 1-9, Geol. Soc. Am., New York, 1950. Outlines the status, qualifications, functions, and responsibilities of the geologist in engineering work.
2. (and Moneymaker, Berlen Clifford). Geology in dam construction, *in* Application of geology to engineering practice, Berkey Volume, p. 11-43, illus., Geol. Soc. Am., New York, 1950. Discusses the geological problems encountered in the location and construction of dams and their solution. The problems are considered according to the type of rock—shales, sandstones, volcanic, metamorphic, limestone, etc.—because each presents special factors.

Burwell, Howard Beirne.

Brown phosphate rock in Tennessee, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 128-131, 1950. The character, occurrence, distribution, and factors controlling the accumulation of brown phosphate in central Tennessee are discussed.

Busch, Daniel Adolph.

Subsurface techniques, *in* Applied sedimentation, p. 559-578, illus., 1950. Describes the various techniques that are used in exploration for oil. Among these are well logs of several types, cores, heavy minerals, micropaleontology, and lithology.

Bush, Robert E.

(and Mardock, E. S.). Some preliminary investigations of quantitative interpretations of radioactivity logs: Jour. Petrol. Tech., v. 2, no. 1, p. 19–34, illus., Jan. 1950; A. I. M. E. Trans., v. 189, 1950. Quantitative interpretation methods are described in the light of the theory of radioactivity logging and the physical processes determining logs, and applications are made to logs of the Smackover limestone of Louisiana, Edwards limestone and dolomite of southern Texas, and Permian dolomites of western Texas. V. S.

Bushnell, Thomas Mark.

Pedological and geological connotations in Indiana [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1564, Dec. 1950.

Buss, Walter Richard.

Solution weathering in southwestern Utah [abs.]: Utah Acad. Sci. Proc., v. 25, p. 182, 1948.

Buswell, A. M.

(and Suter, Max, and Hudson, H. E., Jr.). Chicago area water supply; 1, The ground water conditions in the region: Midwest Engineer, v. 2, no. 6, p. 6–9, illus., Feb. 1950; Ill. State Water Survey Div., Circ. 29, 1950. Brief comments on the aquifers of the Chicago area and the amount of available ground water.

Butcher, W. S. *See* Poole, D. M,

Butler, Bert Sylvenus.

1. A tribute to the early workers in Colorado, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 193–195, Jan. 1950. A brief review of early geologic work in Colorado, listing those who were connected with it.
2. Metasomatic alteration along veins, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 275–279, Jan. 1950. Brief comments on the development of ideas on rock alteration, with reference to earlier work in the field.
3. [Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 284, 342–343, Jan. 1950.
4. Memorial to Waldemar Lindgren [1860–1939]: Geol. Soc. Am. Proc. 1949, p. 177–196, port., June 1950.

Butler, R. G. *See* Fix, P. F.

Butler, S.

Formation of limonite tubes: Rocks and Minerals, v. 25, nos. 1–2, p. 55, Jan.–Feb. 1950. The concentric banding observed in cross-sections of sand-limonite tubes suggests formation by deposition from iron-bearing solutions in channels in the sand. V. S.

Butterlin, Jacques.

1. Contribution à l'étude de la géologie de la bordure sud du Cul-de-Sac (Haïti, Grandes Antilles): Rev. Soc. Haïtienne Hist. Géog. Géol., v. 21, no. 76, p. 1–80, illus. incl. geol. map, Jan. 1950. A general summary of the geology of Haiti is followed by a study of the stratigraphy and fossils of the southern Cul-de-Sac plain, in its western part bordering on Port-au-Prince Bay. The distribution of the Oligocene and Miocene sediments is discussed and shown on a map, and a bibliography is appended. V. S.
2. Note au sujet du cours de la Rivière Artibonite (Haïti, Grandes Antilles): Rev. Soc. Haïtienne Hist. Géog. Géol., v. 21, no. 79, p. 11–12, Oct. 1950. Evidence pointing to the capture of the Artibonite River by the West River, Haiti, is discussed.

Byerly, Perry. *See also* Thomas, R. P.

1. (and Evernden, Jack F.). First motion in earthquakes recorded at Berkeley: Seismol. Soc. Am. Bull., v. 40, no. 4, p. 291–298, illus., Oct. 1950. Data on the initial motion of the earthquakes in the circum-pacific region, recorded at Berkeley, California, during 1938–48, were assembled and studied with a view to distinguishing those north or south of Berkeley. By also taking depth of focus into account, a pattern could be found. The distribution of condensations and dilatations depends on the orientation of the local faults and the direction of movement on them.
2. (and Evernden, Jack F.). False S [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1544, Dec. 1950.
3. (and Eaton, Jerry). Slow surface waves [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1544, Dec. 1950.

Byram, John Perkins.

Alexander-Myatt area of eastern Jones County, Texas; Abilene Geol. Soc., Geol. Contr., p. 1, illus., 1950. Brief notes on petroleum occurrence in the area.

Byrne, Frank Edward.

1. Maps for construction materials: Highway Research Board Bull. 28, p. 63–72, illus., 1950. Defines and describes three types of construction material maps: (1) material-site maps, (2) material-distribution maps, and (3) surface-geology maps. The maps are compared, and their usefulness to the engineer is evaluated.
2. (and Houston, Max Sherman, and Mudge, Melville R.). Construction materials in Jewell County, Kansas: U. S. Geol. Survey Circ. 38, 21 p. (‡), illus. incl. geol. map, May 1950. The areal distribution, character, and thickness of the formations, Upper Cretaceous through Recent in age, which crop out in Jewell County, Kansas, are described, with indication of the construction materials present in each. An inventory of the various construction materials lists engineering and geologic characteristics, stratigraphic sources, and test data. V. S.
3. (and others). Geologic construction-material resources in Republic County, Kansas: U. S. Geol. Survey Circ. 79, 20 p. (‡), illus. incl. geol. map, July 1950. The construction-material resources of Republic County, Kansas, include aggregate for concrete, road metal, mineral filler, volcanic ash, riprap, and structural stone in Upper Cretaceous, Pleistocene, and Recent formations. The outcropping units are described and mapped, and an inventory is given of the materials found in each, with indication of their geologic and performance characteristics. V. S.
4. (and others). Construction materials in Decatur County, Kansas: U. S. Geol. Survey Circ. 40, 11 p. (‡), illus. incl. geol map, Aug. 1950. The strata of Pliocene through Recent age, outcropping in Decatur County, Kansas, are mapped and described briefly, and the construction materials present in each are indicated. The materials—aggregate for concrete, road metal, mineral filler, volcanic ash, riprap, structural stone, and calcareous binder—are inventoried as to engineering and geologic characteristics, stratigraphic sources, and test data. V. S.

Byrne, N. W.

The Discovery Yellowknife gold mine, Giauque Lake, Yellowknife mining area, N. W. T.: Precambrian, v. 23, no. 2, p. 8–12, 17, illus, incl. geol. sk. map, Feb. 1950. The gold quartz vein, discovered in 1944, is located in an area of sediments comprising a series of steeply dipping greywackes, tuffs, and argillites, with minor intrusives and extrusives. The geology and mining development are described. V. S.

Cady, Gilbert Haven.

Research in coal geology: Min. Eng., v. 187, no. 2, p. 275–278, Feb. 1950; A. I. M. E. Trans., v. 187, 1950. Describes the six phases of research in coal geology: resources investigations; coal mining geology; origin of coal; coal botany and paleobotany; coal petrography; and coal geochemistry. Attention is called to the activity in coal research of the Society of Economic Geologists.

Cady, Wallace Martin.

1. Fossil cup corals from the metamorphic rocks of central Vermont: Am. Jour. Sci., v. 248, no. 7, p. 488–497, illus., July 1950. Cup corals, tentatively identified as *Streptelasma*, and therefore suggesting Middle Ordovician age, are reported from phyllite interbedded with Waits River limestone at several localities near Montpelier, Vermont. The corals are described, and their petrographic and structural relationships are discussed.
2. Classification of geotectonic elements: Am. Geophys. Union Trans., v. 31, no. 5, pt. 1, p. 780–785, illus., Oct. 1950. The spatial relationships of geotectonic elements—continental blocks, oceanic basins, geosynclines, and shelves—and their evolution are reviewed in the light of existing literature, with attention to nomenclature, to aid an understanding of the origin and distribution of various types of rocks and mineral deposits. V. S.
3. (and McKelvey, Vincent Ellis, and Wells, Francis Gerritt). Geotectonic relationships of mineral deposits [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1447, Dec. 1950.

Caldwell, Joseph M.

Sedimentation in harbors, *in* Applied sedimentation, p. 291–299, 1950. Harbors are classified into five types and the engineering and economic aspects of sedimentation problems encountered in each type are discussed. Methods of controlling shoaling are listed and the field of future investigations is outlined.

Caldwell, William E.

(and Waterman, George H.). A northwest strontium mineral deposit: Sci. Monthly, v. 70, no. 4, p. 267–270, illus., Apr. 1950. Describes a vein deposit of strontianite and celestite in dunite on Fidalgo Island, Puget Sound, Washington, with respect to geology, mineralogy, and economic aspects. The deposit has recently been opened for mining. V. S.

Caley, John Fletcher.

(and Liberty, B. A.). Preliminary maps, Orillia-Brechin and Beaverton, Ontario (two maps and descriptive notes): Canada Geol. Survey Paper 50–11, 7 p. (‡), geol. maps, 1950. The adjacent Orillia-Brechin and Beaverton areas north of Toronto, Ontario, are underlain mainly by the Trenton and Black River formations of Ordovician age. The rocks are mapped and described, with notes on structure, fossils, glaciation, and economic possibilities. V. S.

California Division of Mines, Staff.

Mineral commodities of California; geologic occurrence, economic development, and utilization of the State's mineral resources: Calif. Dept. Nat. Res. Div. Mines Bull. 156, 443 p., illus., Aug. 1950. Nineteen authors have contributed summary articles covering more than seventy minerals. Statistical summaries of mineral production for 1948, county mineral production for 1948, and a directory of mineral producers are included.

California Research Corporation, La Habra Laboratory.

Particle size determinations, *in* Analytical data on reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 7, p. 129–133, July 1950.

California University, Institute of Transportation and Traffic Engineering.

(and U. S. Geological Survey). Selected logs of borings in the City and County of San Francisco, California: Calif. Univ., Inst. Transportation and Traffic Engineering, Inf. Circ. 11, 240 p., map, Dec. 1950. Graphic record of 437 borings. An index map shows locations.

Calvache Suárez, Guido.

Las posibilidades de hallar yacimientos petrolíferos en Cuba: Petróleo Interamericano, v. 8, no. 3, p. 26–28, illus., Mar. 1950; Petróleos Mexicanos, no. 79, p. 80–84, illus., Mar. 1950. The possibility of finding petroleum in Cuba is discussed. Limestone as a source rock and favorable structures make deep deposits possible. Limited shallow production is obtained from three fields, and surface oil shows are found. V. S.

Cameron, Eugene Nathan.

1. (and Green, Lewis H.). Polarization figures and rotation properties in reflected light and their application to the identification of ore minerals: Econ. Geology, v. 45, no. 8, p. 719–754, illus., Dec. 1950; preliminary note, no. 3, p. 252–253, May 1950. Conoscopic observation of opaque ore minerals between crossed nicols in reflected light shows two basic types of polarization figures characteristic, respectively, of isotropic and anisotropic minerals. Three properties of isotropic and six properties of anisotropic minerals can be determined from these figures. Procedures for analysis are described, and the results of observations for a group of about 40 minerals are given.
2. Intrusion and granitization in the Bryson City area, North Carolina, and their relation to region deformation [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1448, Dec. 1950.

Cameron, Harcourt L.

1. Faulting in the vicinity of Halifax, Nova Scotia: Nova Scotian Inst. Sci. Proc., v. 22, pt. 3, p. 1–15, illus., 1948–1949. Eleven major faults or fault systems cutting the Meguma Series (pre-Cambrian) and Devonian granite near Halifax, Nova Scotia, are outlined. The faulting is post Early Devonian, and probably pre-Carboniferous. The study is based on interpretation of aerial photographs.
2. Glacial geology of the Yarmouth-Pubnico area, Nova Scotia [abs.]: Nova Scotian Inst. Sci. Proc., v. 22, pt. 3, p. 44–45, 1948–1949.

Cameron, J. R.

1. (and King, L. H.). Dolomite deposit, Upper Mosquodoboit: Nova Scotia Dept. Mines Ann. Rpt. 1949, p. 111–118, illus. incl. maps, 1950. In the Upper Musquodoboit Valley, Halifax County, Nova Scotia, dolomite is the predominant rock of the Carboniferous Windsor series. A brief description, maps, cross sections, and chemical composition are given. V. S.
2. The New Ross area: Nova Scotia Dept. Mines Ann. Rpt. 1949, p. 119–127, illus. incl. maps, 1950. Describes a general geological reconnaissance of the New Ross area, Lunenburg County, Nova Scotia, with particular attention to radioactive indications, pegmatite dikes, and other mineralized zones. Several specific localities are mentioned.

Campbell, Charles Duncan. *See also* Conybeare, C. E. B., 3.

Petrology of the Columbia River basalts; present status and ideas for future work: Northwest Sci., v. 24, no. 2, p. 74–83, May 1950. Petrographic data on the basalts are summarized; chemical analyses are given; and data on the lava temperatures are presented. Suggestions for future petrographic and chemical investigations are made.

Campbell, Francis Faulkner.

1. Geological dimension chart: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 452–454, illus., Mar. 1950 The chart gives the relationship of true thickness and dip of a bed, graduated in steps of 100 to 2,000 feet and 5°, respectively, to apparent thickness in a well and width of outcrop. Examples illustrate applications. V. S.
2. The Fort Cobb anticline, a geophysical case history: Geophysics, v. 15, no. 4, p. 585–604, illus., Oct. 1950; abs., Oil and Gas Jour., v. 48, no. 51, p. 120, Apr. 27, 1950. Seismic reflection data, cross-sections, and structure maps are presented for the Fort Cobb anticline in southwestern Oklahoma. Although two hundred feet of closure is indicated, drilling in the Hoxbar and Deese (Des Moines) has shown no oil down to 17,800 feet. V. S.

Campbell, Ian.

1. Magnesium metasomatism in dolomite from Lucerne Valley, California: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 3, p. 118–124, geol. sketch map, 1950; abs., Volume of titles and abstracts, p. 12, 1948. An outcrop of brucite-marble resembling predazzite, intruded by biotite-tonalite and garnet-aplite dikes, forms an isolated rock-knob on the desert surface at Lucerne Valley, California. The occurrence is described petrographically, compared with similar ones, and the origin, age, and introduction of magnesia are discussed.

Campbell, Ian—Continued

2. (and Schenk, Edward Theodore). Camptonite dikes near Boulder Dam, Arizona: Am. Mineralogist, v. 35, nos. 9–10, p. 671–692, illus., Sept.–Oct. 1950. The camptonite dikes are characterized by large amphibole phenocrysts formed essentially in place. Serpentinization of olivine, formation and size of amygdules, and the growth of the phenocrysts are related to distribution of volatiles in the dike magma. Chemical analyses of the amphibole and the chilled margin of the dike are given and discussed.
3. (and Wright, Lauren Albert). Kyanite paragenesis at Ogilby, California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1520–1521, Dec. 1950.

Campbell, Neil.

The Middle Devonian in the Pine Point area, N. W. T.: Geol. Assoc. Canada Proc., v. 3, p. 87–96, Dec. 1950; abs., Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2252, Nov. 1950. The stratigraphy and structure of the Slave Point limestones and Presqu'ile dolomites in the vicinity of Pine Point, on the south shore of Great Slave Lake, are described. Both formations are Middle Devonian in age and it is thought that the Presqu'ile formation represents a reef deposit. The occurrence of gypsum, sulfur, chert, and bitumen is mentioned.

Campbell, Orton E.

The four types of petroleum hydrocarbon curves in drill holes: World Oil, v. 130, no. 1, p. 72, illus., Jan. 1950. Fluorologs of wells "show that the hydrocarbon curve on a drill hole is characteristic of its position relative to an oil accumulation, and that there are four types of hydrocarbon curves." V. S.

Canada Department of Mines and Technical Surveys, Radioactivity Division, Mines Branch, The Staff.

Analysis of uranium ores by Geiger methods: Canadian Min. Met. Bull. no. 460, p. 461–464, illus., Aug. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 312–315, 1950. The apparatus and procedure in three methods are described.

Canada Geological Survey.

1. Arnprior, Ontario-Quebec, aeromagnetic series, No. $31\frac{F}{8}$. Scale 1:63,360 or 1 inch to 1 mile. [1950].
2. Bancroft, Ontario, aeromagnetic series, No. $31\frac{F}{4}$. Scale 1:63,360 or 1 inch to 1 mile. [1950].
3. Bannockburn, Ontario, aeromagnetic series, No. $31\frac{C}{12}$. Scale 1:63,360 or 1 inch to 1 mile. [1950].
4. Brochet, Manitoba. Map 1001–A. Scale 1: 253,440 or 1 inch to 4 miles. 1950. Geologic map, with descriptive notes by N. R. Gadd. The area is in western Manitoba, bordering Reindeer Lake, and is characterized by pre-Cambrian igneous and metamorphic rocks.
5. Campbellford, Ontario, aeromagnetic series, No. $31\frac{C}{5}$. Scale 1:63,360 or 1 inch to 1 mile. [1950].
6. Carleton Place, Ontario, aeromagnetic series, No. $31\frac{F}{1}$. Scale 1:63,360 or 1 inch to 1 mile. [1950].
7. Preliminary aeromagnetic map, Clericy, Abitibi and Témiscamingue Counties, Quebec: Canada Geol. Survey Paper 50–35, 1950.
8. Coe Hill, Ontario, aeromagnetic series, No. $31\frac{C}{13}$. Scale 1:63,360 or 1 inch to 1 mile. [1950].
9. Crowduck Bay, Manitoba. Map 987–A. Scale 1:63,360 or 1 inch to 1 mile. 1950. Geologic map with descriptive notes. The area is in western Manitoba, and is characterized by pre-Cambrian igneous and metamorphic rocks. A few outliers of Ordovician dolomite have been mapped.

Canada Geological Survey—Continued

10. Preliminary aeromagnetic map, Desboues, Abitibi County, Quebec: Canada Geol. Survey Paper 50–31, 1950.
11. Fiedmont, Quebec. Map 999–A. Scale 1 : 63,360 or 1 inch to 1 mile. 1950. Geologic map, with descriptive notes by L. P. Tremblay. The area is one of pre-Cambrian rocks.
12. Kemptville, Ontario, aeromagnetic series, No. $31\frac{G}{4}$. Scale 1 : 63,360 or 1 inch to 1 mile. [1950].
13. Preliminary aeromagnetic map, Kinojevis, Témiscamingue and Abitibi Counties, Quebec: Canada Geol. Survey Paper 50–32, 1950.
14. Lake Simcoe district, Ontario. Map 992–A. Scale 1 : 126,720 or 1 inch to 2 miles. 1950. Map shows bedrock outcrops and Pleistocene glacial deposits.
15. Lake Simcoe district, Ontario. Map 993–A. Scale 1 : 126,720 or 1 inch to 2 miles. 1950. Map shows physiographic divisions.
16. Preliminary aeromagnetic map, Macamic, Abitibi County, Quebec: Canada Geol. Survey Paper 50–30, 1950.
17. Merrickville, Ontario, aeromagnetic series, No. $31\frac{B}{13}$. Scale 1 : 63,360 or 1 inch to 1 mile. [1950].
18. Mulgrave, Nova Scotia. Map 995–A. Scale 1 :63,360 or 1 inch to 1 mile. 1950. Geologic map, with descriptive notes by L. J. Weeks. The area is in eastern Nova Scotia, and is characterized by pre-Cambrian and Paleozoic rocks.
19. Ottawa, Ontario-Quebec, aeromagnetic series, No. $31\frac{G}{5}$. Scale 1 : 63,360 or 1 inch to 1 mile. [1950].
20. Perth, Ontario, aeromagnetic series, No. $31\frac{C}{16}$. Scale 1 : 63,360 or 1 inch to 1 mile. [1950].
21. Preliminary aeromagnetic map, Pointe Verte, Restigouche and Gloucester Counties, New Brunswick: Canada Geol. Survey Paper 50–38, 1950.
22. Senneterre, Quebec. Map 997–A. Scale 1 : 126,720 or 1 inch to 2 miles. 1950. Geologic map, with descriptive notes by A. S. MacLaren. The area is one of pre-Cambrian rocks.
23. Preliminary aeromagnetic map, Taschereau, Abitibi County, Quebec: Canada Geol. Survey Paper 50–33, 1950.
24. Villebon, Quebec. Map 998–A. Scale 1 :63,360 or 1 inch to 1 mile. 1950. Geologic map, with descriptive notes by M. Tiphane and K. R. Dawson. The area is one of pre-Cambrian rocks.

Cannon, Harry B.

Economic minerals in the beach sands of the southeastern United States, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 202–210, 1950. The geologic and mineralogic features of beach sand deposits are discussed, using the Florida ilmenite and zircon concentrations as examples. Exploration, source of material, deposition and other features are considered.

Cannon, Ralph Smyser, Jr.

Nature of ore-lead [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1448, Dec. 1950.

Canright, James E.

Are the Magnoliaceae the most ancient dicots? [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 672, Oct. 1950.

Carder, Dean Samuel.

Seismic investigations on the 5000-foot level, Homestake mine, Lead, S. D. [abs.]: Earthquake Notes, v. 21, nos. 1–2, p. 13–14, Mar.–June 1950.

Carey, Byrl D., Jr.,

Geology of the eastern part of Flat Top anticline, Albany and Carbon Counties, Wyoming [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1550, Dec. 1950.

Carlson, Loyd A.

Magnetic anomalies in South Dakota: S. Dak. Geol. Survey, Rpt. Inv. 66, p. 23–35, illus., Jan. 1950. Anomalies of horizontal and vertical intensity are mapped from U. S. Magnetic Tables and Charts (1935), with tabulation of values, and are interpreted in the light of their correlation with local measurements (1939–46). It is found that most anomalies reflect stratigraphy and surficial lithology rather than structures. (*See also* Petsch, B. C.) V. S.

Carlston, Charles William.

1. Pleistocene history of coastal Alabama: Geol. Soc. Am. Bull., v. 61, no. 10, p. 1119–1130, illus. incl. geol. map, Oct. 1950. "Following its deposition, the late Pliocene or early Pleistocene Citronelle formation was entrenched by consequent streams and then tilted toward the Gulf. Submergence . . . then resulted in a compound shore line and marine erosion of the Coharie terrace. Four other marine terraces occur below the Coharie level: the Sunderland, Wicomico, Penholoway, and Pamlico."
2. Trends in geomorphic research: Geol. Soc. Am. Bull., v. 61, no. 10, p. 1169–1170, illus., Oct. 1950. Classification of papers on geomorphology, presented at The Geological Society of America meetings from 1931 to 1940 and 1945 to 1949, shows increasing productivity in glacial geology but a more than off-setting decline in basic research and studies of eastern and western United States. V. S.
3. Origin of transverse drainage of the North Atlantic slope [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1449, Dec. 1950.

Carpenter, Frank Morton.

The Lower Permian insects of Kansas; Part 10, The order Protorthoptera, the family Liomopteridae and its relatives: Am. Acad. Arts and Sci. Proc., v. 78, no. 4, p. 185–219, illus., Aug. 1950. Describes ten species belonging to eight genera, five of which are new. The relationships of the Liomopteridae and five other families with other Permian groups are discussed.

Carpenter, Jay Arnold. *See* Stoddard, C.

Carpenter, John Tyler.

Idaho the gem state: Mineralogist, v. 18, no. 1, p. 46–48, Jan. 1950. Occurrences of precious and semi-precious stones in Ada, Owyhee, Gem, Washington, Adams, and Custer Counties are described. V. S.

Carr, Donald A. *See* Kulp, J. L., 3.

Carr, Martha E. S.

The District of Columbia; its rocks and their geologic history: U. S. Geol. Survey Bull. 967, 59 p., illus. incl. geol. map, 1950; reprinted in part in Earth Sci. Digest, v. 4, no. 11, p. 3–6, illus., June 1950. A presentation, in form suitable for the layman, of the stratigraphy, paleontology, physiography, and economic rocks and minerals of the District of Columbia, including brief notes on the geographic and historic background.

Carsey, J. Ben.

Geology of Gulf coastal area and continental shelf: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 361–385, illus., Mar. 1950. The coast and shelf areas are compared as to geology and topography to determine similarities, and inferences are drawn on the origin of the shelf, salt domes, and oil possibilities. Several sketch maps and cross sections are included. V. S.

Carter, Frank B.

Calder field, Kern County, California [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2378–2379, Dec. 1950.

Carter, George F.

Evidence for Pleistocene Man in southern California: Geog. Rev., v. 40, no. 1, p. 84–102, illus., Jan. 1950; abs. with title Evidence for Pleistocene Man in an alluvial fan at La Jolla, California, Geol. Soc. Am. Bull., v. 59, no. 12, pt. 2, p. 1315, Dec. 1948; abridged paper with title Evidence for Pleistocene Man at La Jolla, California, N. Y. Acad. Sci. Trans., ser. 2, v. 11, no. 7, p. 254–257, Jan. 1949. Description of an alluvial fan and its relations to sea level fluctuations and soil formation in an attempt to correlate the evidence with traces of Pleistocene Man in the area. Human occupation probably dates back about 40,000 years, and possibly longer.

Cary, Allen Stuart.

1. Origin and significance of openwork gravel: Am. Soc. Civil Eng. Proc., v. 76, Separate no. 17, 13 p., illus., May 1950; discussion, v. 77, Separate no. D-17, 10 p., Sept. 1951. Openwork gravel, without interstitial sand and associated with well graded fluvial sediments, is considered deposited by swift streams on gravel bars or in deltas. Its significance in engineering works is discussed. V. S.
2. Glaciation in the Skykomish River Valley, Washington [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1521, Dec. 1950.

Castaño, John R.

(and Garrels, Robert Minard). Experiments on the deposition of iron with special reference to the Clinton iron ore deposits: Econ. Geology, v. 45, no. 8, p. 755–770, illus., Dec. 1950. Laboratory experiments bearing on the chemical aspects of deposition of the Clinton iron ores are described. The results show that ferrous iron can be carried in solution in aerated river waters of pH 7 or lower. Such solutions on entering marine waters containing calcium carbonate will precipitate ferric oxide. The variations in deposition with changing conditions are discussed.

Castillo Tejero, Carlos.

Ezequiel Ordóñez (1867–1950): Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 6, p. 413–418, port., June 1950.

Castillón B., Manuel.

Subsuelo del campo de Moralillo: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 2, p. 157–168, illus., Feb. 1950. The Moralillo oil field is situated southwest of Tampico and west of Cerro Azul, Veracruz, Mexico. The Cretaceous and Tertiary stratigraphy and structural geology are described. It is concluded that the Tertiary formations do not reflect subsurface structure but are important to new petroleum possibilities in the area.

Caswell, Charles Alfred.

Stratigraphic prospects in southwestern Oklahoma: World Oil, v. 131, no. 3, p. 73–76, 78, illus., Aug. 1950; abs. with title, Stratigraphic trap possibilities in southwestern Oklahoma, Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 620, Mar. 1950. The area on the southwest flank of the Wichita Mountains, Oklahoma, shows good prospects of stratigraphic oil traps because of prominent facies changes, converging unconformities, onlap of the Pennsylvanian system upon the Arbuckle formation, truncation of formations below the Pennsylvanian, and a favorable regional structure pattern. These features are discussed, and electrolog sections and a generalized structural sketch map are given. V. S.

Cater, Frederick William, Jr. *See* Wells, F. G.

Cathcart, James Bachelder, Jr.

1. Notes on the land-pebble phosphate deposits of Florida, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 132–151, illus., 1950. Land-pebble phosphate deposits are found in a large area east and southeast of Tampa, Florida. The Tertiary and Quaternary stratigraphy, mineralogy of the deposits, occurrence and origin, and reserves are described in detail. The presence of uranium in the phosphate is discussed.

Cathcart, James Bachelder, Jr.—Continued

2. (and Houser, Frederick Northrop). Development and distribution of leached rock in the land pebble phosphate district, Florida [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1449–1450, Dec. 1950.

Cathcart, Stanley Holman.

1. Gas in Leidy Township, Clinton County, Pennsylvania: Pa. Geol. Survey, 4th ser., Rpt. 133, 15 p., illus., Jan. 1950. Reports the discovery of gas in the Oriskany sand at 5,659 feet on the Wellsboro anticline, extending the area of Oriskany gas occurrence. Geological information for the area relating to further exploration is summarized. V. S.
2. Pennsylvania Geological Survey's problems: Pa. Dept. Internal Affairs Monthly Bull., v. 18, no. 8, p. 7–13, July 1950. A brief review of the duties and responsibilities of the Geological Survey in topographic mapping, geologic mapping, and surveying the mineral resources of the state.

Cavender, Wayne S.

Geology and the University of Colorado: Compass, v. 27, no. 3, p. 95–103, illus., Mar. 1950. The history of, and present instruction at, the geology department of the University of Colorado are outlined. V. S.

Cederstrom, Dagfin John.

1. Chemical character of ground water in the Coastal Plain of Virginia: Va. Geol. Survey Bull. 68, 62 p., illus., 1946 [1951]. The regional geology of the Coastal Plain is briefly outlined, the belts of artesian water are described in detail, and the chemical analyses of the ground waters are tabulated.
2. Geology and ground-water resources of St. Croix, Virgin Islands: U. S. Geol. Survey Water-Supply Paper 1067, 117 p., illus. incl. geol. map, 1950. The stratigraphy, structure, and water-bearing properties of Cretaceous volcanics, diorite intrusives, Oligocene and Miocene clays and marl, and alluvium are described. The physiography is briefly summarized. V. S.

Cepeda, Edmundo.

Geología general de la Cuenca de Tabasco [abs.]: Petróleo Interamericano, v. 8, no. 5, p. 24–25, May 1950.

Cervera del Castillo, E.

1. Información obtenida durante la perforación de los pozos exploratorios en el noreste de México; Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 4, p. 261–268, Apr. 1950. The combined borehole logging, coring, sampling, and fluorescence tests and paleontological and chemical analyses, used in exploratory drilling for oil in the northeast of Mexico, are described briefly. V. S.
2. Registro radioactivo en el noreste de México; Petróleos Mexicanos, no. 87, p. 80–92, illus., Nov. 1950; abs., Petróleo Interamericano, v. 8, no. 5, p. 25, May 1950. The results of radioactivity logging in four wells in northeastern Mexico are presented and interpreted.

Chadwick, George Halcott.

Glacial molding of the Gulf of Maine [abs.]: Earth Sci. Digest, v. 4, no. 6, p. 15, Jan. 1950.

Chaisson, Ursula. *See also* Laves, F., 2.

The optics of triclinic adularia: Jour. Geology, v. 58, no. 5, p. 537–547, illus., Sept. 1950; abs., Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1879, Dec. 1949; Am. Mineralogist, v. 35, nos. 3–4, p. 279, Mar.–Apr. 1950. Study on the Universal stage of adularia crystals from several localities indicates that some crystals show triclinic symmetry. The triclinic variety occurs as a secondary modification of monoclinic adularia and shows distinctive optical properties which make it a variety of potash feldspar.

Chaney, Ralph Works.

A revision of fossil *Sequoia* and *Taxodium* in western North America based on the recent discovery of *Metasequoia:* Am. Philos. Soc. Trans., v. 40, pt. 3 (1950), p. 171–262, illus., Feb. 1951. Presents a description of the distinguishing generic characteristics of *Metasequoia, Sequoia,* and *Taxodium;* a detailed account of previous studies of specimens from the Cretaceous and Tertiary of North America; systematic descriptions of recognizable North American species; and a bibliography.

Chapman, Carleton Abramson.

1. Some easily constructed models for teaching optical mineralogy: Ill. State Acad. Sci. Trans., v. 43, p. 121–126, illus., 1950. Describes the procedure for constructing simple models of pine wood to illustrate the fundamentals of optical crystallography. Models for orthorhombic, monoclinic, and triclinic crystals are described, and a section is devoted to models for illustrating types of dispersion.
2. Quartz veins formed by metamorphic differentiation of aluminous schists: Am. Mineralogist, v. 35, nos. 9–10, p. 693–710, illus., Sept.–Oct. 1950. Quartz veins occur in a staurolite schist which forms part of the Littleton formation (Devonian) in western New Hampshire. The veins were formed by removal of silica from the wall rock, and the differentiation operated according to the concretion and solution principles with differential compression due to folding playing an important part.

Chapman, Donald Harding.

Preliminary report on the clays of New Hampshire: N. H. State Plan. Dev. Comm. Mineral Res. Survey, Pt. 12, 25 p., map, 1950. Fourteen clay deposits in New Hampshire are described, and for six of these the results of physical tests and chemical analyses are given. A section on the origin of the clays is included.

Chapman, Randolph Wallace.

Contact-metamorphic effects of Triassic diabase at Safe Harbor, Pennsylvania: Geol. Soc. Am. Bull., v. 61, no. 3, p. 191–220, illus. incl. geol. map, Mar. 1950. The highly folded Antietam schist and Vintage dolomite are cut by a Triassic diabase dike. The petrography of the rocks and the contact-metamorphic effects of the intrusion are described. A geologic map of the Safe Harbor quarry, where the rocks were studied, is included. V. S.

Charlewood, G. H.

(and Thomson, James Edgar). Geology of the Lake Shore mine: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 150–160, illus., 1950. Describes the development, general geology, structure, and mineralization at the Lake Shore gold mine in the Kirkland Lake area, northern Ontario.

Chayes, Felix.

1. On a distinction between late-magmatic and post-magmatic replacement reactions: Am. Jour. Sci., v. 248, no. 1, p. 22–36, illus., Jan. 1950. The distinction can be based on the distribution of replacement minerals through the rock mass. "If a replacement reaction occurred while the magmatic residue was still homogeneously distributed through the mass, the amount of replacement mineral formed would be roughly proportional to the amount of original mineral available and probably would not vary inversely with the quantity of the latter surviving the reaction." On this basis muscovite pseudomorphously replacing plagioclase in Barre (Vt.) granite is late-magmatic. V. S.
2. Composition of some New England granites: N. Y. Acad. Sci. Trans., ser. 2, v. 12, no. 5, p. 144–151, illus., Mar. 1950. The need for reliable quantitative petrographic information on which to base hypotheses of rock origin is stressed. The application of such information, compiled for fine-grained granites from 19 New England areas, to the question of granite origin is discussed. The evidence upholds the hypothesis of magmatic origin, that is, crystallization of a liquid of about the same composition as the finished product, for the granites studied.

Chayes, Felix—Continued

3. On the bias of grain-size measurements made in thin section: Jour. Geology, v. 58, no. 2, p. 156–160, illus., Mar. 1950. Discussion by N. N. Greenman, vol. 59, no. 3, p. 268–274, May 1951; reply by F. Chayes, p. 274–275. An examination of W. C. Krumbein's work of 1935 and an alternative mathematical analysis show that bias is not introduced by the shape and size of the grains but by the technique of measurement and may be corrected by computations. V. S.
4. Composition of the granites of Westerly and Bradford, Rhode Island: Am. Jour. Sci., v. 248, no. 6, p. 378–407, June 1950. "Point-counter analyses of three thin sections cut from each of several specimens of the Bradford and Westerly granites are recorded and a variance analysis of the results indicates that significant differences in composition within hand specimens cannot be detected while differences between hand specimens must be very small." Notes on petrographic homogeneity are included, together with a discussion of the advantages of microscopic analysis.
5. On the relation between anorthite content and γ-index of natural plagioclase: Jour. Geology, v. 58, no. 5, p. 593–595, illus., Sept. 1950. Data on anorthite content and γ-index of refraction of plagioclase, as reported in the literature, are correlated, plotted, and interpreted.
6. Measurement of intercept distances in thin section: Am. Geophys. Union Trans., v. 31, no. 6, p. 870–872, illus., Dec. 1950. "Use of a low-pitched thread on the main screw of the mechanical stage of the point counter and substitution of an electric, ten-key adding machine for the cumulative counter used in modal analysis permits rapid measurement of grain intercept distances in thin section. The measuring technique and some results are described."

Chenoweth, Philip A.

Trentonian paleogeography in northwestern New York [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1450, Dec. 1950.

Chesterman, Charles W.

Perlite deposits in Sonoma County, California: Calif. Jour. Mines and Geology, v. 46, no. 1, p. 81–82, Jan. 1950. Perlite, a volcanic glass used in plaster and concrete, occurs as flows or lenticular bodies and is associated with rhyolite and rhyolitic tuffs in the local Pliocene volcanics. V. S.

Ch'ih, Chi Shang. *See also* Turner, F. J., 1, 3.

Structural petrology of the Wissahickon schist near Philadelphia, Pennsylvania, with special reference to granitization: Geol. Soc. Am. Bull., v. 61, no. 9, p. 923–956, illus., Sept. 1950; abs., no. 12, pt. 2, p. 1521, Dec. 1950. A comparative petrofabric study of granitized and ungranitized schist to determine the effects of granitization, the period of granitization, and the chemistry.

Childs, Orlo E.

Geologic history of the Uinta Basin, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 49–59, illus., 1950. Brief, general observations on the stratigraphic, structural, and geomorphic history of the Uinta Basin, Utah.

Chisholm, E. O.

1. Dithizone solution is sensitive field test for tracing copper, lead & zinc: Precambrian, v. 23, no. 1, p. 38–39, Jan. 1950. "The color changes effected in a solution of dithizone by trace amounts of copper, lead, and zinc mineralization provide a sensitive field test for these minerals." Application in Ontario, to samples of soil overlying a zone where gold is associated with disseminated sphalerite, galena, and chalcopyrite, is described. V. S.
2. Preliminary report on radioactive occurrences in the Kenora area: Ontario Dept. Mines [Prelim. Rpt. 1950–1], 4 p. (‡), map, Jan. 1950. Showings of faint disseminated uraninite and monazite have been found near Kenora, Ontario, in granitic and pegmatitic intrusions. The occurrences do not appear to be of sufficient size or grade to have commercial value. V. S.

Chisholm, E. O.—Continued

3. A simple chemical method of tracing mineralization through light non-residual overburden: Canadian Min. Met. Bull., no. 454, p. 64–68, illus., Feb. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 44–48, 1950. The color changes produced in a solution of dithizone by trace amounts of copper, lead, and zinc mineralization provide a sensitive field test for these metals. A gold-bearing mineralized shear zone at the Nor-Penn Mines property near Kenora, Ontario, was successfully traced beneath overburden as much as 5 feet thick.
4. General geology, Red Lake area: Canadian Min. Jour., v. 71, no. 11, p. 110–111, geol. sketch map, Nov. 1950. The pre-Cambrian sediments, volcanics, and intrusives of the Red Lake gold mining area in western Ontario are briefly described.
5. Crow River area geology: Canadian Min. Jour., v. 71, no. 11, p. 112–113, illus. incl., geol. sketch map, Nov. 1950. The pre-Cambrian rocks and the structure are briefly outlined, with notes on the gold occurrence. Both the Central Patricia and Pickle Crow gold mines are in the Crow River area in northwestern Ontario.

Christensen, H. E.

(and Marshall, John). LaBarge field, Lincoln and Sublette Counties, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 105–108, illus., 1950. Brief stratigraphic, structural, physiographic, and production data are given.

Christiansen, Francis Wyman.

1. Thrust surfaces on the front of the central Wasatch Mountains, Utah [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1450, Dec. 1950.
2. Structural history of the Canyon Range, west-central Utah [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1550, Dec. 1950.

Christie, Archibald M.

Geology of Bonavista map-area, Newfoundland: Canada Geol. Survey Paper 50–7, 40 p. (‡), geol. map, 1950. The Bonavista map-area, on the east coast of Newfoundland, contains predominantly sedimentary and volcanic rocks of Proterozoic and Paleozoic (mostly Cambrian) age. The rocks are mapped and described, with attention to structures, glaciation, and economic possibilities, and a columnar section is given. V. S.

Christner, H. Reed. *See* Combo, J. X.

Church, T. G.

Formation of radioactive surface films on minerals: Canadian Jour. Research, Section A, Physical Sciences, v. 28, no. 2, p. 164–167, Mar. 1950. Experiments on synthetic ores show that, with requisite chemical treatment, specific minerals will assume a surface radioactivity by undergoing reactions with radioactive ions in solution. It is essential that the mineral have a tarnished or coated surface. Results obtained for galena, pyrite, apatite and the cobalt minerals are given.

Chute, Newton Earl.

1. Bedrock geology of the Brockton quadrangle, Massachusetts: U. S. Geol. Survey, Geol. Quad. Map, with text. Scale 1: 31,680 or 1 inch to ½ mile. 1950.
2. Surficial geology of the Brockton quadrangle, Massachusetts: U. S. Geol. Survey, Geol. Quad. Map, with text. Scale 1: 31,680 or 1 inch to ½ mile. 1950.

Cisney, Evelyn A. *See* Murata, K. J.; Weeks, A. D.

Clabaugh, Stephen Edmund. *See also* Emmons, R. C.

1. (and Armstrong, Frank Clarkson). Corundum deposits of Gallatin and Madison Counties, Montana: U. S. Geol. Survey Bull. 969–B, p. 29–51, illus. incl. geol. maps, 1950. The Elk Creek, Bozeman, and Bear Trap deposits, southwest of Bozeman, Montana, have been investigated as potential sources of abrasive corundum. The deposits are described and outcrop maps given. The hypothesis that the corundum-bearing lenses were formed by regional metamorphism of syngenetic alumina-rich sediments is discussed.
2. Pegmatites of Montana: Econ. Geology, v. 45, no. 3, p. 254–257, May 1950. Discussion of E. W. Heinrich's report on Montana pegmatites (v. 44, p. 307–335, 1949). The alternative hypothesis is proposed that the corundum deposits southwest of Bozeman, Montana, are metamorphosed lenses and beds of aluminous sedimentary rocks in which the corundum crystals were among the latest minerals to develop. V. S.
3. Eudialyte and eucolite from southern New Mexico [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 279–280, Mar.–Apr. 1950.
4. Corundum deposits of Montana [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1451, Dec. 1950.

Claffy, Esther W.

(and Schulman, James Herbert). Luminescence activation of zeolite minerals by base exchange [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1451, Dec. 1950.

Clair, Joseph Robinson.

(and Edson, Fanny Carter). Lithologic criteria of Arbuckle in western Kansas: World Oil, v. 131, no. 7, p. 83–84, 89–90, illus., Dec., 1950; abs., Oil and Gas Jour., v. 45, no. 36, p. 121, Jan. 11, 1947. The zones into which the Arbuckle rocks of Cambrian and Ordovician age have been subdivided on the basis of lithology are described. These lithologic zones are for quick identification of any part of the Arbuckle rock section and are not correlated with zones based on insoluble residue studies.

Claisse, Fernand.

A roentgenographic method for determining plagioclases: Am. Mineralogist, v. 35, nos. 5–6, p. 412–420, illus., May–June 1950. "A new *x*-ray diffraction method is described which permits the measurement of the Ab-An percentage composition of plagioclases to 1 or 2 percent. . . . Several plagioclases of known composition were analyzed, and calibration curves are given. They indicate that plagioclases do not constitute a single isomorphic series, but rather two such series, with a transition point in the vicinity of Ab_2An_1."

Clark, Arthur W.

Quartz "diamonds" in olivine basalt: Rocks and Minerals, v. 25, nos. 1–2, p. 50–51, Jan.–Feb. 1950. In the basalt flows of the Coast Ranges of northern California clear, crystalline quartz grains are intimately associated with olivine crystals, being apparently foreign material picked up by the melt during its extrusion. V. S.

Clark, John D.

Petalite, a new commercial mineral: Min. Eng., v. 187, no. 10, p. 1068–1070, illus., Oct. 1950; A. I. M. E. Trans., v. 187, 1950. Petalite is a lithium aluminum silicate somewhat similar to spodumene, but differing in chemical composition, specific gravity, and other properties. Its occurrence, properties, and commercial applications are discussed.

Clark, Robey Harned.

The petrology of some Des Moines series sandstones of Iowa: Jour. Sed. Petrology, v. 20, no. 1, p. 21–36, illus., Apr. 1950. "The basal sandy units of the simple cyclothems of the Pennsylvania Des Moines series of south-central Iowa are well sorted, fine grained to silty, quartzose sandstones. Mineralogically they consist of stable species derived largely from pre-existing sediments but containing some apparently fresh material from granitic and metamorphic terranes." The light and heavy minerals are listed, and the conditions of deposition, source areas, and variations in mineral occurrence and abundance are discussed. V. S.

Clark, Thomas Henry.

Preliminary report on the Grondines map-area, Champlain, Portneuf, Laviolette, Nicolet, and Lotbinière Counties; Pt. 1, Paleozoic section: Quebec Dept. Mines, Geol. Surveys Br., Prelim. Rpt. 237, p. 1–3 (‡), geol. map, 1950. Brief notes on the Ordovician strata and structure in the Grondines area, 40 miles west of Quebec City.

Claudet, Aime P.

New method of correlation by resistivity values of electrical logs: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 10, p. 2027–2060, illus., Oct. 1950. The method described consists in using the numerical values of shale resistivities as a basis for the correlation of subsurface formations. Numerous examples are given, with electrolog sections, of long-range correlations in Louisiana, Mississippi, and Alabama. The method is particularly useful for short-range correlations in faulted areas. V. S.

Claveau, Jacques.

North shore of the Saint-Lawrence from Aguanish to Washicoutai Bay, Saguenay County: Quebec Dept. Mines, Geol. Surveys Br., Geol. Rpt. 43, 40 p. (‡), illus. incl. geol. map, 1950. The petrology and structure of the pre-Cambrian basal complex, exposed along the north shore of the Gulf of St. Lawrence from Aguanish to Washicoutai Bay is described. Brief consideration is also given to glacial geology and economic possibilities. V. S.

Clayton, Neal.

1. Seismic problems in reef shooting: World Oil, v. 130, no. 2, p. 69–72, illus., Feb. 1950. Mapping of reefs by seismic reflection shooting is discussed on the basis of work in the North Snyder oil field, Texas. Attention is given to the geology of the producing Canyon reef, as indicated by electrical logs, and to problems of interpreting reflections, complicated here by the absence of structural relief in shallow beds. V. S.
2. Reflection shooting in the north Snyder area, Scurry County, Texas [abs.]: Geophysics, v. 15, no. 1, p. 154, Jan. 1950.

Cleaves, Arthur Bailey.

1. (and Stephenson, Robert Charles). Guidebook to the geology of the Pennsylvania Turnpike, Carlisle to Irwin: Pa. Geol. Survey, 4th ser., Bull. G 24, 72 p., illus. incl. geol. maps, 1949. The guidebook describes the physiography, geologic history, engineering geology, and economic geology of the area in southwestern Pennsylvania traversed by the turnpike and includes a geologic itinerary illustrated by a strip map. The strata range from Cambrian through Permian. V. S.
2. Sedimentation and highway engineering, *in* Applied sedimentation, p. 127–146, illus., 1950. Various problems in connection with the construction of highways on soils and sedimentary rocks, and problems of landslides, subsidence, and base courses are discussed.

Clements, Thomas D.

Some formations exposed in the Cuyama Gorge, Branch Mountain quadrangle, California [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2378, Dec. 1950.

Clewell, Dayton Harris.

1. (and Simon, R. F.). Seismic wave propagation: Geophysics, v. 15, no. 1, p. 50–60, illus., Jan. 1950. Reasons are indicated why seismic energy reflected from geologic horizons is usually in the frequency range of 20 to 100 cycles per second. The explanation accounts for the continuous reception of random energy superimposed upon reflection energy, the relatively lower frequency of deeper reflections, and other observations. V. S.
2. Recent developments in seismic research: Colo. School of Mines Quart., v. 45, no. 4A, p. 79–86, Oct. 1950. Post-war advances in seismic instrumentation, field techniques, and record analysis, as used in oil exploration, consist of technical improvements and adaptations to special problems, but no application of radically new principles. V. S.

Clifton, Roland Leroy.

Memorial to Charles Newton Gould [1868–1949]: Geol. Soc. Am. Proc. 1949, p. 165–174, port., June 1950.

Cline, Lewis Manning.

1. (and Greene, Frank Cook). A stratigraphic study of the upper Marmaton and lowermost Pleasanton groups, Pennsylvanian, of Missouri: Mo. Geol. Survey and Water Res. Rpt. Inv. 12, 1950, 74 p., illus., 1950. The stratigraphy and fauna of the upper Marmaton and lowermost Pleasanton formations, of Pennsylvanian age, from west-central Missouri to south-central Iowa are discussed and illustrated by 7 correlation charts and 24 columnar sections. Special attention is given to the position of the Desmoinesian-Missourian boundary in Missouri. The name Amoret is proposed for the lower member of the Altamont limestone, with designation of a type section. A bibliography is given. V. S.
2. (and Heuer, Edward). The *Codaster alternatus-Codaster pyramidatus* group of blastoids from the Mid-Devonian of North America: Jour. Paleontology, v. 24, no. 2, p. 154–173, illus., Mar. 1950. A restudy of type material from the vicinity of Louisville, Kentucky, and other specimens, to provide more adequate identification and descriptions, raises one variety to specific rank, illustrates one species for the first time, and suppresses one species or variety as a synonym. V. S.

Cloninger, James S.

How deep oil or gas may be expected: World Oil, v. 130, no. 6, p. 57–62, illus. May 1950. Physical and geologic considerations indicate that oil and gas may be expected in sandstones to a depth of 65,620 feet and in limestones to 51,300 feet. Thus, if the necessary source rocks are present, oil or gas could be found near the bottom of all favorable sedimentary sections in the United States, except the San Joaquin-Sacramento basin in California, whose depth reaches 75,000 feet. A bibliography is given. V. S.

Cloos, Ernst.

1. The geology of the South Mountain anticlinorium, Maryland: Johns Hopkins Univ. Studies in Geology, no. 16, pt. 1, p. I–1 to I–28, illus. incl. geol. maps, 1950. The stratigraphic and structural features of the South Mountain anticlinorium in northwestern Maryland are described in a guidebook prepared for the Geological Society of America field trip in November 1950. Detailed road logs of the route, Rockville-Harpers Ferry-Frederick-Baltimore, and other intermediate points, are given. A geologic map of the Harpers Ferry gorge area is included.
2. (and Anderson, Judson Lowell). The geology of Bear Island, Potomac River, Maryland: Johns Hopkins Univ. Studies in Geology, no. 16, pt. 2, p. II–1 to II–13, illus. incl. geol. map, 1950. The structural geology of Bear Island, one of the Potomac River islands between the District of Columbia and Great Falls, is described in a guidebook prepared for the Geological Society of America field trip in November 1950. Mica schist and quartzite, a variety of basic rocks, and granite comprise the bedrock. The area has been intensely metamorphosed, partly by deformation and partly by intrusion of the granite.
3. (and Reed, John Calvin). Memorial to Robert Ellsworth Fellows [1915–1949]: Geol. Soc. Am. Proc. 1949, p. 159–162, port., June 1950.

Coats, Robert Roy.

Volcanic activity in the Aleutian arc: U. S. Geol. Survey Bull. 974–B, p. 35–49, illus., 1950. Volcanic activity in the Aleutian arc, from Buldir Island to Mount Spurr, is reviewed from 1760 to 1948. The distribution of the volcanoes, dates and periodicity of eruptions, characteristic volcanic features, and relation to structure are described. Data on 76 major volcanoes are tabulated, including 17 caldera, 9 of which have not been hitherto reported. V. S.

Cobban, William Aubrey.

Telegraph Creek formation of Sweetgrass arch, north-central Montana: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1899–1900, Sept. 1950. A recently identified fauna from the Sweetgrass arch in Montana confirms the validity of the name "Telegraph Creek formation" for the beds transitional between the Colorado shale and the Virgelle sandstone. The forms are listed. V. S.

Cochran, Kenneth L.

1. Wyoming phosphate industry: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 133–135, 1950. The geology of the phosphate deposits in Wyoming is briefly described, together with notes on the two operating companies at Leefe and Kemmerer.
2. Geology's place in the mining industry: Ohio State Univ., Eng. Expt. Sta. News, v. 22, no. 2, p. 15, 34–36, Apr. 1950. The importance of sound geological training in the exploration and development of new mines is stressed, and the qualifications of a mining geologist are set forth.

Cockfield, William Egbert. *See* Buckham, A. F., 2.

Coffin, Reuben Clare.

Geological imagination in the interpretation of geophysical data: Colo. School of Mines Quart., v. 45, no. 4A, p. 11–40, illus. incl. maps, Oct. 1950. When geophysical data are so few or varied that several interpretations of the geology are possible, the geologist should be imaginative and speculative in considering possible solutions, and able to change his ideas as additional information is acquired. Specific examples of problems are given.

Cohee, George Vincent.

(and others). Coal resources of Michigan: U. S. Geol. Survey Circ. 77, 56 p. (‡), illus., June 1950. With the exception of a few introductory pages, the circular consists of 36 maps of various townships and ranges showing reserves by depth and thickness, and several tables of mine, production, and reserve data. A map of the Michigan coal basin shows the area of reserves and thickness of glacial drift. Total reserves as of January 1950 are placed at 220 million tons.

Colbert, Edwin Harris.

1. (and Northrop, Stuart Alvord) (editors). Guidebook for the fourth field conference of the Society of Vertebrate Paleontology in northwestern New Mexico. 91 p., illus. incl. geol. maps. [1950]. The conference, sponsored by the American Museum of Natural History and the University of New Mexico, was held June 20–24, 1950. The guidebook contains road logs, and papers by S. A. Northrop, A. S. Romer, E. H. Colbert, and G. G. Simpson.
2. Mesozoic vertebrate faunas and formations of northern New Mexico, *in* Guidebook for the fourth field conference of the Society of Vertebrate Paleontology in northwestern New Mexico, p. 57–73, illus., 1950. Describes the Chinle formation and fauna of Triassic age in the Chama River Valley (including notes on the Jurassic and Cretaceous) and the Cretaceous beds and fauna in the San Juan Basin.
3. The beginning of the age of dinosaurs in northern Arizona: Plateau, v. 22, no. 3, p. 37–43, illus., Jan. 1950. A popular account of the life and its environment in northern Arizona during Triassic time.

Cole, E. J.

Copper at Coxheath: Nova Scotia Dept. Mines Ann. Rpt. 1949, p. 104–107, illus., 1950. Copper occurs in Coxheath hills, Cape Breton County, Nova Scotia, at the sheared boundary between local pre-Cambrian volcanics and intrusives. The main veins are described, and geophysical profiles and sampling results are given. V. S.

Colle, Jack Overton.

(and others). Cenozoic and Mesozoic in the Texas portion of the Gulf Coast [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1472, Dec. 1950.

Collins, Robert E. Lee. *See* Gazin, C. L., 1.

Collinson, Charles. *See* Miller, A. K., 6.

Combo, John Xavier.

(and Holmes, Clifford Newton, and Christner, H. Reed). Map showing coal resources of Montana: U. S. Geol. Survey Coal Invs. Map C 2 (2 sheets). Scale 1:500,000 or about 1 inch to 8 miles. 1950. The map covers two sheets, east half and west half, and the coal resources are shown in color, indicating the rank, and in patterns, indicating thickness of beds. Locations of a selected list of mines are given. A bibliography of U. S. Geological Survey publications describing coal areas on the map is included.

Comeforo, Jay Eugene.

(and Hatch, Robert Alchin, and Eitel, Wilhelm). Isomorphism of synthetic fluorine-amphiboles [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1452, Dec. 1950.

Conant, Louis Cowles.

Outcropping Cretaceous beds of Mississippi, *in* Mississippi Geological Society Guidebook, Eighth Field Trip, October 13–15, 1950, p. 5–11, illus., 1950. Describes the Gordo formation of the Tuscaloosa group, the McShan and Eutaw formations, and the Mooreville chalk, Demopolis chalk, Ripley formation and Prairie Bluff chalk of the Selma group.

Conkin, James.

1. On the occurrence of a new species of *Cyrtodonta* from the Liberty formation of Oldham County, Ky.: Annals Ky. Nat. History, v. 1, art. 3, p. 23–25, illus., Oct. 28, 1948. Describes *Cyrtodonta beckneri*, a new species of pelecypod from the upper part of the Liberty formation (Ordovician) at Sleepy Hollow, Prospect quadrangle, Oldham County, Kentucky.
2. The paleontology and stratigraphy of Sleepy Hollow in Oldham County, Kentucky: Annals Ky. Nat. History, v. 1, art. 6, p. 45–48, illus., Oct. 6, 1950. "This report gives the stratigraphic column for the Ordovician of Sleepy Hollow, makes additions to Charles Butts' faunal list of 1914–1915 for the Liberty formation, and points out the evidence of the Whitewater age of the upper beds of the Liberty and the lower beds of the Saluda."

Content, C. S.

Geology applied to engineering: Billings Geol. Soc., First Annual Field Conference, Sept. 15–17, 1950, p. 60–65, illus., 1950. A general paper describing how geologic data are applied to various engineering practices, listing the data necessary in the designing of earth dams, and indicating a method of presentation of data in a report.

Contreras, Hugo.

Posibilidades del Alto Salina de Moloacán-Ixhuatlán: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 7, p. 473–484, illus. incl. geol. sk. map, July 1950. Describes the Tertiary stratigraphy and structure in the area of the Moloacán and Ixhuatlán oil fields, southeast of Coatzacoalcos, Veracruz, Mexico.

Conybeare, Charles E. B.

1. (and Ferguson, Robert Bury). Metamict pitchblende from Goldfields, Saskatchewan, and observations on some ignited pitchblendes: Am. Mineralogist, v. 35, nos. 5–6, p. 401–406, illus., May–June 1950. "Seven metamict pitchblendes, apparently the first to be reported, are described . . . The changes in *x*-ray powder pattern and color of the powder after ignition are tabulated . . .; the principal changes are the restoration of the structure of metamict specimens and the occasional development of U_3O_8 with, or in place of UO_2. On the basis of these changes the nine pitchblendes examined are classified into five distinct types."
2. Microstylolites in pre-Cambrian quartzite; a reply: Jour. Geology, v. 58, no. 6, p. 652–654, illus., Nov. 1950. Reply to the discussion by B. M. Shaub (which see) of Conybeare's article Stylolites in pre-Cambrian quartzite, Jour. Geology, v. 57, no. 1, p. 83–85, Jan. 1949.
3. (and Campbell, Charles Duncan). Petrology of the red radioactive zones north of Goldfields, Saskatchewan [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 280, Mar.–Apr. 1950.

Cook, Harold James.

1. Some considerations affecting the Miocene-Pliocene boundary question in vertebrate-bearing rocks in North America and Eurasia: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 11, p. 85–92, 1950. "The author postulates a temporary land bridge that allowed mass migration to North America of mammals whose original home probably became submerged, and outlines paleogeographical and physical changes that are directly related to the problems of intercontinental migration of vertebrates."
2. Geologic structures in western Nebraska and adjoining areas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1551, Dec. 1950.

Cook, Kenneth Lorimer.

1. Magnetic surveys in the Iron Springs district, Iron County, Utah: U. S. Bur. Mines Rpt. Inv. 4586, 78 p. (‡), illus. incl. geol. sketch maps, Jan. 1950. Surveys for iron ore were chiefly confined to zones of the Homestake limestone, favorable to replacement ores, at the margins of three monzonite intrusions. The 45 magnetic anomalies detected are discussed. V. S.
2. Quantitative interpretation of vertical magnetic anomalies over veins: Geophysics, v. 15, no. 4, p. 667–686, illus., Oct. 1950; abs., Oil and Gas Jour., v. 46, no. 52, p. 115–116, Apr. 29, 1948; Geophysics, v. 13, no. 3, p. 496, July 1948. Derives new variants of the formulas for the magnetic anomalies over a vertical or inclined vein of tabular shape in intermediate northern magnetic latitudes. The orientation of the veins relative to the magnetic north direction is emphasized. Vertical magnetic intensity curves for veins with different strikes and dips are given. V. S.

Cooke, Charles Wythe.

Carolina bays, traces of tidal eddies [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1452, Dec. 1950.

Cooke, Harold Caswell.

Arthur Berkeley Yates (1901–1949): Royal Soc. Canada Proc., 3d ser., v. 44, p. 121–122, 1950.

Cooke, William Forester, Jr. *See* Colle, J. O.

Coombs, Howard Abbott.

1. Vibration studies at Ross Dam: Trend in Engineering at the University of Washington, v. 1, no. 3, p. 5–10, illus., July 1949. Measurements of vibrations set up by blasting are presented and their effect on Ross Dam (Skagit River, northwest Washington) is evaluated.

Coombs, Howard Abbott—Continued

2. Granitization in the Swauk arkose near Wenatchee, Washington: Am. Jour. Sci., v. 248, no. 6, p. 369–377, illus., June 1950. The Swauk formation of Eocene age is composed essentially of arkoses and sandstones with some clay, shale, and conglomerate. Along the axis of an anticline, the arkose has been transformed locally into a rock of the composition and texture of granodiorite. The granitization process was carried on at low temperatures and with a very small amount of solutions. The various steps can be traced and are described.

Coombs, Vincent Bruce. *See* Byrne, F. E., 3.

Coons, R. M.

(and Watson, Howard D.). "Black oil" at Lloydminster: Western Miner, v. 23, no. 5, p. 56, 58, 60, 62, 64, illus., May 1950. The Lloydminster field on the Saskatchewan-Alberta border is the center of a petroliferous area of Lower Cretaceous sediments. Oil and gas accumulations occur in lenticular sands where local structure is favorable. The geology and production history of the area are outlined. V. S.

Cooper, Gustav Arthur.

Permian faunas of the Glass Mountains, Texas, and their environment: N. Y. Acad. Sci. Trans., ser. 2, v. 12, no. 3, p. 80–81, Jan. 1950; abs., Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1453, Dec. 1950. A brief, general description of the various types of silicified brachiopods occurring in limestones of the Wolfcamp, Leonard, and Word formations of Permian age.

Cooper, Harry Mac. *See* Dowd, J. J., 1, 2.

Cooper, Hilton Hammond, Jr.

(and Stringfield, Victor Timothy). Ground water in Florida: Fla. Geol. Survey, Inf. Circ. 3, 7 p., illus., June 1950. Describes briefly the occurrence, source, movement, and consumption of ground water in Florida, and touches on some of the problems of development and conservation.

Cooper, John Roberts.

Arizona zinc and lead deposits; Johnson Camp area, Cochise County, Arizona: Ariz. Bur. Mines Bull. 156, Geol. Ser. 18, p. 30–39, illus. incl. geol. map, Apr. 1950. The structure, metamorphism, and ore bodies of the area are described.

Cornejo Toledo, Alfonso.

(and Hernández Osuna, Alfonso). Las anomalías gravimétricas en la Cuenca Salina del Istmo, planicie costera de Tabasco, Campeche y península de Yucatán; Asoc. Mex. Geól. Petrol. Bol., v. 2, no 7, p. 453–460, illus., July, 1950; Petróleos Mexicanos, no. 87, p. 60–69, illus., Nov. 1950. Gravity anomalies in Tabasco, Campeche, and Yucatan are discussed briefly.

Corwin, Charles H.

Kern Bluff oil field: Calif. Oil Fields, v. 36, no. 1, p. 15–17, illus., Jan.–June 1950. The history, stratigraphy, structure, and producing zones are briefly described. The Kern Bluff field is located in the southeastern part of the San Joaquin Valley, 6 miles northeast of Bakersfield, California.

Cosminsky, Philip R.

An occurrence of babingtonite in Loudoun Co., Virginia: Rocks and Minerals, v. 25, nos. 11–12, p. 579, Nov.–Dec. 1950. Reports the discovery of babingtonite, a triclinic pyroxene, at the Arlington trap rock quarry on Goose Creek in Loudoun County, northern Virginia.

Coulomb, Jean.

(and Molard, Pierre). Ondes séismiques au fond de la mer des Antilles: Annales de Géophysique, tome 5, no. 3, p. 212–214, illus., 1949; addendum, tome 6, no. 1, p. 65, 1950. Describes and interprets certain seismic waves in the Caribbean region registered at the Observatory at Martinique. Reference to the work of Gutenberg and Richter, and Tolstoy, Ewing and Press is given in the addendum.

Counts, W. E.

(and Roy, Rustum, and Osborn, Elburt Franklin). The binary systems CaF_2-BeF_2, MgF_2-BeF_2, PbF_2-BeF_2, and LiF-MgF_2 [abs.]: Am. Ceramic Soc. Bull., v. 29, no. 3, p. 128, Mar. 1950.

Cox, Benjamin Burton.

Influence of clay in oil production: World Oil, v. 131, no. 7, p. 174, 176, 180–182, illus., Dec. 1950. The various properties of clay that influence oil production, such as swelling, dispersion, flocculation, and base exchange, are discussed. The arrangement of clay in a reservoir sand is considered in its relation to associated problems.

Cox, Doak Carey. *See* Shepard, F. P., 1.

Cox, Robert T. *See* Bartley, J. H., 2.

Crandell, Dwight R.

Revision of Pierre shale of central South Dakota: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2337–2346, illus., Dec. 1950. The history of the terminology of the subdivisions of the Upper Cretaceous Pierre shale in South Dakota is outlined, and a revised classification is proposed. Three subdivisions of the Sully member, as used by the South Dakota Geological Survey, are raised to member rank, and the term Sully is discarded. The Agency-Oacoma zone is redefined and renamed the DeGray member. V. S.

Crawford, Arthur Lorenzo.

1. (and Buranek, Alfred M.). Halloysite of agalmatolite type, Bull Valley district, Washington County, Utah: Utah Acad. Sci. Proc., v. 25, p. 127–133, 1948. The properties, chemical composition, and origin of the halloysite are described, together with notes on the geologic occurrence.
2. The meteorite (?) discovery in 1938, near Evanston, Wyoming; a confession of error: Utah Acad. Sci. Proc., v. 25, p. 151–155, 1948. The material formerly described as the "Stove Creek meteorite" is now definitely identified as slag.
3. (and Buranek, Alfred M., and Bell, Mendell McClellan). Kyanite schists of Grouse Creek Range, Box Elder County, Utah [abs.]: Utah Acad. Sci. Proc., v. 25, p. 180–181, 1948.

Crawford, J. E. *See* McKelvey, V. E., 3.

Creasey, Sayville Cyrus.

1. Arizona zinc and lead deposits; Geology of the St. Anthony (Mammoth) area, Pinal County, Arizona: Ariz. Bur. Mines Bull. 156, Geol. ser. 18, p. 63–84, illus. incl. geol. map, Apr. 1950. The rocks, structure, and mineralization of the area are described in some detail. The deposit is of the vein type, involving both filling and replacement, occurring in rhyolite and quartz monzonite. Galena and sphalerite are the chief ore minerals.
2. Arizona zinc and lead deposits: Iron King mine, Yavapai County, Arizona: Ariz. Bur. Mines Bull. 156, Geol. ser. 18, p. 112–122, illus. incl. geol. sketch map, Apr. 1950. The rocks, structure, and mineralization in the Iron King area are described.

Crentz, William L. *See* Dowd, J. J., 2.

Crickmay, Colin Hayter.

Some Devonian Spiriferidae from Alberta: Jour. Paleontology, v. 24, no. 2, p. 219–225, illus., Mar. 1950. Five new species of *Eleutherokomma*, new genus (hitherto confused with *Mucrospirifer*), are described from the new oil fields of Alberta, Canada, from late Middle and early Upper Devonian formations.

Crittenden, Max D., Jr.

Pre-Carboniferous stratigraphy and structure of the Uinta Basin, Utah and Colorado, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 61–69, illus., 1950. Brief notes on the occurrence of pre-Cambrian, Cambrian, Ordovician, and Devonian in the vicinity of the Uinta Basin.

Crockett, Harry Lee. *See* Frost, V. L.

Croft, W. N.

A parallel grinding instrument for the investigation of fossils by serial sections: Jour. Paleontology, v. 24, no. 6, p. 693–698, illus., Nov. 1950. "A surface grinding instrument, primarily for grinding parallel sections of fossils at exact intervals down to 10 microns, is described and figured. . . . Mention is also made of its use in cutting plates from crystals or other substances."

Croneis, Carey Gardiner.

E. DeGolyer, Sidney Powers Memorial Medalist: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 5, p. 971–974, port., May 1950.

Cross, Aureal T. *See* Abilene Geol. Soc., 3; Hoskins, J. H.

Crowell, John Chambers.

1. Geology of Hungry Valley area, southern California: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1623–1646, illus. incl. geol. map, Aug. 1950; abs., v. 32, no. 12, p. 2319, Dec. 1948. The geologic history of the Hungry Valley area, southern California, is reconstructed as a succession of Pliocene continental clastics deposited concurrently with movement on the San Gabriel fault zone, followed by Pleistocene folding and faulting and Recent uplift and erosion. Geologic map and sections are given. V. S.
2. Submarine canyons bordering southern California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1453–1454, Dec. 1950.

Crowl, George Henry.

Erosion surfaces of the Adirondacks [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1565, Dec. 1950.

Crozier, Archie R.

Fuels of Ontario: Canadian Min. Jour., v. 71, no. 11, p. 166–168, illus., Nov. 1950. Natural gas is the chief fuel resource of Ontario. The occurrence is briefly described.

Crump, Robert M. *See* Emmons, R. C.

Cumming, Jorge L.

Deep discoveries increase Mexico's oil reserves: World Oil, v. 130, no. 4, p. 225–226, Mar. 1950. The discoveries made since 1941 include deeper pays in the Poza Rica field and new deposits in the Tamaulipas, Veracruz, and Tabasco regions. They have raised the oil reserves from 821 million to 1–3 billion barrels. V. S.

Cunningham, William A. *See* Barnes, V. E., 2.

Currie, J. B.

Ossian Township, Ontario (report and map): Canada Geol. Survey Paper 50–6, 7 p. (‡), geol. map, 1950. The area is characterized by Keewatin volcanics and post-Keewatin intrusives. Petrology, structures, and gold and pyrite mineralization are outlined briefly. V. S.

Curtis, Bruce Franklin.

Structure of the north flank of the Uinta Mountains: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 93–102, geol. sketch map, 1950. Describes and correlates stratigraphic and structural data on the area of the north flank of the Uinta Mts., northern Utah. The structural history of the region is outlined and a table of chronology of Laramide events is given.

Curvin, Bernard Arthur. *See* Hendricks, T. A., 2.

Cushman, Joseph Augustine, 1881–1949. *See* Durham, J. W., 1.

Cushman, R. V.

The ground-water resources of Rensselaer County, New York: N. Y. Water Power and Control Comm. Bull. GW–21, 56 p., illus. incl. geol. map, 1950. Rensselaer County, New York, is chiefly underlain by folded Lower Cambrian to Middle Ordovician sediments, mantled by unconsolidated glacial or alluvial deposits. The main aquifers are the stratified drift and related sands and gravels. V. S.

Custers, J. F. H.

On the nature of the opal-like outer layer of coated diamonds: Am. Mineralogist, v. 35, nos. 1–2, p. 51–58, illus., Jan.–Feb. 1950. Microscopic study shows the coating to be pure diamond, with minute foreign particles embedded in string formations. The latter suggest a growth in waves of angles of 60° and 80°, with the first predominant. V. S.

Daggett, E. B. *See* Fahey, J. J., 1.

Dake, Henry Carl. *See also* Hodson, G. K.

1. Northwest gem trails; a field guide for the gem hunter, the mineral collector, and the tourist. 1st ed., 80 p., illus. Portland, Oregon, The Mineralogist Pub. Co. 1950. Mineral collecting in Oregon, Washington, Idaho, Montana, and Wyoming is described.
2. Uranium in agate, new Oregon locality: Mineralogist, v. 18, no. 1, p. 50, 52, 54, Jan. 1950. The hollow interiors of "thunder eggs," found near Plush, Oregon, are coated with flourescent uraniferous opal, apparently deposited later than the non-fluorescent agate filling. V. S.
3. The jadeite locality: Mineralogist, v. 18, no. 4, p. 188, 190, Apr. 1950. The jadeite locality near the Gem mine, San Benito County, California, is also the site of discoveries of the rare minerals benitoite and neptunite. V. S.
4. Uranium found in Montana agate: Mineralogist, v. 18, nos. 7–8, p. 358, 360, July–Aug. 1950. The presence of uranium in extremely small amounts in moss agate from the Yellowstone River basin region is reported.

Daly, John Warlaumont.

Benefits derived from cooperative well velocity surveys: World Oil, v. 131, no. 6, p. 81, 84, 91, illus., Nov. 1950. Velocity surveys are discussed as a useful method by which seismograph information can be correlated with lithologic variations. An example from the Midland basin, Texas, is given. V. S.

Daly, Reginald Aldworth.

1. Geology: Sci. Am., v. 183, no. 3, p. 36–39, illus., Sept. 1950. A survey, for the layman, of the advances in geological thinking and knowledge that have taken place in the past fifty years. Among the points discussed are the measurement of the age of rocks by radioactivity, temperature variations in the earth's crust and their cause, the problem of continental drift and its relation to crustal layering, the origin of lavas, the exploration of ocean depths, sea level changes, and climatic variations.
2. A geological map of British Columbia: Am. Jour. Sci., v. 248, no. 10, p. 741–743, Oct. 1950. Discusses the geologic map of British Columbia, recently issued by the Geological Survey of Canada, with reference to Archean rocks as the dry-land source of local Proterozoic and younger clastic sediments. V. S.

Damon, Paul E.

Radioactivity and mineralization in rhyolite porphyry: Geophysics, v. 15, no. 1, p. 94–101, illus., Jan. 1950. Gamma-ray well logs should give accurate indications of the location of mineral deposits in potassium-rich rocks according to measurements of the hard gamma radiation from the pre-Cambrian rhyolite porphyry of a Bourbon, Missouri, well core. Low activities have been found generally associated with high mineral density, which in turn is a function of magnetite content. V. S.

Daniels, Farrington.

(and Saunders, Donald F.). The thermoluminescence of rocks [abs.]: Science, v. 111, no. 2887, p. 462, Apr. 28, 1950.

Danner, Wilbert R.

Permian of northwestern Washington [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1521–1522, Dec. 1950.

Dapples, Edward Charles. *See also* Sloss, L. L., 4.

(and Krumbein, William Christian, and Sloss, Laurence Louis). The organization of sedimentary rocks: Jour. Sed. Petrology, v. 20, no. 1, p. 3–20, Apr. 1950. The constituents of sediments are examined, and a classification is proposed, designed for rapid determination of sedimentary rocks with the use of the binocular microscope. Specific conglomerate, sandstone, shale, and limestone varieties are listed and arranged in groups to indicate their associations. V. S.

Darrah, William Culp.

1. Notes on *Lepidodendropsis:* Paleobot. Notices 1, 16 p. (‡), illus., Mar. 24, 1949. Privately published, 122 Lincoln Road, Medford 55, Mass. The status of the genus *Lepidodendropsis* is discussed, taking into consideration earlier descriptions of species of *Stigmaria* and *Lepidodendron.*
2. Paleozoic lepidodendroid embryos: Paleobot. Notices 2, 40 p. (‡), illus., July 5, 1949. Privately published, 122 Lincoln Road, Medford 55, Mass. Paleozoic coal ball material yielded many specimens of *Lepidodendron glabrum*, several of which showed gametophytes and embryos in various states of preservation. The material is described and discussed, and conclusions are presented.

Davidson, D. F. *See* McKelvey, V. E., 3.

Davidson, Norman, 1918–1949. *See* Milton, C., 1.

Davidson, R. N.

Hydrothermal alteration effects in the Leadville [Colo.] limestone and their relation to metallization [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1551, Dec. 1950.

Davies, James F.

Geology of the Wanipigow River area, Rice Lake Mining Division, Manitoba: Manitoba Dept. Mines and Nat. Res., Mines Branch, Pub. 49–3, 21 p., geol. map, 1950. The Wanipigow River area, in southeastern Manitoba, is underlain by interbanded pre-Cambrian volcanic and sedimentary rocks of the Rice Lake group, intruded by large masses of basic to acid rocks and mantled by the younger pre-Cambrian San Antonio quartzite. Local petrology, structure, and gold and nickel mineralization are described. V. S.

Davies, William E.

The caves of Maryland: Md. Dept. Geology, Mines and Water Res. Bull. 7, 70 p., illus., 1950. Approximately fifty caves in Maryland are described, some in greater detail than others, and maps of fourteen are included.

Davis, Donald McClure. *See* Hazzard, J. C., 3.

Davis, Donald Wilfred.

(and others). Electron micrographs of reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 6, 17 p. (‡), illus., Apr. 1950. Forty-two plates show excellent electron micrographs of representative clay specimens from various typical localities in the United States and Europe. The magnifications range from 11,500 to 53,900 times. The methods used in preparation of the specimens for photographing are described.

Davis, F. J. *See* Stead, F. W., 1.

Davis, Fenelon F.

Mines and mineral resources of Alameda County, California: Calif. Jour. Mines and Geology, v. 46, no. 2, p. 279–348, illus., Apr. 1950. The mineral resources of Alameda County, on the eastern shore of San Francisco Bay, consist mainly of sand, gravel, salines from sea water, and clay. The geology of the area and of the occurrences of these and other less abundant minerals is described. A tabulated list and map of principal mines and deposits are included. V. S.

Davis, Gordon Leslie.

Radium content of ultramafic igneous rocks; 3. Meteorites: Am. Jour. Sci., v. 248, no. 2, p. 107–111, Feb. 1950. "Measurements of the radium content of some pallasites and iron meteorites have been made by a refinement of the vacuum fusion technique. In general, the radium content of the meteorites investigated is lower than that of terrestrial ultramafic rocks and minerals. Radium contents are also given for one stony meteorite and one amphoterite."

Davis, Leon Virgil.

1. Ground water in the Pond Creek Basin, Caddo County, Oklahoma: Okla. Geol. Survey Mineral Rpt. 22, 23 p. (‡), illus., 1950. Briefly describes the Permian and Quaternary deposits, and gives data on several drilled wells, quality of water, and fluctuations of ground-water level.
2. Test drilling the Rush Springs sandstone [abs.]: Okla. Acad. Sci. Proc., v. 29 (1948), p. 43, Mar. 1950.

Dawson, K. R.

Northwest Dasserat Township, Témiscamingue County, Quebec (report and map): Canada Geol. Survey Paper 50–3, 27 p. (‡), geol. map, 1950. The area of the northwest quarter of Dasserat Township, Témiscamingue County, western Quebec, is underlain by Keewatin volcanics, post-Keewatin intrusives, and Proterozoic sediments and diabase dikes. The rocks are mapped and described, with attention to structures and gold deposits. V. S.

Day, Willard L.

(and Galbraith, George). Notes on the Round Top field, Fisher County, Texas: Abilene Geol. Soc., Geol. Contr., p. 66–67, illus., 1950. Notes on the producing horizons of the Round Top field.

De Alba, Alonso.

Exploración de la zona norte en 1948–1949 y perspectivas de nuevas reservas: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 6, p. 371–380, illus., June 1950. Geological and geophysical exploration for oil and gas in the Tampico Basin, Mexico, during 1948–1949, is reviewed by districts, and the potentialities of each area are appraised briefly. V. S.

Deane, Roy Eric.

Pleistocene geology of the Lake Simcoe district, Ontario: Canada Geol. Survey Mem. 256, 108 p., illus. incl. geol. maps, 1950. The physiography, bedrock geology, and Pleistocene deposits of the Lake Simcoe region, southwestern Ontario, are described. Glacial Lake Algonquin and the associated beaches are discussed, and the geologic history of the area during deglaciation is outlined. A geologic map, and one of physiographic divisions, are included.

DeBuchananne, George D.

Ground water in relation to mining in the southeastern states, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 223–227, 1950. The importance of ground water in connection with mining is discussed, using several examples from operations in the southeastern United States.

Decker, Charles Elijah.

1. Ordovician graptolites from well-core, Calhoun County, Michigan: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1903–1909, illus., Sept. 1950. Graptolites and associated forms from the Utica shale of Ordovician age, in Calhoun County, Michigan, are listed and illustrated. The significance of each form is indicated briefly. V. S.
2. Ordovician graptolites from south-central Yukon: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2223–2224, illus., Nov. 1950. Eight specimens of Ordovician graptolites from shales in the Pelly Mts., south-central Yukon, characteristic of the Athens and Normanskill faunas, are identified and illustrated. V. S.

Decker, Robert W.

A study of the upper Horton sediments in northern Nova Scotia and on Cape Breton Island: Nova Scotia Dept. Mines Ann. Rpt. 1949, p. 129–167, illus., 1950. The stratigraphy, correlation, sedimentology, structures, and economic potentialities of the Horton sediments of Mississippian age are described. V. S.

Deevey, Edward Smith, Jr.

Hyroids from Louisiana and Texas, with remarks on the Pleistocene biogeography of the western Gulf of Mexico: Ecology, v. 31, no. 3, p. 334–367, illus., July 1950.

DeFord, Ronald Kinnison. *See also* Donegan, B.

Geology of Marfa Basin [Texas] [abs.]: Oil and Gas Jour., v. 49, no. 32, p. 102, Dec. 14, 1950.

DeGolyer, Everette Lee.

Memorial, Ezequiel Ordoñez (1867–1950): Am. Assoc. Petrol. Geol. Bull., v. 34, no. 5, p. 985–989, port., May 1950.

Dehlinger, Peter.

Vibrations of transverse waves in southern California earthquakes and corresponding fault movements [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1544, Dec. 1950.

de Laguna, Wallace.

1. Geologic history of Long Island: N. Y. Water Power and Control Comm. Bull. GW–18, p. 25–46, 1949. An interpretation of the geologic events of pre-Cretaceous time, and the Cretaceous, Tertiary, and Quaternary periods, as derived from well-record data, is presented.
2. (and Perlmutter, Nathaniel M.). Tables of geologic correlations of well logs in Long Island: N. Y. Water Power and Control Comm. Bull. GW–18, p. 47–138, 1949. Separate tables are given for each county—Kings, Queens, Nassau, and Suffolk.

De la O. Carreño, Alfonso.

Cartas de anomalias de la gravedad en la República Mexicana: Ing. Hidráulica México, v. 3, no. 4, p. 23–35, illus., Oct.–Dec. 1949; Soc. Geol. Mexicana Bol., t. 14, p. 23–38, illus., 1949. Maps of the tectonics and of total-gravity and Bouguer anomalies of Mexico are given and discussed as to underlying data and the regional and structural geology indicated. V. S.

Delario, A. J.

Minerals in medicine: Rocks and Minerals, v. 25, nos. 11–12, p. 580–594, Nov.–Dec. 1950. Thirty-five elements and their compounds that are of use in the treatment of disease are discussed. A brief historical sketch is given for each, and the principal mineral sources, refined products, and medicinal uses are tabulated.

Delavault, Robert E. *See* Warren, H. V., 1, 2, 3.

Delo, David Marion.

1. Geology faces the mid-century: Tulsa Geol. Soc. Digest, v. 18, p. 77–83, 1950. General comments on the geological profession and on the establishment of the American Geological Institute.
2. The American Geological Institute: Compass, v. 28, no. 1, p. 3–6, illus., Nov. 1950. Briefly presents the background, purpose, and aims of the organization.
3. Program of the American Geological Institute [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1565, Dec. 1950.

De Ment, Jack Andrew.

1. Fluoroanalysis in petroleum exploration, *in* Subsurface geologic methods, p. 320-329, illus., Colo. School of Mines, 1950. Various methods of fluoroanalysis are described.
2. Los rayos ultravioleta en la exploración petrolera—Prospecting for oil with ultraviolet rays: Petróleo Interamericano, v. 8, no. 1, p. 26–27, illus., Jan. 1950. (Spanish and English.) Discusses the fluorescence of oil under ultraviolet light and analyses of soil samples and cores in the field and laboratory as an aid to prospecting and well drilling. V. S.
3. Hints for uranium prospectors: Mineralogist, v. 18, no. 6, p. 283–289, June 1950. Useful information on Geiger counters, sample collecting, assaying, counter response to other elements than uranium, and bead testing for uranium.
4. Uranium in the polar regions: Mineralogist, v. 18, no. 9, p. 410–412, Sept. 1950. General comments on the possibility and the implications of the occurrence of radioactive minerals in polar regions and brief notes on three localities in Greenland.
5. Uranium in fossil bone: Mineralogist, v. 18, no. 11, p. 514–515, illus., Nov. 1950. Describes and gives autoradiographs of fossilized bones from Utah. Specimens of calcareous bone assayed approximately 0.02 percent pitchblende-equivalent radioactivity, but silicified bone was much less radioactive.

Denham, Richard Lane. *See* Colle, J. O.

Denis, Theóphile Constant. *See* Dresser, J. A.

Denison, Robert Howland.

A new arthrodire from the New York State Devonian: Am. Jour. Sci., v. 248, no. 8, p. 565–580, illus., Aug. 1950. "The trunk carapace of a new species of arthrodire, *Phlyctænaspis sherwoodi*, is described. Its occurrence in the Late Devonian continental sediments near Gilboa, New York, is surprising, since it belongs to the primative and typically Early Devonian family, Phlyctænaspidae. The suggestion is made that slowly evolving arthrodire stocks persisted throughout most of the Devonian in a fresh water environment, while the main radiation of the order was taking place in the seas."

Dennen, William Henry.

Variations in chemical composition across igneous contacts [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1454, Dec. 1950.

Denning, Reynolds McConnell.

Demonstration of the double refraction of aragonite for rays traveling in the neighborhood of an optic axis: Am. Mineralogist, v. 35, nos. 7–8, p. 598–601, illus., July–Aug. 1950. "The purpose of this note is to call attention to the fact that the demonstration of 'internal conical refraction' is facilitated by the use of the universal stage and that an unusually accurate axial angle determination can be made for both the primary and secondary optic axes."

Dennis, Philip Eldon.

1. (and Akin, Philmore Donald, and Jones, Suzanne L.). Ground water in the Wyndmere area, Richland County, North Dakota: N. Dak. Geol. Survey Ground-water Studies no. 13, 59 p., illus. incl. geol. sketch map, Dec. 1949. The water-bearing units in the Wyndmere area in southeastern North Dakota are the Dakota (?) sandstone of Upper Cretaceous age, and also the sands of the Sheyenne delta and the glacioaqueous deposits associated with till, both of Pleistocene age.
2. (and Akin, Philmore Donald, and Jones, Suzanne L.). Ground water in the Kindred area, Cass and Richland Counties, North Dakota: N. Dak. Geol. Survey Ground-water Studies no. 14, 75 p., illus. incl. geol. map, 1950. In the Kindred area in southeastern North Dakota, ground water occurs in the Pleistocene delta deposits, lacustrine deposits, and tills, and to a lesser extent in Cretaceous (?) shale. The two most important aquifers are in sands of the Lake Agassiz deposits.
3. (and Akin, Philmore Donald). Ground water in the Portland area, Traill County, North Dakota: N. Dak. Geol. Survey Ground-water Studies no. 15, 50 p. (‡), illus., 1950. The Portland area in eastern North Dakota lies in the Red River Valley and is drained by the Goose River and its branches. The water-bearing characteristics of the alluvium, glacial deposits, and Dakota sandstone are described. Chemical data on the ground water are included.

Denny, Charles Storrow. *See also* Raup, H. M.

Pleistocene studies of the U. S. Geological Survey and their relation to soils [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1565–1566, Dec. 1950.

Denson, Mayette Elner, Jr.

Longitudinal waves through the earth's core [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1545, Dec. 1950.

Denson, Norman Maclaren.

The lignite deposits of the Cheyenne River and Standing Rock Indian Reservations, Corson, Dewey, and Ziebach Counties, South Dakota, and Sioux County, North Dakota: U. S. Geol. Survey Circ. 78, 22 p. (‡), illus. incl. geol. map, July 1950. A brief survey of the stratigraphy of the area, with more detailed information on the lignite occurrences and mines. The work represents a part of the Missouri River Basin development program.

Derruau, Max.

Le Parícutin: Revue Géographie Alpine, t. 39, fasc. 2, 325–330, 1951. A general account of the beginning of Parícutin volcano in Mexico in 1943, the building of the cone, erosion, and other features of interest.

Derry, Duncan Ramsay.

1. Lithium-bearing pegmatites in northern Quebec: Econ. Geology, v. 45, no. 2, p. 95–104, illus. incl. geol. map, Mar.–Apr. 1950; abs., Geol. Soc. Am. Bull., v. 59, no. 12, pt. 2, p. 1317–1318, Dec. 1948. An unusual uniformity of texture and spodumene content is reported in the lithium-bearing pegmatite dikes located along the margins of a pre-Cambrian granitic stock in LaCorne Township, north of Val D'Or, Quebec. The spodumene content of one series averages 25 percent. V. S.
2. A tectonic map of Canada: Geol. Assoc. Canada Proc., v. 3, p. 39–53, illus., Dec. 1950. The compilation of the tectonic map of Canada, published in November 1950, is described briefly. Notes on the various tectonic regions are also given.

Desjardins, Louis Hosea.

1. Photogeology in the Texas Gulf Coast: Mines Mag., v. 40, no. 10, p. 97–101, illus., Oct. 1950. Photogeologic interpretations of four selected areas in four different coastal belts of Texas are presented. The belts are Pleistocene, Pliocene, Eocene (Yegua formation), and Eocene (Cook Mountain formation).

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Desjardins, Louis Hosea—Continued

2. Structural contouring for the photogeologist, *in* Symposium of information relative to uses of aerial photographs by geologists: Photogrammetric Engineering, v. 16, no. 5, p. 784–796, illus., Dec. 1950. Several methods for structural contouring by photogeology are presented, particularly where no elevation control is available.
3. Techniques in photogeology: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2284–2317, illus., Dec. 1950. Techniques of advanced photogeologic work are discussed with respect to apparatus, photo mounting, topographic contouring, geologic annotations, photogrammetric aids, dip measurement, preparation of stratigraphic columns and sections, and delineation of structures. A bibliography is given. V. S.

De Terra, Hellmut.

Radiocarbon age measurements and fossil man in Mexico: Ciencia, v. 10, nos. 7–8, p. 209–210, Oct. 15, 1950. Comments on the radiocarbon age determinations of plants from prehistoric sites in the Basin of Mexico, and relates them to the age determinations for human occupation.

DeVries, R. C. *See* Osborn, E. F., 2.

deWit, R.

(and McLaren, Digby Johns). Devonian sections in the Rocky Mountains between Crowsnest Pass and Jasper, Alberta: Canada Geol. Survey Paper 50–23, 66 p. (‡), illus., 1950. The stratigraphy and faunal sequence of the Devonian formations between Crowsnest Pass and Jasper, Alberta, are described. Measured columnar sections of nine localities and tables of fossil occurrences by formation are given. V. S.

de Witt, Wallace, Jr. *See* Pepper, J. F.

Díaz Lozano, Enrique. *See also* Salas, G. P.

José G. Aguilera (1857–1941); Asoc. Mex. Geól. Petrol. Bol., v. 1, no. 2, p. 181–185, port., Dec. 1949.

Dibblee, Thomas Wilson, Jr.

Geology of southwestern Santa Barbara County, California; Point Arguello, Lompoc, Point Conception, Los Olivos, and Gaviota quadrangles: Calif. Dept. Nat. Res., Div. Mines Bull. 150, 95 p., illus. incl. geol. maps, June 1950. A detailed study of the stratigraphy, structure, and geologic history of the area, accompanied by geologic maps, a tectonic map, and structure sections. The strata range from Jurassic to Pleistocene. The report also gives data on the economic minerals, including oil and gas, diatomite, and limestone. The Capitan, Lompoc, and Zaca oil fields are briefly described.

Dickey, Parke Atherton. *See* Russell, O. D.

Dietz, Robert Sinclair. *See* Emery, K. O., 1; LaFond, E. C.

Digman, Ralph E. *See also* Mikami, H. M.

An exposure of the Triassic eastern border fault in Connecticut: Am. Jour. Sci., v. 248, no. 1, p. 37–45, illus., Jan. 1950; reprinted as Conn. State Geol. and Nat. History Survey, Misc. Ser. no. 2, 1950. An extensive exposure, north of Lake Quonnipaug, shows a three-foot band of fault gouge separating Triassic trap rock on the west from pre-Triassic Bolton schist on the east, both highly brecciated. Evidence confirms the high-angle, normal character of the fault. V. S.

Dilling, E. Don. *See* Kauffman, A. J., Jr., 1.

Dings, McClelland Griffith.

Arizona zinc and lead deposits; Wallapai mining district, Mohave County, Arizona: Ariz. Bur. Mines Bull. 156, Geol. Ser. 18, p. 138–142, geol. map, Apr. 1950. The rocks, structure, and ore mineralization of the area are described briefly.

Dirmeyer, Richard D., Jr.

Geology and irrigation engineering, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 123–153, illus., Jan. 1950. In discussing the relationship of geology to irrigation-engineering design, some of the points touched upon are the functions of an engineering geologist, the geologic information necessary in connection with dam, reservoir, tunnel and canal sites, exploration, methods, materials testing, and engineering geology reports. Discussion is by R. F. Rhoades.

Dobbin, Carroll Edward.

1. The petroleum geology of Colorado, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 1–37, illus., Jan. 1950. "Maps, charts, tables, and a relatively short text summarize the geologic history of Colorado, the history of oil and gas development, the age of the oil and gas zones, the types of oil and gas structures, the occurrences of rich helium and carbon dioxide gases and oil shale, and the oil possibilities." Discussion by H. W. Oborne, W. O. Thompson, M. M. Travis, A. E. Brainerd, and M. W. Ball is included.
2. Edwin Harold Hunt (1897–1949): Am. Assoc. Petrol. Geol. Bull., v. 34, no. 2, p. 341–343, port., Feb. 1950.

Dobrin, Milton Burnett.

Dispersion in seismic surface waves [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 120, 123, Apr. 27, 1950.

Dobyns, D. Ray.

Geophysical exploration in the San Juan Basin, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 132, 1950. Brief notes on the use of various types of geophysical survey methods in the San Juan Basin.

Dodge, Burnham H.

Debris control, *in* Applied sedimentation, p. 336–346, illus., 1950. The factors that enter into the problem of debris are discussed and the methods of control in general use are described. The latter consist of watershed treatment, drop structures, check dams and barriers, and debris basins.

Dodge, Henry.

Suggested substitutes for the terms "lunule" and "escutcheon" in Pelecypoda: Jour. Paleontology, v. 24, no. 4, p. 500–501, July 1950. Proposes use of "sigilla" for "lunule" and "vallis" for "escutcheon." V. S.

Doll, H. G.

(and Martin, Maurice). Recent developments in electrical logging and auxiliary methods: Colo. School of Mines Quart., v. 45, no. 4A, p. 49–78, illus., Oct. 1950. The theory and development of electrical resistivity and spontaneous potential methods of well logging are outlined with special attention to recent advances in instruments, techniques, and interpretation. Consideration is given to problems of rock porosity, saturation, layer boundaries, true resistivity, and other factors. V. S.

Donegan, Ben.

(and DeFord, Ronald Kinnison). Ochoa is Permian: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2356–2359, Dec. 1950. Reviews the paleontologic evidence from various outcrops in New Mexico and Texas bearing on the age of the Ochoa series. Diagnostic fossils from the Rustler formation, collected near Rustler Spring, Texas, indicate a Permian age.

Donnay, Gabrielle Hamburger.

(and Buerger, Martin Julian). The determination of the crystal structure of tourmaline: Acta Crystallographica, v. 3, pt. 5, p. 379–388, illus., Sept. 1950. The method of determining the structure is described, and new values of the atomic coördinates, refined after computation of the structure factors for all observed *hk.l* reflections, are given.

Donnay, Joseph Désiré Hubert. *See also* O'Brien, W. A.

(and Hamburger, Gabrielle Eva). One-dimensional representation of triperiodic functions [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 123–124, Jan.–Feb. 1950.

Donnerstag, Philip.

(and McAuslan, Edward R., and Galpin, Sidney Stewart). Sample study and correlation of C. C. Lobdell no. 1 well: N. Y. State Mus. Circ. 28, 15 p., 1950. Lithologic analysis of well cuttings forms the basis for formation designation and thickness determinations. The C. C. Lobdell no. 1 well is located in the New Berlin quadrangle, Chenango County, N. Y., and was drilled to a total depth of 5,701 feet. Cambrian, Ordovician, Silurian, and Devonian rocks were encountered.

Donovan, J. H.

Intertonguing of Green River and Wasatch formations in part of Sublette and Lincoln Counties, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 59–67, illus. incl. geol. map, 1950. Field investigations in the Bridger Basin of southwestern Wyoming indicate that the Green River formation is a lens of lacustrine sediments enclosed by the fluvial debris of the Wasatch and Bridger formations. The lithology, distribution, and depositional history of the strata are discussed.

Dott, Robert Henry.

1. Memorial, Charles Newton Gould, honorary member (1868–1949): Tulsa Geol. Soc. Digest, v. 18, p. 84–88, 1950.
2. Morris Morgan Leighton, honorary member: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 5, p. 975–977, port., May 1950.
3. Geology and industrial minerals of Oklahoma: Hopper, v. 10, no. 10, p. 91–100 (‡), Oct. 1950. Lists the physiographic provinces, major subsurface structures, distribution of sedimentary strata, and distribution of industrial minerals in the state.
4. Geologic map of Oklahoma [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 619, Mar. 1950.

Dougherty, Ellsworth Young.

Ribbon structure in gold-quartz veins: Econ. Geology, v. 45, no. 2, p. 177–179, Mar.–Apr. 1950. Discussion of the article by H. E. McKinstry and E. L. Ohle, Jr., Econ. Geology, v. 44, no. 2, p. 87–109, Mar. 1949.

Douglas, Robert John Wilson.

1. Callum Creek, Langford Creek, and Gap map-areas, Alberta: Canada Geol. Survey Mem. 255, 124 p., illus. incl. geol. maps. 1950. A detailed stratigraphic and structural report of an area of Paleozoic and Mesozoic strata in the Foothills belt of the Canadian Rocky Mts. The area is one of complex structure in the Disturbed belt and the Alberta syncline, and the study has been made to facilitate structural interpretation in connection with petroleum exploration.
2. Preliminary map, Mount Head, Alberta (map and structure sections): Canada Geol. Survey Paper 50–8, geol. map, 1950. The area of Mount Head, southwestern Alberta, is underlain by folded and thrust-faulted Mesozoic and Paleozoic sediments. The latter outcrop in the High Rock Range and Highwood Range. Mesozoic rocks lie between these ranges and east of the Highwood Range. V. S.

Dowd, James Joseph.

1. (and others). Estimate of known recoverable reserves of coking coal in Cambria County, Pa.: U. S. Bur. Mines Rpt. Inv. 4734, 25 p. (‡), illus., Oct. 1950. This report is the first in a series of county reports on reserves of coking coal, undertaken as a part of the investigation of national resources. The reserve statistics are given in detail. Distribution of the reserves is shown on outline county maps.
2. (and others). Estimate of known recoverable reserves of coking coal in Indiana County, Pa.: U. S. Bur. Mines Rpt. Inv. 4757, 22 p. (‡), illus., Dec. 1950. One of a series of county reports on coking coal reserves undertaken as part of the investigation of national resources. Statistics are given in detail, and distribution of the reserves is indicated on maps.

Dowling, Jorn D.

Geologic problems of a portion of the Missouri River Basin project [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1551, Dec. 1950.

Downs, Harold Robert. *See also* Miller, A. K., 2, 3, 5; Youngquist, W. L., 1.

(and Youngquist, Walter Lewellyn). Conodonts from the Cedar Valley limestone of Iowa: Jour. Paleontology, v. 24, no. 6, p. 667–672, illus., Nov. 1950. "A sparse conodont assemblage has been collected from thin shale partings in the lower portion of the Rapid member of the Cedar Valley limestone in southeastern Iowa. Four genera, *Hindeodella, Icriodus, Ozarkodina*, and *Polygnathus* are represented, and the better specimens of these are described and illustrated. The general aspect of the assemblage is compatible with a Middle Devonian assignment of these beds."

Dowse, Alice M.

New evidence on the Cambrian contact at Hoppin Hill, North Attleboro, Massachusetts: Am. Jour. Sci., v. 248, no. 2, p. 95–99, illus., Feb. 1950. Describes an exposure of the sedimentary contact between the lower Cambrian basal quartzite and Dedham granodiorite, confirming the pre-Cambrian age of the Dedham-Salem group. V. S.

Dozy, J. J.

Some notes on the volcanoes of Guatemala: Bull. Volcanologique (Assoc. Volcanologie Union Géodésique Géophysique Internationale), sér. 2, v. 8, p. 47–67, illus., 1949. Describes several recent volcanoes in Guatemala, among them Atitlán, Tolimán, Acatenango-Fuego, Agua, and Pacaya, lakes of volcanic origin, Tertiary and Quaternary volcanic deposits, and the structure of the pre-volcanic basement. Numerous aerial photographs are included.

Dragsdorf, R. D. *See* Parkert, C. W.

Draisin, Wilburt M. *See* Larsen, E. S., Jr., 1.

Dresser, John Alexander.

(and Denis, Théophile Constant). Geology of Quebec, Volume III, Economic geology: Quebec Dept. Mines, Geol. Rpt. 20, x, 562 p., illus. incl. geol. maps, 1949. The volume is divided into 3 sections: gold deposits grouped by regional occurrence, other metal deposits, and industrial nonmetallic deposits. The descriptions include information on general geology, structure, mineralization, ores, mining operations, and production. Numerous geological sketch maps and vertical sections are included.

Dreyer, Robert Marx. *See also* Garrels, R. M.

(and Horr, W. H.). Plant remains from the Arkansas bauxite [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1454, Dec. 1950.

Dudley, Paul Harwood. *See also* Hazzard, J. C., 3.

Oil prospects of northeastern Nevada and northwestern Utah [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2380, Dec. 1950.

Duffner, Ralph T., 1919–1950. *See* Read, C. B., 2, 3.

Dugas, J.

Perth map-area, Lanark and Leeds Counties, Ontario (report and map): Canada Geol. Survey Paper 50–29, 19 p. (‡), geol. map, 1950. The Perth area is located south of Ottawa, on the boundary of the Canadian Shield and the Ottawa-St. Lawrence Lowland. The pre-Cambrian rocks are metamorphics of the Grenville series and post-Grenville intrusives. Ordovician sandstones and dolomitic limestones are found in the eastern part of the area. The structure and economic geology of the area are noted.

Dunaven, Ruth Reece. *See* Thom, E. M.

Dunbar, Carl Owen.

The species concept; further discussion: Evolution, v. 4, no. 2, p. 175–176, June 1950. Comments on the discussion of the species concept by B. H. Burma and Ernst Mayr in Evolution, v. 3, p. 369–373, Dec. 1949.

Duncan, Donald Cave. *See also* Lochman, C. 3.

(and Belser, Carl). Geology and oil-shale resources of the eastern part of the Piceance Creek Basin, Rio Blanco and Garfield Counties, Colorado: U. S. Geol. Survey Oil and Gas Inv. Map OM 119. 1950. An index map, cross section, structural map, and columnar sections are shown, together with a text giving the stratigraphy of the Green River formation in this area and the characteristics of the oil-bearing rocks.

Dunham, Kingsley Charles.

1. (editor). Symposium on the geology, paragenesis, and reserves of the ores of lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, 400 p., illus., 1950. The symposium contains 33 papers; 11 concern Canada, United States, and Mexico. These are cited individually under C. O. Swanson; T. L. Tanton and J. M. Harrison; C. H. Behre, Jr., A. V. Heyl, Jr., and E. T. McKnight; A. L. Brokaw; A. W. Pinger; P. J. Shenon; R. N. Hunt and H. G. Peacock; S. G. Lasky and A. D. Hoagland; E. B. Young; J. González Reyna; G. M. Fowler, R. M. Hernon, and E. A. Stone. A valuable summary of the geology, production, and reserves of world lead and zinc mines has been compiled by the editor.
2. Petrography of the nickeliferous norite of St. Stephen, New Brunswick: Am. Mineralogist, v. 35, nos. 9–10, p. 711–727, illus., Sept.–Oct. 1950. "The St. Stephen complex comprises harzburgite, olivine-norites (including banded troctolitic and anorthositic types) and olivine-hypersthene gabbro, of presumed Devonian age. It is intruded into quartz-chlorite-mica phyllites of the Charlotte group, which show little contact metamorphism." The petrology is discussed on the basis of the petrographic descriptions. Chemical analyses, norms, and modes are given.

Dunkle, David Hosbrook. *See* Schaeffer, B.

Dunn, Paul Heaney.

(and Hayes, William E.). Arenaceous Foraminifera found weathered free from the Silurian of Missouri [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1454–1455, Dec. 1950.

Durham, John Wyatt.

1. The 1940 E. W. Scripps cruise to the Gulf of California, Part 2, Megascopic paleontology and marine stratigraphy: Geol. Soc. Am. Mem. 43, vii, 216 p., illus., Aug. 10, 1950. The major part of the report consists of systematic descriptions of the species of Mollusca, echinoids, corals, and barnacles collected from islands in the Gulf of California and Lower California. Of the 273 species described, 43 are new. Pelecypods and gastropods predominate. The Gulf of California faunal province is discussed; notes on the age and correlation of the strata are included; and a bibliography is listed. A note by J. A. Cushman on an occurrence of *Ramulina* is given.
2. Cenozoic marine climates of the Pacific Coast: Geol. Soc. Am. Bull., v. 61, no. 11, p. 1243–1263, illus., Nov. 1950; abs., no. 12, pt. 2, p. 1537, Dec. 1950. "The data available from the regions surrounding the Pacific Ocean during the early Tertiary indicate that the poles and continients could not have been in the positions postulated by Wegener, DuToit, or Grabau, but were in approximately the same position as at present. During the Paleocene, the 20° C. marine isotherm was north of 49° N. lat., by middle Oligocene time it had started to shift south . . ., by middle Pliocene it had approached its present position. During the Pleistocene it oscillated both northwards and southwards."
3. Pacific Basin and continental drift [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1522, Dec. 1950.
4. (and Kirk, Mahlon V.). Age of the *Coralliochama* beds of the Pacific Coast [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1537, Dec. 1950.

Durrell, Cordell.

Strike-slip faulting in the eastern Sierra Nevada near Blairsden, California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1522, Dec. 1950.

Dutro, J. Thomas, Jr. *See* Bowsher, A. L.

Dutton, Carl Evans.

Progress of geologic work in Iron and Dickinson Counties, Michigan: U. S. Geol. Survey Circ. 84, 7 p. (‡), illus. incl. geol. maps, Sept. 1950. In northern Michigan, recent work has considerably advanced knowledge of the stratigraphy and structure of the highly deformed Huronian iron-bearing sedimentary rocks. The strata, structures, and results of aeromagnetic surveys are described briefly, and preliminary maps are included. V. S.

Duvall, Wilbur I. *See* Obert, L.

Dysart, Arthur.

Sketches of canyons, outcrops and mineralogy near Riverside, Washington: Mineralogist, v. 18, no. 1, p. 24–28, illus., Jan. 1950. Describes the Okanogan Valley, particularly Tunk Creek Canyon, and notes thulite, epidote, tourmaline, muscovite, and other crystals. V. S.

Eakin, Thomas E.

1. Preliminary report on ground water in Fish Lake Valley, Nevada and California: Nev. State Engineer's Office, Water Res. Bull. 11, p. 7–33, illus., 1950. Fish Lake valley is situated in Esmeralda County, southern Nevada, on the California border. The geology is briefly reviewed, and ground water conditions are discussed.
2. (and Robinson, Thomas William, Jr.). Ground-water conditions in Whisky Flat, Mineral County, Nevada. 5 p. (‡), Nevada State Engineer's Office, 1950. Brief report of a reconnaissance study.

Eardley, Armand John.

1. (editor). Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, 152 p., illus., 1950. Contains brief articles on the stratigraphy, structure, gilsonite deposits, and oil and gas fields of the Uinta Basin, Colorado-Utah, contributed by O. E. Childs, M. D. Crittenden, H. J. Bissell, W. L. Stokes, M. D. Williams, A. N. Murray, G. E. and B. R. Untermann, H. L. Patton, V. E. Peterson, K. L. Gow, and J. R. Miller. The field trip of the Intermountain Association of Petroleum Geologists was held on June 15–17, 1950. Road logs are included.
2. Snake River region of western Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 88–92, illus., 1950; abs., Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1455, Dec. 1950. Briefly presents the orogenic history of the Snake River region, south of Jackson on the Wyoming-Idaho boundary. Thrust faulting of Laramide age and high-angle faulting of both Laramide and late Tertiary age are described. A tectonic map of the area is included.
3. Structure and geomorphology of southwestern Montana [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1552, Dec. 1950.

Eargle, Dolan Hoye.

Geologic map of the Selma group in eastern Alabama: U. S. Geol. Survey Oil and Gas Inv. Prelim. Map no. 105. 1950. A geologic map on a scale of 1 inch to 4 miles, and three columnar sections are accompanied by a text describing the stratigraphy of the Selma group (Upper Cretaceous) in the area.

Earley, James W.

Description and synthesis of the selenide minerals: Am. Mineralogist, v. 35, nos. 5–6, p. 337–364, illus., May–June 1950. Presents the results of an investigation, by microscopic and X-ray methods, of natural and artificial selenides. Revised descriptions are given for naumannite, aguilarite, ecuairite, crookesite, berzelianite, umangite, clausthalite, tiemannite, klockmannite, penroseite, guanajuatite, and paraguanajuatite. The classification of the selenides as given in Dana (1944) is modified.

Easton, William Heyden.

1. Eastern mountain and desert region [Calif.], *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2385, Dec. 1950.
2. History of the Pacific Coast Branch of the Paleontological Society [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1537–1538, Dec. 1950.

Eaton, Jerry. *See* Byerly, P., 3.

Ebbutt, Frank.

Genetics of mineral deposits: Precambrian, v. 23, no. 6, p. 15, June 1950. A summary of an address, the main point of which is that recent mapping has emphasized the importance of structure and of the physical properties of rocks in the solution of problems of ore deposition and ore genesis.

Eckhardt, Engelhardt August.

Geophysical activity in 1949: Geophysics, v. 15, no. 3, p. 400–408, illus., July 1950; modified version, Oil and Gas Jour., v. 48, no. 51, p. 104–105, 124, 127, illus., Apr. 27, 1950. A statistical account of geophysical operations the world over during 1949, both in the oil industry and the mining industry. The part reprinted in the Oil and Gas Journal concerns only the oil industry.

Edinger, Tilly.

1. Die Paläoneurologie am Beginn einer neuen Phase: Experientia, v. 6, fasc. 7, p. 250–258, illus., July 15, 1950. Endocranial casts of the stages in the evolutionary history of the horse have made it possible to trace the evolution of the brain through a period of 55 million years. It appears that the main trend has been greater expansion of the cerebrum, neopallium, and corresponding portions of the cerebellum than of the other brain portions. The results obtained indicate that further investigations of phyletic brain histories will contribute to the systematic assemblage of data on paleoneurology.
2. Frontal sinus evolution (particularly in the Equidae): Harvard Coll. Mus. Comp. Zoology Bull., v. 103, no. 8, p. 412–496, illus., Aug. 1950. Study of fossil Equidae shows that the frontal sinus proper did not exist in early ancestors of the horse. It first appeared in the genus *Merychippus* in Middle Miocene time, probably as a result of cerebral expansion.

Edmundson, Raymond Smith.

The Valley and Ridge province, *in* The James River Basin, past, present and future, p. 514–552, geol. map, Va. Acad. Sci., 1950. Describes the stratigraphy of the Valley and Ridge province in western Virginia. The rocks range from Cambrian through early Mississippian in age. A section on the mineral resources of the area, and brief notes on physiography and structure are included.

Edson, Fanny Carter. *See* Clair, J. R.

Edwards, Harold S.

South Haskell field, Haskell County, Texas: Abilene Geol. Soc., Geol. Contr., p. 20–23, illus., 1950. The history of the South Haskell field, stratigraphy, structure, and production are briefly described.

Ehlers, George Marion.

1. Revised classification of the Middle Devonian Detroit River group [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1455–1456, Dec. 1950.
2. (and Stumm, Erwin Charles). Occurrence of the Middle Devonian Columbus limestone near Ingersoll, Ontario [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1566, Dec. 1950.

Einstein, Hans Albert.

(and Johnson, Joe William). The laws of sediment transportation, *in* Applied sedimentation, p. 62–71, illus., 1950. The types of load transported by flowing water, wash load and bed-material load, are described, and the development and application of bed-load equations are discussed. Comments on roughness conditions and tractive force are included.

Eisenberg, Jerome M.

Teaching the earth sciences in the secondary schools: Earth Sci. Digest, v. 4, no. 10, p. 3–18, illus., May 1950; Pt. 2, v. 4, no. 11, p. 11–23, June 1950; Pt. 3, v. 4, no. 12, p. 17–21, July 1950. Report of the papers and discussion at the conference on teaching of earth sciences sponsored by the Earth Science Institute and held at Boston University, March 17–18, 1950.

Eitel, Wilhelm. *See* Comeforo, J. E.; Hatch, R. A.

Elias, Maxim Konrad.

1. Types of occurrence and position of Bryozoa in late Paleozoic sediments of the Midcontinent: Natl. Research Council, Report of the Committee on a treatise on marine ecology and paleoecology, 1948–1949, no. 9, p. 117–120, Dec. 1949. Bryozoa commonly occur in the brachiopod and mixed phases of late Paleozoic marine cycles; are absent in the shallowest, molluscan phases; and are rare in the deepest, fusulinid phase. They are found either scattered, or as nests, layers, or reef aggregations. V. S.
2. The state of paleontology, *in* Symposium on fundamentals in paleontology: Jour. Paleontology, v. 24, no. 2, p. 140–153, illus., Mar. 1950. Discusses several problems that confront paleontologists, among which are time ranges of genera in relation to stratigraphic boundaries, stratigraphic interpretation of conflicting index fossils, variation in stratigraphic boundaries with evolution of fusulinid forms, the human variable in techniques, paleontologic versus genetic nomenclature, and taxonomy.
3. Paleozoic *Ptychocladia* and related Foraminifera: Jour. Paleontology, v. 24, no. 3, p. 287–306, illus., May 1950. The wall structure, chamber partitioning, and megalospheric generation indicate that *Ptychocladia* should be classified with the adnate Foraminifera rather than the ctenostomatous Bryozoa. A new family, Ptychocladiidae, is set up and its evolution and ecology are discussed. New species and varieties from the Pennsylvanian of the United States are described. The classification of certain Russian forms is discussed.
4. *Fenestella deissi* (new name) from the Middle Devonian of Michigan, and related forms: Jour. Paleontology, v. 24, no. 3, p. 390–392, May 1950. Because *Fenestella foraminosa* Deiss is preoccupied, it is renamed *F. deissi* Elias. Its relation to other forms is indicated.
5. Paleontologic versus neontologic species and genera: Evolution, v. 4, no. 2, p. 176–177, June 1950. Comments on the discussion of the species concept by B. H. Burma and Ernst Mayr in Evolution, v. 3, p. 369–373, Dec. 1949.
6. How reliable are the current geologic age estimates [abs.]: Nebr. Acad. Sci. Proc., 60th Ann. Mtg., p. 16, May 1950.
7. Faunal migrations and Mississippian-Pennsylvanian problem [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1456, Dec. 1950.

Elizondo, Jesús Ruiz.

Sedimentos del jurásico en México; Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 1, p. 3–54, illus., Jan. 1950. Typical Jurassic sediments of Mexico and their regional distribution are described and shown on lithofacies and isopach maps. Tectonic aspects related to the areas of deposition and sediment sources are discussed, and paleogeographic features outlined.

Ellis, Brooks Fleming.

(and Messina, Angelina Rose). Catalogue of Foraminifera, Supplement for 1950, no. 1: Am. Mus. Nat. History Spec. Pub., 765 p. (‡), loose-leaf, illus., 1950; no. 2, 687 p., illus., 1950; no. 3, 709 p., illus., 1950; no. 4, 711 p., illus., 1950. Continues the description and illustration of Foraminifera. Supplement no. 1 consists entirely of new forms described by Russian authors in the Russian literature, but excludes those previously included in volumes 1–30 of the catalogue.

Ellison, Lee A.

Metalliferous heavy sands on Staten Island: Staten Island Inst. Arts Sci. Proc., v. 12, no. 3, p. 61–65, Apr. 1950. Study of sands by flotation in liquids of high specific gravity and by chemical analysis indicates that the heavy portions consist chiefly of magnetite, ilmenite, and zircon. Possible origin from serpentine and granite pegmatites is suggested. V. S.

Ellison, Samuel Porter, Jr.

1. (and Wynn, W. Turner). Devonian microfossils, Andrews County, Texas: Am. Jour. Sci., v. 248, no. 11, p. 794–799, illus., Nov. 1950. "A fossiliferous interval containing conodonts and questionable trochiliscids (Charophyta) from the lowest Devonian rocks of the Three-Bar field, Andrews County, Texas, is interpreted as a stratigraphic admixture of Devonian age. This is evidence indicating a Devonian age for the pay zone of the Three-Bar field."
2. Subsurface Woodford black shale, west Texas and southeast New Mexico: Texas Univ. Bur. Econ. Geology Rpt. Inv. 7, 20 p., illus., Nov. 1950. Describes the lithology, paleontology, and distribution of the subsurface Woodford shale (Upper Devonian) in Texas and New Mexico, and correlates it with strata in Oklahoma, Kansas, Arkansas, and other parts of Texas and New Mexico. Paleogeographic data and a map are included.

Ellsworth, Hardy Vincent.

Lead-uranium ratios of two Saskatchewan pitchblendes: Natl. Research Council, Div. Geology and Geography, Rpt. of the Committee on the measurement of geologic time, 1949–1950, Exhibit C, p. 37–38 (‡), Nov. 1950. Lead and uranium determinations are given for pitchblende specimens from the vicinity of the Nicholson mine, Saskatchewan.

Ellsworth, Ralph I. *See* Havard, C. G.

Elsasser, Walter M.

1. The earth's interior and geomagnetism: Rev. Modern Physics, v. 22, no. 1, p. 1–35, illus., Jan. 1950. Existing seismic, chemical, mechanical, thermal, and magnetic knowledge on the interior of the earth, excluding the 30–50 kilometer thickness of the crust, is summarized. A bibliography is given. V. S.
2. Causes of motion in the earth's core: Am. Geophys. Union Trans. v. 31, no. 3, p. 454–462, illus., June 1950. "The investigation . . . shows that thermal convection provides the only satisfactory mechanism for the generation of motions. If 5–10 per cent as much radioactivity as that contained in the crust is concentrated in the central region of the earth inside the Lehmann-Gutenberg discontinuity, convection in the fluid core will take place. A study . . . shows that other effects should be negligible as compared to the thermal effects."

Emery, Kenneth Orris.

1. (and Dietz, Robert Sinclair). Submarine phosphorite deposits off California and Mexico: Calif. Jour. Mines and Geology, v. 46, no. 1, p. 7–15, illus., Jan. 1950. Nodules containing phosphorite are described as to their external and internal characteristics, fossil content, distribution, origin, formation, and economic value. V. S.
2. A deep fathogram across the North Atlantic Ocean: Am. Jour. Sci., v. 248, no. 2, p. 100–106, illus. incl. map, Feb. 1950. The physiography, sedimentation, and geologic history of the North Atlantic floor are deduced from echo-soundings. Portions of the record and a map of bottom topography are shown. V. S.
3. A suggested origin of continental slopes and of submarine canyons: Geological Magazine, v. 87, no. 2, p. 102–104, Mar.–Apr. 1950. It is suggested that thrusting along a shear plane at the continental margins may have resulted in a temporary upbulging of the margins above sea level. Erosion during this interval of exposure may have incised canyons which now, after isostatic readjustment, exist as submarine canyons. Downwarped peneplains, known to exist below continental shelves, may have developed during the exposure of the margins.
4. Ironstone concretions and beach ridges of San Diego County, California: Calif. Jour. Mines and Geology, v. 46, no. 2, p. 213–221, illus., Apr. 1950. "Ironstone concretions are very abundant in sands of beach ridges in San Diego County but are absent in the intervening areas. The ridges appear to be transverse sand dunes that accumulated along shorelines of the sea when it retreated from the Linda Vista terrace. The concretions formed after some weathering had occurred but before streams had dissected the ridges."

Emery, Kenneth Orris—Continued

5. Contorted Pleistocene strata at Newport Beach, California: Jour. Sed. Petrology, v. 20, no. 2, p. 111–115, illus., June 1950. "An example of interformational folding in Pleistocene strata of southern California is ascribed to the sinking of a layer of beach sand into an underlying marsh deposit of sandy silt. The sinking is believed to have resulted from a higher bulk density of the sand than of the sandy silt. No lateral sliding was required."
6. (and Stevenson, Robert Everett). Laminated beach sand: Jour. Sed. Petrology, v. 20, no. 4, p. 220–223, illus., Dec. 1950. "The size distribution of sand grains that form laminae in beaches was investigated by a microscopical study of thin sections of naturally and artificially cemented beach sands. Median diameters of sand in the individual laminae range from much coarser to much finer than the median diameter of the entire sand samples, whereas the sorting coefficients in the individual laminae are generally smaller than for the whole sample."
7. Compaction of marine sediments [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1522–1523, Dec. 1950.
8. Offshore southern California, *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2384, Dec. 1950.

Emiliani, Cesare.

Introduction to a method for determining the physical characters of fossil environments: Jour. Paleontology, v. 24, no. 4, p. 485–491, illus., July 1950. "The concepts of *total mean*, *total standard deviation*, and *total variability* of a thanatocoenosis are introduced. A method for determining the nature of a fossil environment by comparing the coefficients of total variability of living and fossil organisms is presented and illustrated by data derived from the smaller Foraminifera. A new unit of measure, the decamicron (Dμ), is introduced."

Emmons, Richard Conrad.

(and others).. Selected petrogenic relationships of plagioclase [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1456, Dec. 1950.

Enbysk, Betty B. *See* McLaughlin, K. P., 1.

Engel, Albert Edward John. *See also* Jahns, R. H., 3.

(and Engel, Celeste). Stratigraphy and metamorphic reconstitution of parts of the Grenville Series in the northwest Adirondacks; a report of progress [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1457, Dec. 1950.

Engel, Celeste. *See* Engel, A. E. J.

Epstein, Samuel. *See* Urey, H. C., 1.

Erdman, Oscar Alvin. *See also* Lockwood, R. P.

Alexo and Saunders map-areas, Alberta: Canada Geol. Survey Mem. 254, 100 p., illus. incl. geol. maps, 1950. The Alexo and Saunders areas, in the Foothills belt of west-central Alberta, are underlain by sedimentary rocks of Devonian to Paleocene age, although no Permian and Triassic formations are present. The fossils collected have been identified and are listed. The area is characterized by widespread folding and faulting which is described in detail. Coal deposits and petroleum possibilities are considered briefly. V. S.

Ergin, Kazim.

1. Amplitudes of PcP, PcS, ScP, and ScS in deep-focus earthquakes [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1545–1546, Dec. 1950.
2. Energy ratios of waves reflected and refracted at a rock-water boundary [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1545, Dec. 1950.

Eric, John Howard. *See* Wiese, J. H., 1.

Erickson, Max Perry. *See* Bateman, P. C.

Esarey, Ralph Emerson.

1. (and Bieberman, Doris Franz). Guide book, third annual Indiana geologic field conference, May 13, 14, and 15, 1949, on Silurian formations and reef structures of northern Indiana. 19 p., illus. incl. geol. sketch map. Bloomington, Indiana. Indiana Dept. Conserv., Div. Geology. May 1949. Contains the road log, columnar sections of Silurian rocks, and brief descriptions and faunal lists for the Silurian formations in northern Indiana.
2. (and Bieberman, Doris Franz, and Bieberman, R. A.). Guide book, fourth annual Indiana geologic field conference, May 12, 13, and 14, 1950, on Stratigraphy along the Mississippian-Pennsylvanian unconformity of western Indiana. 23 p. (‡), illus. incl. geol. sketch map. Bloomington, Indiana. Indiana Dept. Conserv., Div. Geology. May 1950. Contains the road log, a stratigraphic column of Mississippian formations in Putnam County, and brief descriptions of the formations.

Espenshade, Gilbert Howry.

Occurrences of tungsten minerals in the southeastern states, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 56–66, illus. incl. geol. map, 1950. The geology and mineralization in the Hamme tungsten district in Vance County, North Carolina, and Mecklenburg County, Virginia, are described in some detail accompanied by a geologic sketch map. Other tungsten occurrences in Virginia, North Carolina, South Carolina, Georgia, and Alabama are described briefly.

Espinosa, Roberto Oñate.

Estudios geofisicos en la cuenca de Veracruz: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 4, p. 291–297, illus., Apr. 1950. The work and results of gravitational and seismic exploration for oil in the Veracruz basin, Mexico, are discussed in the light of local geology. Gravimetric and seismological maps are given. V. S.

Esteve Torres, Adrian. *See* Toron Villegas, L., 1.

Etherington, Thomas John.

Washington, *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2381–2382, Dec. 1950.

Evans, Charles Sparling.

Underground hunting in the Silurian of southwestern Ontario: Geol. Assoc. Canada Proc., v. 3, p. 55–85, illus. incl. geol. map, Dec. 1950; abs., Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2251, Nov. 1950. Detailed descriptions of the Salina series and Guelph-Lockport series, both dolomites of Silurian age, are given, together with structure contour and isopach maps. The possibilities of oil and gas occurrence are discussed, and the relations to reef structures are investigated.

Evans, Glen Louis.

Late Quaternary faunal succession in the southern High Plains [Texas] [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1457–1458, Dec. 1950.

Evans, Howard T., Jr.

1. (and Frondel, Clifford). Studies of uranium minerals (II); liebigite and uranothallite: Am. Mineralogist, v. 35, nos. 3–4, p. 251–254, Mar.–Apr. 1950. Optical and X-ray crystallographic data are given for liebigite, and it is shown to be identical with uranothallite. Liebigite as a name has priority, and uranothallite is discredited. The formula of liebigite is $Ca_2U(CO_3)_4.10H_2O$.
2. Studies of uranium minerals, (VI); Walpurgite: Am. Mineralogist, v. 35, nos. 11–12, p. 1021–1027, illus., Nov.–Dec. 1950. Presents data on the crystal morphology and unit cell of walpurgite, hydrated bismuth uranium arsenate, using the Buerger precession method. On the basis of the volume of the unit cell, available data on composition and density are questioned. The most reliable formula appears to be that proposed by E. Fischer, $2Bi_2O_3.UO_3.As_2O_5.3H_2O$.

Evans, John H.

Geophysical exploration for mineral deposits, Parts 1–2: Western Miner, v. 23, no. 8, p. 47–51, illus., Aug. 1950; no. 9, p. 56–58, 60, illus., Sept. 1950. The fundamentals of geophysical exploration for mineral deposits are indicated briefly, and uses of the electrical resistivity, spontaneous polarization, magnetic, and gravitational methods are illustrated by specific, separate or combined, applications to the search of various ores. V. S.

Evans, LaMar G. *See* Gibbs, H. L.

Evans, Oren Frank.

1. On the action of waves breaking against the edge of a submerged shelf: Jour. Geology, v. 58, no. 3, p. 281–282, May 1950. Observations on a submerged shelf in Crystal Lake, Michigan, show that over a 60-year period no ridge has been formed at the outer edge of the shelf by waves moving sediment shoreward. V. S.
2. Internal structure of shoestring sands: World Oil, v. 131, no. 1, p. 66–68, 70, illus., July 1, 1950. The processes and structures constituting the development of the less known types of shoestring sands—beach ridges, hook formations, ball types, channel sands, and river beds—are described with attention to known examples and to oil exploration clues. V. S.
3. The structure of the Verden sandstone [abs.]: Okla. Acad. Sci. Proc., v. 29 (1948), p. 42–43, Mar. 1950.
4. Transportation of sediments on the continental shelf [abs.]: Okla. Acad. Sci. Proc., v. 29 (1948), p. 59–60, Mar. 1950.

Everhart, Donald L.

1. Skaggs Springs quicksilver mine, Sonoma County, California: Calif. Jour. Mines and Geology, v. 46, no. 3, p. 385–394, illus. incl. geol. maps, July 1950. The general geology, mineralization, and structure of the Skaggs Springs mercury deposit, Sonoma County, California, are described. The chief ore mineral is metacinnabar, which is finely disseminated through the Cretaceous (?) sandstone. The ore averages 3 pounds of mercury per ton. V. S.
2. Quicksilver deposits of the Cachuma district, Santa Barbara County, California: Calif. Jour. Mines and Geology, v. 46, no. 4, p. 509–532, illus. incl. geol. map, Oct. 1950. The Cachuma district, in central Santa Barbara County, California, is underlain by the Franciscan, Knoxville, and Monterey formations. These rocks are cut by several sets of faults. Cinnabar occurs in fissures and fractures. The stratigraphy, structure, and deposits are described and mapped, with special attention to the Red Rock and Lion Den mercury mines. V. S.
3. Some features of the secondary redistribution of uranium in oxidation zones [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1458, Dec. 1950.

Evernden, Jack F. *See* Byerly, P., 1, 2.

Ewing, William Maurice. *See also* Press, F.; Tolstoy, I.

1. (and Tolstoy, Ivan, and Press, Frank). Proposed use of the T phase in tsunami warning systems: Seismol. Soc. Am. Bull., v. 40, no. 1, p. 53–58, Jan. 1950; abs., Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1954, Dec. 1949; discussion by L. Don Leet, Seismol. Soc. Am Bull., v. 41, no. 2, p. 165–167, Apr. 1951; abs., Earthquake Notes, v. 21, nos. 1–2, p. 10–11, Mar.–June 1950. The occurrence of Pacific tsunamis through 1933–1948 has been found to correlate substantially with the presence of the short-period T phase on earthquake seismograms. Examination of the evidence suggests the inclusion of T-phase recording instruments in tsunami warning systems. Leet disagrees with their findings. V. S.
2. (and others). Seismic refraction measurements in the Atlantic Ocean basin (Part 1): Seismol. Soc. Am. Bull., v. 40, no. 3, p. 233–242, illus., July 1950. A reversed seismic refraction measurement 120 miles northwest of Bermuda in 2,800 fathoms of water identified the second layer with the ultrabasic layer and indicated absence of the granitic and intermediate layers. A thickness of 4,500 feet for the local sedimentary layer was obtained. The velocities observed are discussed and illustrated by travel-time curves. V. S.

Ewing, William Maurice—Continued

3. (and others). Geophysical investigations in the emerged and submerged Atlantic Coastal Plain; Pt. V, Woods Hole, New York, and Cape May sections: Geol. Soc. Am. Bull., v. 61, no. 9, p. 877–892, illus., Sept. 1950; abs., v. 57, no. 12, pt. 2, p. 1192, Dec. 1946. Seismic refraction measurements from the coast line to the edge of the continental shelf were made at each of the three sections and show an unconsolidated layer, a semiconsolidated layer, and the basement. The sedimentary cross section is thickest at Cape May, less at New York, and much less at Woods Hole.
4. (and Press, Frank). Crustal structure and surface-wave dispersion: Seismol. Soc. Am. Bull., v. 40, no. 4, p. 271–280, illus., Oct. 1950. The observed dispersion of Rayleigh waves across the Atlantic and Pacific Oceans is accounted for by their propagation through water and unconsolidated sediments overlying a thick layer of ultrabasic rock. Illustrative theoretical and observed dispersion curves are given. V. S.

Faessler, Carl.

The Labrador Peninsula in time and space: Canadian Min. Jour., v. 71, no. 6, p. 47–50, illus., June 1950. The geological history of the Labrador area and particularly of the iron deposits.

Fahey, Joseph John. *See also* Pecora, W. T.

1. (and Daggett, E. B., and Gordon, Samuel George). Wherryite, a new mineral from the Mammoth mine, Arizona: Am. Mineralogist, v. 35, nos. 1–2, p. 93–98, illus., Jan.–Feb. 1950. Describes optical, physical, and chemical properties of wherryite, $PbCO_3 \cdot 2PbSO_4 \cdot Pb(Cl, OH)_2 \cdot CuO$, found to be associated in the Mammoth mine with chrysocolla, diaboleite, and paralaurionite. V. S.
2. (and Axelrod, Joseph Meyer). Searlesite from the Green River formation of Wyoming: Am. Mineralogist, v. 35, nos. 11–12, p. 1014–1020, illus., Nov.–Dec. 1950. Physical, chemical, optical, and X-ray data for searlesite, hydrous sodium borosilicate, are given. The material was obtained from the Green River formation, Sweetwater County, Wyoming, and is the third recorded occurrence of the mineral. The X-ray data are furnished by J. M. Axelrod.

Fairbairn, Harold William.

1. Synthetic quartzite: Am. Mineralogist, v. 35, nos. 9–10, p. 735–748, illus., Sept.–Oct. 1950; abs., nos. 3–4, p. 280–281, Mar.–Apr. 1950. "Quartz sand (grain size 125–250 microns) immersed in weak aqueous Na_2CO_3 solution is converted to sheared quartzite (grain size 100–200 microns) after a few hours' exposure to temperatures in the range 230°–435° C., confining pressures between 5,000 and 30,000 psi, and compressive loads between 32,000 and 103,000 psi." The procedure and results of the experimental work are described and discussed.
2. Pressure shadows and relative movements in a shear zone: Am. Geophys. Union Trans., v. 31, no. 6, p. 914–916, illus., Dec. 1950. The determination of direction-sense of movement by means of pressure shadow orientation has been investigated by Mügge (1930), but no correlation with a field example has been made. Data from study of an oriented specimen from the Campbell shear zone at Yellowknife, Northwest Territories, provide such a correlation and confirm the field data in every way.
3. A comparative study of chemical and spectrographic methods of determination of the major elements of rocks [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 227, 1950.

Falkenbach, Charles Henry. *See* Schultz, C. B., 1.

Fancher, George Homer.

The porosity and permeability of clastic sediments and rocks, *in* Subsurface geologic methods, p. 685–713, illus., Colo. School of Mines, 1950. Defines and discusses porosity, permeability, and capillary pressure in sedimentary rocks, and indicates the methods of measurement.

Farquhar, Francis P.

François Emile Matthes, 1874–1948: Am. Alpine Jour., v. 7, no. 2, p. 201–203, port., Jan. 1949.

Farr, Thad D.

Phosphorus; properties of the element and some of its compounds: Tenn. Valley Authority, Chem. Eng. Rpt. no. 8, 93 p., 1950. Chemical, optical, and X-ray diffraction data are given for the calcium phosphates in addition to the data on phosphorus, phosphorus oxides, and acids of phosphorus.

Faul, Henry.

Fossil burrows from the Precambrian Ajibik quartzite of Michigan: Jour. Paleontology, v. 24, no. 1, p. 102–106, illus., Jan. 1950; abs., Geol. Soc. Am. Bull., v. 59, no. 12, pt. 2, p. 1320–1321, Dec. 1948; brief summary, Nature (London), v. 164, no. 4157, p. 32, illus., July 2, 1949. "Markings found on the surfaces of the Ajibik mid-Huronian quartzite north of Ishpeming, Michigan, are interpreted as burrows made by a small unknown organism."

Faust, George Tobias.

Thermal analysis studies on carbonates. 1. Aragonite and calcite: Am. Mineralogist, v. 35, nos. 3–4, p. 207–224, illus., Mar.–Apr. 1950. "Differential thermal analysis studies were made on 8 samples of aragonite, 7 of calcite, and 1 natural mixture of aragonite and calcite. The transformation of aragonite to calcite gave a thermal effect that was easily observed with the continuous-photographic-recording type of differential thermal analysis apparatus. This transformation serves to identify aragonite. The aragonite-calcite transformation and the formation of unstable polymorphs of $CaCO_3$ are discussed."

Fay, Robert O. *See* Fischer, A. G.

Fears, Fulton Keller.

Bibliography on mineral aggregates: Natl. Research Council, Highway Research Board Bibliography no. 6, 89 p. (‡), 1949. The bibliography consists of 467 items, annotated and arranged chronologically. There is a subject index, an author index, and a separate section of references on distribution of mineral aggregates, arranged by states.

Fellows, Robert Ellsworth, 1915–1949. *See also* Moffit, F. H., 1.

Notes on the geology of Rock Creek Park, District of Columbia: Am. Geophys. Union Trans., v. 31, no. 2, pt. 1, p. 267–277, illus. incl. geol. sketch map, Apr. 1950. Pre-Cretaceous schist, granite, and diorite, exposed in Rock Creek Park, are described, mapped, and compared with the rock units identified in the area by A. Keith and N. Darton in 1901. Age revisions and mineralogic and structural relations are suggested. V. S.

Fenner, Clarence Norman, 1870–1949.

The chemical kinetics of the Katmai eruption, Parts 1–2: Am. Jour. Sci., v. 248, no. 9, p. 593–627, illus., Sept. 1950; no. 10, p. 697–725, illus., Oct. 1950. The study of the field relations, petrography, and chemistry of the pumices, ejected in the eruption of Mount Katmai, Alaska, in 1912, points to the assimilation of great quantities of basic rock by the new siliceous magma. Possibilities of exothermic reactions in the magma are explored, and the large quantities of heat that may be developed are indicated. V. S.

Fent, Oscar S.

1. Pleistocene drainage history of central Kansas: Kans. Acad. Sci. Trans., v. 53, p. 81–90, illus., 1950. A tentative drainage history is outlined which indicates a northeastward migration of through-flowing streams effected by successive captures of the southern trunk stream. Several maps and cross sections are included.
2. Geology and ground-water resources of Rice County, Kansas: Kans. Univ., State Geol. Survey Bull. 85, 142 p., illus. incl. geol. map, July 1950. Describes the Permian-Quaternary strata, including the Pleistocene glacial unconsolidated material. The important aquifers of the area are the Pleistocene sands and gravels, the Dakota sandstones, and the Kiowa shales, the latter two of Cretaceous age. Well records and chemical analyses of waters are given.

Fenton, Carroll Lane. *See also* Stumm, E. C., 1.

Wonderland of lava: Nature Mag., v. 43, no. 7, p. 349–352, illus., Aug.–Sept. 1950. Reconstructs briefly the history of the formation of the Columbia-Snake River lava plateau, occupying more than 200,000 square miles in northwestern United States and formed since mid-Miocene time. **V. S.**

Fenton, Mildred Adams. *See* Stumm, E. C., 1.

Ferguson, Hershal Cevera. *See* Colle, J. O.

Ferguson, John L.

Charles Newton Gould (1868–1949): Am. Assoc. Petrol. Geol. Bull., v. 34, no. 4, p. 807–811, port., Apr. 1950.

Ferguson, Robert Bury. *See also* Conybeare, C. E. B., 1.

Red gold from the San Antonio gold mine, Bissett, Manitoba: Am. Mineralogist, v. 35, nos. 5–6, p. 459–460, May–June 1950. Describes the occurrence of native yellow gold with a red coating close to ordinary yellow gold in quartz-carbonate-sulfide ore from the San Antonio mine. X-ray and spectrographic examination indicate that the coating is either copper or a copper-gold alloy.

Ferm, John C.

Megaspores of the middle(?) Kittanning coal in Beaver County, Pennsylvania [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 672–673, Oct. 1950.

Fernquist, Charles O.

Some Washington gem trails: Mineralogist, v. 18, no. 2, p. 59–64, Feb. 1950. Occurrences in the state of Washington are indicated for 40 precious and semi-precious stones, and several collecting grounds are described briefly. **V. S.**

Ferris, Bernard J.

Are oil shales natural source beds of petroleum? World Oil, v. 131, no. 3, p. 80, 82, 84, 86, 88, illus., Aug. 1950; Pt. 2, no. 5, p. 73–76, 78, 81, illus., Oct. 1950. Thin sections of oil shale from the Green River formation, Garfield County, Colorado, were tested to determine shale solubility as a function of particle size, oil yield, specific gravity, duration of exposure, and temperature of solvent. The results, together with consideration of the effect of geologic time and other factors, indicate that oil shale has not been a significant source bed of petroleum.

Fetter, Hans. *See* Knížek, J. O.

Fettke, Charles Reinhard.

1. Summarized record of deep wells in Pennsylvania: Pa. Geol. Survey, 4th ser., Bull. M31, 148 p., illus., 1950. Most of the report is devoted to statistics of the deep wells drilled, but an introductory section gives stratigraphic information on the early Paleozoic formations and the oil and gas possibilities.
2. Henderson dome, a unique structure in northwestern Pennsylvania [abs.]: Geol. Soc. Am Bull., v. 61, no. 12, pt. 2, p. 1458, Dec. 1950.
3. Subsurface stratigraphic sections across the northern part of the Appalachian Basin [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1566, Dec. 1950.

Fetzer, Wallace Gordon.

(and Gruner, John Walter, and Rapaport, Irving). Hydrothermal uranium deposits near Marysvale, Piute County, Utah [abs.]: Geol. Soc. Am Bull., v. 61, no. 12, pt. 2, p. 1459, Dec. 1950.

Fidlar, Marion Moore.

1. Structural features of the Green River Basin: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 86–87, illus., 1950. Brief presentation of the main features of the Green River structural basin in southwest Wyoming, accompanied by a tectonic map of the area.
2. Baxter Basin gas fields, Sweetwater County, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 109-110, illus., 1950. Brief notes on the history, stratigraphy, structure, and production of the gas fields in the Baxter Basin near Rock Springs, Wyoming.

Fidlar, Marion Moore—Continued

3. Church Buttes gas field, Sweetwater and Uinta Counties, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 111–113, illus., 1950. The stratigraphy, structure, production, and history of the Church Buttes gas field, in the Green River Basin, are briefly described.
4. Clay Basin gas field, Daggett County, Utah: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 114–116, geol. sketch map, 1950. Stratigraphic, structural, and production data are briefly presented, accompanied by a geologic and structural map and a columnar section.

Field, D. S. M.

1. Canada's giant zircons: Gemmologist, v. 19, no. 228, p. 139–141, July 1950. Brief notes on the red zircon crystals occurring in Renfrew County, Ontario, Canada.
2. Diamond pipes in Canada: Canadian Min. Jour., v. 71, no. 7, p. 54–57, map, July 1950. Reports the diamond finds that have been made in the glacial drift of both Canada and the United States.
3. Arctic gems: Gemmologist, v. 19, no. 229, p. 177–179, Aug. 1950. A brief presentation of notes on gem minerals from Baffin Island, Canada, quoted from an article by T. L. Walker in the Ottawa Naturalist for August-September 1915.

Field, George W.

Selected bibliography, *in* Mississippi Geological Society Guidebook, Eighth Field Trip, October 13–15, 1950, p. 25–35, 1950.

Field, Richard Montgomery.

Geological-geophysical-geochemical significance of geosynclines [abs.]: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 8, p. 28, 1950; Volume of titles and abstracts, p. 53–54, 1948; Geophysics, v. 14, no. 3, p. 375, July 1949.

Field, William Osgood, Jr.

The variations of Alaskan glaciers, 1935–1947: Assoc. Internat. Hydrol. Sci., Assemblée Générale, Oslo, 1948, t. 2, Comm. de la Neige et des Glaciers, Travaux, p. 277–282, [1950?].

Fieldner, Arno Carl.

Coal for coke production: U. S. Bur. Mines, Inf. Circ. 7559, 21 p. (‡), illus. incl. sketch maps, Mar. 1950. Reviews the nature, distribution, and utilization of coal resources in the United States, with special attention to minable reserves of coking coal. V. S.

Finch, Ruy Herbert. *See also* Macdonald, G. A., 2, 3.

1. (and Macdonald, Gordon Andrew). Thermal water on Kilauea volcano: Volcano Letter, no. 507, p. 1, Jan.–Mar. 1950. Steam vents and four occurrences of warm water on Kilauea volcano, Hawaii, are described and generally attributed to the heating of basal ground water by hot rock. Water temperatures range from 83° to 91° F., against an air temperature of 77°–79° F. V. S.
2. (and Macdonald, Gordon Andrew). The June 1950 eruption of Mauna Loa: Volcano Letter, no. 508, p. 1–11, illus., Apr.–June 1950. Chronological narrative of the events of the eruption on the southwest flank of Mauna Loa Volcano, Hawaii, on June 1, 1950.
3. Earthquakes accompanying the 1949 eruption of Mauna Loa: Seismol. Soc. Am. Bull., v. 40, no. 4, p. 263–266, illus., Oct. 1950. The volcanic eruption of Mauna Loa, Hawaii, during January–May, 1949, was both preceded and accompanied by a great increase in the number of local earthquakes. There were 16 shocks on the day of the beginning of eruption. The earthquakes, tremors, fuming, and associated phenomena are described briefly. V. S.
4. The December 1950 subsidence at Kilauea: Volcano Letter, no. 510, p. 1–2, illus., Oct.–Dec. 1950. Briefly describes the earthquakes, tilting, and cracking that accompanied the subsidence of Kilauea Caldera between December 8–14, 1950. More than 656 earthquakes, originating along the rift zone from Kokoolau Crater to the Kamakaia Hills, were recorded.
5. (and Macdonald, Gordon Andrew, and Robinson, Gershon Duvall). June 1950 flank eruption of Mauna Loa, Hawaii [abs.]: Geol. Soc. Am Bull., v. 61, no. 12, pt. 2, p. 1459, Dec. 1950.

Fine, Spencer Freeland. *See* Wiese, J. H., 3.

Finley, Jean Carson. *See* McGee, D. A.

Fischer, Alfred George.

(and Fay, Robert O.). Commensalism of a new Ordovician tetracoral with a bryozoan ? [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1459, Dec. 1950.

Fischer, Richard Philip.

Uranium-bearing sandstone deposits of the Colorado plateau: Econ. Geology, v. 45, no. 1, p. 1–11, illus., Jan.–Feb. 1950. Describes the sedimentary "carnotite" deposits, their distribution, size, shape, and formation. The ore was probably precipitated from ground-water solutions, their movement being controlled by sedimentary structures. V. S.

Fisher, Daniel Jerome.

1. Cone-axis diffraction patterns [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 281, Mar.–Apr. 1950.
2. Chalcanthite by the x-ray precession technique [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1460, Dec. 1950.

Fisher, Donald William.

Marcasite fauna in the Ludlowville formation of western New York [abs.]: Science, v. 112, no. 2912, p. 449, Oct. 20, 1950.

Fisher, Joel E.

1. Dirt bands: Am. Alpine Jour., v. 7, no. 3, p. 309–317, illus., Sept. 1949. The concentric markings found in valley glaciers and usually referred to as Forbes bands or dirt bands are discussed. It is concluded that there are two types of different origins. Both types owe their appearance to slight differences in the texture of the ice, but in the Forbes bands the process is one of vertical splitting of the ice followed by immediate back-filling by fresh snow. In the Alaskan bands the process is one of accumulation with extreme variation between summer and winter texture resulting in stratification.
2. Pressure melting points of ice and their control on the profile of glaciated valleys: Assoc. Internat. Hydrol. Sci., Assemblée Générale, Oslo, 1948, t. 2, Comm. de la Neige et des Glaciers, Travaux, p. 345, [1950?].
3. Some problems of geophysics, approached from viewpoints of modern physics. 75 p. (‡), illus., Privately printed, New York, Apr. 1, 1950. The principle of exponential diminution of universal gravitation with time is applied, with related considerations, to the explanation of orogeny, ocean basins, continental drift, and glaciation. Wegener's theory of drift is supported in general, and a basis for recurring cycles of glaciation is provided. V. S.

Fitts, Leroy E., Jr. *See* Abilene Geol. Soc., 3.

Fitz, Mildred B.

Published works by Esper S. Larsen, Jr.: Am. Mineralogist, v. 35, nos. 9–10, p. 954–958, Sept.–Oct. 1950.

FitzGerald, Norman Dunham.

The Beddo field, Runnels County, Texas: Abilene Geol. Soc., Geol. Contr., p. 7–8, illus., 1950. Brief notes on the stratigraphy, structure, and development of the field.

Fitzpatrick, M. M.

A gravitational study of the Clare River syncline area, Ontario: Royal Soc. Canada Trans., 3d ser., v. 44, sec. 4, p. 21–34, illus., June 1950; abs., Proc., 3d ser., v. 44, p. 230, 1950. The mapping of gravity anomalies in the pre-Cambrian Clare River syncline area, near Belleville, Ontario, is described and the correlation with geologic data is discussed. The conclusion is reached that, in drift-covered areas where a sufficient density contrast is known to exist in the bedrock, a gravimeter survey can be useful in determining the geologic structure.

Fix, Philip Forsyth.

(and others). Ground water in the Escalante Valley, Beaver, Iron, and Washington Counties, Utah (a progress report): Utah State Eng. Tech. Pub. 6, *in* Utah State Eng. 27th Bienn. Rpt. p. 109–210, illus. incl. geol. map, 1950. Describes the general features in relation to water resources of the Escalante Valley, in southwestern Utah. Ground water in the Beryl-Enterprise district is described by B. E. Lofgren; that of the Milford district by W. B. Nelson.

Flawn, Peter T.

Sedimentary amphibolites in the Van Horn Mountains, Texas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1460, Dec. 1950.

Fleischer, Michael. *See* Frondel, J. W.

Flint, Richard Foster.

1. Pleistocene drainage diversions in South Dakota; Geografiska Annaler, årg. 31, häfte 1–4, p. 56–74, illus., 1949; abs., Geol. Soc. Am. Bull., v. 59, no. 12, pt. 2, p. 1321–1322, Dec. 1948. "Reconnaissance examination of central and eastern South Dakota indicates that a system of streams, flowing eastward in wide valleys incised into an early Pleistocene (?) planation surface, was blocked by the James glacial lobe, apparently in Kansan time. In consequence a new drainage pattern . . . was formed. The Missouri River is the principal member of this later generation of streams. Conspicuous post-diversion, pre-Wisconsin rejuvenation has affected these later streams."
2. Late Pleistocene dates derived from radiocarbon assays: Science, v. 109, no. 2843, p. 636, June 24, 1949. Brief notes on the application of research on natural radiocarbon to the dating of glacial drift. The requirements of material suitable for radiocarbon assay are listed.
3. Pleistocene stratigraphy of eastern South Dakota [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1460–1461, Dec. 1950.
4. Report of committee on radioactive carbon 14 [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1517–1518, Dec. 1950.

Flores, Teodoro.

Geologic and structural environment of the iron ore deposits of Mexico: Econ. Geology, v. 45, no. 2, p. 105–126, illus. incl. geol. sketch maps, Mar.–Apr. 1950. "The most important Mexican iron ore deposits occur along the Pacific slope of the continent and, sporadically, in the northeastern and central parts of the high plateau. . . . Genetically, the deposits are of three types: (1) replacements (mainly hematite, martite, and magnetite), (2) contact metasomatic deposits (magnetite and hematite), and (3) residual deposits formed by weathering of iron orebodies and of basic rocks (ochre useful as pigment)." The paper is accompanied by maps and a production table.

Florin, Rudolf.

Upper Carboniferous and Lower Permian conifers: Bot. Rev., v. 16, no. 5, p. 258–282, May 1950. The genera *Lebachia* and *Ernestiodendron* and artificial genera are described with special sections on the vegetative and reproductive organs. V. S.

Flower, Rousseau Hayner.

1. *Stereotoceras* and the Brevicoceratidae: Palaeontographica Americana, v. 3, no. 24, 36 p., illus., June 1, 1950. The new genus, *Stereotoceras*, a rare smooth-shelled Devonian gyroceracone, is described and illustrated. Seven new species are placed in the genus, and another is included doubtfully.
2. (and Kummel, Bernhard, Jr.). A classification of the Nautiloidea: Jour. Paleontology, v. 24, no. 5, p. 604–616, illus., Sept. 1950. A new classification of the Nautiloidea is proposed, which includes the erection of new orders, revision of families, and addition of a few new generic groups. Nautiloid phylogeny is discussed. V. S.
3. Structural history of the Hudson Valley [abs.]: Earth Sci. Digest, v. 4, no. 6, p. 18–19, Jan. 1950.
4. Status of classification of Paleozoic nautiloids [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1461, Dec. 1950.

Fluhr, Thomas Warren.

1. The Delaware aqueduct; some geological data: N. Y. Acad. Sci. Trans., ser. 2, v. 12, no. 6, p. 182–186, illus., Apr. 1950. Discusses features of the area in southeastern New York State traversed by the aqueduct system between the Catskill Mts. and New York City, including deformation south of the Highlands, correlation of the gneisses, correlation of the Manhattan-Inwood series, interbedded limestones in the Fordham gneiss, and the validity of quartzites.
2. Geology of the Brooklyn-Battery tunnel: Rocks and Minerals, v. 25, nos. 5–6, p. 250–254, illus., May–June 1950. The geologic characteristics of the bedrock in the vicinity of the vehicular tunnel under the East River between the lower end of Manhattan Island and Brooklyn, New York, are described. The bedrock is Manhattan schist and Brooklyn injection gneiss, with a band of inferred Inwood limestone between them. A deep gorge in the bedrock marks the band.

Foley, Frank Clingan.

Sedimentation and ground water, *in* Applied sedimentation, p. 113–123, 1950. Sediments of various environments (glacial, fluvial, delta, marine), are discussed as sources of ground water. Relation of permeability of sediments to ground water is also discussed.

Folinsbee, Robert Edward.

1. (and Moore, J. C.). Preliminary map, Matthews Lake, Northwest Territories (map and descriptive notes): Canada Geol. Survey Paper 50–2, 11 p. (‡), 1950. The Matthews Lake map area, northeast of Yellowknife, Northwest Territories, comprises volcanic rocks, porphyritic intrusives, and metamorphosed dioritic sediments. The rocks, structures, and gold mineralization are described briefly. V. S.
2. Preliminary map, Walmsley Lake, Northwest Territories: Canada Geol. Survey Paper 50–4, geol. map, 1950. A geologic map, with notes, of the northern part of the Walmsley Lake area, northeast of Great Slave Lake, Northwest Territories. The rocks are altered volcanics and sediments of the pre-Cambrian Yellowknife group, intruded by granitic rocks and basic dikes, also pre-Cambrian. V. S.

Folk, Robert Louis.

1. Petrology of Lower Ordovician cherts in central Pennsylvania [abs.]: Earth Sci. Digest, v. 4, no. 6, p. 16, Jan. 1950.
2. (and Weaver, Charles Edward). Surface features of chert as studied by the electron microscope [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1461-1462, Dec. 1950.

Follett, Clarence R. *See* Sundstrom, R. W.

Foose, Richard Martin.

Studies on the relationship between the chemistry of ground water, movement of ground water, and rock types: Pa. Acad. Sci. Proc., v. 24, p. 151–154, 1950. The results of detailed studies of ground water in part of the Great Valley of eastern Pennsylvania are presented briefly and indicate the possibility of two new mapping techniques. Measurements of hydrogen ion concentration and of total dissolved solids can be used to show major formational contacts, major structures, and pronounced ground water movement.

Forbes, Hyde.

The geochemistry of earthwork: Am. Soc. Civil Eng. Proc., v. 76, Separate no. 7, 19 p., illus., Mar. 1950; discussion, v. 77, Separate no. D–7, 15 p., illus., Feb. 1951 Observations are given on the effects exerted by excavation, handling, moistening, and compacting operations, and by the agents of air and water, upon the physical, mineralogical, and chemical characteristics of rock materials used in earthworks, in analogy to natural processes of rock weathering, erosion, and deposition. V. S.

Foshag, William Frederick.

The aqueous emanation from Parícutin volcano: Am. Mineralogist, v. 35, nos. 9–10, p. 749–755, illus., Sept.–Oct. 1950. "An estimate of the quantity of water emitted by the crater vent of Parícutin volcano gives 17,000 tons per day, compared to an average daily emission of lava of 100,000 tons from the lava vents. This quantity of water is believed to be larger than the amount of water one could reasonably expect from the magma rising in the eruptive conduit, and suggests a considerable dilution of magma emission by vapors derived from meteoric waters."

Foster, Margaret Dorothy.

1. The origin of high sodium bicarbonate waters in the Atlantic and Gulf Coastal Plains: Geochimica et Cosmochimica Acta, v. 1, no. 1, p. 33–48, illus., 1950. The origin of the excessive bicarbonate content of the deeper waters in the Atlantic and Gulf Coastal Plains, as compared to that of the shallower waters, is investigated. Experimental work shows that the presence of carbonaceous material, together with calcium carbonate and base-exchange minerals, can account for the high bicarbonate content.
2. Importance of exchangeable magnesium in the study of montmorillonitic clays [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1462, Dec. 1950.

Foster, Wilfrid Raymond.

Synthetic sapphirine and its stability relations in the system $MgO–Al_2O_3–SiO_2$: Am. Ceramic Soc. Jour., v. 33, no. 3, p. 73–84, illus., Mar. 1950; abridged version in Jour. Geology, v. 58, no. 2, p. 135–151, illus., Mar. 1950. The compound, corresponding in properties with the natural mineral, melts incongruently at about 1475° C. to yield spinel and liquid, and is compatible immediately below that temperature with cordierite, spinel, and mullite, and at still lower temperatures with corundum. The equilibrium diagram of the system is revised accordingly. V. S.

Foster, William J.

Some suggestions concerning the protection of fragile mineral specimens: Rocks and Minerals, v. 25, nos. 3–4, p. 155–158, illus., Mar.–Apr. 1950. Fragile mineral specimens can be packed for transportation by wrapping in wet, thin paper which, on drying, forms a protective covering and which can be easily removed by soaking in water. V. S.

Fournier, George.

Photographing small Foraminifera: Micropaleontologist, v. 4, no. 1, p. 19–21, Jan. 1950. Describes briefly the microscope, illumination, magnification, film, and exposure times currently used in micropaleontologic photography at the American Museum of Natural History in New York.

Fowler, George Malcolm.

1. (and Hernon, Robert M., and Stone, Edwin A.). The Taxco mining district, Guerrero, Mèxico, *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 143–153, illus. incl. geol. map, 1950; abs., Volume of titles and abstracts, p. 44–45, 1948. The lead-zinc ores of the Taxco district, Mexico, occur as veins and replacement deposits associated with schist basement rock and Cretaceous (?) sediments. The ore minerals are sphalerite and galena.
2. Geochemical prospecting in the Mississippi Valley [abs.]: Min. Cong. Jour., v. 36, no. 10, p. 77, Oct. 1950.

Fowler, Phillip.

Stratigraphy and structure of the Castleton area, Vermont: Vt. Geol. Survey Bull. 2, 83 p., illus. incl. geol. map, 1950. The Castleton area of western Vermont is characterized by two stratigraphic sequences, the 10,000-foot Champlain Valley sequence and the 3000–4000-foot Taconic sequence, both of which comprise pre-Cambrian, Cambrian, and Ordovician strata. The stratigraphy is described in detail, the structural features discussed, and the geologic history outlined. A bibliography is included. The colored geologic map is on a scale of 1 inch to 1 mile.

Fox, Harold D.

Structure and origin of two windows exposed on the Nittany arch at Birmingham, Pennsylvania: Am. Jour. Sci., v. 248, no. 3, p. 153–170, illus., Mar. 1950. The windows, exposing overturned and graben-faulted Ordovician formations, are described. Their origin is explained by local synclinal folding and faulting, and subsequent thrusting of relatively small stratigraphic displacement. V. S.

Foye, Wilbur Garland, 1886–1935.

The geology of eastern Connecticut: Conn. Geol. Nat. History Survey Bull. 74, 95 p., illus. incl. geol. map, 1949. Describes and discusses the physiography, glacial geology, structural geology, mineral localities, and rocks of eastern Connecticut, and includes a section on the Moodus earthquakes of East Haddam.

Frame, Ralph G.

1. Preliminary report on Kirby Hill gas field: Calif. Oil Fields, v. 35, no. 1, p. 13–21, illus., Jan.–June 1949. Briefly describes the stratigraphy, structure, productive zones, and reserves of the Kirby Hill field, about 40 miles northeast of San Francisco, California.
2. Helm oil field: Calif. Oil Fields, v. 36, no. 1, p. 5–14, illus., Jan.–June 1950. The development, stratigraphy, producing zones, and production statistics are discussed. The Helm field is located in the western part of the San Joaquin Valley, 22 miles southwest of Fresno, California. Production has been obtained from Paleocene and Cretaceous strata. The prospects for deeper production are poor.

Frankforter, Weldon D.

The Pleistocene geology of the middle portion of the Elkhorn River Valley: Nebr. Univ. Studies, new series no. 5, 46 p., illus. incl. geol. map, July 1950. The area of the Elkhorn River Valley in eastern Nebraska is important for correlation of deposits between glacial and periglacial regions. Detailed stratigraphic sections of several localities are given; the development of Elkhorn terrâce is discussed; and the Pleistocene geologic history of the area is summarized.

Frarey, Murray James.

Ile-à-la-Crosse map-area, Saskatchewan (report and map): Canada Geol. Survey Paper 50–25, 10 p. (‡), geol. map, 1950. An area of pre-Cambrian igneous and metamorphic rocks in south-central Saskatchewan.

Frebold, Hans.

Stratigraphie und Brachiopodenfauna des marinen Jungpalaeozoikums von Holms und Amdrups Land (Nordostgruenland): Meddelelser om Grønland, Bd. 126, no. 3, 97 p., illus., 1950; Copenhague Univ. Mus. Miner. Géol., Commun. Géol. no. 37, 1950. Describes species of *Orthotichia, Derbyia, Streptorhynchus, Productus, Spirifer, Camarophoria,* and *Athyris* from late Paleozoic marine beds of Holms and Amdrups Land in northeast Greenland. Comparisons with strata of East Greenland, Spitzbergen, Nova Zembla, and European parts of the Soviet Union are given.

Frederickson, Arman Frederick.

The behavior of some diabase and basalt dilation dikes in the Union Companion mine, Cornucopia, Oregon: Econ. Geology, v. 45, no. 3, p. 201–209, illus., May 1950. "At depth, the path followed by the dikes in the Cornucopia gold mining district is almost independent of the minor structural features of the area. At intermediate depths, the dikes 'roll' into and follow planar zones of weakness (faults, veins, etc.) for a short distance, 'roll' out of the structurally weak zones, and continue to the surface at high angles. Minor changes in the strike and the dip of these dilation dikes, when they are in the plane of a vein, result in the displacement of portions of the vein."

Frederickson, Edward Arthur, Jr. *See* Wilson, J. L., 2.

Freedman, Jacob.

1. The geology of the Mt. Pawtuckaway quadrangle, New Hampshire. 34 p., illus. incl. geol. map. Concord, New Hampshire. New Hampshire State Planning and Development Commission. 1950. An account for the layman which describes the geologic history of the Mt. Pawtuckaway quadrangle in southeastern New Hampshire, the glacial geology, and some of the minerals.
2. Stratigraphy and structure of the Mt. Pawtuckaway quadrangle, southeastern New Hampshire: Geol. Soc. Am. Bull., v. 61, no. 5, p. 449–492, illus. incl. geol. map, May 1950. The Mt. Pawtuckaway quadrangle, southeastern New Hampshire, is an area of metamorphosed sedimentary rocks intruded by plutonic rocks. The igneous rocks belong to the late Devonian (?) New Hampshire magma series and the Mississippian (?) White Mt. magma series. The metamorphics are assigned to the Eliot, Berwick, and Littleton formations. On the basis of several lines of evidence, the age of the Eliot and Berwick formations is Middle Silurian or older, and the Littleton formation is Lower Devonian. A bibliography is given.

Freeman, Louise Barton.

Paleozoic structure and stratigraphy [of the Jackson Purchase region, Kentucky]: Ky. Geol. Survey Bull. ser. 9, no. 4, p. 12–36, illus., 1950. A revised reprinting of Bulletin 8, Kentucky Dept. Mines and Minerals, 1945. The lithology of the Paleozoic formations is described as determined by examination of well cuttings.

Frenzel, Hugh N. *See* Adams, J. E.

Frey, David Grover.

Carolina bays in relation to the North Carolina coastal plain: Elisha Mitchell Sci. Soc. Jour., v. 66, no. 1, p. 44–52, illus., June 1950. Reports the results of the first sediment studies undertaken to establish the age and ontogeny of the basins.

Fridley, Harry Marion.

Glacial drainage diversions in West Virginia [abs.]: W. Va. Acad. Sci. Proc., v. 21, p. 96, 1949.

Friedman, I. I.

Liquid immiscibility in the Na_2O–SiO_2–H_2O system; preliminary data on the Na_2O–SiO_2–Al_2O_3–H_2O system [abs.]: Am. Mineralogist, v. 35, nos. 3-4, p. 281, Mar.–Apr. 1950.

Fries, Carl, Jr.

1. Ezequiel Ordóñez [1867–1950]: Min. Eng., v. 187, no. 4, p. 525, Apr. 1950.
2. (and Gutiérrez, Celedonio). Activity of Parícutin Volcano from August 1, 1948 to June 30, 1949: Am. Geophys. Union Trans., v. 31, no. 3, p. 406–418, illus., June 1950; same for July 1 to December 31, 1949: Am. Geophys. Union Trans., v. 31, no. 5, pt. 1, p. 732–740, illus., Oct. 1950. A continuation of the periodic reports on the eruptive characteristics of Parícutin Volcano, Mexico. Maps showing the area covered by lava flows are given.

Fritz, Madeleine Alberta.

1. Multisolenida, a new order of the Schizocoralla: Jour. Paleontology, v. 24, no. 1, p. 115–116, Jan. 1950. Proposes the family Multisolenidae as a fourth order of the Schizocoralla on the basis of the corallum, corallites, septa, and numerous, well-developed solenia. V. S.
2. Life before the Cambrian: Geol. Assoc. Canada Proc., v. 2, p. 37–42, Apr. 1950. The very scarce evidence of organic material that existed during the pre-Cambrian is described and discussed with reference to the various theories that have been advanced to account for its lack. Spectrometric data on carbon ratios for various pre-Cambrian rocks are evaluated.

Frizzell, Donald Leslie.

1. Examples of synonymous homonyms: Jour. Paleontology, v. 24, no. 1, p. 117, Jan. 1950. Three examples are given at the specific level for Foraminifera from the upper Cretaceous of Texas. V. S.
2. (and Anderson, Irvin J.). Diastems in the Pecan Gap chalk of Travis County, Texas: Jour. Sed. Petrology, v. 20, no. 1, p. 55–59, illus., Apr. 1950. "The importance of the recognition of diastems in attempts at detailed microfaunal zonation of marine strata is discussed. Three diastems are described, occurring in an exposure of Pecan Gap chalk (Upper Cretaceous, Taylor group) near Austin, Texas. The presence of encrusting foraminifera on casts of mollusks is indicated as evidence for the existence of a diastem."
3. (and Schwartz, Ely). A new lituolid foraminiferal genus from the Cretaceous, with an emendation of *Cribrostomoides* Cushman: Mo. Univ., School of Mines and Met. Bull., Tech. ser. no. 76, 12 p., illus., Sept. 1950. "*Cribrostomoides* Cushman, 1910, is emended to include planispiral arenaceous foraminifera distinguished by a slit aperture at the base of the septal face but enclosed by it, with multiple apertures in variant individuals . . . *Barkerina*, new genus . . ., consists of species with multiple apertures not enclosed by the septal face, the chambers subdivided by transverse partitions."

Frondel, Clifford. *See also* Evans, H. T., Jr., 1; Hopkins, J. P.; Lindberg, M. L. L., 2.

1. (and Palache, Charles). Three new polymorphs of zinc sulfide: Am. Mineralogist, v. 35, nos. 1–2, p. 29–42, illus., Jan.–Feb. 1950. Three new zinc sulfide polymorphs, related structurally to wurtzite, occur as small crystals in the Conemaugh formation (Pennsylvanian) black shales of Pennsylvania and Ohio. Their physical, chemical, and crystallographic properties, occurrence, and associated minerals are described. V. S.
2. On paratacamite and some related copper chlorides: Mineralogical Mag., v. 29, no. 208, p. 34–45, illus., Mar. 1950; abs., Am. Mineralogist, v. 35, nos. 3–4, p. 320, Mar.–Apr. 1950. Chemical, optical, and thermal data, together with crystal structure measurements, conclusively reestablish the validity of paratacamite as a species rather than a twinned variety of atacamite. Chemical, optical, and X-ray data are given in less detail for atelite, tallingite, botallackite, melanothallite, hydromelanothallite, eriochalcite, and antofagastite.
3. Studies of uranium minerals (I); parsonsite and randite; Am. Mineralogist, v. 35, nos. 3–4, p. 245–250, illus., Mar.–Apr. 1950. Chemical and X-ray data are given for parsonsite from the Rugges pegmatite, near Grafton Center, New Hampshire, the first known occurrence outside of the Belgian Congo. A second new occurrence, on a specimen from Wölsendorf, Bavaria, is also briefly described. The formula is $Pb_2(UO_2)(PO_4)_2.2H_2O$. Randite, originally described as a carbonate of calcium and uranium, is actually a mixture of calcite, beta-uranotile, and some tyuyamunite, and is discredited.
4. (and Whitfield, R. E.). Crystallography of rhombohedral sulfur: Acta Crystallographica, v. 3, pt. 3, p. 242–243, May 1950. Gives physical, optical, and structural data.
5. Notes on arcanite, ammonian aphthitalite, and oxammite: Am. Mineralogist, v. 35, nos. 7–8, p. 596–598, July–Aug. 1950. Optical and X-ray study of arcanite from the Santa Ana tin mine, California, indicates that it is identical with artificial K_2SO_4 and is therefore the first authentic natural example of the mineral. Authentic specimens of taylorite from the original locality, the Chincha Islands, do not appear to be extant. Other specimens so labeled have proved to be ammonian aphthitalite, which may be identical with taylorite. A brief note on the properties of oxammite is given.
6. Studies of uranium minerals (V); phosphuranylite: Am. Mineralogist, v. 35, nos. 9–10, p. 756–763, illus., Sept.–Oct. 1950. Phosphuranylite, formerly known only from North Carolina, is redescribed from twelve new localities. Physical, optical, chemical, and X-ray data are given. The formula has not yet been definitely determined.
7. Synthesis of star sapphires and rubies [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1462–1463, Dec. 1950.

Frondel, Judith Weiss.

(and Fleischer, Michael). A glossary of uranium- and thorium-bearing minerals: U. S. Geol. Survey Circ. 74, 20 p. (‡), Apr. 1950. Lists 325 minerals containing or reported to contain U and/or Th with the percentage of each, chemical formula, and literature reference. Valid, synonymous, and questionable species are indicated.

Frost, Robert Edson.

Permafrost: Purdue Univ. Eng. Ext. series no. 71, Proc. 36th Ann. Road School, p. 101–111, illus., Apr. 10–13, 1950. The general characteristics of permafrost are described briefly and illustrated. The work of the Purdue University Engineering Experiment Station in the interpretation of permafrost conditions from aerial photographs is outlined.

Frost, Victor LeRoy.

(and Crockett, Harry Lee). Geology of East Pauls Valley pool, Garvin County, Oklahoma: Tulsa Geol. Soc. Digest, v. 18, p. 59–64, illus., 1950. The stratigraphy, structure, and geologic history are briefly described. Production is from five Pennsylvanian horizons; no showings are known from Permian rocks.

Frueh, Alfred J., Jr.

1. Disorder in the mineral bornite, Cu_5FeS_4: Am. Mineralogist, v. 35, nos. 3–4, p. 185–192, illus., Mar.–Apr. 1950; abs. nos. 1–2, p. 128–129, Jan.–Feb. 1950. X-ray, thermal, and electrical evidence, obtained from a single crystal from Bristol, Connecticut, indicates that bornite can exist in at least two structurally different forms, low-temperature and high-temperature, and that the relation is one of order-disorder of the metal atoms. When thermally induced, complete disorder is reached at 220° C. With quenching, the disordered form is retained; with slow cooling, it reverts to the low-temperature form.
2. Disorder in sulfides [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 282, Mar.–Apr. 1950.
3. Crystal structure of claudetite (monoclinic As_2O_3) [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1463, Dec. 1950.

Fry, Albert S.

Sedimentation in reservoirs, *in* Applied sedimentation, p. 347–363, illus., 1950. The problems of reservoir sedimentation are outlined. The methods and equipment used in the measurement of sedimentation in reservoirs are described in detail.

Frye, John Chapman. *See also* Swineford, A.

1. Origin of Kansas Great Plains depressions: Kans. Univ., State Geol. Survey Bull. 86, pt. 1, 20 p., illus., Mar. 15, 1950. The larger depressions, developed in Permian or Cretaceous rocks, are the result of underground solution followed by collapse or subsidence of surface rocks. The more numerous, smaller depressions, in Pliocene and Pleistocene sediments, are attributed to differential eolian deposition or erosion, compaction, silt infiltration, and animal action. V. S.
2. (and Walters, Kenneth L.) Subsurface reconnaissance of glacial deposits in northeastern Kansas: Kans. Univ., State Geol. Survey Bull. 86, pt. 6, p. 141–158, illus., Dec. 15, 1950. Describes the stratigraphy of the till, gravel, silt, and alluvium deposits of Pleistocene and Recent ages in northeastern Kansas, which constitute the main ground-water sources. Records of 64 test holes and cross sections are given. V. S.
3. (and Leonard, Arthur Byron). Stratigraphy of the late Pleistocene loesses in Kansas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1463, Dec. 1950.
4. Soil-forming intervals evidenced in the Kansas Pleistocene [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1567, Dec. 1950.

Fryklund, Verne C., Jr.

The ore deposits of the Mayflower area, *in* Detailed geology of certain areas in the Mineral Hill and Warm Springs mining districts, Blaine County, Idaho: Idaho Bur. Mines and Geology Pamph. 90, p. 63–73, illus. incl. geol. maps, Oct. 1950. Describes the stratigraphy, structure and mineralization of the Mayflower area, near Hailey, southern Idaho. The ore is mainly galena, sphalerite, and tetrahedrite. Particular attention is given to structure and its relation to the continuation of ore in depth.

Fryxell, Fritiof Melvin. *See also* Matthes, F. E., 2, 3.

1. Student projects and their place in geologic education: Ill. State Acad. Sci. Trans., v. 43, p. 116–120, 1950. Describes the development and value of extracurricular student projects in connection with the teaching of geology at Augustana College, Rock Island, Illinois.
2. Memorial to Neil Alden Miner [1898–1947]: Geol. Soc. Am. Proc. 1949, p. 201–207, port., June 1950.

Fuller, James Osborn.

1. New discoveries concerning the Sharon conglomerate in northeastern Ohio [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1567, Dec. 1950.
2. Northern Middle Devonian sedimentary source for the Sharon conglomerate of northeastern Ohio [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1463–1464, Dec. 1950.

Fuller, M. Luther. *See* Davis, D. W.

Fuller, Richard Eugene.

1. Structural features in the Columbia River basalt: Northwest Sci., v. 24, no. 2, p. 65–73, May 1950. The discussion covers such points as the possibility of differentiation in the flows, aqueous chilling, tensional surface features, jointing, and basaltic vents. A bibliography is given.
2. Palisades diabase joint cracks [N. J.] [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1523, Dec. 1950.

Fulton, Robert Burwell, 3d.

Prospecting for zinc using semiquantitative chemical analyses of soils: Econ. Geology, v. 45, no. 7, p. 654–670, illus., Nov. 1950; abs., Stanford Univ. Bull., Abstracts of Dissertations, 1948–1949, v. 24, p. 244–246, Nov. 30, 1949. Describes a field method of semiquantitative chemical analysis of soils for zinc, which can be used as a tool in prospecting for zinc ore. The method is particularly applicable to areas where outcrops are few due to a heavy soil cover.

Funnell, John E.

Recent studies of Wilcox group clays in Arkansas: Am. Ceramic Soc. Bull., v. 29, no. 8, p. 286–289, illus., Aug. 1950. The geology, occurrence, and extent of the clays in the Wilcox formation in south-central and southwestern Arkansas are indicated. The results of microscopic and X-ray diffraction studies and ceramic tests are given briefly, together with chemical analyses.

Furcron, Aurelius Sydney.

1. Geological provinces of Georgia and their principal mineral resources: Ga. Geol. Survey Bull. 56, p. 10–20, 1950. A brief résumé of the minerals produced in the three physiographic regions—crystalline area, Coastal Plain area, and the Paleozoic area.
2. Kyanite and sillimanite in the southeastern states, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 99–111, illus., 1950. Describes the occurrence and distribution of kyanite and sillimanite deposits in Virginia, North Carolina, South Carolina, and Georgia, and discusses the origin and age.

Gabelman, John W. *See also* Wagner, W. R.

1. Geology of the Fulford and Brush Creek mining districts, Eagle County, Colorado: Mining Yearbook, p. 50–52, illus. incl. geol. sk. map, Colo. Min. Assoc., Denver, Colo. 1950. Briefly describes the igneous rocks, rock alteration, structure, and ore possibilities of the area. A geologic sketch map and stratigraphic column are shown. The ore deposits are gold-silver-copper, and although there is no accurate recorded production, prospecting and small operations have been carried on.
2. Structural control of limestone alteration in the Monarch mining district, Colorado [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1552–1553, Dec. 1950.

Gabriel, Vittali Gavrilovich.

Geological considerations in evaluation of residual gravities: Mines Mag., v. 40, no. 10, p. 104–106, illus., Oct. 1950. "Geological considerations for the determination of depths from the surface of points located in the regional formations or structures are given and the analogy of depth determinations with the evaluation of residual gravities is investigated. Finally, inferences for proper evaluation of residual gravities are made."

Gad, Gamal M.

Thermochemical changes in alunite and alunitic clays: Am. Ceramic Soc. Jour., v. 33, no. 6, p. 208–210, illus., June 1950. An X-ray diffraction and thermal analysis study of the reaction of alunite and alunitic clays to heating.

Gair, Jacob E.

Some effects of deformation in the central Appalachians: Geol. Soc. Am. Bull., v. 61, no. 8, p. 857–876, illus., Aug. 1950. Presents the results of field and laboratory study of deformation of quartzites, sandstones, shales and limestones in the central Appalachians, particularly in the Potomac River Valley. Folds, faults, cleavage, and lineation in Cambrian to Devonian rocks, and fabric diagrams have been used to interpret deforming mechanisms. Conclusions on the causes of changes in deformation and the extent of deformation are given.

Galbraith, George. *See* Day, W. L.

Gallagher, David. *See* Pérez Siliceo, R.

Galloni, Ernesto E.

The crystal structure of ferroan zincian rhodochrosite: Am. Mineralogist, v. 35, nos. 7–8, p. 562–570, illus., July–Aug. 1950. "Roentgenographic and thermal analysis of this new variety proved that it is a Mn-Fe and Zn carbonate isomorphous with $MnCO_3$. Specific gravity and refractive indices have been determined."

Gallup, W. B.

Geology of the Turner Valley oil and gas field [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2250, Nov. 1950.

Galpin, Sidney Stewart. *See* Donnerstag, P.

Gammell, Hugh Graham. *See* Hancock, W. P.

García Rojas, Antonio.

1. Exploración gravimétrica: Petróleos Mexicanos, no. 78, p. 13–38, Feb. 1950. The principles of geophysical exploration using gravimetric methods are discussed, supplemented by specific data on Mexican areas.
2. Exploración petrolera en la República mexicana de 1938 a 1950; Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 4, p. 245–255, illus., Apr. 1950; Petróleos Mexicanos, no. 85, p. 75–95, illus., Sept. 30, 1950. A brief account of oil and gas exploration in Mexico during 1938–50, followed by a review of developments in the promising northeastern, northern, and southern petroliferous zones on the Gulf Coast, and in other regions. V. S.

García Tijerina, Napoleón.

Bosquejo geológico del Istmo de Tehuantepec: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 7, p. 435–444, July 1950; Petróleos Mexicanos, no. 87, p. 70–79, Nov. 1950. Sketches the physiography, stratigraphy, structure, and geologic history of the Tehuantepec Isthmus area in Mexico.

Gardner, Eugene Delos.

Guide to prospecting for lode gold: U. S. Bur. Mines Inf. Circ. 7535, p. 1–12 (‡), Feb. 1950; reprinted in part in Earth Sci. Digest, v. 4, no. 9, p. 8–15, Apr. 1950. Geologic conditions favoring formation of gold deposits, characteristic surface indications, associated minerals, testing procedures, and field equipment and provisions are discussed. V. S.

Gardner, Louis Samuel.

Geology of the Button Butte-Forestgrove area, Fergus County, Montana: U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 106. 1950. An index map, geologic map, and columnar section are shown, together with a text on the Carboniferous, Jurassic, and Cretaceous stratigraphy and the mineral resources of the area.

Garland, G. D.

1. Gravity anomalies of the Canadian Shield area of northern Ontario: Bulletin Géodésique, 1949, no. 12, p. 163–164, June 1949. It is concluded that irregularities in the granitic layer resulted from pre-Cambrian mountain building and produce the broad, regional gravity anomalies. More local anomalies can be correlated directly with known surface geology.
2. The analysis of combined gravity and magnetic anomalies [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 230, 1950.

Garman, William L. *See* Harper, H. J.

Garpner, Erik U.

(and Reed, David E.). Interpretation of magnetic survey data: Mines Mag., v. 40, no. 4, p. 18–19, illus., Apr. 1950. Magnetic anomalies are distinguished into those produced by elevation of the basement, polarization contrasts within the basement, and a combination of both factors, and the characteristics of each type are discussed to aid interpretation. V. S.

Garrels, Robert Minard. *See also* Castaño, J. R.

(and Dreyer, Robert Marx). Solubility and rate of solution of calcium carbonate [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1464, Dec. 1950.

Garrett, Howard L.

Sand pockets and breccia in the Leadville limestone Star Basin area, Colorado [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1553, Dec. 1950.

Garrett, Julius Benjamin, Jr.

New name for a Texas Miocene foraminifer: Jour. Paleontology, v. 24, no. 4, p. 506, July 1950. *Planulina palmerana* is proposed for *Planulina palmerae* Garrett, preoccupied. V. S.

Garrison, Lester Edward.

(and Takasaki, K. J.). Bottom samples off the coast of southern California: Calif. Univ. Scripps Inst. Oceanography, Submarine Geology Rpt. 12, 6 p. (‡), illus., Aug. 1950. Data on the location and analysis of some 400 bottom samples taken in the southern California region up to 1939 are plotted on 4 charts.

Gassmann, Friedrich.

A survey of geophysics: Sci. Monthly, v. 70, no. 6, p. 358–364, June 1950. A general article dealing with the aims and scope of geophysics, the interior of the earth, gravity, terrestrial magnetism, and seismology.

Gates, Frank C.

The disappearing Sleeping Bear dune: Ecology, v. 31, no. 3, p. 386–392, illus., July 1950. Sleeping Bear dune, about 25 miles west of Traverse City, Michigan, is perched on a glacial moraine overlooking Lake Michigan to the west. Formerly covered by vegetation, the dune is now being eroded away by the wind as a result of activity within the past 20 years which has destroyed the protective vegetative covering. Variations in the measurements from 1928 to the present time are given.

Gates, Robert M. *See* Emmons, R. C.

Gault, Hugh Richard.

1. Metallic mineral reserves of Pennsylvania, *in* Symposium on mineral resources of Pennsylvania: Pa. Acad. Sci. Proc., v. 24, p. 208–214, illus., 1950. The metallic minerals of Pennsylvania are discussed from the point of view of their geological occurrence, and tabulations are given according to origin and age. The future of several ores is outlined briefly.
2. Some chemical and mineral characteristics of carbonate rocks determined from chemical analyses [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1464–1465, Dec. 1950.

Gazin, Charles Lewis.

1. (and Collins, Robert E. Lee). Remains of land mammals from the Miocene of the Chesapeake Bay region: Smithsonian Inst. Misc. Coll., v. 116, no. 2, 21 p., illus., Oct. 12, 1950. Describes molar remains of several species of mammals (dog, mastodon, tapir, rhinoceros, horse, and peccary), from the Calvert formation. *Gomphotherium calvertensis*, n. sp., is described.
2. Annotated list of fossil Mammalia associated with human remains at Melbourne, Fla.: Washington Acad. Sci. Jour., v. 40, no. 12, p. 397–404, Dec. 15, 1950. Paleontological studies of the Pleistocene mammalian fauna at Melbourne, Florida, are reviewed briefly. Fifty forms are recognized, of which 28 are extinct. The total is considered to be nearly complete and 50 percent larger than the living fauna. V. S.

Gee, David E. *See* Abilene Geol. Soc., 3.

Gentry, Howard Scott.

Taxonomy and evolution of *Vaseyanthus:* Madroño, v. 10, no. 5, p. 142–155, illus., Jan. 1950. *Vaseyanthus* is a genus of small vine endemic to the Gulf of California region of northwestern Mexico. The development of the plant during Tertiary time, and its environment, are discussed.

Geoffroy, Paul R.

(and Koulomzine, Theodore). Need for new policies and new tools in mining geophysics: Canadian Min. Met. Bull. no. 458, p. 313–315, June 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 205–207, 1950. A review of the place of geophysics in prospecting, its present status in the mineral and oil industries, and ways that geophysics can be utilized to aid the discovery of ore deposits.

Geological Association of Canada.

Tectonic map of Canada. Scale 1:3,801,600 or 1 inch to 60 miles. 1950. Pre-Cambrian, Paleozoic, Mesozoic, and Cenozoic sedimentary, volcanic, and intrusive rocks are differentiated by colors. The sedimentary and volcanic rocks are further differentiated into undisturbed and disturbed by patterns. Structural features are shown by black symbols.

Geological Society of America.

Application of geology to engineering practice; Berkey Volume. 327 p., illus. Geol. Soc. Am., New York, 1950. The Berkey Volume is a collection of papers dealing with various aspects of the application of geology to engineering practice that has been assembled to honor Charles P. Berkey and his many contributions to engineering geology. Papers by J. L. Savage and R. F. Rhoades; E. B. Burwell, Jr., and G. D. Roberts; E. B. Burwell, Jr., and B. C. Moneymaker; J. F. Sanborn; K. Terzaghi; G. D. Louderback; O. E. Meinzer; E. F. Bean; W. C. Krumbein; D. McConnell and others; K. C. Heald; M. H. Gidel; and C. B. Hunt are included. These are cited individually.

George, D'Arcy Roscoe.

Mineralogy of uranium and thorium bearing minerals; U. S. Atomic Energy Comm. Pub. RMO-563, 198 p. (‡), illus., Jan. 1949. The first part of the report deals with the distribution, mode of occurrence, classification, and chemistry of the minerals. The second part consists of descriptions of the individual minerals, arranged under three headings—hypogene uranium minerals, hypogene thorium minerals, and supergene uranium minerals. The material in both sections is based both on literature studies and laboratory investigations.

George, William Owsley.

The salt water problem in Texas: World Oil, v. 130, no. 2, p. 56-58, illus., Feb. 1950. Ground water occurrence in relation to wells drilled for oil and gas is considered briefly with a view to prevention of contamination of fresh water sands by the salt water from such wells. Examples are given. V. S.

Gester, George Clark.

Northern Coast Ranges, California, *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2382, Dec. 1950.

Geyer, Richard A.

A bibliography on the Gulf of Mexico: Texas Jour. Sci., v. 2, no. 1, p. 44-93, Mar. 31, 1950. Approximately 120 references on geologic, paleontologic, and geophysical aspects are given. The other 260 references cover oceanography, marine biology, and meteorology, with an appendix of 80 references on mass mortality.

Gibbs, Harold L.

(and Evans, LaMar G.). Improvements in methods for preparing thin sections of rocks: U. S. Bur. Mines Rpt. Inv. 4711, 6 p. (‡), illus., June 1950. "Detailed instructions for making thin sections by methods developed at the Salt Lake City laboratory of the Bureau of Mines are given in this paper. Several new techniques are described for making thin sections of highly altered and friable rocks."

Gibson, Juan B.

Acumulaciónes petroliferas en la corteza terrestre: Petróleos Mexicanos, no. 82, p. 1-9, illus., June 1950. General comments on structures in sedimentary rocks favorable to the accumulation of petroleum, and references to Mexican occurrences.

Gidel, Murl Harold.

Geology in the discovery, development, and exploitation of mineral deposits, *in* Application of geology to engineering practice, Berkey Volume, p. 273-294, illus., Geol. Soc. Am., New York, 1950. The fundamental principles of ore deposition are summarized, and their application to mineral exploration and development is discussed.

Gilbert, J. E.

1. Preliminary report on the Lac La Trève area, Abitibi-East County: Quebec Dept. Mines, Geol. Surveys Br., Prelim. Rpt. 230, 7 p. (‡), geol. map, 1949. A brief report on the pre-Cambrian volcanics and sedimentary strata, the structure, and economic possibilities of the Lac La Trève area in northern Quebec.
2. Étude sur le métamorphisme des roches basiques de la région des lacs Capisisit et Inconnu, dans le district d'Abitibi-Est; Assoc. Canadienne-Française Av. Sci. Annales, v. 16, p. 93-97, 1950. Petrographic description of the metamorphosed basic rocks in the vicinity of Capsisit and Inconnu Lakes, Abitibi-East, Quebec, and conclusions on their origin.
3. Capsisit Lake and eastward; geology and mineral possibilities: Canadian Min. Jour., v. 71, no. 5, p. 73-80, illus. incl. geol. sketch map, May 1950. The Capsisit Lake area in northern Quebec consists of an east-trending belt of volcanic and sedimentary rocks with associated intrusives, all of pre-Cambrian age. The types of intrusives, the structure, and economic possibilities of the area are discussed.

Gilbert, Ray E.

Geochemical prospecting in the Park City district [Utah] [abs.]: Min. Cong. Jour., v. 36, no. 10, p. 77, Oct. 1950.

Gildersleeve, Benjamin.

1. Mineral resources [of the Jackson Purchase region, Kentucky]: Ky. Geol. Survey Bull. ser. 9, no. 4, p. 82–111, illus., 1950. A revised reprinting of Bulletin 8, Kentucky Dept. Mines and Minerals, 1945. Clay is the chief mineral resource of the area. The geologic occurrence and various sections in the clay pits are described. Sand, gravel, chert, oil and gas, and ground water are briefly mentioned.
2. Building stone of the Crab Orchard district, Tennessee: Min. Eng., v. 187, no. 8, p. 883–885, illus., Aug. 1950; A. I. M. E. Trans., v. 187, 1950. Describes the geology, character, and quarrying of a fine-grained, quartzitic, multicolored sandstone from Cumberland County, eastern Tennessee.

Gilmour, Andrew.

The state of seismic prospecting: Geophysics, v. 15, no. 3, p. 395–399, July 1950; Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1384–1388, July 1950; modified version, Oil and Gas Jour., v. 48, no. 51, p. 110, 112, Apr. 27, 1950. The progress of seismic prospecting in the United States from 1920 to the present time is reviewed briefly. Quality and efficiency of operations are examined and found to depend on the technical skill, experience and ability of the personnel of prospecting parties. V. S.

Girard, Henri. *See* Risi, J.

Girault, Jean Paul.

A new method for measuring the refractive indices in micaceous minerals: Am. Mineralogist, v. 35, nos. 5–6, p. 421–424, illus., May–June 1950. Describes a method whereby a narrow mica strip, cut perpendicularly to (001), is set in a lead pellet in a vertical position. It is then immersed in a suitable index liquid and placed on a temperature cell fixed to a microscope. The liquid is heated and when the refractive index is equal to that of the mica, it is read on the refractometer drum. The procedure and apparatus are described, the method evaluated, and its application to chlorites discussed.

Goddard, Edwin Newell. *See also* Lovering, T. S., 1.

Structure of the Judith Mountains, Montana [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1465, Dec. 1950.

Goebel, Lawrence A.

Cairo field, Union County, Arkansas: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 10, p. 1954–1980, illus., Oct. 1950. The Cairo oil field, west of El Dorado, southern Arkansas, produces from the Smackover formation of Upper Jurassic age. It has exceptional oil-water contacts and abnormally low bottom-hole pressure. Structure does not appear to be a controlling influence on the reservoir. These features are examined in the light of local geology, and the relationship of the Cairo field to adjacent fields is discussed. The nomenclature of the Haynesville, Cotton Valley, and Buckner formations in the area is considered. V. S.

Goedicke, T. R.

Some geological observations in Caldwell and Watauga Counties, western North Carolina [abs.]: N. C. Acad. Sci. Proc. *in* Elisha Mitchell Sci. Soc. Jour., v. 66, no. 2, p. 116, Dec. 1950.

Golder, Charles R. *See* Benson, W. E. B.

Goldman, Marcus Isaac.

What is "sedimentology"? Jour. Sed. Petrology, v. 20, no. 2, p. 118–119, June 1950. Maintains that the study of sedimentary rocks is a part of petrology. J. L. Hough (editor) outlines the history of the term "sedimentology." V. S.

Goldring, Winifred.

Devonian crinoids; new and old: Wagner Free Inst. Sci. Bull., v. 25, no. 4, p. 29–37, illus., Nov. 1950. Seven species of Devonian crinoids are described and figured, among which are a new variety of *Botryocrinus reimanni*, and the new species *Botryocrinus arkonensis* and *Dolatocrinus bethaniensis*.

Goldsmith, Julian R.

Gallium and germanium substitutions in synthetic feldspars: Jour. Geology, v. 58, no. 5, p. 518–536, illus., Sept. 1950; abs., with title, "Significance of gallium and germanium replacements in synthetic feldspars", Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1891, Dec. 1949; Am. Mineralogist, v. 35, nos. 3–4, p. 282, Mar.–Apr. 1950. Gallium and germanium atoms substituting for aluminum and silicon atoms are discussed as a means of obtaining information on substitutional disorder in alumino-silicates, and of interpreting problems of the natural feldspars.

Goldsmith, Richard.

Granitization in the central Okanogan Range, Okanogan County, Washington [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1523, Dec. 1950.

Goldstein, August, Jr. *See also* Hendricks, T. A., 2.

Mineralogy of some Cretaceous sandstones from the Colorado Front Range: Jour. Sed. Petrology, v. 20, no. 2, p. 85–97, illus., June 1950. "Heavy mineral suites of Cretaceous sandstones from the Colorado Front Range are described and discussed. Progressive variation in these suites between Dakota time and Laramie time is a function of the position of the sediment in the disastrophic cycle and results from addition of first-cycle sedimentary detritus in the early stages of the Laramide Revolution. A mineral stability series for Cretaceous sediments in the Front Range area is established."

Goldstone, Frank.

(and Nettleton, Lewis Lomax). Sedimentary volumes in the Gulf Coastal Plain; geophysical aspects [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1465, Dec. 1950.

Goldthwait, Richard Parker.

1. Wisconsin glacial deposits, *in* The water resources of Greene County, Ohio: Ohio Water Res. Bd. Bull. 19, p. 13–19, illus. incl. geol. map, Jan. 1950. The various types of glacial deposits are described and their water-bearing properties are discussed. A map of the surficial geology is included.
2. Geomorphology, *in* Baffin Island expedition, 1950, a preliminary report: Arctic, v. 3, no. 3, p. 139–141, Dec. 1950. Brief data on the activity of the Barnes Ice Cap and moraine formation, and the glacial history of the region between the ice cap and the coast.
3. Wisconsin deglaciation of west-central Ohio [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1466, Dec. 1950.

Golzé, Alfred R.

Problems of irrigation canals, *in* Applied sedimentation, p. 364–379, 1950. Methods of reducing the inflow of silt are considered, along with the problem of the cost of silt removal.

Gonzáles Reyna, Jenaro.

1. Los recursos minerometalurgicos: Soc. Mex. Geog. Est. Bol., v. 68, nos. 1–2, p. 19–44, July–Oct. 1949. A general discussion of mineral resources of Mexico according to regions.
2. Geología, paragénesis y reservas de los yacimientos de plomo y zinc de México, *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 121–142, illus., 1950; abs., Volume of titles and abstracts, p. 18–19, 1948; also published as México Inst. Nac. Inv. Rec. Miner. Bol. 26, 32 p., illus., 1950. The lead-zinc deposits of Mexico are discussed according to geographic distribution, geologic occurrence, mineralization, production, and reserves. Several summarized tabulations of data are included.

Gonzáles, Reyna Jenaro—Continued

3. The coal deposits of Coahuila, Mexico: Econ. Geology, v. 45, no. 3, p. 249–251, May 1950. Describes briefly the occurrence and reserves of coal in the Cretaceous strata of the Fuente, Sabinas, Esperanza, and Saltillito-Lampacites coal basins. Reserves for the province total 1,690,000,000 tons. V. S.

Goodspeed, George Edward.

Rheomorphic breccias [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 282–283, Mar.–Apr. 1950.

Goranson, Roy Waldemar. *See* Tuve, M. A., 1.

Gordon, I. *See* Bauer, W. H.

Gordon, Mackenzie, Jr. *See* Koschmann, A. H., 1.

Gordon, Samuel George, d. 1952. *See also* Fahey, J. J., 1.

Crystallographic data on wavellite from Llallagua, Bolivia, and on cacoxenite from Hellertown, Pennsylvania [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 132, Jan.–Feb. 1950.

Gorfinkle, Lorraine G. *See* Ahrens, L. H., 2, 5.

Goudge, M. G.

Sandstone at Hantsport: Nova Scotia Dept. Mines Ann. Rpt. 1949, p. 108–110, illus., 1950. The sandstone deposit of Mississippian age, at the town of Hantsport, Nova Scotia, contains over 100,000 tons of silica rocks suitable for production of glass. Chemical composition is given. V. S.

Gould, Howard Ross.

Some quantitative aspects of Lake Mead turbidity currents [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 176, Apr. 27, 1950.

Gow, Kenneth L.

Douglas Creek gas field, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 139–146, illus., 1950. The stratigraphy and structure of the Douglas Creek gas field, northwestern Colorado, are described briefly. Notes on nearby wildcat wells are given. A gas analysis is included.

Graf, Donald L.

1. Petrology of the basal high-purity bed of the Burlington limestone: Ill. State Acad. Sci. Trans., v. 43, p. 160–164, illus., 1950; Ill. State Geol. Survey Circ. 170, 1951. The depositional history of a basal, chert-free layer of the Burlington limestone in western Illinois is interpreted through a study of thin sections.
2. (and Kerr, Paul Francis). Trace-element studies, Santa Rita, New Mexico: Geol. Soc. Am. Bull., v. 61, no. 10, p. 1023–1052, illus., Oct. 1950. "Emission spectrography has been used to study distribution of trace elements in Paleozoic limestones surrounding Pb-Zn ore bodies near Santa Rita, New Mexico, and subsequent transportation of these traces into overlying Tertiary beds. Analyses are given for Pb, Zn, Cu, Ag, and V, important ore metals, and Mn and Al, prominent in pre-ore silication." The correlations, zonation, and structural control of the trace-element distribution are discussed.
3. (and Lamar, John Everts). Petrology of Fredonia oölite in southern Illinois: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2318–2336, illus., Dec. 1950. Describes the geologic history and petrology of the Fredonia oölite (Mississippian) of southern Illinois, a member of the Ste. Genevieve limestone and an important oil-bearing bed. Two ages of cementation, two periods of solution, and primary and secondary porosity are observed. Twinning and undulose extinction in coarsely crystalline calcite and penetration and disruption of oölites indicate pressure related to compaction, and perhaps also to diastrophism. V. S.

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Graham, D. W.

Susan Peak field, Tom Green County, Texas: Abilene Geol. Soc., Geol. Contr., p. 80–81, illus., 1950. Brief notes on the structure and producing zones.

Graham, E. R.

The plagioclase feldspars as an index to soil weathering: Soil Science Soc. Am. Proc. 1949, v. 14, p. 300–302, 1950. The procedure followed and the results obtained in experimental work on feldspar weathering are described. It is concluded that the weathering rate of plagioclase feldspar follows the calcium content. Anorthite, with the highest calcium content, weathers the most rapidly; albite, with the lowest content, is most resistant. The rate for anorthite is 16.3 times as fast as that for albite.

Graham, Jack Bennett.

1. Pennsylvania's water resources and water uses, *in* Symposium on mineral resources of Pennsylvania: Pa. Acad. Sci. Proc., v. 24, p. 220–229, 1950. General comments on the occurrence, use, chemical quality, and development of ground-water and surface-water supplies in Pennsylvania.
2. Ground-water problems in the Philadelphia area: Econ. Geology, v. 45, no. 3, p. 210–221, illus. incl. geol. sketch map, May 1950. The Philadelphia area, in southeastern Pennsylvania, is situated partly on pre-Cambrian crystalline rocks and partly on unconsolidated sediments of the Atlantic Coastal Plain. The sand and gravel aquifers of the Coastal Plain are highly productive compared to the bedrock aquifers of the Piedmont. The water-bearing properties of the rocks are described. V. S.

Graham, Joseph John.

1. A chamber cast in *Nodosaria affinis* d'Orbigny in the Eocene of California: Micropaleontologist, v. 4, no. 1, p. 17, illus., Jan. 1950. Small, oölitic goethite pellets occurring in the Meganos shale (Eocene) of central California are the internal casts of the chambers of *Nodosaria affinis*.
2. New Foraminifera from the type Meganos formation (Eocene) of California: Jour. Paleontology, v. 24, no. 3, p. 282–286, illus., May 1950. "Two new species of Foraminifera are illustrated and described from Division E of the type Meganos formation (Eocene) of California: *Elphidium* (?) *clarki* and *Operculina campi*. This is the earliest stratigraphic occurrence of *Operculina* in California, and if *E.* (?) *clarki* is correctly allocated, possibly one of the earliest occurrences of *Elphidium* in North America."
3. Foraminifera of the type Meganos formation (Eocene) of central California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1538, Dec. 1950.

Graham, Robert Bruce.

1. Preliminary report on part of the west half of Hébécourt Township, Abitibi-West County: Quebec Dept. Mines, Mineral Deposits Br., Prelim. Rpt. 232, 15 p. (‡), geol. map, 1949. A brief report on the pre-Cambrian rocks, structure, and gold and copper ore prospecting in Hébécourt Township, northwestern Quebec.
2. Preliminary report on the southwest part of Lesueur Township, Abitibi-East County: Quebec Dept. Mines, Mineral Deposits Br., Prelim. Rpt. 243, 15 p. (‡), geol. map, 1950. Describes the pre-Cambrian rocks and structure in Lesueur Township in northern Quebec. The area is characterized by gold, silver, lead, and zinc mineralization. Several mine properties are described.
3. The geology of the southwest part of Lesueur Township, Bachelor Lake: Canadian Min. Jour., v. 71, no. 8, p. 60–66, illus. incl. geol. map, Aug. 1950. The southwest part of Lesueur Township, Bachelor Lake area, northern Quebec, is underlain by pre-Cambrian volcanics and sediments, cut by various intrusives. Gold, silver, zinc, and lead mineralization occurs in silicified agglomerate and tuff. V. S.

Grant, Willard H.

The petrography of three Georgia itacolumites: Ga. Geol. Survey Bull. 56, p. 91–96, 1950. Brief descriptions of flexible sandstones occurring in Georgia, with notes on their origin.

Gray, A. Lloyd.

The practical application of air survey to geological exploration: Western Miner, v. 23, no. 3, p. 52–54, illus., Mar. 1950. Large-scale aerial photographs, taken by suitable methods and examined stereoscopically, can aid in identifying geological boundaries, structures, soils, glacier flow-lines, and rock types, and in planning ground traverses. V. S.

Gray, Carlyle.

A strucural problem near Evansville, Pa.: Pa. Acad. Sci. Proc., v. 24, p. 170–175, illus. incl. geol. sketch map, 1950. The Beekmantown, Jacksonburg, and Martinsburg formations, of Ordovician age, are exposed in the vicinity of Evansville, near Reading, eastern Pennsylvania. Complex thrust faulting and folding characterize the area. The stratigraphy and structure of the Jacksonburg formation are discussed.

Gray, Henry Hamilton.

Mineral City [Ohio] "structure" [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1567, Dec. 1950.

Green, Cecil Howard.

The relationship of research and field operations in seismic exploration: Colo. School of Mines Quart., v. 45, no. 4A, p. 1–9, Oct. 1950. Progress in seismic exploration for oil, reviewed through advances in the interpretation of salt domes, reefs, weathering, low-relief structure, varied lithology, and other problems, shows the importance of long-range research, assured by education in fundamentals of mathematics, physics, and geology. V. S.

Green, Jesse Robison.

A curious Montana cavern: Mineralogist, v. 18, nos. 7–8, p. 343–344, illus., July-Aug. 1950. Reports the occurrence of a sink hole near Armington, Montana. The hole, 156 feet in diameter and 120 feet deep, apparently formed by the collapse of sandstone strata over a limestone cavern.

Green, Lewis H. *See* Cameron, E. N., 1.

Green, Morton.

Review of the stratigraphy of the John Day formation in Oregon [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1538–1539, Dec. 1950.

Green, Stephen Harry.

Industrial coal available to Pacific Northwest industries: Raw Materials Survey, Resource Rpt. 4, 22 p. (‡), maps, Feb. 1949. The coal fields of Washington, Oregon, Utah, Wyoming, and Montana are described briefly. Available resources are sufficient for the foreseeable needs of the Lower Columbia River industrial area. V. S.

Green, Thomas Henning. *See* Swesnik, R. M., 2.

Greene, Frank Cook. *See also* Cline, L. M., 1.

(and Searight, Walter Vernon). Revision of the classification of the post-Cherokee Pennsylvanian beds of Missouri: Mo. Geol. Survey and Water Res. Rpt. Inv. 11, 22 p., illus., 1949. The nomenclature and classification of the post-Cherokee Pennsylvanian, comprising the Desmoinesian, Missourian, and Virginian series, as adopted by the Missouri Geological Survey in compliance with an interstate agreement with Kansas, Iowa, and Nebraska, is presented, discussed, and illustrated by a detailed columnar section.

Greene, Kenneth Titsworth. *See* McConnell, D., 1.

Greenman, Norman N. *See* Chayes, F., 3.

Greer, W. L.

Geraldton-Beardmore area, general geology: Canadian Min. Jour., v. 71, no. 11, p. 114–115, geol. sketch map, Nov. 1950. The ore bodies and their structural features are briefly outlined. The Geraldton-Beardmore gold mining camp is located in central Ontario near Lake Nipigon.

Gregory, Herbert Ernest, 1869–1952.

Geology of eastern Iron County, Utah: Utah Geol. Miner. Survey Bull. 37, 153 p., illus. incl. geol. map, Feb. 1950. Discusses the stratigraphy, igneous rocks, structure, physiography, and economic geology of the area. The strata range from Permian through Tertiary in age, with glacial deposits of Quaternary age. The igneous rocks are of volcanic origin, and are Tertiary or Quaternary. Coal is the only resource of economic value.

Gregory, Joseph Tracy.

1. Tetrapods of the Pennsylvanian nodules from Mazon Creek, Illinois: Am. Jour. Sci., v. 248, no. 12, p. 833–873, illus., Dec. 1950. Re-examination of the tetrapod fauna from the nodules in the Pennsylvanian shales at Mazon Creek, Illinois, indicates recognition of only 6 genera and species. The genus *Amphibamus* is revised; *Sauropleura* is described for the first time from the locality; and several other specimens are reviewed. Notes on the similarity of Paleozoic vertebrate faunas of North America and Europe and the means of distribution are included.
2. A large pycnodont from the Niobrara chalk: Postilla, no. 5, 10 p., illus., Dec. 29, 1950. Describes a new pycnodont fish, *Hadrodus marshi*, n. sp., discovered among specimens collected from the Cretaceous chalk along the Smoky Hill River in Kansas by the Yale Scientific Expedition of 1872.

Gregory, William King.

Parallel and diverging skeletal evolution in vertebrates and arthropods: Evolution, v. 4, no. 2, p. 164–171, June 1950.

Greig, Joseph Wilson. *See* Tuve, M. A., 1.

Grenier, Paul E.

1. Preliminary report on Beetz Lake area (western half) Saguenay County: Quebec Dept. Mines, Geol. Surveys Br., Prelim. Rpt. 240, 5 p. (‡), geol. map, 1950. Brief notes on the pre-Cambrian rocks, structure, and economic possibilities of the Beetz Lake area in eastern Quebec. Chalcopyrite, magnetite, and hematite have been found.
2. Problèmes géologiques au lac Albanel: Assoc. Canadienne-Française Av. Sci. Annales, v. 16, p. 97–100, 1950. Discusses the relationships of the pre-Cambrian gneiss and sedimentary rocks of the Mistassini series in the region of Lake Albanel, northern Quebec.

Gries, John Paul.

Water resources: Black Hills Engineer, v. 29, no. 2, p. 38, Nov. 1949. General comments on ground water in South Dakota and the need for an inventory of the water resources of the State.

Griffin, Charles D.

A pollen profile from Reed bog, Randolph County, Indiana: Butler Univ. Bot. Studies, v. 9, Paper no. 12, p. 131–139, May 1950. A paleobotanical study of a peat bog in eastern Indiana.

Griffin, K.

(and Thomson, James Edgar). Geology of the Teck-Hughes mine: Ontario Dept. Mines Ann. Rept., 1948, v. 57, pt. 5, p. 141–149, illus., 1950. Describes the development, general geology, structure, and mineralization at the Teck-Hughes gold mine in the Kirkland Lake area, northern Ontario.

Griffiths, John Cedric.

Directional permeability and dimensional orientation in Bradford sand: Producers Monthly, v. 14, no. 8, p. 26–32, illus., June 1950; reprinted in Pa. State Coll. Mineral Indus. Expt. Sta. Bull. 54, p. 138–163, illus., 1950. "Measurement of long axis orientation of quartz grains in 14 thin sections from 3 Bradford sand cores has shown that a grain orientation exists and is sensibly parallel to the direction of maximum permeability in these cores. The most marked grain orientation lies at a 30° angle to the bedding and is best shown in sections perpendicular to the bedding and in the plane of maximum permeability."

Griggs, David Tressell. *See* Turner, F. J., 3.

Grim, Ralph Early.

1. Some fundamental factors influencing the properties of soil materials: Second Internat. Conf. Soil Mechanics and Found. Eng., v. 3, p. 8–12, illus., 1948; Ill. State Geol. Survey, Rpt. Inv. 146, p. 5–11, illus., 1950. The factors of composition and textural characteristics are discussed insofar as they affect and control the properties of soils. "A theory of the structure of soil materials in the plastic state is presented that is based on the oriented configuration of the water molecules initially adsorbed by the clay mineral components." It is shown that small amounts of montmorillonite may markedly increase plastic properties. V. S.
2. Mineralogical composition in relation to the properties of certain soils: Géotechnique, v. 1, no. 3, p. 139–147, illus., June 1949; Ill. State Geol. Survey, Rpt. Inv. 146, p. 13–21, illus., 1950. Analyses of 9 selected, widely different soils are described to show relations between composition and soil properties. The latter are found influenced particularly by montmorillonite and halloysite content, high soluble-salt content, high base-exchange capacity, sodium as an exchangeable base, and concentration of components in fine silt particle size. V. S.
3. Application of studies of the composition of clays in the field of ceramics, *in* Applied sedimentation, p. 464–474, 1950. The composition of clays as a determining factor of their properties, particularly those which make them adaptable to ceramic use, is discussed. The ceramic properties considered are plasticity, suspension characteristics, bonding strength, drying shrinkage, and firing characteristics.
4. Clay mineralogy in the discovery and recovery of petroleum: Tulsa Geol. Soc. Digest, v. 18, p. 31–32, 1950. Brief summary of a talk given to the Tulsa Geological Society, March 6, 1950.

Griswold, Daniel H.

Applications of geology in soil conservation, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 107–121, illus. incl. geol. sk. maps, Jan. 1950. Discusses the application of geology to problems in flood control, watershed improvement, and land use. Specific information for the Rio Grande watershed in New Mexico and Texas, with regard to flood control, and for a proposed reservoir site in Beaver County, Utah, is given. Discussion by S. W. Lohman and W. A. Stewart is appended.

Grogan, Robert Mann.

(and Shrode, Raymond S.). Formation temperatures of southern Illinois bedded fluorite as determined from fluid inclusions [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1466, Dec. 1950.

Gross, William H.

A study of the spatial relation of gold ore to intrusive bodies in northwestern Ontario: Geol. Assoc. Canada Proc., v. 3, p. 123–139, illus., Dec. 1950. "This paper deals with the possibility of predicting the approximate location of ore by determining the direction of movement of the late crystallizing products in a magma by comparing partial analyses of rock specimens on the present surface of the intrusive." Preliminary work in four areas: two in the Red Lake district, Ontario; at Rice Lake, Manitoba; and at Eagle Lake, Ontario, is reported. The first three areas are known gold deposits; the fourth is a barren stock.

Grossman, Irving G.

Geomorphology of the interior saline basins of western North Dakota (summary) [abs.]: N. Dak. Acad. Sci. Proc., v. 3, 1949, p. 14–15, Jan. 1950.

Gruner, John Walter. *See also* Fetzer, W. G.

An attempt to arrange silicates in the order of reaction energies at relatively low temperatures: Am. Mineralogist, v. 35, nos. 3–4, p. 137–148, Mar.–Apr. 1950. Consideration of ionic forces and covalent SiO_2 forces leads to a tabulation of 85 silicates in a decreasing order of their electronegativity and bridging values, the product of which gives for each silicate its serial energy-index. The bridging factor is calculated from coordinate numbers. Various possibilities of geologic application through groupng into smaller units, such as the granitic pegmatite silicates, contact metamorphic silicates, etc., are discussed. The paper was presented as the presidential address, November 11, 1949. V. S.

Gruver, Robert M.

Differential thermal-analysis studies of ceramic materials; 2, Transition of aragonite to calcite: Am. Ceramic Soc. Jour., v. 33, no. 5, p. 171–174, illus., May 1, 1950. Previously published differential thermal-analysis curves for aragonite have not shown the transition to calcite near 450 C. This inversion is clearly shown in curves presented for six samples of aragonite and the transition is confirmed by X-ray diffraction patterns.

Gude, Arthur James, 3d.

Clay minerals of Laramie formation, Golden, Colorado, identified by x-ray diffraction: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1699–1717, illus., Aug. 1950. The mineralogical and lithological distribution and association of clay minerals in the Upper Cretaceous Laramie formation at Golden, Colorado, was studied by the X-ray diffraction powder method. Three stratigraphic intervals were distinguished, and the lower formation boundary was corrected. Clay mineral distribution was found to transect lithologic facies boundaries. The method and interpretation of data are discussed, and the lithologic column is given, with examples of X-ray patterns. V. S.

Guennel, G. K.

History of forests in the glacial Lake Chicago area: Butler Univ. Bot. Studies, v. 9, Paper no. 13, p. 140–158, illus., May 1950. Pollen profiles of the Pinhook bog and Merrillville bog in northern Indiana are given.

Guerra Peña, Felipe.

Introducción a la fotogeologia: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 1, p. 55–70, Jan. 1950. Photogeology is defined, and its development, techniques, and application in petroleum exploration are discussed.

Guiza, Reinaldo, Jr. *See also* Smith, W. C.; White, D. E., 1.

(and White, Donald Edward). Los yacimientos antimoniales de la región de El Antimonio, Estado de Sonora: México, Inst. Nac. Inv. Rec. Miner. Bol. 23, 48 p., illus. incl. geol. maps, 1949. The stratigraphy of the Triassic rocks, the structure, and the igneous intrusives in the Antimonio district in northwestern Sonora, Mexico, are described. The major part of the report is devoted to description of the geologic conditions, cross sections, and maps of twenty-two antimony mines.

Gunning, Henry Cecil.

The Cordilleran region: Canadian Min. Met. Bull. no. 454, p. 88–91, Feb. 1950. Discussion of the Institute Jubilee Volume, Structural geology of Canadian ore deposits.

Gutenberg, Beno.

1. Structure of the earth's crust in the continents: Science, v. 111, no. 2872, p. 29–30, Jan. 13, 1950. Differences between results from earthquakes and from artificial explosions on wave velocities and crustal structure are explained by a new hypothesis, according to which explosion waves reaching the low velocity layer are refracted downward without revealing it, whereas waves from earthquakes originating in this layer form a "sofar channel", as observed in the atmosphere and ocean, which radiates the energy of the $\overline{P}$ phase. V. S.

Gutenberg, Beno—Continued

2. Earthquakes in North America: Science, v. 111, no. 2883, p. 319–324, illus., Mar. 31, 1950. Reviews progress in seismology during the past 10 years, improvement in earthquake-magnitude determination, resulting knowledge on the relative seismicity of various regions of the earth, and different approaches in utilizing earthquake study for geological investigations. Particular attention is given to seismicity zones in the United States. V. S.
3. Wave velocity in the earth's crustal layers [abs.]: Geophysics, v. 15, no. 1, p. 156, Jan. 1950.
4. Revised travel time curves for southern California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1546, Dec. 1950.

Gutiérrez, Celedonio. *See* Fries, C., Jr., 2.

Gutiérrez Gil, Roberto.

Yacimientos petrolíferos en la región de Macuspana, Tabasco: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 8, p. 499–510, illus. incl. geol. sk. map, Aug. 1950. Briefly outlines the physiography, stratigraphy, and structure of the petroleum-bearing region of Macuspana, southern Tabasco, Mexico.

Guzmán, Eduardo Jose.

1. Geología del Noreste de Guerrero: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 2, p. 95–156, illus. incl. geol. map, Feb. 1950. A stratigraphic and structural study of the northeastern part of the State of Guerrero in southwestern Mexico. The strata consist of metamorphosed Paleozoic (?) rocks, and Triassic (?) through Quaternary sediments. Notes on the fossils, geologic history, igneous rocks, and petroleum possibilities are given. A geologic map, cross sections, and a correlation chart are included.
2. (and Mina Uhink, Federico). Resultados de las perforaciones de petróleos mexicanos en 1949: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 3, p. 171–203, illus., Mar. 1950; reprinted in Petróleos Mexicanos, no. 81, p. 41–71, illus., May 1950. Describes and gives statistics on petroleum development in Mexico during 1949. The greater part took place in eastern Mexico in three areas, northeastern, Tampico Basin, and Tehuantepec Isthmus.

Gwinn, G. Richards.

Dunite ring-dike at Webster, North Carolina [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1567–1568, Dec. 1950.

Gwynne, Charles Sumner.

Terraced highway side slopes in loess, southwestern Iowa: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 1, p. 1347–1354, illus., Dec. 1950. A terraced design for a four-mile stretch of highway cut through loess, with some cuts as much as 80 feet deep, is described. The effect of runoff, slope wash, and erosion is discussed.

Haas, Otto.

1. Ammonites; Tetrabranchiata or Dibranchiata?: Jour. Paleontology, v. 24, no. 1, p. 109–110, Jan. 1950. The accepted classification of the Ammonoidea as Dibranchiata is defended against A. Jeannet's alternative assignment, with criticism of his evidence. V. S.
2. Genus designation for species in evolutionary transition: Jour Paleontology, v. 24, no. 5, p. 625, Sept. 1950. Suggests that generic designation of species in evolutionary transition be made by using a hyphen between the generic names instead of using brackets, as formerly proposed by M. K. Elias. V. S.

Hack, John Tilton.

(and Nikiforoff, Constantin C.). The Brandywine area, *in* The coastal plain geology of southern Maryland: Johns Hopkins Univ. Studies in Geology, no. 16, pt. 3, p. III–1 to III–14, illus. incl. geol. map, 1950. The Tertiary sediments of the Brandywine area, between the District of Columbia and Upper Marlboro, Maryland, are described in a guidebook prepared for the Geological Society of America field trip in November 1950. The origin of the Brandywine formation is discussed.

Hadley, Herbert David.

The Charles problem: Billings Geol. Soc., First Annual Field Conference, Sept. 15–17, 1950, p. 44–46, illus., 1950. Discusses the stratigraphic position and extent of the Charles formation, known only from underground exploration. The formation represents a transition between the non-clastic Madison limestone and the clastic Kibbey formation, both of Mississippian age.

Hadley, Jarvis Bardwell.

Geology of the Bradford-Thetford area, Orange County, Vermont: Vt. Geol. Survey, Bull. 1, 36 p., illus. incl. geol. map, 1950. The Bradford-Thetford area, in eastern Vermont on the Connecticut River, is characterized by highly folded and metamorphosed sedimentary and volcanic rocks and minor intrusives, all of Ordovician or Devonian (?) age. The stratigraphy, structure, metamorphism, and glacial features are described. V. S.

Haeberle, Frederick Roland.

1. A survey of uranium resources of the world: Texas Jour. Sci., v. 2, no. 2, p. 148–155, June 30, 1950. The principal uranium minerals and the geologic occurrence at both the better and lesser known world deposits are discussed.
2. A review of some of the aspects of land bridges in the Tertiary: Texas Jour. Sci., v. 2, no. 2, p. 263–269, June 30, 1950. The various types of land bridges and the process of migration are discussed.

Hagen, H. B. *See* Boucher, F. G.

Hager, Dorsey.

1. The search for oil and gas in the Rocky Mountain region: Oil and Gas Jour., v. 49, no. 2, p. 116–118, 156, 158, illus., May 18, 1950. Considers the rule-of-thumb method that the number of undiscovered oil fields in sedimentary areas will be in the proportion that the volume of sediments in the new areas bear to the volume of sediments in the developed areas, and applies it to Montana, Wyoming, Colorado, and adjacent states.
2. (and Bell, Mendell McClellan). Summary of the gas and oil possibilities of Utah: Mines Mag., v. 40, no. 10, p. 60–63, map, Oct. 1950. It is concluded that the Uinta Basin, northeastern Utah, is an area of rich oil potential, the Colorado Plateau area has important possibilities, and the Basin and Range province is the least likely area for oil and gas.

Haider, M. L.

Oil developments in western Canada: Canadian Min. Met. Bull. no. 458, p. 321–325, illus., June 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 213–217, 1950. Oil developments from 1914 to the present, with particular emphasis on the progress in the Edmonton area since 1947, are reviewed.

Haigh, Berte Rolph. *See also* Bartley, J. H., 1.

Geology of Delaware Basin [Texas] [abs.]: Oil and Gas Jour., v. 49, no. 32, p. 102, Dec. 14, 1950.

Hail, William J., Jr. *See* Vine, J. D.

Haines, Richard Bower. *See* McClellan, H. W.

Hake, Benjamin Franklin.

Memorial to Robert Hastings Palmer [1882–1948]: Geol. Soc. Am. Proc. 1949, p. 211–212, port., June 1950.

Halbouty, Michel Thomas.

(and Hardin, George Cecil, Jr.). Types of hydrocarbon accumulation and geology of South Liberty salt dome, Liberty County, Texas [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 119, Apr. 27, 1950.

Hale, Danforth Rawson.

1. Hydrothermal synthesis of quartz crystals: Ceramic Age, v. 56, no. 5, p. 22–24, illus., Nov. 1950. One of the papers presented at the crystal chemistry symposium held at Rutgers University, June 2, 1950. Certain points of phase rule relationships of binary systems are discussed briefly insofar as they apply to more complex systems. The behavior of sodium carbonate with silica at high temperatures is also discussed.
2. Growing rock crystal [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1568, Dec. 1950.

Hale, Lyle A.

Stratigraphy of the Upper Cretaceous Montana group in the Rock Springs uplift, Sweetwater County, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 49–58, illus. incl. geol. map, 1950. The lithology, thickness, distribution, and correlation of the Baxter shale, Blair formation, Rock Springs formation, Ericson formation, Almond formation, and Lewis shale are described. The origin and conditions of deposition of the sandstones of the Montana group are discussed.

Haley, Boyd R. *See* Rothrock, H. E., 1.

Ham, William Eugene.

1. Geology of the Arbuckle limestone in the Arbuckle anticline: Tulsa Geol. Soc. Digest, v. 18, p. 49–53, illus., 1950; abs. with title, Stratigraphy and structure of the Arbuckle limestone in the Arbuckle anticline, Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 621, Mar. 1950. The stratigraphy and structure of the Arbuckle limestone, comprising four Upper Cambrian and four Lower Ordovician formations in south-central Oklahoma, are described, and brief notes on lithology are included.
2. Industrial minerals of the Arbuckle Mountains, Oklahoma: Hopper, v. 10, no. 11, p. 101–106 (‡), Nov. 1950. Brief notes on the occurrence and availability of sand and gravel, building stone, crushed stone, silica sand, and dolomite in the Arbuckle Mts. region of south central Oklahoma.

Hamburger, Gabrielle Eva. *See* Donnay, J. D. H.

Hamilton, Daniel Kirk.

Areas and principles of ground-water occurrence in the inner Bluegrass region, Kentucky: Ky. Geol. Survey Bull. 5, 68 p., illus. incl. geol. maps, 1950. The inner Bluegrass region comprises Fayette, Scott, Bourbon and Jessamine counties in north-central Kentucky. The stratigraphy, structure, and solutional features of the Lower to Upper Ordovician beds in the area are described. Ground water occurrence is discussed and well records are given. Geologic, structural, and ground-water maps of each county are included.

Hamilton, Gordon R. *See* Ewing, W. M., 2.

Hamilton, Howard V. *See also* Seaman, D. M.

Notes on the occurrence of celestite in Pa.: Rocks and Minerals, v. 25, nos. 7–8, p. 348–350, sketch map, July-Aug. 1950. Fibrous and crystalline celestite occurs in Silurian Wills Creek limestone near Bellwood, Blair County, Pennsylvania. V. S.

Hamilton, Peggy-Kay. *See* Davis, D. W.; Kerr, P. F., 3, 4.

Hammer, Sigmund Immanuel.

1. Density determinations by underground gravity measurements: Geophysics, v. 15, no. 4, p. 637–652, illus., Oct. 1950; abs., Oil and Gas Jour., v. 48, no. 51, p. 123, Apr. 27, 1950. Comparisons between measurements of rock density, made in a 2,247-feet deep shaft in limestone at Barberton, Ohio, by means of a gravimeter survey and laboratory tests of core samples, show the gravimeter to be more precise for density determinations of finite intervals of underground strata. V. S.
2. Recent developments in gravity prospecting: Colo. School of Mines Quart., v. 45, no. 4A, p. 87–103, illus., Oct. 1950. Advances in gravity instrumentation and field techniques are reviewed, with special attention to the interpretation of data and application to ore finding. The usefulness of density contrasts in the understanding of structures is emphasized. V. S.

Hammond, Charles R.

The chemical composition and some physical characteristics of tektites: Pop. Astronomy, v. 58, no. 7, p. 345–350, Aug. 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 271–275, 1950. "Accurate density measurements are given for two australites and for three moldavites, and a chemical analysis, made of a moldavite, is compared with that of other tektites and with those of ancient and modern glasses. The chemical analysis is then used to approximate the coefficient of thermal expansion and other physical characteristics of tektitic material."

Hancock, Willis Pritchard.

(and Gammell, Hugh Graham). Redwater oil field, Alberta [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2253, Nov. 1950.

Handin, John Walter. *See* Krumbein, W. C., 3.

Hanley, John B.

(and Heinrich, Eberhardt William, and Page, Lincoln Ridler). Pegmatite investigations in Colorado, Wyoming, and Utah, 1942–1944: U. S. Geol. Survey Prof. Paper 227, 125 p., illus. incl. geol. maps, 1950. The report based on examination of 114 pegmatites, describes the geology at the mines and prospects studied, illustrated by numerous maps and sections, and gives estimates of resources of beryllium, tantalum, and lithium minerals and of muscovite. V. S.

Hansen, Henry Paul.

Postglacial forests along the Alaska Highway in British Columbia: Am. Phil. Soc. Proc., v. 94, no. 5, p. 411–421, illus., Oct. 19, 1950. Pollen analyses of seventeen peat sections from northeastern British Columbia are described and interpreted.

Happ, Stafford Coleman.

1. Stream-channel control, *in* Applied sedimentation, p. 319–335, illus., 1950. Stream-channel processes are described, and the methods employed for improving stream channels for flood control and navigation are discussed, using the Mississippi, Ohio, and Missouri River work as illustrations.
2. Treatment of chalk foundation with bentonite seams, Harlan County Dam, Nebraska [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1467, Dec. 1950.
3. Geological classification of alluvial soils [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1568, Dec. 1950.

Harbaugh, John W.

Biogeochemical investigations in the Tri-State district: Econ. Geology, v. 45, no. 6, p. 548–567, illus., Sept.-Oct. 1950. Plant samples, collected at seven areas in the Tri-State district of Kansas, Missouri, and Oklahoma, were analyzed for zinc, copper, lead, nickel, tin, silver, and cobalt. The results are discussed. It is concluded that average zinc concentrations can be useful in prospecting for concealed mineralization in the district, particularly in the outcrop area of the Mississippian cherty limestones.

Harder, Poul.

(and Jensen, Adolf Severin, and Laursen, Dan). The marine Quaternary sediments in Disko Bugt: Meddelelser om Grønland, Bd. 149, no. 1, 85 p., illus., 1949; Copenhague Univ. Mus. Minér. Géol., Commun. Géol. no. 39, 1949. Describes Quaternary beds at several localities in Disko Bugt, southwest Greenland; Orpigsôq, Kangersuneq, Sarfarssuit, Sydost bugten, and Lerbugten. The report is based on the diary of Poul Harder, written during an expedition in 1906, supplemented by observations by Laursen in 1946, and includes the fossil shell determinations of Jensen on the material he collected in 1906.

Hardin, George Cecil, Jr. *See* Halbouty, M. T.

Harding, Richard C.

Paleozoic and Mesozoic stratigraphy of the Boulder area, Colorado: Compass, v. 27, no. 3, p. 114–126, illus, incl. geol. map, Mar. 1950. Describes strata of Pennsylvanian to Cretaceous age deposited in the Rocky Mountain geosyncline in the Boulder area. V. S.

Harding, Richard W.

Correlation of Bradford Third and Richburg sands, Pennsylvania and New York: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1866–1873, illus. Sept. 1950. Electrolog and surface geologic data show that the Bradford Third sand of the Bradford oil field, Pennsylvania, and the Richburg sand of the Allegany oil field, New York, are stratigraphic equivalents. Both sands occur in the Chemung formation of Devonian age. The evidence is discussed and illustrated by electrolog sections. V. S.

Harding, William Duffield.

1. Geology of the Olden-Bedford area: Ontario Dept. Mines Ann. Rpt., v. 56, pt. 6, 1947, 100 p., illus. incl. geol. maps, 1951. The Olden-Bedford area is located in Frontenac County, southeastern Ontario, about 40 miles north of Kingston. The rocks consist of strata of the Grenville series, a granite-gneiss complex, and basic intrusives, all of pre-Cambrian age. The various occurrences and mines of both metallic and nonmetallic minerals are described.
2. Geology of the Gullwing Lake-Sunstrum area: Ontario Dept. Mines Ann. Rpt., v. 59, pt. 4, 1950, 29 p., illus. incl. geol. map, 1951. The Gullwing Lake-Sunstrum area lies in the district of Kenora, western Ontario, along the route of the Canadian National Railway. The rocks of the area are pre-Cambrian volcanics, sediments, and intrusives, overlain by Pleistocene glacial deposits. The rocks are described, and brief mention is made of the economic possibilities.
3. Preliminary report on the geology along the Mississagi road: Ontario Dept. Mines Prelim. Rpt. 1950–6, 4 p. (‡), geol. map, Mar. 1950. Summarizes the results of a reconnaissance survey of the pre-Cambrian rocks which outcrop along the Mississagi road and in adjacent sections in the area between Township 1F, Algoma, Ontario, and Chapleau, Sudbury, Ontario.

Hare, John.

Silurian of Indiana: Compass, v. 27, no. 4, p. 239–244, illus., May 1950. Silurian formations in Indiana are described briefly, and characteristic fossils are noted. Columnar sections of the Silurian, Devonian, and Mississippian are included. V. S.

Hares, Charles Joseph.

Pristine monadnocks [Rocky Mts.] [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1553, Dec. 1950.

Harker, P.

(and McLaren, Digby Johns). *Sciophyllum*, a new rugose coral from the Canadian Arctic: Canada Geol. Survey Bull. 15, p. 29–34, 42–43, illus., 1950. A coral specimen collected from an area of Carboniferous rocks near the Yukon-Alaska boundary is described and assigned to a new genus and species. The development of the new genus, which appears to be closely associated with the Lithostrotionidae, is discussed.

Harlin, M. N. *See* Wilhelm, C. J.

Harned, C. H.

Foundations for highway bridges and separation structures on unconsolidated sediment, *in* Applied sedimentation, p. 169–180, 1950. Exploration procedure, personnel, and tools for both footing and pile foundations are discussed.

Harper, Arthur R.

Ohio in the making. xi, 80 p., illus. incl. geol. sketch map. Columbus, Ohio. Ohio State Univ. College of Education. 1948. A popular account of the geology of Ohio for students and teachers. Paleozoic stratigraphy and glaciation form the major part of the discussion.

Harper, Horace James.

(and Garman, William L.). Further studies on the recent accumulation of alluvium in the flood plains of Deep Fork of the North Canadian River, Lincoln County, Oklahoma: Okla. Acad. Sci. Proc., v. 29 (1948), p. 56–59, illus., Mar. 1950. The progress of sedimentation between 1943 and 1948, with statistical data, is described, and its causes and consequences are analyzed. V. S.

Harrington, John W.

Some implications of the geometry of geosynclines [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1467–1468, Dec. 1950.

Harris, H. M. *See* Wilhelm, C. J.

Harris, Sidney L.

Limestone reefs of west central Texas: Abilene Geol. Soc., Geol. Contr., p. 47–59, illus., 1950. A discussion of reef building, reef types and patterns, reef correlation, relation of structure to reefs, and other reef problems, with particular reference to west Texas.

Harrison, A. E.

Glaciers then and now: Sierra Club Bull., v. 35, no. 6, p. 113–116, illus., June 1950. Notes on the recession of Lyell, Dana, Maclure, Parker Creek, Conness, and other glaciers in the Sierras during the past seventy years. Comparative photographs are shown.

Harrison, Harold Charles. *See* Larsen, E. S., Jr., 2.

Harrison, James Merritt. *See also* Tanton, T. L., 1.

Structural features of the Canadian Shield: World Oil, v. 130, no. 2, p. 202–206, illus., Feb. 1950. Study of the pre-Cambrian basement complex from aerial photographs offers a method which may assist in the interpretation of structures occurring below some of the known oil fields. V. S.

Harshman, Elbert Nelson.

Engineering geologic investigations; Hungry Horse project, Montana [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1553–1554, Dec. 1950.

Harvey, William P. *See* Agnich, F. J.

Hass, Wilbert Henry.

Age of lower part of Stanley shale: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1578–1584, July 1950. A study of conodonts from the Stanley shale at various localities in Oklahoma and Arkansas suggests that the formation ranges in age from Mississippian Meramec to earliest Pennsylvanian. The conodont evidence and the correlations are discussed. The age of the barite deposits in the Stanley shale near Hopper and Magnet Cove, Arkansas, is presumed to be Mississippian.

Hatch, Robert Alchin. *See also* Comeforo, J. E.

(and Eitel, Wilhelm, and Humphrey, R. A.). Synthesis of fluorine micas and related layer structure compounds [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1468, Dec. 1950.

Hatt, Robert Torrens.

A bibliography of Parícutin volcano: Mich. Acad. Sci. Papers, v. 34 (1948), p. 227–237, 1950. Approximately 160 articles appearing from 1943 to 1947 are listed by author, classified as to content, and a few are annotated.

Hauptman, Charles A.

The Spring Valley, Aspen, and Sulphur Creek fields: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 117–118, illus., 1950. Brief notes on the stratigraphy and oil occurrence at the Spring Valley, Aspen, and Sulphur Creek fields in Uinta County, southwestern Wyoming.

Havard, Charles Gentry, 1921–1950.

(and Ellsworth, Ralph I.). Geology of the southern Van Horn Mountains, trans-Pecos Texas: Compass, v. 27, no. 4, p. 285–292, illus., May 1950. Outlines the stratigraphy and structure of the southern Van Horn Mountains, Culberson County, Texas, characterized mainly by Cretaceous sediments, Tertiary volcanics and intrusives, and pronounced Cretaceous overthrusting. Local fossils are indicated. V. S.

Hawkes, Herbert Edwin, Jr.

1. Geochemical prospecting for ores, *in* Applied sedimentation, p. 537–555, 1950. Reviews the results of work on geochemical prospecting during the period 1935–1950, treating specifically dispersion patterns, botanical indications, sampling for chemical analysis, and analytical procedures. A bibliography of more than 100 references is included.
2. (and Huff, Lyman Coleman). Geochemistry, a new tool for the prospector [abs.]: Min. Cong. Jour., v. 36, no. 10, p. 76–77, Oct. 1950.

Hawley, James Edwin.

1. Mineralogy of the Kirkland Lake ores: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 104–124, illus., 1950. Description of the metallic and nonmetallic minerals occurring in the Kirkland Lake, Ontario, gold ores, based on the study of thin sections and polished surfaces. The metallics are chiefly magnetite-ilmenite, pyrite, chalcopyrite, native gold, tellurides and hematite. Nonmetallics are quartz, dolomite, calcite and feldspar. The ores were formed under intermediate temperatures and pressures. Their paragenesis is summarized.
2. Memorial of Everend Lester Bruce [1884–1949]: Am. Mineralogist, v. 35, nos. 3–4, p. 262–267, port., Mar.–Apr. 1950.
3. (and Rimsaite, Yadviga, and Wark, W. J.). Minor elements in pyrite of a Canadian gold mine [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 227–228, 1950.
4. Precious metals in common sulphides and arsenides of the Sudbury district [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 228, 1950.

Hay, Richard L. *See* Thayer, T. P.

Hayes, William E. *See* Dunn, P. H.

Hazebroek, P.

Note on the analysis of oblique reflection data: Geophysics, v. 15, no. 1, p. 70–79, illus., Jan. 1950. The location and orientation of geologic layers are determined by a geometrical method from seismic reflections at a cross spread, assuming a linear wave-velocity distribution. Solutions cover cases when the distance between the shot point and center of spread is perpendicular or inclined to the strike. V. S.

Hazzard, John Charles.

1. (and others). Cretaceous rocks in the Kamishak Bay area, Cook Inlet, Alaska: Science, v. 112, no. 2904, p. 226–227, Aug. 25, 1950. Reports the occurrence of Cretaceous sandstone disconformably overlying Upper Jurassic beds in the Kamishak Hills in southwestern Alaska. The strata are 2,000 feet or more in thickness, and contain Middle and Upper Cretaceous cephalopod genera.
2. Lower Cretaceous rocks at Cape Kaguyak north of Kukak Bay, Alaska: Science, v. 112, no. 2904, p. 227, Aug. 25, 1950. Reports the occurrence of 400 feet of Lower Cretaceous interbedded siltstone and limestone at Cape Kaguyak, about 30–35 miles south of Kamishak Bay, southwestern Alaska.
3. (and others). Oil and gas traps in California [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 119–120, Apr. 27, 1950.
4. (and others). Geology of Kamishak Bay area, Cook Inlet, Alaska [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2377, Dec. 1950.

Heald, Kenneth Conrad.

1. Geologic engineering in the petroleum industry, *in* Application of geology to engineering practice, Berkey Volume, p. 251–271, Geol. Soc. Am., New York, 1950. The various uses of geology and application of geological principles to phases of petroleum exploration and production are discussed.
2. Memorial to Robert Watson Clark [1884–1948]: Geol. Soc. Am. Proc. 1949, p. 139–140, port., June 1950.
3. Major oil fields of the United States and Canada: Geol. Assoc. Canada Proc., v. 3, p. 13–25, illus., Dec. 1950. A general review of features of the larger oil fields, indicating such points as age of producing formations, distribution of reserves by geologic periods, geologic setting, geographic distribution, and discovery frequency.

Heald, Milton T.

1. The geology of the Lovewell Mountain quadrangle, New Hampshire. 29 p., illus. incl. geol. map. Concord, New Hampshire. New Hampshire State Planning and Development Commission. 1950. An account for the layman of the geologic history of the Lovewell Mountain quadrangle in southwestern New Hampshire. The geologic time-scale is shown, and the rocks, minerals, and glacial features are described.
2. Structure and petrology of the Lovewell Mountain quadrangle, New Hampshire: Geol. Soc. Am. Bull., v. 61, no. 1, p. 43–89, illus. incl. geol. maps, Jan. 1950. Bedrock consists of metasediments of the lower Devonian Littleton formation and plutonic rocks of the New Hampshire magma series, probably late Devonian. Their composition, mineralogical and structural features, and geologic history are described, with attention to the metamorphic processes and origin of the plutonic rocks. A bibliography is appended. V. S.
3. Thermal study of potash-soda feldspars: Am. Mineralogist, v. 35, nos. 1–2, p. 77–89, illus., Jan.–Feb. 1950. Temperatures required to homogenize lamellar feldspars from various types of rock are not necessarily the minimum temperature at which the feldspars crystallized. Accordingly, many of these may have formed by the simultaneous crystallization of soda feldspar and potash feldspar rather than by the exsolution of an initially homogeneous feldspar. V. S.
4. Authigenesis in West Virginia sandstones: Jour. Geology, v. 58, no. 6, p. 624–633, illus., Nov. 1950; abs., W. Va. Acad. Sci. Proc., v. 21, p. 95, 1949. Quartz, calcite, dolomite, orthoclase, microcline, albite, chlorite, kaolinite, and pyrite occur as authigenic minerals in the Oriskany, Berea, and Big Injun formations, oil- and gas-producing sandstones in West Virginia. Their occurrence and the process of formation are described and discussed.

Heaton, Ross L., 1890–1950.

Late Paleozoic and Mesozoic history of Colorado and adjacent areas: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1659–1698, illus., incl. geol. maps, Aug. 1950. Revises paleogeographic data on the Rocky Mountain region. Chief changes are made in the Jurassic maps, in which the Navajo-Nugget sandstone is extended farther east, the Carmel and Twin Creek area is expanded, the Entrada sandstone is modified in the west and north, and the Curtis marine beds and Morrison deposits are extended in several directions. A correlation chart, 14 revised paleogeographic maps, and a cross section are given. V. S.

Heck, William Adam. *See* Johnston, J. E.

Heggblom, J. Conrad. *See* Bemrose, J.

Heim, George W.

(and Allsman, Paul Trekell). Investigation of Daggett Chief manganese deposit, Manila, Daggett County, Utah: U. S. Bur. Mines Rpt. Inv. 4731, 9 p. (‡), illus., Oct. 1950. The manganese ore occurs in the upper part of the Morrison formation (Jurassic) in the northern foothills of the Uinta Mts. in northeastern Utah. The occurrence of the ore is described briefly, and a stratigraphic section is given.

Heinrich, Eberhardt William. *See also* Hanley, J. B.

1. Sillimanite deposits of the Dillon region, Montana: Mont. Bur. Mines and Geology Mem. 30, 43 p., illus. incl. geol. maps, 1950. The report describes the geology of the southern Ruby Range, and gives detailed descriptions of the sillimanite deposits in that region. Geologic maps of several deposits are included. The sillimanite formed as the result of aluminous metasomatism accompanying the older unmetamorphosed pegmatites after or near the close of the period of regional metamorphism.
2. The Camp Creek corundum deposit near Dillon, Beaverhead County, Montana: Mont. Bur. Mines and Geology Misc. Contr. 11, 20 p. (‡), illus. incl. geol. map, 1950. The Camp Creek corundum deposit near Dillon, Montana, occurs within the Cherry Creek series of metasediments, a subdivision of local pre-Beltian rocks. The corundum-bearing rock is associated with a marble lens in biotite schist. The geology and petrology of the area are indicated, and a summary is given of the geology of the other types of corundum deposits in Montana. V. S.

Heinrich, Eberhardt William—Continued

3. Accessory sulfides in North Carolina pegmatites: Am. Jour. Sci., v. 248, no. 2, p. 112–123, illus., Feb. 1950. Describes the mineralogy and paragenesis of the sulfides which formed replacements in the pegmatites of the Franklin-Sylva and other districts during a late hydrothermal phase characteristic of these pegmatites. Typically, the replacement sequence is pyrrhotite, pyrite, chalcopyrite, and marcasite, with the first two predominating. V. S.
4. Cordierite in pegmatite near Micanite, Colorado: Am. Mineralogist, v. 35, nos. 3–4, p. 173–184, illus., Mar.–Apr. 1950; addendum, nos. 11–12, p. 1089, Nov.–Dec. 1950. "The Climax pegmatite of the Micanite district in Colorado contains unusually large masses of cordierite, which is altered in varying degree to pinite, consisting chiefly of muscovite, chlorite, and biotite, and traces of garnet, zoisite, and tourmaline. Data on 50 other occurrences of pegmatitic and vein cordierite are summarized, and the paragenesis of pegmatitic cordierite is discussed."
5. Syenitic corundum pegmatites near Bozeman, Montana: Econ. Geology, v. 45, no. 4, p. 378–380, June–July 1950. Additional considerations are given in support of the author's theory of a pegmatitic origin of the corundum deposits southwest of Bozeman, Montana (v. 44, p. 307–335, 1949), in response to an alternative hypothesis advanced by S. E. Clabaugh. (See Clabaugh, 2.) V. S.
6. Paragenesis of the rhodolite deposit, Masons Mountain, North Carolina: Am. Mineralogist, v. 35, nos. 9–10, p. 764–771, illus., Sept.–Oct. 1950. Describes the occurrence of a coarse gneissic rock at Masons Mountain, western North Carolina, which consisted originally of rhodolite and hypersthene, but has been partly transformed, by metasomatism, into anthophyllite-biotite gneiss. Also described is a kyanite-staurolite pegmatite, occurring in the vicinity, and one of the few instances of staurolite as an important pegmatite constituent.

Heinrich, Ross R.

1. The Mississippi Valley earthquake of June 30, 1947: Seismol. Soc. Am. Bull., v. 40, no. 1, p. 7–19, illus., Jan. 1950. The earthquake (intensity VI) occurred a few miles south of St. Louis, Missouri, and coincided with one of the largest floods in history of the Mississippi River. The evidence suggests an origin in a basement zone of transitional structure and a relation to epicenters of previous seismic activity. Whether there was any relation between the flood and the quake is not known. V. S.
2. Earthquakes in the Ste. Genevieve (Mo.) fault zone: Earthquake Notes, v. 21, no. 3, p. 17–18, Sept. 1950. Seismographic data are given for two minor earthquakes in the vicinity of the Ste. Genevieve fault zone in eastern Missouri. The earthquakes occurred on Nov. 7, 1946, and June 8, 1949.
3. Two microseismic storms: Earthquake Notes, v. 21, no. 3, p. 20–21, Sept. 1950. Describes microseisms which were recorded on seismographs at St. Louis, Missouri, as a result of two cyclones.
4. Earthquake recorded by microbarographs: Earthquake Notes, v. 21, no. 3, p. 23–24, Sept. 1950. The microbarograph record of the earthquake of Aug. 22, 1949, in the Queen Charlotte Islands off the coast of British Columbia, is described.

Hem, John David.

1. Quality of water of the Gila River Basin above Coolidge Dam, Arizona: U. S. Geol. Survey Water-Supply Paper 1104, 230 p., illus., 1950. The chemical character of both surface and ground water of the Gila River Basin is discussed by areas, and extensive tabulations are given.
2. Geochemistry of ground water: Econ. Geology, v. 45, no. 1, p. 72–81, Jan.–Feb. 1950. The field of the science is defined; current and past studies are outlined; the study of natural waters, interaction of water and rock minerals, and applications to ground-water hydrology are discussed; and research projects are suggested. V. S.

Henderson, Donald M.

1. Atomic models of the silicates as an essential aid in the teaching of elementary mineralogy: Ill. State Acad. Sci. Trans., v. 43, p. 127–131, illus., 1950. Briefly describes the construction of atomic models of minerals by using cork spheres of various sizes, and their use in the presentation of fundamental principles in elementary mineralogy courses. The comments are directed with particular regard to the silicates.
2. Metamorphic development of the eastern part of the Crawford Notch quadrangle, New Hampshire: Ill. State Acad. Sci. Trans., v. 43, p. 165–170, illus. incl. geol. sketch map, 1950. The rocks in the area consist of the Littleton gneiss and schist of Devonian age, quartz monzonite of Devonian age, and the White Mountain magma series of probable Mississippian age. The various stages in the metamorphism of the Littleton formation are described.

Henderson, George G.

Permutations of fusulinids from the Moran formation of Texas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1468, Dec. 1950.

Henderson, James Fenwick.

1. (and Brown, Irvin Cecil). Preliminary map, Yellowknife, Northwest Territories (sheet 3): Canada Geol. Survey Paper 49–26, geol. map, 1949. An area of pre-Cambrian rocks. V. S.
2. (and Brown, Irvin Cecil). Preliminary map, Yellowknife, Northwest Territories (sheet 4): Canada Geol. Survey Paper 50–34, geol. map, 1950. An area of pre-Cambrian rocks.
3. (and Brown, Irvin Cecil). Structure of the Yellowknife greenstone belt, Northwest Territories: Canadian Min. Met. Bull. no. 463, p. 613–620, illus. incl. geol. map, Nov. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 415–422, 1950. Presents an interpretation of the structure along the west side of Yellowknife Bay. Key lava beds have been traced across the West Bay fault and east of the Giant-Campbell shear-zone system, suggesting that the shear zones are related to a large, early fault. The probable extension of this fault has been mapped.

Hendricks, Sterling Brown.

(and Hill, William Lee). The nature of bone and phosphate rock: Natl. Acad. Sci. Proc., v. 36, no. 12, p. 731–737, illus., Dec. 1950. Discusses investigations of the composition and structure of the inorganic compounds of bone, enamel, and related phosphorites, the nature and relation of the mineral francolite, and the surface chemistry of bone.

Hendricks, Thomas Andrews.

1. (and Parks, Bryan C.). Geology of the Fort Smith district, Arkansas: U. S. Geol. Survey Prof. Paper 221–E, p. 67–94, illus. incl. geol. map, 1950. Discusses the stratigraphy, structure, and geomorphology of the region, and includes a list of the plant fossils collected from the Arkansas coal field which have been identified. Strata identified in the Fort Smith district are the Atoka, Hartshorne, McAlester, Savanna, and Boggy formations, all of Pennsylvanian age. Folds, reverse faults, and normal faults are present in the area.
2. (and Curvin, Bernard Arthur, and Goldstein, August, Jr.). Geology of McAlester-Arkansas Valley Basin [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 621, Mar. 1950.

Hendriks, Herbert E.

Geology of the Crooked Creek structure, Crawford County, Missouri [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1469, Dec. 1950.

Hendrix, Charles E.

The cave book: Earth Science Inst. Spec. Pub. no. 1, 67 p., illus., 1950. A layman's handbook on types of caves, theories of formation, various features, methods and techniques of exploration and mapping, and the scientific value of cave exploration.

Henry, Darold J.

California gem trails; a field guide for the gem hunter, the mineral collector, and the tourist. 1st ed., 63 p., illus. Portland, Oregon, The Mineralogist Pub. Co. 1948.

Hernández Osuna, Alfonso. *See* Cornejo Toledo, A.

Herness, Sigurd Kermit.

Subsurface and office representation in mining geology, *in* Subsurface geologic methods, p. 989–1037, illus., Colo. School of Mines, 1950. Discusses in specific manner the recording of field data and the subsequent preparation of the data in the form of sections, sheets, and maps in connection with the geological exploration work of mining companies.

Hernon, Robert M. *See* Fowler, G. M., 1.

Herpers, Henry F., Jr.

1. A new conularid from the Esopus formation, Sussex County, New Jersey: N. J. Dept. Conserv., Misc. Geol. Paper, 7 p., illus., 1949. Describes a new species, *Conularia sussexensis*, from the Esopus formation of Devonian age. The specimen was collected near Montague village, Sussex County, New Jersey.
2. An Onondagan faunule in New Jersey: Jour. Paleontology, v. 24, no. 5, p. 617–619, illus., Sept. 1950. Reports the finding of new brachiopod, gastropod, conularid, and coral species from the Esopus formation, on the basis of which an Onondaga age is assigned.

Herrick, Charles E. *See also* Romney, C. F., 1.

1. (and Pendery, Carolyn H.). Earthquakes in northern California and the registration of earthquakes at Berkeley—Mount Hamilton—Palo Alto—San Francisco—Ferndale—Fresno, from July 1, 1942 to September 30, 1942: Calif. Univ. Seismog, Sta. Bull., v. 12, no. 3, p. 95–156 (‡), 1950; from October 1, 1942 to December 31, 1942, no. 4, p. 157–206 (‡), 1950.
2. (and Pendery, Carolyn H.). Earthquakes in northern California and the registration of earthquakes at Berkeley—Mount Hamilton—Palo Alto—San Francisco—Ferndale—Fresno, from January 1, 1943 to March 31, 1943: Calif. Univ. Seismog. Sta. Bull., v. 13, no. 1, p. 1–32 (‡), 1950; from April 1, 1943 to June 30, 1943, no. 2, p. 33–82 (‡), 1950; from July 1, 1943 to September 30, 1943, no. 3, p. 83–116 (‡), 1950; from October 1, 1943, to December 31, 1943, no. 4, p. 117–155 (‡), 1950.
3. (and Pendery, Carolyn H.). Earthquakes in northern California and the registration of earthquakes at Berkeley—Mount Hamilton—Palo Alto—San Francisco—Ferndale—Fresno—Mineral, from January 1, 1944 to March 31, 1944; Calif. Univ. Seismog. Sta. Bull., v. 14, no. 1, p. 1–33 (‡), 1950; from April 1, 1944 to June 30, 1944, no. 2, p. 34–77 (‡), 1950; from July 1, 1944 to September 30, 1944, no. 3, p. 78–138 (‡), 1950; from October 1, 1944 to December 31, 1944, no. 4, p. 139–188 (‡), 1951.

Hersey, John B. *See* Ewing, W. M., 2.

Herz, Norman.

Cross section through the Maryland Piedmont obtained from the Baltimore-Patapsco aqueduct [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1469, Dec. 1950.

Hess, Harold D. *See* Kauffman, A. J., Jr., 2.

Heuer, Edward. *See* Cline, L. M., 2.

Hewitt, Donald F.

1. Geology of Skead Township, Larder Lake area: Ontario Dept. Mines Ann. Rpt., v. 58, pt. 6, 1949, 43 p., illus. incl. geol. map, 1951. Skead Township, in the Kirkland Lake-Larder Lake gold belt, is located approximately 100 miles north of Sudbury, Ontario. The petrologic and structural relations of the pre-Cambrian sedimentary, volcanic, and intrusive rocks are described. Chemical analyses of andesite and intrusive porphyries from an earlier report are reprinted, and 2 new analyses of post-Keewatin intrusive rocks are given. Gold occurrences and properties are described, but as yet there has been no important commercial development.

Hewitt, Donald F.—Continued

2. Asbestos in Ontario: Ontario Dept. Mines, Indus. Mineral Circ. 1, 7 p. (‡), Apr. 1950. Briefly describes asbestos occurrences in Ontario and their geologic characteristics, together with notes on evaluation, specifications, and uses.
3. Industrial minerals in Ontario: Canadian Min. Jour., v. 71, no. 11, p. 155–165, illus. incl. geol. sketch maps, Nov. 1950. Describes the occurrence and development of such mineral resources as sand, gravel, limestone, clay, feldspar, mica, asbestos, silica, nepheline syenite, and gypsum.

Hewitt, Forrest Alan.

(and Baker, Roger Crane, and Billingsley, Granville Alton). Ground-water resources of Ashley County, Arkansas: Ark. Univ., Inst. Science and Technology, Research Ser. no. 16, 35 p., illus., Mar. 1949. The Tertiary and Quaternary formations are described with respect to their ground-water possibilities. Ground water occurs mainly in the Cockfield sand of Eocene age and in Pleistocene and Recent sands. A section on chemical composition of the water is included.

Heyl, Allen Van, Jr. *See* Behre, C. H., Jr. 2.

Hibbard, Claude William.

1. (and Villa R., Bernardo). El bisonte gigante de México: Anales del Instituto de Biología México, t. 21, no. 1, p. 243–254, illus., 1950. Portions of the skull and horns of specimens of large bison from the Pleistocene of Mexico, now in the collection of the Muséo Nacional de Historia Natural, are described. The specimens are assigned to *Bison chaneyi* Cook, and comparison of measurements is made with the holotype from Texas.
2. Mammals of the Rexroad formation from Fox Canyon, Kansas: Mich. Univ. Mus. Paleontology Contr., v. 8, no. 6, p. 113–192, illus., June 29, 1950. A fauna of 88 forms (shrews, bats, mice, rats, voles) of Pliocene age occurring in the Rexroad formation in Meade County, Kansas, is described. Three new genera and several new species are named. The Rexroad formation and its correlations are discussed.
3. (and Keenmon, Kendall A.). New evidence of the lower Miocene age of the Blacktail Deer Creek formation in Montana: Mich. Univ. Mus. Paleontology Contr., v. 8, no. 7, p. 193–204, illus., July 28, 1950. Gives a measured section of the Blacktail Deer Creek formation (type section) from Beaverhead County, Montana, and describes the two mammal species (one of which is new) on the basis of which the lower Miocene age of the formation is established.
4. (and Wilson, John Andrew). A new rodent from subsurface stratum in Bee County, Texas: Jour Paleontology, v. 24, no. 5, p. 621–623, illus., Sept. 1950. A new species of geomyid rodent, *Grangerimus sellardsi*, is established on the basis of a fragmentary lower jaw found in well cuttings from Bee County, Texas. The age is Oligocene or Miocene. V. S.

Hicks, Forrest L.

Formation and mineralogy of stalactites and stalagmites: Natl. Speleol. Soc. Bull. 12, p. 63–72, illus., Nov. 1950. "Stalactites and stalagmites are shown to be formed from over sixty minerals and several other substances by a precipitation of the mineral, by solidifying from its liquid state, and by several less common means. Factors affecting their rate of growth, and their shape include the rate of incoming flow, rate of evaporation, chemical composition of the solution, and the size of the stalactite or stalagmite."

Hicks, H. S.

Geology of the iron deposits of Steep Rock Iron Mines Ltd.: Precambrian, v. 23, no. 5, p. 8–10, 13, geol. sketch map, May 1950. Study of the pre-Cambrian Coutchiching, Keewatin, Laurentian, and Steeprock series, and the Algoman intrusives in the area of Steeprock Lake, Ontario, shows that the iron deposits have been formed at the contacts between carbonate intrusives and volcanics. V. S.

Hiestand, Thomas Cleon. *See* Summerford, H. E

Higazy, Riad A.

Significance of the orthoclase-albite-anorthite, and the $NaAlSiO_4$-$KAlSiO_4$-SiO_2 equilibrium diagrams in igneous petrogeny: Am. Mineralogist, v. 35, nos. 11–12, p. 1039–1048, illus., Nov.–Dec. 1950. The formation of potash- and soda-rich rocks by differentiation from a basaltic magma cannot be satisfactorily explained either by the Or-Ab-An or the $NaAlSiO_4$-$KAlSiO_4$-SiO_2 equilibrium diagrams. It is suggested that such rocks may be enriched through metasomatic processes or may be formed from crystallization of potash-rich granitic, or soda-rich spilitic magmas.

Hild, John Henry. *See* Volin, M. E.

Hildebrand, Fred A. *See also* Bates, T. F., 2.

Orbicular tinguaite dikes near Bryant, Saline County, Arkansas [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 283, Mar.–Apr. 1950.

Hildebrandt, A. B. *See* Boucher, F. G.

Hill, Robert Scott. *See* Thoenen, J. R.

Hill, William Lee. *See* Hendricks, S. B.

Hintze, Lehi F.

(and Webb, Gregory W.). Ordovician stratigraphy from central Utah to central Nevada [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1524, Dec. 1950.

Hoadley, John William.

Preliminary map, Zeballos, British Columbia (map and descriptive notes): Canada Geol. Survey Paper 50–9, 4 p. (‡), geol. map, 1950. The Zeballos map-area, on the west coast of Vancouver Island, is characterized by strongly faulted Triassic volcanic and sedimentary rocks and Jurassic or Cretaceous granitic intrusions. V. S.

Hoagland, A. D. *See* Lasky, S. G., 1.

Hobbs, William Herbert.

The Pleistocene history of the Mississippi River: Science, v. 111, no. 2880, p. 260–262, illus., Mar. 10, 1950. Changes in the upper course of the river are traced through four glacial advances during the Pleistocene, with indication of the relation of the glacial invasions and recessions to seasonal meltwater streams and sediments deposited in the Gulf of Mexico. Sketch maps are given. V. S.

Hobson, Henry David.

Sacramento Valley region [Calif.], *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2382-2383, Dec. 1950.

Hodgson, Ernest Atkinson.

The Saint Lawrence earthquake, March 1, 1925: Canada Dominion Observatory Pubs., v. 7, no. 10, p. 365–436, illus., 1950. Gives a detailed account of the St. Lawrence earthquake which occurred in the lower St. Lawrence Valley and caused considerable damage in the region east of Quebec City. The epicenter is placed at 47°6′ N. Lat., 70°1′ W. Long.

Hodgson, John Humphrey.

1. The implications of the Poulter method to the problem of seismic prospecting in southwestern Ontario: Canadian Min. Met. Bull. no. 461, p. 486, Sept. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 320, 1950. On the basis of the conditions which caused negative results in previous seismic investigations, it is concluded that the Poulter method might improve the results, but that no great benefit would be derived therefrom.
2. (and Milne, W. G.). Direction of faulting in certain earthquakes of the North Pacific [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 226–227, 1950; Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1546, Dec. 1950.

Hodson, G. Keith.

(and Dake, Henry Carl). Opal mines and mining in Nevada: Mineralogist, v. 18, no. 4, p. 171–179, 198, 200, 202, 204, illus., Apr. 1950. The Rainbow Ridge mine, in Virgin Valley, Humboldt County, leading opal producer in the United States, is described. V. S.

Hoffacker, B. L., Jr.

Résumé of the drilling and stratigraphy of the L. D. Wilson deep test: Producers Monthly, v. 14, no. 10, p. 20–23, illus., Aug. 1950. Data are given on the subsurface Ordovician, Silurian, and Devonian strata encountered in the drilling of L. D. Wilson No. 18, Bradford quadrangle, northern Pennsylvania. A detailed section is given.

Hoffmeister, John Edward.

Recent coral reefs: Tulsa Geol. Soc. Digest, v. 18, p. 73–74, 1950. A brief summary of important points to be considered in the interpretation of the structure and origin of modern reefs.

Hofker, J.

What is the genus *Eponides*?: Micropaleontologist, v. 4, no. 1, p. 15–16, Jan. 1950. Briefly discusses the nomenclatural confusion of *Bolivinita* and *Eponides*, and gives a revised description of the latter.

Hogg, Nelson.

The Porcupine gold area: Canadian Min. Jour., v. 71, no. 11, p. 102–106, geol. sketch map, Nov. 1950. The pre-Cambrian geology, structure, mineralization, and ore bodies of the Porcupine gold area in eastern Ontario are described.

Hogue, William G.

(and Wilson, Eldred Dewey). Arizona zinc and lead deposits; Bisbee or Warren district: Ariz. Bur. Mines Bull. 156, Geol. Ser. 18, p. 17–29, illus. incl. geol. map, Apr. 1950. Brief information on the structure and ore deposits of the area.

Holdredge, Claire Parker.

1. (and Wood, Hiram B.). Problem of decomposed dikes and hydrothermally altered joints at Pine Flat Dam, California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1470, Dec. 1950.
2. (and Wood, Hiram B.). Foundation geology at Pine Flat Dam, Kings River, California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1524, Dec. 1950.

Holke, Kenneth A. *See* Bailly, R. J., 2.

Holland, Heinrich D.

1. (and Kulp, John Laurence). Geologic age from metamict minerals: Science, v. 111, no. 2882, p. 312, Mar. 24, 1950. It has been shown that some isodesmic multiple oxides, such as gadolinite and microlite, occurring in the metamict state, can be converted by heating to the crystalline state with evolution of heat. Assuming that these minerals were originally crystalline, it is suggested that their geologic age may be estimated by measurement of the length of time required for lattice destruction. V. S.
2. (and Kulp, John Laurence). Adsorption of radio-elements on ocean-bottom sediments [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1470, Dec. 1950.

Holland, William Y. *See* McConnell, D., 1.

Hollingsworth, Richard Vincen. *See* Kapner, H. H.

Hollister, John Chamberlain.

Geophysics grows at "Mines": Mines Mag., v. 40, no. 10, p. 53–59, illus., Oct. 1950. The geophysical instruction and courses, and the laboratories and equipment at the Colorado School of Mines, Golden, Colorado, are described.

Holmes, Charles R.

Magnetic fields associated with igneous pipes in the central Ozarks: Min. Eng., v. 187, no. 11, p. 1143–1146, illus., Nov. 1950; A. I. M. E. Trans., v. 187, 1950. In southeastern Missouri, numerous igneous intrusives occurring in Cambrian strata are believed to represent explosion tubes of post-Devonian and probably Cretaceous age. A detailed magnetic study of one of the intrusives, near Avon, is described. The results substantiate the inferred origin.

Holmes, Clifford Newton. *See also* Combo, J. X.

Effect of the Uncompahgre uplift on the Mesozoic sedimentary rocks of western Colorado [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1470–1471, Dec. 1950.

Holmes, G. William.

Correlation of erosion surfaces on the west flank of the Wind River Mountains, Wyoming [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1471, Dec. 1950.

Holser, William Thomas.

Metamorphism and associated mineralization in the Philipsburg region, Montana: Geol. Soc. Am. Bull., v. 61, no. 10, p. 1053–1090, illus. incl. geol. maps, Oct. 1950. A field investigation, as part of a study of allochemical metamorphism and its relations to high-temperature hydrothermal activity. Intrusive contacts of several granodiorite bodies with calcitic, dolomitic, and shaly limestones in the Philipsburg region, Montana, are described in detail. The various stages of metamorphism and the mineralization accompanying each stage are discussed. Several large-scale geologic maps and sections are given.

Holt, Thomas C. *See* Bemrose, J.

Holtedahl, Olaf.

Supposed marginal fault lines in the shelf area off some high northern lands: Geol. Soc. Am. Bull., v. 61, no. 5, p. 493–500, illus., May 1950. "Studies of the shelf topography off Norway indicate that the high northwestern part of the Scandinavian Peninsula is bordered by fractures along which dislocations probably took place during the Tertiary uplift of the land mass. . . . attention is drawn to the fact that similar relief features are characteristic also of shelf areas off West Greenland and Labrador."

Honkala, Fred S. *See* McLaughlin, K. P., 3.

Honke, Martin T., Jr.

(and Ver Planck, William E., Jr.). Mines and mineral resources of Sonoma County, California: Calif. Jour. Mines and Geology, v. 46, no. 1, p. 83–141, Jan. 1950. Local geology is characterized by widespread outcrops of Franciscan sandstones, Pliocene sediments and volcanics in the southeast, and evidence of chromite, coal, copper, diatomite, graphite, magnesite, manganese, petroleum, quicksilver, and construction-material deposits. Mines and prospects are described, and a bibliography is given. V. S.

Hooijer, Dirk A.

The study of subspecific advance in the Quaternary: Evolution, v. 4, no. 4, p. 360–361, Dec. 1950. Discusses the trend toward decreasing size in Quaternary faunas as compared to the trend toward larger size in Tertiary species, and outlines some of the pertinent problems in connection with a study of the evolutionary factors.

Hook, John W. *See* Oder, C. R. L.

Hooker, Marjorie. *See* Thom, E. M.

Hoover, William B.

Jurassic formations of parts of Utah, Colorado, Arizona, and New Mexico, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 76–81, illus., 1950. The Glen Canyon, San Raphael, and Morrison groups of the Jurassic are described briefly and correlations are discussed.

Hopkins, David Moody.

(and Sigafoos, Robert S.). Frost action and vegetation patterns on Seward Peninsula, Alaska [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1471, Dec. 1950.

Hopkins, Harold.

Geology of the Wright-Hargreaves mine: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 161–176, illus., 1950. Description of the general geology, structure, faulting, vein mineralization, wall-rock alteration, and ores of the Wright-Hargreaves gold mine in the Kirkland Lake area, northern Ontario.

Hopkins, Joan Prewitt.

(and Frondel, Clifford). Thermal decomposition of zinc sulfide polymorphs: Am. Mineralogist, v. 35, nos. 1–2, p. 116, Jan.–Feb. 1950. The known five polymorphs of ZnS decompose to zincite. V. S.

Hopkins, Oliver Baker.

1. The Leduc oilfield and its significance: Geol. Assoc. Canada Proc., v. 2, p. 11–25, illus., Apr. 1950. General information on the geologic setting of the Leduc oil field in Alberta, Canada, is presented, together with development and production data.
2. Oil in western Canada: Oil and Gas Jour., v. 49, no. 13, p. 54–57, illus., Aug. 3, 1950. A brief account of the geologic possibilities for oil in western Canada and recent exploration activity.

Hoppin, Richard A.

(and Norman, L. A., Jr.). Commercial "black granite" of San Diego County, California: Calif. Dept. Nat. Res., Div. Mines Spec. Rpt. 3, 19 p., illus., Dec. 1950; abs. by R. A. Hoppin with title Composition and quality of the "black granite" dimension stone of San Diego County, California, Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1524–1525, Dec. 1950. Presents the results of field and laboratory investigations. Composition and texture, nature of weathering, structural features, and hydrothermal alteration are described. The cause of staining in granite monuments is discussed, and recommendations for industrial utilization are made.

Horberg, Carl Leland.

1. Bedrock topography of Illinois: Ill. State Geol. Survey Bull. 73, 111 p., illus., incl. geol. map, 1950. A comprehensive report on the bedrock topography, compiled to facilitate ground-water investigations. Detailed data on the physiographic divisions, bedrock valley systems, erosional history, and ground-water resources are given. Among the illustrations area generalized geologic map of the state. a bedrock surface topographic map, and a map of preglacial drainage systems.
2. Groundwater in the Peoria region, Part 1, Geology: Ill. State Geol. Survey Bull. 75, p. 1–49, illus. incl. geol. map, 1950. The Paleozoic formations of the area, the bedrock topography, and the glacial deposits are described insofar as they affect the ground-water conditions. The aquifers are classified. Development of ground-water supplies is discussed. Bedrock surface and areal geology maps are included.
3. Preglacial gravels in Henry County, Illinois: Ill. State Acad. Sci. Trans., v. 43, p. 171–175, illus., 1950; Ill. State Geol. Survey Circ. 170, 1951. The Tertiary gravels exposed in a road cut near Kewanee, Henry County, Illinois, are described and correlated, and a measured section is given. The origin is discussed.
4. Interrelations of geomorphology, glacial geology, and Pleistocene geology [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1472, Dec. 1950.

Horner, Seward E.

(and McNeal, John D.). Applications of geology to highway engineering, *in* Applied geology, a symposium; Colo. School of Mines Quart., v. 45, no. 1B, p. 155–191, illus., Jan. 1950. Points discussed are the organization and functions of a state highway geology section, and the particular functions and responsibilities of the highway geologist. The operation of the Kansas state highway geology section is described. Discussion by D. H. Griswold, R. F. Rhoades, and F. M. Van Tuyl is included.

Horr, W. H. *See* Dreyer, R. M.

Hose, H. R.

The geology and mineral resources of Jamaica: Colonial Geology and Mineral Resources (London), v. 1, no. 1, p. 11–36, illus. incl. geol. map, 1950. The physical features, stratigraphy, minerals, and ground water supplies are described. The strata consist of Cretaceous, Tertiary, and Quaternary shales, conglomerate, and limestones. Among the mineral resources are bauxite, copper, limestone, gypsum, and phosphates.

Hoskins, John Hobart.

(and Cross, Aureal T.). A study of some lower Mississippian species of *Callixylon* [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 673, Oct. 1950.

Hotz, Preston Enslow.

1. Diamond-drill exploration of the Dillsburg magnetite deposits, York County, Pennsylvania: U. S. Geol. Survey Bull. 969–A, p. 1–27, illus. incl. geol. maps, 1950. The Triassic sedimentary rocks and the intruded diabase of the Dillsburg region in southern Pennsylvania are described. Mineralization occurred along with the diabase intrusion resulting in magnetite replacing beds of limestone conglomerate. The origin of the magnetite is discussed, and the deposits are described.
2. Origin of granophyre in diabase in southeastern Pennsylvania [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1472, Dec. 1950.

Hough, Jack Luin. *See* Goldman, M. I.

Hough, Jean Ringier.

The habits and adaptation of the Oligocene saber tooth carnivore, *Hoplophoneus:* U. S. Geol. Survey Prof. Paper 221–H, p. 125–135, illus., 1950. The anatomy of *Hoplophoneus* is described in detail, particularly with reference to the use of the saber teeth. The study indicates that some of the hunting habits were feline, but that the more highly developed feline habits had not yet appeared.

Houser, Frederick Northrop. *See* Cathcart, J. B., Jr., 2.

Houston, Max Sherman. *See* Byrne, F. E., 2.

Howard, Arthur David.

1. An observation bearing on the problem of exfoliation: Jour. Geology, v. 58, no. 2, p. 155–156, Mar. 1950. The absence of exfoliation in various pebbles, subjected for 13 years to a temperature variation of —50 to 212 F, lends support to Blackwelder's thesis that exfoliation is due primarily to chemical changes. V. S.
2. Till isopleth map of northeastern Montana and northwestern North Dakota [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1525, Dec. 1950.

Howard, Hildegarde.

Fossil evidence of avian evolution: Ibis, v. 92, no. 1, p. 1–21, illus., Jan. 1, 1950. The evolution of the Colymbiformes, Sphenisciformes, Procellariiformes, Pelecaniformes, Ciconiiformes, Anseriformes, Falconiformes, Gruiformes, Charadriiformes, Strigiformes, and Passeriformes, for which paleontological data are available, is traced from early Cretaceous through Tertiary time. The flightless terrestrial birds are discussed as a unit termed "Ratites". A bibliography is given.

Howard, W. K. *See* Treasher, R. C.

Howe, Elbridge Gerry. *See* Thoenen, J. R.

Howell, Benjamin Franklin.

1. A new conularid from the Silurian Sodus formation of New York: Wagner Free Inst. Sci. Bull., v. 25, no. 1, 4 p., illus., Feb. 1950. Describes a new species of Conulariidae, *Metaconularia sinclairi,* collected from the gray shale of the Middle Silurian Sodus formation near Rochester, New York. V. S.

Howell, Benjamin Franklin—Continued

2. (and Roberts, Henry, and Willard, Bradford). Subdivision and dating of the Cambrian of eastern Pennsylvania: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 1, p. 1355–1367, illus., Dec. 1950. The Cambrian in eastern Pennsylvania consists of a basal quartzite of Lower Cambrian age overlain by limestones. These are now divided into the Leithsville, Limeport, and Allentown formations. The latter two are of Late Cambrian age, but the age of the Leithsville is as yet undetermined.

Howell, Jesse V.

Notes on the Rocky Mountain Trench: Tulsa Geol. Soc. Digest, v. 18, p. 54–58, 1950. A bibliography of articles pertinent to a study of the Rocky Mountain Trench extending from northwestern Montana to northern British Columbia.

Hoylman, Homer Wayne.

Evaluation of magnetics in Delaware Basin [Texas] [abs.]: Oil and Gas Jour., v. 49, no. 32, p. 102, Dec. 14, 1950.

Hriskevitch, M. E.

Preliminary map, Little Rattling Brook, Newfoundland: Canada Geol. Survey Paper 50–17, geol. map, 1950. A geologic map, with notes, of the Little Rattling Brook area, near Botwood, Newfoundland, showing mainly volcanics of Middle Ordovician age and sedimentary and granitic rocks of Devonian age. V. S.

Hseung, Yi.

(and Marshall, Charles Edmund, and Krusekopf, H. H.). On the origin of gumbotil: Soil Science Soc. Am. Proc. 1949, v. 14, p. 311–315, 1950. The procedure and results of mineralogical and mechanical studies of two sections of loess, gumbotil and till, near Columbus, Missouri, are described. It is concluded that the gumbotil is not a pedogenic horizon in the weathered till section, but formed as a water deposit of highly weathered clay derived from till.

Hubbard, Bela.

Coal as a possible petroleum source rock: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2347–2351, Dec. 1950. Using the information on American lignite occurrence and properties, as given in U. S. Bureau of Mines Bulletin 482, and other sources, the author arrives at a figure of about 150 billion tons of hydrocarbons and hydrocarbon-like compounds in Paleocene, Eocene, or early Tertiary formations. On the basis of the high wax content in peat and lignite as compared with little or none in coals of higher rank, it is suggested that the wax constituents may liquefy and form petroleum.

Hubbard, George David. *See* Rothrock, E. P.

Huber, Walter.

Geologisch-petrographische Untersuchungen in der innern Fjordregion des Kejser Franz Josephs Fjord-systems in Nordostgrönland: Meddelelser om Grønland, Bind 151, no. 3, 84 p., illus., 1950. Geologic and petrographic investigations were made to determine the age of the Vela Massif metamorphic complex in the vicinity of Kejser Franz Josephs Fjord and Kõng Oscars Fjord, East Greenland. A continuous transition from the sedimentary Eleonore Bay formation and Petermann series (Upper Algonkian) into the metamorphic rocks can be established. The metamorphism is approximately Caledonian in age.

Hudson, H. E., Jr. *See* Buswell, A. M.

Huff, Lyman Coleman. *See* Hawkes, H. E., Jr., 2; Lovering, T. S., 4.

Hughes, Darrell Stephen.

(and Jones, H. J.). Variation of elastic moduli of igneous rocks with pressure and temperature: Geol. Soc. Am. Bull., v. 61, no. 8, p. 843–856, illus., Aug. 1950. The apparatus and laboratory procedure are described. The measurements made on five specimens, granite, quartz monzonite, andesite, norite, and diorite, are presented and discussed.

Hulin, Carlton Dewey.

Mineral deposits of Idaho: 51st Ann. Rpt., Mining Industry of the State of Idaho for 1949, p. 60–63 [1950]. General comments on ore bodies and mineralization in Idaho, as given at the annual meeting of the Idaho Mining Association.

Hume, George Sherwood.

Geology of the bituminous sands area, *in* Drilling and sampling of bituminous sands of northern Alberta, Vol. I, Results of investigations, 1942–1947: Canada Bur. Mines, p. 7–13, 1949. The bituminous sands occur in the McMurray formation of Lower Cretaceous age. The deposition of the sands and origin and character of the bitumen are discussed.

Hummel, Floyd A. *See also* Ricker, R. W.

Synthesis of uvarovite: Am. Mineralogist, v. 35, nos. 3–4, p. 324–325, Mar.–Apr. 1950. Experimental work on the synthesis of garnet by dry reaction using pure oxides indicates that grossularite and andradite cannot be produced. Uvarovite was produced at various temperatures and duration runs. X-ray data for the synthetic uvarovite is compared with that for natural material.

Humphrey, R. A. *See* Hatch, R. A.

Hunt, C. Warren.

1. Preliminary report on Whitemud oil field, Alberta, Canada: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1795–1801, illus., Sept. 1950. Describes the stratigraphy and structure of the Whitemud oil field, Edmonton district, Alberta, producing from the Quartz Sand series, here named "Ellerslie member" of the Blairmore formation, at the base of the Lower Cretaceous. The position of oil accumulation on the structure appears closely controlled by stratigraphic conditions. V. S.
2. Preliminary report on Joseph Lake oil field, Alberta, Canada: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1802–1806, illus., Sept. 1950. The Joseph Lake oil field, Edmonton District, Alberta, produces from the marine Viking member of the Colorado shale, of Cretaceous age. The structure of the field is anticlinal and originated from differential subsidence after Viking deposition. V. S.

Hunt, Charles Butler.

1. Military geology, *in* Application of geology to engineering practice, Berkey Volume, p. 295–327, illus., Geol. Soc. Am., New York, 1950. The application of geologic principles and information to the solution of military problems is discussed. The Military Geology Unit of the United States Geological Survey, which supplied strategic area reports to the Army during World War II, is described, and the scope of its work discussed.
2. (and Sokoloff, Vladimir Petrovich). Pre-Wisconsin soil in the Rocky Mountain region, a progress report: U. S. Geol. Survey Prof. Paper 221–G, p. 109–123, illus., 1950. Discusses an ancient soil in the Lake Bonneville and Denver Basins, which consists of red-brown leached clay overlying lime-enriched weathered parent material. This soil has been discovered on many different parent materials, in many topographic positions, and at various altitudes in the Rocky Mountain region. It is useful for distinguishing late Pleistocene and Recent features from earlier ones. A bibliography is given. V. S.

Hunt, John M.

Infrared spectra of clay minerals, *in* Infrared spectra of reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 8, p. 105–121, July 1950.

Hunt, Richard N.

(and Peacock, H. G.). Lead and lead-zinc ores of the Bingham district, Utah, *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 92–96, illus., 1950; abs., Volume of titles and abstracts, p. 45–46, 1948. The lead-zinc ores occur as fissure veins and replacements in Pennsylvanian strata in a zone surrounding the Utah Copper monzonitic stock and its adjacent area of mineralization. The chief ore minerals are galena, sphalerite, and pyrite.

Hunter, Charles Eugene.

Vermiculite of the southeastern States, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 120–127, illus., 1950. Describes and discusses the occurrence and origin of the vermiculite deposits in North Carolina and South Carolina. Minor occurrences in nearby states are mentioned.

Hunter, La Verne D.

Evidence of uplift in the Bighorn Mountains during Upper Cretaceous time [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1554, Dec. 1950.

Hunter, William S., Jr.

The Kemmerer coal field: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 123–132, illus., 1950. The coal beds in the Frontier and Adaville formations (Cretaceous) in the Kemmerer area, southwestern Wyoming, are described.

Hurd, Paul.

Fulgurites: Rocks and Minerals, v. 25, nos. 3–4, p. 135, Mar.–Apr. 1950. Fulgurites occur in the sands of dunes near Stevensville and Riverside on Lake Michigan. V. S.

Hurlbut, Cornelius Searle, Jr.

1. Studies of uranium minerals (IV); johannite: Am. Mineralogist, v. 35, nos. 7–8, p. 531–535, illus., July–Aug. 1950. X-ray crystallographic data are presented. The formula of johannite is $CuU_2(SO_4)_2(OH)_{10}.2H_2O$.
2. Childrenite-eosphorite series: Am. Mineralogist, v. 35, nos. 9–10, p. 793–805, illus., Sept.–Oct. 1950. Physical, optical, and chemical data for eosphorite, and optical data for childrenite are given, based on re-examination of material. The optical work showed the presence of twinning in all well-crystallized specimens. The crystal form is therefore monoclinic rather than orthorhombic. The formula of eosphorite is $MnAl(PO_4)(OH)_2.H_2O$; that of childrenite is $FeAl(PO_4)(OH)_2.H_2O$.
3. Beryl at Mt. Mica, Maine [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 283, Mar.–Apr. 1950.
4. Monochromator utilizing the rotary power of quartz [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1473, Dec. 1950.

Hurley, Patrick Mason.

1. Distribution of radioactivity in granites and possible relation to helium age measurements: Geol. Soc. Am, Bull., v. 61, no. 1, p. 1–8, illus., Jan. 1950. Alpha particle emission from granulated granite samples is much larger than that from their known total radioactive contents and suggests a surficial distribution of radioactive elements on the granules and partial removal of elements by ground water acid. Such losses may be related to the retention of helium in different igneous rocks. V. S.
2. Progress report on age measurements: Am Geophys. Union Trans., v. 31, no. 1, p. 142–144, Feb. 1950. Age measurements on the pre-Cambrian rocks of the North-Atlantic continent by various radioactive methods are correlated with directions of structural trends. It is noted that the history of a pre-Cambrian area is best preserved by sets of major structures which have persistent directions. V. S.
3. (and Thompson, James B., Jr.). Airborne magnetometer and geological reconnaissance survey in northwestern Maine: Geol. Soc. Am. Bull., v. 61, no. 8, p. 835–841, geol. map, Aug. 1950. Presents the results of an aeromagnetic survey in the Moosehead Lake area undertaken in conjunction with a survey of asbestos possibilities. The geology of the region is discussed, and a geological map with superimposed total magnetic intensity variations is shown. Among the modifications made to the geology of the area was the placing of a large area of granite unconformably below a Siluro-Devonian section.
4. Progress report to the Committee on the measurement of geologic time: Natl. Research Council, Div. Geology and Geography, Rpt. of the Committee on the measurement of geologic time, 1949–1950. Exhibit A, p. 25–28 (‡), Nov. 1950. Work at the Massachusetts Institute of Technology on ocean bottom cores, Columbia Plateau basalts, alteration zones, and radionuclides, during the past year, is reviewed briefly.

Hurley, Patrick Mason—Continued

5. Progress report on geologic time measurement [abs.]: Science, v. 112, no. 2912, p. 453, Oct. 20, 1950.

Hurst, Macleod Ewart.

1. General geology of Ontario: Canadian Min. Jour., v. 71, no. 11, p. 96–101, illus. incl. geol. map, Nov. 1950. The general geology of the province is outlined, with particular reference to the men who have carried on investigations of various areas. The map shows the general distribution of Archean, Proterozoic, Paleozoic and Mesozoic rocks.
2. Iron in Ontario: Canadian Min. Jour., v. 71, no. 11, p. 144–151, illus., Nov. 1950. Describes the various occurrences of iron ore in Ontario, including the Steep Rock mine, the Helen mine, and the Josephine mine. Data on the type and grade of ore, and reserves are given, together with an index map of deposits.

Hussey, Keith Morgan.

1. (and McNulty, Charles Lee, Jr.). *Planularia planotrochiformis*, a new species showing variation in the genus: Jour. Paleontology, v. 24, no. 4, p. 472–473, illus., July 1950. "The new species, *Planularia planotrochiformis*, is described. The gradation from perfectly planispiral to strongly trochoid forms is emphasized, and reasons for not recognizing a new genus are given."
2. (and Tator, Benjamin A.). Sandstone spindles: Am. Jour. Sci., v. 248, no. 10, p. 734–740, illus., Oct. 1950. The Dawson arkose (Eocene), outcropping at Corral Bluffs near Colorado Springs, Colorado, exhibits relatively small, spindle-shaped structures occurring in closely spaced, parallel arrangements on the surface of exposure. The spindles result from the action of ground-water solutions which develop zones of weakness along planes of crossbedding and jointing. Their composition, occurrence, and development by weathering are described. V. S.

Hutchinson, George Evelyn.

The biogeochemistry of vertebrate excretion: Am. Mus. Nat. History Bull., v. 96, 554 p., illus., 1950. A section of this work, the third to appear in the "Survey of existing knowledge of biogeochemistry", is devoted to the geochemistry of guano minerals, treating the water-soluble minerals, the calcium phosphates, magnesium phosphates, aluminum phosphates, and the ferric phosphates.

Hutchinson, R. D.

New evidence on the New Brunswick geanticline [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1473, Dec. 1950.

Hutt, Gordon McLean.

To geology students at graduation: Precambrian, v. 23, no. 5, p. 11, 13, May 1950. Points out various facts of which a student embarking on a geological career should be apprised, among which are the importance of mastery of written English, the usefulness of languages, and the need for early specialization.

Hutton, C. Osborne.

1. (and Bowen, Oliver E., Jr.). An occurrence of jarosite in altered volcanic rocks of Stoddard Mountain, San Bernardino County, California: Am. Mineralogist, v. 35, nos. 7–8, p. 556–561, illus., July–Aug. 1950. "The hydrated sulfate of potassium and ferric iron, jarosite, has been identified as a minor constituent of pneumatically altered quartz porphyry of Juratrias age that outcrops on the south slope of Stoddard Mtn. in the Barstow-Victorville district, San Bernardino County, California. The mineral has been identified on the basis of optical and goniometric measurements, and this diagnosis has been verified by chemical tests."
2. Allanite from Yosemite National Park and Fiordland, New Zealand [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1525, Dec. 1950.

Hysom, R. L.

The search for oil: Colorado Engineer, v. 46, no 4, p. 9–11, 38, illus., May 15, 1950. The nature of geophysical, especially gravitational, data used in oil search is explained briefly in relation to geologic characteristics. V. S.

Imbault, Paul E.

1. Preliminary report on the Maicasagi area, Abitibi-East County: Quebec Dept. Mines, Geol. Surveys Br., Prelim. Rpt. 231, 8 p. (‡), geol. map, 1949. A brief report on the pre-Cambrian rocks and structure of the Maicasagi area in northern Quebec.
2. The Mattagami-Inconnu region: Canadian Min. Jour., v. 71, no. 6, p. 62–66, illus. incl. geol. sketch map, June 1950. An east-trending belt of interbedded volcanics and sedimentary rocks characterizes the Mattagami-Inconnu region in northern Quebec. Syenitic and granitic intrusives are also present over a large part of the area. The structure and economic possibilities of the region are discussed.

Imbt, Robert Floyd.

(and McCollum, S. V.). Todd Deep field, Crockett County, Texas: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 2, p. 239–262, illus., Feb. 1950. The stratigraphy and structure of the Paleozoic and Cretaceous beds are described. Petroleum is produced from several zones in the Ellenburger formation (Ordovician) and from the Strawn crinoidal limestone (Pennsylvanian). Subsurface structure contour maps and several cross sections are included. V. S.

Imbt, William C. *See also* Bartram, J. G.

Carbonate porosity and permeability, *in* Applied sedimentation, p. 616–632, illus., 1950. The principles involved in the formation of porosity and permeability in carbonate rocks, and the practical application of these characteristics in petroleum work are discussed. Several types of future research are suggested.

Imlay, Ralph Willard.

1. Paleoecology of Jurassic seas in the western interior of the United States: Natl. Research Council, Report of the Committee on a treatise on marine ecology and paleoecology, 1948–1949, no. 9, p. 72–104, illus., Dec. 1949. The extent, depth, and character of the four invasions of Arctic seas into the western interior during the Jurassic are described from evidence on sedimentary facies and fossil assemblages. Maps and cross sections showing the distribution of deposits at various stages are included. V. S.
2. Jurassic rocks in the mountains along the west side of the Green River Basin: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 36–48, illus., 1950. The lithology, thickness, distribution, and variation of the Twin Creek limestone in southwestern Wyoming and adjacent parts of Utah and Idaho are described. Measured sections are included, and a correlation table of Jurassic formations in the western interior region is given.

Imperial Oil, Ltd., Western Division, Geological Staff.

Devonian nomenclature in Edmonton area, Alberta, Canada: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1807–1825, illus., Sept. 1950. The temporary nomenclature for the Devonian beds of the Leduc field, Alberta, is revised. Four formations and seven members are given geographic names on the basis of the areal extent of different lithological units, and their characteristics are discussed. A type section for each newly named unit is described in detail. V. S.

Ingerson, Earl.

The water content of primitive granitic magma: Am. Mineralogist, v. 35, nos. 9–10, p. 806–815, illus., Sept.–Oct. 1950. "Previous estimates of water content of magmas are summarized. Assuming that essentially the amount of water now on the earth's surface was in a primitive atmosphere and that this atmosphere was in equilibrium with a molten outer layer of the earth as it began to crystallize, the amount of water in this 'primitive magma' can be calculated. It comes out about 3 percent."

Ingham, Albert Irwin.

McDonald and adjacent oil fields, Alleghany and Washington Counties, Pennsylvania; Part 1, Geology: Pa. Geol. Survey, 4th ser., Bull. M29, p. 1–40, illus., 1949. The subsurface stratigraphy and structure of the Upper Devonian, Mississippian, and Pennsylvanian in the McDonald, McCurdy, Venice, Hopper, and Moon Run-Crafton oil fields in southwestern Pennsylvania are presented.

Ingram, Richard E.

Note on the magnification curve of a seismograph recording through a galvanometer: Seismol. Soc. Am. Bull., v. 40, no. 1, p. 21–23, illus., Jan. 1950. Seismograph constants are linked by a general equation with the value of the earth period, essential for understanding the magnification curve. The equation aids a quick appreciation of the curve and may help in designing instruments. V. S.

Ingram, W. Frank.

The kyanite, staurolite, and garnet association in Upson County, Georgia: Ga. Geol. Survey Bull. 56, p. 85–91, 1950. Petrographic description of thin sections of augen gneiss occurring near Thomaston, Georgia.

Inman, Douglas Lamar.

1. Submarine topography and sedimentation in the vicinity of Mugu submarine canyon, California: Calif. Univ., Scripps Inst. Oceanography, Submarine Geology Rpt. no. 10, 42 p., illus., Feb. 16, 1950; Beach Erosion Bd. Tech. Memo. 19, 45 p., illus., July 1950. Mugu submarine canyon has a ridge on the floor of each of the two branches at its head, but otherwise resembles subaerially eroded canyons inland. The canyon sediments differ from those of the adjacent shelf areas in size variation and distribution. V. S.
2. Suggested standardization of the descriptive parameters in the mechanical analysis of sediments: Calif. Univ., Scripps Inst. Oceanography, Submarine Geology Rpt. 15, 14 p. (‡), illus., Oct. 1950. Suggests the use of five parameters (median diameter, standard deviation, kurtosis, and two measures of skewness) to indicate the features of the size-frequency distribution of a sediment. The parameters are based on five percentiles obtained from the cumulative size-frequency curve, and give significant differences not obtainable from parameters derived from quartile measurements.

Inman, William U.

Clear Creek jadeite: Mineralogist, v. 18, no. 10, p. 451–453, Oct. 1950. A brief account of prospecting for jadeite in place on Clear Creek, San Benito County, California, and a report of finding several outcrops.

Innes, M. J. S.

Gravity anomalies in northwestern Canada: Bulletin Géodésique, 1949, no. 12, p. 162, June 1949. Data on gravity anomalies from stations between 55° and 70° north latitude and between Hudson Bay and the Mackenzie River show negative anomalies for all pre-Cambrian stations. These anomalies may be due to lack of isostatic adjustment following removal of glacial loads.

Insley, Herbert. *See also* Van Valkenburgh, A., Jr.

Growth of crystals of mica and related fluosilicates [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1474, Dec. 1950.

International Nickel Company of Canada, Ltd.

Ontario nickel industry: Canadian Min. Jour., v. 71, no. 11, p. 134–143, illus., Nov. 1950. A part of this article, which deals with all phases of the operations of the company at Sudbury, Ontario, is devoted to a description of the nickel intrusive, mineralization, structure, and origin of the ore.

Ireland, Hubert Andrew.

Curved surface sections for microscopic study of calcareous rocks: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1737–1739, Aug. 1950. Describes a method for obtaining "curved surface sections" on calcareous fragments. The sections are used in place of ground surfaces or thin sections for microscopic examination of texture, fabric, inclusions, and other features. Uses and advantages are discussed.

Irish, Ernest James Wingett.

Daniels Flats map-area, Alberta (report and map): Canada Geol. Survey Paper 50–12, 29 p. (‡), illus. incl. geol. map, 1950. The Daniels Flats area, in the eastern part of the Foothills belt of west-central Alberta, is underlain by a succession of folded and faulted marine and non-marine sediments of Lower Cretaceous through Paleocene (?) age, containing several bituminous coal seams. The formations and structure are described. Cross sections and a geologic map are given. **V. S.**

Irish, Ruth. *See* Warren, H. V., 3.

Islas Leal, Juventino. *See* Basurto García, J.

Isotoff, Andrei. *See* Snavely, P. D., Jr.

Ives, Ronald Lorenz.

1. Laboratory power supply for vibrator-type portable Geiger counters: Econ. Geology, v. 45, no. 3, p. 245–248, illus., May 1950. Describes a transformer-rectifier-filter device for powering vibrator-type portable Geiger counters in the laboratory. Construction, basic circuit, voltage adjustment, and battery recharging are indicated. **V. S.**
2. Glaciations in Little Cottonwood Canyon, Utah: Sci. Monthly, v. 71, no. 2, p. 105–117, illus., Aug. 1950. Describes early Cambrian (?) and Pleistocene glaciations in the Wasatch Mts., Utah. The moraines in Little Cottonwood Canyon are mapped and discussed. The glacial stages in this area are correlated with those in Monarch Valley, Colorado.

Jacobs, Elbridge Churchill.

The physical features of Vermont. 169 p., illus., Vt. State Dev. Comm., Feb. 1950; abstracts, Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1970–1971, Dec. 1949; Earth Sci. Digest, v. 4, no. 6, p. 19, Jan. 1950. The physiographic provinces of Vermont are described, introduced by a 50-page résumé of general geology and mineralogy. The last 70 pages are devoted to a very useful index of mountains, lakes, streams, and other features, giving their location by town, county, and quadrangle.

Jacobsen, Clyone Lynn.

Geology of the Island area, McLean County, Kentucky: Ky. Geol. Survey Bull. ser. 9, no. 3, 26 p., illus., 1950. A descriptive report of the stratigraphy, structure, petroleum production, and future possibilities of the Island area in western Kentucky. Petroleum is produced from five Mississippian horizons and one Pennsylvanian horizon.

Jaffe, Howard William.

1. (and Sherwood, Alexander M.). Phosphate-allophane in an epidosite from North Carolina: Am. Mineralogist, v. 35, nos. 1–2, p. 102–107, illus., Jan.–Feb. 1950. Gives chemical and petrographic data for phosphate-allophane which replaces oligoclase in epidosite. **V. S.**
2. The role of yttrium and other minor elements in the garnet group [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 284, Mar.–Apr. 1950.

Jaggar, Thomas Augustus.

Abrasion hardness: Hawaiian Volcano Observatory, Fifth Spec. Rpt., 43 p., illus., 1950. Experimental work on the testing of hardness, softness, and abradability of various materials and under various conditions, carried on at the Volcanology Laboratory of the University of Hawaii, is described. A scratch hardness tester has been designed and is described. The principle of the instrument is to scratch the smooth surface of the specimen to be tested with a sharp tool rotating at a certain speed, and for a definite length of time. The length of the resulting scratch indicates the hardness; the longer the scratch the softer the material.

Jahns, Richard Henry. *See also* White, W. S.

1. (and Lancaster, Forrest W.). Physical characteristics of commercial sheet muscovite in the southeastern United States: U. S. Geol. Survey Prof. Paper 225, 110 p., illus., 1950. Results of petrographic, electrical, and color tests made on specimens of mica from 850 deposits in 5 southeastern states are presented together with a review of the local distribution, mode of occurrence, and economics of sheet muscovite. A bibliography is given. V. S.
2. (and Lance, John Franklin). Geology of San Dieguito pyrophyllite area, San Diego County, California: Calif. Dept. Nat. Res., Div. Mines Spec. Rpt. 4, 32 p., illus. incl. geol. maps, Nov. 1950. The geology and structure of the Santiago Peak volcanics in the western part of San Diego County are described. Detailed petrographic, mineralogic, and chemical data are given for the pyrophyllite-bearing rocks which occur as altered parts of the volcanic series. The origin is discussed. Economic aspects of pyrophyllite production are presented.
3. (and Engel, Albert Edward John). Chaotic breccias in southern California; tectonic or sedimentary ? [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1474, Dec. 1950.

Jakosky, John Jay.

Exploration geophysics. 2d ed., xvi, 1195 p., illus. Los Angeles, Calif., Trija Publishing Co. 1950. Detailed information is given in chapters covering geologic background, magnetic, gravitational, electrical, seismic, chemical, thermal, and radioactivity methods, bore hole investigations, physical principles applied to production problems, and land tenure and patent problems.

James, Ellen L.

New marine fauna from Coos Bay, Oregon [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1539, Dec. 1950.

James, Harold Lloyd.

Current U. S. Geological Survey investigations in the iron ranges of northern Michigan [abs.]: Econ. Geology, v. 45, no. 4, p. 385–386, June–July 1950.

James, William Fleming.

(and others). Canadian deposits of uranium and thorium: Min. Eng., v. 187, no. 2, p. 239–255, illus. incl. geol. map, Feb. 1950; A. I. M. E. Trans., v. 187, 1950. "Contains a history of Canadian uranium and thorium discoveries, a working classification of the deposits, fairly detailed descriptions of the Eldorado mine and of properties in northern Saskatchewan, and shorter accounts of several other discoveries." An index map showing locations, and geologic sketch map of the Goldfields region are included.

Jardetzky, W. S.

The problem of mountain chains: Am. Geophys. Union Trans., v. 31, no. 6, p. 901–913, illus., Dec. 1950. The problem of mountain building is divided into three parts: (1) mechanism of formation, (2) distribution of forces acting in the earth's crust and producing simultaneous formation of ranges, and (3) the changes of these forces during geologic time. Four principal types of the mechanism of folding are considered and mathematical formulae given. New data on the distribution of forces and variation during geologic time are presented.

Jarvik, Erik.

1. Note on the Upper Devonian vertebrate fauna of East Greenland and on the age of the ichthyostegid stegocephalians: K. Svenska Vetenskapsakad., Arkiv Zool., Bd. 41A, H. 4, no. 13, 8 p., 1949. The occurrence and associations of the ichthyostegids point to a Late Devonian age. A useful bibliography is included.

Jarvik, Erik—Continued

2. Middle Devonian vertebrates from Canning Land and Wegeners Halvö (East Greenland); Pt. 2, Crossopterygii: Meddelelser om Grønland, Bd. 96, no. 4, 132 p., illus., 1950; Copenhague Univ. Mus. Minér. Géol., Commun. Paléon. no. 72, 1950. Comprehensive descriptions of *Gyroptychius groenlandicus* and *G.?* cf. *groenlandicus*, new species of crossopterygians from the Middle Devonian strata of Wegeners Peninsula and Canning Land, East Greenland. Also included are notes on some Porolepiformes remains and on the strata.
3. Note on Middle Devonian crossopterygians from the eastern part of Gauss Halvö, East Greenland, with an appendix, An attempt at a correlation of the Upper Old Red Sandstone of East Greenland with the marine sequence: Meddelelser om Grønland, Bd. 149, no. 6, 20 p., illus., 1950; Copenhague Univ. Mus. Minér. Géol., Commun. Paléon. no. 73, 1950. Describes evidence of crossopterygian remains which establish the Upper Middle Devonian age of the strata. In the appendix, a correlation chart shows the relation of the Upper Old Red Sandstone in Greenland to the Upper Devonian in Belgium, Russia, and the Baltic area.

Jeffords, Russell MacGregor.

The ground-water resources of Montgomery County, New York: N. Y. Water Power and Control Comm. Bull. GW–23, 63 p., illus. incl. geol. map, 1950. The sedimentary and metamorphic rocks of Montgomery County, New York, range from pre-Cambrian through Recent in age. The chief water-bearing formations are Cambrian dolomite, Ordovician shales, and unconsolidated till and gravel. V. S.

Jeletzky, Jurij Alexander.

1. *Actinocamax* from the Upper Cretaceous of Manitoba: Canada Geol. Survey Bull. 15, p. 1–27, 36–41, illus., 1950. A critical review of the belemnoid genus *Actinocamax*, including descriptions of two new varieties from Manitoba. The possibility of the use of belemnites as index fossils in correlating Canadian strata is discussed.
2. Stratigraphy of the west coast of Vancouver Island between Kyuquot Sound and Esperanza Inlet, British Columbia (report, map, and figure): Canada Geol. Survey Paper 50–37, 52 p. (‡), geol. map, 1950. Preliminary results of an investigation of the Triassic, Jurassic, Cretaceous, and Tertiary strata are outlined. The strata are described in some detail and the faunal content is given. The age and correlation are discussed. A correlation table with other Pacific Coast areas is included.
3. Some nomenclatorial and taxonomic problems in paleozoology: Jour. Paleontology, v. 24, no. 1, p. 19–38, illus., Jan. 1950. Multiplication of species and genera, provisional names, and neozoological statistical methods are criticized in favor of infraspecific categories, phylogenetic methods and evolutionary studies, and the latter approach is illustrated by correlation of upper Jurassic and Cretaceous faunas on both sides of the Atlantic. A bibliography is appended. V. S.

Jenke, Arthur Louis.

Well temperatures in the Abilene area: Abilene Geol. Soc., Geol. Contr., p. 82–87, illus., 1950. Describes the methods of measurement, the results, and the significance of bottom-hole temperatures in wells in the Abilene, Texas, area. Investigations have shown that, for this area, the rate of temperature increase with depth is essentially a straight line, and thus reasonably accurate gradients can be calculated from bottom-hole measurements.

Jenny, Hans.

Origin of soils, *in* Applied sedimentation, p. 41–61, illus., 1950. The factors in soil formation—time, parent material, topography, climate, and the biotic factor—are discussed. The processes of soil formation, dependent on the application of physics, chemistry, and biology, are discussed in that light.

Jensen, Adolf Severin. *See* Harder, P.

Jérémine, Elisabeth.

Description pétrographique de quelques roches du Labrador, de la Baie d'Hudson et de la baie James: Revue Trimestrielle Canadienne, v. 35, no. 140, p. 370–402; illus., Winter 1949–50. Petrographic descriptions of gneiss, amphibolite, quartzite, and chlorite schist of the Grenville series and of intrusives of the Buckingham series from Labrador and areas in the vicinity of Hudson Bay and James Bay.

Jerome, S. E.

Special field applications of a confirmatory test for lead: Econ. Geology, v. 45, no. 4, p. 358–362, June–July 1950. The potassium iodide test for rapid, large scale field identification of anglesite and cerussite in arkose is described. A supplementary method for determining cerussite with 10 percent sodium sulfide solution is discussed briefly. V. S.

Jewett, John Mark.

Oil prospects in eastern Kansas: World Oil, v. 130, no. 6, p. 64–66, 68, 70, illus. incl. geol. sketch map, May 1950. Eastern Kansas is characterized by Paleozoic sediments ranging from 500 to 4,800 feet in thickness. Oil is produced from sandstones, limestones, and dolomites of Ordovician to Permian age. Major structural provinces and further oil potentialities are discussed. A bibliography is given. V. S.

Jillson, Willard Rouse.

1. American fluvial Pliocene deposits bordering the western margin of the Cumberland Plateau: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 9, p. 54–58, 1950. River sands and gravels that occur at varying levels between 650 and 950 feet in valleys and as terrace deposits near and within the western part of the Cumberland Plateau are considered to be of Pliocene age. Their occurrence and the history of their recognition are sketched.
2. A bibliography of early books, pamphlets, articles and maps pertaining to the geology, paleontology and seismology of Kentucky, 1744–1854 (with annotations). 53 p. Frankfort, Ky. Roberts Printing Co. 1950.
3. First American gusher. 60 p., illus. Frankfort, Ky. Roberts Printing Co. 1950. The first oil well in America, Stockton no. 1, discovered March 11, 1829, in Cumberland County, Kentucky, is located on a small anticline in Paleozoic sediments. The local geology and history of the well are outlined, and a bibliography is given. V. S.
4. The geological map of the United States, a narrative outline and annotated bibliography (1752–1946). 23 p. Frankfort, Ky. Roberts Printing Co. 1950. Brief historical notes followed by a bibliography of about 50 items arranged chronologically.
5. Geology of Button Knob and vicinity. 60 p., illus. Frankfort, Ky. Roberts Printing Co. 1950. Describes the stratigraphy, structure, paleontology, physiography, and oil and gas potentialities of the Button Knob area, Casey County, central Kentucky. The area is one of faulted and folded Paleozoic strata ranging from Ordovician through Mississippian. Oil and gas have been produced from Ordovician beds.
6. Geology of the Elk Lick Valley. 33 p., illus. Frankfort, Ky. Roberts Printing Co. 1950. The valley, in Fayette County, Kentucky, known for its tufa deposit called "Petrified Falls," is described as to topography, stratigraphy, structure, upland gravels, fossil horizons, and small local potholes. A bibliography is given. V. S.
7. The Menifee natural gas reservoir. 33 p., illus. Frankfort, Ky. Roberts Printing Co. 1950. A brief discussion of the stratigraphy, structure, and occurrence of natural gas in the area of the Menifee gas field in eastern Kentucky. An annotated bibliography is included.

Jizba, Zdenek V. *See also* Wood, W. H.

Retardation method for determining the orientation of uniaxial crystals [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1525–1526, Dec. 1950.

Johnson, Frank Walker.

Shale density analysis, *in* Subsurface geologic methods, p. 329–341, illus., Colo. School of Mines, 1950. Discusses the determination and application of shale density as an indication of shale compaction and one of the criteria of formation.

Johnson, George W.

Duties and reports of a subsurface geologist, *in* Subsurface geologic methods, p. 810–855, illus., Colo. School of Mines, 1950. Discusses specific points to be considered in reports on various phases of oil field development and outlines typical reports.

Johnson, Jesse Harlan.

A Permian algal-foraminiferal consortium from west Texas: Jour. Paleontology, v. 24, no. 1, p. 61–62, illus., Jan. 1950. Describes two new species of *Nubecularia* and *Girvanella*, found intimately entwined as algal-ball deposits near Vinton, Texas. V. S.

Johnson, Joe William. *See* Einstein, H. A.

Johnson, S. J. *See* Turnbull, W. J.

Johnson, Wendell B. *See* Byrne, F. E., 3.

Johnston, Floyd T.

Relief wells for artesian sandstone, Fort Randall Dam, Missouri River, South Dakota [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1475, Dec. 1950.

Johnston, John Edward.

(and Heck, William Adam). The Fire Clay and Whitesburg coals in the Hyden quadrangle, Leslie, Clay, and Perry Counties, Kentucky: U. S. Geol. Survey Coal Inv. Map C5. 1950. The map shows outcrops and thickness of the coal beds and structure. Descriptive notes of the coal geology and reserves are given together with numerous coal bed sections, analyses, and reserve figures.

Johnston, Kenneth Howard.

(and Moot, C. W., Jr.). Petroleum engineering study of the Weber pool, Washington County, Okla.: U. S. Bur. Mines Rpt. Inv. 4740, 47 p. (‡), illus., Dec. 1950. Discusses the geology, development, and exploitation of the Weber pool, in the Bartlesville-Dewey field in northeastern Oklahoma. Structure maps, cross sections, and production data are given.

Jones, H. J. *See* Hughes, D. S.

Jones, Islwyn Winwaloc.

The Appalachian region: Canadian Min. Met. Bull. no. 454, p. 93–98, illus., Feb. 1950. Discussion of the Institute Jubilee Volume, Structural geology of Canadian ore deposits, together with additional information on the relation of structures to ore deposits in the Quebec section.

Jones, Jack O.

(and Peyton, Alexander L.) Investigation of Furniss tungsten deposits, Cabarrus County, N. C.: U. S. Bur. Mines Rpt. Inv. 4724, 14 p. (‡), illus., Sept. 1950. Tungsten occurs in lenticular quartz veins in metamorphosed andesitic flows and tuffs near the contact with a quartz diorite intrusive. The ore mineral is scheelite. Chalcopyrite and native gold are associated minerals.

Jones, Paul Hastings.

(and Buford, Thomas Bernard). The application of electric logging to ground-water exploration [abs.]: Geophysics, v. 15, no. 1, p. 152, Jan. 1950.

Jones, Stewart McReddie.

Geology of Gatun Lake and vicinity, Panama: Geol. Soc. Am. Bull., v. 61, no. 9, p. 893–921, illus. incl. geol. map, Sept. 1950. The Tertiary stratigraphy and structure in the northern half of the central Panama Isthmus are described, and the formations are correlated with those of adjacent localities. The fracture pattern of the area upholds the view that the Panama Isthmus ridge is a wide upwarp between the Caribbean and Ecuador seas, possibly dating from Late Cretaceous orogeny. The geologic history of the area is outlined.

Jones, Suzanne L. *See* Dennis, P. E., 1, 2.

Jones, Waldo H.

1. Topaz locality, old Brewer mine: Mineralogist, v. 18, no. 2, p. 66–67, Feb. 1950. Notes the occurrence of topaz in quartz sericite schist at the Brewer mine, near Jefferson, South Carolina. V. S.
2. New fossil grounds: Mineralogist, v. 18, nos. 7–8, p. 377, July-Aug. 1950. Reports a recently made exposure at Cherry Grove Inlet, South Carolina, where specimens of Pliocene and Peistocene age may be collected.

Jones, Walter Bryan.

1. Oil and gas progress and prospects in Alabama: World Oil, v. 131, no. 1, p. 57, 60, 62, 64, illus., July 1, 1950. Oil and gas production and prospects in Alabama are reviewed. Seven districts are distinguished, the most promising areas being located in the southwestern and northwestern parts of the state. V. S.
2. Possible oil-bearing horizons in Alabama: Oil, v. 10, no. 10, p. 11–12, illus., Dec. 1950. Eight regions are differentiated according to the potential oil possibilities. The characteristics of each region are discussed. The southwestern and northwestern parts of the state are the most promising.

Jordan, George F.

Memorial to Harold Watson Murray [1906–1948]: Geol. Soc. Am. Proc. 1949, p. 209–210, port., June 1950.

Jordan, Louise. *See* Applin, E. E. R., 2.

Jordan, Richard H.

An interpretation of Floridian karst: Jour. Geology, v. 58, no. 3, p. 261–268, illus., May 1950. The highly developed artesian system of peninsular Florida, extending to depths of several thousand feet, is described and explained by the high permeability and great thickness of limestones. Formation of caverns, sinks, and springs is discussed. V. S.

Jorgensen, Neil.

Some mines of Oxford County, Maine: Rocks and Minerals, v. 25, nos. 3–4, p. 158–159, illus., Mar.–Apr. 1950. Reports briefly on mineral collecting in the pegmatite area of the Mt. Mica, Bennett, Bessey, and smaller quarries near Paris, Maine. V. S.

Juan, Vei Chow.

The system $CaSiO_3$–$Ca_2Al_2SiO_7$–$NaAlSiO_4$: Jour. Geology, v. 58, no. 1, p. 1–15, illus., Jan. 1950. The thermal-equilibrium relationships in the system have been investigated by the quenching method. The data are tabulated and presented in equilibrium diagrams, and their bearing on related systems of the soda-lime-alumina-silica tetrahedron and petrologic significance are discussed. V. S.

Judd, William R.

Loess as a foundation material [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1554, Dec. 1950.

Judson, S. Sheldon, Jr.

Depressions of the northern portion of the southern High Plains of eastern New Mexico: Geol. Soc. Am. Bull., v. 61, no. 3, p. 253–274, illus., Mar. 1950. The shallow depressions in the Pliocene Ogallala sandstone are the result of alternate periods of leaching and wind deflation and not of subsidence or collapse. The process is discussed in relation to climate. V. S.

Just, Theodor Karl.

Mesozoic plant microfossils and their geological significance [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 178, Apr. 27, 1950.

Kaiser, Charles Philip.

Stratigraphy of Lower Mississippian rocks in southwestern Missouri: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2133–2175, illus., Nov. 1950. Eleven Lower Mississippian formations outcropping in southwestern Missouri are described with respect to lithology, distribution, and age. The formations are correlated with sections in Arkansas and Oklahoma. Detailed sections are given, and a bibliography is included. Changes in nomenclature are made.

Kaiser, Edward Peck.

1. Mining geology, a science: Econ. Geology, v. 45, no. 5, p. 482–485, Aug. 1950. Mining geology is considered to be a field of science with ample opportunity for research, rather than a branch of engineering which makes use of geological principles and procedures. V. S.
2. Structural significance of lineaments [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1475–1476, Dec. 1950.

Kalliokoski, Jorma O. K.

Second preliminary map, Weldon Bay, Manitoba (map and descriptive notes): Canada Geol. Survey Paper 50–5, 15 p. (‡), geol. map, 1950. Weldon Bay, western Manitoba, is an area of pre-Cambrian gneisses and intrusives. The rocks and structural relations, including those in neighboring areas, are mapped and described briefly, with attention to economic possibilities. V. S.

Kapner, Harvey Herbert.

(and Hollingsworth, Richard Vincen, and Williams, Harold L.). Fusulinid chart for Pennsylvanian correlations in mid-Continent area [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 621, Mar. 1950.

Kaser, Paul.

Ground-water levels in Ohio, 1948: Ohio Water Res. Bd. Bull. 21, 60 p., illus., July 1950. Ground water in Ohio is discussed by county.

Kauffman, Albert John, Jr.

1. (and Dilling, E. Don). Differential thermal curves of certain hydrous and anhydrous minerals, with a description of the apparatus used: Econ. Geology, v. 45, no. 3, p. 222–244, illus., May 1950. One hundred and three differential thermal curves, many of them new, are given for various clays, hydrous oxides, carbonates, silicates, sulfates, phosphates, volcanic glasses, and miscellaneous minerals. Details of the apparatus used, including an electronic recording potentiometer, are outlined. V. S.
2. (and Mortimore, D. M., and Hess, Harold D.). A study of certain uncommon minerals found in the Pacific Northwest: U. S. Bur. Mines Rpt. Inv. 4721, 22 p. (‡), Sept. 1950. Optical, X-ray, and spectrographic data are given for allanite, native antimony, boulangerite, chromium mica, geocronite, glaucodot, kotschubeite, manganophyllite, plumbojarosite, pseudomalachite, and pyromorphite. A list of references is given for each mineral.

Kaufmann, Dale W.

(and Slawson, Chester Baker). Ripple mark in rock salt of the Salina formation: Jour. Geology, v. 58, no. 1, p. 24–29, illus., Jan. 1950. Extensive series of ripple mark at various horizons have been observed in Silurian rock salt of the Salina formation, Michigan, and anhydrite lamellae which show similar ripple mark have been noted in the clear salt mass. These are the first such observations on a large scale. V. S.

Kaufmann, Godfrey F.

Modern methods in petroleum exploration, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 39–74, illus., Jan. 1950. Discusses geologic and geophysical techniques for both surface and subsurface exploration. A section is included on the importance of the study of sedimentary basins and geosynclines, both of which are fundamentally connected with petroleum exploration. Discussion by T. H. Allan, J. T. Rouse, and A. S. Bunte is appended.

Kay, George Marshall.

Ordovician Canadian-Chazyan relations in Vermont [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1476, Dec. 1950.

Kaye, Clifford Alan.

Principles of soil mechanics as viewed by a geologist, *in* Applied sedimentation, p. 93–112, illus., 1950. Among the points covered are principles of soil mechanics, sampling and testing techniques, Atterberg limits, slope-stability analysis, consolidation, and the role of geology in soil mechanics.

Keen, Angeline Myra. *See* Schenck, H. G.

Keenmon, Kendall A. *See* Hibbard, C. W., 3.

Keevil, Norman Bell. *See also* Larsen, E. S., Jr., 2.

Radioactivity and mineral deposits: Am Mineralogist, v. 35, nos. 9–10, p. 816–833, illus., Sept.–Oct. 1950 The helium and lead methods of calculating geologic age are discussed and compared. The distribution of radioactivity around "non-radioactive" ore deposits (Ontario; Franklin, New Jersey; Gilman, Colorado) and around radioactive ore bodies (Great Bear Lake) is described. The detection of hidden radioactive deposits is discussed.

Kehrlein, Oliver.

Death comes to a glacier: Pacific Discovery, v. 3, no. 3, p. 8–18, illus., May–June 1950. Describes the last, small remnants of a glacier on the north slope of Mt. Pickering, at the southern end of the Sierras in California.

Keith, Mackenzie Lawrence. *See also* Yoder, H. S., Jr., 4.

(and Tuttle, Orville Frank). Geological significance of variations in the high-low inversion of quartz [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1476, Dec. 1950.

Keller, Walter David. *See also* Muilenberg, G. A

1. (and Pickett, E. E.). The absorption of infrared radiation by clay minerals: Am. Jour. Sci., v. 248, no. 4, p. 264–273, illus., Apr. 1950; abs., Geol. Soc. Am. Bull., v. 59, no. 12, pt. 2, p. 1332, Dec. 1948; Am. Mineralogist, v. 34, nos. 3–4, p. 278, Mar.–Apr. 1949. "Infrared absorption spectrograms by pulverized minerals of the kaolin, montmorillonite, and illite groups in the 2 to 15 micron wave length bands are shown. The kaolin minerals have a distinctive absorption but those from the other groups are less clearly defined. Spectrograms of gibbsite, brucite, quartz, opal, and muscovite are shown because of their structural relationships to the clay minerals."
2. (and Littlefield, Romaine F.). Inclusions in the quartz of igneous and metamorphic rocks: Jour. Sed. Petrology, v. 20, no. 2, p. 74–84, illus., June 1950. Thin-section study of inclusions in 51 specimens of igneous and metamorphic quartz showed that "regular inclusions characterize the quartz of schists, irregular inclusions predominate in igneous quartz, and globular and acicular inclusions are most abundant in igneous quartz although they also occur in metamorphic quartz." Spectrographic analyses indicate that petrogenic quartz probably includes abundant, sub-microscopically fine particles of ordinary rock-forming minerals. V. S.
3. (and Pickett, E. E.). Method of preparation of clay samples for measurement of infrared absorption, *in* Infrared spectra of reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 8, p. 123–139, July 1950.

Keller, Walter David—Continued

4. (and Klemme, Arnold W., and Pickett, E. E.). Detailed survey of the chemical composition of rock layers in an agricultural limestone quarry: Econ. Geology, v. 45, no. 5, p. 461–469, illus., Aug. 1950. Chemical and spectrographic tests of dolomite quarried from the Jefferson City formation, near Marshfield, southwestern Missouri, showed Ca and Mg as major constituents, and Mn, Cu, B, Cr, Sr, Ba, Ni, Ag, and V as trace elements. It is concluded that Ca, Mg, and trace element content are more useful than $CaCO_3$ equivalent in classifying agricultural limestone or "agstone" for industrial use.
5. (and Ting, Chuen Pu). The petrology of a specimen of the Perry Farm shale: Jour. Sed. Petrology, v. 20, no. 3, p. 123–132, illus., Sept. 1950. A petrologic description of a shale specimen from the Perry Farm member of the Lenapah formation of Pennsylvanian age collected in Ray County, Missouri. The specimen is a calcareous, micaceous sandy shale with lamination due to parallel orientation of platy minerals. The origin is discussed.
6. (and Pickett, E. E.). Hydroxyl in minerals [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 284, Mar.–Apr. 1950.

Kelley, Vincent Cooper.

1. Introduction, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 9–11, 1950. Brief, general notes on the setting and geology of the San Juan Basin.
2. Pre-Cambrian rocks of the San Juan Basin, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 53–55, illus., 1950. Brief notes and an outcrop map of the pre-Cambrian rocks, together with selected references.
3. Regional structure of the San Juan Basin, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 101–108, illus., 1950. The structural boundaries, major structural elements, and tectonic evolution of the San Juan Basin are described and discussed.
4. Oölitic iron ores of New Mexico [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1554–1555, Dec. 1950.

Kellogg, Frederic Hartwell.

Rate of depletion of water-bearing sands: Miss. Geol. Survey Bull. 70, 15 p., illus., 1950. Mathematical considerations are given to show that methods of estimating rates of depletion of sand aquifers should be based on two-phase steady state flow, instead of on unsteady state flow, as is currently practiced. V. S.

Kelly, Hal J.

Refractory materials of the Pacific Northwest: Raw Materials Survey, Resource Rpt. 3, 15 p. (‡), maps, June 1948. Deposits of clay, silica, chromite, magnesite, olivine, sillimanite, and zircon in Washington, Oregon, Idaho, and Montana are described briefly and discussed as to refractory properties and economics. V. S.

Kelly, Sherwin Finch.

1. Geophysics, progress and prospects: Min. Eng., v. 187, no. 1, p. 63–67, illus., Jan. 1950. A review of geophysical activity during 1949 in the United States and Canada, and of developments in techniques and instruments.
2. The rise of geophysics: Canadian Min. Jour., v. 71, no. 7, p. 47–53, illus., July 1950. An historical account of the development of the science of geophysics and the various exploratory methods and techniques.

Kennedy, George Clayton.

1. Pressure-volume-temperature relations in water at elevated temperatures and pressures: Am. Jour. Sci., v. 248, no. 8, p. 540–564, illus., Aug. 1950. "Development of new high-temperature alloys has made possible precise measurements of P-v-T relations for water over a considerable pressure and temperature range. Much of the existing published data on P-v-T relationships at supercritical pressures and temperatures is in considerable error and new values at temperatures up to 1000° C. and pressures up to 2500 bars are herein presented."

Kennedy, George Clayton—Continued

2. "Pneumatolysis" and the liquid inclusion method of geologic thermometry: Econ. Geology, v. 45, no. 6, p. 533–547, illus., Sept.–Oct. 1950. Discussion by F. G. Smith, P. A. Peach, H. S. Scott, A. D. Mutch, G. D. Springer, R. W. Boyle, and W. M. M. Ogden, p. 582–587. The use of liquid inclusions in the determination of geologic temperatures and recent work are scrutinized and discussed. The basic assumption, that the enclosed liquid cannot move in or out, is challenged by experimental evidence indicating movement along lineage boundaries. Corrections for pressure are evaluated and new pressure correction curves are presented.
3. A portion of the system silica-water: Econ. Geology, v. 45, no. 7, p. 629–653, illus., Nov. 1950. Presents the results of experimental work on the solubility of quartz in water at temperatures up to 560 C and pressures up to 1000 bars. The apparatus and procedures are described. The application of the results to geological problems is discussed.

Kent, Deane F.

Techniques used in mine-water problems of east Tennessee zinc district: U. S. Geol. Survey Circ. 71, 9 p. (‡), illus., Feb. 1950. Tests made of methods for tracing ground water in cavernous limestone and dolomite terrain showed fluorescein dyeing and comparative-flow techniques to be the most effective and rapid means for determining sources and routes of travel. **V. S.**

Keplinger, Charles Henry.

(and Wanenmacher, Joseph Melching). The new reef fields of Texas: World Oil, v. 131, no. 4, p. 181–184, 186, 188, illus., Sept. 1950. The limestone reefs of western Texas occur in the shaly Strawn and Canyon sections of the Pennsylvanian series. Data on oil accumulation, porosity, permeability, and reserves are considered. **V. S.**

Kepper, Jack.

A new mineral locality in Baltimore, Md.: Rocks and Minerals, v. 25, nos. 7–8, p. 374–376, illus., July–Aug. 1950. Describes zeolites and other crystals from the Powder Mill and Old Tower shafts sunk through gabbro and pegmatite in Baltimore, Maryland. Twenty-five minerals are listed. **V. S.**

Kerfoot, W. K.

Weinert field, Haskell County, Texas: Abilene Geol. Soc., Geol. Contr., p. 88–89, illus., 1950. Brief notes on the discovery, history, and structure.

Kerr, A. J.

Determination of porosity of the Palo Pinto reef by radioactivity logging: Abilene Geol. Soc., Geol. Contr., p. 39–46, illus., 1950. The technique of utilizing radioactivity logs to determine porosity quantitatively is reviewed and applied to the Palo Pinto reef of basal Canyon age (Pennsylvanian). Porosity is calculated for the Huddleston A–12 well, Eskota field, Texas, and on the basis of the neutron derived porosity curve, the porosity is given for the Pike Hall No. 3 well in the same field.

Kerr, Lillian B. *See* Allan, J. D., 2.

Kerr, Paul Francis. *See also* Davis, D. W.; Graf, D. L., 2.

1. Discussion of alteration and its application to ore search, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 328–336, Jan. 1950. Outlines several problems connected with alteration, such as the time relations of mineralization and wall-rock alteration, the geochemistry of sericitic alteration, and the effect of weathering or supergene action on alteration products, with reference to observations at Santa Rita, New Mexico, and Silver Bell, Arizona.

Kerr, Paul Francis—Continued

2. (and others). Hydrothermal alteration at Santa Rita, New Mexico: Geol. Soc. Am. Bull., v. 61, no. 4, p. 275–347, illus. incl. geol. maps, Apr. 1950. "The intrusives at Santa Rita and near-by Hanover differ widely in the extent of hydrothermal alteration. The Santa Rita intrusive is in many places highly kaolinized, sericitized, and silicified. The Hanover instrusive is to a large degree unaltered . . . . four stages of alteration in the Santa Rita intrusive have been selected . . ." Comparison of ore distribution with alteration indicates that the highest copper concentration in general is related to argillic alteration. The study shows the utility of applying zones of alteration in field mapping to outline areas of greater and lesser mineralization promise. V. S.
3. (and Main, Margaret S., and Hamilton, Peggy-Kay). Occurrence and microscopic examination of reference clay mineral specimens, Pt. 1, Occurrence: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 5, p. 1–14, Apr. 1950.
4. (and Hamilton, Peggy-Kay, and Phil, R. J.). X-ray diffraction measurements and chemical analyses, *in* Analytical data on reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 7, p. 1–58, July 1950.
5. (and Adler, Hans H.). Summary, *in* Infrared spectra of reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 8, p. 143–146, July 1950.

Kesler, Thomas Lingle.

1. Barite deposits southeast of the Appalachian plateaus, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 88–98, illus., 1950. Summarizes the geology and discusses the age and origin of the barite deposits in the southeastern United States, with particular reference to the Cartersville district in Georgia, the Sweetwater district in Tennessee, and the Del Rio-Hot Springs district in North Carolina.
2. Geology and mineral deposits of the Cartersville district, Georgia: U. S. Geol. Survey Prof. Paper 224, 97 p., illus. incl. geol. maps, 1950. The Cartersville mining district, 40 miles northwest of Atlanta, is characterized by Cambrian metasediments and gneisses. The formations, structures, rock alteration, and erosional history are described. Secondary deposits of barite, manganese, brown iron ore, ocher, and umber occur, of which the principal mines are described. A bibliography is given. V. S.

Kesten, S. Norman. *See also* James, W. F.

Radioactive occurrences, Sault Ste. Marie area, and some considerations affecting exploration practice: Canadian Min. Jour., v. 71, no. 8, p. 46–53, illus., Aug. 1950. The pitchblende deposits at Theano Point and nearby localities in the Sault Ste. Marie area, Ontario, are classified into syngenetic and hydrothermal deposits, and their occurrence and origin are discussed. General exploration methods and additional, locally effective techniques are indicated. V. S.

Ketner, K. *See* Emmons, R. C.

Kiersch, George A.

1. Small-scale structures and other features of Navajo sandstone, northern part of San Rafael Swell, Utah: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 5, p. 923–942, illus., May 1950. Cross-lamination patterns, ripple marks, intraformational deformation zones and other features are described and analyzed. Concludes that although the dominant manner of deposition of the Navajo sand was by southerly winds, short periods of aqueous deposition were common during accumulation of the lower section of the formation. A detailed columnar section and statistical data on the cross-laminae are given.
2. Geological investigations and problems; Folsom Dam project, California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1526, Dec. 1950.

Kiilsgaard, Thor H.

1. Descriptions of some ore deposits and their relationships to the Purcell sills, Boundary County, Idaho: Idaho Bur. Mines and Geology Pamph. no. 85, 32 p. (‡), illus. incl. geol. maps, Jan. 1949. Discusses the origin of the ores, chiefly lead-zinc, which occur in the Purcell Mtn. Range in northern Idaho. The mineralization follows fractures which are located near the contact of igneous sills and metamorphosed sediments and which resulted from Tertiary deformation. Several properties in the area are described and geologic maps are shown.
2. The geology and ore deposits of the Boulder Creek mining district, Custer County, Idaho: Idaho Bur. Mines and Geology Pamph. no. 88, 28 p. (‡), illus. incl. geol. maps, Apr. 1949. The silver-lead deposits in the Boulder Creek district, central Idaho, are described. The chief ore mineral is jamesonite, and the ores occur partly as fissure fillings and partly as replacement deposits. Ores and mineralization at the Livingston mine are described in detail. Notes on other properties are included.
3. The geology and ore deposits of the Triumph-Parker mine mineral belt, *in* Detailed geology of certain areas in the Mineral Hill and Warm Springs mining districts, Blaine County, Idaho: Idaho Bur. Mines and Geology Pamph. 90, p. 39–62, illus. incl. geol. maps, Oct. 1950. Describes the stratigraphy, structure, and mineralization of the Triumph-Parker mine region in southern Idaho. The ores are sulfides with lead, zinc, silver, and gold content, and occur both as fissure fillings and replacement deposits. The mines and prospects are described.

Kilkenny, John Edward.

San Joaquin Valley [Calif.], *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2383, Dec. 1950.

Kimball, Kent K.

Memorial, Burton Armand Lilienborg (1900–1949): Tulsa Geol. Soc. Digest, v. 18, p. 88–89, 1950.

Kimble, George H. T.

(and Sinclair, Martin H.). The occurrence of uranium: Nucleonics, v. 6, no. 4, p. 48–51, map, Apr. 1950. A brief, general statement of the occurrence of uranium minerals and their geographic distribution.

Kindle, Edward Darwin. *See also* McLearn, F. H.

Dezadeash map-area, Yukon (report and map): Canada Geol. Survey Paper 49–24, 33 p. (‡), geol. map, 1949. Local formations range from pre-Cambrian to Recent, but are mostly Jurassic and Cretaceous intrusives and sedimentary rocks. The rocks, structure, and mineral prospects are described. V. S.

King, L. H. *See* Cameron, J. R., 1.

King, Myrle E. *See* Mielenz, R. C.

King, Philip Burke.

1. (and Stupka, Arthur). The Great Smoky Mountains; their geology and natural history: U. S. Geol. Survey Topog. Map, Great Smoky Mountains National Park and vicinity, Tennessee and North Carolina. Scale 1 inch to 2 miles. 1950. An account of the geologic history of the area, illustrated by cross sections and sketches, and a description of the trees and plant life, are printed on the reverse side of the map.
2. (and Stupka, Arthur). The Great Smoky Mountains; their geology and natural history: Sci. Monthly, v. 71, no. 1, p. 31–43, illus., July 1950. The geologic history of the Great Smoky Mtn. area in western North Carolina and eastern Tennessee is presented in popular form, accompanied by cross sections and sketches. The trees and plant life are described.

King, Philip Burke—Continued

3. Tectonic framework of southeastern United States: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 4, p. 635–671, illus. incl. geol. maps, Apr. 1950; reprinted in condensed form *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 9–25, illus., 1950. The mountain system formed during Paleozoic time and now represented by the Appalachian, Ouachita, and related groups, is described as to the structures of its component parts and their relations and deformations through time. Emphasis is placed on recent drilling and its interpretations. A bibliography is given.

King, William Homer.

(and Allsman, Paul Trekell). Reconnaissance of metal mining in the San Juan region, Ouray, San Juan, and San Miguel Counties, Colo.: U. S. Bur. Mines Inf. Circ. 7554, 109 p. (‡), illus., Mar. 1950. Describes the mineral deposits, mining and milling methods, and operating conditions in the gold, silver, lead, and zinc producing area extending from Ouray to Silverton and from Ophir to the San Juan-Hinsdale County line. V. S.

Kingman, Owen.

Geochemical prospecting at Tennessee Copper [Ducktown, Tenn.] [abs..]: Min. Cong. Jour., v. 36, no. 10, p. 77–78, Oct. 1950.

Kinney, Douglas Merrill. *See* U. S. G. S., 2.

Kinsolving, May Risch.

(and MacGillavry, Caroline H., and Pepinsky, Ray). Twinning in nesquehonite, $MgCO_3.3H_2O$ [abs.]: Am. Mineralogist, v. 35, nos. 1-2, p. 127, Jan.-Feb. 1950.

Kirk, Mahlon V. *See* Durham, J. W., 4.

Kirkpatrick, Alan Fred.

The frequency-distribution of the optical properties of crystals [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 129, Jan.-Feb. 1950.

Kisslinger, Carl.

Velocity of longitudinal waves in some Paleozoic formations in the vicinity of St. Louis, Missouri: Am. Geophys. Union Trans., v. 31, no. 2, pt. 1, p. 169–173, illus., Apr. 1950. Velocities were determined in five sedimentary formations, including the Kimmswick limestone and Joachim dolomite. The possibility that the magnesium carbonate content of a carbonate rock is a dominant factor, controlling the velocity of elastic waves through it, is suggested. V. S.

Kjellesvig-Waering, Erik N.

1. A new Silurian *Hughmilleria* from West Virginia: Jour. Paleontology, v. 24, no. 2, p. 226–228, illus., Mar. 1950. A new eurypterid, *Hughmilleria bellistriata*, is described from the Silurian Wills Creek formation of Hardy County, West Virginia, and a complete list of described species of the genus is included. V. S.
2. A new Silurian eurypterid from Florida: Jour. Paleontology, v. 24, no. 2, p. 229–231, Mar. 1950. Describes a new eurypterid species, *Pterygotus floridanus*, in Silurian shale from a well core, Suwannee County, Florida. V. S.

Klaer, Fred Harlen, Jr. *See also* Stallman, R. W.

Ground-water levels in Indiana: Ind. Acad. Sci. Proc., v. 59, p. 236–245, illus., 1950. General comments on ground-water resources and fluctuations of water-levels in Indiana. Present indications show an adequate supply of ground water.

Klein, Howard.

(and Baker, Roger Crane, and Billingsley, Granville Alton). Ground-water resources of Jefferson County, Arkansas: Ark. Univ., Inst. Science and Technology, Research Ser. no. 19, 44 p., illus., June 1950. Contains information on the stratigraphy of the Tertiary and Quaternary strata, the occurrence of the ground water, and chemical composition of the water.

Klemme, Arnold W. *See* Keller, W. D., 4.

Klepper, Montis Ruhl.

A geologic reconnaissance of parts of Beaverhead and Madison Counties, Montana: U. S. Geol. Survey Bull. 969–C, p. 55–85, geol. map, 1950. The area covered by the reconnaissance is in southwestern Montana, between the Ruby River and the Red Rock River. Strata ranging in age from pre-Cambrian to Cretaceous, igneous intrusives, and Tertiary volcanics are described, and the structure is outlined. Notes on the economic geology of the area are included.

Klinger, Edgar D.

The Diamond M reef of Scurry County, Texas: World Petroleum, v. 21, no. 4, p. 36–39, illus., Apr. 1950. The development of the Diamond M oil field in the Canyon reef limestone of Pennsylvanian age, Scurry County, Texas, is outlined, with a brief description of the producing strata and local structures. V. S.

Knauss, J. A. *See* LaFond, E. C.

Knechtel, Maxwell McMichael.

1. Geology and coal and natural gas resources of northern Le Flore County, Oklahoma: Okla. Geol. Survey Bull. 68, 76 p., illus. incl. geol. map, 1949. Bedrock in northern Le Flore County, in the Arkansas Valley, consists of sandstones and shales of Pennsylvanian age, which have been compressed into east trending folds. The stratigraphy, structure, coal beds, and gas fields are described. V. S.
2. Trap-door domes of Little Rocky Mountains, Montana [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1477, Dec. 1950.
3. (and Patterson, Sam H., Jr.). Cretaceous bentonite beds of Missouri River Basin as sources of drilling and foundry clay [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1478, Dec. 1950.

Knight, Samuel Howell.

Physical aspects of the Green River Basin and adjacent mountain ranges: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 75–80, 1950. Describes the physical features enclosing the Green River Basin, southwestern Wyoming—the Wind River Mts., Gros Ventre Mts., Hoback and Wyoming Ranges, and the Uinta Mts. Geomorphic characteristics, particularly the several erosion surfaces, are discussed.

Knížek, Jan O.

(and Fetter, Hans). The refractory properties of alunite: I. High-alumina refractories and the genesis, occurrence and uses of alunite; British Ceramic Soc. Trans., v. 49, no. 5, p. 202–223, illus., May 1950. Alunite from four Mexican deposits is described in some detail, including chemical analyses and thermal analysis curves.

Knopf, Adolph.

1. The geologic records of time, *in* Time and its mysteries, p. 33–59, New York University Press, New York, 1949. A lecture given at New York University, April 16, 1941, in which various methods of determining geologic time, such as radioactivity of rocks, varved sediments, and others, are discussed.

Knopf, Adolph—Continued

2. The Marysville granodiorite stock, Montana: Am. Mineralogist, v. 35, nos. 9–10, p. 834–844, geol. sk. map, Sept.–Oct. 1950. Discusses the origin of the Marysville stock, one of several surrounding the Boulder batholith, near Helena, Montana. It is concluded that the stock is an outlier of the batholith, probably a cupola, and that by its position it acted as a structural control in the location of the gold veins which are geographically associated. The gold veins are later and were probably formed in connection with dacite extrusions or rhyolite eruptions, both of which are gold-bearing.

Knowlton, Charles S.

A new pink garnet locality: Mineralogist, v. 18, nos. 7–8, p. 362, 364, 366, July–Aug. 1950. A popular account of the occurrence of pink garnets near Lake Jaco, southern Chihuahua, northern Mexico.

Koch, Lauge.

Report on the expeditions to central East Greenland 1926–1939 conducted by Lauge Koch; Pt. 1, Notes on some topographical and geological maps of East Greenland: Meddelelser om Grønland, Bind 143, no. 1, 11 p., geol. and topog. maps, 1950. Two topographic maps of East Greenland, and five geologic maps, covering areas between 71°–75° N. lat. and 20°–24° W. long., are published in advance of the areal reports. The geologic maps are colored and on a scale of 1:250,000.

Kohn, Jack A. *See also* Ramsdell, L. S., 2; Slawson, C. B., 2.

Observations on the Slijper diamond: Gems and Gemology, v. 6, no. 11, p. 347–348, illus., Fall 1950. The Slijper diamond consists of a large octahedron enclosing a second octahedron having good outlines. The investigation to determine whether the two crystals were related by means of twinning resulted in the conclusion that the mutual orientation is one of random overgrowth.

Kornfeld, Joseph Alton.

Ringwood, Elk City focus attention on Anadarko geosyncline: World Petroleum, v. 21, no. 6, p. 34–39, illus., June 1950. Describes the exploration and development in the Elk City field in southwestern Oklahoma and in the Ringwood field in northwestern Oklahoma. Stratigraphic and structural data on the Anadarko Basin are discussed.

Kosanke, Robert M.

1. Pennsylvanian spores of Illinois and their use in correlation: Ill. State Geol. Survey Bull. 74, 128 p., illus., 1950. Describes 5 new genera and 100 new species of small spores from Illinois coal beds. These forms, together with previously described ones, have been studied with a view to their usefulness in correlating the coal beds. Many of the species are restricted, or have significant ranges, so that correlations have been made. Studies of the Caseyville, Tradewater, Carbondale, and McLeansboro groups are discussed, and the results are given.
2. Notes on the *Psaronii* of the Eastern Interior Basin [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 673, Oct. 1950.
3. Pennsylvanian plant microfossils and paleoecology [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1478, Dec. 1950.

Koschmann, Albert Herbert.

1. (and Gordon, Mackenzie, Jr.). Geology and mineral resources of the Maimón-Hatillo district, Dominican Republic: U. S. Geol. Survey Bull. 964–D, p. 307–359, illus. incl. geol. map, 1950. The Cretaceous strata and Tertiary intrusives and volcanics, faulting and folding, and geologic history are described. Iron and nickel deposits, which are fairly widespread and may be of commercial value, are described in detail. Minor deposits of cobalt and copper are mentioned.
2. [Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 282–283, Jan. 1950.
3. Origin of some Colorado Precambrian granites by fusion of sediments [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1555, Dec. 1950.

Kottlowski, Frank Edward. *See also* Wier, C. E., 3.

1. A new species of *Atrypa* from the Devonian of Montana: Ind. Acad. Sci. Proc., v. 59, p. 246–250, illus., 1950. *Atrypa multicostellata*, a new species of brachiopod occurring in Devonian limestones in Montana and Wyoming, is described, figured, and differentiated from *Atrypa missouriensis*.
2. (and Waters, Kenneth Harold). Regional structure of Indiana: Compass, v. 27, no. 4, p. 236–238, illus. incl. geol. sketch map, May 1950. Brief remarks on the Cincinnati Arch and related regional structure in Indiana, with a sketch map of the distribution of Paleozoic formations and a columnar section of the Ordovician in the southeast. V. S.

Koulomzine, Theodore. *See also* Geoffroy, P. R.

Why hasn't geophysics been applied more intensively to the mining industry in the past and what should be done about it in the future? [abs.]: Econ. Geology, v. 45, no. 4, p. 389, June–July 1950.

Kranck, Ernst Håkan.

Bedrock geology, *in* Baffin Island expedition, 1950, a preliminary report: Arctic, v. 3, no. 3, p. 138–139, Dec. 1950. The metamorphic rocks which comprise the bedrock in the vicinity of Clyde Inlet, Gibbs Fiord, Eglinton Fiord, Sam Ford Fiord, and McBeth Fiord, are very briefly described.

Kräusel, Richard.

(and Weyland, Hermann). *Gilboaphyton* und die Protolepidophytales: Senckenbergiana, Band 30, no. 1–3, p. 129–152, illus., May 31, 1949. Discusses the description and classification of the genus *Gilboaphyton*, from the Middle Devonian of New York, by C. A. Arnold (1937) and indicates that, rather than being closely related to *Drepanophycus*, it shows affinity to *Archaeosigillaria*. Important forms of the Archaeolepidophytales, Protolepidophytales, and Lepidophytales are classified.

Krauskopf, Konrad Bates.

Physical chemistry of quicksilver deposition [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1526, Dec. 1950.

Krinitzsky, Ellis Louis. *See* Price, W. A.; Schultz, J. R.; Turnbull, W. J.

Krumbein, William Christian. *See also* Dapples, E. C.; Sloss, L. L., 4.

1. Geological aspects of beach engineering, *in* Application of geology to engineering practice, Berkey Volume, p. 195–223, illus., Geol. Soc. Am., New York, 1950. Beach features and shoreline processes are described. The scope of interest of the geologist and the engineer is outlined and the collection of data, organization of reports, and engineering structures are discussed.
2. Grain-size measurements made in thin section, comments: Jour. Geology, v. 58, no. 2, p. 160, Mar. 1950. Comments on article by Felix Chayes, 3.
3. (and Ohsiek, L. E.). Pulsational transport of sand by shore agents: Am. Geophys. Union Trans., v. 31, no. 2, pt. 1, p. 216–220, illus., Apr. 1950; discussion by John W. Handin and John C. Ludwick, with reply by W. C. Krumbein, no. 6, p. 936–937, Dec. 1950. Observations of sand migration along beaches with tidal inlets and tideless harbors show that the movement is pulsational, as a result of the building and shifting of sand spits and bars. The mechanics are described, and the harbor at Waukegan, Illinois, is used as an illustration. V. S.
4. Occurrence and lithologic associations of evaporites in United States [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 179, Apr. 27, 1950.

Krusekopf, H. H. *See* Hseung, Y.

Krynine, Paul Dimitri.

1. Petrology, stratigraphy, and origin of the Triassic sedimentary rocks of Connecticut: Conn. Geol. Nat. History Survey Bull. 73, 239 p., illus. incl. geol. map, 1950. The mineralogy, petrography, stratigraphy, and structure of the Triassic rocks are discussed comprehensively. Conditions of sedimentation, climate, and paleogeography are interpreted. An extensive bibliography is included.
2. The origin of red beds [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1770, Aug. 1950.

Kuenen, Philip Henry.

1. Marine geology. x, 568 p., illus. New York, John Wiley & Sons, Inc. 1950. A comprehensive work covering numerous phases of submarine geological investigation. Chapter headings are: Physical oceanography, sea basins, Indonesian deep-sea depressions, sources and transportation of marine sediment, formation of marine sediments, coral reefs, geomorphology of the sea floor, and eustatic changes of sea level.
2. Stereoscopic projection for demonstration in geology, geomorphology, and other natural sciences: Jour. Geology, v. 58, no. 1, p. 49–54, illus., Jan. 1950. Discusses techniques of stereoscopic photography and projection and the subjects to which they are best applicable for demonstration. V. S.
3. (and Migliorini, C. I.). Turbidity currents as a cause of graded bedding: Jour. Geology, v. 58, no. 2, p. 91–127, illus., Mar. 1950. Experimental investigations on currents and bedding, the study of graded rocks from the Apennines, and general considerations, such as the absence of current bedding and ripple marking, character of coarse-material deposition, inclusion of fragments, show that deposits made by turbidity currents have distinctive textures and structures allowing their identification. A bibliography is appended. V. S.
4. The formation of the continental terrace: Advancement of Science, v. 7, no. 25, p. 76–80, illus., May 1950. "The continental terrace has been attributed either to marine erosion, to deposition on the continental slope . . ., or the up-building on a subsiding foundation. The author suggests that the Atlantic terrace of North America is due to subsidence and accumulation over the whole structure caused by isostatic adjustment to a load, primarily deposited as fore-set beds. Present terraces have been formed since the Paleozoic. The apparent disappearance of earlier terraces forms a baffling problem of fundamental importance to geophysics and geology."

Kuhn, Truman Howard. *See* Van Tuyl, F. M.

Kulp, John Laurence. *See also* Holland, H. D., 1, 2; Kerr, P. F., 2.

1. (and Adler, Hans H.). Thermal study of jarosite: Am. Jour. Sci., v. 248, no. 7, p. 475–487, illus., July 1950. "Jarosite, argentojarosite, and plumbojarosite are examined by differential thermal analysis and X-ray diffraction. The structural and chemical changes which these minerals undergo on heating are discussed and compared with alunite. In general two endothermic peaks at about 400° C. and 700° C. are the major thermal features. A number of thermal curves of jarosite group minerals from typical localities are discussed."
2. (and Perfetti, Jose N.). Thermal study of some manganese oxide minerals: Mineralogical Mag., v. 29, no. 210, p. 239–251, illus., Sept. 1950. The method of thermal analysis, apparatus, and procedure are briefly described. Thermal curves for representative specimens of pyrolusite, manganite, ramsdellite, and psilomelane-type minerals are shown, together with thermal curves of various artificial mixtures. The artificial mixtures were studied to determine the size and shape of characteristic peaks as a means of analysis of natural aggregates.
3. (and Carr, Donald A.). Surface area of deep sea sediments: Columbia Univ., Lamont Geol. Observatory, Tech. Rpt. 2, 21 p., illus., Nov. 1950; abs., Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1902, Dec. 1949; Am. Mineralogist, v. 35, nos. 3–4, p. 284–285, Mar.–Apr. 1950. In connection with absolute age determinations of deep-sea material, particularly by the radioactive inequilibrium method, studies of absolute surface areas of the sediments have been undertaken. The surface areas of a representative set, determined to within an accuracy of 2 percent, range from 2.5 to 40 m^2/g. and are characteristic of a specific sediment type.
4. Strontium isotope age project—progress report [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1479, Dec. 1950.

Kulstad, Robert O. *See* Emmons, R. C.; Nixon, E. K., 2.

Kummel, Bernhard, Jr. *See also* Flower, R. H., 2.

Triassic stratigraphy of the area around the Green River Basin, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 28–36, illus., 1950. The Dinwoody, Woodside, and Thaynes formations, exposed in several areas adjacent to the Green River Basin in southwest Wyoming, are described. Notes on post Thaynes strata, also of Triassic age, are included.

Kurtz, V. E.

(and McNair, Andrew Hamilton, and Wales, Donald B.). Stratigraphy of the Dundas Harbour area, Devon Island, Arctic Archipelago [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1479, Dec. 1950.

Lacabanne, W. D.

(and Thiel, George Alfred). The effect of continuous addition of mineral grains to a settling environment: Jour. Sed. Petrology, v. 20, no. 3, p. 161–173, illus., Sept. 1950. The settling behavior of mineral grains under conditions of continuous addition of grains to a fluid medium was observed in a modified elutriator. The relations between size, shape and density of grains are discussed.

Ladd, Harry Stephen.

Recent reefs: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 2, p. 203–214, illus., Feb. 1950. Considers the nature, determining conditions, and types of reefs, the seaward concentration of living builder-organisms and landward or lagoonward aggregation of sediments, the control of reef growth by temperature and water purity and salinity, and the changes in the relations of land masses and sea bodies as an explanation of thick reefs and seamounts. V. S.

Ladoo, Raymond B.

Wollastonite, a new industrial mineral: Eng. Min. Jour., v. 151, no. 11, p. 95–97, illus., Nov. 1950. Brief notes on the occurrence, composition, and uses of wollastonite, $CaSiO_3$, with particular reference to the deposit at Willsboro, New York.

LaFond, Eugene C.

(and Dietz, Robert Sinclair, and Knauss, J. A.). A sonic device for underwater sediment surveys: Jour. Sed. Petrology, v. 20, no. 2, p. 107–110, illus., June 1950. Describes a sonic device for determining the nature of the sea floor. It consists of a hydrophone to be dragged along the ocean bottom, and since the frictional noises caused by mud, sand, stony, and rock bottoms differ in character, it is possible to identify the bottom type. A test survey was made off the California coast near San Diego. V. S.

Lahee, Frederick Henry.

Our oil and gas reserves, their meaning and limitations: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 6, p. 1283–1287, June 1950; Oil and Gas Jour., v. 49, no. 30, p. 69, 71–72, Nov. 30, 1950. A discussion of the need for uniform terminology and meaning in the estimation of oil and gas reserves.

Laird, Wilson Morrow.

Ground water in the Zeeland area, North Dakota: N. Dak. Geol. Survey Ground-water Studies No. 12, 38 p. (‡), illus. incl. geol. sk. map, Oct. 1948. Gives data on the physiography, glacial geology, and ground-water occurrence in the Zeeland area, McIntosh County, southern North Dakota. Sections on pumping tests and quality of water are contributed by P. D. Akin.

Lalicker, Cecil Gordon.

Foraminifera of the Ellis group, Jurassic, at the type locality: Kans. Univ. Paleont. Contr. no. 5, Protozoa, art. 2, 20 p., illus., Feb. 24, 1950. The type section of the Ellis formation is near old Fort Ellis, 7 miles from Bozeman, southwestern Montana. This report contains systematic descriptions of the thirty-nine new species and one new genus (*Ellisina*) constituting the entire collection from the Ellis formation. The stratigraphic distribution of the genera is charted.

Lamar, John Everts. *See also* Graf, D. L., 3.

Acid etching in the study of limestones and dolomites: Ill. Geol. Survey Circ. 156, 47 p., illus., 1950. The etching of calcareous rocks to determine their texture, grain size, noncarbonate components, and other lithologic characteristics is discussed as to procedure, use of hydrochloric and acetic acids, and possible applications. The results are illustrated by 22 photographs of the Illinois limestones tested. V. S.

Lamey, Carl Arthur.

The Blewett iron-nickel deposit, Chelan County, Washington: U. S. Geol. Survey Bull., 969–D, p. 87–103, illus. incl. geol. map, 1950. The Blewett deposit is located 80 miles east of Seattle, Washington, in the northern Cascade Mts. An early Tertiary peridotite conglomerate, containing iron-rich lenses, lies on a pre-Tertiary serpentinised peridotite. The conglomerate was probably derived from the peridotite and from a lateritic iron deposit, with very little transportation. The theories of origin and accumulation are discussed.

LaMoreaux, Philip Elmer.

1. Ground-water geology of Tennessee Valley area in Alabama, with reference to vertical drainage: Ala. Geol. Survey Circ. 18, 13 p., illus. incl. geol. map, Aug. 1949. The area is underlain by the Tuscumbia and Fort Payne limestones of Mississippian age, which are cut by extensive solution cavities and constitute excellent aquifers. The relation of the water table level and the solution cavities to vertical drainage is discussed. V. S.
2. (and Swindel, G. W., Jr., and Lanphere, C. R.). Ground-water resources of the Huntsville area, Alabama: Ala. Geol. Survey Bull. 62, 82 p., illus. incl. geol. map, 1950. The stratigraphy of the exposed formations, chiefly Mississippian and Pennsylvanian in age, and the hydrology of the formations are described. A revised geologic map of Madison County is included.
3. Fluoride in ground water of Alabama: Min. Eng., v. 187, no. 8, p. 887–888, illus., Aug. 1950, A. I. M. E. Trans., v. 187, 1950. Water from the glauconitic sands in the Eutaw, Blufftown, and Ripley formations (Cretaceous) contains larger concentrations (up to 6.8 ppm) of fluoride than that from other formations. Tertiary formation content ranges from a trace to 1.2 ppm. Limited examination of water from the Piedmont crystalline and Paleozoic areas indicates that the fluoride will not exceed 1 ppm.

Lancaster, Forrest W. *See* Jahns, R. H., 1.

Lance, John Franklin. *See also* Jahns, R. H., 2.

Paleontología y estratigrafía del Plioceno de Yepomera, Estado de Chihuahua; 1ª parte, Equidos, excepto *Neohipparion:* México Univ. Nac., Inst. Geología, Bol. 54, 81 p., illus., 1950. Describes in detail *Pliohippus (Astrohippus) stockii*, n. sp., *Pliohippus (Pliohippus) mexicanus*, n. sp., and *Nannipus* cf. *minor* (Sellards) from the Pliocene beds of the valley of the Río Papigóchic, northwestern Chihuahua, Mexico. Translated from the English by A. R. V. Arellano.

Lang, Andrew J., Jr.

Feldspathized schist of the Fourmile area, Custer County, South Dakota [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1527, Dec. 1950.

Lang, Arthur Hamilton. *See also* James, W. F.

Summary account of Canadian uranium deposits: Canadian Min. Met. Bull. no. 460, p. 426–433, illus., Aug. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 277–284, 1950. Eight types of deposits are described—granitic, pegmatitic, metamorphic, hydrothermal, sedimentary, carnotite, secondary, and placer. The distribution of the deposits in each of the provinces is discussed, and a table shows the percentage distribution.

Lang, Bernard.

Gammatron surveys: World Oil, v. 131, no. 6, p. 86, 88, Nov. 1950. The gammatron method of exploration consists of measurement of radiations on the earth's surface as a means of discovering structures favorable to oil and gas accumulation. The procedure is described, and applications are discussed. V. S.

Lang, Joseph Winford.

(and Winslow, A. G., and White, Walter Noy). Geology and ground-water resources of the Houston district, Texas: Texas State Bd. Water Engineers Bull. 5001, 55 p. (‡), illus. incl. geol. map, Oct. 1950. Gives a brief description of the stratigraphy of the Houston area as it relates to the occurrence of ground water. The remainder of the bulletin is devoted to data on pumpage, water-level fluctuation, quality of water, and deep well exploration.

Lang, Walter Theodore Barnes.

Comparison of the cyclic deposits of the Castile and Salado formations of the Permian of the Southwest [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1479–1480, Dec. 1950.

Langston, Wann, Jr. *See* Stovall, J. W., 2.

Lanphere, C. R. *See* LaMoreaux, P. E., 2.

Lantz, Robert Joseph.

Geological formations penetrated by the Arkansas-Louisiana Gas Company No. 1 Barton well on the Cecil anticline, Franklin County, Arkansas: Ark. Res. Dev. Comm. Div. Geology Bull. 18, 26 p., illus., 1950. Gives the detailed lithology of the core and cuttings obtained from the No. 1 Barton well, the first gas producer from lower Pennsylvanian Morrow strata in Arkansas. Strata of Ordovician, Silurian, Devonian, Mississippian, and Pennsylvanian age were penetrated. The formations are described briefly and tentatively correlated with adjacent areas.

LaPaz, Lincoln. *See also* Beck, C. W., 1.

The possible preservation in concretions of traces of ancient meteorites: Pop. Astronomy, v. 58, no. 1, p. 35–39, Jan. 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 239–243, 1950. Recent work in sedimentary petrology points to the fact that heavy minerals or other materials may be well preserved in impermeable concretions while similar materials in the surrounding beds may be highly altered or may have disappeared completely. The possibility of finding moissanite (meteoritic SiC) is discussed.

Lardé y Larín, Jorge.

Indice provisional de las regiones fosilíferas de El Salvador: Paleontología Salvadoreña, 11 p. [San Salvador], 1950. Lists 68 localities in El Salvador, and for each locality the numbers of specimens in the collection of the Muséo Nacional are given.

Larios, Hermion. *See* Mina Uhink, F., 1.

La Rocque, Aurèle.

Pre-Traverse Devonian pelecypods of Michigan: Mich. Univ. Mus. Paleontology Contr., v. 7, no. 10, p. 271–366, illus., Mar. 29, 1950. Contains systematic descriptions of 23 genera, including three new genera, *Diodontopteria*, *Liromytilus*, and *Phenacocyclas*. Several new species are described. A section on the stratigraphic distribution of the pelecypod faunas and an extensive bibliography are included.

Larsen, Esper Signius, Jr. *See also* Meyrowitz, R.

1. (and Draisin, Wilburt M.). Composition of the minerals in the rocks of the southern California batholith: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 2, p. 66–79, illus., 1950; abs., Volume of titles and abstracts, p. 6, 1948. The rocks of the batholith range from calcic gabbro to granite. The chemical compositions of the minerals are reported and the relation between the compositions of the minerals and of the rocks is discussed. The ratio FeO : FeO+MgO is approximately the same for any rock as for all the mafic minerals in that rock, ranging from 0.36 in calcic gabbro to 0.85 in granite. The anorthite content of plagioclase changes regularly with the rock composition.
2. (and Keevil, Norman Bell, and Harrison, Harold Charles). Method of determining the age of igneous rocks using the accessory minerals [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1480, Dec. 1950.

Larsen, Veryl E.

The "hard rock" geology of Boulder County, Colorado: Compass, v. 27, no. 3, p. 147–159, illus. incl. geol. sketch map, Mar. 1950. Outlines very briefly the existing information on the metamorphic and igneous rocks in Boulder County, Colorado. Notes on the ore deposits of the Jamestown district, Caribou-Grand Island district, and Boulder County tungsten district are included.

Larson, E. Richard.

1. Ordovician diastems in Missouri: Jour. Sed. Petrology, v. 20, no. 2, p. 63–64, illus., June 1950. Describes two prominent examples of diastems in the Middle Ordovician Plattin limestone of eastern Jefferson County, Missouri. Convergence of the Plattin formation, from Cape Girardeau to St. Louis County, Missouri, is partly due to thinning of its members caused by depositional hiatuses.
2. Stratigraphy of the Plattin limestone in southeastern Missouri [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1480–1481, Dec. 1950.

Lasky, Bernard H.

Surface minerals reflect subsurface structure in new exploration technique: World Oil, v. 131, no. 5, p. 73–76, 78, 81, illus., Oct. 1950. The use of mineral alteration studies, of the type that have been employed in ore exploration, is described in its application to petroleum exploration and delineation of subsurface structure. A close correlation has been noted between structure and alteration. The results of surveys in areas of Texas and Louisiana are cited.

Lasky, Samuel Grossman.

1. (and Hoagland, A. D.). Central mining district, New Mexico, *in* Dunham, K. C. ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 97–110, illus. incl. geol. map, 1950; abs., Volume of title and abstracts, p. 46–47, 1948. Reprinted in West Texas Geol. Soc. Guidebook, Field Trip no. 3, p. 7–24, 1949. The Central mining district, near Hanover, New Mexico, is one of the leading zinc producers in the United States. The geology, structure, and mineralization are described, and ore reserves are estimated. Three types of deposits are recognized—contact metamorphic, replacement, and vein.
2. Mineral-resource appraisal by the U. S. Geological Survey: Colo. School of Mines Quart., v. 45, no 1A, p. 1–27, illus., Jan. 1950. Outlines and describes the work of the U. S. Geological Survey in developing and maintaining a program for a continuous appraisal of the mineral position of the United States insofar as it is related to geologic considerations.
3. [Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 337–338, Jan. 1950.
4. Mining geology, 1949: Min. Eng., v. 187, no. 1, p. 24–28, illus., Jan. 1950. A review of progress in mineral exploration during 1949, with comments on geochemical prospecting and mineral resource appraisal.

Lasky, Samuel Grossman—Continued

5. How tonnage and grade relations help predict ore reserves: Eng. Min. Jour., v. 151, no. 4, p. 81–85, illus., Apr. 1950; reprinted in French, Chronique des Mines Coloniales, 19e Année, No. 177, p. 58–65, illus., Mar. 15, 1951. Studies of certain mineral deposits have shown that, wherever there is gradation from richer to poorer ores, there appears to be a consistent mathematical relation between tonnage and grade. This relationship, expressed in mathematical curves, may serve to predict unknown parts of deposits by the extrapolation of plotted curvatures beyond available data. The method is illustrated by application to a hypothetical porphyry-copper deposit. V. S.

Latour, B. A. *See* Buckham, A. F., 1.

Latta, Bruce Ferrell.

Geology and ground-water resources of Barton and Stafford Counties, Kansas: Kans. Univ., State Geol. Survey Bull. 88, 228 p., illus. incl. geol. map, 1950. Describes the Cretaceous to Recent stratigraphy, the physiography, and the occurrence of ground water in Barton and Stafford Counties in central Kansas. Detailed data are given on the supply, development, and chemical character of the ground water, and on areal conditions. Well records are included.

Laudon, Lowell Robert.

Imperial River section, Mackenzie Mountains, Northwest Territories, Canada: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1565–1577, illus., July 1950. The details of a well exposed section of more than 6,000 feet of Cambrian, Silurian, and Devonian rocks in the Imperial River canyon, MacKenzie Mountains, Northwest Territories, are presented in columnar form and discussed. V. S.

Laurence, Robert Abraham.

Geologic investigations and exploration in southeastern United States, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 1–8, illus., 1950. Describes recent mineral developments and stresses the need for accurate geologic mapping as a foundation for modern mineral exploration. Geochemical prospecting may also prove useful in future exploration. A map showing geological map coverage of the southern Appalachian region is included.

Laursen, Dan. *See also* Harder, P.

The stratigraphy of the marine Quaternary deposits in West Greenland: Meddelelser om Grønland, Bd. 151, no. 1, 142 p., illus., 1950; Copenhague Univ. Mus. Minér. Géol., Commun. Géol. no. 41, 1950. Marine Quaternary deposits in West Greenland, from Kugssineq, Svartenhuk Peninsula in the north to Sukkertoppen in the south, are described. Shell lists are included. Correlation with Quaternary deposits of Iceland, Norway, and Denmark is discussed.

Laverdière, Joseph Willie.

Baleine fossile de Daveluyville, Québec: Naturaliste Canadien, v. 77, nos. 9–10, p. 271–282, illus., Sept.–Oct. 1950; abs., Royal Soc. Canada Proc., 3d ser., v. 44, p. 229, 1950. A fossil whale skeleton was found in 1947 in the Pleistocene strata of the Daveluyville area, near the St. Lawrence River, Quebec. The skeleton is described, and the associated fauna is listed. Chemical and size analyses of the enclosing soil are given. Other localities in Ontario and Quebec, where cetacean fossils have been found, are indicated.

Laves, Fritz.

1. The lattice and twinning of microcline and other potash feldspars: Jour. Geology, v. 58, no. 5, p. 548–571, illus., Sept. 1950. The lattice symmetry and the various modifications in the potash feldspars are investigated, and a new X-ray determination of the lattice of microcline is given. The structural relations between microcline, triclinic adularia, and "monoclinic" orthoclase are discussed, making use for the most part of intensity differences in the X-ray photographs.

Laves, Fritz—Continued

2. (and Chaisson, Ursula). An X-ray investigation of the "high"-"low" albite relations: Jour Geology, v. 58, no. 5, p. 584–592, illus., Sept. 1950. The investigation of the differences in optical measurements and X-ray powder photographs of "high" and "low" albite is reported.
3. Twinning in microcline [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 127, Jan.–Feb. 1950.
4. The geometry of triclinic adularia [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 285, Mar.–Apr. 1950.

Lawrence, Donald Buermann.

Glacier fluctuation for six centuries in southeastern Alaska and its relation to solar activity: Geog. Rev., v. 40, no. 2, p. 191–223, illus., Apr. 1950. Study of the flow of glaciers from the southern part of the Juneau Ice Field, Alaska, shows a maximum advance in the early or middle 18th century, coinciding with the end of a period of great sunspot dearth in 1715, and subsequent recessions of 1.3 to 5 miles. V. S.

Lawson, Andrew Cowper.

Sea bottom off the coast of California: Geol. Soc. Am. Bull., v. 61, no. 11, p. 1225–1241, illus., Nov. 1950. A review of Shepard and Emery's "Submarine topography off the California coast" (Geol. Soc. Am. Spec. Paper 31, 1941) in which a different classification and hypothesis of origin of the features shown on the U. S. Coast and Geodetic Survey charts are presented.

Layer, Douglas Bruce. *See* Waring, W. W.

Layne, N. M., Jr.

A procedure for shale disintegration: Micropaleontologist, v. 4, no. 1, p. 21, Jan. 1950. If indurated shales are first heated to drive out interstitial moisture, covered with gasoline for half an hour, and then decanted before being boiled in water, the time required for disintegration can be reduced to a few minutes.

Leatherock, Constance.

Subsurface stratigraphy of Paleozoic rocks in southeastern Montana and adjacent parts of Wyoming and South Dakota: U. S. Geol. Survey Oil and Gas Inv. Chart OC 40. 1950. Numerous columnar sections are shown, accompanied by a text which includes a section on oil and gas possibilities.

Le Conte, Joseph. *See* Armstrong, H. K.

Lee, Charles Hamilton.

Classification and definitions of subsurface water: Assoc. Int. Hydrol. Sci., Réunion, Washington, 1939, C. R. tome 2, Comm. des Eaux Souterraines, Question 2, Rapport 1, 11 p., [1948?].

Lee, H. A.

Pleistocene geology of Fenelon Township, Victoria County, Ontario; Canada Geol. Survey Paper 50–36, 14 p. (‡), geol. map, 1950. Fenelton Township is located 75 miles northeast of Toronto, Ontario. The bedrock of the area is chiefly Trenton limestone. The various glacial features and glacial geology are described. A table of beach elevations and notes on the soils and sand and gravel deposits are included.

Lee, O. Ivan.

A famous forgotten quartz crystal locality, Crystal Hill near Delaware Water Gap, Penna.: Rocks and Minerals, v. 25, nos. 7–8, p. 372–373, sketch map, July–Aug. 1950. Reminds collectors of the quartz crystal locality, Crystal Hill, near Stormsville, Monroe County, Pennsylvania. V. S.

Leet, Lewis Don. *See also* Ewing, W. M., 1.

1. Earth waves. 122 p., illus., Harvard Monograph in Applied Science no. 2, New York, John Wiley & Sons, 1950. Theoretical fundamentals and practical illustrations are given on the transmission, measurement, and types of waves in the earth in application to exploration for minerals, mapping of geologic structures, study of hurricanes, and shock-resistance of buildings. V. S.
2. Atlantic basement rocks: Geol. Soc. Am. Bull., v. 61, no. 4, p. 411, Apr. 1950. The view that the granitic layer may be absent in parts of ocean basins, based on the seismic evidence obtained in the Atlantic Ocean at 34° N. lat., 66°30′ W. long. by Ewing and others, is questioned on the grounds of data on wave velocities. V. S.
3. (and Linehan, Daniel, and Berger, Philip). Investigation of the T phase [abs.]: Earthquake Notes, v. 21, nos. 1–2, p. 8–9, Mar.–June 1950.

Leggette, Ralph Maxwell.

Geologic methods, *in* Prospecting for ground water: Am. Water Works Assoc. Jour., v. 42, no. 10, p. 945–946, Oct. 1950. A brief statement of the importance of geologic studies in ground-water development, the effect of geology on the mineral content of ground water, and the variability of water-bearing properties of different types of formations.

Legrand, Harry E. *See also* Mundorff, M. J., 1.

Ground water in the French Broad River Basin, North Carolina, *in* Hydrologic data on the French Broad River Basin, 1857–1945: N. C. Dept. Conserv. Dev., Div. Water Res. and Eng., p. 160–177, geol. map, 1950. Describes the occurrence of ground water and the water-bearing character of the rocks.

LeGrand, J. R. *See* Van Horn, E. C.

Lehner, E.

Artesian water supply of Carriacou. 6 p., geol. map. St. George's, Grenada, Government Printing Office. 1935. In connection with a report on the possibilities of establishing an artesian water supply for the island of Carriacou, in the Lesser Antilles, West Indies, a sketch of the stratigraphy and structure is given, and a geologic map on a scale of 1:50,000 is included. The strata consist of Tertiary volcanics and limestones, the latter containing Foraminifera. Structurally, the island is a monocline dipping southeast.

Lehner, Robert E.

Geologic setting of the Ohio State University Field Station: Compass, v. 27, no. 2, p. 21–25, illus., Jan. 1950. Outlines briefly the stratigraphy, structure, and rock types of the Wasatch and Gunnison plateaus, Utah. V. S.

Leighton, Morris Morgan.

1. Mineral resource research and activities of the State Geological Survey, 1948–1949: Ill. State Geol. Survey Circ. 166, p. 161–181, illus., 1950.
2. (and Willman, Harold Bowen). Loess formations of the Mississippi Valley: Jour. Geology, v. 58, no. 6, p. 599–623, illus., Nov. 1950; Ill. State Geol. Survey Rpt. Inv. 149, 1950. Discusses the stratigraphic succession, eolian origin, distribution, composition, and other features of the Pleistocene loess deposits in both the upper and lower Mississippi Valley. The theory that the loess deposits of the lower Mississippi Valley are derived from backswamp alluvial deposits by a process of loessification is rejected.

Leith, Carlton James.

1. Geology of the Quien Sabe quadrangle, California: Calif. Dept. Nat. Res. Div. Mines Bull. 147, p. 7–35, illus. incl. geol. maps, Oct. 1949. The Quien Sabe quadrangle, 90 miles southeast of San Francisco, is characterized by the Franciscan group of Jurassic age and sediments, volcanics, and intrusives of Cretaceous, Tertiary, and Quaternary ages. Geomorphology, stratigraphy, structure, geologic history, and economic geology are described. V. S.

Leith, Carlton James—Continued

2. Removal of iron oxide coatings from mineral grains: Jour. Sed. Petrology, v. 20, no. 3, p. 174–176, Sept. 1950. "Hydrogen produced by the action of oxalic acid on aluminum is an effective agent for the removal of iron oxide coatings from mineral grains, and, because the method is rapid and simple, it is recommended for routine analysis of granular materials. Data are presented to compare the results obtained by this method with those produced by the use of various other reagents."
3. Mineralogy and petrology of the Quien Sabe volcanics, California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1527, Dec. 1950.

Leith, Charles Kenneth.

Memorial to Sydney H. Ball [1877–1949]: Geol. Soc. Am. Proc. 1949, p. 113–114, port., June 1950.

Leith, T. H.

Heat flow at Kirkland Lake [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 229–230, 1950.

Lemoine, Rémy C. *See* Taylor, G. C., Jr.

Leonard, Arthur Byron. *See also* Frye, J. C., 3.

1. A Yarmouthian molluscan fauna in the mid-continent region of the United States: Kansas Univ. Paleont. Contr. no. 8, Mollusca, Art. 3, 48 p., illus., Mar. 24, 1950. Sixty-five species of gastropods and pelecypods, associated with the Pearlette volcanic ash of Pleistocene age in Iowa, Nebraska, Kansas, Oklahoma, and Texas, are described and illustrated. The composition of the fauna suggests certain paleoecological features. V. S.
2. Stratigraphic zonation of the Peoria loess in Kansas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1481, Dec. 1950.

Leonard, Benjamin Franklin, 3d.

Magnetite deposits of the St. Lawrence County district, New York [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1481–1482, Dec. 1950.

Leonard, Frederick Charles.

On the identification and the recovery of the Goose Lake, California, siderite (ECN=+1205, 420): Pop. Astronomy, v. 58, no. 10, p. 516–518, Dec. 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 323–324, 1950. Historical account of the Goose Lake, California, meteorite.

LeRoy, Leslie Walter.

1. (editor). Subsurface geologic methods (a symposium). 2d ed., 1166 p., illus. Golden, Colo., Colorado School of Mines. 1950. Contains 58 articles, 12 of which are new in this edition, by specialists on various methods and techniques used in subsurface geologic exploration. The first edition was published as Colorado School of Mines Quarterly, v. 44, no. 3, July 1949.
2. Comments on sedimentary rocks, *in* Subsurface geologic methods, p. 71–83, Colo. School of Mines, 1950. The types, texture, and color of sedimentary rocks are briefly reviewed.

Lester, James George.

1. The Geiger-Mueller counter in geologic work: Ga. Geol. Survey Bull. 56, p. 112–117, illus., 1950. Gives preliminary results obtained in using the Geiger-Mueller counter to distinguish the contact between Stone Mountain granite and the rocks into which it has been intruded and to locate strata of monazite-bearing sands.
2. (and Allen, Arthur Thomas, Jr.). Diabase of the Georgia Piedmont: Geol. Soc. Am. Bull., v. 61, no. 11, p. 1217–1224, illus. incl. geol. map, Nov. 1950. Fifty-seven diabase dikes were mapped in northern Georgia and studied megascopically and microscopically. The distribution, structural and geomorphic relations, and petrography are described. Five dike zones were located and seem to be directly related to downwarps during post-Paleozoic time. The age of the dikes is tentatively set as Triassic.

Levin, S. Benedict.

1. Genesis of some Adirondack garnet deposits: Geol. Soc. Am. Bull., v. 61, no. 6, p. 519–565, illus., incl. geol. maps, June 1950; abs. with title Petrology and genesis of Gore Montain garnet, New York, v. 59, no. 12, pt. 2, p. 1335–1336, Dec. 1948. "New mineralogic and petrographic data, derived from study of a number of garnet-rich deposits in the southeastern Adirondacks, are presented." They indicate that the Barton ore is an extreme metagabbro facies formed during the peripheral metamorphism of the gabbro by intrusive syenite magma. Chemical analyses, specific gravities, optical and X-ray diffraction data, micrometric modes, micrographs, maps, and graphs are presented.
2. The physical analysis of polycomponent garnet [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 285–286, Mar.–Apr. 1950; v. 34, nos. 3–4, p. 279, Mar.–Apr. 1949.
3. Origin of hornblende rims on Adirondack garnet [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1482, Dec. 1950.

Levings, William Stephen.

Contribution to the geomorphology of the Raton Mesa area [Colo.] [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1555–1556, Dec. 1950.

Levinson, Stuart A.

1. The hingement of Paleozoic Ostracoda and its bearings on orientation: Jour. Paleontology, v. 24, no. 1, p. 63–75, illus., Jan. 1950. "The hingements of species of fifteen Paleozoic ostracode genera are described. The importance of hingement in the classification, identification and evolutionary history of ostracodes is stressed and it is shown that hingement can be used as a criterion for orienting Paleozoic ostracodes."
2. A technique for sectioning microfossils: Science, v. 111, no. 2873, p. 60, Jan. 20, 1950. The technique involves use of a thermoplastic having the same resistance to grinding as calcite and makes possible rapid sectioning of calcareous microfossils. The application to ostracod sectioning is described. V. S.

Levorsen, Arville Irving.

Memorial to William Harvey Emmons [1876–1949]: Geol. Soc. Am. Proc. 1949, p. 151–157, port., June 1950.

Lewis, Donald R.

Base-exchange data, *in* Analytical data on reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 7, p. 91–124, July 1950.

Liberty, B. A. *See* Caley, J. F.

Liebenberg, W. R. *See* Ahrens, L. H., 3.

Limón-Gutiérrez, Luis.

Las Capas "Sorites" del Oligoceno superior de México y sus foraminiferos: Asoc. Mex. Geol. Petrol. Bol., v. 2, no. 10, p. 617–630, illus., Oct. 1950. The Sorites beds, in the Tampico-Tuxpan bay area of northern Veracruz, are described and considered to be Upper Oligocene in age. The foraminiferal fauna is listed.

Lindberg, Marie Louise Lange.

1. Arrojadite, hühnerkobelite, and graftonite: Am. Mineralogist, v. 35, nos. 1–2, p. 59–76, illus., Jan.–Feb. 1950. Arrojadite from Nickel Plate pegmatite, South Dakota, was found isostructural and identical with arrojadite from Serra Branca pegmatite, Brazil, but structurally different from arrojadite from Hühnerkobel, Bavaria and Norrö, Sweden. The latter is designated as hühnerkobelite. A new analysis is given of graftonite associated with arrojadite. V. S.
2. (and Frondel, Clifford). Zincian rockbridgeite: Am. Mineralogist, v. 35, nos. 11–12, p. 1028–1034, illus., Nov.–Dec. 1950. Gives physical, chemical, optical, and X-ray data for zincian rockbridgeite. The material described occurs in fibrous crusts as an alteration product of triphylite in pegmatite at Maxedo, Portugal.

Linehan, Daniel. *See* Leet, L. D., 3.

Link, Theodore August.

1. Theory of transgressive and regressive reef (bioherm) development and origin of oil: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 2, p. 263–294, illus., Feb. 1950; abs., Tulsa Geol. Soc. Digest, v. 18, p. 44, 1950. The development of reefs in transgressive and regressive seas is described in detail, using examples from Alberta and Texas. Hydrocarbon occurrence is considered indigenous, resulting from concentration of organisms. The terms bioherm and biostrome are defined, the latter differing in lacking the greater vertical dimensions of the bioherm. V. S.
2. Edwin Russell Lloyd, honorary member: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 5, p. 977–980, port., May 1950.
3. The western Canada sedimentary basin area: Canadian Min. Met. Bull. no. 459, p. 379–389, illus., July 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 254–264, 1950. The stratigraphy and structure of the basin area between the pre-Cambrian shield and the Cordilleran area is outlined. The strata range from Cambrian to Tertiary, and the structure varies from broad arches and synclines to the highly folded and thrust Foothills belt and Rocky Mts. Examples of producing oil-field structures are given.
4. Western Canada's oil and gas potentialities: World Petroleum, v. 21, no. 7, p. 40–43, illus., July 1950. A general discussion of oil and gas occurrence in western Canada, well illustrated with generalized maps and cross sections.
5. Recent oil and gas developments in Alberta, Canada: Mines Mag., v. 40, no. 10, p. 87–91, 96, 115, illus., Oct. 1950. Summarizes the geological conditions, recent oil discoveries, and development.
6. Some thoughts on "reef" trends and configurations: Geol. Assoc. Canada Proc., v. 3, p. 27–37, illus., Dec. 1950. "An attempt to visualize what some modern coral-reef alignments and configuration might appear like, if projected into the rocks of the past geological periods, is the main theme of this paper. As an example, the tilting, warping or folding of a sizeable atoll and the resultant accumulation and concentration of oil or gas are considered from a theoretical viewpoint. Subsurface contouring of reef surfaces, as revealed from oil well drilling, is also discussed on the basis of their growth, evolution, and history."
7. Source of the oil of the "tar sands" of the Athabaska River, Alberta [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2252, Nov. 1950.

Link, Walter Karl.

1. Approach to the origin of oil: Oil and Gas Jour., v. 48, no. 45, p. 88, 91–92, illus., Mar. 16, 1950; Farol (Buenos Aires), v. 2, no. 5, p. 8–13, illus., Dec. 1950. (Spanish.) Suggests and discusses the possibility of determining the origin of oil through study of recently deposited sediments. The Tertiary through Recent Gulf Coast sediments are noted as particularly well adapted to such a study, and phases of the investigation are outlined.
2. Direct geology: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1901–1903, Sept. 1950. The study of current geologic processes, and particularly an understanding of sediments and sedimentation processes, is advocated as essential for a better grasp of subsurface conditions, especially in oil exploration. V. S.

Lins, Thomas W.

Origin and environment of the Tonganoxie sandstone in northeastern Kansas: Kans. Univ., State Geol. Survey Bull. 86, pt. 5, p. 105–140, illus. incl. geol. map, Oct. 31, 1950. The Tonganoxie sandstone is a member of the Stranger formation, the lowermost subdivision in the Douglas group of the Virgilian Series (Upper Pennsylvanian), in Tonganoxie Valley, Kansas. Its origin, lithologic composition, stratigraphic relations to the underlying Missourian and overlying Virgilian groups, and ground-water bearing capacity are described and illustrated by a geologic map and cross-sections. V. S.

Little, H. W.

Salmo map-area, British Columbia (report and map): Canada Geol. Survey Paper 50–19, 43 p. (‡), illus. incl. geol. map, 1950. The Salmo area, in the Kootena district, British Columbia, is underlain by faulted and folded sedimentary and volcanic rocks of Proterozoic, Paleozoic, and Mesozoic age. Economic resources are zinc-lead deposits and minor occurrences of gold, tungsten, and iron oxide. The formations and intrusives are described and mapped. V. S.

Littlefield, Romaine F. *See* Keller, W. D., 2.

Littleton, Robert Thomas.

1. Reconnaissance of the ground-water resources of the Wheatland Flats area, Wyoming: U. S. Geol. Survey Circ. 70, 32 p. (‡), illus. incl. geol. map, Apr. 1950. The Wheatland Flats area, within the Laramie River basin, is underlain by terraced gravel deposits and alluvium of Quaternary age resting on an irregular surface of Tertiary sediments. The geology and water-bearing properties are described. V. S.
2. Ground-water conditions in the vicinity of Gillette, Wyoming, with a section on the quality of ground waters, by Herbert A. Swenson: U. S. Geol. Survey Circ. 76, 43 p. (‡), illus., Oct. 1950. In the Gillette, Wyoming, area Cambrian to Cretaceous sediments are overlain by the Tertiary Wasatch and Fort Union formations, in turn mantled by thin Quaternary alluvium. The Fort Union formation appears to be the best aquifer. V. S.
3. Reconnaissance of the geology and ground-water hydrology of the Laramie Basin, Wyoming, with special reference to the Laramie and Little Laramie River Valleys: U. S. Geol. Survey Circ. 80, 37 p. (‡), illus. incl. geol. map, Nov. 1950. A columnar section of the Mississippian to Recent strata in the Laramie Basin, including lithology and ground-water characteristics, is given. The hydrology of the area is described, and specific data on water loss from streams as it may be related to geologic conditions are given.

Lochman, Christina.

1. Paleoecology of the Cambrian in Montana and Wyoming: Natl. Research Council, Report of the Committee on a treatise on marine ecology and paleoecology, 1948–1949, no. 9, p. 31–71, illus., Dec. 1949. Describes the conditions of sedimentation and faunal development and distribution during Middle and Upper Cambrian time, in Montana and Wyoming, on the slowly downwarping, westward sloping shelf bordering the miogeosyncline trending from western Montana through southern Utah. A correlation table of formations and facies is given. The ecologic significance of pebble conglomerate, oolite, and glauconite is discussed. A bibliography is included.
2. Upper Cambrian faunas of the Little Rocky Mountains, Montana: Jour. Paleontology, v. 24, no. 3, p. 322–349, illus., May 1950. The Cambrian of the Little Rocky Mts., Montana, represents the northeasternmost outcrop of Cambrian in the Cordilleran province. The only complete sequence of Upper Cambrian in the area occurs in a section along Lodge Pole Creek. The sequence is a typical development of the Pilgrim formation of central Montana. The trilobite fauna is described; one new genus, *Knechtelia,* and five new species are included.
3. (and Duncan, Donald Cave). The Lower Ordovician *Bellefontia* fauna in central Montana: Jour. Paleontology, v. 24, no. 3, p. 350–353, illus., May 1950. Describes the occurrence of a trilobite fauna (diagnostic of the *Bellefontia* zone) from the uppermost beds of the Pilgrim formation, Lower Ordovician, near Half Moon Pass in the Big Snowy Mts., Montana. It is inferred that shallow seas continued to occupy the shelf areas until after early Lower Ordovician time, and that the absence of the Ordovician beds can be attributed to later erosion.

Lochman, Christina—Continued

4. Status of Dry Creek shale of central Montana: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2200–2222, illus., Nov. 1950. Discusses the Upper Cambrian stratigraphy of the Horseshoe Hills area, central Montana. The name "Dry Creek shale" should be used only for the lower member of the Snowy Range formation. The name "Sage pebble conglomerates" is proposed for the upper member of this formation. Brick-red shales and dolomites, also formerly designated by the name Dry Creek and since proved to be Devonian, should be called the Maywood formation. V. S.

Locke, L. C.

(and Bliss, Jack E.). Core analysis technique for limestone and dolomite: World Oil, v. 131, no. 4, p. 204, 206–207, illus., Sept. 1950. In the measurement of permeability and porosity of nonhomogeneous limestone and dolomite cores for the estimation of total oil reserves in formations, the determination of solution cavity volume by the displacement and re-saturation technique may provide more dependable data than directional core analysis because of the heterogeneity of the pore system. The technique is described. V. S.

Lockwood, Robinson Peale.

(and Erdman, Oscar Alvin). Stettler field, Alberta, Canada [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2253, Nov. 1950.

Lockwood, William Noble.

Impregnating sandstone specimens with thermosetting plastics for studies of oil-bearing formations: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 10, p. 2061–2067, illus., Oct. 1950. Describes experimental tests of the suitability of the thermosetting plastics Castolite, Laminac Resin 4128, and Laminac Resin 4126 as materials for impregnating sandstone specimens for thin-section preparation. V. S.

Loeblich, Alfred Richard, Jr. *See also* Applin, E. E. R., 1.

1. (and Tappan, Helen Nina). North American Jurassic Foraminifera; I, the type Redwater shale (Oxfordian) of South Dakota: Jour. Paleontology, v. 24, no. 1, p. 39–60, illus., Jan. 1950. "Fifty-six species of Foraminifera, belonging to eight families, are described and figured from the type Redwater shale member of the Sundance formation of South Dakota. Over two-thirds of the species belong to the Lagenidae." Most of the species described are new.
2. (and Tappan, Helen Nina). North American Jurassic Foraminifera; II, characteristic western interior Callovian species: Washington Acad. Sci. Jour., v. 40, no. 1, p. 5–19, illus., Jan. 15, 1950. New species of *Ammodiscus*, *Frankeina*, *Lenticulina*, *Astacolus*, *Marginulinopsis*, *Vaginulinopsis*, *Dentalina*, *Nodosaria*, *Lingulina*, *Tristix*, *Vaginulina*, *Citharina*, *Citharinella*, *Tribrachia*, and *Turrispirillina*, from various Jurassic exposures in Montana, Wyoming, and North Dakota.
3. (and Tappan, Helen Nina). Foraminifera from the type Kiowa shale, Lower Cretaceous, of Kansas: Kans. Univ. Paleont. Contr. no. 6, Protozoa, art. 3, 15 p., illus., Feb. 24, 1950. "Twenty-seven species of Foraminifera, of which eleven are new, are figured and described from the Lower Cretaceous Kiowa formation from the type area in southern Kansas. Methods of study are described, evidence is presented to suggest a brackish water, near-shore origin for the Kiowa shale, and the fauna is compared to that of the black shale facies of the Kiamichi formation in northern Texas and southern Oklahoma."

Lofgren, Ben E. *See* Fix, P. F.

Logan, Clarence August.

Mines and mineral resources of Madera County, California: Calif. Jour. Mines and Geology, v. 46, no. 4, p. 445–482, illus. incl. map, Oct. 1950. The mineral resources include gold, silver, copper, natural gas, granite, tungsten, iron, pumice, and other industrial minerals and construction materials. The mines and deposits are described, mapped, and tabulated. A bibliography is included. V. S.

Logan, John A.

Clay foundation problem, Friant-Kern Canal, California [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1527, 1950.

Lohman, Stanley William. *See* Griswold, D. H.

Long, William A.

Glacial geology of the Wenatchee area, Washington [abs.]: Northwest Sci., v. 24, no. 1, p. 36, Feb. 1950.

Longley, William Warren.

North shore of the Saint-Lawrence from Mingan to Aguanish, Saguenay County: Quebec Dept. Mines, Geol. Surveys Br., Geol. Rpt. 42, pt. 1, 30 p., illus. incl. geol. map, 1950. A reconnaissance report of the shore area along the St. Lawrence River between Mingan and Aguanish, opposite Anticosti Island. The area covers a distance of 85 miles. The pre-Cambrian and Ordovician rocks are described, and mineral occurrences with potential commercial value, such as feldspar and limestone, are noted.

Longwell, Chester Ray.

1. Tectonic theory viewed from the Basin Ranges: Geol. Soc. Am. Bull., v. 61, no. 5, p. 413–433, illus. incl. maps, May 1950. Tectonic theory and the tectonics of the Great Basin in the western United States are discussed using the evidence of sedimentation as shown in Paleozoic sections in Arizona, southern Nevada, and California, the record of deformation from Devonian to Recent time, and the record of igneous activity. The evidence shows that both orogeny and volcanic activity have moved eastward from the coastal belt. The implications of this evidence and its bearing on the wider problems of crustal deformation are considered. A bibliography is given.
2. Charles Hyde Warren (1876–1950): Am. Philos. Soc. Yearb. 1950, p. 328–333, 1951.

Lonsdale, John Tipton.

(and Maxwell, Ross Allan). Petrology of Big Bend National Park [Texas] [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 286, Mar.–Apr. 1950.

López Ramos, Ernesto.

1. Geología del subsuelo de tres pozos de exploración al sureste de Poza Rica, Veracruz: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 6, p. 381–395, illus., June 1950. Stratigraphic data obtained from three test wells in the southeastern part of the petroliferous Poza Rica area, Veracruz, Mexico, are given. Beds of Miocene through Cretaceous age were encountered. The columnar section of each well is given, relation to structure is indicated, and oil and gas potentialities are appraised briefly. V. S.
2. Secciones Cretácica y Jurásica al norte de Teziutlán, Puebla, Mexico: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 9, p. 549–555, illus., Sept. 1950. Describes and shows a cross section through Jurassic and Cretaceous strata a few miles north of Teziutlán, Puebla, Mexico.

Lorain, Sinclair Holt.

Investigation of manganese deposits in the Philipsburg mining district, Granite County, Mont.: U. S. Bur. Mines Rpt. Inv. 4723, 57 p. (‡), illus. incl. geol. map, Oct. 1950. Brief descriptions of the regional geology and the ores are given, together with a geologic map of the area. Manganese occurs both as rhodochrosite and pyrolusite, associated with zinc-lead-silver ores. The ores are in Paleozoic sediments and are associated with tension fractures close to the contact of the granodiorite batholith.

Lord, Clifford Symington.

(and Barnes, F. Q.). Second preliminary map, Aylmer Lake, Northwest Territories (map and descriptive notes): Canada Geol. Survey Paper 50–10, 8 p. (‡), geol. map, 1950. The Aylmer Lake area, northeast of Great Slave Lake, Northwest Territories, contains pre-Cambrian volcanics, sedimentary rocks, and varied granitic intrusives. The rocks are mapped and briefly described, with attention to glaciation and economic possibilities. V. S.

Louderback, George Davis.

Faults and engineering geology, *in* Application of geology to engineering practice, Berkey Volume, p. 125–150, Geol. Soc. Am., New York, 1950. Faults and fault movements and their relation to engineering projects are described. Numerous specific examples are cited of problems encountered in dam and tunnel construction that are associated with faulting.

Lougee, Richard Jewett.

Glacial marine limit in Maine [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1569, Dec. 1950.

Love, John David.

1. Geologic map of Albany County, Wyoming: Wyo. Geol. Survey, 1935. Scale 1 inch to 2 miles. This map, on a reduced scale of about 1 inch to 2.3 miles, is included in U. S. Geol. Survey Circular 80, "Reconnaissance of the geology and ground-water hydrology of the Laramie Basin, Wyoming", by Robert T. Littleton, Nov. 1950.
2. (and Weitz, Joseph Leonard). Geologic map of part of southwestern Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, 1950. Scale 1:500,000 or about 1 inch to 8 miles.
3. Paleozoic rocks on the southwest flank of the Wind River Mountains, near Pinedale, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 25–27, geol. sketch map, 1950. Several outcrops of Paleozoic rocks in the area between New Fork Lake and the southeast end of the Wind River Range are described. With the geologic sketch map is a tentative cross section.
4. Upper Cretaceous section from southwestern Wyoming to Yellowstone National Park: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, facing p. 48, 1950.
5. Oil and gas possibilities in post-Frontier Cretaceous rocks of Wyoming [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 176–177, Apr. 27, 1950.
6. Petrography as an aid in dating Tertiary volcanic rocks [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1482, Dec. 1950.

Lovering, Thomas Seward. *See also* Morris, H. T.

1. (and Goddard, Edwin Newell). Geology and ore deposits of the Front Range, Colorado: U. S. Geol. Survey Prof. Paper 223, 319 p., illus. incl. geol. maps, 1950. A comprehensive description and discussion of the geology of the Front Range in Colorado from a regional point of view. Data on the individual mining districts are presented with emphasis on their place in the regional picture. The importance of structure in interpreting the regional geology is stressed. Numerous mine maps and sections are included.
2. The geochemistry of argillic and related types of rock alteration, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 231–260, illus., Jan. 1950. A detailed discussion of the processes, chemistry, factors, and characteristics of rock alteration, based on experimental work on synthesis and solution of minerals and field investigations of hot-spring alteration. A bibliography is included.
3. [Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 281–282, 320–321, 325–327, Jan. 1950.

Lovering, Thomas Seward—Continued

4. (and Huff, Lyman Coleman, and Almond, Hy). Dispersion of copper from the San Manuel copper deposit, Pinal County, Arizona: Econ. Geology, v. 45, no. 6, p. 493–514, illus., Sept.–Oct. 1950. The San Manual copper deposit, near Tucson, Arizona, was chosen for a geochemical investigation of the dispersion pattern produced by weathering in a desert climate. Analysis showed very little copper in the ground water, run-off, or in plants. Analysis of soil and alluvium, combined with upstream and upslope sampling, appears to be one of the best means of copper prospecting in a desert environment.
5. East Tintic district [Utah] geologic picture changed [abs.]: Min. Cong. Jour., v. 36, no. 10, p. 78, Oct. 1950.

Lowdermilk, Walter Clay.

(and Sundling, H. L.). Erosion pavement, its formation and significance: Am. Geophys. Union Trans., v. 31, no. 1, p. 96–100, illus., Feb. 1950; discussion by L. C. Peltier, v. 32, no. 3, p. 466–467, June 1951. Experiments show that the formation of an "erosion pavement", an accumulation of rock fragments at the soil surface, is due to accelerated erosion, representing deviation from the geologic norm of erosion established by a complete vegetation cover. V. S.

Lowe, Kurt Emil.

Storm King granite at Bear Mountain, New York: Geol. Soc. Am. Bull., v. 61, no. 3, p. 137–190, illus. incl. geol. map, Mar. 1950. "The Storm King granite at Bear Mountain, New York, occupies the core of a syncline in the earlier crystalline complex of the Hudson Highlands. It is part of a larger synclinal pluton whose accordance with the northeast-plunging structure is shown by conformable contacts and mineral alignment in both the granite and the country rocks. Reasonably constant mineral composition, flow structures of early hornblende crystals, and inclusions confined to the margins of the granite body indicate magmatic intrusion. Absence of secondary foliation and lack of tectonic fabric patterns in the granite suggest post-tectonic emplacement." The petrography, petrology, and structural geology are discussed. Petrofabric analyses and a bibliography are included.

Lowenstam, Heinz Adolf. *See also* Urey, H. C., 1.

1. Niagaran reefs in Illinois and their relation to oil accumulation: Oil and Gas Jour., v. 48, no. 43, p. 48–49, 77, illus., Mar. 2, 1950. A summarized version of the article of the same title which appeared as Illinois State Geological Survey Report of Investigations No. 145, 36 p., 1949.
2. Niagaran reefs of the Great Lakes area: Jour. Geology, v. 58, no. 4, p. 430–487, illus., July 1950. A comprehensive treatment of the Silurian reefs in the Great Lakes area, covering numerous aspects of reef growth. Among these are definition, biologic potential, shape, height, substrata, growth, spread, pattern of distribution, and climate. Although the true reef nature of the Niagaran structures has been questioned, it is shown that they exhibit all the basic properties of reefs.

Lowman, Shepard Wetmore. *See* Rolshausen, F. W.

Lucas, Elmer Lawrence.

1. The petrographic character of some tourmaline and zircon detritals: Okla. Acad. Sci. Proc., v. 29 (1948), p. 44–45, Mar. 1950. Authigenic secondary growths have been found on both tourmaline and zircon detrital grains in Pennsylvanian sandstone in Oklahoma. Their color, shape, optical orientation, and attachment are described briefly. V. S.
2. Petrographic study of Pennsylvanian sandstones in Murray County, Oklahoma [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 178–179, Apr. 27, 1950.

Ludlum, John Charles.

Sedimentation features of the Upper Silurian limestones in West Virginia [abs.]: W. Va. Acad. Sci. Proc., v. 22, p. 97, 1950; with title Significance of rhythmic sedimentation of the Upper Silurian limestones of West Virginia; Geol. Soc. Am. Bull., v. 61, no. 12, pt 2, p. 1483, Dec. 1950.

Ludwick, John C. *See* Krumbein, W. C., 3; Menard, H. W., Jr., 4.

Lugn, Alvin Leonard.

Duration of the Pleistocene period [abs.]: Nebr. Acad. Sci. Proc., 60th Ann. Mtg., p. 15, May 1950.

Lukesh, Joseph Stevens.

(and Pauling, Linus Carl). The problem of the graphite structure [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 125, Jan.–Feb. 1950.

Luna, J.

(and Muñoz, Frank J.). El campo petrolero de Poza Rica: Asoc. Mex. Geól. Petrol. Bol., v. 1, no. 1, p. 35–46, illus., Nov. 1949. The Poza Rica oil field, Veracruz, produces from Tamabra limestone of Cretaceous age. Structure is anticlinal. Associated lenticular sandstones of the Chicontepec Velasco formation have shown oil and gas. Exploitation is described. V. S.

Lundahl, Arthur C.

(compiler). Symposium of information relative to uses of aerial photographs by geologists: Photogrammetric Engineering, v. 16, no. 5, p. 721–806, illus., Dec. 1950. Contains papers by F. A. Melton, Curt Teichert and R. W. Fairbridge, F. P. Shepard, S. A. Wengerd, H. T. U. Smith, Louis Desjardins, and H. R. Wanless.

Lundberg, Hans.

1. Airborne electrical surveys for regional studies in oil and ore prospecting: Canadian Min. Met. Bull. no. 456, p. 190–192, illus., Apr. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 130–132, 1950. The new airborne electromagnetic apparatus, inducing secondary alternating magnetic fields in conducting bodies in the ground and recording field amplitudes and phases, gives data on the extent and depth of these bodies. The principles of the instrument and test flights are described, and the interpretation of records and application of the method are discussed. V. S.
2. Current trends and progress in mining geophysics: Colo. Sch. Mines Quart., v. 45, no. 4A, p. 41–47, Oct. 1950. Developments in aviation, electronics, and aerial photography have made geophysical exploration for ore deposits by airborne operations possible. The cost, time required, and results of air-borne and ground operations are compared.

Lunde, M.

Preliminary report on the Grondines map-area, Champlain, Portneuf, Laviolette, Nicolet, and Lotbinière Counties; Pt. 2, Pre-Cambrian section: Quebec Dept. Mines Geol. Surveys Br., Prelim. Rpt. 237, p. 3–6 (‡), geol. map, 1950. Brief notes on the pre-Cambrian rocks and structure in the Grondines area, 40 miles west of Quebec City.

Lupton, Benjamin Charles.

Santa Maria region [Calif.], *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2383–2384, Dec. 1950.

Lyden, Joseph P.

1. Aspects of structure and mineralization used as guides in the development of the Picher field: Min. Eng., v. 187, no. 12, p. 1251–1259, illus., Dec. 1950; A. I. M. E. Trans., v. 187, 1950. "In the Picher field [Kansas-Oklahoma], structure made openings for the circulation of the mineralizing solutions by flexing, shearing, and fracturing the sedimentary beds. This structure is used with the spatial and genetic relationship of the ore minerals, sphalerite and galena, and the gangue minerals, dolomite and jasperoid, in prospecting for ore bodies."
2. Structure and mineralization maps as a guide to mining in the Picher mining field [abs.]: Econ. Geology, v. 45, no. 4, p. 385, June-July 1950.

Lynd, L. E. *See* Moore, C. H., Jr.

Lynn, Ralph D. *See* Ricker, N.

Lyons, Paul L.

A gravity map of the United States: Tulsa Geol. Soc. Digest, v. 18, p. 33–43, illus., 1950. Describes and shows a regional Bouguer anomaly gravity map of the United States based on previously published sources and data supplied by the Carter Oil Company.

Lytle, William S.

1. Crude oil reserves of Pennsylvania: Pa. Geol. Survey, 4th ser., Bull. M 32, 256 p., illus., 1950. A compilation of statistical data on the oil reserves of Pennsylvania, accompanied by a map of the oil fields in the state.
2. Crude oil reserves of Pennsylvania, *in* Symposium on mineral resources of Pennsylvania: Pa. Acad. Sci. Proc., v. 24, p. 203–207, 1950. The oil reserves, as of January 1947, are tabulated by county and in other ways. Total oil in place is estimated at 2,734,434,000 barrels.

McAndrew, John. *See* Peacock, M. A., 1.

McAnulty, William Noel. *See* Stovall, J. W., 3.

McAtee, J. L.

(and Milligan, W. O.). X-ray diffraction examination of synthetic mullite: Texas Jour. Sci., v. 2, no. 2, p. 200–205, illus., June 30, 1950. An investigation by X-ray investigation of the conditions of formations and the effect of impurities in mullite prepared by heat treatment of alumina-silica gels.

McAuslan, Edward R. *See* Donnerstag, P.

MacCallum, D. *See* Shaw, G., 1, 2.

McCampbell, John Caldwell.

Some employer requirements in the education of petroleum geologists: Compass, v. 28, no. 1, p. 6–9, illus., Nov. 1950. Briefly summarizes the information obtained from a questionnaire sent to employers of geologically trained people in the petroleum industry. The results indicate not only the amount and type of geological course work, but also other desirable qualifications.

McCanne, Rolland W.

Recent discovery and development of oil and gas reserves along the east flank of the Julesburg Basin: Mines Mag., v. 40, no. 10, p. 25–32, 36, 74, illus., Oct. 1950. Describes the recent activities of the Ohio Oil Company in developing oil and gas in Cheyenne County, Nebraska, on the eastern flank of the Julesburg basin. The discovery marks the first production from the Cretaceous in Nebraska.

McCarver, Holland C. *See* Taylor, S. J.

McClellan, Hugh Wallace.

(and Haines, Richard Bower). San Miguelito oil field [Calif.] [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2380, Dec. 1950.

McClelland, W. R.

Notes on antimony deposits and occurrences in Canada: Canada Bur. Mines, Mineral Res. Div., Memo. series, no. 108, 20 p. (‡), Apr. 1950. Thirty-six deposits in Newfoundland, Nova Scotia, New Brunswick, Quebec, British Columbia, and Yukon are described briefly. A bibliography is given. V. S.

McCollum, S. V. *See* Imbt. R. F.

McConnell, Duncan.

1. (and others). Petrology of concrete affected by cement-aggregate reaction, *in* Application of geology to engineering practice, Berkey Volume, p. 225–250, illus., Geol. Soc. Am., New York, 1950. Describes the investigation of concrete deterioration by petrographic and petrologic methods, and discusses the process of reaction between the aggregate and cement. The potential behavior of concrete aggregate can be predicted by petrographic examination.

McConnell, Duncan—Continued

2. The petrography of rock phosphates: Jour. Geology, v. 58, no. 1, p. 16–23, illus., Jan. 1950. Gives data on 38 minerals that occur in rock phosphates. A bibliography is appended. V. S.
3. The crystal chemistry of montmorillonite: Am. Mineralogist, v. 35, nos. 3–4, p. 166–172, illus., Mar.–Apr. 1950. The hypothesis that hydroxyl ions can substitute for silicon-oxygen groups in the tetrahedral layers of montmorillonite is proposed in modification of the Hofmann-Endell-Wilm structure. It may explain the variable excess of high-temperature water and other thermochemical properties, particularly base-exchange capacity and thermal behavior. V. S.
4. Crystal chemistry of montmorillonite. 2. Calculation of the structural formula [abs.]: Geol. Soc. Am Bull., v. 61, no. 12, pt. 2, p. 1485, Dec. 1950.

Macdonald, Gordon Andrew. *See also* Finch, R. H., 1, 2, 5; Shepard, F. P., 1.

1. (and Orr, James B.). The 1949 summit eruption of Mauna Loa, Hawaii: U. S. Geol. Survey Bull. 974–A, p. 1–33, illus., 1950. The summit eruption of Mauna Loa, Hawaii, January–May 1949, is described as regards the lava extrusion, eruptive products, and accompanying disturbances. The three phases typical of past eruptions were clearly observable again. V. S.
2. (and Finch, Ruy Herbert). Origin of Puehu cinder cone, Kau: Volcano Letter, no. 507, p. 2–3, Jan.–Mar. 1950. Puehu cinder cone on the southern slope of Mauna Loa, Hawaii, is a primary cone formed by eruption at a lava vent during late Pahala time and probably belongs in the Hilina volcanic series of Kilauea volcano. Classification as a littoral cone of the Kau volcanic series is disproved. V. S.
3. (and Finch, Ruy Herbert). The June 1950 eruption of Mauna Loa; Part 2, Special features: Volcano Letter, no. 509, p. 1–6, illus., July–Sept. 1950. The special features described are lava flows, temperature measurements, radiation studies, tilting of the ground, harmonic tremor, earthquakes, and the absence of littoral explosions. See Finch, R. H. 2, for Part I of the report on the Mauna Loa volcanic eruption, Hawaii, June 1, 1950.

Macdonald, James R.

1. A note on the age of the Truckee formation: Am. Jour. Sci., v. 248, no. 8, p. 581–583, Aug. 1950. Reports the occurrence of mammalian remains in the Truckee formation at Brady Pocket, 10 miles north of U. S. Highway 40 on the Brady Hot Springs-Nightingale road, Nevada. This evidence points to a Lower Pliocene age, but it is noted that the Truckee formation may transgress time boundaries and that the exposures which have yielded fossils may be of different ages.
2. A new species of *Nimravus* from the upper Oligocene of South Dakota: Jour. Paleontology, v. 24, no. 5, p. 601–603, illus., Sept. 1950. Describes a new species of cat, *Nimravus altidens*, identified on the basis of portions of the jaw, and discusses its relation to other species. The new species occurs in the *Protoceras* sandstones of upper Oligocene age and is the oldest known species of *Nimravus* from South Dakota.

McDowell, Alfred N.

(and Parker, Travis J.). Notes on the construction of geologic scale models: Mines Mag., v. 40, no. 10, p. 75–79, illus., Oct. 1950. Describes the planning and construction of a laboratory model of a salt dome, as an example of the work on models of geologic features currently in progress at the A. & M. College of Texas.

McElvenny, Linden T.

(and Smith, Matthew Clair, and McElwaine, Robert Berentz). Investigation of southwestern Arkansas mercury district, Howard, Pike, and Clark Counties, Ark.: U. S. Bur. Mines Rpt. Inv. 4737, 25 p. (‡), illus., Oct. 1950. Cinnabar is the chief ore mineral, and the deposits are found in the Gap Ridge sandstone member of the Stanley shale and in the Jackfork sandstone, both of Pennsylvanian age. The general structure of the area and the distribution of the ore are described.

McElwaine, Robert Berentz. *See* McElvenny, L. T.

Macelwane, James Bernard.
Survey of geophysical education in the United States and Canada in 1948: Geophysics, v. 15, no. 2, p. 257–263, Apr. 1950. Report of the Committee on geophysical education of the Society of Exploration Geophysicists, in which courses offered at colleges and universities are tabulated. V. S.

McFadden, W. A., Jr.
Review of seismic and gravity exploration of Delaware Basin [Texas] [abs.]: Oil and Gas Jour., v. 49, no. 32, p. 102, Dec. 14, 1950.

McFall, Rex Lewis.
East-west cross section of northwest Runnels and northeast Coke Counties, Texas: Abilene Geol. Soc., Geol. Contr., p. 68–69, illus., 1950. The section consists of a correlation of six electric logs.

McGaha, S. W.
1. Radioactivity dictionary: Tomorrow's Tools Today, v. 16, no. 4, p. 4–11, 34, illus., Fourth Quarter 1950. "Describes briefly the subsurface formations encountered during logging operations and illustrates the behavior of the gamma ray-neutron curves." Curve values are maximum, minimum, intermediate, or extreme.
2. (and Terry, J. M.). Greater Seminole area of Oklahoma: Tomorrow's Tools Today, v. 16, no. 4, p. 28–31, Fourth Quarter 1950. The values for gamma ray and neutron logging in the Ordovician, Silurian-Devonian, Mississippian, and Pennsylvanian strata are given.

McGee, Dean Alexander.
(and Seale, Tom, and Finley, Jean Carson). Oil in the Gulf of Mexico [abs.]: Okla. Acad. Sci. Proc., v. 29 (1948), p. 60–61, Mar. 1950.

McGerrigle, Harold William.
The geology of eastern Gaspé: Quebec Dept. Mines, Geol. Surveys Br., Geol. Rpt. 35, 168 p., illus. incl. geol. maps, 1950. The area described is in eastern Quebec, between the St. Lawrence River and Chaleur Bay. The formations, Cambrian through Carboniferous in age, and their structure are described particularly with a view to the petroleum possibilities of the region. Five detailed geological maps of the area are included, together with a generalized map of the entire peninsula, and several cross sections.

MacGillavry, Caroline H. *See* Kinsolving, M. R.

McGowen, N. C.
Natural gas and natural gas liquid reserves in the U. S.: World Oil, v. 130, no. 7, p. 140, June 1950. A summary of the findings of the Committee on natural gas reserves of the American Gas Association. As of December 31, 1949, the proved reserves are 180.4 trillion cubic feet, a net increase of 6.5 trillion cubic feet over the proved reserves at the beginning of the year. The net increase since December 31, 1945, has been 32.6 trillion cubic feet. Approximately 82 percent of the reserves are in New Mexico, Texas, Oklahoma, Arkansas, Louisiana, and Mississippi.

McGrain, Preston.
Preliminary report on the thickness of glacial drift in the upper Wabash drainage basin [abs.]: Ind. Acad. Sci. Proc., v. 59, p. 214–215, 1950.

MacGregor, Archibald Gordon.
Prediction in relation to seismo-volcanic phenomena in the Caribbean volcanic arc.: Bull. Volcanologie (Assoc. Volcanologie Union Géodésique Géophysique Internationale), sér. 2, v. 8, p. 69–86, illus., 1949. "A compilation of a review of evidence potentially useful for predicting the time and place of future earthquakes, soufrière activity or volcanic eruptions in this part [Caribbean volcanic arc] of the West Indies." A table of seismo-volcanic activity in the Lesser Antilles within historic time is included.

McGrew, Paul O.

Tertiary vertebrate fossils of the Green River Basin: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 68–74, illus., 1950. Reviews the vertebrate forms that have been found in the Knight formation, Green River formation, Cathedral Bluffs tongue, and Bridger formation—Eocene formations present in the Green River Basin of southwestern Wyoming.

McGuirt, James Holland. *See* Colle, J. O.

MacIntosh, Charles G.

(and Thomson, James Edgar). Geology of the Sylvanite mine: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 177–183, illus., 1950. Describes the development, general geology, structure, ore mineralization and wall-rock alteration at the Sylvanite gold mine in the Kirkland Lake area, northern Ontario.

McIntosh, Franklin G.

Rare gem minerals of America: Mineralogist, v. 18, no. 12, p. 604, 606, 608, 610, 612, 614, Dec. 1950. Reprinted from the Oregon Mineralogist, v. 2, no. 7, p. 3–4, 30, July 1934; no. 8, p. 5–6, 21, Aug. 1934.

MacKay, Bertram Reid.

1. Atlas, coal areas of Alberta. Canada Geol. Survey [1949]. The atlas contains 50 geological maps of coal areas in Alberta, an index map, and a map showing relation of mining locations to geological formations. Tables of data for each coal occurrence are included.
2. Atlas, estimate of reserves of Sydney coalfield, Cape Breton Island, Nova Scotia. Canada Geol. Survey [1949?]. The atlas contains 13 maps showing data on reserves in various seams of the Sydney coal field.

McKee, Edwin Dinwiddie.

1. Isopach studies in Arizona and adjoining areas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1557, Dec. 1950.
2. Opportunities for petroleum development in Arizona [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2379–2380, Dec. 1950.

McKelvey, Vincent Ellis. *See also* Cady, W. M., 3.

1. The field of economic geology of sedimentary mineral deposits, *in* Applied sedimentation, p. 485–505, 1950. Sedimentary mineral deposits of economic value form 36 percent of the total value of mineral production in the United States according to 1946 figures. The various types of deposits and the minerals are given in tabular form. Prospecting for, appraisal and development of, and other problems connected with sedimentary mineral deposits are discussed.
2. (and Nelson, John Marshall). Characteristics of marine uranium-bearing sedimentary rocks: Econ. Geology, v. 45, no. 1, p. 35–53, Jan.–Feb. 1950. Marine black shales and phosphorites generally contain 0.01 to 0.02 percent uranium and may prove to be an economic source. Other marine sediments contain uranium, which tends to increase with greater organic or phosphatic content. The origin is discussed in detail. V. S.
3. (and others). Value of domestic production of minerals from various classes of rocks: Econ. Geology, v. 45, no. 5, p. 470–479, Aug. 1950. Statistics on the value of mineral production from the various classes of rocks in the United States in 1946 are discussed. Fluids and sedimentary rocks constituted 48 and 36 percent, respectively, of the entire value of $7,500,000,000, with fuels accounting for 77 percent of total. A table of all minerals produced, classified by rock type, is included. V. S.

McKenney, J. Wilson.

He named Lake Cahuilla: Desert Mag., v. 10, no. 5, p. 11–13, illus. incl. port., Mar. 1950. Biographical sketch of William Phipps Blake, 1826–1910.

Mackin, Joseph Hoover.

1. Engineering geology of West Seattle: Trend in Engineering at the University of Washington, v. 1, no. 3, p. 24–26, illus., July 1949. The general geology and ground water relationships in their bearing on the Alki Avenue slide problem are discussed.

Mackin, Joseph Hoover—Continued

2. The down-structure method of viewing geologic maps: Jour. Geology, v. 58, no. 1, p. 55–72, illus., Jan. 1950. The method consists in viewing geologic maps down the slope of inclined planes, surface traces of which are the contact lines on the map, so as to see map patterns as structures. It is illustrated by applications to a simple plunging monocline and a recumbent fold, showing the difference between map-pattern trends and true structural trends. V. S.
3. (and Nelson, Willis H.). Early Tertiary welded tuffs in the Iron Springs district, Utah [abs.] : Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1528, Dec. 1950.

McKinley, Glenn Ernest.

A discussion of red granites [abs.]: N. C. Acad. Sci. Proc. *in* Elisha Mitchell Sci. Soc. Jour., v. 66, no. 2, p. 117, Dec. 1950.

McKinney, Charles R. *See* Urey, H C., 1.

McKinnon, Frederick Allan.

Northwest Territories and Norman Wells [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2252, Nov. 1950.

McKinstry, Hugh Exton.

[Discussion]: Eng. Min. Jour., v. 151, no. 4, p. 119–120, Apr. 1950. Comments on "Sedimentary strata experience can aid in rock-burst study" by R. W. Wuerker, Eng. Min. Jour., v. 150, p. 61–64, June 1949, in which questions are raised on the interpretation of the stresses and resulting rock failure.

Mackle, Vincent D.

Phases occurring after the initial P phase in earthquakes: Earthquake Notes, v. 21, no. 4, p. 29–31, Dec. 1950. Explanations are proposed for the existence of a phase following the initial P phase which has been observed in the seismograph records of earthquakes in Mexico, the West Indies, and off the northwest coast of the United States.

McKnight, Edwin Thor. *See* Behre, C. H., Jr., 2.

MacLaren, A. S. *See* Canada Geological Survey, 22.

McLaren, Digby Johns. *See* deWit, R.; Harker, P.

McLaughlin, Dean Benjamin.

1. A suggested correlation of Triassic areas of the eastern United States: Pa. Acad. Sci. Proc., v. 24, p. 161–169, 1950. The correlation of beds of the Newark group, from localities in Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Virginia, and North Carolina, is shown in three tables and discussed.
2. A contact of the Sibley series with the basement complex [Ont.] [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 227, 1950.

McLaughlin, Donald Hamilton.

1. Research in the mineral industries: Black Hills Engineer, v. 29, no. 2, p. 32–36, Nov. 1949. An address, delivered at the South Dakota Conference on Industrial Research, October 1949, of which a part is devoted to a discussion of the place of geology in ore exploration.
2. The Homestake mine: Geol. Assoc. Canada Proc., v. 2, p. 27–35, Apr. 1950; reprinted from Canadian Min. Jour., v. 70, no. 12, p. 49–53, Dec. 1949. Brief summary of the stratigraphy, structure, mineralization, and ore bodies in the Homestake gold mine, South Dakota.

McLaughlin, Kenneth Phelps.

1. (and Enbysk, Betty B.). Middle Cambrian trilobites from Pend Oreille County, Washington: Jour. Paleontology, v. 24, no. 4, p. 466–471, illus., July 1950. Trilobites from the Metaline limestone of Pend Oreille County, Washington, including the genera *Bathyuriscus*, *Elrathia*, *Elrathina*, *Olenoides*, *Ogygopsis*, and *Taxioura*, are described. The Middle Cambrian age of the formation is substantiated; it appears to be in part equivalent to the Burgess shale member of the Stephen formation of British Columbia. V. S.

McLaughlin, Kenneth Phelps—Continued

2. (and Simons, Merton E., and Wood, William H.). Preliminary paleontologic report on the Paleozoic of northeastern Washington [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1539–1540, Dec. 1950.
3. (and Honkala, Fred S.). Problems of the Wells and Brazer formations in southeastern Idaho [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1560; Dec. 1950.

McLaughlin, Thad Gerald.

Ground water in the Julesburg area, Colorado: Colo. Water Conserv. Bd., Ground Water Ser., Circ. 1, 20 p. (‡), illus., July 1948. The rocks outcropping in the Julesburg area, Colorado, are chiefly clays, sands, and gravels of Tertiary age overlain by alluvium and terrace deposits of Quaternary age. Ground water in moderate to large quantities is found only in the alluvium and possibly in a porous zone in the Brule clay. V. S.

McLean, James Douglas, Jr.

1. A summary of the foraminiferal guide fossils for the Atlantic Coastal Plains region between New Jersey and Georgia. 3 sheets (‡). Published by the author, Alexandria, Virginia, 1949. Sheet 1 contains notes on the Foraminifera from New Jersey, Delaware, Maryland, Virginia, North and South Carolina, and Georgia. Sheet 2 lists the guide Foraminifera with the literature reference. Sheet 3 is a preliminary correlation chart of the species for Maryland, Virginia, and the Carolinas.
2. Card catalogue of American Foraminifera. Published by the author. Alexandria, Virginia, 1950. A continuing catalogue, issued in sets of 50 cards each, of diagnostic species of American Gulf Coast foraminiferal zones. Two sets have been issued to the end of 1950.
3. Later Tertiary foraminiferal zones of the Gulf Coast. 20 p. (‡). Published by the author, Alexandria, Virginia, 1950. A tabulation of the Upper Tertiary foraminiferal guide zones of the Gulf Coast area. A selected bibliography of 105 references constitutes the source material from which, for each zone, the citations, species, and pertinent quotations are given.
4. Stratigraphic study of well at Crisfield, Somerset County, Maryland: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 1, p. 133–138, Jan. 1950. Cretaceous, Tertiary, and Recent stratigraphy, as shown in the 1302-ft. Crisfield well, is outlined, and Foraminifera new for Maryland are listed. Comparison with data from the nearby Bradshaw well indicates that local Pleistocene thickness is more variable than supposed. V. S.

McLearn, Frank Harris.

(and Kindle, Edward Darwin). Geology of northeastern British Columbia: Canada Geol. Survey Mem. 259, 236 p., illus. incl. geol. maps, 1950. A comprehensive report covering the physical features, stratigraphy, structure, paleogeography, and economic geology of the northeastern section of British Columbia. A partial geologic map of the area, on a scale of one inch to 10 miles, and several smaller geologic maps of specific areas, are included.

McMurdie, Howard Francis.

(and Sullivan, Barbara, and Mauer, Floyd A.). High-temperature X-ray study of the Mn_3O_4-Fe_3O_4 system [abs.]: Am. Ceramic Soc. Bull., v. 29, no. 3, p. 128, Mar. 1950.

McMurray, Lynn Lloyd. *See* Van Horn, E. C.

McNair, Andrew Hamilton. *See* Kurtz, V. E.; Wheeler, H. E., 2.

McNeal, John D. *See* Horner, S. E.

MacNeil, Francis Stearns.
Pleistocene shore lines in Florida and Georgia: U. S. Geol. Survey Prof. Paper 221–F, p. 95–107, illus., 1950. Four marine terraces and shore lines are recognized, described, and correlated. The study was originally undertaken to show possible relationship between Pleistocene terraces and the land pebble phosphate deposits. It is concluded that no such relationship exists, and that the evidence for Pliocene age is much stronger than that for Pleistocene age.

McNulty, Charles Lee, Jr. *See* Hussey, K. M., 1.

McTaggart, Kenneth Cunningham.
Keno and Galena Hills, Yukon (two maps): Canada Geol. Survey Paper 50–20, 1950. Two geological maps of adjoining areas, Keno Hill and Galena Hill, in central Yukon, 220 miles north of Whitehorse, on a scale of 1 inch to 1,000 feet. Descriptive notes on the rocks and mining properties are given. Lead and silver are the principal ores.

Maddox, David C.
Use of two-color column in graphic logs: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 4, p. 782–784, Apr. 1950. A five-section well log, with standardized color scheme and symbols, is described.

Maddox, Gerald C.
Stratigraphy and oil possibilities of the marine Permian and Pennsylvanian in northwestern Oklahoma [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 620, Mar. 1950.

Magnusson, Adelynn. *See also* Burr, A. C.
Sulfur in North Dakota lignite: N. Dak. Acad. Sci. Proc., v. 3, 1949, p. 18–21, Jan. 1950. Sulfur content, as sulfate, pyritic, and organic forms, is given for 11 samples of lignite. The total amount ranges from 0.20 to 1.0 percent.

Maher, John Charles.
1. Pre-Pennsylvanian rocks along the Front Range of Colorado: U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart no. 39, 1950. The Ordovician and Mississippian strata are described and various sections are given. Three cross sections, one along the Front Range and two extending eastward from the Range to the Kansas border are shown.
2. Detailed sections of pre-Pennsylvanian rocks along the Front Range of Colorado: U. S. Geol. Survey Circ. 68, 20 p. (‡), illus., June 1950. Twelve detailed sections of pre-Pennsylvanian rocks outcropping along the Front Range of Colorado, based on microscopic laboratory examination of samples, are presented. A table shows the previous and present classification of formations used and correlates them with the subsurface units of eastern Colorado. V. S.

Main, Frederic H.
Structure and stratigraphy of the Inde-Cieneguillas district, Durango, Mexico [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1483, Dec. 1950.

Main, Margaret S. *See also* Kerr, P. F., 3.
Occurrence and microscopic examination of reference clay mineral specimens, Pt. 2, Microscopic examination: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 5, p. 15–57, illus., Apr. 1950. Notes on the origin, composition, impurities, and history of typical clay specimens from various localities in the United States.

Malaise, Rene.
The constriction theory: Earth Sci. Digest, v. 4, no. 8, p. 3–10, illus., Mar. 1950. The theory, first published in 1934 by N. H. Odhner, accounts for vertical crustal movements through shrinking and expansion caused by temperature changes. A brief summary, extracted from a book to be published in Sweden, applies the theory to orogeny, earthquakes, and volcanism with reference to Atlantis. V. S.

Maldonado-Koerdell, Manuel.

1. Sobre el hallazgo de *Rhynchonella lacunosa* (Quenstedt), *Aucella sp.* y otros fósiles en la Sierra de Cruillas, Tamps., Mexico: Soc. Mex. Geog. Est. Bol., v. 66, nos. 1–2, p. 93–107, illus., July–Oct. 1948. The finding of *Rhynchonella lacunosa, Aucella* sp., and other forms in the Sierra de Cruillas, Tamaulipas State, Mexico, permits correlation with strata in the Sierra de la Catorce, San Luis Potosi, and in the Sierra Madre Oriental, Tamaulipas. Similarity of paleogeographic and paleoecologic conditions during Upper Jurassic time is indicated. Columnar sections of each region are given.
2. Nueva equisetal del Cretacico Superior de Coahuila, Mexico: Asoc. Mex. Geól. Petrol. Bol., v. 1, no. 1, p. 27–34, illus., Nov. 1949. Describes a new species, *Neocalamites barcenai*, from Upper Cretaceous strata in Coahuila Province. V. S.
3. Peces fósiles de México: II. Dipnoos, ganoides y teleosteos: Soc. Mexicana Historia Nat. Rev., tomo 10, nos. 1–4, p. 241–246, illus., Dec. 1949. Continues the catalog of fossil fish occurrences in Mexico, listing eight specimens from the Cretaceous.
4. Los estudios paleobotánicos en México, con un catálogo sistemático de sus plantas fósiles (excepto Tallophyta y Bryophyta): México Univ. Nac., Inst. Geología, Bol. 55, 72 p., 1950. The catalog of fossil plants is arranged alphabetically by genus and species, and also includes a section showing stratigraphic distribution and taxonomic distribution. A bibliography is given, and a résumé of paleobotanical studies in Mexico.
5. El tiempo en la geología: Petróleos Mexicanos, no. 77, p. 1–24, Jan. 1950. A general discussion of geologic time and the various methods of measuring it both in absolute and relative terms. Two tables are included—one of the geologic periods and one showing relation of the Pleistocene glacial periods to human culture. E. I.
6. Otro ejemplar de *Prionotropis woolgari* (Mantell)? var. *mexicana* Böse y fósiles asociades dèl Estado de Coahuila, Mexico: Ciencia, v. 10, nos. 3–4, p. 92–94, illus., May 5, 1950. Discusses the finding of another specimen of the cephalopod, *Prionotropis woolgari* var. *mexicana* from the Upper Cretaceous beds in Arroyo de la Leona, near the Río Bravo, in northern Mexico.
7. Otro equinoide y un braquiópodo del Cretácico Medio inferior del Estado de Colima (México); Ciencia, v. 10, nos. 7–8, p. 206–208, illus., Oct. 15, 1950. Describes specimens of *Tetragramma sp.* and *Kingena wacoensis*, from the Middle Cretaceous of the State of Colima, Mexico.

Mallams, Paula. *See* Tanner, W. F., 2.

Malott, Clyde Arnett, 1887–1950.

The swallow-holes of Lost River, Orange County, Indiana [abs.]: Ind. Acad. Sci. Proc., v. 59, p. 214, 1950.

Mamay, Sergius Harry.

1. Some American Carboniferous fern fructifications; Mo. Bot. Garden Annals, v. 37, no. 3, p. 409–477, illus., Sept. 1950. Fructification species of ferns in coal balls from various American localities are discussed and compared with European species. Several distinctly new entities are recognized, including seven new species, one new genus, one new variety, and emendations. Descriptions, illustrations, and a bibliography are given. V. S.
2. (and Andrews, Henry Nathaniel, Jr.). A contribution to our knowledge of the anatomy of *Botryopteris;* Torrey Bot. Club. Bull., v. 77, no. 6, p. 462–494, illus., Nov.-Dec. 1950. Describes a new species of coenopterid fern, *Botryopteris trisecta*, from a coal ball collected from the Calhoun horizon (Upper Pennsylvanian) in southern Illinois. The plant is comprehensively described and discussed, and the species is compared to other species of the same genus.

Mandarino, Joseph A.

The minerals of the Champion, Michigan, area: Rocks and Minerals, v. 25, nos. 11–12, p. 563–565, illus., Nov.-Dec. 1950. Brief notations on the minerals collected from the Beacon mine dumps and the Phenix pits, near Champion, on the Upper Peninsula of Michigan. Pyrite, hematite, siderite, magnetite, goethite, chlorite, tourmaline, and quartz are among those listed.

Mandra, York T.

Studies on fossil silicoflagellates [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1539, Dec. 1950.

Manly, Robert L., Jr.

The differential thermal analysis of certain phosphates: Am. Mineralogist, v. 35, nos. 1–2, p. 108–115, illus., Jan.-Feb. 1950. Some phosphates give endothermic reactions at low temperatures, indicative of a loss of water of crystallization. At higher temperatures these reactions are smaller and correlate with loss of hydroxyl, or possibly fluorine. Hydrous aluminum-phosphates commonly recrystallize on heating, with formation of different structures. V. S.

Mann, Robert.

(and Schmidt, Eugene). Radio wave prospecting for structure: World Oil, v. 131, no. 6, p. 92, illus., Nov. 1950. Outlines briefly the method of exploration for structure by recording radio frequency waves transmitted through the ground. Instruments have been developed which give continuous recording from an airplane, a car, or equipment carried on foot. V. S.

Mann, Virgil I. *See also* Emmons, R. C.

A spot test for phosphorus in rocks: Jour. Sed. Petrology, v. 20, no. 2, p. 116–117, June 1950. "Acid ammonium molybdate will react with soluble phosphates to form a yellow precipitate. A technique has been devised which utilizes this principle to identify phosphorus-bearing minerals directly upon a rock surface."

Manning, George A.

(and Ogle, Burdette A.). Geology of the Blue Lake quadrangle, California: Calif. Dept. Nat. Res., Div. Mines, Bull. 148, 36 p., illus. incl. geol. maps, July 1950. The Blue Lake quadrangle, in Humboldt County and largely within the northern Coast Ranges, is characterized by Tertiary, Jurassic, and older formations. Structurally it is marked by complex repeated faulting. These features are described, with notes on geomorphology, paleontology, and economic mineral deposits. A bibliography is given. V. S.

Mapes Vasquez, Eduardo.

Los criaderos minerales de "El Bote", Zacatecas, Zac.: México Inst. Nac. Inv. Rec. Miner. Bol. 24, 39 p., illus. incl. geol. map, 1949. The stratigraphy, structure, and ore deposits of El Bote mine area, in the southwestern part of the Sierra de Zacatecas, central Mexico, are described. The strata are Triassic, Jurassic, and Tertiary. Lead, zinc, silver, and gold mineralization occurred during Tertiary time.

Marble, John Putnam.

1. Some applications of autoradiography: Internat. Geol. Cong., 18th, Great Britain, Rept. pt. 2, p. 80–85, illus., 1950; abs., Volume of titles and abstracts, p. 6–7, 1948. "A properly prepared surface of a radioactive mineral, when placed in direct contact with a photographic plate or film for an optimum time will yield valuable information as to relative radioactive content of different parts of the specimen, leaching, infiltration of radioactive matter, movements subsequent to original crystallization and other points. . . . By exposing for the same length of time chips of an unknown mineral with others whose U+Th content is known, a semi-quantitative estimate of the U+Th content of the unanalyzed mineral can be quickly made."

Marble, John Putnam—Continued

2. Lead-uranium ratio and possible geologic age of allanite from Greenwich, Massachusetts: Am. Mineralogist, v. 35, nos. 9–10, p. 845–852, illus., Sept.-Oct. 1950. "Allanite from a pegmatitic lens in the Monson granodiorite at Greenwich, Massachusetts, contains 0.03 Pb, 1.53 Th, 0.095 U. The results of other studies are outlined, and a maximum possible age of about 390 million years is calculated."
3. (chairman). Report of the Committee on the measurement of geologic time, 1949–1950: Natl. Research Council, Div. Geology and Geography, 118 p. (‡), Nov. 1950. Contains progress reports of current work by L. H. Ahrens and P. M. Hurley; an annotated bibliography of articles related to the measurement of geologic time by the chairman; and other information by H. V. Ellsworth and the chairman.
4. Review of recent work in Laboratory of Geophysics, Department of Physics, University of Toronto: Natl. Research Council, Div. Geology and Geography, Rpt. of the Committee on the measurement of geologic time, 1949–1950, Exhibit D, p. 39–42 (‡), Nov. 1950. The work in progress, pertinent to geophysics and geologic time measurement, is described.
5. Annotated bibliography of articles related to the measurement of geologic time: Natl. Research Council, Div. Geology and Geography, Rpt. of the Committee on the measurement of geologic time, 1949–1950, Exhibit F, p. 52–112 (‡), Nov. 1950.

Mardock, E. S. *See* Bush, R. E.

Marel, H. W. van der.

Identification of minerals in soil clay by x-ray diffraction patterns: Soil Science, v. 70, no. 2, p. 109–136, illus., Aug. 1950. X-ray diffraction data for three groups are given: those occurring in the clay separate of soils, those occurring in the clay separate of sediments, and minerals to which those in the clay separate of soils are closely related. The camera, preparation of the sample, readings, calculations, and corrections are described.

Marsell, Ray E.

Rate and processes of enlargement of road cuts in bouldery alluvium [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1528–1529, Dec. 1950.

Marshall, Charles Edmund. *See* Hseung, Y.

Marshall, H. E.

(and Maxey, J. S.). The role of the geologist in constructing Ohio's highways: Ohio State Univ., Eng. Expt. Sta. News, v. 22, no. 2, p. 12–14, 32–34, illus., Apr. 1950. Describes briefly the responsibilities of the highway geologist in the investigation of soil and rock conditions for new highway construction, with particular attention to landslides, peat deposits, and ground water.

Marshall, John. *See* Christensen, H. E.

Martin, Benjamin Herbert.

Humphrey-Gray pool, Jones County, Texas: Abilene Geol. Soc., Geol. Contr., p. 26–30, illus., 1950. The history of discovery, stratigraphy, structure, and producing horizons are described.

Martin, Helen Mary Mandeville.

Geology of Michigan [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1570, Dec. 1950.

Martin, Lawrence.

William Morris Davis: investigator, teacher, and leader in geomorphology: Assoc. Am. Geographers Annals, v. 40, no. 3, p. 172–180, Sept. 1950. A biographical tribute to William Morris Davis, 1850–1934, on the occasion of the 100th anniversary of his birth.

Martin, Maurice. *See* Doll, H. G.

Martínez Portillo, Jesús.

Bibliografía del Ing. D. Ezequiel Ordóñez: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 6, p. 419–428, June 1950. Lists 129 papers.

Martner, Samuel T.

Observations on seismic waves reflected at the core boundary of the earth: Seismol. Soc. Am. Bull., v. 40, no. 2, p. 95–109, illus., Apr. 1950. A comparison is made between amplitudes of waves reflected from the outer boundary of the earth's core and amplitudes of direct body waves. The data suggest that the phase displacement ratios of respective longitudinal waves are larger than reasonable modifications of recognized theories can explain. The evidence, plotted in diagrams, is discussed. V. S.

Mason, Brian Harold.

1. (and Vitaliano, Charles J.). A preliminary account of the naturally occurring antimony oxides [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 286–287, Mar.–Apr. 1950.
2. (and Vitaliano, Charles J.). Bystromite, magnesium antimonate, a new mineral [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1484, Dec. 1950.
3. (and Vitaliano, Charles J.). Further account of the naturally occurring antimony oxides [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1484, Dec. 1950.

Mason, J. W. *See* Wheeler, H. E., 1.

Mason, Martin A. *See also* Rosalsky, M. B.

Geology in shore-control problems, *in* Applied sedimentation, p. 276–290, illus., 1950. Presents several problems of shore control, such as the stabilization of beaches, maintenance of navigation channels, and harbor protection, and indicates the factors involved and ways in which the geologist can assist the engineer in modifying the factors.

Masson, Peter H.

Circular soil structures in northeastern California: Calif. Dept. Nat. Res., Div. Mines, Bull. 151, p. 61–71, illus., 1949. The low mounds of Siskiyou County, 2 to 3 feet high and up to 85 feet in diameter, each surrounded by a ring of loose stones, are described and explained by the freezing and thawing of water-saturated, clayey soil, resulting in a concentration of clay. V. S.

Masters, John A.

Limestone a source rock of petroleum [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1556, Dec. 1950.

Mather, Kirtley Fletcher.

1. (and Roy, Chalmer John, and Thiesmeyer, Lincoln Reuber). Physical geology; a laboratory manual for geology, Part 1. xii, 87 p., illus. Appleton-Century-Crofts, Inc., 35 West 32 St., New York. 1950.
2. Memorial to Wallace Walter Atwood [1872–1949]: Geol. Soc. Am. Proc. 1949, p. 107–112, port., June 1950.

Mather, William Bardwell.

Nonmetalliferous mineral resources in Arkansas: Min. Eng., v. 187, no. 5, p. 577–584, illus., May 1950; A. I. M. E. Trans., v. 187, 1950. Among the deposits described are clays, shales, slates, silica deposits, limestones and dolomites, barite, gypsum, and several others. The variety and distribution of the deposits indicate extensive potential use.

Mathews, Asa A. Lee.

Geology of Brazos County, Texas: Texas Eng. Expt. Sta. Research Rpt. 14, 13 p. (‡), illus. incl. geol. map, May 1950. Describes the stratigraphy of the Eocene and Miocene beds of Brazos County. A bibliography of references for each of the stratigraphic names is included.

Mathews, William Henry.

1. Mount Garibaldi, a "supraglacial" volcano ? [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1484, Dec. 1950.
2. Physical features of the Lightning Lakes Valley, southwestern British Columbia [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1529, Dec. 1950.

Mathieson, A. M.

(and Wadsley, A. D.). The crystal structure of cryptomelane: Am. Mineralogist, v. 35, nos. 1–2, p. 99–101, Jan.–Feb. 1950. Cryptomelane is established as monoclinic. Unit-cell data are given. V. S.

Mathis, Robert W. *See* Barnes, V. E., 1.

Matthes, François Emile, 1874–1948.

1. (chairman). Variations of glaciers in the continental United States and Alaska, 1933–1938: Assoc. Int. Hydrol. Sci., Réunion, Washington, 1939, C. R. tome 2, Comm. des Glaciers, Question 1, Rapport 7, 22 p. [1948?]. Report of the Committee on Glaciers of the Section of Hydrology, American Geophysical Union. Includes a partial bibliography of more than 100 references on Alaskan glaciers.
2. The incomparable valley. xiii, 160 p. illus. Berkeley, Calif. University of California Press. 1950. The geologic interpretation of Yosemite Valley, California, assembled from the author's unpublished notes by Fritiof Fryxell into a most readable and well illustrated book.
3. Sequoia National Park. viii, 136 p. illus., Berkeley, California. University of California Press. 1950. A collection of photographs of Sequoia National Park, California, accompanied by nontechnical, interpretive descriptions of the geologic features. The book, ably edited by Fritiof Fryxell, is an outgrowth of the Sequoia albums, prepared in 1938 by the author to serve as a pictorial guide to the region.

Matthews, A. E.

Applications of geology and soil science to highway problem [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1570, Dec. 1950.

Matthews, Claude W. *See* Byrne, F. E., 4.

Mauer, Floyd A. *See* McMurdie, H. F.

Mauffette, Pierre.

1. Preliminary report on Denholm-Hincks area, Gatineau County: Quebec Dept. Mines, Geol. Surveys Br., Prelim. Rpt. 235, 5 p. (‡), geol. map, 1949. Brief notes on the Grenville series, intrusive rocks, and Pleistocene deposits of the Denholm-Hincks area, north of Ottawa.
2. Notes sur la découverte des sédiments fossilifères de la mer Champlain dans les régions de Val-des-Bois, de Martindale et de Farrellton, P. Q.: Assoc. Canadienne-Française l'Avancement des Sciences Annales, v. 16, p. 100–103, 1950. Reports the discovery of fossiliferous beds of Pleistocene age in the Val-des-Bois region north of Ottawa, Canada.

Maurice, Ovide D.

Razilly map-area, Abitibi-East County: Quebec Dept. Mines, Geol. Surveys Br., Geol. Rpt. 41, 16 p., illus. incl. geol. map, 1950. Describes the general and structural geology of an area of pre-Cambrian volcanics and intrusives in northern Quebec.

Mawdsley, James Buckland.

Pine Channel area, Lake Athabasca district, Saskatchewan (report and map): Canada Geol. Survey Paper 49-27, 10 p. (‡), geol. map. 1949. The bedrock consists of the Tazin gneisses, the Athabaska series of conglomerates and sandstones, and several types of intrusives, all of pre-Cambrian age. The rocks, mineral prospects, and structure of the area are described. V. S.

Maxey, George Burke.

(and Robinson, Thomas William, Jr.). Ground water in Las Vegas, Pahrump, and Indian Spring Valleys, Nevada (a summary) : Nev. State Engineer's Office, Water Res. Bull. 6, 23 p., illus., 1947. A summarized version of Bulletin 5 (1948).

Maxey, J. S. *See* Marshall, H. E.

Maxson, John Haviland.

1. Lava flows in the Grand Canyon of the Colorado River, Arizona: Geol. Soc. Am. Bull., v. 61, no. 1, p. 9–15, illus., JaJn. 1950. In the downstream three-fourths of the river channel the remnants of the olivine basalt lava appear to pertain to the same flow, whereas in the upstream one-fourth several flows may be distinguished. The lowest correlates with the downstream remnants and exemplifies strikingly the lava's fluidity. V. S.
2. Physiographic features of the Panamint Range, California: Geol. Soc. Am. Bull., v. 61, no. 2, p. 99–114, illus., Feb. 1950. "The Panamint Range, California, exemplifies many of the characteristic geomorphic features of basin ranges. The central part of the range was an inselberg on a pre-faulting surface of generally low to moderate relief developed in an arid climate. The Panamint block was brought into strong relief presumably by late Pliocene and early Pleistocene down-faulting of adjacent basin blocks on faults of variable dip. Movement was in part strike-slip; the Panamint Valley block moved northward and down with respect to the mountain block. In addition the Panamint block and adjacent depressed Death Valley block were rotated eastward."
3. Pediments and pediplains [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1556–1557, Dec. 1950.

Maxwell, John A.

Field geology at West Virginia University: Compass, v. 28, no. 1, p. 13–19, illus. incl. geol. sketch map, Nov. 1950. The summer field course in geology is held at Camp Arthur Wood near Alvon, Greenbrier County, in southeastern West Virginia. The stratigraphy and structure of the area are briefly described, accompanied by a columnar section and a geologic sketch map. Silurian, Devonian, and Mississippian strata are present.

Maxwell, Ross Allan. *See* Lonsdale, J. T.

Maync, Wolf.

1. The Cretaceous beds between Kuhn Island and Cape Franklin (Gauss Peninsula), northern East Greenland: Meddelelser om Grønland, Bd. 133, no. 3, 291 p., illus., 1949. A detailed and comprehensive account of the Cretaceous stratigraphy on Kuhn, Sabine, Pendulum, and Clavering Islands, the Wollaston Foreland, Hold-with-Hope Foreland, and Gauss Peninsula along the coast of East Greenland between 73° and 75° N. lat. Sedimentation and facies, the effect of block faulting, and faunal assemblages are discussed. Many detailed columnar sections and an extensive bibliography are included.
2. The foraminiferal genus *Choffatella* Schlumberger in the Lower Cretaceous (Urgonian) of the Caribbean region (Venezuela, Cuba, Mexico, and Florida): Eclogae Geologicae Helvetiae, v. 42, no. 2, p. 529–547, illus., 1949. The stratigraphic and geographic distribution of *Choffatella* is discussed. The classification of the Lituolidae is discussed, an emended description and new localities for *Choffatella decipiens* are given, and notes on *Choffatella peneropliformis* are included. A bibliography is appended.

Mayo, Evans Blakemore. *See* Webb, R. W.

Mead, Robert Everett. *See* Brown, R.

Meade, Grayson Eichelberger.

Early Pleistocene fauna from Frederick, Oklahoma [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1485, Dec. 1950.

Mears, Brainerd, Jr.

1. Faulting in Oak Creek Canyon and a discussion of contrary bending: Plateau, v. 23, no. 2, p. 26–31, illus., Oct. 1950. Discusses the various ways that reverse drag folding can be produced, and concludes that the reverse drag present in Oak Creek Canyon, Arizona, is the result of initial faulting followed by compression which causes buckling of the strata adjacent to the fault.
2. Cenozoic geomorphic history of the Oak Creek Canyon region, Arizona [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1557, Dec. 1950.

Meeker, John E. *See* Romney, C. F., 2, 3.

Meen, Victor Ben.

1. Mineralogy, a science and a hobby: Royal Canadian Inst. Proc., ser. 3A, v. 15, p. 13–22, 1949–50. Presidential address delivered to the Royal Canadian Institute on November 5, 1949.
2. Chubb crater, Ungava, Quebec [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1485, Dec. 1950.

Meholin, Graydon L.

Recent geological developments in western Anadarko basin, Texas and Oklahoma Panhandles: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1530–1539, illus., July 1950; abs., no. 3, p. 622–623, Mar. 1950. Discusses general stratigraphic and structural trends in the subsurface Mississippian and Pennsylvanian beds in the western Anadarko basin, Amarillo district, Texas and Oklahoma Panhandles, revealed by the recent drilling of 12 deep wildcat tests. V. S.

Meinzer, Oscar Edward, 1876–1948.

1. Ground water in the United States; a concise report on the ground-water conditions and resources of the country, the utilization of the ground water, and the scientific investigation and literature relating to the subject: Assoc. Internat. Hydrol. Sci., Réunion, Washington, 1939, C. R. tome 2, Comm. des Eaux Souterraines, Enquete, Rapport 8, 15 p. [1948?].
2. Geology and engineering in the production and control of ground water, *in* Application of geology to engineering practice, Berkey Volume, p. 151–179, illus., Geol. Soc. Am., New York, 1950. Geohydrology, or ground water hydrology, is defined and its principles are outlined. The application of geohydrology in the development of ground-water supplies and in engineering projects is discussed.

Meissner, Fred F.

An epsomite occurrence in the Tintic District, Utah: Rocks and Minerals, v. 25, nos. 3–4, p. 132–133, 179, illus., Mar.-Apr. 1950. Epsomite occurs as a secondary deposit in the form of white hairlike efflorescence in the mine of the Chief Consolidated Mining Co. near Eureka, Utah. V. S.

Mellen, Frederic Francis.

Status of Fearn Springs formation: Miss. Geol. Survey Bull. 69, 20 p., illus., 1950. Defines and discusses the stratigraphic importance of the Fearn Springs formation, a cyclical unit at the base of the Wilcox group (Tertiary) in Mississippi.

Melton, Frank Armon.

1. The Carolina "bays": Jour. Geology, v. 58, no. 2, p. 128–134, illus., Mar. 1950. D. W. Johnson's spring-vent hypothesis for the formation of the bays is criticized, and a revised meteoritic theory is used to show that the causal impact could have occurred at any one of several geologic periods. V. S.
2. The geomorphology and photo-geological study of the "flat-lands", *in* Symposium of information relative to uses of aerial photographs by geologists: Photogrammetric Engineering, v. 16, no. 5, p. 722–744, illus., Dec. 1950; Mines Mag., v. 40, no. 10, p. 37–48, 52, 74, illus., Oct. 1950. The geomorphic types of relatively low-lying areas are listed, structural interpretation is discussed, special features of such areas are enumerated, and geologic interpretation by stereoscopic vision is examined.

Melvin, John Harper.

The Division of Geological Survey: Ohio State Univ., Eng. Expt. Sta. News, v. 22, no. 2, p. 3, 22, Apr. 1950. The Geological Survey of Ohio became, on August 10, 1949, the Division of Geological Survey of the Department of Natural Resources. The duties and responsibilities of the Division are given.

Menard, Henry W., Jr.

1. Current-ripple profiles and their development: Jour. Geology, v. 58, no. 2, p. 152–153, illus., Mar. 1950. Changes in ripple-mark profiles, developed by variations of water velocity, suggest that the profiles preserved in the geologic section may have value as indicators of current velocities in ancient watercourses. V. S.
2. Transportation of sediment by bubbles: Jour. Sed. Petrology, v. 20, no. 2, p. 98–106, illus., June 1950. "Bubbles adhere to sediment in water and facilitate its transportation both in suspension and as bed-load. The physical limitations on the formation of bubble-grain agglomerates are analysed, and natural environments favorable for their occurrence are discussed. The agglomerates influence the sorting as well as the transportation of sediment."
3. Sediment movement in relation to current velocity: Jour. Sed. Petrology, v. 20, no. 3, p. 148–160, illus., Sept. 1950. "Experiments in flumes indicate that the type of movement on a bed of sand may be correlated with mean current velocity. The bottom conditions to be expected if a given current acts on a sand of a given grain size in shallow water are shown in graphic form, and the conditions are discussed."
4. (and Ludwick, John C.). Some theoretical aspects of density currents [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 172, 176, Apr. 27, 1950.

Mendoza, Raúl Escalante. *See* Salas, G. P.

Meneses de Gyves, Javier.

Zonas micropaleontológicas del Oligoceno del noreste de Mexico: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 1, p. 71–81, illus., Jan. 1950. Foraminifera species of Oligocene age encountered in the drilling of wells in northeastern Tamaulipas, Mexico, are listed and figured. On the basis of the Foraminifera, the beds are subdivided into the Vicksburg, Frío, Anahuac, and Catahoula formations and into marine and brackish water zones.

Merker, L. *See* Moore, C. H., Jr.

Merrell, Richard H.

The distribution and frequency of Alaskan earthquakes, 1939–1948: Seismol. Soc. Am. Bull., v. 40, no. 4, p. 267–269, map, Oct. 1950. Alaskan earthquakes during 1939–48 were of low intensity and were concentrated in the central and south-central portion of the country, with the greatest frequency at Fairbanks and in the area of the Kenai Peninsula. The known epicenters and frequency distribution are mapped. V. S.

Merriam, Patricia.

Ice caves: Natl. Speleol. Soc. Bull. 12, p. 32–37, illus., Nov. 1950. "Ice caves are permanent caves in which ice forms and remains far into the summer or throughout the year. Several suggestions as to their origin are presented. The factors necessary for their formation are probably a rock formation with many crevices, cold winters, a good circulatory system, and adequate shading in the summer. A list of ice caves in the United States is presented."

Merritt, Phillip Leonidas.

Uranium exploration in the United States: Canadian Min. Met Bull. 460, p. 438–443, illus., Aug. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 289–294, 1950; Rocks and Minerals, v. 25, nos. 7–8, p. 363–370, July–Aug. 1950. The exploration program of the Atomic Energy Commission is outlined and areas of specific interest—Colorado Plateau, Colorado Front Range, Sunshine mine in Idaho, the Upper Peninsula of Michigan, and Marysvale, Utah, are described. Possible low-grade sources are also considered.

Merwin, Herbert Eugene.

Acceptance of the Roebling Medal of the Mineralogical Society of America: Am. Mineralogist, v. 35, nos. 3–4, p. 258, Mar.–Apr. 1950.

Messina, Angelina Rose. *See* Ellis, B. F.

Meyer, Charles. *See* Sales, R. H., 1.

Meyerhoff, Howard Augustus.

1. Industrial minerals in 1949: Min. Eng., v. 187, no. 1, p. 68–73, illus., Jan. 1950. A review of developments and trends in the field of nonmetallic minerals during 1949.
2. Tectonics and the Davis assumptions [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1485–1486, Dec. 1950.

Meyers, Theodore Ralph.

Foundry sands of New Hampshire: N. H. State Plan. Dev. Comm. Mineral Res. Survey, Pt. 13, 30 p., map, 1950. General data on foundry sands are given, followed by descriptions of the occurrence and distribution of New Hampshire deposits. Mechanical analyses were made by Willis C. Campbell.

Meyrowitz, Robert.

(and Larsen, Esper Signius, Jr.). Immersion liquids of high refractive index [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1486, Dec. 1950.

Michigan University, Lake Hydraulics Laboratory.

Bibliography on beach erosion and related subjects: Mich. Univ., Lake Hydraulics Lab., Research Pub. 1, 86 p., Mar. 1, 1950. Contains approximately 700 references on beach erosion, ripplemarks, sand and sand movement, shore protection, and engineering aspects of beach erosion problems. Annotations are given for about 150 references.

Mickelson, John Chester.

Pleistocene and recent deposits, LeBeau quadrangle, South Dakota [abs.]: Northwest Sci., v. 24, no. 1, p. 36, Feb. 1950.

Middlebrooks, Thomas A.

Earth dams, *in* Applied sedimentation, p. 181–192, 1950. "Investigational, design, and construction features of earth dams are covered in this chapter with specific reference to soil mechanics and geological aspects of all phases of the work."

Mielenz, Richard Childs. *See also* McConnell, D., 1.

(and King, Myrle E., and Schieltz, N. Cyril). Staining tests, *in* Analytical data on reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 7, p. 135–160, July 1950.

Migliorini, C. I. *See* Kuenen, P. H., 3.

Mikami, Harry M.

(and Digman, Ralph E.). Geology of the Branford-Killingworth area, Connecticut [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1486–1487, Dec. 1950.

Miller, Arthur K. *See also* Youngquist, W. L., 1, 2.

1. Iowa Pennsylvanian goniatites: Iowa Acad. Sci. Proc., v. 56, p. 225–228, illus., 1949. Discusses the three species of ammonoids which occur in the Pennsylvanian strata of Iowa. The occurrences are very rare; one specimen of *Paralegoceras* (the only known occurrence in this country) and one of *Wiedeyoceras*. The other four specimens, formerly referred to *Eoasianites* [*Gastrioceras*] *excelsus* (Meek), are given a new species name, *Eoasianites wilsoni* and one is designated as the holotype.
2. (and Downs, Harold Robert). Tertiary nautiloids of the Americas, supplement: Jour. Paleontology, v. 24, no. 1, p. 1–18, illus., Jan. 1950. Representatives of *Eutrephoceras*, *Cimomia*, *Hercoglossa*, *Deltoidonautilus*, and *Aturia* from various geologic periods and areas in the United States, Colombia, Trinidad, Peru, and Cuba are described and figured in part. **V. S.**

Miller, Arthur K.—Continued

3. (and Downs, Harold Robert). Ammonoids of the Pennsylvanian Finis shale of Texas: Jour. Paleontology, v. 24, no. 2, p. 185–218, illus., Mar. 1950. Fifteen species in 11 genera from the Finis shale of the Graham formation of north-central Texas, the largest single ammonoid fauna known from the Upper Pennsylvanian, are discussed and illustrated. A new species referable to *Vidrioceras* is established. V. S.
4. *Brittsoceras*, a synonym of *Porcellia:* Jour. Paleontology, v. 24, no. 4, p. 506, July 1950. Assumes responsibility for the erroneous generic name *Brittsoceras*. V. S.
5. (and Downs, Harold Robert). Additional ammonoids from the Mississippion Barnett formation of Texas: Jour. Paleontology, v. 24, no. 5, p. 575–576, illus., Sept. 1950. Additional notes on ammonoids collected from the Mississippian Barnett formation near San Saba, Texas, including a single rare specimen of *Neoglyphioceras*, are given. One new species, *Girtyoceras burmai*, is described.
6. (and Collinson, Charles). A unique Mississippian nautiloid from Kentucky: Jour. Paleontology, v. 24, no. 6, p. 673–674, illus., Nov. 1950. "A large, nodose, discoidal nautiloid from the Meramec of south-central Kentucky is illustrated and described as *Tylodiscoceras unicum*, n. gen. and n. sp."
7. The role of Paleozoic ammonoids in pure and applied geology [abs.], *in* Symposium on fundamentals in paleontology: Jour. Paleontology, v. 24, no. 2, p. 130, Mar. 1950. Paleozoic ammonoid genera from which the complicated Permian forms evolved have been found widely distributed, suggesting that the evolution may not have been restricted exclusively to the region that is now southwestern United States.

Miller, John Robson.

Roosevelt field, Utah, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 147–152, illus., 1950. The Tertiary stratigraphy, structure, and production data of the Roosevelt oil field, northeastern Utah, are briefly presented. The field was opened in 1949.

Miller, Loye Holmes.

A Miocene flamingo from California: Condor, v. 52, no. 2, p. 69–73, illus., Mar.–Apr. 1950. Reports the finding, in Upper Miocene lacustrine clays at Barstow, California, of a tibial fragment that has been tentatively assigned to *Megapaleolodus connectens*. Comparison is made with the fragments from South Dakota, on which the genus was originally established, and the characteristics and relationships are discussed.

Miller, Maynard M.

1. Glacier survey in the Tetons, 1947: Am. Alpine Jour., v. 7, no. 2, p. 172–173, Jan. 1949. Brief notes made during an aerial survey of the glaciers in the Grand Teton National Park, Wyoming. The Teton glaciers are probably post-Pleistocene in age, and are now shrinking rapidly.
2. Aerial survey of Alaskan glaciers, 1947: Am. Alpine Jour., v. 7, no. 2, p. 174–177, Jan. 1949. Notes on glaciers in the vicinity of Juneau, Glacier Bay; upper Alsek River, Cordova; and other areas in Alaska.

Miller, Ralph LeRoy.

1. (and Brosgé, William P.). Geology of the Jonesville district, Lee County, Virginia: U. S. Geol. Survey Oil and Gas Inv. Prelim. Map no. 104 (2 sheets). Scale 1 inch to ½ mile. 1950. The information given on the two sheets consists of a geologic map of the district, several cross sections, columnar section, table of well records, correlation of well records, and a text by the senior author devoted chiefly to a discussion of the structure and oil possibilities of the area. The exposed rocks of the Jonesville district are chiefly Upper Cambrian and Ordovician limestones and dolomites of the Cumberland overthrust block and of the underlying block now exposed as fensters. Eight new formation names are proposed for a section of the Ordovician strata.

Miller, Ralph LeRoy—Continued

2. Developments in Alaska in 1949: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 6, p. 1226–1234, maps, June 1950. Outlines the geological and geophysical exploration for oil in the vicinity of Naval Petroleum Reserve No. 4 in northern Alaska and studies made in the Alaska Peninsula-Cook Inlet area of southern Alaska. V. S.

Miller, Robert Burns.

Annotated bibliography of economic geology for 1944, v. 17, nos. 1–2, viii, 423 p., 1950.

Miller, Stephen W. *See* Poulter, T. C., 1.

Miller, Victor C.

1. Rapid dip estimation in photo-geological reconnaissance: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1739–1743, illus., Aug. 1950. Describes the preparation of a graph, on which are plotted true dip of slopes determined from topographic maps and apparent dip from aerial photographs, and from which the amount of vertical exaggeration in the photographs can be determined.
2. Pediments and pediment-forming processes near House Rock, Arizona: Jour. Geology, v. 58, no. 6, p. 634–645, illus., Nov. 1950. "At the base of the East Kaibab monocline, 6 miles south of House Rock, Arizona, stand two levels of pediment remnants, cut largely in Moenkopi red shales and capped by boulders and gravels of Kaibab limestone. The pediments are produced primarily by lateral corrasion by master streams, aided by rill wash and gully erosion. Pediment cutting has been interrupted by periods of aggradation in which thick protective gravels were spread upon the pediments."

Milligan, W. O. *See* McAtee, J. L.

Mills, Joseph W.

Structural control of orebodies as illustrated by the use of vein contours at the O'Brien gold mine, Cadillac, Quebec: Econ. Geology, v. 45, no. 8, p. 786–807, illus., Dec. 1950. "This paper is an account of the method and results of constructing vein contours for the purpose of visualizing vein deflections in space and correlating them with ore shoots. Such a correlation is shown to exist for the gold-bearing veins of the O'Brien mine indicating that the position and attitudes of sites favorable for late gold deposition were determined principally by vein attitude. Other structural features, such as vein intersections and folds, are shown to have had a strong localizing influence on the ore."

Mills, N. K. *See* Bradish, B. B., 1, 2.

Milne, W. G. *See also* Hodgson, J. H., 2.

Bibliography of seismology: Canada Dominion Observatory Pubs., v. 14, no. 6, Items 7132–7221, July to Dec. 1949, p. 135–145, 1950; no. 7, Items 7222–7417, Jan. to June 1950, p. 147–164, 1950.

Milne, William P.

Relation of electric log resistivities in limestone to oil production: Okla. Acad. Sci. Proc., v. 29 (1948), p. 50–56, illus., Mar. 1950. The production of an oil well can be predicted from curves of a standard composite resistivity log by measuring the deviation between the second and the third curve, computing their departure from parallelism by a given formula, and transposing the values into production figures on the basis of production tests. The method is illustrated for West Edmond field, Oklahoma. V. S.

Milton, Charles.

1. (and Davidson, Norman). An occurrence of natrolite, andradite, and allanite in the Franklin Furnace quadrangle, New Jersey: Am. Mineralogist, v. 35, nos. 7–8, p. 500–507, illus., July-Aug. 1950. "Masses of natrolite containing small crystals of green andradite and dark-brown allanite occur in the weathered debris of a nepheline syenite dike. Optical, chemical, and spectrographic data are given for these three minerals, with a brief discussion of paragenetic relationships. The nepheline syenite contains abundant brown melanite, but no andradite."
2. Nickel-copper-gold mineralogy at the Mackinaw mine, Snohomish County, Washington [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 287, Mar.–Apr. 1950.

Mina Uhink, Federico. *See also* Guzmán, E. J., 2.

1. Notas para la geología de Sinaloa: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 5, p. 345–363, geol. map, May 1950. A brief outline of the sedimentary and igneous rocks (mainly Tertiary and Quaternary) of the State of Sinaloa on the west coast of Mexico. Petrographic notes for approximately 30 specimens are by Hermion Larios. The location of the specimens is shown on the geologic map.
2. Posibles provincias petroliferas Baja California: Petróleos Mexicanos, no. 81, p. 93–96, May 1950. Brief note on three potential petroleum areas of Lower California, Mexico.

Mink, John F. *See* Bates, T. F., 1, 3.

Misener, Austin Donald.

(and Thompson, L. G. D.). Temperature gradients in Ontario and Quebec: Canadian Min. Met. Bull. no. 462, p. 542–545, illus., Oct. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 368–371, 1950. The results of geothermal gradient measurements at several localities are presented. The areas are the Malartic gold field, Delnite mine, King mine in the Thetford area, Kerr-Addison gold mine, New Calumet mine, Lake Shore mine in the Kirkland Lake area, and a well at Toronto.

Miser, Hugh Dinsmore.

1. Manganese deposits of the southeastern states, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 152–169, illus., 1950. The occurrence, distribution, mineralogy, and origin of manganese deposits in the southeastern United States are described. Production and reserve data are also given. A selected bibliography arranged by states is included .
2. Memorial to Joseph Alexander Taff [1862–1944]: Geol. Soc. Am. Proc. 1949, p. 227–235, port., June 1950.

Mississippi Geological Society.

Guidebook, Eighth Field Trip, October 13–15, 1950; Cretaceous of Mississippi and south Tennessee. 54 p., illus. Jackson, Miss. 1950. Contains articles by L. C. Conant and Jules Braunstein on Cretaceous stratigraphy of Mississippi, a selected bibliography by G. W. Field, a road log, various maps, and a list of foraminifera from localities in the area covered by the trip.

Mitchell, Lane.

1. A new classification of the clays of Georgia: Ga. Geol. Survey Bull. 56, p. 96–98, 1950. The clays found in Georgia are classified, according to properties, into kaolinites, montmorillonites, and illites, forming a useful grouping for the ceramic engineer.
2. Thermal analysis of Georgia minerals: Ga. Geol. Survey Bull. 56, p. 99–105, illus., 1950. Brief notes on the thermal analysis of Georgia clays and its use in their identification.

Mitchell, R. C.

Concerning the core of the earth [abs.]: Elisha Mitchell Sci. Soc. Jour., v. 66, no. 2, p. 122, Dec. 1950.

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Mitchell, Richard S.

A description of the quartz minerals found at Bayard, Nebraska: Rocks and Minerals, v. 25, nos. 1–2, p. 3–7, illus., Jan.-Feb. 1950. Describes chalcedony, agate, jasper, and chert characteristic of North Platte River gravel. V. S.

Moebs, Noel N.

History of the geology department at West Virginia University: Compass, v. 28, no. 1, p. 9–12, Nov. 1950. Gives a historical sketch of the department and describes the type of course work.

Moffit, Fred Howard.

1. (and Fellows, Robert Ellsworth). Copper deposits of the Prince William Sound district, Alaska: U. S. Geol. Survey Bull. 963–B, p. 47–80, illus. incl. geol. maps, 1950. Prince William Sound, on the south-central coast of Alaska, was a copper-producing district from 1897 to 1930. The main deposits are associated with greenstone lava flows and intrusives, interbedded with Mesozoic (?) slates and graywackes. The history and present state of the mines and prospects, especially the Beatson-Bonanza and the Ellamar, are described, including the extent of development. V. S.
2. (and Reed, John Calvin, and Washburn, Albert Lincoln). Memorial to Philip Sidney Smith [1877–1949]: Geol. Soc. Am. Proc. 1949, p. 217–225, port., June 1950.

Moir, Leo Hughes, Jr.

Montalvo oil field, Ventura County [Calif.] [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2379, Dec. 1950.

Molard, Pierre. *See* Coulomb, J.

Moneymaker, Berlen Clifford. *See also* Burwell, E. B., Jr., 2.

Geology and foundation treatment of South Holston Dam, Tennessee [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1487–1488, Dec. 1950.

Monnett, Victor Elvert.

(and Brown, Howard E.). The principles of physical geology. vi, 450 p., illus. Boston, Ginn and Co. 1950.

Monroe, John Napier.

Origin of the clastic dikes in the Rockwall area, Texas: Field & Lab., v. 18, no. 4, p. 133–143, illus., Oct. 1950. The presence of bedding and Foraminifera in the clastic dikes of the Rockwall area, Texas, indicates that they were formed by the deposition of marine sediment in tension cracks opened along the sea-floor during Upper Cretaceous time. Several dikes are described and illustrated. V. S.

Montgomery, Arthur.

Geochemistry of tantalum in the Harding pegmatite, Taos County, New Mexico: Am. Mineralogist, v. 35, nos. 9–10, p. 853–866, illus. incl. geol. maps, Sept.–Oct. 1950. "The notable tantalum enrichment in the Harding pegmatite, in northern New Mexico, is believed due to (1) a parental tantalum-rich granite, (2) a uniquely favorable environment, (3) specific absence of tantalum-bearing sphene from all adjacent granite, (4) long-continued deformation acting upon crystallizing granite and pegmatite. A more indirect factor . . . is believed to have been a chemical control exerted by pegmatite assimilation of country rock."

Moody, Graham B.

Foreword, *to* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2381, Dec. 1950. Fifteen papers on Washington, Oregon, and various regions of California, were presented at the meeting of the American Association of Petroleum Geologists, October 20, 1950, of which abstracts are given in the Am. Assoc. Petrol. Geol. Bull. for December, 1950, p. 2381–2386.

Moore, Carl Allphin.

(editor). A symposium on subsurface logging techniques. 113 p., illus. University Book Exchange, Norman, Okla. 1949. Contains ten papers presented at the Subsurface Geological Symposium held at the University of Oklahoma, April 5–6, 1949.

Moore, Charles Henkel, Jr. *See also* Bauer, W. H.

(and Merker, L., and Lynd, L. E.). Observations on the flame fusion growth and structure of rutile crystals [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 127–128, Jan.–Feb. 1950.

Moore, Fred E.

Authigenic albite in the Green River oil shales: Jour. Sed. Petrology, v. 20, no. 4, p. 227–230, illus., Dec. 1950. "Very small crystals of authigenic albite have been found in those layers of the Green River formation [Colorado] with the highest content of organic matter. The nature of the Green River sediments clearly implies a low temperature of formation for the feldspar and suggests a relation between the organic matter and the authigenic mineral."

Moore, J. C. *See* Folinsbee, **R. E., 1.**

Moore, R. Woodward.

Development of geophysical methods of subsurface exploration in the field of highway construction: Highway Research Bd. Bull. 28, p. 73–99, illus., 1950. The application of seismic and resistivity methods to subsurface exploration in connection with problems of highway construction is described and discussed.

Moore, Raymond Cecil.

1. Late Paleozoic cyclic sedimentation in central United States: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 4, p. 5–16, illus., 1950; abs., Volume of titles and abstracts, p. 21, 1948. Describes and discusses the extensive cyclic sedimentation shown by the Pennsylvanian and Lower Permian deposits in Kansas and adjacent areas of the central United States. Types of cycles are differentiated. The problems involved in interpreting geologic history from the features of cyclic sedimentation are considered.
2. Evolution of the Crinoidea in relation to major paleogeographic changes in earth history: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 12, p. 27–53, illus., 1950; abs., Volume of titles and abstracts, p. 77–78, 1948. The evolutionary history of the main crinoid groups is presented, accompanied by a correlation of significant evolutionary changes with stratigraphic and geographic distribution of genera. Paleogeographic changes, due mainly to crustal movements, such as the establishment or interruption of seaways, are considered in their effect on development by either restricting or aiding intermigration.
3. Stratigraphical classification: Geol. Soc. Japan Jour., v. 56, no. 652, p. 39–47, Jan. 1950. An address before the Geological Society of Japan in which the various units of stratigraphic classification, formation, member, etc., are defined and the criteria for their recognition outlined. The separation of the units into two categories, on the basis of physical characters and geologic time concepts, is discussed.
4. (chairman, Am. Comm. Stratigraphic Nomenclature). Note 10—Should additional categories of stratigraphic units be recognized?: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2360–2361, Dec. 1950. Comments on the use of the term "sequence" as treated in the paper by H. E. Wheeler and others, "Stratigraphic classification", v. 34, no. 12, p. 2361–2365, Dec. 1950. **V. S.**

Moorhead, Johnny Bob.

Geology of Fort Worth Basin [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 622, Mar. 1950.

Moorhouse, Walter Wilson.

1. Geology of Osway Township: Ontario Dept. Mines Ann. Rpt. 58, pt. 5 (1949), 27 p., illus. incl. geol. map, 1951. Osway Township is located in the district of Sudbury, approximately 100 miles northwest of the town of Sudbury, Ontario. The area is one of pre-Cambrian sediments, volcanics, and intrusives overlain by glacial sand and gravel. The rocks and structure are described. The gold prospects are described, particularly the Jerome mine, although it is not operating. The colored geologic map is on a scale of 1 inch to 1,000 feet.
2. Preliminary report on O'Sullivan Lake area: Ontario Dept. Mines Prelim. Rpt. 1950–7, 5 p. (‡), geol. map, 1950. Describes the pre-Cambrian rocks, structure, and prospected claims of the O'Sullivan Lake area, Thunder Bay district, northern Ontario.

Moot, C. W., Jr. *See* Johnston, K. H.

Morey, George Washington.

Solubility of quartz and some other substances in superheated steam at high pressures [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1488, Dec. 1950.

Morley, Russell A.

The discovery of an additional Sams Valley, Oregon, meteorite (ECN=+1229, 425): Pop. Astronomy, v. 58, no. 5, p. 236–238, May 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 261–262, 1950. Physical properties of two meteorite specimens from Sams Valley, southern Oregon, are given, together with details of the occurrence.

Morris, H. T.

(and Lovering, Thomas Seward). Supergene and hydrothermal dispersion of heavy metals in wall rocks near ore bodies, Tintic district, Utah [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1488–1489, Dec. 1950.

Mortimore, D. M. *See* Kauffman, A. J., Jr., 2.

Morton, Frank. *See* Barr, K. W.

Moseley, John R.

The Ordovician-Silurian contact near Kempton, Pennsylvania: Pa. Acad. Sci. Proc., v. 24, p. 176–187, geol. sketch maps, 1950. The lithology, structure, age, and stratigraphic relationships of the Martinsburg formation (Ordovician) in the vicinity of Kempton, near Reading, Pennsylvania, are described. The fossils are listed. The field studies indicate that the Martinsburg formation and the overlying Tuscarora quartzite are separated by an angular unconformity.

Moyd, Louis Stephen.

1. Structure of the corundum deposit at Craigmont: Geol. Assoc. Canada Proc., v. 2, p. 51–56, illus., Apr. 1950. Reports the results of a field exploration study of the Craigmont corundum area, Renfrew County, southeastern Ontario. The mineralogy, petrology, and structure of the ore deposit are described. Reserves of inferred ore are estimated at 3,000,000 tons (between surface and adit level) from which 200,000 tons of concentrate could be recovered. Considerably more ore is indicated below adit level.
2. Determination of the coefficient of linear thermal expansion of rock specimens by means of resistance wire (SR–4) strain gauges: Min. Eng., v. 187, no. 6, p. 683–684, illus., June 1950; A. I. M. E. Trans., v. 187, 1950. Describes a method developed in the petrographic laboratory of the Concrete Research Division of the Corps of Engineers at Clinton, Mississippi. The sample preparation, instrumentation, procedure, and computations are described.

Mrose, Mary E.

Studies of uranium minerals (III); saléeite from Schneeberg, Saxony: Am. Mineralogist, v. 35, nos. 7–8, p. 525–530, illus., July–Aug. 1950. Optical, chemical, and X-ray crystallographic data on saléeite are presented. The material from Schneeberg, Saxony, is compared with that from Katanga, Belgian Congo. The formula of the Saxony material is $Mg(UO_2)_2Tr(P.AsO_4)_2.10H_2O$.

Mudge, Melville R. *See* Byrne, F. E., 2.

Muench, Oscar Brauer.

1. Recent analyses for age by lead ratios: Geol. Soc. Am. Bull., v. 61, no. 2, p. 129–132, Feb. 1950. The Pb-U ratios for pitchblende from Colorado, monazite from Manitoba and New Mexico, and euxenite from Colorado are given, and the age of the pitchblende from Wood's mine, Central City, Colorado, is calculated to be 111 million years. The complete analysis of euxenite is included. V. S.
2. Determining geologic age from radioactivity: Sci. Monthly, v. 71, no. 5, p. 298–301, Nov. 1950. Outlines briefly methods of determining geologic age from radioactivity, the accuracy of determinations, and the results for certain minerals. A few details are given on chemical analysis. V. S.

Muilenberg, Garrett A.

(and Keller, Walter David). Carnotite and radioactive shale in Missouri: Am. Mineralogist, v. 35, nos. 3–4, p. 323–324, Mar.–Apr. 1950; Earth Sci. Digest, v. 4, no. 8, p. 24, Mar. 1950. Reports and describes briefly the occurrence of carnotite as a film along a joint in the Spergen limestone, Ste. Genevieve County, Missouri. Investigation with a Geiger counter indicated the presence of a thin bed of radioactive black shale overlying the carnotite occurrence, and possibly the source. It is suggested that the clay mineral of the shale, illite, may be uranium- and vanadium-bearing.

Müller, Florence. *See* Arellano, A. R. V., 1.

Mullerried, Frederick Karl Gustav.

1. Contribución a la geología del Soconusco y región vecina del Sur de Chiapas: Soc. Mex. Geog. Est. Bol., v. 66, no. 3, p. 403–430, illus. incl. geol. sketch map, Nov.–Dec. 1948. A summary account of the physiography, stratigraphy, and geologic history of southern Chiapas, on the Guatemala border, Mexico, to which is added a report made in 1945 on the economic mineral possibilities of the region.
2. Sistematica y origen de los Plagioptychinae: Comision Impulsora y Coordinadora de la Investigación Cientifica, Anuario 1947, p. 197–203, illus., México, D. F., 1949. The characteristics and evolution of the three genera in the pelecypod subfamily Plagioptychinae—*Coralliochama*, *Plagioptychus*, and *Mitrocaprina*, are discussed.
3. Contribución a la geología del Estado de Nuevo Leon: Soc. Mex. Hist. Nat., Rev., t. 10, nos. 1–4, p. 263–276, illus., Dec. 1949. Describes and locates on sketch maps mineral and rock occurrences, and fossil occurrences in Upper Jurassic and Cretaceous strata.
4. Nota acerca de la estratigrafía y roca basal en la región de San Pedro Altetepan, cerca de Almanza, Estado de Veracruz (México): Ciencia, v. 10, nos. 9–10, p. 281–284, illus., 1950. Note on the Jurassic strata and ammonites in the region of San Pedro Altetepan, near Almanza, eastern Mexico.
5. El ing. Ezequiel Ordoñez, 1867–1950: Ciencia, v. 10, nos. 5–6, p. 173–174, port., Aug. 5, 1950.
6. Radiolitido supracretacico de Tlaquiltenango, Estado de Morelos: Soc. Mex. Hist. Nat., Rev., t. 11, nos. 1–4, p. 223–228, illus., Dec. 1950. Describes the first occurrence in Mexico, and in America, of a fossil rudistid, *Durania cornu-pastoris*. The specimen was found in Upper Cretaceous strata at Los Hornos, Estado de Morelos, south of Mexico City. A brief resumé is given of previous descriptions of this species of *Durania*, showing the variability in the valve dimensions.

Munday, W. A. Don, 1890–1950.

The last advance of the glaciers in the Coast Mountains of British Columbia: Assoc. Int. Hydrol. Sci., Réunion, Washington, 1939, C. R. tome 2, Comm. des Glaciers, Question 1, Rapport 6, 5 p. [1948?]. Brief data on the advance and recession of Franklin, Scimitar, and Klinaklini glaciers.

Mundorff, Maurice John.

1. (and Legrand, Harry E.). Ground water in the Catawba and Broad River Basins, North Carolina, *in* Hydrologic data on the Catawba and Broad River Basins, 1872–1945: N. C. Dept. Conserv. Dev., Div. Water Res. and Eng., p. 103–129, illus. incl. geol. map, 1949. Briefly describes the geology and the water-bearing character of the rocks.
2. Flood-plain deposits of North Carolina Piedmont and mountain streams as a possible source of ground-water supply, Preliminary report: N. C. Dept. Conserv. Dev., Div. Mineral Res. Bull. 59, 20 p., illus., 1950. Reconnaissance and test borings were made along streams in the Piedmont and mountain sections of North Carolina to determine the occurrence and extent of their flood plains and the character of underlying alluvial materials. The data indicate that many of the flood plains have a sufficient thickness of permeable sands and gravels to furnish important supplies of ground water. V. S.

Muñoz, Frank J. *See* Luna, J.

Munyan, Arthur Claude.

Apparatus for impregnation of rock: Ga. Geol. Survey Bull. 56, p. 130–133, illus., 1950. Describes the use of a dessicator in connection with the impregnation of friable rock specimens with Canada balsam. The specimen is placed in a beaker in a solution of balsam and benzine (1:5), placed in the dessicator to which a vacuum line has been attached, the pressure reduced, and the air in the rock withdrawn and replaced by the balsam. The specimen is then dried at 100 C. Total time is approximately 15–20 minutes, and several specimens may be done at one time.

Murata, Kiguma Jack. *See also* Stadnichenko, T.; Tunell, G., 2.

(and others). Hydration and base-exchange properties of carnotite, tyuyamunite and related compounds [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1489–1490, Dec. 1950.

Murdoch, Joseph.

Perovskite from California [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 287, Mar.–Apr. 1950.

Murdock, Thomas Glenn.

The mining industry in North Carolina from 1937 to 1945: N. C. Dept. Conserv. Dev., Div. Mineral Res., Econ. Paper no. 65, 57 p., [1950?]. The occurrence of metallic and non-metallic mineral resources in North Carolina is described, with particular attention to mica, clay, and building stone.

Murphy, Leonard M.

United States earthquakes, 1947: U. S. Coast and Geod. Survey Serial 730, 61 p., illus., 1950.

Murphy, Richard. *See* James, W. F.

Murray, Albert Nelson.

The gilsonite deposits of the Uinta Basin, Utah, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 115–118, illus., 1950. Brief general comments on the occurrence and origin of the gilsonite veins in the Tertiary strata of the Uinta Basin, northeastern Utah.

Murray, Grover Elmer, Jr.

1. (and Wilbert, Louis Joseph, Jr.). Jacksonian stage: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 10, p. 1990–1997, Oct. 1950. "Jacksonian is introduced as a time and time-rock unit replacing Jackson formation and Jackson group as a major division of the Eocene sediments of the Gulf and Atlantic Coastal Plain. . . . The original type section of the Jackson group (exposures at Jackson, Mississippi) is designated as typical of the Jacksonian stage. More complete . . . sections . . . are designated as standard sections for comparison. . . . Suggestions for similar establishment of other natural divisions of Gulf Coast Tertiary sediments are made."
2. Geosynclinal deposits in central Gulf region of United States [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 123, Apr. 27, 1950.
3. Lithologic facies of Jacksonian stage, central and eastern Gulf Coast [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 123, 172, Apr. 27, 1950.
4. Mesozoic and Cenozoic sedimentary volumes in central Gulf Coast [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1490–1491, Dec. 1950.

Murray, Harrison Frank.

Advanced field geology: Compass, v. 27, no. 3, p. 113–114, Mar. 1950. Describes the summer course in advanced field geology, given at the University of Colorado, Boulder, Colo., for training in geologic mapping and interpretation. V. S.

Mutch, A. D. *See* Kennedy, G. C., 2; Schmitt, H. A., 4.

Myers, Richmond Elmore.

The value of a research paper in an elementary geology course: Pa. Acad. Sci. Proc., v. 24, p. 230–233, 1950. A paper on the geology of the area of his home town is required of each first-year geology student at Muhlenberg College, Allentown, Pennsylvania. The general outline of the paper, the procedure under which it is compiled, and the criteria for grading are discussed.

Myers, W. Bradley. *See* Bailey, E. H.

Natland, Manley Leonard.

1. The 1940 E. W. Scripps cruise to the Gulf of California, Part 4, Report on the Pleistocene and Pliocene Foraminifera: Geol. Soc. Am. Mem. 43, v, 55 p., illus., Aug. 10, 1950. Systematic descriptions of approximately 155 species of Pliocene and Pleistocene Foraminifera collected from islands in the Gulf of California. Five species are new. Notes on paleoecology are included.
2. Sedimentary features suggesting turbidity flow in deep southern California Tertiary basins [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 177, Apr. 27, 1950.

Needham, Albert Booth.

Investigation of mica deposits at the White Bear, Silver Dollar, Buster Dike, and Hot Shot mines, Custer County, S. Dak.: U. S. Bur. Mines Rpt. Inv. 4693, 54 p. (‡), illus., June 1950. The development and geology of the 4 mica pegmatite deposits in the southern Black Hills are described briefly. The major part of the report consists of detailed mineral descriptions of 11 diamond drill holes. V. S.

Neely, Florence E.

A new seed from Illinois [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 673, Oct. 1950.

Neilson, James M.

Preliminary report on Témiscamie Mountains map-area, Mistassini Territory: Quebec Dept. Mines, Geol. Surveys Br., Prelim. Rpt. 238, 8 p. (‡), geol. map, 1950. Brief report on the pre-Cambrian rocks, consisting of the pre-Mistassini intrusives and the Mistassini series, and structure in the Témiscamie Mts. area, northeast of Lake Mistassini, northern Quebec.

Nelson, D. O.

Method of eliminating gypsum from samples: Micropaleontologist, v. 4, no. 3, p. 21, July 1950. Gypsum in foraminiferal residues can be eliminated by heating the sample in a supersaturated sodium chloride solution and then washing through a screen.

Nelson, John Marshall. *See* McKelvey, V. E., 2.

Nelson, Lloyd Alvino.

Franklin Mountains, *in* West Texas Geological Society Guidebook, 1950 Field Trip, October 7–8, 1950, p. 37–39, illus., 1950. Brief notes on the rocks of the Franklin Mts. north of El Paso, Texas. A columnar section is shown.

Nelson, Reuben Andrew. *See* Stead, F. W., 1.

Nelson, Vincent Edward.

(and Wood, E. Boyne). Preliminary reports on iron resources of western Kentucky: Ky. Geol. Survey Rpt. Inv. 1, 7 p. (‡), 1949. The brown limonitic iron ores of western Kentucky, between the Cumberland and Tennessee Rivers, are described briefly. Notes on past production are given, reserves are estimated, and it is concluded that the ore is not likely to be of economic value.

Nelson, W. B. *See* Fix, P. F.

Nelson, Wilbur Armistead.

Structure and stratigraphy of the Blue Ridge Mountain area of Albemarle and adjacent counties, Virginia [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1491, Dec. 1950.

Nelson, Willis H. *See* Mackin, J. H., 3.

Nesbitt, Robert H.

The work of the geologist in civil engineering: Ohio State Univ., Eng. Expt. Sta. News, v. 22, no. 2, p. 4–8, 23–25, illus., Apr. 1950. The usefulness of geology to engineering is demonstrated by a description of its application to dam construction. Seismograph exploration, diamond-core borings, and petrographic data provide the answers to many questions on the foundations, rock stress, and construction design.

Nettleton, Lewis Lomax. *See also* Goldstone, F.

On the use of geophysical tools: Mines Mag., v. 40, no. 10, p. 49–52, Oct. 1950. A review of the fundamentals of three geophysical methods—magnetic surveys, gravity surveys, and reflection seismograph surveys—in their application to geologic exploration.

New Hampshire State Planning and Development Commission.

Surficial geology of New Hampshire. Scale 1:250,000 or about 1 inch to 4 miles. Concord, N. H. 1950. A single sheet map showing distribution of ground moraine, stratified sand, silt and gravel deposits, boulder trains, and drumlins. Other features indicated are direction of glacial striae, varved clay localities, and cirques.

New Mexico Geological Society.

Guidebook of the San Juan Basin, New Mexico and Colorado, first field conference, November 3–5, 1950. 153 p., illus., 1950. The guidebook contains, in addition to papers and maps which are cited under the individual authors, road logs, maps, cross sections, and information on oil and gas development.

Newmarch, Charles B.

The correlation of Kootenay coal seams: Canadian Min. Met. Bull. no. 455, p. 141–148, illus., Mar. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 91–98, 1950. The methods used in correlation of Kootenay coals of the Crowsnest area, British Columbia, are summarized. A new method, spectrographic ash analysis of trace element content of each coal seam, is outlined and applied. The elements most useful in correlation are Na, Ba, Si, V, Mg, Ni, Sr, and Al. V. S.

Nichols, Herbert B.

Sedimentation studies at Lake Mead: Earth Sci. Digest, v. 5, no. 1, p. 13–22, illus., Aug. 1950. Describes the procedures and techniques that were used in studies at Lake Mead, the artificial lake behind Hoover Dam on the Colorado River. Studies were made to determine (1) the amount of silting, and (2) how much and what kind of salts are being drawn out of the rocks through chemical action at new ground water levels. The results of the investigations are given briefly.

Nicol, David.

Origin of the pelecypod family Glycymeridae: Jour. Paleontology, v. 24, no. 1, p. 89–98, illus., Jan. 1950. "The Glycymeridae evolved from a cucullaeid stock probably during late Jurassic time. A study of the morphologic characters of both families proves that they are remarkably similar, particularly when Cretaceous species are considered. The chronogenetic and geographic evidence confirms the data shown by the morphologic characters."

Nielsen, Eigil.

Studies on Triassic fishes, II: Meddelelser om Grønland, Bd. 146, no. 1, 309 p., illus., 1949; Copenhague Univ. Mus. Minér. Géol., Commun. Paléon. no. 71, 1949. Comprehensive descriptions of *Australosomus kochi*, *A. simplex*, n. sp., *A. pholidopleurides*, n. sp., and *Birgeria groenlandica*, chiefly from the Kap Stosch and Hird Bay areas, East Greenland.

Nielsen, Merrill L. *See* Youngquist, W. L., 2.

Nikiforoff, Constantin C. *See* Hack, J. T.

Nininger, Addie Delp. *See* Nininger, H. H., 1.

Nininger, Harvey Harlow.

1. (and Nininger, Addie Delp). The Nininger collection of meteorites; a catalog and a history. 144 p., illus. Winslow, Arizona, American Meteorite Museum.. 1950. The Nininger collection of meteorites is the result of intensive collecting that has been carried on since 1923 and now contains specimens representing 587 falls. The factual data for the specimens—type, weight, date and locality of discovery—are given, together with field notes for many of them. Numerous illustrations are included.
2. Structure and composition of Canyon Diablo meteorites as related to zonal distribution of fragments: Pop. Astronomy, v. 58, no. 4, p. 169–173, illus., Apr. 1950. Investigations have shown a definite relationship between internal structures and location of the meteorite fragments at Barringer Crater, Arizona. Fragmentation took place, due to unequal distribution of brittle minerals, as the meteor entered the lithosphere, resulting in localized explosions and consequent differences between the outlying meteorites and those nearer to the crater rim.

Nishimura, Eiichi.

On earth tides: Am Geophys. Union Trans., v. 31, no. 3, p. 357–376, illus., June 1950. Discusses the rigidity of the upper mantle of the earth, the particular motion of the earth's surface near an active fault, rigidity of the earth as a whole, tidal variation of latitude, time variation of the elasticity of the earth's crust, and elastic anisotropy of the upper mantle of the earth.

Nixon, Earl K.

1. Oil and gas, *in* Geology and ground-water resources of Barton and Stafford Counties, Kansas: Kans. Univ., State Geol. Survey Bull. 88, p. 21–35, illus., 1950. Tabulates the principal features of the oil and gas pools of Barton and Stafford Counties in central Kansas.

Nixon, Earl K.—Continued

2. (and Runnels, Russell T., and Kulstad, Robert O.). The Cheyenne sandstone of Barber, Comanche, and Kiowa Counties, Kansas, as raw material for glass manufacture: Kans. Univ., State Geol. Survey Bull. 86, pt. 3, p. 41–84, illus., Oct. 30, 1950. Laboratory investigations involving chemical, mechanical, mineralogic, and spectrographic analyses indicate that the Cheyenne sandstone meets the standards for glass sand. The data are presented, together with comments on the reserves and economic aspects.

Noble, James Alexander.

1. Ore mineralization in the Homestake gold mine, Lead, South Dakota: Geol. Soc. Am. Bull., v. 61, no. 3, p. 221–252, illus., Mar. 1950. Mineralization at the Homestake mine can be subdivided into four stages, separated by structural breaks, with gold deposited during the last stage. The ore bodies are replacements of the pre-Cambrian Homestake formation at the intersection of folds, with localization of the ore believed due to the permeability produced by dilatation of the schists. The age and sequence of the mineralization, and why the gold is confined to the Homestake formation are still unanswered questions.
2. Manganese on Punta Concepcion, Baja California, Mexico: Econ. Geology, v. 45, no. 8, p. 771–785, illus., Dec. 1950. Veins of pyrolusite and other minerals are found in Miocene volcanics, intrusives, and Pliocene strata at Punta Concepcion, on the eastern side of Baja California peninsula. The veins are considered to be of primary hydrothermal origin. The rocks, deformation, and mineralization are described and discussed.

Nolan, Thomas Brennan.

The search for new mining districts: Econ. Geology, v. 45, no. 7, p. 601–608, illus., Nov. 1950. Presidential address, delivered to the Society at the El Paso meeting, November 1949. Consideration is given to the search for hypogene mineral deposits related to igneous activity, and several ideas concerning possible distribution are put forth. The usefulness of detailed geologic mapping, reconnaissance geophysical work, geothermal gradient measurements, and geochemical prospecting is discussed.

Noriega, José F.

Los recursos petroliferos: Soc. Mex. Geog. Est. Bol., v. 68, nos. 1–2, p. 63–79. July–Oct. 1949. General discussion of petroleum reserves of Mexico.

Norman, L. A., Jr. *See* Hoppin, R. A.

Norris, Stanley Eugene.

The water resources of Green County, Ohio: Ohio Water Res. Bd. Bull. 19, 52 p. (‡), illus. incl. geol. maps, Jan. 1950. A detailed report on the availability and quality of both ground and surface water in Greene County, Ohio. Conditions in several specific areas within the county are discussed. The section on surface water was written by William P. Cross, and that on the Wisconsin glacial deposits, including the surficial geology map, is by Richard P. Goldthwait.

Northrip, Gerald Albert.

North Pauls Valley field, Garvin County, Oklahoma: Tulsa Geol. Soc. Digest, v. 18, p. 65–66, 1950. Brief notes on the structure and the Ordovician and Pennsylvanian producing horizons of the North Pauls Valley oil field, Oklahoma.

Northrop, Stuart Alvord. *See also* Bass, N. W., 2; Colbert, E. H., 1.

General geology of northern New Mexico, *in* Guidebook for the fourth field conference of the Society of Vertebrate Paleontology in northwestern New Mexico, p. 26–47, illus., 1950. Discusses general features, stratigraphy, structure, and economic geology of northern New Mexico. A generalized geologic section and bibliography are included.

Norton, James Jennings. *See* Page, L. R., 3.

Nuffield, Edward Wilfrid.

Preliminary report on the geology of part of Township 29, Range XIV, District of Algoma: Ontario Dept. Mines Prelim. Rpt. 1950-5, 6 p. (‡), geol. map, 1950. The area of Township 29, on the east shore of Lake Superior, is characterized by pre-Cambrian Algoman (?) granites and pegmatites cut by Keweenawan diabase dikes, and shows radioactive anomalies over both rocks and dikes, the best known of which are at Theano Point. The anomalies over dikes are due to pitchblende deposited by hydrothermal solutions in diabase cracks, fractures, and contacts with granites. V. S.

Núñez Jiménez, Antonio.

Temas espeleológicos Bol. Historia Nat., v. 1, no. 3, p. 105–112 (‡), Nov. 1950. A popular account of ground waters, their role in forming caverns and subterranean terraces, the evolution of caverns in limestone, and the origin of caverns in Cuba. V. S.

Nuttli, Otto W.

The western Washington earthquake of April 13, 1949 [abs.]: Earthquake Notes, v. 21, nos. 1–2, p. 9, Mar.–June 1950.

Oakes, Malcolm Christie.

Mapping the Missouri-Virgil boundary in northeast Oklahoma [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 620, Mar. 1950; Tulsa Geol. Soc. Digest, v. 18, p. 67, 1950.

Oakeshott, Gordon Blaisdell.

1. Geology of the Placerita oil field, Los Angeles County, California: Calif. Jour. Mines and Geology, v. 46, no. 1, p. 43–79, illus., Jan. 1950. Oil accumulation is considered conditioned mainly by the Placerita anticline, and the San Gabriel fault and the folds associated with it. The area is one of Tertiary sediments, including organic shales, dipping off very much older crystalline rocks. V. S.
2. Southern coastal region [Calif.], *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2384, Dec. 1950.
3. Southern mountain region [Calif.] [abs.], *in* Symposium on possible future oil provinces of the Pacific Coast region: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2384–2385, Dec. 1950.

Obert, Leonard.

(and Duvall, Wilbur I.). Generation and propagation of strain waves in rock, Part 1: U. S. Bur. Mines Rpt. Inv. 4683, 19 p. (‡), illus., May 1950. The generation and propagation of strain waves in greenstone, produced by an explosive at distances of 2 to 54 feet, were studied by means of strain gages and recording equipment. Variations of pulse characteristics are analyzed in the records, and physical properties and a petrographic description of the greenstone are included. V. S.

Oborne, Harry W.

Eastern Colorado oil and gas prospects [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 623, Mar. 1950.

O'Brien, J. C.

Mines and mineral resources of Yolo County: Calif. Jour. Mines and Geology, v. 46, no. 3, p. 421–436, illus., July 1950. The mineral resources of Yolo County, in the Sacramento Valley, California, are mainly mercury, construction materials, and natural gas. They are briefly described and mapped, with a listing of mining properties. V. S.

O'Brien, W. A.

(and Donnay, Joseph Désiré Hubert). Crystal optics on microscopic views—a monoclinic case [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 129, Jan.–Feb. 1950.

Ode, William Harlan. *See* Selvig, W. A.

Odell, Noel Ewart.

1. Notes on the geology of the St. Elias Range, Alaska-Yukon Territory, North America: Geol. Soc. London Quart. Jour., v. 106, pt. 1, no. 421, p. 137–139, 1950; Abstracts of Proceedings, no. 1461, p. 92–93, Mar. 28, 1950. Preliminary report on the geological work accomplished during the 1949 field season of "Project Snow Cornice".
2. Yukon-Alaska expedition of the Arctic Institute of North America: Nature (London), v. 165, no. 4192, p. 337–338, Mar. 4, 1950. A brief description of the 1949 field season of the "Project Snow Cornice" in the St. Elias Range on the Canadian-Alaskan boundary. Examination of the bedrock of the area indicates that the St. Elias Range consists primarily of metamorphosed sediments, probably of Paleozoic and Mesozoic age, and granitic and dioritic intrusives. Pleistocene glacial deposits are also present at high elevations.

Oder, Charles Rollin Lorain.

(and Hook, John W.). Zinc deposits of the southeastern states, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 72–87, illus., 1950. The occurrence, mineralogy, and origin of the zinc ores in the Mascot-Jefferson City district, Tennessee, are described in detail, and of the ores in Austinville district in Virginia briefly. Several other districts are mentioned. A columnar section of the Cambrian and Ordovician formations in the east Tennessee-southwest Virginia area and an extensive bibliography are included.

O'Donnell, Hugh John. *See* Selvig, W. A.

Odum, Howard T.

Strontium biogeochemistry, ecosystems, and paleoecological tools: Natl. Research Council, Report of the Committee on a treatise on marine ecology and paleoecology, 1949–1950, no. 10, p. 55–58, Nov. 1950. Outlines and discusses the study of the strontium cycle and indicates the application of strontium analyses of fossil materials to paleoecologic problems.

Oelrich, Thomas M.

A new *Testudo* from Madison County, Montana: Mich. Univ. Mus. Paleontology Contr., v. 8, no. 4, p. 43–58, illus., May 31, 1950. Describes the new species, *Testudo primaeva*, from the vicinity of Sweetwater Creek, Madison County, Montana. The specimen is of probable Lower Miocene age.

Ogden, W. M. M. *See* Kennedy, G. C., 2.

Ogle, Burdette A. *See* Manning, G. A.

Ogryzlo, Stephen Peter.

(and Thomson, James Edgar). Geology of the Toburn mine: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 184–188, illus., 1950. Describes the development, general geology, structure, and ore mineralization of the Toburn gold mine in the Kirkland Lake area, northern Ontario.

Ohle, Ernest Linwood, Jr.

Influence of permeability on ore distribution in limestone and dolomite [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1491–1492, Dec. 1950.

Ohsiek, L. E. *See* Krumbein, W. C., 3.

Oklahoma City Geological Society.

Guidebook, field conference in eastern part of the Ouachita Mountains in Oklahoma, with special reference to the pre-Pennsylvanian and lower Pennsylvanian rocks. 39 p., illus. incl. geol. maps, Nov. 1950. The conference took place Nov. 4–5, 1950. The guidebook contains a discussion of the stratigraphy of the area, road logs, columnar sections, and bibliography.

Okulitch, Vladimir Joseph.

1. *Vacuocyathus*, a new name for *Coelocyathus* Vologdin, 1933: Jour. Paleontology, v. 24, no. 3, p. 392–393, May 1950. The name *Vacuocyathus* is proposed for *Coelocyathus* Vologdin, 1933, preoccupied by *Coelocyathus* Schluter, 1886, and by *C.* Sars, 1857. V. S.
2. Nomenclatural notes on pleosponge genera *Archaeocyathus*, *Spirocyathus*, *Flindersicyathus*, *Pycnoidocyathus* and *Cambrocyathus*: Jour. Paleontology, v. 24, no. 3, p. 393–394, May 1950. Considers *Archaeocyathus* as the type genus of the Archaeocyathidae (*Spirocyathus* and *Flindersicyathus* as synonyms) and *Pycnoidocyathus* the type genus of the Pycnoidocyathidae (*Cambrocyathus* as synonym). V. S.
3. *Monocyathus* Bedford versus *Archaeolynthus* Taylor: Jour. Paleontology, v. 24, no. 4, p. 502–503, July 1950. *Monocyathus* Bedford is upheld against W. Simon's substitution of *Archaeolynthus* Taylor, and Simon's inclusion of *Rhabdocnema* and *Ventriculocyathus* in the latter genus is criticized. V. S.
4. *Pluralicyathus*, new name for *Polycyathus* Vologdin, 1928, not Duncan, 1876: Jour. Paleontology, v. 24, no. 4, p. 503, July 1950. A new name *Pluralicyathus* is proposed for *Polycyathus* Vologdin, invalidated by W. Simon in 1939, and his view that *Archaeocyathellus* is cogeneric is criticized. V. S.
5. Lower Cambrian fossils from near Addy, Washington [abs.]: Geol. Soc. Am. Bull., v. 61. no. 12, pt. 2, p. 1540, Dec. 1950.

Oliphant, Charles W.

Comparison of field and laboratory measurements of seismic velocities in sedimentary rock: Geol. Soc. Am. Bull., v. 61, no. 7, p. 759–787, illus., July 1950. Determination of composition of rocks by field and laboratory study of seismic wave velocities is applied to near-surface, sedimentary rocks. Field and laboratory measurement of 2 types of wave velocities combined with information on the nature of the material, all determined independently, test the validity of the work. The field work was carried on in Osage County, Oklahoma, in Pennsylvanian limestones and shales. Equipment and procedure in both the field and laboratory study are described. Conclusions are drawn.

Olmsted, Franklin H.

Geology and oil prospects of western San Jose Hills, Los Angeles County, California: Calif. Jour. Mines and Geology, v. 46, no. 2, p. 191–212, illus. incl. geol. map, Apr. 1950. The stratigraphy and structure of western San Jose Hills, 25 miles east of Los Angeles, are described. The folding suggests oil possibilities in the southern of the two local anticlines. A bibliography is given. V. S.

Olsen, Frederick Russell.

The fluorine content of some Miocene horse bones: Science, v. 112, no. 2917, p. 620–621, Nov. 24, 1950. Lower Miocene horse bones from Gilchrist County, Florida, were analyzed for fluorine content. The method of analysis is described, the results are tabulated, and the significance is discussed.

Olson, Everett Claire.

The temporal region of the Permian reptile *Diadectes:* Fieldiana; Geology, v. 10, no. 9, p. 63–77, illus., Sept. 29, 1950. The interpretation of the temporal region presented in 1947, which recognized a complete series of temporal elements, has led to a restudy of a series of skulls, the results of which are presented. The recent study upholds the earlier conclusion that a complete series of temporal elements is present in *Diadectes.*

Olson, Jerry Chipman.

Feldspar and associated pegmatite minerals in New Hampshire: N. H. State Plan. Dev. Comm. Mineral Res. Survey, Pt. 14, 48 p., illus., 1950. The properties, uses, mining, and milling of feldspar and other pegmatite minerals are described. The occurrence, size, shape, mineral composition, and areal distribution of pegmatites are discussed. A bibliography is included.

Olsson, Axel Adolf. *See* Pilsbry, H. A.

Omer, Guy C., Jr.

Volcanic tremor (Part 2, The theory of volcanic tremor): Seismol. Soc. Am. Bull., v. 40, no. 3, p. 175–194, illus., July 1950. "It is proposed that volcanic tremor originates in the vibration of laminae which are partly freed by the differential tilting of the surface of the earth around a volcanic vent during an eruption. The topographic evidence around Kilauea caldera is examined, and a probable range of the free vibrating lengths is determined. The various possible modes of vibration are considered, and it is concluded that longitudinal vibration would best explain the observed seismograms."

Ontario Department of Mines.

1. Township of Osway, District of Sudbury, Ontario. Map no. 1949–2. Scale 1: 12,000 or 1 inch to 1,000 feet. [1949?]. Colored geologic map of an area of pre-Cambrian rocks.
2. Gullwing Lake-Sunstrum area, District of Kenora, Ontario. Map no. 1950–2. Scale 1: 63,360 or 1 inch to 1 mile. [1950?]. Colored geologic map of an area of pre-Cambrian, Pleistocene, and Recent rocks.

Ordóñez, Ezequiel, 1867–1950.

Actividad del volcán de Parícutin durante el año de 1947: Comisión Impulsora y Coordinadora de la Investigación Cientifica, Anuario 1947, p. 145–155, illus. México, D. F., 1949. The activity of Parícutin volcano during 1947 is described.

Oriel, Steven S.

Geology and mineral resources of the Hot Springs window, Madison County, North Carolina: N. C. Dept. Conserv. Dev., Div. Mineral Res. Bull. 60, 70 p., illus. incl. geol. map, 1950. Describes the Cambrian strata, beds of unknown age, and the pre-Cambrian crystalline complex. The faulted structure of the area is discussed, and the origin of the Hot Springs window is compared to that of the Engadine window in Switzerland. The barite, shale, other mineral resources, and hot springs are considered. The geologic map is colored and drawn to a scale of 1 inch to 2,000 feet.

Orr, James B. *See* Macdonald, G. A., 1.

Osborn, Elburt Franklin. *See also* Counts, W. E.; Roy, D. M.; Roy, R.; Schairer, J. F., 1.

1. Segregation of elements during the crystallization of a magma: Am. Ceramic Soc. Jour., v. 33, no. 7, p. 219–224, illus., July 1, 1950. "The manner in which ions segregate during the long period of cooling and crystallization of a magma in the earth's crust, whereby rock bodies varying widely in composition are formed, is discussed from the standpoint of composition of liquid, temperature, and the properties of the ions."
2. (and DeVries, R. C., and Tait, D. B.). Invariant points in the quaternary system $CaO-MgO-Al_2O_3-SiO_2$ [abs.]: Am. Ceramic Soc. Bull., v. 29, no. 3, p. 128, Mar. 1950.

Osborne, Freleigh Fitz. *See also* Wahl, W. G.

1. Ventifacts at Mont Carmel, Quebec: Royal Soc. Canada Trans., 3d ser., v. 44, sec. 4, p. 41–49, illus., June 1950; abs., Proc., 3d ser., v. 44, p. 229, 1950. Mont Carmel, a 650-foot hill on the St. Lawrence lowland near Trois Rivières, Quebec, is composed of sand and gravel. It is not a residual, but rather originated as a part of a delta formed when marine waters encroached on the ice-filled St. Lawrence Valley. Wind work has since produced dunes and faceted stones on its upper surface.
2. (and Archambault, Maurice). Hisingerite from Montauban-les-Mines: Naturaliste Canadien, v. 77, nos. 9–10, p. 283–290, Sept.–Oct. 1950; abs., Royal Soc. Canada Proc., 3d ser., v. 44, p. 228, 1950. Describes hisingerite from the Tétreault mine in the Montauban-les-Mines area, Quebec. Physical, chemical, and optical data are given, and the origin is discussed.

Osborne, Freleigh Fitz—Continued

3. Marine crevasse fillings in the Lotbinière region, Quebec: Am. Jour. Sci., v. 248, no. 12, p. 874–890, illus., Dec. 1950. "Peculiar ridges in an extensive region on the south shore of the St. Lawrence River near Quebec are the result of the filling of crevasses in drift-burdened and stagnant ice by sands and gravels of a late Pleistocene sea." The origin is discussed in its bearing on the extent and duration of the ice and the Pleistocene sea level. V. S.

Osmond, John C., Jr.

Recent small-scale deformation of limestone strata, Concho County, Texas: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1743–1747, illus., Aug. 1950. Describes the recent buckling of exposed Leuders limestone of the Permian Wichita group in Concho County, Texas, resulting in an arcuate ridge 10 feet high, 40 feet wide, and 1,000 feet long. Local alternation of thin limestone and shale strata is considered the cause. V. S.

Osorio Tafall, Bibiano F.

La Isla de Cedros, Baja California: Soc. Mex. Geog. Est. Bol., v. 66, no. 3, p. 317–402, illus. incl. geol. map, Nov.–Dec. 1948. An areal study of Cedros Island, off the west coast of Lower California, Mexico, of which five pages are devoted to geology. The generalized geologic map shows pre-Cretaceous metamorphics, Mesozoic intrusives, Cretaceous and Tertiary sedimentary strata, and Quaternary volcanics.

O'Sullivan, Robert B. *See* Walton, M. S., Jr.

Ousdal, Asbjorn P.

Microscopic study of fractures in unidentified fossil algae discovered in silicified slate [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 674, Oct. 1950.

Overbeck, Robert Milton.

Southern Maryland, *in* The coastal plain geology of southern Maryland: Johns Hopkins Univ. Studies in Geology, no. 16, pt. 3, p. III–15 to III–56, illus. incl. geol. maps, 1950. The Cretaceous and Tertiary formations exposed in southern Maryland are described in a guidebook prepared for the Geological Society of America field trip in November 1950. Road logs are given and route maps show the geology.

Overholt, J. L.

(and Vaux, G., and Rodda, J. L.). The nature of "arizonite": Am. Mineralogist, v. 35, nos. 1–2, p. 117–119, Jan.–Feb. 1950. X-ray data show "arizonite," $Fe_2O_3 \cdot 3TiO_2$, to be an impure mixture of hematite, ilmenite, anatase, and rutile, probably weathered ilmenite. V. S.

Ovey, C. D.

Dr. J[oseph] A[ugustine] Cushman [1881–1949]: Nature (London), v. 163, no. 4155, p. 944, June 18, 1949.

Oxley, Philip.

Chazyan stratigraphy west of the Champlain thrust, New York and Vermont [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1492, Dec. 1950.

Pabst, Adolf.

1. A structural classification of fluoaluminates: Am. Mineralogist, v. 35, nos. 3–4, p. 149–165, illus., Mar.–Apr. 1950. The examination of ten known structures, illustrated by diagrams, leads to distinguishing seven classes of octahedral linkage: separate octahedra, chains, interrupted sheets, sheets, interrupted frameworks, and two distinct patterns of framework. The derived generalized types of AlF_6 structure are described and compared with those of silicates. V. S.
2. X-ray examination of uranothorite [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1492–1493, Dec. 1950.

Page, Benjamin Markham.

Geology of the Broadway Tunnel, Berkeley Hills, California: Econ. Geology, v. 45, no. 2, p. 142–166, illus., Mar.–Apr. 1950. A "case history" of the Broadway highway tunnel, near Oakland, California, in which the stratigraphy, structure, and petrology of Miocene and Pliocene formations are considered from the engineering geology standpoint. V. S.

Page, Lincoln Ridler. *See also* Hanley, J. B.

1. Beryllium in Colorado: Mining Yearbook, p. 37, 39–40, illus., Colo. Min. Assoc., Denver, Colo. 1950. Describes the various types of beryl concentrations in pegmatite deposits and the localities in Colorado that have produced beryl.
2. Uranium in pegmatites: Econ. Geology, v. 45, no. 1, p. 12–34, illus., Jan.–Feb. 1950. Describes the uranium and rare-earth minerals that are common accessory constituents of pegmatites, usually those rich in potash feldspar. The mineral content can generally be estimated with sufficient accuracy for development, although in the United States no pegmatites have been found rich enough for exploitation for uranium only. V. S.
3. (and Norton, James Jennings). Methods used to determine grade and reserves of pegmatites [abs.]: Econ. Geology, v. 45, no. 4, p. 387–388, June–July 1950.

Page, Thornton.

The origin of the earth: Smithsonian Inst. Ann. Rpt. 1949, p. 161–174, illus., 1950. A résumé and discussion of the various hypotheses of origin, both from the geological and astronomical points of view.

Palache, Charles. *See also* Frondel, C., 1.

1. Fayalite at Rockport, Massachusetts: Am. Mineralogist, v. 35, nos. 9–10, p. 877–881, illus., Sept.–Oct. 1950. "The facts are collected concerning the place and mode of occurrence of fayalite at four localities on Cape Ann, Mass., with a description of one of them which yielded the largest and best-developed crystals. All of these occurrences are in pegmatite of a granitic nature but evidence is presented which seems to show that all are xenoliths, genetically related to a fayalite-bearing nordmarkite granite, older than and intruded by the dominant Rockport granite."
2. Paralaurionite: Mineralogical Mag., v. 29, no. 211, p. 341–345, illus., Dec. 1950. "Paralaurionite from a new locality, the Mammoth mine, Arizona, is described. X-ray study and chemical analysis confirm the original characteristics of the mineral as described in 1899 by G. F. Herbert Smith. Measurements are given which establish new forms on crystals from Arizona and also on crystals from a South American locality. A complete angle table for twenty-eight forms is presented."

Pangborn, Mark White, Jr.

The earth for the layman: Am. Geol. Inst. Rpt. 2, 50 p. (‡), June 1950. A bibliography of selected books and pamphlets (mostly non-technical) on geology, mining, rocks, minerals and gems, fossils, evolution and related subjects. The arrangement is by topics and geographically by states.

Pardee, Joseph Thomas.

Late Cenozoic block faulting in western Montana: Geol. Soc. Am. Bull., v. 61, no. 4, p. 359–406, illus. incl. sketch maps, Apr. 1950. The mountain ranges and basins of western Montana are distinguished into those formed by block faulting and those produced by warping. Faulting occurred mainly during Oligocene-Pliocene time. Various block-fault systems are described and shown in cross sections. A bibliography is given. V. S.

Park, Charles Frederick, Jr.

Structure in the volcanic rocks of the Olympic Peninsula, Washington [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1529, Dec. 1950.

Parker, Garald Gordon.

(and Stringfield, Victor Timothy). Effects of earthquakes, trains, tides, winds, and atmospheric pressure changes on water in the geologic formations of southern Florida: Econ. Geology, v. 45, no. 5, p. 441–460, illus., Aug. 1950. Water levels in wells in southern Florida fluctuate not only from discharge and recharge, but also from the effects of earthquakes, trains, tides, winds, and atmospheric pressure. The effects of these factors are described and illustrated by graphs. V. S.

Parker, John Mason, 3d.

Feldspar and mica deposits of southeastern United States, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 42–48, 1950. The type, strike and dip of the country rock of 16 pegmatite districts in the southeastern states are tabulated. Other tables summarize the mineralogic, structural, and economic features of the pegmatites.

Parker, Travis J. *See* McDowell, A. N.

Parkert, C. W.

(and Perkins, Alfred T., and Dragsdorf, R. D.). Decomposition of minerals by grinding: Kans. Acad. Sci. Trans., v. 53, p. 386–397, illus., 1950. Kaolinite, montmorillonite, and muscovite were dry ground in a ball mill. The effect on average particle size, solubility, pH, base exchange capacity, thermal curves, and X-ray diffraction patterns is discussed. It is concluded that grinding permits the formation of amorphous materials differing from the original materials in chemical reactions and crystal structure.

Parks, Bryan C. *See* Hendricks, T. A., 1; Selvig, W. A.

Parry, V. F.

Production, classification, and utilization of western United States coals: Econ. Geology, v. 45, no. 6, p. 515–532, illus., Sept.–Oct. 1950. "This paper reviews and summarizes pertinent technical and economic facts relating to the utilization of western coals, and discusses classification of coal of interest to the chemical engineer. Average chemical analyses of coal produced in 44 mining fields are presented."

Parvis, Merle.

Drainage pattern significance in airphoto identification of soils and bedrocks: Highway Research Board Bull. 28, p. 36–62, illus., 1950; reprinted in Photogrammetric Engineering, v. 16, no. 3, p. 387–409, illus., June 1950. The report on the analysis of drainage patterns for their use in the identification of regional soils and bedrocks is the result of a study conducted by the Joint Highway Research Project at Purdue University. It is concluded that there is a high degree of correlation between the drainage patterns and the soils and bedrocks, and that the patterns recognized in airphotos can be relied on to aid airphoto identification of soils and bedrocks.

Paslay, L. C.

A single boat seismograph system [abs.]: Geophysics, v. 15, no. 1, p. 152, Jan. 1950.

Patterson, C. B.

(and Simmons, H. B.). Contribution of model analysis to the solution of shoaling problems, *in* Applied sedimentation, p. 300–318, illus., 1950. Various problems of shoaling are discussed and illustrated by specific examples. Among these are shoaling in an open river (Pryors Island Reach, Ohio River), shoaling in a tidal stream (Deepwater Point Range, Delaware River, and Savannah Harbor), and shoaling of an entrance channel to a bay or estuary (Absecon Inlet, New Jersey).

Patterson, Charles Meade. *See* Kerr, P. F., 2.

Patterson, Sam H., Jr. *See* Knechtel, M. M., 3.

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Patterson, T. A.

The Missouri Ozarks: Mineralogist, v. 18, nos. 7–8, p. 356, 358, July-Aug. 1950. Mineral collecting in McDonald County, southwestern Missouri, is described.

Patton, Howard Lewis.

Rangely oil field, *in* Petroleum geology of the Unita Basin: Guidebook to the Geology of Utah, no. 5, p. 127–133, illus., 1950. Brief summary of the stratigraphy, structure, and operations at the Rangely oil field, northwestern Colorado. A geologic formation table is included.

Patton, John B.

Character of sand in the Ohio River formation [Ind.] [abs.]: Ind. Acad. Sci. Proc., v. 59, p. 215, 1950.

Pauling, Linus Carl. *See* Lukesh, J. S.

Peach, P. A. *See* Kennedy, G. C., 2.

Peacock, H. G. *See* Hunt, R. N.

Peacock, Martin Alfred, 1898–1950.

1. (and McAndrew, John). On parkerite and shandite and the crystal structure of $Ni_3Pb_2S_2$: Am. Mineralogist, v. 35, nos. 5–6, p. 425–439, illus., May–June 1950. Reviews previously determined spectrographic and X-ray data on parkerite and discusses the possibility of a natural parkerite series with end members bismuth-parkerite and lead-parkerite. It is proposed that the name parkerite be used for natural $Ni_3(Bi,Pb)_2S_2$. Crystal structure data for shandite, $Ni_3Pb_2S_2$, from Trial Harbour, Tasmania, are also given.
2. Hauchecornite: Am. Mineralogist, v. 35, nos. 5–6, p. 440–446, May–June 1950; abs., Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1913, Dec. 1949; Am. Mineralogist, v. 35, nos. 3–4, p. 287–288, Mar.–Apr. 1950. Supplementary study of hauchecornite, originally described in 1893 but subsequently considered a mixture, confirms it as a definite mineral species. Physical, optical, and X-ray data are given.
3. Remarks on crystallographic nomenclature: Am. Mineralogist, v. 35, nos. 9–10, p. 882–888, Sept.–Oct. 1950. "In special cases the lattice (not structure) of a crystal in any system may be indistinguishable from the lattice typical of any higher system. Thus it is formally better to define and name the systems on the basis of symmetry (as groups of classes); for this purpose a set of self-explanatory names and symbols is proposed."
4. Studies of mineral sulpho-salts; XV. Xanthoconite and pyrostilpnite: Mineralogical Mag., v. 29, no. 211, p. 346–358, illus., Dec. 1950. Optical and crystal structure data for xanthoconite, $3Ag_2S.As_2S_3$, and pyrostilpnite, $3Ag_2S.Sb_2S_3$, are given.

Peale, Rodgers.

Mining geology and exploration: Min. Cong. Jour., v. 36, no. 2, p. 77–81, 88, illus., Feb. 1950. Recent research on processes of ore deposition, developments in techniques of ore search, and exploration for various metals in the United States and Canada are reviewed. Maintenance of the discovery rate depends on further investigations of structure and mineralogy. V. S.

Pearl, Richard Maxwell.

New data on lossenite, louderbackite, zepharovichite, peganite, and sphaerite: Am. Mineralogist, v. 35, nos. 11–12, p. 1055–1059, Nov.–Dec. 1950. Reexamination of material indicates that lossenite is a mixture of scorodite and beudantite, that louderbackite is identical with roemerite, that zepharovichite is probably identical with wavellite, that sphaerite is probably identical with variscite, and confirms the identity of peganite with variscite as previously suggested by Larsen and Schaller.

Pearse, Arthur Sperry.

The emigrations of animals from the sea. xii, 210 p., illus. The Sherwood Press, Dryden, New York. 1950. The chapters cover the origin of life, the sea as the original home of life, routes from the sea, causes of emigration from the sea, how the animals have changed, and what animals have attained on land. An extensive bibliography is given.

Pecora, William Thomas. *See also* Bannerman, H. M.; Brown, R. W., 1.

(and Fahey, Joseph John). The lazulite-scorzalite isomorphous series: Am. Mineralogist, v. 35, nos. 1–2, p. 1–18, illus., Jan.–Feb. 1950. "The lazulite-scorzalite isomorphous series—expressed by the oxide formula $(Mg, Fe'')O.Al_2O_3.P_2O_5.H_2O$—is established in this paper on the basis of chemical analyses, indices of refraction, and specific gravity of eight selected specimens." The name calcium lazulite is discredited. Geological occurrences are classified, and distribution is noted. V. S.

Pegau, Arthur August.

Geology of the titanium-bearing deposits in Virginia, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 49–55, illus., 1950. The various types of occurrence of ilmenite and rutile, recent production data, and theories of origin are presented. The rutile-bearing anorthosite body in Nelson and Amherst Counties is described briefly.

Peltier, Louis Cook. *See also* Lowdermilk, W. C.

The geographic cycle in periglacial regions as it is related to climatic geomorphology: Assoc. Am. Geographers Annals, v. 40, no. 3, p. 214–236, illus., Sept. 1950; abs., no. 2, p. 135–136, June 1950. An area of a particular climate will have its own assemblage of geomorphic processes and therefore its own geomorphic features. Nine such morphogenetic regions are designated: glacial, periglacial, boreal, maritime, selva, moderate ("normal"), savanna, semi-arid, and arid. The periglacial region and the development of polygenetic topography, in Pennsylvania and Missouri, are discussed.

Pelzer, Ernest E.

The Rankin-Inlet nickel-copper deposit; a microscopic study: Canadian Min. Jour., v. 71. no. 9, p. 79–83, illus., Sept. 1950. "A mineragraphic study of the Rankin Inlet [west side of Hudson Bay, Canada] sulfides reveals the presence of magnetite, pyrrhotite, pentlandite, chalcopyrite, pyrite, marcasite, violarite, and possibly gersdorffite. The textural relationships indicate a magmatic origin for the principal minerals. Some pyrite may have been introduced hydrothermally, and marcasite and violarite have formed as supergene alteration products of pyrrhotite and pentlandite respectively."

Pence, Forrest K.

Characteristics of Texas ball clay near Troup: Texas Univ. Bur. Econ. Geology Pub. 5019, p. 39–51, illus., Oct. 1, 1950. Physical properties, thermal analysis data, X-ray diffraction data, and ceramic properties are presented.

Pendery, Carolyn H. *See* Herrick, C. E., 1, 2, 3.

Pennsylvania Academy of Science.

Symposium on mineral resources in Pennsylvania: Pa. Acad. Sci. Proc., v. 24, p. 192–229, illus., 1950. The symposium covers coal, petroleum, metallic minerals, industrial minerals, and water resources. Papers by H. E. Rothrock, G. H. Ashley, W. S. Lytle, H. R. Gault, R. C. Stephenson, and J. B. Graham are included.

Pepinsky, Ray. *See* Kinsolving, M. R.

Pepper, James Franklin.

(and de Witt, Wallace, Jr.). Stratigraphy of the Upper Devonian Wiscoy sandstone and the equivalent Hanover shale in western and central New York: U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 37 (2 sheets). 1950. Sheet 1 shows a colored outcrop map on a scale of 1 inch to 4 miles, cross sections indicating facies changes, and a diagrammatic paleogeographic map. Descriptive notes of the stratigraphy, sedimentation, and paleogeography are also given. Sheet 2 consists of several detailed stratigraphic sections.

Pérez Siliceo, Rafael.

(and Gallagher, David). Geología del distrito mercurial de Huahuaxtla, Estado de Guerrero: México Inst. Nac. Inv. Rec. Miner. Bol. 27, 30 p., illus. incl. geol. map, 1950. Spanish translation by Salvador Ulloa, of U. S. Geol. Survey Bull. 960–E, 1948. The stratigraphy, structure, and ore deposits of the Huahuaxtla mercury district, in southwest Mexico, are described. The strata are Upper Cretaceous shale and limestone formations that have been faulted. Black cinnabar is the chief ore mineral. The mineralization, age, and origin of the ore are discussed.

Perfetti, Jose N. *See* Kulp, J. L., 2.

Perini, Vincent Charles, Jr.

Some comments on Howard, Rotan, Royston and Round Top fields, Fisher County, Texas: Abilene Geol. Soc., Geol. Contr., p. 24–25, illus., 1950. Brief notes on the structure of the fields.

Perkins, Alfred Thomas. *See* Parkert, C. W.

Perlmutter, Nathaniel M. *See also* de Laguna, W., 2.

Geologic correlation of logs of wells in Long Island: N. Y. Water Power and Control Comm. Bull. GW–18, p. 3–24, 1949. The stratigraphic units found to be most practicable for hydrologic studies are described and correlated. They are the Raritan and Magothy (?) formations (Upper Cretaceous) and the Jameco gravel, Gardiners clay, and other deposits of Pleistocene age.

Perret, Frank Alvord, 1867–1943.

Volcanological observations: Carnegie Inst. Washington, Pub. 549, 162 p., illus., 1950. The paper describes in detail observations of volcanic activity in various parts of the world and is illustrated with numerous photographs. Consideration is given to the characteristics of solid volcanic formations, liquid flows, gaseous phases, ejectamenta, and electric, gravitational, seismic, and atmospheric phenomena. V. S.

Perrin, René.

L'oxygène en les calculs pétrographiques, une discussion (with English summary): Jour. Geology, v. 58, no. 2, p. 163–168, Mar. 1950. Processes of metamorphism and granitization by the action of solid diffusion are defended against I. T. Rosenqvist's criticism that diffusion in rocks is insufficient. V. S.

Perry, Eugene Sheridan.

1. The Belt series of Montana: Billings Geol. Soc., First Annual Field Conference, Sept. 15–17, 1950, p. 40–43, illus., 1950. Contains a brief description, columnar section, correlation chart, and map showing distribution.
2. Highlights of geology between Three Forks and Whitehall: Billings Geol. Soc., First Annual Field Conference, Sept. 15–17, 1950, p. 56–59, geol. map, 1950. Contains brief notes on the stratigraphy and structure in the Three Forks-Whitehall area, Montana, a table of formations, and a geologic map. The area shows a continuous section from pre-Cambrian to Tertiary, folding, faulting, unconformities, volcanic rocks, and intrusives.
3. The Butte mining district: Billings Geol. Soc., First Annual Field Conference, Sept. 15–17, 1950, p. 66–68, 1950. A brief literature review of the geology, mineralogy, and ore deposits of the Butte mining district, Montana.

Perry, O. S.

(and Thomson, James Edgar). Geology of the Kirkland Lake gold mine: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 133–140, illus., 1950. Describes the development, general geology, structure, and vein mineralization at the Kirkland Lake gold mine in the Kirkland Lake ore belt, northern Ontario.

Peterson, Earl T.

The Ardmore basin, geology and oil possibilities: World Oil, v. 130, no. 4, p. 57–58, 60, 63–64, illus., Mar. 1950. The Ardmore basin in Oklahoma is considered in its broader geosynclinal aspect; the deposition of Paleozoic sediments and their structural history is reviewed; the oil pools and producing formations are discussed; and future possibilities are found dependent on deep drilling. V. S.

Peterson, H. V.

The problem of gullying in western valleys, *in* Applied sedimentation, p. 407–434, illus., 1950. The distribution, mechanics, causes, and methods of control of gullying are described.

Peterson, Jahn Jean. *See* Spangler, W. B., 1.

Peterson, Nels Paul.

Arizona zinc and lead deposits; Lead and zinc deposits in the Globe-Miami district, Arizona: Ariz. Bur. Mines Bull. 156, Geol. Ser. 18, p. 98–112, illus., Apr. 1950. The geology, structure, and ore mineralization at several properties in the area are described.

Peterson, Victor Edwin.

The Ashley Valley oil field, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 135–138, illus., 1950. The Ashley Valley field has produced gas commercially for several years, but is the first commercial oil producer in Utah. The stratigraphy, structure, and production data are given briefly. The Weber sandstone (Pennsylvanian) is the producing horizon.

Petsch, Bruno Carl.

Magnetic surveys in South Dakota: S. Dak. Geol. Survey, Rpt. Inv. 66, p. 1–22, 34–35, illus., Jan. 1950. Magnetic survey work since 1900 is summarized. The results, interpreted in the light of magnetic susceptibilities of bedrock and illustrated by maps, show low values on the pre-Cambrian in the Black Hills and higher values on the sediments of the great plains. V. S.

Pettijohn, Francis John.

Turbidity currents and graywackes, a discussion: Jour. Geology, v. 58, no. 2, p. 169–171, Mar. 1950. The origin of graywackes can be explained by such currents accounting not only for their many peculiarities, but also for accumulation of coarse material in deep waters. V. S.

Petty, Julian Jay.

Bibliography of the geology of the State of South Carolina: S. C. Univ. Pubs., ser. 2, Physical Sciences, Bull. 1, 86 p., 1950. Contains more than 800 references arranged alphabetically by author, followed by a subject index.

Péwé, Troy Lewis.

1. Origin of the upland silt in Fairbanks area, Alaska [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1493, Dec. 1950.
2. Relationship of permafrost to agriculture in the Fairbanks area, Alaska [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1571, Dec. 1950.

Peyton, Alexander L. *See* Jones, J. O.

Peyton, Garland.

The industrial minerals of Georgia: Ga. Geol. Survey Bull. 56, p. 1–10, 1950. A brief summary of the nonmetallic mineral resources of the areas of crystalline rocks, Paleozoic strata, and Coastal Plain sediments.

Philbrick, Shailer Shaw.

Foundation problems of sedimentary rocks, *in* Applied sedimentation, p. 147–168, illus., 1950. Such problems as the appraisal of foundation material, laboratory testing of materials, calculation of safe bearing capacity, and permeability are considered. A section on the classification of sedimentary rocks, with notes on cyclic sediments and soluble rocks, is included.

Philpott, Thomas Hughes.

The Lower and Upper Cretaceous geologic history of north Louisiana and south Arkansas [abs.]: Geophysics, v. 15, no. 1, p. 151, Jan. 1950.

Phleger, Fred B., Jr.

1. Offshore sedimentology, northwest Gulf of Mexico: Tulsa Geol. Soc. Digest, v. 18, p. 76, 1950. Features of Foraminifera distribution and sedimentation interpreted from traverses and cores in the northwest Gulf of Mexico are listed.
2. (and Walton, William R.). Ecology of marsh and bay Foraminifera, Barnstable, Mass.: Am. Jour. Sci., v. 248, no. 4, p. 274–294, illus., Apr. 1950. Study of Barnstable Harbor and Cape Cod Bay areas as to distribution of Foraminifera shows a principal facies in each, as well as 3 subfacies in the harbor and 2 subfacies in the bay. The largest population occurs in the harbor high marsh. Environmental conditions are correlated with facies and subfacies distribution. V. S.
3. Faunal evidence for mass movement of submarine sediments [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 177, Apr. 27, 1950.

Phoenix, David Allen.

Geology and ground water in the Meadow Valley Wash drainage area, Nevada, above the vicinity of Caliente: Nev. State Engineer's Office, Water Res. Bull. 7, p. 15–74, 90–117, illus. incl. geol. map, 1948. The Meadow Valley Wash area is located in Lincoln County, southeastern Nevada, on the Utah border. The physiography, stratigraphy, and ground-water geology are described, with the major emphasis on ground-water occurrence and development.

Pickett, E. E. *See* Keller, W. D., 1, 3, 4, 6.

Pierce, William Dwight.

1. Fossil arthropods of British Columbia; 5, A new deposit of lignite: S. Calif. Acad. Sci. Bull., v. 49, pt. 1, p. 3, Jan.–Apr. 1950. A note on a black, shaly Interglacial lignite collected about 8 miles from the mouth of Seymour River. The lignite contains plant remains.
2. Fossil arthropods of British Columbia; 6, Fossil spider silk: S. Calif. Acad. Sci. Bull., v. 49, pt. 1, p. 3, Jan.–Apr. 1950. Reports the occurrence in the Seymour River lignite of silken egg cases, referred to *Salticus seymouri*, new species.
3. Fossil arthropods of British Columbia; 7, A carabid from Lynn Creek lignite: S. Calif. Acad. Sci. Bull., v. 49, pt. 1, p. 4–7, illus., Jan.–Apr. 1950. Describes a new species of beetle, *Notiophilus vancouveri*, from Interglacial lignite at Lynn Creek, North Vancouver. The determination is based on a pair of elytra.
4. Fossil arthropods of British Columbia; 8, The genus *Donacia* in British Columbia lignite: S. Calif. Acad. Sci. Bull., v. 49, pt. 1, p. 7–9, Jan.–Apr. 1950. Describes three new species of the beetle *Donacia* from Interglacial lignite at Cordova Bay and Lynn Creek. Comparative measurements of eight species of the genus are given.
5. Fossil arthropods from onyx marble: S. Calif. Acad. Sci. Bull., v. 49, pt. 3, p. 101–104, illus., Sept.–Dec. 1950. Describes a new genus and species of arachnid, *Onychothelyphonus bonneri*, and a new genus and species of insect, *Onychojapyx schmidti*. Both specimens occur in onyx of unknown locality.
6. When does a thing become a fossil: S. Calif. Acad. Sci. Bull., v. 49, pt. 3, p. 105–107, Sept.–Dec. 1950. Brief discussion of the criteria for fossilization.

Pierce, William Gamewell.

Source and movement of the Heart Mountain thrust blocks, Park County, Wyoming [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1493–1494, Dec. 1950.

Pill, R. J. *See* Kerr, P. F., 4.

Pilsbry, Henry Augustus.

(and Olsson, Axel Adolf). Review of *Anticlimax*, with new Tertiary species (Gastropoda, Vitrinellidae): Bull. Am. Paleontology, v. 33, no. 135, 22 p., illus., July 5, 1950. A key to species of *Anticlimax* is given, and new species from Miocene and Pliocene beds in Florida, Santo Domingo, Costa Rica, and the Canal Zone are described and figured. A new subgenus, *Subclimax*, is set up.

Pinger, Allen W.

Geology of the Franklin-Sterling area, Sussex County, New Jersey, *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 77–87, illus., 1950; abs., Volume of titles and abstracts, p. 48, 1948. Describes the mineralization and structure of the zinc ore bodies in the pre-Cambrian Franklin limestone at Franklin (Franklin mine) and Ogdensburg (Sterling mine) in northern New Jersey. The ore minerals are franklinite, willemite, and zincite. The various theories of origin are discussed. A brief historical sketch of mining in the area is also given.

Pinson, William H., Jr.

A criticism of "Gondwana land bridges": Ga. Geol. Survey Bull. 56, p. 134–140, 1950. Concludes that "though land bridges may have existed where they are not now even suspected, there seem to be no known cases of either faunal or floral distribution that do not lend themselves quite well to explanations along the lines of migration, natural transportation, and parallel evolution."

Pipiringos, George N. *See* Thompson, Raymond M.

Plummer, Frederick Byron, 1886–1947.

The Carboniferous rocks of the Llano region of central Texas: Texas Univ. Bur. Econ. Geology Pub. no. 4329, August 1, 1943, 170 p., illus. incl. geol. map, Feb. 1950. A comprehensive report on the stratigraphy of the Carboniferous formations in central Texas, including numerous measured sections, faunal lists and photographs, descriptions of fossil localities, and references. The colored geologic map is on a scale of 1 inch to 3 miles.

Plummer, Norman Vincen.

Ceramic materials, *in* Geology and ground-water resources of Barton and Stafford Counties, Kansas: Kans. Univ., State Geol. Survey Bull. 88, p. 35–37, 1950. Brief report on the occurrence and properties of clays in Barton and Stafford Counties, central Kansas.

Pohly, Richard A.

Significant gravity pattern in reef anomalies [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 119, Apr. 27, 1950.

Poland, Joseph Fairfield.

Ground water in California: Min. Eng., v. 187, no. 2, p. 279–284, illus., Feb. 1950; discussion, no. 11, p. 1168–1169, Nov. 1950; A. I. M. E. Trans., v. 187, 1950. A general picture of the ground-water problems, particularly overdraft and salt-water encroachment. The location of basins and geologic features are treated briefly, and a map showing the location of 33 basins is given.

Poldervaart, Arie.

Correlation of physical properties and chemical composition in the plagioclase, olivine, and orthopyroxene series: Am. Mineralogist, v. 35, nos. 11–12, p. 1067–1079, illus., Nov.–Dec. 1950. "Physical properties . . . are plotted against chemical composition in a series of diagrams. The limitations of the various methods used to determine compositions of rock-forming minerals by optical means are discussed in detail, and lines of further work on the three mineral series are noted. A pleas is made for the use of molecular percentages and for standard nomenclature in these and other mineral groups."

Polk, Thomas R.

Large smoky quartz crystals from the Wichita Mountains, Oklahoma: Okla. Acad. Sci. Proc., v. 29 (1948), p. 41–42, illus., Mar. 1950. Reports the finding of two smoky quartz crystals in pre-Cambrian Lugert granite near Lugert dam in Kiowa County. V. S.

Poole, D. M.

(and Butcher, W. S.). Calibration of the Emery settling tube for sand analysis: Calif. Univ., Scripps Inst. Oceanography, Submarine Geology Rpt. no. 9, 14 p. (‡), illus., Apr. 1950. Tests of the accuracy of the Emery settling tube, made on sands between 0.062 and 1 mm. mesh, showed a probable error in median diameter of 0.8 percent, close to the sieving probable error of 0.7 percent. Analysis procedure is given. V. S.

Postel, Albert Williams.

1. (chairman, and others). New list of map symbols: U. S. Geol. Survey, Geol. Map Symbol Committee. 6 p. (‡). [1950?]. Revised edition of 1948 list.
2. Magnetite deposits of the Clinton County district, New York [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1494, Dec. 1950.

Potts, Merlin K.

Mount Rainier's greatest ice cavern: Pacific Discovery, v. 3, no. 3, p. 5–7, illus., May–June 1950. Describes an ice cavern recently exposed on Kautz Glacier, Mt. Rainier, Washington, and discusses its formation.

Pough, Frederick Harvey.

Seventh anniversary of Parícutin: Sci. Monthly, v. 71, no. 5, p. 312–317, illus., Nov. 1950. Describes the changes in the activity of Parícutin Volcano, Mexico, during 1949–50 and the present characteristics of the area. V. S.

Poulter, Thomas Charles.

1. (and Allen, C. F., and Miller, Stephen W.). Seismic measurements on the Taku Glacier, *in* Geophysical studies in the Antarctic by T. C. Poulter, Appendix 3, p. 150–179, illus., Stanford, Calif., Stanford Research Institute, [1949?]. Taku Glacier in Alaska is the only one of the many emanating from the Juneau Ice Field which is advancing along its front. In connection with an investigation of this condition, seismic measurements were conducted by the Stanford Research Institute to determine the thickness of the ice. The record is included in this volume to make the data more complete.
2. The Poulter seismic method of geophysical exploration: Geophysics, v. 15, no. 2, p. 181–207, illus., Apr. 1950. Techniques of detonating a pattern of several charges above the ground are discussed with a view to generating a seismic pulse of controlled frequency and bettering the signal-to-noise ratio. Three methods of frequency control are described, and the resulting improvement in reflection records is illustrated. V. S.
3. The Poulter seismic method; oilfield techniques in the study of polar ice caps and the contribution of glacier techniques in the discovery of oil and minerals: Canadian Min. Met. Bull. no. 457, p. 259–267, illus., May 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 174–182, 1950. Problems of directivity of seismic energy, frequency control, and signal-to-noise ratio in exploration for oil and ores are discussed on the basis of studies of surface detonations of explosive charges in the high velocity, uniform medium of the ice on Taku glacier, Alaska. V. S.

Powell, John Wesley, 1834–1902.

Physical features of the Colorado Valley: Sci. Monthly, v. 71, no. 3, p. 147–154, illus., Sept. 1950. A reprint of a portion of an article by Major Powell which appeared in Popular Science Monthly, 7, p. 385–399, 1875.

Powell, Russell D.

Washington locality: Mineralogist, v. 18, no. 10, p. 482, 484, Oct. 1950. Reports a locality at Forest, Washington, five miles south of Chehalis and east of Highway 99, for collecting agates, geodes, and petrified wood.

Powers, M. C.

A megascopic roundness scale [abs.]: N. C. Acad. Sci. Proc. *in* Elisha Mitchell Sci. Soc. Jour., v. 66, no. 2, p. 116, Dec. 1950.

Prabhu, Keshavrao P.

Anion exchange in clay minerals [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1494–1495, Dec. 1950.

Pratt, Wallace Everette. *See also* Weaver, Paul, 1.

1. The earth's petroleum resources, *in* Fanning, L. M., ed., Our oil resources, 2d ed., p. 137–153, 1950. A general discussion emphasizing the possibilities of petroleum occurrence in areas not yet explored such as the continental shelves, the Far East, and Arctic Sea areas.
2. Calculating petroleum reserves: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1756–1757, Aug. 1950. The view of A. I. Levorsen that two-thirds of the world's total amount of oil is in the continental shelves is defended in refutation of G. M. Lees' paper "Calculating petroleum reserves" (Inst. Petrol. Rev., v. 4, p. 33–37, 1950). V. S.

Prescott, B. Osborne.

A cross-section board: World Oil, v. 130, no. 1, p. 69–70, illus., Jan. 1950. A simplified method for construction of geologic cross sections consists in plotting correlations by means of colored strings and maptacks on a white board and photographing on orthochromatic film, thus eliminating the lengthy drafting process. V. S.

Press, Frank. *See also* Ewing, W. M., 1, 2, 3, 4.

(and Ewing, William Maurice, and Tolstoy, Ivan). The Airy phase of shallow-focus submarine earthquakes: Seismol. Soc. Am. Bull., v. 40, no. 2, p. 111–148, illus., Apr. 1950. The Airy wave phase, predicted theoretically on seismograms of shallow-focus submarine earthquakes, has been observed for shocks in the Dominican Republic and southwest of the Galapagos Islands. The evidence is discussed. As the ocean bottom affects both the periods and velocities of the Airy phase, its study should provide information on the nature of the ocean floor. V. S.

Price, Paul Holland. *See also* Reeves, Frank.

The work of the West Virginia Geological Survey: Compass, v. 28, no. 1, p. 27–46, illus., Nov. 1950. Describes the history, development, functions, laboratory and field investigations, publications, current projects on coal, brines, limestones, petroleum and natural gas, and cooperative projects on ground water and stream gaging. A list of the State Geologists and personnel, since organization of the Survey in 1897, is included.

Price, William Armstrong.

Discussion, Origin of pimple mounds, by E. L. Krinitzsky: Am. Jour. Sci., v. 248, no. 5, p. 355–360, May 1950. Krinitzsky's polygenetic theory of pimple mound origin is criticized, in part in defense of the gopher hypothesis. A reply by Krinitzsky stresses the need of precise definitions. V. S.

Price, William E., Jr.

1. Cenozoic gravels on the rim of Sycamore Canyon, Arizona: Geol. Soc. Am. Bull., v. 61, no. 5, p. 501–507, illus., May 1950. "The gravels are of two types: one of rounded pebbles derived locally from the Shinarump conglomerate and developed in Pleistocene-Recent time; the other, angular pebbles derived from rocks similar to those exposed today in the Black Hills-Bradshaw Mts. area to the southwest and developed in the Miocene or Pliocene. The angular gravels were laid down not upon a peneplain, . . . but upon a pediment that extended northeastward from the mountains and covered that area of the Colorado Plateau now occupied by Sycamore Canyon."
2. The Kaibab formation of Sycamore Canyon: Plateau, v. 23, no. 1, p. 11–16, illus., July 1950. Two measured sections of the Permian Kaibab limestone outcropping in Sycamore Canyon, 20 miles southwest of Flagstaff, northern Arizona, are described. The sections measure 396.5 and 534 feet. Notes on the lateral changes evident from the measurement of several other sections are included.

Prichard, George E. *See* Richards, P. W.

Prince, Alan Theodore.

Phase equilibrium relationships in a portion of the system MgO-Al_2O_3-$2CaO.SiO_2$ [abs.]: Am. Ceramic Soc. Bull., v. 29, no. 3, p. 128, Mar. 1950.

Proctor, Paul Dean. *See also* Bateman, P. C.

Harrisburg (Silver Reef) mining district, Washington County, Utah [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1495, Dec. 1950.

Prouty, William Frederick, 1879–1949.

Origin of Carolina Bays: Pop. Astronomy, v. 58, no. 1, p. 17–21, Jan. 1950. The objections of Chapman Grant (Pop. Astronomy, v. 56, p. 511–527, Dec. 1948) to the modified meteoritic theory of origin for the Carolina Bays of North and South Carolina are answered.

Pruett, J. Hugh.

The lost Port Orford, Oregon, meteorite (ECN=+1245,428): Pop. Astronomy, v. 58, no. 8, p. 402–405, illus., Oct. 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 286–290, illus., 1950. Historical account of the Port Orford meteorite, the original mass of which, on Bald Mtn. in southwestern Oregon, has never been relocated since its discovery in 1859 by John Evans.

Prunty, Merle C.

Curricular status of the earth sciences in higher education in Georgia: Ga. Geol. Survey Bull. 56, p. 21–26, 1950.

Pugh, William Emerson.

(editor). Bibliography of organic reefs, bioherms, and biostromes. xxxi, 139 p. Tulsa, Okla. Seismograph Service Corp. 1950. Contains 1,060 references in English from 1920 through the early part of 1950. The papers are arranged in 4 sections, of which the first, alphabetically by author, gives the complete citation. The other three are indexes of geographic location, geologic age, and general subjects. In the author index, concurrent geographic and geologic age indexing should prove very helpful. This scheme is also used in the geographic and geologic age indexes.

Pullen, Milton William, Jr.

Summary of research results on the geologic aspects of radio wave transmission: Ill. State Geol. Survey Circ. 159, 6 p. (‡), illus., 1950. A brief preliminary report on the current investigation of the correlation of geologic features with intensity anomalies in radio wave transmission.

Putnam, William Clement.

1. Moraine and shoreline relationships at Mono Lake, California: Geol. Soc. Am. Bull., v. 61, no. 2, p. 115–122, illus. incl. geol. maps, Feb. 1950. Discusses the moraines and shore lines formed at glacial Lake Russell during the Tahoe and Tioga glacial stages of the late Pleistocene. When the ice front was stationary the lake waves cut broad terraces, and when retreat was rapid, only narrow benches were carved. V. S.
2. Geomorphology as a tool for geologists [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1495, Dec. 1950.

Quarles, Miller Winthrop, Jr.

Fault interpretation from seismic data in southwest Texas: Geophysics, v. 15, no. 3, p. 462–476, illus., July 1950; abs., Oil and Gas Jour., v. 47, no. 46, p. 161, Mar. 17, 1949; Geophysics, v. 14, no. 3, p. 444–445, July 1949. Because many of the oil-bearing structures of the Gulf Coast and southwest Texas are found along a distinctive type of low-angle normal faulting, reflection seismograph shooting has been tried as a means of locating faulting. It has been found that normal data are obtained from the downthrow side and two types of distorted data from the upthrow side. The types are discussed and explained. Several distinctive fault patterns are classified.

Quigley, James E.

Primary uranium ore now being mined in Utah: Eng. Min. Jour., v. 151, no. 8, p. 90–93, illus., Aug. 1950. Briefly describes the geology of several individual deposits in the area of a new uranium discovery at Antelope Range, 4 miles northeast of Marysvale, Utah. The ore is autunite and pitchblende occurring in fissures near a monzonite-rhyolite contact.

Quinn, Alonzo Wallace.

1. (and Swann, David Henry). Bibliography of the geology of Rhode Island. 2d ed., 26 p., index maps. Providence, R. I., R. I. Port and Indus. Dev. Comm., 1950. This second edition adds the references for 1944–1949 inclusive and a few prior ones not given in the first edition. The references are arranged alphabetically by author, and the index is both topical and geographic.
2. (and Allen, William Burrows). The geology and ground-water resources of Woonsocket, Rhode Island: R. I. Port and Indus. Dev. Comm. Geol. Bull. 5, 40 p., illus. incl. geol. map, 1950. Discusses the stratigraphy and structure of the Paleozoic strata, with notes on the glacial deposits and geologic history. The section on ground water includes analyses and logs of test holes.

Quinn, Harold A.

Geology and gold deposits, Giauque Lake, Yellowknife: Canadian Min. Jour., v. 71, no. 10, p. 55–69, illus. incl. geol. map, Oct. 1950. The Giauque Lake area is north of Yellowknife, Northwest Territories. The pre-Cambrian rocks, consisting chiefly of sediments and volcanics of the Yellowknife group, are described. Complex folding and faulting are present throughout the area. The mineralogy and paragenesis of the gold deposits are described. Data on two gold mines are given. The gold occurs in quartz veins, stockworks, and altered rocks.

Raasch, Gilbert Oscar.

Current evaluation of the Cambrian-Keweenawan boundary: Ill. State Acad. Sci Trans., v. 43, p. 137–150, illus., 1950. The stratigraphic relations of the Bayfield group of redbed shales and sandstones in Wisconsin, and equivalent sediments in Michigan and Minnesota, to Keweenawan and Cambrian strata are discussed. It is suggested that the Bayfield sediments are continental deposits of Middle, and possibly Early Cambrian age, laid down in structural basins.

Rabbitt, John Charles.

"The Professor": Am. Mineralogist, v. 35, nos. 9–10, p. 619–621, port., Sept.–Oct. 1950. An informal essay on Esper S. Larsen, Jr., the introductory article of the Larsen Volume, Studies in petrology and mineralogy, made up of 33 papers by friends and former students.

Rabbitt, Mary C.

(and Skitsky, Vsevolod Lawrovitch, and Vesselowsky, Sergius Theodore). Geophysical abstracts, no. 140, Jan.–Mar. 1950: U. S. Geol. Survey Bull. 976–A, p. 1–69, 1950; (and Vesselowsky, S. T.), no. 141, Apr.–June 1950, Bull. 976–B, p. 71–139, 1950; (and Vesselowsky, S. T.), no. 142, July–Sept. 1950, Bull. 976–C, p. 141–209, 1950; (and Vesselowsky, S. T.), no. 143, Oct.–Dec. 1950, Bull. 976–D, p. 211–266, 1951.

Rainwater, Edward Harriman. *See* Toulmin, L. D., Jr.

Raitt, Russell Watson.

Seismic studies of the Pacific Ocean floor off California [abs.]: Geophysics, v. 15, no. 1, p. 156, Jan. 1950.

Ramírez, Ricardo.

Descripción de algunos moluscos del Mioceno del Valle del Cibao de la República Dominicana: Santo Domingo Univ. Pub., ser. 4, v. 70, no. 1, 39 p., illus., 1949. Describes 33 species of gastropods and 10 species of pelecypods collected from the Miocene formations in the Cibao valley, northern part of the Dominican Republic.

Ramsdell, Lewis Stephen.

1. (and Wolfe, Caleb Wroe). The unit cell of malachite: Am. Mineralogist, v. 35, nos. 1–2, p. 119–121, illus., Jan.–Feb. 1950. The unit cell dimensions and the axial ratio, obtained by Brasseur with V. Goldschmidt's angular data, are revised on the basis of a corrected value for β. V. S.
2. (and Kohn, Jack A.). The crystal structure of SiC, type 10–H [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 125, Jan.–Feb. 1950.

Rand, William Whitehill.

Ventura region [Calif.], *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2386, Dec. 1950.

Rankama, Kalervo.

(and Sahama, Thure Georg). Geochemistry. xvi, 912 p., illus. Chicago, Univ. of Chicago Press, 1950. A survey of the broad science of geochemistry—the borderland field of geology and chemistry—and the first comprehensive account in English incorporating the most recent contributions in both American and European literature. Part 1 concerns the general aspects—abundance and distribution of elements, chemistry of igneous, sedimentary and metamorphic rocks, the hydrosphere, and biosphere. Part 2 discusses each of the elements in detail. A bibliography of more than 600 references is included.

Rapaport, Irving. *See* Fetzer, W. G.

Ratliff, Fred. *See* Vickers, R. B., Jr.

Rau, Weldon Willis.

Tertiary Foraminifera from the Willapa River Valley of southwest Washington [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1540, Dec. 1950.

Raup, Hugh Miller.

(and Denny, Charles Storrow). Photo interpretation of the terrain along the southern part of the Alaska Highway: U. S. Geol. Survey Bull. 963–D, p. 95–135, illus., 1950. "This paper is an attempt to apply the combined knowledge and techniques of botany and geology to the photo interpretation of terrain in northern regions, in particular, the area along the southern part of the Alaska Highway in British Columbia and southeastern Yukon."

Raymond, C. L.

Gem williamsite: Mineralogist, v. 18, no. 11, p. 556, 558, Nov. 1950. A brief note on the occurrence of williamsite, a form of serpentine, at the Geiger chrome pit dump in northern Maryland.

Raymond, Percy Edward.

Olof O. Nylander, 1864–1943: Nautilus, v. 64, no. 2, p. 63–64, Oct. 1950. Revised from Am. Jour. Sci., v. 241, no. 11, p. 704–705, Nov. 1943.

Rea, Henry Carter.

"Strat trap" search need shown by Wyoming Basin: World Oil, v. 131, no. 6, p. 75–76, 78, 80, 88, 91, illus., Nov. 1950. Production from non-marine sediments and stratigraphic traps in the oil fields of the Powder River Basin, Wyoming, is reviewed as evidence that exploration for oil must be generally broadened beyond the present search for structures. The concept of structural control of oil accumulation is examined critically in the light of local structure maps and actual locations of production. V. S.

Read, Charles Brian. *See also* Beaumont, E. C.

1. Stratigraphy of the outcropping Permian rocks around the San Juan Basin, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 62–66, illus., 1950. Discusses the outcrops of Permian strata on the margin of the San Juan Basin, and the paleogeography. A table of formations in several areas is given.
2. (and others). Coal resources of New Mexico, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 124–131, illus., 1950. The geologic and geographic distribution of coal in New Mexico is described, columnar sections of the coal-bearing areas are given, and estimates of reserves are calculated. The classification of coals by rank on which the reserve figures are based is outlined.
3. (and others). Coal resources of New Mexico: U. S. Geol. Survey Circ. 89, 24 p. (‡), illus., Nov. 1950. The New Mexico coal reserves, Cretaceous through Eocene, are estimated at 61,754.6 million short tons of subbituminous, bituminous, and anthracite coal, located in the San Juan River and Raton Mesa regions. Classes of reserves and method of estimation are discussed, and the 8 principal coal fields are described and illustrated by a columnar section, map, and statistical data. V. S.

Reed, Avery H., Jr.

Investigation of the Coosa tin deposit, Coosa County, Ala.: U. S. Bur. Mines Rpt. Inv. 4704, 33 p. (‡), illus., July 1950. In the Coosa area, Alabama, cassiterite occurs in pegmatites intruded into pre-Cambrian schist. The deposits are distributed over an area 20 miles long and 3 miles wide. The pegmatite groups are described, and data are given on samples, metallurgical tests, and drill-hole logs. V. S.

Reed, Charles A.

A preliminary announcement of a new mammalian fossil locality in the Pliocene of Arizona: Plateau, v. 22, no. 4, p. 75–77, Apr. 1950. A brief note on random bones of camels, antelopes, horses, and other mammals found in Pliocene rocks on Milk Creek in the Prescott National Forest, Arizona. V. S.

Reed, Clyde F.

Morphology of fern spores and its relation to taxonomy [abs]: Am. Jour. Botany, v. 37, no. 8, p. 673–674, Oct. 1950.

Reed, David E. *See* Garpner, E. U.

Reed, Eugene Clifton. *See* Thorp, J., 1.

Reed, Fredda Doris.

A new species of a Cordaite leaf [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 673, Oct. 1950.

Reed, Glenn Cornelius.

Mines and mineral deposits (except fuels), Park County, Montana: U. S. Bur. Mines, Inf. Circ. 7546, 64 p. (‡), illus. incl. geol. sketch maps, Feb. 1950. The gold, silver, copper, and lead mines and deposits of the Jardine, New World, Emigrant, and other mining districts of Park County are described. Geologic maps and a bibliography are given. V. S.

Reed, John Calvin. *See* Cloos, E., 3; Moffit, F. H., 2.

Reedy, Milton Frank, Jr. *See* Colle, J. O.

Reeves, Frank.

(and Price, Paul Holland). Early Devonian gas in northern West Virginia and pre-Devonian oil prospects: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2095–2132, illus., Nov. 1950; abs. with title "Progress report on the search for early Devonian gas in northern West Virginia, with comments on pre-Devonian oil prospects," no. 8, p. 1771, Aug. 1950. Discusses the occurrence of gas in the Terra Alta and Canaan Valley fields. The stratigraphy and structure of the area, in the folded belt west of the Allegheny Front, are described. The possibilities of gas in the Devonian formations, and of oil in the pre-Devonian formations are discussed. A bibliography is given.

Reger, David Bright. *See* Wells, Dana.

Reiche, Parry.

1. A survey of weathering processes and products: N. Mex. Univ. Pub. Geology no. 3, 95 p., illus., 1950. This is a revised edition of the original paper published in 1945 and covers the same ground with only minor changes. It is a general discussion of the physical and chemical processes, soil-forming processes, their results, and the effect of such factors as relief and time.
2. Geology of part of the Delta-Mendota Canal near Tracy, California: Calif. Dept. Nat. Res., Div. Mines, Spec. Rpt. 2, 12 p., illus. incl. geol. sketch map, Oct. 1950. Excavation of the Delta-Mendota Canal, which extends along the western margin of the Great Valley, California, has exposed Miocene and Plio-Pleistocene continental sediments. The stratigraphy and structure are described, and the engineering geology is discussed. V. S.
3. Rio Vista, California, fault scarp [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1529–1530, Dec. 1950.

Reichel, Manfred.

1. Alvéolines de l'oligo-miocène de Cuba [abs.]: Schweizerischen Naturforschenden Gesellschaft Verhandlungen, 1949, p. 148, 1949.
2. Remarques sur le genre *Boreloides* Cole et Bermúdez [abs.]: Schweizerischen Naturforschenden Gesellschaft Verhandlungen, 1949, p. 148, 1949. Brief notes based on specimens from the lower Eocene of Cuba.

Reid, John Alexander.

Silver in Ontario: Canadian Min. Jour., v. 71, no. 11, p. 129–132, illus., Nov. 1950. Silver mining has been carried on at three areas in Ontario—Thunder Bay in the southwestern part, Favourable Lake in the northwestern part, and Temiskaming in the northeastern part. The Temiskaming area, mineralization, and production are described, and the features of the other two areas indicated briefly.

Reimann, Irving George.

Possible phylogenetic relationships of some early eublastoids: Jour. Paleontology, v. 24, no. 4, p. 499–500, July 1950. *Codaster pulchellus*, *C. lorae*, and *C. pentalobus* are referred to the genus *Pleuroschisma* Reimann 1945. Notes on other variously classified blastoids are included.

Reinhardt, Paul W. *See* Stead, F. W., 1.

Reno, Duane Hugh.

(and Taylor, Garvin Lawrence). Magnetic susceptibility, *in* Analytical data on reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 7, p. 125–128, July 1950.

Revelle, Roger.

The 1940 E. W. Scripps cruise to the Gulf of California, Part 5, Sedimentation and oceanography; survey of field observations: Geol. Soc. Am. Mem. 43, 6 p., Aug. 10, 1950. Describes the sediments present in cores from several areas in the Gulf of California, chemical and bacteriological studies of the sediments, current measurements, and the rate of deposition of organic remains.

Rexford, Elliot P.

Some factors in the selection and testing of concrete aggregates for large structures: Min. Eng., v. 187, no. 3, p. 395–402, illus., Mar. 1950; discussion, no. 11, p. 1168, Nov. 1950; A. I. M. E. Trans., v. 187, 1950. Petrographic and engineering tests of rocks, gravels, and sands for their durability, chemical reactivity, and thermal compatibility are discussed with a view to selecting optimal materials for concrete structures. V. S.

Reynolds, Dewey A. *See* Dowd, J. J., 1, 2.

Rhoades, Roger Farnsworth. *See also* Dirmeyer, R. D., Jr.; Savage, J. L.

Influence of sedimentation on concrete aggregate, *in* Applied sedimentation, p. 437–463, illus., 1950 Typical occurrences of natural aggregates, such as river deposits, glacial deposits, talus deposits, wind-blown sand, marine deposits, and residual deposits are described. The properties of aggregates, as the result of the type of source material modified by sedimentation processes, are discussed. The influence on concrete of the properties is given in an appendix.

Rich, John Lyon.

1. Flow markings, groovings, and intra-stratal crumplings as criteria for recognition of slope deposits, with illustrations from Silurian rocks of Wales: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 4, p. 717–741, illus., Apr. 1950. Of the three critical marine depositional environments—continental shelf, continental slope, and sea bottom—that of the slope can be recognized with good assurance by the association of: repeated alternate bedding of silt- and clay-size material; relatively thin, even, uniform bedding; sparsity of fossils; general absence of ripple marks; flow markings and flow rolls; and intra- and inter-stratal crumpling. Examples from Aberystwyth, Wales, are described and figured.
2. (and Wilson, William Jay). Paleogeographic and stratigraphic significance of subaqueous flow markings in the Lower Mississippian strata of south-central Ohio and adjacent parts of Kentucky [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1496, Dec. 1950.

Richards, A. R. *See* Barr, K. W.

Richards, Arthur.

Geology along the Williams thrust near Kremmling, Colorado [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1496–1497, Dec. 1950.

Richards, Horace Gardiner. *See also* Straley, H. W., 3d, 1.

1. Postglacial marine submergence of arctic North America with special reference to the Mackenzie Delta: Am. Philos. Soc. Proc., v. 94, no. 1, p. 31–37, illus., Feb. 1950. Pleistocene features suggest that the weight of the Wisconsin ice sheet depressed the northeastern Atlantic and the eastern Arctic coast more considerably than the lower Mackenzie Valley. No postglacial marine beaches or marine deposits on top of the bed rock were found in the vicinity of the delta. V. S.
2. Geological studies in the Mackenzie Delta, Arctic Canada: Earth Sci. Digest, v. 4, no. 9, p. 3–6, illus., Apr. 1950. Brief investigation in 1948 showed no evidence of a Pleistocene marine submergence in the immediate vicinity of the delta. The field trip is described, and conclusions are given. V. S.

Richards, Horace Gardiner—Continued

3. Geology of the Coastal Plain of North Carolina: Am. Philos. Soc. Trans., v. 40, pt. 1, 83 p., illus., Aug. 1950. The stratigraphy of the Cretaceous, Tertiary, and Pleistocene beds is described and faunal lists for each formation are given. Sections on the geologic history of the area, structure, correlation of formations, mineral resources (chiefly non-metallics), and ground water are included together with an extensive bibliography.
4 Analysis of the methods of storing invertebrate fossils [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1497, Dec. 1950.

Richards, Paul William.

(and Prichard, George E.). The Livingston formation: Billings Geol. Soc., First Annual Field Conference, Sept. 15–17, 1950, p. 49–55, illus., incl. geol. sketch map. 1950. The Livingston formation, of Upper Cretceous and Tertiary age, crops out in the Crazy Mountain syncline of south-central Montana. The literature on the formation is reviewed, and recent observations on field relations are noted. A map showing extent of the formation is given. A columnar section of Paleozoic strata near Livingston, Montana, is included.

Richards, T. C. *See* Bemrose, J.

Richardson, Carl B.

Regional discussion of Pennsylvanian reefs of Texas [abs.]: Tulsa Geol. Soc. Digest, v. 18, p. 74–75, illus., 1950; Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 619, Mar. 1950; Oil and Gas Jour., v. 48, no. 51, p. 118, Apr. 27, 1950.

Richardson, Eugene Stanley, Jr.

A middle Devonian octactinellid sponge from New York: Fieldiana; Geology, v. 10, no. 10, p. 79–88, illus., Oct. 5, 1950. Describes a new species, *Astraeospongia clauda*, collected from the Onondaga limestone near Snyder, western New York. Also included is a tabular comparison of spicule characteristics in various species of *Astraeospongia.*

Richmond, Gerald Martin.

Interstadial soils as possible stratigraphic horizons in Wisconsin chronology [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1497, Dec. 1950.

Richter, Charles Francis.

1. Velocities of P at short distances: Seismol. Soc. Am. Bull., v. 40, no. 4, p. 281–289, illus., Oct. 1950. New temporary stations in southern California for recording P seismic waves to epicentral distances not over 160 km. have shown their velocity to be near 6.4 km./sec. The data are given. V. S.
2. Seismic waves at short distances; progress report [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1546–1547, Dec. 1950.

Ricker, Norman.

(and Lynn, Ralph D.). Composite reflections: Geophysics, v. 15, no. 1, p. 30–49, illus. incl. geol. maps, Jan. 1950. A method is discussed for seismic reflection prospecting with the use of the PS phase traveling from the shot to the reflecting bed as a dilatation wave and from the reflecting bed to the surface as a shear wave. Advantages and limitations are indicated, and experimental application in Louisiana is described. V. S.

Ricker, R. W.

(and Hummel, Floyd A.). Reactions in the system SiO_2–TiO_2 and suggested revision of the phase diagram [abs.]: Am. Ceramic Soc. Bull., v. 29, no. 3, p. 128, Mar. 1950.

Riddell, John E.

A technique for the determination of traces of epigenetic base metals in rocks and its application to samples of unaltered and altered rocks surrounding ore bodies of the Amulet mine, Noranda, P. Q.: Quebec Dept. Mines, Mineral Deposits Br. and Laboratories Br., Prelim. Rpt. 239, 23 p. (‡), illus., 1950. Describes a modification of the dithizone method. The field tests indicate that as an ore body is approached the determinable heavy metal content (probably representing epigenetic metal) increases from less than 1 ppm to more than 20 ppm.

Ridland, George Carman.

Radioactivity at the Caribou silver mine, Boulder County, Colorado: Min. Eng., v. 187, no. 1, p. 98–101, illus., Jan. 1950; A. I. M. E. Trans., v. 187, 1950. A survey with a Geiger counter at the mining properties of Caribou Hill, one of the mineralized areas of the Front Range, revealed a radioactive ore body on the 1040 level. There was no surface indication of the ore, nor any indication of an above-normal gamma-ray count by the quartz-monzonite host rock.

Riecken, Frank Frederick.

Loess of Iowa with some interrelationship of soils, geology, and geography [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1572, Dec. 1950.

Ries, Heinrich, 1871–1951.

Foundry sands, *in* Applied sedimentation, p. 475–482, 1950. Among the points covered in the discussion are the shape and fineness of sand grains in foundry sands, properties such as cohesiveness, permeability, compressive strength, and flowability, properties at high temperatures, and distribution of foundry sands in the United States.

Rimsaite, Yadviga. *See* Hawley, J. E., 3.

Rinehart, John S.

Some observations on high-speed impact: Pop. Astronomy, v. 58, no. 9, p. 458–464, illus., Nov. 1950; Meteor. Soc. Contr., v. 4, no. 4, p. 299–305, illus., 1950. Summarizes experimental data on phenomena associated with the impact of high-velocity particles; in particular, the mechanics of crater formation. The probable mass of the meteorite that formed the Barringer meteorite crater in Arizona is calculated to be about 12,500 tons. Several conclusions on mass, impact, and crater formation are drawn.

Risi, J.

(and others). A chemical study of the peats of Quebec: Quebec Dept. Mines, Laboratories Br., Prelim. Rpt. 234, 36 p. (‡), illus., 1950. The method of analysis and the results obtained on 92 samples of peat from the Clair peat bog near Lévis, Quebec, are described. The chemical utilization of peat is discussed.

Rittenhouse, Gordon.

Red beds and the search for oil [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 123, Apr. 27, 1950.

Ritzius, D. E.

South Belridge oil field: Calif. Oil Fields, v. 36, no. 1, p. 18–24, illus., Jan.–June 1950. The South Belridge field is located in the southwestern part of the San Joaquin Valley, in Kern County, California. The development history, stratigraphy, structure, producing zones, and production statistics are briefly described.

Roberts, Albert E. *See* Snavely, P. D., Jr.

Roberts, Carroll Norton.

The metamict state: Compass, v. 27, no. 4, p. 223–226, May 1950. A brief resumé of the cause and characteristics of the metamict state, an amorphous form assumed by certain minerals. The metamict state is particularly characteristic of the rare-earth minerals.

Roberts, Elliott B.

(and Ulrich, Franklin Peter). Seismological activities of the U. S. Coast and Geodetic Survey in 1948: Seismol. Soc. Am. Bull., v. 40, no. 3, p. 195–216, illus., July 1950. Reviews the seismological activities of the U. S. Coast and Geodetic Survey in 1948 as regards the teleseismic and questionnaire work, strong motion, vibration, tiltmeter recording, instrumentation, research, cooperative projects, and related activities. Earthquake tabulations, isoseismal maps, and sample records are given. V. S.

Roberts, George Daniel. *See* Burwell, E. B., Jr., 1.

Roberts, Henry. *See* Howell, B. F., 2.

Roberts, Joseph Kent.

1. (and Gildersleeve, Benjamin, and Freeman, Louise Barton). Geology . . . of the Jackson Purchase region, Kentucky: Ky. Geol. Survey Bull. ser. 9, no. 4, 114 p., illus., incl. geol. maps, 1950. A reprinting, with revision, of Bulletin 8 of the Kentucky Dept. Mines and Minerals, 1945. Paleozoic structure and stratigraphy are described by L. B. Freeman, Cretaceous, Tertiary, and Quaternary stratigraphy by J. K. Roberts, and the mineral resources by B. Gildersleeve.
2. History of the development of geology, *in* The James River Basin, past, present and future, p. 442–464, illus., Va. Acad. Sci., 1950. Gives general information on stratigraphy, paleontology, mineral resources, ground water, springs, earthquakes, and geophysical investigations in the James River Basin area of Virginia.
3. The Triassic and Coastal Plain, *in* The James River Basin, past, present and future, p. 465–481, Va. Acad. Sci., 1950. Discusses the Triassic strata of the Piedmont province, and the Cretaceous, Tertiary, and Quaternary strata of the Coastal Plain in Virginia. A selected bibliography is included.

Robertson, Almon Fulton.

Mines and mineral deposits (except fuels), Fergus County, Mont.: U. S. Bur. Mines Inf. Circ. 7544, 76 p. (‡), illus. incl. geol. maps, Jan. 1950. Describes the mineral deposits and mines, chiefly worked for gold and silver values, of the Warm Springs district, the North Moccasin district, and the Cone Butte district in Fergus County, central Montana. Data for each formerly operating deposit are summarized and tabulated. Notes on the non-metallic mineral deposits, particularly gypsum and clay, are included.

Robertson, D. S.

Preliminary map, Elbow Lake, Manitoba: Canada Geol. Survey Paper 50–1, 1950. A geologic map with marginal notes. Pre-Cambrian greenstones, granites, and diorites characterize the area. V. S.

Robertson, Eugene C.

Strength of limestone [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1498, Dec. 1950.

Robertson, Florence. *See also* Volk, J. A., 1.

On the selection of a seismograph. 41 p., illus., St. Louis, Mo., Sprengnether Instrument Co., 1948. The principles, elements, and types of seismograph construction are described to aid choice of instruments suitable for specific problems. Consideration is given to requirements of a steady reference-point, registration of motions in different directions and of vibrations of different frequencies, and satisfactory damping, recording, magnifying, and timing of movement. V. S.

Robertson, George McAfee.

1. Some contributions of fossil study to the problem of vertebrate origin: Iowa Acad. Sci. Proc., v. 56, p. 379–384, 1949. A discussion of the theories that have been advanced to explain vertebrate origin and possible relationships to invertebrates. The role of the ostracoderms in the problem is considered and the possibility of the existence of fresh water animals between the ostracoderms and an invertebrate phylum is suggested.

Robertson, George McAfee—Continued

2. Paleoecology of the Agnatha: Natl. Research Council, Report of the Committee on a treatise on marine ecology and paleoecology, 1948-1949, no. 9, p. 111–116, Dec. 1949. An annotated bibliography of 35 references concerning ostracoderm paleoecology.
3. Species criteria in Osteostraci, with special reference to the genus *Tremataspis:* Am. Jour. Sci., v. 248, no. 5, p. 335–346, May 1950. "An attempt is made to compare species criteria as used in the genus *Tremataspis* with those used in establishing species in the other genera of the order Osteostraci. Exception is taken to Denison's use of histologic characters of the shield as an adequate basis for placing specimens which differ in other respects in the same species."

Robie, Edward H.

Josiah E. Spurr [1871–1950]: Min. Eng., v. 187, no 5, p. 632–633, May 1950.

Robinson, Gershon Duvall. *See* Finch, R. H., 5.

Robinson Gilbert C. *See* Buie, B. F.

Robinson, Raymond F. *See* Thurlow, E. E.

Robinson, Stephen Clive.

Mineralogy of the Goldfields district, Saskatchewan (interim account): Canada Geol. Survey Paper 50–16, 38 p. (‡), illus., 1950. The minerals of hydrothermal origin, particularly uranium-bearing, in the Goldfields district, Saskatchewan, are described. Their distribution, associations, paragenesis, and origin are discussed. A map of occurrences is given. V. S.

Robinson, Thomas William, Jr. *See also* Eakin, T. E., 2; Maxey, G. B.

Ground water in Nevada: Colo. Sch. Mines Quart., v. 45, no. 4B, p. 33–38, Oct. 1950. General comments on the distribution and quality of ground water in Nevada.

Rochow, T. G. *See* Davis, D. W.

Rodan, William Bird.

Good field, Borden County, Texas: Abilene Geol. Soc., Geol. Contr., p. 15–19, illus., 1950. The history of discovery, stratigraphy, structure, and production are briefly described.

Rodda, J. L. *See* Overholt, J. L.

Rodgers, John.

1. Mechanics of Appalachian folding as illustrated by Sequatchie anticline, Tennessee and Alabama: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 4, p. 672–681, illus., Apr. 1950. Study of the Sequatchie anticline in the Pennsylvanian strata of the Cumberland Plateau shows the existence of tear faulting at both ends. Formation mechanically similar to the Pine Mtn. thrust fault to the northeast is suggested, with the anticline forming where the thrusting cut from one weak layer to another On this basis, two areas of younger rocks surrounded by older ones are interpreted as windows which have been eroded through the thrust fault that disappears northwestward and on which the displacement must have been approximately 1½ miles.
2. The nomenclature and classification of sedimentary rocks: Am. Jour. Sci., v. 248, no. 5, p. 297–311, May 1950. Examination of existing classifications and their purposes affirms the necessity for both descriptive and genetic systems. It is suggested that an analytical descriptive classification, for use by laboratory workers, should be expressed entirely by measured parameters instead of rock names. V. S.

Rodríguez A., Raúl.

Notas breves sobre gas natural: Asoc. Mex. Geól. Petrol. Bol., v. 1, no. 2, p. 157–162, illus., Dec. 1949. The composite nature and modes of occurrence of natural gas are indicated, and three kinds—retrograde, humid, and dry—are distinguished on the basis of effects of subsurface pressure, temperature, and moisture, and are discussed briefly as to methods of exploitation. V. S.

Roe, Walter B.

Geologic features of North Dakota lignite: Econ. Geology, v. 45, no. 5, p. 434–440, Aug. 1950. Lignite occurs in the Fort Union and Lance formations (early Tertiary) in western North Dakota. The lignite horizons are continuous over large areas, but the individual seams are lenticular and vary from a few inches to more than 40 feet in thickness. The composition and characteristics are described.

Roedder, Edwin W.

Preliminary report on the system leucite–SiO_2–FeO [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 288, Mar.–Apr. 1950.

Rohrer, Robert H.

A portable high-speed Geiger counter for geologic surveys in Georgia: Ga. Geol. Survey Bull. 56, p. 117–129, illus., 1950. Description, diagram, and pictures of the apparatus.

Rold, John W.

1. Geology of the Wellsville area, north flank of the Sangre de Cristo Mountains, Colorado: Compass, v. 27, no. 3, p. 159–178, illus. incl. geol. map, Mar. 1950. A study of the pre-Pennsylvanian stratigraphy and structure in the Wellsville area, Colorado. The lithology of a measured section of the Ordovician, Devonian, and Mississippian rocks is described in detail. V. S.
2. Structure and pre-Pennsylvanian stratigraphy of the Wellsville area, Colorado [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1558, Dec. 1950.

Rolshausen, F. W.

(and Lowman, Shepard Wetmore). Geological guide books and road logs in the United States: Am. Geol. Inst. Rpt. no. 4, 77 p. (‡), June 1950. Gives titles and brief publication data for 210 guidebooks issued by various state geological surveys and professional societies.

Rolston, Jack W. *See* Trask, P. D., 4.

Romberg, Frederick. *See* Barnes, V. E., 1.

Romer, Alfred Sherwood.

1. The Upper Paleozoic Abo formation and its vertebrate fauna, *in* Guidebook for the fourth field conference of the Society of Vertebrate Paleontology in northwestern New Mexico, p. 48–55, 1950. Describes the historical background of vertebrate collecting from the Permian Abo formation in New Mexico, and compares the fauna with that from the Wichita group of Texas.
2. The nature and relationships of the Paleozoic microsaurs: Am. Jour. Sci., v. 248, no. 9, p. 628–654, illus., Sept. 1950. Establishes a series of characters for defining Paleozoic microsaurs. A number of Carboniferous and early Permian genera are included, but among those excluded is the "type" microsaur *Hylonomus*. "It seems best to retain the familiar ordinal term Microsauria for the group as here defined. The microsaurs appear to have no relationship to reptiles, but are possibly ancestral to the urodele and apodous amphibians." V. S.

Romney, Carl F. *See also* Tocher, D., 1.

1. (and Herrick, Charles E.). Earthquakes in northern California and the registration of earthquakes at Berkeley—Mount Hamilton—Palo Alto—San Francisco—Ferndale—Fresno, from January 1, 1942 to March 31, 1942: Calif. Univ. Seismog. Sta. Bull., v. 12, no. 1, p. 1–48 (‡), 1950; from April 1, 1942 to June 30, 1942, no. 2, p. 49–94 (‡), 1950.

Romney, Carl F.—Continued

2. (and Meeker, John E.). Earthquakes in northern California and Nevada and the registration of earthquakes at Berkeley—Mount Hamilton—Palo Alto—San Francisco—Ferndale—Fresno—Mineral—Arcata—Reno, from October 1, 1948 to December 31, 1948: Calif. Univ. Seismog. Sta. Bull., v. 18, no. 4, p. 279–355 (‡), 1949.
3. (and Meeker, John E.). Earthquakes and the registration of earthquakes, Berkeley—Mount Hamilton—Palo Alto—San Francisco—Ferndale—Fresno—Mineral—Arcata—Reno, from January 1, 1949 to March 31, 1949: Calif. Univ. Seismog. Sta. Bull., v. 19, no. 1, p. 1–78 (‡), 1950; from April 1, 1949 to July 31, 1949, no. 2, p. 79–152 (‡), 1950.

Rooney, William Joseph. *See* Tuve, M. A., 1.

Rosalsky, Maurice B.

The characteristics of beach drifting: Shore and Beach, v. 18, no. 1, p. 6–8, illus., Apr. 1950; discussion by Martin A. Mason, p. 8–10. On Fire Island, off the south coast of Long Island, New York, beach drifting by the action of waves is controlled more by storm winds from the east than by prevailing winds from the southwest. Observations on the relative speed of the coarse and fine material by drifting and on the paths of the coarse particles are described and discussed.

Rose, Bruce.

Everend Lester Bruce (1884–1949): Royal Soc. Canada Proc., 3d ser., v. 44, p. 73–76, port., 1950.

Rose, Edward Roderick.

Preliminary map, Torbay, Newfoundland: Canada Geol. Survey Paper 50–24, 1950. Geologic map, with descriptive notes, of an area of pre-Cambrian and Ordovician rocks mantled with glacial drift in southeastern Newfoundland.

Rose, Kenneth E.

Silica sand from south-central Kansas for foundry use: Kans. Univ., State Geol. Survey Bull. 86, pt. 4, p. 85–104, illus., Oct. 30, 1950. Screen analyses and foundry tests of the Cheyenne sandstone indicate that it can be a satisfactory source of silica sand for making synthetic molding sand or cores. The data are given, and economic aspects are discussed. V. S.

Rose, Walter D.

(and Wyllie, M. R. J.). Specific surface areas and porosities from photomicrographs: Am. Assoc. Petrol. Geol Bull., v. 34, no. 8, p. 1748–1749, Aug. 1950. The statistical method of H. W. Chalkley, et al. (Science, v. 110, p. 295–97, 1949) for estimating volume-surface ratios in biological specimens is modified for the determination of specific surface areas and porosities in porous geologic media from photomicrographs. The principles are also found applicable to the examination of surface areas and percentage compositions of the components in geologic thin sections. V. S.

Rosenfeld, John L.

Determination of all principal indices of refraction on difficultly oriented minerals by direct measurement: Am. Mineralogist, v. 35, nos. 9–10, p. 902–905, Sept.–Oct. 1950. "A device and method of general applicability is described whereby one can determine all principal indices of refraction on a single grain of non-opaque substance by direct measurement. The materials used are easily obtained and cost less than one dollar."

Rosenfeld, Melvin Arthur.

Problem of porosity [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1498, Dec. 1950.

Rosenholtz, Joseph Leon.

1. (and Smith, Dudley Thompson). Comments on the characteristics of heat-treated Yule marble: Am. Jour. Sci., v. 248, no. 5, p. 352–354, May 1950. Fabric analysis and determination of linear thermal expansion on marble from Yule, Colorado, show such approaches to be useful in studies of the deformational history of rocks. (*See* Turner, F. J., 1.)
2. (and Smith, Dudley Thompson). Crestmore Sky Blue marble, its thermal expansion and color: Am. Mineralogist, v. 35, nos. 11–12, p. 1049–1054, illus, Nov.–Dec. 1950. The coefficients of linear thermal expansion were determined from 20–700 C for specimens cut with various orientations, from the Sky Blue marble at Crestmore, California. The results are interpreted with a view to correlation with deformational stress and geologic structure. The blue color is attributed to residual strain, and is relieved by heating.

Roseveare, George H. *See* Wilson, E. D., 1.

Ross, Clarence Samuel.

The dark-field stereoscopic microscope for mineralogic studies: Am. Mineralogist, v. 35, nos. 9–10, p. 906–910, illus., Sept.–Oct. 1950. "Dark-field illumination has not been widely used in the study of minerals, but the stereoscopic microscope can readily be adapted to make use of the dark-field effect. The dark-field stops that may be used with the stereoscopic microscope are described, together with some of the applications for which the method has proved most useful."

Ross, Clyde Polhemus.

Fluorspar prospects of Montana: U. S. Geol. Survey Bull. 955–E, p. 173–224, illus. incl geol. maps, 1950. Several areas in Montana have been explored for fluorspar, among which are the Sweetgrass Hills, the Spar property in Mineral County, the Boeing prospect near Austin, and the Silver Bow claims near Silver Bow. The fluorite occurs in metalliferous deposits, many of which are replacement deposits in limestone. The geology, mineralogy, and economic aspects of the occurrences are described, and geologic sketch maps are given. V. S.

Ross, Reuben J., Jr.

Ontogenetic development of selected Lower Ordovician trilobites [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1498–1499, Dec. 1950.

Ross, Stewart Hamilton.

Preliminary report on the geology of the Sagard-Callières region, Charlevoix, Chicoutimi, and Saguenay Counties: Quebec Dept. Mines, Mineral Deposits Br., Prelim. Rpt. 244, 8 p. (‡), geol. map, 1950. Describes briefly the pre-Cambrian rocks of the area, with notes on the structure and on the occurrence of mica.

Rothrock, Edgar Paul.

(and Hubbard, George David). New work on bed of Lake Dakota, South Dakota [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1499, Dec. 1950.

Rothrock, Howard Eugene.

1. (and Wagner, Holly Clyde, and Haley, Boyd R.). Geology of anthracite in the west-central part of the Mount Carmel quadrangle, Pennsylvania: U. S. Geol. Survey Coal Inv. Map C3 (3 sheets). Scale 1:6,000 or 1 inch to 500 feet. 1950. Sheet 1 shows coal outcrops and features associated with coal mining; Sheet 2 is a structure map of the Buck Mountain coal bed; Sheet 3 consists of cross sections, columnar section, correlation chart showing variation in intervals between coal beds, and a text describing the stratigraphy, structure and individual beds.
2. A summary and critique of the estimates of Pennsylvania anthracite reserves, *in* Symposium on mineral resources in Pennsylvania: Pa. Acad. Sci. Proc., v. 24, p. 192–197, 1950. The factors and methods used in making estimates of anthracite are discussed, and previously made estimates are summarized. Ashley (1945) estimated the unmined reserves at 15.8 billion tons, or a mining life of approximately 175 years.

Rouse, John Thomas. *See* Kaufmann, G. F.

Rowe, F. G. *See* Davis, D. W.

Rowley, Elmer B.

Minerals in our world: Rocks and Minerals, v. 25, nos. 5–6, p. 227–245, illus., May–June 1950. A popular account of the origin of minerals, touching on such points as mineral definition, types of mineral deposition, precipitation, metasomatism, metamorphism, and evaporation.

Roy, Chalmer John. *See* Mather, K. F., 1.

Roy, Della M. *See also* Roy, R.

(and Roy, Rustum, and Osborn, Elburt Franklin). Phase relations and structural phenomena in the fluoride-model systems $LiF–BeF_2$ and $NaF–BeF_2$: Am. Ceramic Soc. Jour., v. 33, no. 3, p. 85–90, illus., Mar. 1950.

Roy, Rustum. *See also* Counts, W. E.; Roy, D. M.

(and Roy, Della M., and Osborn, Elburt Franklin). Compositional and stability relationships among the lithium aluminosilicates; eucryptite, spodumene, and petalite: Am. Ceramic Soc. Jour., v. 33, no. 5, p. 152–159, illus., May 1, 1950. The results of a phase-equilibrium study of mixtures lying on the join eucryptite-silica in the system $Li_2O–Al_2O_3–SiO_2$ are presented. Hydrothermal techniques were used to obtain equilibrium relations among the crystalline phases at low temperature. The low forms of eucryptite, spodumene and petalite were synthesized. The upper limits of stability of the naturally occurring forms were found to be 972, 500, and 680 C respectively.

Roy, Sharat Kumar.

1. (and Wyant, Robert Kriss). The Smithonia meteorite: Field Mus. Nat. History, Geol. ser., v. 7, no. 9, p. 129–134, illus., Dec. 22, 1950. Describes and gives a chemical analysis of the Smithonia meteorite from Oglethorpe County, Georgia.
2. (and Wyant, Robert Kriss). The La Porte meteorite: Field Mus. Nat. History, Geol. ser., v. 7, no. 10, p. 135–144, illus., Dec. 22, 1950. Describes the structure and constituents, and gives chemical analyses of the La Porte meteorite from La Porte County, Indiana.

Rubey, William Walden.

1. Geologic evidence regarding the source of the earth's hydrosphere and atmosphere [abs.]: Science, v. 112, no. 2912, p. 454, Oct. 20, 1950.
2. Geologic history of sea-water [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1499–1500, Dec. 1950.

Ruhe, Robert V.

1. A Bignell (?) loess section in western Iowa: Iowa Acad. Sci. Proc., v. 56, p. 229–231, illus., 1949. Describes a section exposed in a road cut in Harrison County, Iowa, which by comparison with the Bignell type section in Nebraska and other sections, is identified as Bignell loess.
2. Graphic analysis of drift topographies: Am. Jour. Sci., v. 248, no. 6, p. 435–443, illus., June 1950. Topography is used as a criterion for differentiation of glacial drifts of different ages. A quantitative method of analysis in graphic form is proposed. Relationships of the Wisconsin drifts of northwestern Iowa are demonstrated by application of the method.
3. Reclassification and correlation of the glacial drifts of northwestern Iowa and adjacent areas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1500–1501, Dec. 1950.

Rummerfield, Benjamin F.

Algunos problemas de la exploración sismológica en México: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 5, p. 305–311, May 1950; in English and Spanish, Petróleo Interamericano, v. 8, no. 9, p. 28–29, 60, 62, illus., Sept. 1950; in English, Mines Mag., v. 40, no. 10, p 120–122, 129, illus., Oct. 1950. Outlines several problems of seismological exploration for petroleum in Mexico, touching on the effect of intrusive and extrusive rocks, salt domes, reefs, faults, and fractures.

Runke, S. M. *See* Thoenen, J. R.

Runnels, Russell T. *See* Nixon, E. K., 2.

Russell, Charles D.

(and Dickey, Parke Atherton). Porosity, permeability, and capillary properties of petroleum reservoirs, *in* Applied sedimentation, p. 579–615, illus., 1950. Porosity and permeability are discussed as measurable properties controlled by the petrographic texture of the rock. The sedimentary factors which affect these properties are outlined. Points considered are bedding, grain size, packing, clay content, and cementation.

Russell, James E.

Practical aspects of core analysis: Abilene Geol. Soc., Geol. Contr., p. 11–14, 1950. The use of core analyses in determining permeability and porosity is discussed.

Russell, Loris Shano.

1. A new locality for fossil fishes and eurypterids in the Middle Devonian of Gaspé, Quebec: Royal Ontario Mus. Paleontology Contr. 12, 6 p., illus., July 1947. Describes a new fossil locality east of D'Aiguillon post office, Gaspé County, Quebec. The stratum is called the D'Aiguillon bone bed, and is calculated to lie about 2,300 feet above the base of the Gaspé sandstone. A measured section is given. Preliminary work indicates the presence of a species of *Pterygotus*, *Cephalaspis*, and of a small pelecypod, possibly *Modiomorpha*.
2. Correlation of the Cretaceous-Tertiary transition in Saskatchewan and Alberta: Geol. Soc. Am. Bull., v. 61, no. 1, p. 27–42, illus., Jan. 1950; reprinted in Geol. Assoc. Canada Proc., v. 2, Apr. 1950. The author's earlier conclusions are reviewed in the light of various recent studies, and revised correlations are given for several localities. The most important change is the extension of the time range of the Edmonton formation to include the portion equivalent to part of the Lance stage. V. S.
3. The Tertiary gravels of Saskatchewan: Royal Soc. Canada Trans., 3d ser., v. 44, sec. 4, p. 51–59, June 1950; abs., Proc., 3d ser, v. 44, p. 226, 1950. Results of recent work on the three Tertiary mammalian faunas of Saskatchewan are described. The faunas are those of the Swift Current Creek beds (Eocene), Cypress Hills formation (Oligocene), and the Wood Mountain gravel (Miocene). Notes on the Flaxville gravels of northeastern Montana are included.

Russell, Richard Dana.

1. Applications of sedimentation to naval problems, *in* Applied sedimentation, p. 656–665, 1950. Information on sediments is useful in problems involving underwater sound, installation of underwater equipment, mining operations, amphibious operations, and shore installations. Examples of the application of such information are given.
2. Research in submarine geology sponsored by the U. S. Navy: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 8, p. 63–68, 1950; abs., Volume of titles and abstracts, p. 56, 1948. The U. S. Navy participates in submarine geological research that includes compilation of data on bottom sediments in shallow water, detailed bottom surveys of particular areas, and collection of samples and cores from the deep sea. The purpose and scope of these activities are described.

Russell, Richard Joel.

The Pliocene-Pleistocene boundary in Louisiana: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 9, p. 94–96, 1950; abs., Volume of titles and abstracts, p. 63, 1948. The recognition of subdivisions of the Tertiary in Louisiana is discussed, and it is shown that no basis for distinguishing Miocene and Pliocene exists. The Louisiana Geological Survey does not recognize any Pliocene in the state. The Pliocene-Pleistocene boundary is placed at the base of deposits formed during the first major ice advance.

Ruwwe, Ralph Walter.

Résumé of development of Forest City Basin of northeast Kansas [abs.]: Am. Assoc. Petrol Geol. Bull., v. 34, no. 3, p. 624, Mar. 1950.

Sagui, Cornelio L. *See* Bain, G. W., 1.

Sahama, Thure Georg. *See* Rankama, K.

Sahinen, Uuno M.

Geology and ore deposits of the Highland Mountains, southwestern Montana: Mont. Bur. Mines and Geology Mem. 32, 63 p. (‡), illus. incl. geol. map, 1950. The Highland Mountains, 15 miles south of Butte, Montana, are formed by highly folded sedimentary rocks of pre-Cambrian through Cretaceous age, intruded by the quartz-monzonite Boulder batholith. Mineralization accompanying the intrusions resulted in gold, silver, copper, lead, zinc, and molybdenite deposits. Phosphate rock occurs in the Phosphoria formation of Permian age. The formations, deposits, and mines are described and mapped. V. S.

Said, Rushdi.

Geology in tenth century Arabic literature: Am. Jour. Sci., v. 248, no. 1, p. 63–66, Jan. 1950. The Arabic classic "Discourses of the Brothers of Purity" is found to contain a description of a metamorphic cycle and mentions of peneplanation, pond evolution, epicontinental seas, weathering, erosion, and particle transport by streams and wind. V. S.

Sakamoto, Takao.

The origin of the pre-Cambrian banded iron ores: Am. Jour, Sci. v. 248, no. 7, p. 449–474, illus., July 1950. Cyclical deposition of colloids due to a periodic change of reaction (pH) of lake water is proposed to account for banding in pre-Cambrian iron ores. The 2-component and 3-component ores, of alternating bands, are both products of primary sedimentation. The regularity and purity of the bands and thickness of the beds indicate chemical weathering and deposition. The unique environment of shallow lakes and a monsoon-like climate prevailed only in the middle pre-Cambrian and has never been repeated in later geologic ages.

Salas, Guillermo P.

Bosquejo geológico de la cuenca sedimentaria de Oaxaca: Asoc. Mex. Geól. Petrol. Bol., v. 1, no. 2, p. 79–156, illus. incl. geol. map, Dec. 1949. The Triassic, Jurassic, Cretaceous, and Tertiary (?) strata of Oaxaca Province, Mexico, are described in detail, with consideration of paleogeography, structure, and oil possibilities. An appendix (p. 152–156) by Enrique Díaz Lozano and Raúl Escalante Mendoza lists fossils identified from the Jurassic and Cretaceous. V. S.

Sales, Reno Haber.

1. (and Meyer, Charles). Interpretation of wall-rock alteration at Butte, Montana, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 261–273, illus., Jan. 1950. The extensive mineralogical and chemical changes involved in the alteration of the quartz monzonite at Butte are reviewed; the contemporaneous development of argillized and sericitized zones is suggested; and the factors controlling the zonal pattern of the alteration are discussed.
2. [Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 284, 321–322, 339–342, illus., Jan. 1950.

Sampson, Norman N. *See* Barton, C. L.

Sanborn, James F.

Engineering geology in the design and construction of tunnels, *in* Application of geology to engineering practice, Berkey Volume, p. 45–81, illus., Geol. Soc. Am., New York, 1950. The function of a geologist and the usefulness of geology in tunnel construction is described by using examples of specific projects from the work of C. P. Berkey. The Catskill Aqueduct, the Delaware Aqueduct, tunnels in New York City, and tunnels in other regions are described.

Sánchez Roig, Mario.

1. Los equinodermos fósiles de Cuba: Paleontología Cubana, I, p. 1–302, illus., 1949. Systematic descriptions of 310 fossil echinoderms of Cuba. Three new genera are described:—*Pseudorthopsis* Lambert, *Hernandezaster* Sánchez Roig, and *Palmeraster* Sánchez Roig. Approximately 140 new species are described.
2. La fauna Jurásica de Viñales: Anales Acad. Ciencias Médicas, Físicas y Naturales Habana, v. 89, fasc. 2, p. 47–94, illus., 1950–1951. The Jurassic stratigraphy and paleontology of the Viñales region of western Cuba is briefly reviewed. The major part of the article is given to a description of genera and species of Jurassic ammonoids and nautiloids, of which 26 are new.

Sand, Leonard B. *See* Bates, T. F., 1.

Sargent, S.

(and Shotwell, J. Arnold). Preliminary report of a new vertebrate locality near Pendleton, Oregon [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1540–1541, Dec. 1950.

Satterly, Jack.

1. Preliminary report on drilling to determine stratigraphic succession at Jaab Lake, District of Cochrane: Ontario Dept. Mines Prelim. Rpt. 1950–3, 14 p. (‡), 1950. Drilling on the north shore of Jaab Lake, Ontario, to a depth of 1,810 feet yielded a core of Devonian and Silurian strata. Formational divisions and correlations are given, with fossil identifications by A. E. Wilson. V. S.
2. Preliminary report on drilling to determine stratigraphical succession in Sanborn Township, District of Cochrane: Ontario Dept. Mines Prelim. Rpt. 1950–2, 3 p. (‡), Mar. 1950. A drill hole on the east shore of Campbell Lake, Ontario, to a depth of 1,129 feet shows Devonian strata and pre-Cambrian igneous rocks overlain by 700 feet of Pleistocene clays and sands. Fossil identifications by A. E. Wilson are given. V. S.

Saunders, Donald F. *See* Daniels, F.

Savage, C. N.

Earthflow associated with strip mining: Min. Eng., v. 187, no. 3, p. 337–339, illus., Mar. 1950. The effects of excavation work in producing landslide-type movements are discussed and illustrated by an example of strip mining near Macksburgh, Ohio. They are found dependent on subsurface materials, water table, drainage pattern, and load distribution on bearing surfaces. V. S.

Savage, Donald Elvin.

New evidence concerning the chronologic and geographic range of the long-horned bison of North America [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1541, Dec. 1950.

Savage, John Lucian.

(and Rhoades, Roger Farnsworth). Charles Peter Berkey [biographical sketch], *in* Application of geology to engineering practice, Berkey Volume, p. xi–xix, port., Geol. Soc. Am., New York, 1950.

Savage, William S.

General geology and structure in Kirkland Lake area: Canadian Min. Jour., v. 71, no. 11, p. 107–109, illus. incl. geol. sketch map, Nov. 1950. The pre-Cambrian geology, structure, and mineralization of the Kirkland Lake gold area in eastern Ontario are briefly outlined.

Sayre, Albert Nelson.

1. Ground-water investigations in the United States: Smithsonian Inst. Ann. Rpt., 1949, p. 219–225, 1950; reprinted from Econ. Geology, v. 43, no. 7, p. 547–552, Nov. 1948. General comments on the progress of investigations.

Sayre, Albert Nelson—Continued

2. Applications of geology to the investigation of our water resources, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 75–106, illus., Jan. 1950. The development of ground-water geology and its importance to the investigation of water resources are discussed. General comments on the occurrence and movement of ground water are made, and the need for more research on various problems is indicated.
3. Ground water: Sci. Am., v. 183, no. 5, p. 14–19, illus., Nov. 1950. In view of recent water shortages in many sections of the United States, the hydrology, occurrence, and distribution of ground water are discussed.

Sceva, Jack E.

Preliminary report on the ground-water resources of southwestern Skagit County, Washington: U. S. Geol. Survey, Washington (State) Groundwater Rpt. 1, 40 p. (‡), illus. incl. geol. map, Dec. 1950. The Tertiary and Quaternary geologic history of the southwestern part of Skagit County, in northwestern Washington, is outlined. Ground water occurs chiefly in sand and gravel strata of the Skagit River delta. Well records and water analyses are included.

Schaeffer, Bobb.

(and Dunkle, David Hosbrook). A semionotid fish from the Chinle formation, with consideration of its relationships: Am. Mus. Nat. History Novitates, no. 1457, 29 p., illus., Mar. 15, 1950. Describes a new species, *Semionotus kanabensis* from the Chinle formation (Upper Triassic) near Kanab, Utah. Includes a discussion of the origin and evolutionary trends in certain of the Holostei.

Schairer, John Frank.

1. (and Osborn, Elburt Franklin). The system $CaO-MgO-FeO-SiO_2$; 1, Preliminary data on the join $CaSiO_3-MgO-FeO$: Am. Ceramic Soc. Jour., v. 33, no. 5, p. 160–167, illus., May 1, 1950. "Presents quenching data for a portion of the plane $CaSiO_3-MgO-FeO$ and optical data on the melilites."
2. The alkali-feldspar join in the system $NaAlSiO_4-KAlSiO_4-SiO_2$: Jour. Geology, v. 58, no. 5, p. 512–517, illus., Sept. 1950. The study of the alkali-feldspar join $KAlSi_3O_8-NaAlSi_3O_8$ shows an unbroken series of solid solutions between these alkali feldspars. A revised equilibrium diagram for the system is given, but the data on which it is based are to be given in full later.

Schaller, Waldemar Theodore.

1. Miserite from Arkansas; a renaming of natroxonotlite: Am. Mineralogist, v. 35, nos. 9–10, p. 911–921, Sept.–Oct. 1950. A reinvestigation of a pink calcium silicate, occurring with wollastonite in a contact metamorphosed shale at Potash Sulphur Springs, Arkansas, indicates that the original analysis is in error. The mineral, formerly named natroxonotlite, is here renamed miserite. The formula is $K_2O.8CaO.10SiO_2.3H_2O$. Physical, optical, chemical, and X-ray data are given.
2. An interpretation of the composition of high-silica sericites: Mineralogical Mag., v. 29, no. 211, p. 406–415, illus., Dec. 1950. The high-silica sericites contain more divalent elements, chiefly Mg and Fe, than those sericites whose silica content is about the same as nonsericitic muscovite, and their chemical composition is intermediate between muscovite and leucophyllite. The series muscovite-leucophyllite includes the named micas phengite, mariposite and alurgite. It is recommended that only the species names of the end members be retained.

Schaub, Hans Peter.

On the pre-Cambrian to Cambrian sedimentation in NE-Greenland: Meddelelser om Grønland, Bind 114, no. 10, 50 p., illus., 1950. Describes the stratigraphy and conditions of sedimentation of the Lower Limestone group, Tömmer Bay group, and Upper Limestone group, of pre-Cambrian and Cambrian age, in the vicinity of Kap Oswald, Northeast Greenland. The three groups represent three periods of marine deposition; the first and last mainly of chemical and biochemical character, the middle one of clastic and chemical sediments mixed.

Scheidegger, A. E.

1. (and Wilson, John Tuzo). An investigation into possible methods of failure of the earth: Geol. Assoc. Canada Proc., v. 3, p. 167–190, illus., Dec. 1950. "The question of the cause of island arcs and curved mountain ranges is investigated. It is shown that most of these arcs are roughly circular or spiral shaped and that their physical cause must lie in the asthenosphere. Methods of failure of spherical shells are theoretically investigated for matter in different states and applied to the asthenosphere. It is shown that contraction in a cooling earth is the most likely cause . . ."
2. The collapse of a contracting earth [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 221, 1950.

Schemel, Mart P.

1. Carboniferous plant spores from Daggett County, Utah: Jour. Paleontology, v. 24, no. 2, p. 232–244, illus., Mar. 1950. Post-Madison, pre-Belden plant spores from Lucerne Valley are described, with comparison to British, Polish, and Russian samples of similar age. Two new genera, *Rotaspora* and *Tripartites*, are proposed. V. S.
2. Cretaceous plant microfossils from Iowa: Am. Jour. Botany, v. 37, no. 9, p. 750–754, illus., Nov. 1950. Describes plant microfossils collected from a Cretaceous coal bed in Plymouth County, Iowa. Species of *Chrysotheca*, *Spermatites*, *Arcellites*, and *Molaspora* are described. *Molaspora* is a new genus; the species are new except those of *Spermatites*.
3. Small-spore correlation methods [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 674, Oct. 1950.

Schenck, Hubert Gregory.

(and Keen, Angeline Myra). California fossils for the field geologist. 88 p. (‡), illus. Stanford University Press, Stanford University, California. 1950. A handbook for rapid identification of fossils in the field.

Schenk, Edward Theodore. *See* Campbell, I., 2.

Schevill, William E.

An upper Jurassic sepioid from Cuba: Jour. Paleontology, v. 24, no. 1, p. 99–101, illus., Jan. 1950. "In evidence that true sepioids existed in the Upper Jurassic, a new genus [*Voltzia*] is described from the Jagua formation of western Cuba."

Schieck, Emmett E. *See* Summerford, H. E.

Schieltz, N. Cyril. *See* Mielenz, R. C.

Schmidt, Eugene. *See* Mann, R.

Schmitt, Harrison Ashley.

1. The fumarolic-hot spring and "epithermal" mineral deposit environment, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 209–229, Jan. 1950. Data on fumaroles, hot springs, and "epithermal" (shallow) mineral deposits are reviewed. The possibility of similar conditions of origin is considered and used as a basis for a detailed discussion of the origin of "epithermal" deposits.
2. [Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 285, 322–324, 327, 338–339, Jan. 1950.
3. Uniformitarianism and the ideal vein: Econ. Geology, v. 45, no. 1, p. 54–61, Jan.–Feb. 1950. Views of the genesis of veins, based on the assumption of uniform processes throughout the earth's history, are questioned; evidence is cited of fundamental changes with time; and broader hypotheses of mineralization are deemed necessary. It is pointed out that some elements are characteristic of late time, as mercury, selenium, tellurium, whereas others appear unevenly distributed in early time, as sulphur. V. S.

Schmitt, Harrison Ashley—Continued

4. Origin of the "epithermal" mineral deposits: Econ. Geology, v. 45, no. 3, p. 191–200, May 1950. Discussion by F. G. Smith and A. D. Mutch, no. 7, p. 701–703, illus., Nov. 1950. "The problem is outlined. 'Epithermal' is defined. The characteristics of 'epithermal' deposits are described. The various hypotheses of origin are discussed, particularly the possible relationship to fumarolic-hot spring phenomena. An attempt is made to place the ore mineral phase in a theory of origin. Conclusions are followed by suggested implications."
5. The genetic classification of the bed rock hypogene mineral deposits: Econ. Geology, v. 45, no. 7, p. 671–680, illus., Nov. 1950. "Genetic hypotheses and derived classifications have varied in extreme cycles. There are objections to certain features of the Lindgren hypothesis and classification. A proposed provisional classification is outlined. This uses the apparently fundamental and objective factors of depth and temperature expressed by ordinates and abscissae on charts. Areas on these represent well known genetic types of ore deposits."

Schneider, Hyrum.

Stratigraphic problems in the Duchesne River Valley, Utah [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1558–1559, Dec. 1950.

Schneider, Robert.

(and Blankenship, R. R.). Subsurface geologic cross section from Claybrook, Madison County, to Memphis, Shelby County, Tennessee: Tenn. Dept. Conserv. Div. Geology, Ground-Water Inv., Prelim. Chart 1, one sheet, 1950. In addition to the cross section, a generalized columnar section is shown together with descriptive data on the formations, ground-water levels, and wells. Chemical analyses of water from several wells are also given.

Schoff, Stuart Leeson.

1. Ground water in the Cherokee area, Alfalfa County, Oklahoma: Okla. Geol. Survey, Mineral Rpt. 21, 18 p. (‡), illus., 1950. Ground water occurs in the bedrock, the terrace deposits, and alluvium. The ground water in the bedrock is limited in quantity and may be highly mineralized, and that from the alluvium has a high mineral content.
2. Geology and water well construction: Am. Water Works Assoc. Jour., v. 42, no. 5, p. 475–478, May 1950. A brief discussion of some of the aspects of geology encountered in water well drilling, e. g. identification of the formation at the site, grain size of the particles in the aquifer, degree of consolidation of the rock, soluble minerals in the aquifer, and underground water circulation. Accurate geological information is considered fundamental in the preparation of water well contract proposals.

Schopf, James Morton.

Plant microfossils and Paleozoic stratigraphy [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 178, Apr. 27, 1950.

Schraut, Joseph A., Jr.

The occurrence and association of millerite and fluorite in limestone quarries of the St. Louis, Missouri, area: Rocks and Minerals, v. 25, nos. 3–4, p. 134–135, Mar.–Apr. 1950.

Schulman, James Herbert. *See* Birks, L. S.; Claffy, E. W.

Schultz, Charles Bertrand.

1. (and Falkenbach, Charles Henry). Phenacocoelinae, a new subfamily of oreodonts: Am. Mus. Nat. History Bull., v. 95, art. 3, p. 89–149, illus., Nov. 13, 1950. The new subfamily, Phenacocoelinae, contains four genera, three of which are new: *Phenacocoelus* Peterson, *Hypsiops*, *Submerycochoerus*, and *Pseudomesoreodon*. Twelve species, of which seven are new, and one subspecies are described and illustrated. Except for the occurrence of *Phenacocoelus stouti* in middle Miocene beds, the subfamily is so far known only from the lower Miocene.
2. The use of vertebrate paleontologic evidence in the relative dating of geologic deposits [abs.]: Nebr. Acad. Sci. Proc., 60th Ann. Mtg., p. 15, May 1950.

Schultz, John Russell.

(and Krinitzsky, Ellis Louis). Geology of the Lower Red River: Waterways Expt. Sta. Tech. Memo. no. 3–319, 72 p., illus. incl. geol. map, Sept. 1950. The report gives data on the bedrock geology, comprising the Tertiary strata, and the alluvial geology, comprising the Pleistocene deposits. The geological history of the region is traced. A section is devoted to engineering geology. The Lower Red River Valley is defined to include the area south of the Louisiana-Arkansas boundary. Numerous maps show the distribution of geologic formations and of soils.

Schwartz, Ely. *See* Frizzell, D. L., 3.

Schwartz, George Melvin.

Problems in the relation of ore deposits to hydrothermal alteration, *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 197–208, illus., Jan. 1950. Specifically discussed is the effect of different compositions of host rocks as a factor in hydrothermal alteration. The problem of interpolating alteration patterns from one region to another is discussed, using the San Manuel copper district in Arizona as an example. The application of alteration studies to the search for ore is also discussed.

Sclar, Charles B.

1. Origin of a layered ultramylonite from southeastern Connecticut [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, p. 2, p. 1501, Dec. 1950.
2. Time relation of magmatic intrusion to polymetamorphism at Preston, Connecticut [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1573, Dec. 1950.

Scott, H. Steuart. *See* Kennedy, G. C., 2.

Scott, Harold William.

The Big Snowy group (Mississippian): Billings Geol. Soc., First Annual Field Conference, Sept. 15–17, 1950, p. 47–48, illus., 1950. Brief notes on the paleogeography of central Montana during the deposition of the Big Snowy group sediments.

Scott, W. Frank. *See also* Wheeler, H. E., 1.

Triassic stratigraphy in the central Wasatch Mountains, Utah [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1530, Dec. 1950.

Scruton, Philip C.

The petrography and environment of deposition of the Warner, Little Cabin, and Hartshorne sandstones in northeastern Oklahoma: Am. Jour. Sci., v. 248, no. 6, p. 408–426, illus., June 1950. On the basis of sedimentary structures, lithologic characteristics, fossil evidence, and areal distribution, three environments of sand deposition are indicated, river channel, submarine channel, and near shore neritic zone. The deposition environments show that the Des Moines series in the Warner-Pryor district represents a moderate-sized delta. Correlation of particular beds in the delta by means of heavy minerals was not possible.

Seale, Tom. *See* McGee, D. A.

Seaman, David Martin.

(and Hamilton, Howard V.). Occurrence of polymorphous wurtzite in western Pennsylvania and eastern Ohio: Am. Mineralogist, v. 35, nos. 1–2, p. 43–50, illus., Jan.–Feb. 1950. Describes the field occurrence and mineralogy of three new zinc sulfide polymorphs found in the Conemaugh formation in Pennsylvania and Ohio. (See also Frondel, 1.) V. S.

Searight, Walter Vernon. *See also* Greene, F. C.

The status of coal resources studies: Econ. Geology, v. 45, no. 4, p. 324–330, June–July 1950. "Discussion of the status of coal resources studies is mostly restricted to mapping of coals, exploration, overburden studies, mined out areas, areal variation studies, and estimates of coal reserves. The work of various workers and agencies in each type of study is summarized and comments on the adequacy of the various studies are made."

Searls, Fred, Jr.

The Emerald Isle copper deposit: Econ. Geology, v. 45, no. 2, p. 175–176, Mar.–Apr. 1950. The occurrence of abundant chrysocolla and other secondary copper minerals at the Emerald Isle deposit, Arizona, is the result of deposition from solutions raised by capillary action from the bedrock surface into overlying gravel, rather than from deposition by ascending hypogene solutions that rose along fissures and spread out into the adjacent alluvium. A low-grade ore, located by geophysical surveys, is the source of the copper.

Sears, Paul Bigelow.

Pollen analyses in old and New Mexico: Geol. Soc. Am. Bull., v. 61, no. 10, p. 1171, Oct. 1950. A brief note on fossil pollen in sediments within the Basin of Mexico and in northern New Mexico. Alternation of humid and dry conditions and definite connections with glacial retreats and re-advances are indicated for both regions. V. S.

Segerstrom, Kenneth. *See also* Smith, W. C.

Erosion studies at Parícutin, State of Michoacán, Mexico: U. S. Geol. Survey Bull. 965–A, 164 p., illus. incl. maps, 1950. Erosional processes were studied in the area of Parícutin Volcano, Mexico, because they develop so rapidly in the ash under the action of summer rains and dry-season winds that they can be observed in operation. Local geology, eruption history, characteristics of ash mantle, and erosion, transportation, and redeposition of ash are described. V. S.

Seigel, Harold O.

A theory of fracture of materials and its application to geology: Am. Geophys. Union Trans., v. 31, no. 4, p. 611–619, illus., Aug. 1950. "A theory of fracture of materials is developed which encompasses shear and tension failure . . . Applied to geology the theory accounts for certain types of faults, jointing in rocks, for certain effects of increase in depth, and for the deflection or termination of a fault by an earlier fault or shear zone."

Sellards, Elias Howard.

Geologic section and succession of human cultures in the late Pleistocene of the Clovis-Portales region, eastern New Mexico [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1501–1502, Dec. 1950.

Selvig, Walter Alfred.

(and others). American lignites; geological occurrence, petrographic composition, and extractable waxes: U. S. Bur. Mines Bull. 482, 63 p., illus., 1950. Lignites of Arkansas, California, Texas, North Dakota, Montana, and Washington were investigated to determine the yield and properties of their extractable montan waxes. The geology of the deposits, the economic characteristics of the waxes, and the petrography of the lignites are described. V. S.

Serr, Eugene F., 3d.

Progress report, investigations of fluvial sediments of the Niobrara River near Cody, Nebraska: U. S. Geol. Survey Circ. 67, 25 p. (‡), illus., May 1950. Investigations of fluvial sediments in the Niobrara River basin involve a study of the relation between suspended load and total load for the streams of the region. A comparison of sediment concentrations in the Niobrara River near Cody, Nebraska, indicated that at the local gaging station 50 percent of the sediment was transported as bed load, whereas at a naturally contracted section ¼ mile downstream, practically the entire sediment load moved in suspension.

Severson, John L.

Devonian stratigraphy, Sunwapta Pass area, Alberta, Canada: Am. Assoc. Petrol. Geol. Bull., v. 34 no. 9, p. 1826–1849, illus., Sept. 1950. A detailed Ordovician to Mississippian section is given of Sunwapta Pass area, Alberta, and the stratigraphy and fossils of the Devonian Fairholme, Palliser, and Exshaw formations are described. The Mt. Wilson quartzite is assigned an Ordovician or Silurian age rather than Devonian. A bibliography is included. V. S.

Shaffer, Paul R.

Geology for students of agriculture: Ohio State Univ., Eng. Expt. Sta. News, v. 22, no. 2, p. 10, 27–29, Apr. 1950. Outlines the objectives and content of a course in geology for agricultural students.

Shainin, Vincent Everett, 1921–1950.

Conjugate sets of en echelon tension fractures in the Athens limestone at Riverton, Virginia: Geol. Soc. Am. Bull., v. 61, no. 6, p. 509–517, illus. incl. geol. sketch map, June 1950; abs., with title New application of en echelon tension fractures to geological stress-strain analysis, v. 54, no. 12, p. 1826–1827, Dec. 1943. The conjugate sets of fractures in the Ordovician Athens limestone at Riverton, Virginia, demonstrate that division of the strained rock mass into wedge-shaped units precedes shearing. Two hypotheses are advanced: two periods of stress with different directions of elongation, or one period of stress with two sets of shears developing simultaneously.

Shand, Samuel James.

Rock-magma and rock-species: Am. Mineralogist, v. 35, nos. 9–10, p. 922–930, Sept.–Oct. 1950. "A discussion of two fundamental petrologic terms. The word *magma* has lost its former physical significance and become a mere sack-name for any hot silicate fluid. This has led to misunderstanding of the actual physical state of the igneous fluid at the moment of intrusion or extrusion. The extravagant multiplication of rock names leads the writer to offer a definition of *rock-species* and to advocate the use of phase-petrology."

Sharp, Byron J. *See* Stringham, B. F., 3.

Sharp, Robert Phillip.

1. Status report of glaciological work on the Seward Ice Field, Yukon Territory: Am. Alpine Jour., v. 7, no. 2, p. 178–183, illus., Jan. 1949. The work during the 1948 season was devoted to obtaining information on the physical properties of the ice and firn. Data on temperature, density, firn pipes, melt-water circulation, ablation, ice thickness, and movement are summarized.
2. Report of glaciological work on Project Snow Cornice in 1949: Am. Alpine Jour., v. 7, no. 4, p. 432–435, illus., 1950. The work of the 1949 season in the Seward ice field, Yukon, is summarized. Data on temperature, melt-water circulation, ablation, and ice thickness are given.
3. Needs of modern research in physical geomorphology [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1502, Dec. 1950.

Shaub, Benjamin Martin.

1. The application of numbers to mineral specimens in the field: Rocks and Minerals, v. 25, nos. 7–8, p. 345–347, July–Aug. 1950. Suggests a method of using numbers typed on adhesive tape and covered with transparent cellulose tape for the labeling of dry mineral specimens in the field. V. S.
2. Microstylolites in pre-Cambrian quartzite; a discussion: Jour. Geology, v. 58, no. 6, p. 650–652, Nov. 1950. Discussion of the article "Stylolites in pre-Cambrian quartzite [Alice Lake area, Saskatchewan]" by C. E. B. Conybeare, Jour. Geology, v. 57, p. 83–85, Jan. 1949. Author's reply follows on p. 652–654.

Shaw, Alan B.

1. Paleogeography and nomenclature, another commentary: Jour. Paleontology, v. 24, no. 1, p. 110–111, Jan. 1950. Observations on the wide distribution of trilobites suggest "that species may actually have had much greater geographic ranges under the equable climates of the early Paleozoic than is common at present, and that the present distribution of some species of fossils may be attributable to the effective migration of the poles."

Shaw, Alan B.—Continued

2. A revision of several early Cambrian trilobites from eastern Massachusetts: Jour. Paleontology, v. 24, no. 5, p. 577–590, illus., Sept. 1950. Trilobites of the Hoppin slate, of early Cambrian age, are redescribed and refigured. The Hoppin slate and Weymouth formation, formerly grouped and correlated with the "*Olenellus* zone" are reassigned. The Hoppin slate is interpreted as a preolenellidian formation, older than the Weymouth, and assigned to the "*Obolella* zone."
3. (and Stubblefield, Cyril James). *Trinucleus* Murchison, 1839, as a nomen conservandum: Jour. Paleontology, v. 24, no. 5, p. 624–625, Sept. 1950. A notification of the impending action to have *Trinucleus* Murchison, 1839, designated as a nomen conservandum, displacing the unused *Trinucleus* Link, 1807. A note to the effect that *T. caractaci* is the true type of *T.* Murchison is included.

Shaw, George.

1. (and MacCallum, D.). Preliminary map, Southeast Dubuisson, Abitibi County, Quebec, ground magnetic survey: Canada Geol. Survey Paper 49–1, 1949.
2. (and MacCallum, D.). Preliminary map, Southeast Vassan, Abitibi County, Quebec, ground magnetic survey: Canada Geol. Survey Paper 49–11, 1949.

Shea, Edward F. *See* Bartram, J. G.

Shenon, Philip John.

Lead and zinc deposits of the Coeur d'Alene district, Idaho, *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 88–91, illus., 1950; abs., Volume of titles and abstracts, p. 50, 1948. Briefly describes the geology of the Coeur d'Alene district in northern Idaho. The ore bodies occur along fractured and shear zones in the pre-Cambrian quartzites and argillites of the Belt Series. The ore minerals are galena, sphalerite, tetrahedrite, and others. Intense alteration is common, with formation of sericite, clay, and carbonates.

Shepard, Francis Parker.

1. (and Macdonald, Gordon Andrew, and Cox, Doak Carey). The tsunami of April 1, 1946: Calif. Univ., Scripps Inst. Oceanography Bull., v. 5, no. 6, p. 391–528, illus., 1950. A comprehensive and detailed account of the tsunami in the Hawaiian Islands caused by a crustal movement on the northern slope of the Aleutian Trough. V. S.
2. Beach cycles in southern California: Calif. Univ., Scripps Inst. Oceanography, Submarine Geology Rpt. no. 11, 18 p., illus., Feb. 1950; Beach Erosion Bd. Tech. Memo. 20, 26 p., illus., July 1950. The alternation from large waves from the northwest during winter storms to small waves from the south during the summer produces a yearly cycle of offshore-onshore and lateral sand movement changing the width and contours of southern California beaches. Sketch maps and profiles are given. V. S.
3. Contour charts in the San Diego area: Calif. Univ., Scripps Inst. Oceanography, Submarine Geology Rpt. 13, 6 p. (‡), illus., Aug. 1950. The charts show the topography of La Jolla and Coronado submarine canyons, off the southern California coast, in detail.
4. The 1940 E. W. Scripps cruise to the Gulf of California, Part 3, Submarine topography of the Gulf of California: Geol. Soc. Am. Mem. 43, vii, 32 p., illus., Aug. 10, 1950. Several thousand soundings provided new data on the submarine configuration of the Gulf of California, indicating basins and extensive fault scarps. Submarine canyons are found only in the southern part of the Gulf, and the topography suggests subaerial erosion. The origin and history of the basins, scarps, and canyons are discussed. Eleven submarine charts are included.
5. Photography related to investigation of shore processes, *in* Symposium of information relative to uses of aerial photographs by geologists: Photogrammetric Engineering, v. 16, no. 5, p. 756–769, illus., Dec. 1950. The advantages of using photographs for some of the phases of investigation and interpretation of wave and beach phenomena are considered. Numerous illustrations are included.

Shepard, Francis Parker—Continued

6. Mass movement of sand into deep water [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 177–178, Apr. 27, 1950.

Shepherd, George Frederick.

(and Wilson, Malcolm E., Jr.). Pegasus and Meadows fields, Midland and Upton Counties, West Texas: Oil and Gas Jour., v. 48, no. 51, p. 140, 142, 146, 149–150, 152, illus., Apr. 27, 1950. Reviews the discovery history of the two fields and briefly presents stratigraphic and structural data. Both fields have resulted from deep drilling exploration in the Midland Basin to obtain oil from Ordovician and Devonian horizons.

Sheridan, David S.

Permian (?), Triassic, and Jurassic stratigraphy of the McCoy area of west central Colorado: Compass, v. 27, no. 3, p. 126–147, illus., Mar. 1950; abs., Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1559, Dec. 1950. The study of Permian (?), Triassic, and Jurassic strata in the McCoy area, west central Colorado, including detailed measurement of several sections and regional correlations, points to alternating marine and continental deposition and a close relationship between sedimentation and tectonic movements. V. S.

Sherwood, Alexander M. *See* Jaffe, H. W., 1; Weeks, A. D.

Shock, D. A. *See* Barnes, V. E., 2.

Shoemaker, Richard Walter. *See* Hazzard, J. C., 1, 4.

Shotwell, J. Arnold. *See also* Sargent, S.

New locality of *Desmostylus hesperus* Marsh, from the Astoria Miocene [Oreg.] [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1541, Dec. 1950.

Shrock, Robert Rakes.

Some physical aspects of ancient reef complexes [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 118, Apr. 27, 1950.

Shrode, Raymond S. *See* Grogan, R. M.

Shuler, Ellis William.

A new elasmosaur from the Eagle Ford shale of Texas; the elasmosaur and its environment: Fondren Science Series, no. 1, pt. 2, 32 p., illus., Southern Methodist Univ., Dallas, Texas, Apr. 17, 1950. A semi-popular account of the new reptile species, *Elasmosaurus morgani*, collected from the Upper Cretaceous Eagle Ford shale near Cedar Hill, Texas. The discovery of the specimen and its skeletal features are described; the environment in which it lived and its habits are reconstructed. The restoration of elasmosaurs, from skeletal material, is discussed and illustrated.

Siever, Raymond.

1. Structure of Herrin (No. 6) coal bed in Marion and Fayette Counties, and adjacent parts of Bond, Clinton, Montgomery, Clay, Effingham, Washington, Jefferson, and Wayne Counties: Ill. State Geol. Survey Circ. 164, 100 p., illus., 1950. Ninety pages of this report are given over to the tabulation of drill-hole data on the Herrin coal bed (Pennsylvanian age) in southern Illinois. The report is the seventh in a series dealing with the structure and extent of the Herrin coal bed.
2. Mississippian-Pennsylvanian unconformity in southern Illinois [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1502, Dec. 1950.

Sigafoos, Robert S. *See also* Hopkins, D. M.

Some botanical problems in the interpretation of aerial photographs of tundra areas: Photogrammetric Engineering, v. 16, no. 3, p. 429–431, June 1950. Interpretation of vegetation and surficial geology through aerial photographs depends first on determining the significance of the geological-botanical landscape and the identification of the patterns. Aerial photographs are a valuable adjunct to the study of field problems.

Silver, Caswell.

1. Geologic map of the San Juan Basin, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, 1950. Scale 1 inch to 10 miles.
2. The occurrence of gas in the Cretaceous rocks of the San Juan Basin, New Mexico and Colorado, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 109–123, illus., 1950. The stratigraphy and structure, geologic history, and characteristics of the gas reservoirs are described, and conclusions regarding the occurrence and distribution of the gas are discussed.

Simmons, H. B. *See* Patterson, C. B.

Simmons, Jean G.

A general index to the Journal of Geology, volumes XXXVI through LV, 1928 through 1947. 182 p. Chicago, University of Chicago Press. 1950.

Simmons, Woodrow W.

Recent geological investigations in the Ducktown mining district, Tennessee, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 67–71, geol. map, 1950. Recent investigations and mapping of the geology, particularly the faulting and folding in the Ducktown copper mining area, both above and below ground, are described. It is thought that the controlling factor in ore deposition has been the replacement of a favorable bed by ore solutions and that folding was important in that it thickened that bed.

Simon, R. F. *See* Clewell, D. H., 1.

Simons, Merton E. *See* McLaughlin, K. P., 2.

Simonson, Russell Ray. *See* Hazzard, J. C., 3.

Simpson, George Gaylord.

1. Cenozoic formations and vertebrate faunas, *in* Guidebook for the fourth field conference of the Society of Vertebrate Paleontology in northwestern New Mexico, p. 74–85, illus., 1950; reprinted in part with title, Lower Tertiary formations and vertebrate faunas of the San Juan Basin, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 85–89, 1950. Paleocene and Eocene strata in the San Juan Basin are briefly described and a vertebrate faunal list is given. The Santa Fé formation (Miocene and Pliocene) in the Rio Grande Depression is described and a few mammalian genera listed.
2. A synopsis of three lectures on evolution and the history of life: Wagner Free Inst. Sci. Bull., v. 25, no. 2, 12 p., May 1950. Paleontology is discussed as a source of knowledge on biological evolution, and a brief survey of evolutionary theories is given. V. S.
3. Trends in research and the Journal of Paleontology: Jour. Paleontology, v. 24, no. 4, p. 498–499, July 1950. A comparative classification of papers published in the Journal of Paleontology in 1939 and 1949 shows the same percentage of descriptive studies and no increased attention to the geologic, biologic, or theoretical aspects of paleontology.
4. Evolutionary determinism and the fossil record: Sci. Monthly, v. 71, no. 4, p. 262–267, Oct. 1950.
5. Bones in the brewery: Natl. Speleol. Soc. Bull. 12, p. 18–25, illus., Nov. 1950; reprinted from Nat. History, v. 55, no. 6, p. 252–259, illus., June 1946. Reports the discovery of the bones of *Platygonus compressus*, an extinct peccary, in a cave in St. Louis, Missouri. The history of the cave and the deposition of the bones are discussed. V. S.

Sims, Paul Kibler.

Magnetite deposits of the Dover district, New Jersey [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1503, Dec. 1950.

Sinclair, George Winston.

Note on nomenclature, July, 1950: Jour. Paleontology, v. 24, no. 6, p. 749–754, Nov. 1950. Reviews the Proceedings of the International Commission on Zoological Nomenclature (Paris meeting, 1948), of which the first half have been published in the Bulletin of Zoological Nomenclature, v. 4, pts. 1–9. The Proceedings contain the record of discussion and decisions which will be incorporated in the rewriting of the Règles. Among the points reviewed are designation of type species, selection of names, gender of names, conditional names, homonyms, and what constitutes publication.

Sinclair, Martin H. *See* Kimble, G. H. T.

Singewald, Quentin Dreyer.

Gold placers and their geologic environment in northwestern Park County, Colorado: U. S. Geol. Survey Bull. 955–D, p. 103–172, illus. incl. geol. maps, 1950. Discusses the bedrock geology of the area insofar as it affects the physiography, the glaciation and glacial deposits of the mountain province and mountain-park province, and the closely related gold placers.

Skeels, Dorr Covell.

Geophysical data on the North Carolina Coastal Plain: Geophysics, v. 15, no. 3, p. 409–425, illus., July 1950; abs., Oil and Gas Jour., v. 48, no. 51, p. 120, Apr. 27, 1950. Gravity and magnetic surveys on the coastal plain of northeastern North Carolina and southeastern Virginia indicate a complex basement with a grain approximating north-south. Seismic refraction data show the regional eastward dip of a high velocity layer. The reflection survey of Pamlico Sound shows regional east dip, and possible faults but no closed structures. Gravity and magnetic maps are included. V. S.

Skitsky, Vsevolod Lawrovitch. *See* Rabbitt, M. C.

Slack, Howard A.

(and Whitham, K.). A further investigation of the radioactivity of the Round Lake and Elzevir batholiths [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 231, 1950.

Slawson, Chester Baker. *See also* Kaufmann, D. W.

1. Twinning in the diamond: Am. Mineralogist, v. 35, nos. 3–4, p. 193–206, illus., Mar.–Apr. 1950. A detailed discussion, covering structural twinning, twinning morphology, analysis of twinned intergrowths, and relation between inclusions and twinning.
2. (and Kohn, Jack A.). Maximum hardness vectors in the diamond [abs.]: Am. Mineralogist, v. 35, nos. 1–2, p. 131, Jan.–Feb. 1950.

Slichter, Louis Byrne.

The Rancho Santa Fe conference concerning the evolution of the earth: Natl. Acad. Sci. Proc., v. 36, no. 9, p. 511–514, Sept. 1950. The conference sponsored by the National Academy of Sciences, was held on January 23–25, 1950, at Rancho Santa Fe, California. The informal discussion by scientists representing the fields of chemistry, geophysics, geology, astronomy, fluid mechanics, physics, and oceanography is reported.

Sloss, Laurence Louis. *See also* Dapples, E. C.

1. Paleozoic sedimentation in Montana area: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 423–451, illus., Mar. 1950. "The record of Paleozoic sedimentation in Montana and adjacent states and provinces reveals the influence of the tectonic framework of the area on the lithologic character, distribution, and thickness of the systems. Isopach and lithofacies maps of each system are presented . . . the complex Cordilleran geosyncline, Williston basin, Central Montana trough, and Wyoming shelf areas were important factors in controlling sedimentation by their tectonic behavior during deposition. The Sweetgrass arch appears to have had little influence during sedimentation, but pre-Middle Devonian and pre-Middle Jurassic uplift and erosion of the element broadly affected the present distribution and thickness of Paleozoic systems."

Sloss, Laurence Louis—Continued

2. Rates of evolution, *in* Symposium on fundamentals in paleontology: Jour. Paleontology, v. 24, no. 2, p. 131–139, illus., Mar. 1950. "Figures on the number of species recorded in various categories of marine invertebrates may be plotted against computed points on the geologic time scale to produce curves which illustrate the frequency distribution of species in time. Investigation indicates that the frequency distribution patterns of a number of groups of animals for which sufficient data are available are represented by symmetrical probability curves. The symmetry of the curves suggests a number of theoretical considerations in terms of rates of speciation and extinction, longevity of species, and the relationship between physical and biologic change."
3. Sedimentary facies and stratigraphic analysis [abs.]: Tulsa Geol. Soc. Digest, v. 18, p. 72, 1950.
4. (and Dapples, Edward Charles, and Krumbein, William Christian). Paleogeographic distribution and classification of reefs [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 118, Apr. 27, 1950.

Slotnick, Morris Miller.

A graphical method for the interpretation of refraction profile data: Geophysics, v. 15, no. 2, p. 163–180, illus., Apr. 1950. The theoretical assumptions underlying the method are given, the general case of the single dipping interface is considered, and application is illustrated by the numerical determination of the traces of four interfaces from data of time-distance curves. V. S.

Smith, Alexander.

Mining geophysics in British Columbia: Western Miner, v. 23, no. 2, p. 43–47, illus., Feb. 1950. Applications of magnetic, electrical, electromagnetic, and gravitational methods to exploration for metalliferous deposits are outlined with brief indications of local geology. A bibliography is given. V. S.

Smith, Dudley Thompson. *See* Rosenholtz, J. L., 1, 2.

Smith, Frederick Gordon. *See also* Kennedy, G. C., 2; Schmitt, H. A., 4.

A method for determining the direction of flow of hydrothermal solutions: Econ. Geology, v. 45, no. 1, p. 62–69, illus., Jan–Feb. 1950. "A method for determining the direction of flow of hydrothermal solutions, using the measured temperature of filling of liquid inclusions in vein minerals, is outlined. The application of the method to the low-temperature ore of the McIntyre and Lamaque mines shows that the solutions moved upward in the inclined ore zones under a driving pressure gradient of 400 atmospheres per mile. Relative flow velocities can also be measured in any one vein."

Smith, H. F.

1. Groundwater resources in Champaign County: Ill. State Water Survey Div. Rpt. Inv. 6, 44 p. (‡), illus., 1950. In Champaign County, Illinois, particularly in the Champaign-Urbana area, ground-water resources are obtained from the Wisconsin, Illinoian, and Kansan glacial drift, of Pleistocene age. Ground-water levels and movement are discussed, and records of wells, analyses of water, and a columnar section are given. V. S.
2. Rockford ground water situation: Am. Water Works Assoc. Jour., v. 42, no. 7, p. 701–706, illus., July 1950. The movement and availability of ground water in the Rockford, Illinois, area is discussed.

Smith, Harold Theodore Uhr.

1. Progress and problems in photogeology: Photogrammetric Engineering, v. 16, no. 1, p. 111–118, Mar. 1950. The nature and scope of photogeology are characterized by a consideration of its objectives, methods, accomplishments, and limitations. Successful use in basic geology, regional mapping, and applied geology is essentially dependent on general geologic competence, familiarity with the terrain investigated, and field checks. V. S.

Smith, Harold Theodore Uhr—Continued

2. Notes on recent literature relating to photogeology, *in* Symposium of information relative to uses of aerial photographs by geologists: Photogrammetric Engineering, v. 16, no. 5, p. 781–783, Dec. 1950.
3. Cryopedologic phenomena in the Beartooth Mountains, Wyoming-Montana [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1503, Dec. 1950.

Smith, J. R.

Preliminary report on Montauban-les-mines area, Portneuf County: Quebec Dept. Mines, Mineral Deposits Br., Prelim. Rpt. 242, 6 p. (‡), geol. map, 1950. Brief notes on the pre-Cambrian rocks in the Montauban-les-mines area, 50 miles west of Quebec City. The lead-zinc mineralization at the Anacon Lead Mines property is summarized.

Smith, Joe Fred, Jr. *See* Albritton, C. C., Jr.

Smith, Kenneth G.

Standards for grading texture of erosional topography: Am. Jour. Sci., v. 248, no. 9, p. 655–668, illus., Sept. 1950. A texture-ratio for grading texture on contour topographic maps is derived from a study of the drainage density of stream-eroded topography. The ratio is a logarithmic function of R. E. Horton's "drainage density." An application of this ratio to type areas suggests standard values for three texture-grades, coarse, medium, and fine. V. S.

Smith, Matthew Clair. *See* McElvenny, L. T.

Smith, Melbourne.

The rubies of Cowee Valley, North Carolina: Rocks and Minerals, v. 25, nos. 9–10, p. 474–480, illus., Sept.–Oct. 1950. Rubies occur in gravels along Cowee Creek and Caler Fork, Macon County, western North Carolina. The occurrence and associated minerals are described, and the story of mining attempts is sketched.

Smith, Neal Johnstone.

The case for gravity data from boreholes: Geophysics, v. 15, no. 4, p. 605–635, illus., Oct. 1950. As gravity data are related to seismic, electrical, and lithologic data because of their common dependence upon rock density, gravity surveys in boreholes should benefit all respective methods. Applications, problems, and limitations of such surveys are discussed. V. S.

Smith, Philip Sidney, 1877–1949.

Memorial to Stephen Reid Capps [1881–1949]: Geol. Soc. Am. Proc. 1949, p. 127–137, port., June 1950.

Smith, Ward Conwell.

(and Segerstrom, Kenneth, and Guiza, Reinaldo, Jr.). Tin deposits of Durango, Mexico: U. S. Geol. Survey Bull. 962–D, p. 155–204, illus. incl. geol. maps, 1950. Numerous deposits in several districts of Durango, Mexico, are described and mapped; among them are those of the Cerro de los Remedios, the América-Sapioris district, and those near Ochoa, Canatlán, and Río Verde. Reported occurrences in southern and western Durango are reviewed. The economic possibilities for future tin production are discussed.

Smith, Warren Du Pré.

Faults and earthquake possibilities in Oregon [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1547, Dec. 1950.

Smitheringale, William V.

Geology of the Keno Hill area: Western Miner, v. 23, no. 6, p. 43–46, geol. sketch map, June 1950. Describes the faulted structure and silver-lead vein mineralization of the Keno Hill area, Mayo district, Yukon Territory.

Snavely, Parke D., Jr.

(and others). Large intrusive bodies in the central Coast Range of Oregon [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1503–1504, Dec. 1950.

Snyder, Frank G.

(editor). Symposium on mineral resources of the southeastern United States. vii, 236 p., illus. Knoxville, Tennessee, Univ. Tennessee Press, 1950. The symposium contains 20 papers dealing with the economic geology of metallic and non-metallic minerals and ground water with a view toward future exploration and development.

Socolow, Arthur A.

Geology of the Irwin district of Colorado [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 288, Mar.–Apr. 1950.

Sohn, Israel Gregory.

1. Growth series of ostracodes from the Permian of Texas: U. S. Geol. Survey Prof. Paper 221–C, p. 33–39, illus., 1950. Describes two new ostracode genera, *Aurikirkbya* and *Miltonella*, from the Permian of the Glass Mts., Texas, and establishes a new family, Miltonellidae. Measurements of hinge length, height, and convexity, made on 252 specimens of *Aurikirkbya wordensis* indicate that it is not possible to distinguish growth stages in this species with these criteria. Calculations on the percentage of surviving individuals expected at successive growth stages are given.
2. Growth stages in fossil ostracodes: Am. Jour. Sci., v. 248, no. 6, p. 427–434, June 1950; abs., Geol. Soc. Am. Bull., v. 59, no 12, pt 2, p. 1353, Dec. 1948. "Principles for the rate of growth in Arthropoda as applied to ostracodes, the number of growth stages that occur, and growth factors (the percentage of increase in size between growth stages) are discussed. Hans Przibram's growth factor of 1.26 for all Arthropoda is proved . . . not to apply to ostracodes. Limitations inherent in the study of growth stages of fossil ostracodes are pointed out."
3. Comparison of etched silicified ostracodes from limestone with calcareous forms from subjacent shale [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1504, Dec. 1950.

Sokoloff, Vladimir Petrovich. *See also* Hunt, C. B., 2.

Sampling and testing of soil and rock for copper, lead and zinc in geochemical reconnaissance: Mines Mag., v. 40, no. 11, p. 15–22, illus., Nov. 1950. The procedures used in preparation of the samples, and test solutions, the tests for copper, lead, and zinc, and the interpretation of dithizone colors are described. Preparation and care of the reagents is also noted.

Solecki, Ralph S.

Archeology and geology in northwestern Alaska: Earth Sci. Digest, v. 4, no. 7, p. 3–7, illus., Feb. 1950. Flint artifacts are reported found north of the Brooks Range. Local geological features are mentioned as clues to possible Asiatic-American migration of prehistoric man. V. S.

Sosman, Robert Browning.

Centripetal genesis of magmatic ore deposits [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1505, Dec. 1950.

Soulé, John Henderson.

Investigation of the Royal John lead-zinc deposits, Grant County, N. Mex.: U. S. Bur. Mines Rpt. Inv. 4748, 8 p. (‡), illus. incl. geol. map, Nov. 1950. The Royal John deposit is located on the west slope of the Mimbres Mts. in the Swartz (Carpenter) mining district of southwestern New Mexico. The ore occurrence and structure are described briefly.

South Dakota Geological Survey.

Panel diagram, subsurface formations in South Dakota. One sheet. Scale 1:1,300,000. 1950.

Spackman, William, Jr. *See* Barghoorn, E. S., Jr.

Spangler, Walter Blue.

1. (and Peterson, Jahn Jean). Geology of Atlantic coastal plain in New Jersey, Delaware, Maryland, and Virginia: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 1, p. 1–99, illus., Jan. 1950. Detailed lithologic descriptions of Cretaceous and Tertiary stratigraphy based on field studies of all important outcrops of the area are used to solve correlation problems. Former interpretations of formation relationships and ages are contrasted with those advanced. A bibliography is appended, and thirteen structure contour and isopach maps are included. V. S.
2. Subsurface geology of Atlantic coastal plain of North Carolina: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 1, p. 100–132, illus., Jan. 1950. The geological and geophysical methods used and the data obtained on Cretaceous and Tertiary subsurface formations during petroleum exploration in 1945–47 are outlined, and interpretations are advanced of local stratigraphy and structure. Formational identification depends mainly on faunal content, which ceases to be reliable below the beds of Taylor age. V. S.

Spence, D. *See* Risi, J.

Spicer, Herbert Cecil.

Investigation of bedrock depths by electrical-resistivity methods in the Ripon-Fond du Lac area, Wisconsin: U. S. Geol. Survey Circ. 69, 37 p. (‡), illus., Mar. 1950. "The field measurements indicate that with favorable surface conditions, resistivity methods may be used in this area to locate the pre-Cambrian rocks to depths of approximately 1,500 feet."

Spieker, Edmund Maute.

The transition between the Colorado plateaus and the Great Basin in central Utah: Utah Geol. Survey, Guidebook to the geology of Utah, no. 4, 106 p., illus. incl. geol. map, 1949. Describes the Jurassic, Cretaceous, and Tertiary strata and structure of the area comprising the Sevier Valley and adjacent Gunnison [San Pitch Mountains] and Wasatch Plateaus. A geologic map, cross sections, and a bibliography are given. V. S.

Spiroff, Kiril.

Seneca calcite: Rocks and Minerals, v. 25, nos. 9–10, p. 466, Sept.–Oct. 1950. Reports the recent deposition of calcite coatings on the lava walls in deep levels of the Seneca copper mine, on the Kearsarge lode, Keweenaw County, Michigan.

Spitznas, Roger L.

Potholes and channel scrolls in the Navajo sandstone, Zion National Park, Utah: Earth Sci. Digest, v. 5, no. 5, p. 3–6, illus., Dec. 1950. Describes potholes and semi-circular borings along Pine and Clear Creeks and their tributaries in Zion National Park, Utah.

Spradlin, Virgil E.

The relation of initial production to true resistance in the Southeast Newcastle field, Cleveland and McClain Counties, Oklahoma: Okla. Acad. Sci. Proc., v. 29 (1948), p. 45–49, illus., Mar. 1950. A statistical study was made to determine whether the true electrical resistivity of beds, determined from logging data, could be sufficient to predict the initial oil production from the Bois D'Arc limestone of the Southeast Newcastle field. The results showed that additional geologic information is necessary. V. S.

Springer, G. D. *See also* Kennedy, G. C., 2.

Mineral deposits of the Cat Lake-Winnipeg River area; Lac du Bonnet Division, Manitoba: Manitoba Dept. Mines and Nat. Res., Mines Br. Pub. 49–7, 14 p., illus. incl. geol. map, 1950. The copper-nickel, chrome, lithium, and beryllium deposits are described, and notes are included on tin, gold, and radioactive minerals.

Staatz, Mortimer Hay.

(and Trites, Albert F., Jr.). Relation of type of country rock to the shape of granitic pegmatite intrusions [abs.] Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1505–1506, Dec. 1950.

Stacey, F. R.

(and Wynn, W. O. R.). Building materials from St. Vincent: Colonial Geology and Mineral Resources, v. 1, no. 2, p. 152–163, 1950. Clay, volcanic rocks, sand, and coral from St. Vincent, British West Indies, were submitted to laboratory tests to determine their suitability as materials for brick and concrete. The results of the tests are given. It is indicated that good quality pozzolana may be made from the volcanic ash.

Stadnichenko, Taisia.

(and Murata, Kiguma Jack, and Axelrod, Joseph Meyer). Germaniferous lignite from the District of Columbia and vicinity: Science, v. 112, no. 2900, p. 109, July 28, 1950. Reports a high content of germanium in lignite of the Patuxent formation (Lower Cretaceous) in the District of Columbia area. The content of the ash is up to 6 percent or 10,000 times the average content in the crust of the earth.

Stainbrook, Merrill Addison.

1. The fauna and correlation of the McCraney limestone of Iowa and Illinois: Am. Jour. Sci., v. 248, no. 3, p. 194–213, Mar. 1950. Faunal evidence and lithologic study of Mississippian Kinderhook strata along the Mississippi River indicate that the McCraney limestone can be correlated with the Louisiana formation.
2. Brachiopoda and stratigraphy of the Aplington formation of northern Iowa: Jour. Paleontology, v. 24, no. 3, p. 365–385, illus., May 1950. The Aplington formation of northern Iowa, a dolomite formerly included with the Sheffield shale beds, is distinguished, and the type section is described. Faunal comparisons suggest a Lower Mississippian age. Three new brachiopod genera, including 17 species, are described and illustrated.

Stainforth, Robert Masterman.

1. Types of *Pullenia duplicata* Stainforth: Jour. Paleontology, v. 24, no. 4, p. 502, July 1950. A type description and co-types are indicated for *Pullenia duplicata* Stainforth, which replaces the invalid *Pullenia compressiuscula* Reuss. V. S.
2. Comments on "A pitfall of paleontologic 'Latin'": Jour. Paleontology, v. 24, no. 4, p. 504–505, July 1950. Considerations are given why a varietal name should agree in gender with the generic name to which it is attached. V. S.

Stallman, Robert William.

(and Klaer, Fred Harlen, Jr.). Ground-water resources of Noble County, Indiana: Ind. Dept. Conserv. Div. Water Res. Bull. 5, 103 p. (‡), illus. incl. geol. map, 1950. The ground water occurs in the glacial drift which has an average thickness of 350 feet. The glacial geology, water-bearing formations, and conditions in specific areas are described. A map of surficial glacial deposits is included.

Staples, Lloyd William.

1. Cubic pseudomorphs of quartz after halite in petrified wood: Am. Jour. Sci., v. 248, no. 2, p. 124–136, illus., Feb. 1950. The quartz cubes, occurring in petrified wood from the Sweet Home petrified forest near Holley, Oregon, are considered pseudomorphous after skeletal halite crystals. Distribution through the wood disproves the view that skeletal halite develops only on an evaporating surface. V. S.
2. A realgar and orpiment sagenite: Mineralogist, v. 18, no. 10, p. 492, 494, Oct. 1950. Sagenite is defined as "inclusions of an acicular mineral in any of the silica minerals." The sagenite described consists of realgar and orpiment crystals in a matrix of quartz and chalcedony discovered near Trent, Oregon. The separation of the crystals from the matrix and chemical tests which indicate that the maximum temperature to which the sagenite has been subjected is 300 C are described.
3. Jordisite and ilsemannite [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1530, Dec. 1950.

Stauffer, Clinton Raymond.

Some Pleistocene mammalian inhabitants of Minnesota: Minn. Acad. Sci. Proc., v. 13, p. 20–43, illus., 1945. Records the various finds of portions of the skeletons of musk ox and beaver from Pleistocene glacial drift deposits. Particular attention is given to the elephant remains in the drift. Four species are described briefly, and 104 occurrences are listed.

Stead, Frank Walter.

1. (and others). Airborne radioactivity survey of parts of Marquette, Dickinson, and Baraga Counties, Michigan: U. S. Geol. Survey. Scale 1 inch to 2 miles. 1950. A map showing the location of radioactivity anomalies in the central part of the Upper Peninsula of Michigan. Brief explanatory notes are given.
2. Airborne radioactivity surveying speeds uranium prospecting: Eng. Min. Jour., v. 151, no. 9, p. 74–77, illus., Sept. 1950. The equipment and technique employed in an aerial survey for uranium-bearing ores are described.

Stebinger, Eugene, 1883–1951.

Petroleum in the ground, *in* World geography of petroleum, edited by W. E. Pratt and D. Good, Am. Geog. Soc. Spec. Pub. no. 31, p. 3–24, illus., 1950. A discussion of the geological principles governing the occurrence of petroleum, the methods of geological and geophysical exploration for petroleum, the extent of exploration, and the estimation of reserves. A table of world production and estimated reserves, by countries, as of January 1, 1949, is given.

Steele, G. *See* Wheeler, H. E., 1.

Steenland, Nelson Clarence. *See* Ewing, W. M., 3.

Stelck, Charles Richard. *See* Warren, P. S.

Stenzel, Henryk Bronislaw.

1. Ball clay of the Troup district, Texas: Texas Univ. Bur. Econ. Geology Pub. 5019, p. 5–38, illus. incl. geol. maps, Oct. 1, 1950. The Cretaceous and Eocene strata are described in detail with data on surface and subsurface distribution, composition, vegetation, soils, and topography. Several measured sections are given. The extent and relationships of the ball clay are discussed with a view to future exploration.
2. Lower Eocene ball clay in east Texas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1506, Dec. 1950.

Stephens, Fred H.

Uranium "hot spot": Western Miner, v. 23, no. 9, p. 41–46, illus. incl. geol. sketch map, Sept. 1950. Statements from existing literature and personal observations on the geology, uranium discoveries and prospects, and exploratory activities in the pre-Cambrian of the Goldfields area, Lake Athabaska, northwestern Saskatchewan. V. S.

Stephenson, Lloyd William.

Index fossils, with particular reference to the Upper Cretaceous of eastern United States: Geol. Soc. Japan Jour., v. 56, no. 653, p. 89–94, Feb. 1950. An address before the Geological Society of Japan in which the significance of index fossils is outlined and examples from Cretaceous strata are cited.

Stephenson, Robert Charles. *See also* Cleaves, A. B., 1.

Non-metallic mineral resources of Pennsylvania, *in* Symposium on mineral resources of Pennsylvania: Pa. Acad. Sci. Proc., v. 24, p. 215–219, 1950; Pa. Dept. Internal Affairs Monthly Bull., v. 18, no. 10, p. 7–10, Sept. 1950. General comments on the occurrence and potential utilization of industrial minerals in Pennsylvania. Cement, crushed stone, refractory clays, ganister, glass sand, slate, and other commodities are discussed.

Sternberg, Charles Mortram.

1. *Pachyrhinosaurus canadensis*, representing a new family of the Ceratopsia, from southern Alberta: Canada Natl. Mus. Bull. 118, p. 109–120, illus., 1950. Proposes a new family in the Ceratopsia, Pachyrhinosauridae, and describes the new genus and species, *Pachyrhinosaurus canadensis*, from the Edmonton formation, Upper Cretaceous, on the north side of the Little Bow River, east of Carmongay, Alberta.
2. *Leptoceratops*, the most primitive horned dinosaur, from the Upper Edmonton of Alberta [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 229, 1950.

Steven, Thomas August.

Age and structural control of the fluorspar deposits in the Northgate district, Colorado [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1506, Dec. 1950.

Stevens, Nelson Pierce. *See* Bray, E. E.

Stevens, Rollin Elbert.

Perley G[ilman] Nutting [1873–1949]: Washington Acad. Sci. Jour., v. 40, no. 5, p. 175–176, May 15, 1950.

Stevenson, John Sinclair.

1. Geology and mineral deposits of the Zeballos mining camp, British Columbia: British Columbia Dept. Mines Bull. 27, 145 p., illus. incl. geol. maps, 1950. A comprehensive, detailed description of the rocks, structure, and ore mineralization at the Zeballos gold mining camp on the west coast of Vancouver Island. Detailed data and numerous sections and maps are given for each of the mining properties in the area.
2. Some notes on uranium in British Columbia: Canadian Min. Met. Bull. no. 460, p. 434–435, illus., Aug. 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 285–286, 1950. Uraninite has been found at the Gem mine in the Bridge River area and at the Victoria mine south of Hazelton. At both places, it is associated with cobalt-nickel sulfarsenides and molybdenite. Suggestions for future prospecting for uranium ores in British Columbia are included.
3. Mineral deposits containing uranium in British Columbia [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1530–1531, Dec. 1950.

Stevenson, Robert Evan. *See* Willard, B., 4.

Stevenson, Robert Everett. *See* Emery, K. O., 6.

Stewart, Duncan, Jr.

Michigan geology; progress bibliography, Pt. 6: Mich. State Coll. Dept. Geology and Geography, 12 p. (‡), Mar. 1950. Additional references for the period 1943–1949, and from the Natl. Acad. Sci. Proc. for 1915–1948.

Stewart, Grace Anne.

Ostracoda from Middle Devonian bone beds in central Ohio: Jour. Paleontology, v. 24, no. 6, p. 652–666, illus., Nov. 1950. "This paper records 29 species and one variety of ostracodes . . . with the exception of one species, *Euglyphella spinosa*, n. sp., and some undefinable fragments from Bone bed no. 2 of the Columbus limestone, all forms are from Bone bed no. 3 (*Hadrophyllum* zone of Stauffer) of the Delaware formation. The species are distributed through ten families and 21 genera; nine species and one variety are described as new. The assemblage cannot be linked directly with any described fauna."

Stewart, W. Alan. *See also* Griswold, D. H.

Unconformities, *in* Subsurface geologic methods, p. 32–51, illus., Colo. School of Mines, 1950. An account of types of unconformities, criteria for their recognition, and their importance in ore and petroleum exploration.

Stewart, Wilson N.

1. Report on the Carr and Daniels collections of fossil plants from Mazon Creek: Ill. State Acad. Sci. Trans., v. 43, p. 41–45, illus., 1950. The Carr and Daniels collections of fossil plants from Mazon Creek, Illinois, now owned by the Natural History Museum of the University of Illinois, contain 4018 specimens. Fifty-one genera and 103 species have been identified and are listed.
2. A new species of *Medullosa* [abs.]: Am. Jour. Botany, v. 37, no. 8, p. 674, Oct. 1950. The specimen is from the McLeansboro formation, of Pennsylvanian age, at Berryville, Illinois.

Stieff, Lorin R. *See* Murata, K. J.

Stirton, Ruben Arthur.

1. Principles in correlation and their application to later Cenozoic Holarctic continental mammalian faunas: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 11, p. 74–84, illus., 1950. The problem of the relation of Miocene and Pliocene synchrony to mammalian evolution and distribution is discussed. The importance of definite concepts on which accurate correlations can be based is stressed. It is suggested that established epoch terminology should be retained and the law of priority rigidly applied in geologic time terminology.
2. Late Cenozoic avenues of dispersal for terrestrial animals between North America and South America [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1541–1542, Dec. 1950.

Stobbe, Helen Ruth.

Dacites from Laughlin Peak, Colfax County, New Mexico [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 288–289, Mar.–Apr. 1950.

Stock, Chester, 1892–1950.

1. Rancho La Brea, a record of Pleistocene life in California: Los Angeles County Mus. Science Ser. no. 13, Paleontology no. 8, 4th ed., 80 p., illus., June 1, 1949. A well-illustrated, popular account of the fossil forms that have been collected from the asphalt pits at Rancho La Brea, in southern California.
2. Biographical memoir of John Campbell Merriam, 1869–1945; Natl. Acad. Sci. Biog. Mem., v. 26, no. 11, p. 209–232, port., 1950. His complete bibliography is included.
3. Note on a hyænarctid bear from the Middle Pliocene of Chihuahua, Mexico: S. Calif. Acad. Sci. Bull., v. 49, pt. 1, p. 1–2, illus., Jan.–Apr. 1950. Describes two upper molars of *Hyænarctos* cf. *schneideri* collected from Middle Pliocene beds at Arroyo Huachin, near Rincon, Chihuahua, Mexico.
4. 25,000-year-old horse: Engineering and Science, v. 14, no. 1, p. 16–17, illus., Oct. 1950. Brief, general notes on *Equus conversidens leoni*, a Pleistocene horse, skeletons of which have been found in San Josécito cave in southern Nuevo León, Mexico. The skeleton is compared to that of a specimen from Rancho La Brea, California.
5. Bears from the Pleistocene cave of San Josécito, Nuevo León, Mexico: Washington Acad. Sci. Jour., v. 40, no. 10, p. 317–321, illus., Oct. 15, 1950. Two types of bears have been identified among the fossil mammals from San Josécito cave, and one is assigned to a new species, *Tremarctos mexicanus*. The characteristics of the jaw and skull fragments are described and compared with other specimens.

Stockwell, Clifford Howard.

1. Preliminary map, southwest Dasserat, Temiscamingue County, Quebec: Canada Geol. Survey Paper 49–23, 1949. A geologic map with marginal notes. Proterozoic graywacke and arkose occupy most of the area; Keewatin andesite predominates in the north. V. S.
2. Preliminary map, southeast Dasserat, Temiscamingue County, Quebec: Canada Geol. Survey Paper 49–25, 1949. A geologic map with marginal notes. Keewatin andesite and post-Timiskaming diorite and syenite are prominent in the north of the area, and Pontiac sedimentary mica schist in the south. V. S.

Stockwell, Clifford Howard—Continued

3. The use of plunge in the construction of cross-sections of folds: Geol. Assoc. Canada Proc., v. 3, p. 97–121, illus., Dec. 1950. "This paper outlines a graphical method for the construction of sections of folded rock formations by projection of formational contacts down the plunge to the plane of the section. Many plunge determinations are required, not only in the region of the axes but also on the flanks of the fold. They are given by the lines of intersections of planes represented by bedding strike and dip symbols on a map. The method is illustrated by the construction in plan and section of ideal synclinal folds of two types . . ."

Stoddard, Carl.

(and Carpenter, Jay Arnold). Mineral resources of Storey and Lyon Counties, Nevada: Nev. Univ. Bull., Geology and Mining Ser., no. 49, v. 44, no. 1, 115 p., illus., Mar. 1950. The occurrence and production of silver and gold are described by mining districts, with particular attention to the Comstock and Yerington districts. A comprehensive bibliography is included. V. S.

Stokes, William Lee.

1. Mesozoic stratigraphy of the Uinta Basin, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 97–99, 1950. Lists the events comprising the Mesozoic paleogeography of the Uinta Basin area, Colorado and Utah. A formation table is included.
2. Pediment concept applied to Shinarump and similar conglomerates: Geol. Soc. Am. Bull., v. 61, no. 2, p. 91–98, Feb. 1950. The characteristics of the Shinarump and Buckhorn conglomerates and Dakota sandstone of the western interior, difficult to explain by current theories, suggest their formation by pedimentation. Revisions of stratigraphic terminology and age assignments are discussed. V. S.
3. Some unusual ripple marks from the Triassic of Utah: Jour. Geology, v. 58, no. 2, p. 153–154, illus., Mar. 1950. The silty facies of the Moenkopi formation near Temple Mountain shows several types of complex ripple marks over wide areas and through a considerable depth. Three components can be distinguished in the most complex mark. V. S.
4. Early Cretaceous sediments in eastern Utah [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1559, Dec. 1950.

Stokley, John Allen.

Industrial limestones of Kentucky: Ky. Geol. Survey Rpt. Inv. 2, 51 p. (‡) illus. incl. geol. map, 1949. "Gives general information on the chemical composition, character, thickness, and distribution of the more important limestone and dolomite formations of Kentucky and indicates possible uses . . . in the chemical industries." A table of exposed formations in Kentucky and a general geologic map of the state are included.

Stoll, Walter Clericus.

Mica and beryl pegmatites in Idaho and Montana: U. S. Geol. Survey Prof. Paper 229, 64 p., illus. incl. geol. maps, 1950. Describes and gives maps and structure sections of mines and prospects in the Avon mica district, Latah County, Idaho, several other districts in Idaho, and the Tobacco Root Mts., Madison County, Montana.

Stone, Edwin A. *See* Fowler, G. M., 1.

Stose, Anna Isabel Jonas. *See* Stose, G. W., 3.

Stose, George Willis.

1. Comments on the Taconic sequence in Pennsylvania: Geol. Soc. Am. Bull., v. 61, no. 2, p. 133–135, geol. map, Feb. 1950. Evidence is given in favor of assigning the shale belt from Hummelstown to Shepherdstown to the Taconic sequence, rather than to the Martinsburg shale. From the data, faults are inferred to account for the unconformable relations of the rocks. V. S.

Stose, George Willis—Continued

2. Evidence of the Taconic sequence in the vicinity of Lehigh River, Pennsylvania: Am. Jour. Sci., v. 248, no. 11, p. 815–819, illus. incl. geol. sk. map, Nov. 1950. Further study in the Allentown West quadrangle, eastern Pennsylvania, indicates that the Hamburg klippe, containing rocks of the Taconic sequence, extends considerably west of the Lehigh River. Limestone inliers in the klippe, near Seemsville, of apparent Upper Cambrian age, may represent the floor on which the Taconic shales were deposited and which were thrust with the shales to their present position.
3. (and Stose, Anna Isabel Jonas). Folded low-angle overthrusts of the southern Appalachians [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2 p. 1506–1507, Dec. 1950.

Stothart, R. A.

Reef surveying with radioactivity: World Oil, v. 130, no. 1, p. 61–63, illus., Jan. 1950. The radioactive method of surface exploration for oil has been successfully applied to the mapping of reef structures. Emanations are given off by shales overlying oil zones. The survey technique is described, and geologic interpretation is illustrated by profiles plotted through productive and non-productive areas. V.S.

Stout, Thompson Mylan.

1. The Pliocene-Pleistocene boundary in the Great Plains region of North America: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 9, p. 99, 1950. Comments on the importance of the Great Plains region in the determination of the Pliocene-Pleistocene boundary. It is suggested that the Lisco member of the Broadwater formation is the probable equivalent of the Fullerton clay of Aftonian age and is also, on the basis of fossil mammals, Villafranchian. The Villafranchian can then be regarded, at least in part, as Aftonian or First Interglacial, and the Cromerian as Yarmouth or Second Interglacial.
2. Relative dating within the Cenozoic between Eurasia and North America [abs.]: Nebr. Acad. Sci. Proc., 60th Ann. Mtg., p. 14–15, May 1950.

Stovall, John Willis.

1. A new cotylosaur from north central Oklahoma: Am. Jour. Sci., v. 248, no. 1, p. 46–54, illus., Jan. 1950. Describes a new genus of Permian reptiles, *Labidosaurikos meachami*. V. S.
2. (and Langston, Wann, Jr.). *Acrocanthosaurus atokensis*, a new genus and species of Lower Cretaceous Theropoda from Oklahoma: Am. Midland Naturalist, v. 43, no. 3, p. 696–728, illus., May 1950. Describes and figures in detail a new genus and species of aberrant Theropoda from the Trinity sands of Lower Cretaceous age in Atoka County, southeastern Oklahoma. The genus is characterized by greatly elongated and massive neural spines, and the relationships to other long-spined forms are discussed. The genus appears most closely allied to the Allosauridae.
3. (and McAnulty, William Noel). The vertebrate fauna and geologic age of Trinity River terraces in Henderson County, Texas: Am. Midland Naturalist, v. 44, no. 1, p. 211–250, illus., July 1950. The various stratigraphic units of the Pleistocene in Henderson and adjoining counties, that is, up-dip terrace deposits, are correlated with equivalent formations of the Gulf Coastal Plain, and the age of these terraces is determined as compared with glacial deposits in the glaciated states. It is concluded that the three terraces were laid down during the Wisconsin stage of the Pleistocene.

Stow, Marcellus Henry.

Introduction, *in* The James River Basin, past, present and future, p. 435–441, illus., Va. Acad. Sci., 1950. Gives a brief description of an air view of the topography and geology of the James River from its source in Highland County to its mouth at Cape Henry, as an introductory statement to the detailed descriptions of the physiographic provinces through which it flows.

Straczek, John A. *See also* U. S. G. S., 2.

Manganeso en Cuba, 1940–1945: Bol. Historia Nat., v. 1, no. 4, p. 161–168, Dec. 1950. General information on the types of manganese deposits, exploration, and reserves.

Strahler, Arthur Newell.

1. Davis' concepts of slope development viewed in the light of recent quantitative investigations: Assoc. Am. Geographers Annals, v. 40, no. 3, p. 209–213, Sept. 1950; abs., no. 2, p. 135, June 1950. "The purpose of this paper is to review briefly the concepts of slope development held by W. M. Davis, to explain the contrast between Davis' explanatory-descriptive system of geomorphology and the dynamic-quantitative system endorsed by G. K. Gilbert, and to note certain uses of quantitative techniques in the study of slope problems."
2. Equilibrium theory of erosional slopes approached by frequency distribution analysis, Parts 1–2: Am. Jour. Sci., v. 248, no. 10, p. 673–696, illus., Oct. 1950; no. 11, p. 800–814, illus., Nov. 1950. A frequency distribution analysis of slope angles in several mature regions shows a prevailing condition of form-equilibrium, accompanying a steady state in an open system of erosion and transportation. Differences in slope angles in the Verdugo Mts. and San Rafael Hills, California, indicate a principal dependence on factors other than lithology or directional exposure. V. S.

Strain, William Samuel.

Juarez Mountains (Sierra del Paso del Norte), *in* West Texas Geological Society Guidebook, 1950 Field Trip, October 7–8, 1950, p. 46–47, 1950. The rocks of the Juarez Mts., in Chihuahua, Mexico, just south of El Paso, Texas, are Cretaceous strata cut by faults and intruded by Cenozoic sills and dikes.

Straley, Harrison Wilson, 3d.

1. (and Richards, Horace Gardiner). The Atlantic Coastal Plain: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 6, p. 86–91, illus., 1950; abs., Volume of titles and abstracts, p. 35, 1948. The stratigraphy of the Atlantic Coastal Plain between New Jersey and Florida is outlined, and the possibilities of the area as a potential source of petroleum are discussed.
2. Is the basement complex involved in Appalachian folding? [abs.]: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 5, p. 121, 1950; Volume of titles and abstracts, p. 29, 1948; Geophysics, v. 14, no. 3, p. 374, July 1949. Full article entitled "How deep-seated are Appalachian anticlines?" published in W. Va. Acad. Sci. Proc., v. 20, p. 103–105, Mar. 1949.

Strimple, Harrell LeRoy.

1. Emendation of *Endelocrinus tumidus* (Strimple): Jour. Paleontology, v. 24, no. 1, p. 112–113, Jan. 1950. The description given by the author in 1939 is emended and restricted. V. S.
2. New species of *Utharocrinus* and *Lasanocrinus:* Jour. Paleontology, v. 24, no. 5, p. 571–574, illus., Sept. 1950. "Several forms from the Missourian and Virgilian of Oklahoma and Kansas are described as *Utharocrinus habitus*, n. sp., *U. spinosus*, n. sp., *U. fabulosus*, n. sp. and *U. facilis*, n. sp. One form from the Desmoinesian is described as *Lasanocrinus altamontensis*, n. sp."

Stringfield, Victor Timothy. *See also* Cooper, H. H., Jr.; Parker, G. G.

Ground-water geology in the southeastern states, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 211–222, illus., 1950. The general characteristics of the four ground-water provinces in the southeastern United States—South-Central Paleozoic, Blue Ridge-Appalachian Valley, Piedmont, and Coastal Plain, are described. General data on ground-water investigations and consumption in the area are included.

Stringham, Bronson Ferrin.

1. [Discussion of alteration and its application to ore search], *in* Applied geology, a symposium: Colo. School of Mines Quart., v. 45, no. 1B, p. 280–281, 342, Jan. 1950.
2. Mordenite from Tintic, Utah, and the discredited mineral arduinite: Am. Mineralogist, v. 35, nos. 7–8, p. 601–604, July-Aug. 1950. Optical, chemical, and X-ray data are given for mordenite occurring in quartz latite in the Tintic mining district, Utah. The specimen was originally identified as arduinite, but subsequent study has proved arduinite to be identical with mordenite and therefore discredited.
3. (and Sharp, Byron J.). The Fox Clay deposit, Utah: Am. Jour. Sci., v. 248, no. 10, p. 726–733, illus. incl. geol. map, Oct. 1950. Differential thermal analysis indicates that samples from the Fox Clay deposit, Lake Mountains area, Utah, contain more water than typical halloysite $2H_2O$, although X-ray powder pictures compare favorably with those of authentic halloysite. It is concluded that the Fox Clay haloysite "contains adsorbed water which so affects all properties other than X-ray as to make it appear to be endellite $4H_2O$." V. S.
4. (and Taylor, Allen O.). Nontronite at Bingham, Utah: Am. Mineralogist, v. 35, nos. 11–12, p. 1060–1066, illus., Nov.–Dec. 1950; abs., nos. 3–4, p. 289, Mar.–Apr. 1950; Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1923, Dec. 1949. Chemical, optical, and differential thermal analysis data are given for nontronite which occurs as a weathering product of diopside, tremolite, and pyrophyllite at the Kennecott copper mine, Bingham, Utah. The chemical formula is calculated, and the origin of the nontronite is discussed.

Stromquist, Arvid A. *See* Wiese, J. H., 1.

Stubblefield, Cyril James. *See* Shaw, A. B., 3.

Stuckey, Jasper Leonidas.

1. Talc, soapstone, and pyrophyllite in the southeastern United States, *in* Snyder, F. G., ed., Symposium on mineral resources of the southeastern United States, p. 112–119, 1950. Reviews briefly the occurrence, distribution and origin of the talc, soapstone, and pyrophyllite deposits in Maryland, Virginia, North Carolina, South Carolina, Georgia, and Alabama.
2. (and White, William Alexander). [Memorial to] William Frederick Prouty [1879–1949]: N. C. Acad. Sci. Proc. *in* Elisha Mitchell Sci. Soc. Jour., v. 66, no. 2, p. 106–108, Dec. 1950.

Stumm, Erwin Charles. *See also* Ehlers, G. M., 2.

1. (and others). Tabulata [Unit 1–E, pt. C], *in* Type invertebrate fossils of North America (Devonian): Wagner Free Inst. Sci., Cards 261–405, 1950.
2. New name for *Favosites proximus* Davis: Jour. Paleontology, v. 24, no. 3, p. 395, May 1950. *Favosites proximus* Davis, a homonym of *F. proximus* Hall, is renamed *F. proximatus*. V. S.
3. Corals of the Devonian Traverse group of Michigan. Part III, *Antholites*, *Pleurodictyum*, and *Procteria*: Mich. Univ. Mus. Paleontology Contr., v. 8, no. 8, p. 205–220, illus., Aug. 11, 1950. Systematic descriptions of seven species, two of which are new.
4. Occurrence of North American species of the European and Australian tetracoral genus *Tryplasma* [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1507, Dec. 1950.

Stupka, Arthur. *See* King, P. B., 1, 2.

Sturgeon, Myron Thomas.

Fossils, useful tools of geologists and benefits to society: Ohio State Univ., Eng. Expt. Sta. News, v. 22, no. 2, p. 11, 29–32, Apr. 1950. Outlines briefly the usefulness of fossils in geologic mapping, structure interpretation, location of oil wells, discovery of mineral deposits, and in the development of the geologic and biologic sciences.

Suárez C., Rodolfo.

Estratigrafía y estructura del campo de Moralillo: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 11, p. 647–677, illus., Nov. 1950. The Moralillo oil field is located in the northern part of Veracruz, Mexico, about 70 miles south of Tampico. The Cretaceous, Eocene, and Oligocène formations are described in detail. Brief sections on structure and producing zones are included.

Suess, Hans.

Gas content and age of tektites [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1507, Dec. 1950.

Sulkowski, Eugene L.

The University of Pittsburgh pen-and-ink recording seismograph: Seismol. Soc. Am. Bull., v. 40, no. 3, p. 165–168, illus., July 1950. The high-magnification seismograph, developed at the University of Pittsburgh, Pennsylvania, translates the output of a multiplier phototube by means of a photo-electric recorder into a pen-and-ink tracing, differing little from a photographic tracing. The apparatus is described, and a sample of the record obtained is shown. V. S.

Sullivan, Barbara. *See* McMurdie, H. F.

Sullivan, Geraldine R. *See* Whitehead, W. L., 2.

Summerford, H. Edgar.

(and Schieck, Emmett E., and Hiestand, Thomas Cleon). Oil and gas accumulation controlled by sedimentary facies in Upper Cretaceous Newcastle sandstone, Wyoming: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1850–1865, illus., Sept. 1950. In the Upper Cretaceous Newcastle sandstone of northeastern Wyoming, studied in the Mush Creek and Skull Creek areas, Weston County, oil and gas accumulation was found controlled by alternating facies changes from shale to sandstone, rather than by the local monoclinal dip. The five sand beds distinguished are described, indicated on lithofacies maps, and attributed to a near-shore depositional environment. V. S.

Sundling, H. L. *See* Lowdermilk, W. C.

Sundstrom, Raymond W.

(and Follett, Clarence R.). Ground-water resources of Atascosa County, Texas: U. S. Geol. Survey Water-Supply Paper 1079–C, p. 107–153, illus., 1950. Atascosa County, Texas, is underlain by Tertiary water-bearing sands, of which the chief producing formation is the Carrizo sand. The ground-water resources are described and illustrated by well logs and water analyses. V. S.

Suter, Hans H.

Mining geology and the engineering aspects of mineral exploration: Econ. Geology, v. 45, no. 3, p. 257–258, May 1950. Discussion of J. D. Forrester's article (v. 44, p. 545–550, 1949) regarding the appellations suitable for work involving geology, engineering, and exploration.

Suter, Max. *See* Buswell, A. M.

Suter, Russell.

(and others). Mapping of geologic formations and aquifers of Long Island, New York: N. Y. Water Power and Control Comm. Bull. GW–18, 212 p., illus., 1949. Presents factual data on the strata and their correlation, the geologic history, and topography in relation to the strata, which will serve as a basis for ground-water studies of Long Island. Various sections of the report are contributed by Wallace de Laguna, N. M. Perlmutter, and M. L. Brashears, Jr. (which see).

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Swain, James Fulton, 1903–1948.

Geology and occurrence of oil in Medina sand of Blue Rock-Salt Creek pool, Ohio: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 9, p. 1874–1886, illus., Sept. 1950. Describes the stratigraphy and structure of the Silurian Medina sand in the area of the Blue Rock-Salt Creek oil and gas pool, Muskingum County, Ohio. The evidence indicates that the local reservoir and oil accumulation are of sedimentary rather than structural origin. Formative processes in a small bayhead deltaic environment are suggested. V. S.

Swann, David Henry. *See also* Quinn, A. W., 1; Workman, L. E., 2.

Primary sedimentary structures of the Aux Vases sandstone [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1507–1508. Dec. 1950.

Swanson, Clarence Otto.

The Sullivan mine, Kimberley, B. C., *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 40–46, illus., 1950; abs., Volume of titles and abstracts, p. 51, 1948. The Sullivan ore body is a sulfide replacement of argillaceous and silty beds in the pre-Cambrian Aldridge formation in southeastern British Columbia. The ore minerals are galena and sphalerite. Folding and faulting are present and wall-rock alteration is extensive.

Swartz, Frank McKim.

Subsurface projection of Cambro-Ordovician sediments in the Pennsylvania-New York region and relation to oil and gas possibilities: Pa. Geol. Survey, 4th ser., Bull. G25, 18 p., illus., 1950. Reprinted from Producers Monthly, v. 13, no. 11, p. 25–32, illus., Sept. 1949; no. 12, p. 28–31, illus., Oct. 1949; v. 14, no. 1, p. 25–31, illus., Nov. 1949; no. 2, p. 34–39, illus., Dec. 1949.

Swenson, Herbert A. *See* Littleton, R. T., 2; Tychsen, P. C.

Swesnik, Robert Malcolm. *See also* Wheeler, R. R., 2.

1. Golden Trend of south-central Oklahoma: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 386–422, illus., Mar. 1950. The Golden Trend petroliferous area in the southeastern embayment of the Anadarko basin is described as to development, stratigraphy, structures, Ordovician-Permian history, and three major type-pools. Production is mainly from structural Ordovician and stratigraphic Pennsylvanian traps. Geologic sketch maps and sections are given. V. S.
2. (and Green, Thomas Henning). Geology of Eola area, Garvin County, Oklahoma: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 11, p. 2176–2199, illus., Nov. 1950; abs. with title Eola, Oklahoma, typical Arbuckle Mountain structure, no. 3, p. 625–626, Mar. 1950. The structurally complex area of the Eola oil field, north of the Arbuckle Mts., Oklahoma, is characterized mainly by a thrust fault with a stratigraphic displacement measurable in miles. North of the fault highly folded and faulted pre-Deese strata form an overturned syncline. Oil is produced from the Bromide sand of Ordovician age. The stratigraphy and structure are discussed and illustrated by maps and sections. V. S.
3. Geology of Lindsay area, Garvin and McClain Counties, Oklahoma [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 619, Mar. 1950.

Swindel, G. W., Jr. *See* LaMoreaux, P. E., 2.

Swineford, Ada. *See also* Bates, T. F., 2.

(and Frye, John Chapman). Petrography of the Peoria loess in Kansas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1508, Dec. 1950.

Swinney, C. Melvin. *See also* Wiese, J. H., 1.

The Altoona quicksilver mine, Trinity County, California: Calif. Jour. Mines and Geology, v. 46, no. 3, p. 395–404, illus., July 1950. The ore bodies at the Altoona mercury deposit, Trinity County, California, are steeply dipping tabular lenses along faults that cut altered diorite. The ore is cinnabar, and averages 18 pounds of mercury per ton. General geology and ore bodies are described and illustrated by mine-level sections. V. S.

Switzer, George.

(and Brannock, Walter Wallace). Composition of veatchite: Am. Mineralogist, v. 35, nos. 1–2, p. 90–92, Jan.–Feb. 1950. Veatchite is not a hydrous calcium borate, as described in 1938, but a strontium borate, probably $3SrO.8B_2O_3.5H_2O$. Chemical analyses and unit cell data are given. V. S.

Taber, Stephen.

1. Quartz crystals with clay and fluid inclusions: Jour. Geology, v. 58, no. 1, p. 37–48, illus., Jan. 1950. Describes the form, orientation, and origin of quartz crystals with fluid and clay inclusions, found in the Piedmont region of North Carolina. V. S.
2. Intensive frost action along lake shores: Am. Jour. Sci., v. 248, no. 11, p. 784–793, illus., Nov. 1950. Beach gravels of the Finger Lakes, central New York, are chiefly limestone derived from boulder clay. The gravel is angular because rupture by frost action proceeds faster than rounding by waves. The process of frost action in coarse- and fine-textured rocks, supplemented by experimental evidence, is discussed.

Tait, D. B. *See* Osborn, E. F., 2.

Takasaki, K. J. *See* Garrison, L. E.

Tanner, William F.

1. Location of the syncline in island arc structure: Science, v. 111, no. 2879, p. 232, Mar. 3, 1950. The apparent non-existence of foredeep sediments as deep-sea deposits in synclines, and the derivation of synclinal sediments from land masses located seaward are viewed as evidence for considering the shallow island-arc becken, rather than the foredeep, as the origin and location of the geosyncline. V. S.
2. (and Mallams, Paula). Sorting of Canadian River, Oklahoma, sands: Jour. Sed. Petrology, v. 20, no. 4, p. 224–225, illus., Dec. 1950. Histograms of sand samples taken from a bar in the North Canadian River and from the floodplain of the South Canadian River indicate that sorting is similar to that found in dune, beach, and marine offshore sands.

Tanton, Thomas Leslie.

1. (and Harrison, James Merritt). The Flin Flon and Sherritt Gordon mines, *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 47–50, illus., 1950; abs., Volume of titles and abstracts, p. 51, 1948. The Flin Flon ore bodies, on the Manitoba-Saskatchewan boundary, consist of sulfide replacement lenses in drag folds associated with a pitching anticline. The ore minerals are chalcopyrite and sphalerite. The Sherritt Gordon ore bodies, in northern Manitoba, are replacements associated with a pegmatite intrusion, into pre-Cambrian gneiss. The ore minerals are chalcopyrite, pyrite, sphalerite, and pyrrhotite carrying gold and silver values.
2. The origin of iron range rocks: Royal Soc. Canada Trans., 3d ser., v. 44, sec. 4, p. 1–19, illus., June 1950. Presidential address, in which the various interpretations of the origin of the siliceous iron-bearing rocks typical of the Lake Superior district are discussed. The conclusion is drawn that iron range rocks are not of surficial or sedimentary origin, but are products of differentiation, by liquation in ore-forming magma. The iron ore deposits are due to the escape of volatile end products that leached out the silica and left a residual concentration of iron oxides.
3. Origin of iron rocks: Canadian Min. Jour., v. 71, no. 8, p. 43–45, illus., Aug. 1950. A summary of a paper presented at the Royal Society of Canada meeting, June 6, 1950, on the "Origin of Iron Range rocks." The conclusion is reached that "Iron Range rocks are not of surficial or sedimentary origin. They meet the host rocks in which they occur as irruptive bodies or primary replacement deposits . . . [and are] products of differentiation by liquation in ore-forming magma." V. S.

Tappan, Helen Nina. *See* Applin, E. E. R., 1; Loeblich, A. R., Jr., 1, 2, 3.

Tarbet, Loyal Alexander.

Imperial Valley [Calif.] *in* Symposium on possible future oil provinces of the Pacific Coast region [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2385, Dec. 1950.

Tasch, Paul.

Fauna and paleoecology of the Upper Cambrian Warrior formation of central Pennsylvania [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1508–1509, Dec. 1950.

Tatel, Howard Edwin. *See* Tuve, M. A., 2.

Tator, Benjamin A. *See also* Hussey, K. M., 2.

1. Photogrammetry and photo interpretation in geology curricula: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2351–2356, Dec. 1950. Discusses the application of photogrammetric techniques to the geologic interpretation of aerial photographs and the need to include these techniques in geologic training. V. S.
2. Piedmont interstream surfaces of the Colorado Springs region [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1509, Dec. 1950.

Taylor, Allen O. *See* Stringham, B. F., 4.

Taylor, Dorothy Ann. *See* Berryhill, H. L., Jr.

Taylor, Garvin Lawrence. *See* Reno, D. H.

Taylor, George Carroll, Jr.

(and Lemoine, Rémy C.). Ground-water geology of the Gonaïves plain, Haiti: Econ. Geology, v. 45, no. 2, p. 127–141, geol. sketch map, Mar.–Apr. 1950; Rev. Soc. Haïtienne Hist. Geol., v. 20, no. 75, p. 8–33, geol. map, Oct. 1949 (French). The stratigraphy, structure, and water-bearing properties of the local Cretaceous to Recent rocks are described. The Recent alluvium is considered to contain sufficient ground water for irrigation. V. S.

Taylor, Jane M.

Pore-space reduction in sandstones: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 4, p. 701–716, illus., Apr. 1950. Thin-section study of Cretaceous to Jurassic sandstones from Wyoming shows that pore-space reduction of three types occur: pore filling, solid flow, and solution and redeposition or removal of dissolved material. Sand-grain contacts are classified and discussed. The study may lead to predictions of porosity changes with depth useful in oil exploration. V. S.

Taylor, Surce John.

(and McCarver, Holland C.). The Vealmoor field, Howard and Borden Counties, Texas—a Pennsylvanian reef [abs.]: Geophysics, v. 15, no. 1, p. 154, Jan. 1950.

Teague, Kefton Harding.

Sillimanite in the Southeast: Min. Eng., v. 187, no. 7, p. 785–789, illus., July 1950; A. I. M. E. Trans., v. 187, 1950. Describes the geology, mineral composition, origin, and reserves of several recently discovered deposits of sillimanite-bearing schists in North Carolina, South Carolina, and Georgia.

Teichert, Curt.

Zone concept in stratigraphy: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1585–1588, July 1950. Past definitions and uses of the term "zone" are reviewed, and conclusions determining the concept are drawn, characterizing zone as a time-stratigraphic unit, preferably a subdivision of a stage (but not a sub-stage), recognizable by a distinct fossil assemblage. V. S.

Telkes, Maria.

Thermoelectric power and electrical resistivity of minerals: Am. Mineralogist, v. 35, nos. 7–8, p. 536–555, illus., July–Aug. 1950. The thermoelectric power and electrical resistivity of a large group of minerals were determined and the data are tabulated. They indicate that a definite order of magnitude values can be established.

Téllez-Girón, Clemencia.

Ostrácodos fósiles de México: Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 6, p. 407–412, June 1950. Lists the genera and species of ostracodes that have been found in Mexico. The Cypridae, Cytherellidae, and Cytheridae are represented. Fourteen species have been identified.

Tellington, Wentworth J.

Seismic work problems in the Canadian bush country: Oil and Gas Jour., v. 48, no. 51, p. 114, 116–117, illus., Apr. 27, 1950.

Templeton, Justus Stevens, Jr.

The Mt. Simon sandstone in northern Illinois: Ill. State Acad. Sci. Trans., v. 43, p. 151–159, illus., 1950; Ill. State Geol. Survey Circ. 170, 1951. The stratigraphic relations of the Upper Cambrian Mt. Simon sandstone, encountered in wells in northern Illinois, are discussed. It is suggested that the Mt. Simon sandstone in Illinois is the equivalent of the Bayfield sandstone of Wisconsin and of the Hinckley and Fond du Lac formations in Minnesota. Seven subdivisions of the Mt. Simon are proposed as members—Crane, Kenyon, Lovell, Mayfield, Lacey, Gunn, and Charter.

Tennessee Valley Authority.

Geology and foundation treatment, Tennessee Valley Authority projects: Tennessee Valley Authority, Tech. Rpt. 22, 548 p., illus., 1949. The general geologic conditions at each of the 8 main river projects and the 11 tributary river projects are described.

Terry, J. M. *See also* McGaha, S. W., 2.

Radioactivity logging: Petróleo Interamericano, v. 8, no. 6, p. 43–44, 47, 64, illus., June 1950. (Spanish and English). Discusses the principles, characteristics, and applications of combined radioactivity and neutron logs for obtaining stratigraphic information of bore holes, comparing their curves with electric logs. V. S.

Terzaghi, Karl.

1. Geologic aspects of soft-ground tunneling, *in* Applied sedimentation, p. 193–209, illus., 1950. The points discussed include classification of soft grounds, treatment of soft ground conditions, methods of tunneling, test boring, water-table position, and the functions of the geologist in earth-tunnel investigations.
2. Mechanism of landslides, *in* Application of geology to engineering practice, Berkey Volume, p. 83–123, illus., Geol. Soc. Am., New York, 1950. The points covered in the discussion include varieties of slope movements, processes leading to landslides, dynamics of landslides, and preventive and corrective measures.

Thalmann, Hans Ernst.

Bibliography and index to new genera, species, and varieties of Foraminifera for the year 1949: Jour. Paleontology, v. 24, no. 6, p. 699–745, Nov. 1950. Lists 350 papers for 1949, and 131 for previous years. The index lists as new during 1949: 2 subfamilies, 28 genera, 4 subgenera, 625 species, and 77 varieties. Supplemental to the lists of previous years, 5 genera, 63 species, and 7 varieties are listed.

Thayer, Thomas Prence.

(and Hay, Richard L.). Preliminary notes on later Miocene volcanism in the John Day region, Oregon: Northwest Sci., v. 24, no. 2, p. 89–90, May 1950. Details of several stratigraphic sections of the Columbia River lavas and the Mascall formation and their equivalents in the John Day River Valley are given.

Thiel, George Alfred. *See* Lacabanne, W. D.

Thiesmeyer, Lincoln Reuber. *See* Mather, K. F., 1.

Thoenen, John Roy.

(and others). Investigation of the Prairie Creek diamond area, Pike County, Ark.: Earth Sci. Digest, v. 4, no. 6, p. 3–8, illus. incl. geol. sketch map, Jan. 1950. Describes the local geology, the occurrence of the diamonds, and the results of sampling by the Bureau of Mines.

Thom, Emma Mertins.

(and Hooker, Marjorie, and Dunaven, Ruth Reece). Bibliography of North American geology, 1948: U. S. Geol. Survey Bull. 968, 309 p., 1950. Arranged alphabetically by author, with a subject index.

Thomas, Blakemore E.

Geology of the Wallapai district, Arizona [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1509–1510, Dec. 1950.

Thomas, Emil Paul.

Mississippi structures and their relation to oil accumulation: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1502–1516, illus., July 1950. "All of the known fields are found either in structural or combination structural and stratigraphic traps. The producing structures may be divided conveniently into four groups: (1) igneous intrusions, (2) piercement salt domes, (3) deep-seated salt domes, and (4) normal faults and grabens. A discussion of the general features, distribution, petroleum production, origin, and geologic history of each group is given."

Thomas, Horace Davis.

Summary of the Paleozoic stratigraphy of the Green River Basin, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 17–24, illus., 1950. Cambrian, Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian, and Permian strata in the Bear Lake area of Idaho-Utah, on the western side of the Green River Basin, in the Wind River Mts., and at other points in southwest Wyoming, are described. A generalized correlation table and sketch map of Paleozoic rock outcrops are included.

Thomas, Leo Almor.

1. Pennsylvanian Charophyta in Iowa: Iowa Acad. Sci. Proc., v. 56, p. 233, 1949. Reports the occurrence of oogina in the Higginsville limestone member of the Ft. Scott formation of Pennsylvanian age near Madrid, Iowa.
2. (and Balster, C. A.). Micropaleontological zones in Iowa: Iowa Acad. Sci. Proc., v. 56, p. 235–240, 1949. Micropaleontological information is compiled in an attempt to establish preliminary faunal zones. Tables of formations and zone index genera and species for the Ordovician, Upper Devonian, and Pennsylvanian are given. A bibliography is included.
3. Sweetland Creek (Devonian) conodonts: Jour. Paleontology, v. 24, no. 4, p. 497–498, July 1950. A list of conodont genera and species from the lower part of the Sweetland Creek shale of Iowa. The genus *Icriodus*, which is very rare in the upper shale, is abundant in the lower beds.

Thomas, Robert H.

Phase equilibrium in a portion of the ternary system $BaO–Al_2O_3–SiO_2$: Am. Ceramic Soc. Jour., v. 33, no. 2, p. 35–44, illus., Feb. 1, 1950. "The crystal phases that separate from melts within the area investigated are barium orthosilicate, barium metasilicate, solid solutions, sanbornite, tridymite and cristobalite, mullite, and celsian."

Thomas, Robert P.

(and Byerly, Perry). S waves as diagnostic of fault motion [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1547, Dec. 1950.

Thompson, James B., Jr. *See* Hurley, P. M., 3.

Thompson, L. G. D. *See* Misener, A. D.

Thompson, Marcus Luther.

(and Verville, George Julius, and Bissell, Harold Joseph). Pennsylvanian fusulinids of the south-central Wasatch Mountains, Utah: Jour. Paleontology, v. 24, no. 4, p. 430–465, illus., July 1950. On the basis of the fusulinids, the Oquirrh formation is divided into three parts: the Desmoinesian stage of the Oklan series, and the Missourian and Virgilian stages of the Kawvian series. Several species of *Fusulina*, *Wedekindellina*, *Triticites*, and *Waeringella* are described and illustrated. No fusulinids of Morrowan, Atokan, late Desmoinesian, or late Virgilian ages have been identified.

Thompson, Raymond Melvin.

(and others). Geology of the Lander area, central Wyoming: U. S. Geol. Survey Oil and Gas Inv. Map OM 112 (2 sheets). 1950. Sheet 1 shows index maps, cross sections, and a colored geologic map on a scale of 1 inch to 1 mile. Sheet 2 has a detailed, composite columnar section and a text which covers the stratigraphy, structure, oil and gas possibilities, and construction material resources.

Thompson, Robert Mitchell.

1. Mineral occurrences in western Canada: Am. Mineralogist, v. 35, nos. 5–6, p. 451–455, May–June 1950. Brief notes on specimens of bismuth, bismuthinite, boulangerite, bournonite, galenobismutite, hessite, jamesonite, joseite, linnaeite, owyheeite, polybasite, skutterudite, stannite, tellurbismuth, tetradymite, wehrlite, wittichenite, and wurtzite, from various localities in Yukon Territory, British Columbia, and Northwest Territories.
2. The probable non-existence of alaskaite: Am. Mineralogist, v. 35, nos. 5–6, p. 456–457, May–June 1950. Study of five specimens of alaskaite, three from the type locality in Colorado, indicates that the species should probably be discredited. The Colorado material is more likely an intergrowth of matildite and aikinite, and the Bolivian material is probably benjaminite.

Thompson, Thomas Francis.

Artesian horizon beneath McNary Dam, Oregon [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1510, Dec. 1950.

Thomson, James Edgar. *See also* Charlewood, G. H.; Griffin, K.; MacIntosh, C. G.; Ogryzlo, S. P.; Perry, O. S.; Ward, W.

1. Geology of Teck Township and the Kenogami Lake area, Kirkland Lake gold belt: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 1–53, illus. incl. geol. maps, 1950. Describes the pre-Cambrian intrusives, sediments, and volcanics and the folded and faulted structures of Teck Township and the Kenogami Lake area, comprising the western section of the Kirkland Lake gold belt in northern Ontario. The various gold mines and properties are also described. Two colored geologic maps of the area, on a scale of 1 inch to 1000 feet, and one generalized map of the gold belt are included.
2. Geology of the main ore zone at Kirkland Lake; Introduction and general description: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 55–103, illus., 1950. The rock formations, structures, and mineralization of the Kirkland Lake ore zone in northern Ontario are described. The zone is about 3 miles long, 1¼ miles wide, and reaches a depth of more than 1⅓ miles. Numerous underground plans and sections supplement the text. Ore genesis and its relation to the faulting are discussed. A brief note on geothermal gradients in the area is included.
3. Preliminary report on copper, nickel, lead, and zinc deposits of Ontario: Ontario Dept. Mines Prelim. Rpt. 1950–4, 19 p., Mar. 1950. An inventory of the main copper, nickel, lead, and zinc deposits of Ontario giving location, development, mineralization, productivity, reserves, and references. V. S.
4. Non-ferrous base metal deposits in Ontario: Canadian Min. Jour., v. 71, no. 11, p. 152–154, Nov. 1950. Brief notes on the occurrence of copper, lead, zinc, cobalt, uranium, and several other minor metals in Ontario.

Thorington, J. Monroe.

Rollin Thomas Chamberlin, 1881–1948: Am. Alpine Jour., v. 7, no. 2, p. 205–206, port., Jan. 1949.

Thornbury, William David.

1. Glacial sluiceways and lacustrine plains of southern Indiana: Ind. Dept. Conserv., Div. Geology Bull. 4, 21 p., illus., June 1950. The extent and causes of the Pleistocene valley filling, characteristic of southern Indiana, are discussed. The glacial lakes of the Illinoisian and Wisconsin glacial stages are mapped.
2. (and Wayne, William J.). Late Cenozoic history of the Wabash area, Indiana [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1510, Dec. 1950.

Thornton, F. M. *See* Berry, L. G., 2.

Thorp, James.

1. (and Reed, Eugene Clifton). Is there laterite in rocks of the Dakota group?: Science, v. 109, no. 2821, p. 69, Jan. 21, 1949. It is tentatively concluded that the Dakota group of strata, in Nebraska and Kansas, includes more than one horizon of lateritic material that represents a former sub-soil horizon of an ancient soil. The Dakota group is Cretaceous in age.
2. Progress on the use of soil profiles as an aid to estimating recent geologic time [abs.]: Nebr. Acad. Sci. Proc., 60th Ann. Mtg., p. 16, May 1950.
3. Distribution of wind-deposited soil materials in the United States [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12 pt. 2, p. 1573–1574, Dec. 1950. Progress report of the National Research Council Committee on the study of eolian deposits of United States, Alaska, and Canada.

Thurlow, Ernest E.

(and Wright, Robert James). Uraninite in the Coeur d'Alene district, Idaho: Econ. Geology, v. 45, no. 5, p. 395–404, illus., Aug. 1950. Discussion by Raymond F. Robinson, no. 8, p. 818–819, Dec. 1950. Exploration on the basis of favorable geologic conditions showed trace amounts of uraninite in the Sunshine and Coeur d'Alene mines, Idaho. The uranium-bearing veins occur chiefly in the quartzite wall rock of the ore bodies. The mineralogy is described, and similarities with other uranium deposits are noted.

Ting, Chuen Pu. *See* Keller, W. D., 5.

Tiphane, Marcel.

Preliminary report on the Mazarin area, Abitibi-East County: Quebec Dept. Mines, Geol. Surveys Br., Prelim. Rpt. 236, 6 p. (‡), geol. map, 1950. Brief notes on the pre-Cambrian rocks and structure of the Mazarin area in northern Quebec.

Tocher, Don.

1. (and Romney, Carl F.). Earthquakes and the registration of earthquakes, Berkeley—Mount Hamilton—Palo Alto—San Francisco—Ferndale—Fresno—Mineral—Arcata—Reno, from July 1, 1949 to September 30, 1949; Calif. Univ. Seismog. Sta. Bull., v. 19, no. 3, p. 153–283 (‡), 1950.
2. Earthquakes and the registration of earthquakes, Berkeley—Mount Hamilton—Palo Alto—San Francisco—Ferndale—Fresno—Mineral—Arcata—Reno, from October 1, 1949, to December 31, 1949: Calif. Univ. Seismog. Sta. Bull., v. 19, no. 4, p. 284–404 (‡), 1951.

Todd, Margaret Ruth.

Joseph Augustine Cushman [1881–1949]: Cushman Laboratory for Foraminiferal Research, Memorial Volume, p. 5–16, portraits, Apr. 1950.

Toenges, Albert Louis. *See* Dowd, J. J., 1, 2.

Tolstoy, Ivan. *See also* Ewing, W. M., 1; Press, Frank.

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37. Total intensity aeromagnetic map of Wells County, Indiana. No. GP 33. Scale 1 inch to 1 mile. 1950.
38. Total intensity aeromagnetic map of Whitley County, Indiana. No. GP 34. Scale 1 inch to 1 mile. 1950.
39. Total intensity aeromagnetic map of Bonne Terre quadrangle, Missouri. No. GP 14. Scale 1 inch to ½ mile. 1950.
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Ver Wiebe, Walter August.

North American and Middle East oil fields. iv, 259 p., illus. Wichita, Kansas. 1950. Describes the stratigraphy and structure of 15 oil-producing provinces in the United States, several areas in Canada, Alaska, and Mexico, and, very briefly, the fields of Iraq, Iran, and Saudi Arabia. Production data are given.

Vesselowsky, Sergius Theodore. *See* Rabbitt, M. C.

Vestal, Franklin Earl.

Carroll County geology: Miss. Geol. Survey Bull. 67, 114 p., illus. incl. geol. map, 1950. Discusses the Tertiary and Quaternary stratigraphy and the structure in detail. The mineral resources of the area are described. They are chiefly sand, gravel, clay, and loess.

Vestal, Jack H.

Petroleum geology of the Smackover formation of southern Arkansas: Ark. Res. Dev. Comm. Div. Geology Inf. Circ. 14, 19 p., illus., 1950. The stratigraphy and structure of the Jurassic Smackover limestone and associated formations in southern Arkansas are reviewed and reinterpreted on the basis of new log and core data. The geologic history of the area is outlined. Structure contour and isopach maps of the Smackover limestone, well logs, and a cross-section through southern Arkansas are given. A bibliography is appended. V. S.

Veytia, Mario. *See* Wilson, I. F.

Vickers, Robert Brice, Jr.

(and Ratliff, Fred). Pardue field, Fisher County, Texas: Abilene Geol. Soc., Geol. Contr., p. 36–38, illus., 1950. Notes on the discovery wells and the producing horizons.

Vietzke, Werner J.

Uranium in Upper Michigan: Mineralogist, v. 18, no. 6, p. 298, 300, 302, illus., June 1950. A popular account of the geologic history of northern Michigan as background for discoveries of radioactive minerals.

Villa R., Bernardo. *See* Hibbard, C. W., 1.

Vincent, Ewart Albert.

The chemical composition and physical properties of the residual glass of the Kap Daussy tholeiite dike, East Greenland: Mineralogical Mag., v. 29, no. 208, p. 46–62, illus., Mar. 1950; abs., Am. Mineralogist, v. 35, nos. 3–4, p. 320–321, Mar.–Apr. 1950. Detailed description of glass in an olivine tholeiite dike, one of a Tertiary dike swarm on the coast of East Greenland. Chemical and optical data are given, and comparisons made with data for glass in a tholeiite from Scotland. The investigation was made to determine the trend of differentiation of the dike magma, and a discussion of the crystallization sequence is included.

Vine, James David.

(and Hail, William J., Jr.). Geologic map of the Hobson area, central Montana: U. S. Geol. Survey Oil and Gas Inv. Prelim. Map no. 108. 1950. A colored geologic map, scale 1 inch to 1 mile, and three columnar sections are accompanied by a text describing the Carboniferous, Jurassic, and Cretaceous stratigraphy and the mineral resources. Oil and gas possibilities are mentioned.

Viniegra O., Francisco.

Breve análisis geológico de la llamada cuenca de Veracruz; sus posibilidades petrolíferas; Petróleos Mexicanos, no. 79, p. 100–112, illus., Mar. 1950; Asoc. Mex. Geól. Petrol. Bol., v. 2, no. 4, p. 281–289, illus., Apr. 1950. The geomorphology of the Veracruz basin, Mexico, is described, with particular attention to the Teziutlan and Papaloapan physiographic provinces; Mesozoic and Tertiary sedimentary rocks in the latter are considered; and the local structures are found indicative of oil possibilities. V. S.

Visher, Stephen Sargent.

Memorial to Mark Jefferson [Mark Sylvester William Jefferson, 1863–1949]: Geol. Soc. Am. Proc. 1949, p. 175–176, port., June 1950.

Vitaliano, Charles J. *See also* Mason, B. H., 1, 2, 3.

Needles magnesite deposit, San Bernardino County, California: Calif. Jour. Mines and Geology, v. 46, no. 3, p. 357–372, illus. incl. geol. map, July 1950. The Needles magnesite deposit, San Bernardino County, California, is a lens enclosed in highly contorted and faulted sedimentary rocks of Tertiary age. The rocks, structures, and mineralization are described. Reserves are estimated at more than 500,000 tons of ore. V. S.

Volin, Melden Earl.

(and Hild, John Henry). Investigation of Smuggler lead-zinc mine, Aspen, Pitkin County, Colo.: U. S. Bur. Mines Rpt. Inv. 4696, 47 p. (‡), illus., June 1950. The Smuggler lead-zinc mine, Aspen district, Colorado, was investigated in 1946–48 with a view to evaluating the ore in a mineralized breccia zone at the contact of the Leadville and Weber formations. The breccia ores are related to faults displacing the contact. The geology of the area is reviewed, and log data are given. V. S.

Volk, Joseph A.

1. (and Robertson, Florence). The electronic seismograph: Seismol. Soc. Am. Bull., v. 40, no. 2, p. 81–93, illus., Apr. 1950. Describes the carrier bridge, capacitance-type seismograph with electronic voltage regulation and the related equipment, which are used at the tripartite seismic station at Florissant, Missouri, recently set up for the study of short-period microseisms. Constituent parts are discussed, and photographs and schematic diagrams are given. V. S.

Volk, Joseph A.—Continued

2. The photoelectric seismograph: Seismol. Soc. Am. Bull., v. 40, no. 3, p. 169–173, illus., July 1950. In the photoelectric seismograph described, the light beam of an exciter lamp, reflected from the seismometer's galvanometer mirror, is focused through a modulating V-shaped light wedge on a photoelectric cell, the pulses of which, amplified and rectified, drive an ink recorder. The advantages of the system are discussed. V. S.

Von Croy, Stefan.

(and Valerius, Claude N.). Case history of Benton field, Bossier Parish, Louisiana [abs.]: Oil and Gas Jour., v. 48, no. 51, p. 120, Apr. 27, 1950.

Von Engeln, Oskar Dietrich.

Submarine canyons and the ice age, a discussion: Jour. Geology, v. 58, no. 2, p. 161–163, Mar. 1950. Apparent formation of the canyons by subaerial stream erosion during Pleistocene time is explained by a temporary increase in the density of the earth and a corresponding universal continental uprise, producing the refrigeration of the Pleistocene glacial stages. Alternative hypotheses are criticized. V. S.

Von Gaertner, Hans Rudolf.

Erschliessung und Entwicklung der Erdölfelder im westlichen Canada: Erdöl und Kohle, v. 3, no. 7, p. 305–313, illus., July 1950. Information is given on the discovery, occurrence, production, and reserves of various oil-bearing regions in Alberta, Saskatchewan, and the Northwest Territories. An extensive bibliography is included.

Waagé, Karl Mensch.

Refractory clays of the Maryland coal measures: Md. Dept. Geology, Mines and Water Res. Bull. 9, 182 p., illus. incl. geol. maps, 1950. The stratigraphy of the coal beds and underclay zones, and the distribution of refractory clays in the Georges Creek, Castleman, and northern Upper Potomac basins are described. The clay deposits of the Castleman are discussed in detail, and a geologic map (colored) of the basin on a scale of 1 inch to 2,000 feet is included. Other geologic sketch maps of several areas are given.

Waddington, George Wilfred.

1. Limestone deposits of the Mingan Islands area, Saguenay County: Quebec Dept. Mines, Geol. Surveys Br., Geol. Rpt. 42, pt. 2, 13 p., illus., 1950. A reconnaissance report, including chemical analyses of the limestones in the Mingan Islands and the north shore of the St. Lawrence River, near the village of Havre St. Pierre, Quebec. Substantial reserves, favorably located for exploitation, are indicated.
2. Marl deposits of the Province of Quebec: Quebec Dept. Mines, Mineral Deposits Br., Geol. Rpt. 45, 127 p., illus., 1950. The marl deposits of 63 townships and seigneuries in Quebec are described briefly and the reserves of each are estimated. Analyses of 154 samples are given.

Wadsley, A. D. *See also* Mathieson, A. M.

Synthesis of some hydrated manganese minerals: Am. Mineralogist, v. 35, nos. 7–8, p. 485–499, illus., July–Aug. 1950. "Attempts have been made to synthesize the minerals psilomelane, cesarolite, ranciéite, chalcophanite, lithiophorite, and lampadite by hydrothermal alteration of the metallic derivatives of a hydrous manganese oxide. The compounds prepared are compared by chemical, *x*-ray, and electron microscopic methods with mineral specimens, and the conclusions which are drawn offer some evidence for the paragenesis of these minerals."

Waesche, Hugh Henry.

Growth of water-soluble and other crystals at low temperatures [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1512, Dec. 1950.

Waggoner, Eugene B.

Geologic mapping of tunnels for engineering use [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1559–1560, Dec. 1950.

Wagner, Holly Clyde. *See* Rothrock, H. E., 1.

Wagner, Norman Spencer.

Ground-water studies in Umatilla and Morrow Counties: Oreg. Dept. Geology and Mineral Indus. Bull. 41, 100 p. (‡), illus. incl. geol. map, 1949. Umatilla and Morrow counties, Oregon, are characterized by Tertiary volcanic lava flows interbedded with sediments. Favorable ground-water conditions exist at some depth in the Coriba basalt group in the central part of the area. Water-well data and a bibliography are given. V. S.

Wagner, Warren Richard.

(and Gabelman, John W.). Micro (Petrographic) analysis, *in* Subsurface geologic methods, p. 172–183, illus., Colo. School of Mines, 1950. Describes the technique of heavy mineral separation, and the preparation of fragment and thin sections of sedimentary rocks.

Wahl, William G.

(and Osborne, Freleigh Fitz). Cawatose map-area, Pontiac County: Quebec Dept. Mines, Geol. Surveys Br., Geol. Rpt. 44, 37 p., illus. incl. geol. map, 1950. Petrologic data on the paragneisses, orthogneisses, limestone, and pegmatites of the Cawatose area, in the Grenville sub-province of the pre-Cambrian shield, southwestern Quebec, are presented and their origin is discussed.

Wahlstrom, Ernest Eugene.

1. Introduction to theoretical igneous petrology. ix, 365 p., illus. New York, John Wiley & Sons, Inc., 1950. A presentation of the basic concepts pertaining to the composition and formation of igneous rocks. Equilibrium in systems of various components, and particularly silicate systems, is outlined. The source, nature, emplacement, and crystallization of magmas, differentiation, and granitization are treated in detail. Sections on igneous minerals, origin of rock types, and classification are included.
2. Melonite in Boulder County, Colorado: Am. Mineralogist, v. 35, nos. 9–10 p. 948–953, illus., Sept.–Oct. 1950; abs., nos. 3–4, p. 290, Mar.–Apr. 1950. Describes the occurrence, association, and paragenesis of melonite, a rare ditelluride of nickel, $NiTe_2$, from various mines in Boulder County, Colorado. The method of identification is described briefly.

Wahrhaftig, Clyde.

Physiographic history of southern Alaska, a hypothesis [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1532, Dec. 1950.

Wales, Donald B. *See* Kurtz, V. E.

Walker, Cecil L.

Geologic map and structure sections, Cumberland Reservoir-Little Muddy Creek area, Lincoln County, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, facing p. 24, 1950.

Walker, George Walton.

1. The Calera limestone in San Mateo and Santa Clara Counties, California: Calif. Dept. Nat. Res., Div. Mines Spec. Rpt. 1–B, 7 p., illus. incl. geol. map, Dec. 1950. Describes the distribution, age, physical and chemical properties, and economic possibilities of the Calera limestone in the San Mateo area, south of San Francisco, California.
2. Sierra Blanca limestone in Santa Barbara County, California: Calif. Dept. Nat. Res., Div. Mines Spec. Rpt. 1–A, 5 p., geol. map, Dec. 1950. Gives the general geology and a reconnaissance map of a part of the San Rafael Mts. area north of Santa Barbara, California. The lithology and composition of the Sierra Blanca limestone are described. The rock is of commercial grade, and the economic possibilities are evaluated.

Walker, Robert Y., Jr.

1. Bateman Ranch field, King County, Texas: Abilene Geol. Soc., Geol. Contr., p. 2–6, illus., 1950. Briefly describes the history and geology and gives production statistics.

Walker, Robert Y., Jr.—Continued

2. Ross Ranch field, King County, Texas: Abilene Geol. Soc., Geol. Contr., p. 62–65, illus., 1950. The history of discovery, structure, and producing horizons are described.

Wallace, Louis S. *See* Wheeler, R. R., 1.

Wallace, Robert Earl.

1. (chairman). Columbia River basalts; a recorded informal discussion: Northwest Sci., v. 24, no. 2, p. 51–58, May 1950. Transcript of the discussion held at the 1948 meeting of the Geology-Geography section of the Northwest Scientific Association, and participated in by C. E. B. Conybeare, V. E. Scheid, K. P. McLaughlin, R. L. Lupher, A. R. Ritchie, V. E. McKelvey, H. T. Stearns, R. E. Fuller, F. O. Jones, H. E. Culver, R. C. Newcomb, and E. M. Baldwin.
2. Determination of dip and strike by indirect observations in the field and from aerial photographs; a solution by stereographic projection: Jour. Geology, v. 58, no. 3, p. 269–280, illus., May 1950. "A method of determining the true dip and strike of a bed from observation of its outcrop lines as seen from a distance or in aerial photographs is presented. The angular relations between apparent plunge and trend of outcrop lines and true dip and strike of the bed are determined by the use of the stereographic projection." Three examples are given, and errors are considered. V. S.
3. Geometry of shearing stress and relation to faulting [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1533, Dec. 1950.

Wallis, William E.

Frederick A. Sutton (1894–1950): Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1777–1778, port., Aug. 1950.

Walter, Edward Joseph.

Underground vibrations [abs.]: Earthquake Notes, v. 21, nos. 1–2, p. 10, Mar.–June 1950.

Walter, J. P.

The distribution of radioactivity in some rock formations of Ontario [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 231, 1950.

Walters, Kenneth L. *See* Frye, J. C., 2.

Walters, Robert Fred.

Oil production from pre-Cambrian basement rocks in central Kansas [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 622, Mar. 1950.

Walthier, Thomas Nash.

The Precambrian-Cambrian problem of east Newfoundland: N. Y. Acad. Sci. Trans., ser. 2, v. 12, no. 7, p. 208–213, illus., May 1950. The stratigraphy and structure of eastern Newfoundland are summarized, and it is observed that, due to lack of uniformity and continuity in the sections from the various areas studied, no criteria are available for precisely distinguishing the pre-Cambrian–Cambrian boundary. The evidence points to a general grading of the sediments and the absence of any major break.

Walton, Matt Savage, Jr.

(and O'Sullivan, Robert B.). The intrusive mechanics of a clastic dike: Am. Jour. Sci., v. 248, no. 1, p. 1–21, illus., Jan. 1950. A dike in Connecticut, cutting into a dolerite sill from an underlying conglomerate, is considered formed by the expansion of water or water vapor in the pore space of the conglomerate in response to a local drop in pressure resulting from the opening of a fracture in the dolerite. V. S.

Walton, William R. *See* Phleger, F. B., Jr., 2.

Wanenmacher, Joseph Melching. *See* Keplinger, C. H.

Wanless, Harold Rollin.

1. Late Paleozoic cycles of sedimentation in the United States: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 4, p. 17–28, illus., 1950; abs., Volume of titles and abstracts, p. 22–23, 1948. The sedimentary cycles of marine and non-marine strata characteristic of Mississippian, Pennsylvanian, and Permian rocks in various regions of the United States are described. The explanations which have been proposed for cyclic sedimentation are reviewed.
2. Selection of aerial photographs for teaching geology, *in* Symposium of information relative to uses of aerial photographs by geologists: Photogrammetric Engineering, v. 16, no. 5, p. 796–802, Dec. 1950. A survey of the outstanding aerial photographs of various geologic features contained in the University of Illinois collection. Brief descriptions are given with each illustration.
3. Aerial photograph collection, *in* Symposium of information relative to uses of aerial photographs by geologists: Photogrammetric Engineering, v. 16, no. 5, p. 803–806, Dec. 1950. Describes the method of indexing the University of Illinois collection of aerial photographs and gives a sample portion of the index.

Ward, W. H.

Glaciology, *in* Baffin Island expedition, 1950, a preliminary report: Arctic, v. 3, no. 3, p. 141–143, Dec. 1950. Glaciological data for the Barnes Ice Cap are briefly presented.

Ward, William.

(and Thomson, James Edgar). Geology of the Macassa mine: Ontario Dept. Mines Ann. Rpt., 1948, v. 57, pt. 5, p. 125–132, illus., 1950. Description of the general geology, structure, ores, veins, and wall-rock alteration of the Macassa gold mine in the Kirkland Lake area, northern Ontario.

Waring, W. W.

(and Layer, Douglas Bruce). Devonian dolomitized reef, D3 reservoir, Leduc field, Alberta, Canada: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 2, p. 295–312, illus., Feb. 1950. The reef is studied as to the volume and relations of the various types of void spaces in rock by examination of cores, electrolog and core-data correlation, and determinations of porosity and permeability. The results show the presence of zones of very low intergranular porosity. V. S.

Wark, W. J. *See* Hawley, J. E., 3.

Warnock, M. D.

Bibliography on the loess, as it applies to the loess of North America: U. S. Bur. Recl., Tech. Bib. no. 207, 29 p. (‡), May 1950. A bibliography of 345 references arranged alphabetically by author.

Warren, Harry Verney.

1. (and Delavault, Robert E.). Gold and silver content of some trees and horsetails in British Columbia: Geol. Soc. Am. Bull., v. 61, no. 2, p. 123–128, Feb. 1950. Gold was contained only in samples from auriferous areas, but silver was found even in samples from areas with no silver mineralization. V. S.
2. (and Delavault, Robert E.). A history of biogeochemical investigations in British Columbia: Canadian Min. Met. Bull. no. 458, p. 344–350, June 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 236–242, 1950. The progress of biogeochemistry, the relation of botany to subsurface geology, as a means of locating ore deposits, is traced from its beginnings in 1944 to the present time.
3. (and Delavault, Robert E., and Irish, Ruth). Improved dithizone field test for heavy metals in water [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1533, Dec. 1950.

Warren, Percival Sydney.

(and Stelck, Charles Richard). Succession of Devonian faunas in western Canada: Royal Soc. Canada Trans., 3d ser., v. 44, sec. 4, p. 61–78, June 1950. The Devonian strata of western Canada have been subdivided into twenty faunal zones, based as far as possible on collections from type sections. Each zone is described and discussed. A composite table shows the correlation of the zones at eleven localities in Alberta, Manitoba, and the Northwest Territories.

Wasem, Adam Richard. *See also* Brundall, L.

Photogeology applied to petroleum exploration: World Oil, v. 130, no. 5, p. 64–66, 68, 70, 72, illus., Apr. 1950. Methods of preparing geologic maps from aerial photographs are described for areas of extensive surface outcrops. Notes are given on the determination of dip of beds, delineation of stratigraphic units, and interpretation of structures. V. S.

Washburn, Albert Lincoln. *See* Moffit, F. H., 2.

Washken, Edward.

(and Buerger, Martin Julian). The effect of potassium on the nepheline-carnegieite transformation [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 290–291, Mar.–Apr. 1950.

Wasselhoeft, Robert, Jr.

North Winters field, Runnels County, Texas: Abilene Geol. Soc., Geol. Contr., p. 92–95, illus., 1950. Describes the discovery, stratigraphy, and structure of the field.

Waterman, George H. *See* Caldwell, W. E.

Waters, Aaron Clement.

Multiple dike feeders of the Columbia River basalt [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1533, Dec. 1950.

Waters, Kenneth Harold. *See* Kottlowski, F. E., 2.

Waterways Experiment Station.

Geological investigation of faulting in the Lower Mississippi Valley: Waterways Expt. Sta. Tech. Mem. no. 3-311, 91 p. (‡), illus., May 1950. "The investigation . . . was undertaken to determine the relationships, if any, existing between fault systems and crevasses in the Lower Mississippi River alluvial valley and the effects of faults on stream diversions and orientations of physiographic features." An appendix describes earthquake activity in the region. A bibliography is given.

Watson, Elaine. *See* Boardman, L., 1, 3, 7.

Watson, Howard D. *See* Coons, R. M.

Watson, Kenneth DePencier.

1. Hydrocarbon with cinnabar in British Columbia: Am. Mineralogist, v. 35, nos. 5–6, p. 457–459, May–June 1950. Describes the occurrence of hydrocarbon, associated with cinnabar, calcite, and quartz in greenstone, at the Phillips prospect, near the Manitou mercury mine, Tyaughton Lake area, southwestern British Columbia.
2. Prehnitization of albitite [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1533–1534, Dec. 1950.

Watson, Robert James. *See* Bemrose, J.

Wayne, William J. *See also* Thornbury, W. D., 2; Wier, C. E., 3.

1. A karst valley in western Monroe County, Indiana: Ind. Acad. Sci. Proc., v. 59, p. 258–263, illus., 1950. A karst valley in the headwater region of Indian Creek, 7 miles southwest of Bloomington, Indiana, is described, with particular reference to development and subterranean drainage.

Wayne, William J.—Continued

2. Description of the Indiana karst: Compass, v. 27, no. 4, p. 215–223, illus. incl. map. May 1950. Subterranean drainage and karst topography are exemplified in southern Indiana particularly in the Mitchell Plain, along the outcrop belt of Middle Mississippian limestones. The numerous features of karst topography—lapiés, grikes, sinkholes, uvalàs, and others—and hydrology are described. V. S.

Weaver, Charles Edward. *See* Folk, R. L., 2.

Weaver, Paul. *See also* Colle, J. O.

1. Variations in history of continental shelves: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 351–360, illus., Mar. 1950; discussion by W. E. Pratt, with reply by Paul Weaver, no. 7, p. 1589–1592, July 1950. Gulf of Mexico geology is discussed to show that the continental shelf is physiographically an eroded part of the coastal plain and that only its outer, steeper border with the continental slope has a tectonic origin. The evidence refutes W. E. Pratt's theory of a tectonic submergence of the shelf. V. S.
2. Milton Frank Reedy, Jr., recipient of President's Award: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 5, p. 980–982, port., May 1950.

Webb, Gregory W. *See* Hintze, L. F.

Webb, Robert Wallace.

Volcanic geology of Toowa Valley, southern Sierra Nevada, California: Geol. Soc. Am. Bull., v. 61, no. 4, p. 349–357, illus. incl. geol. map, Apr. 1950; discussion by Evans B. Mayo, no. 9, p. 1021–1022, Sept. 1950. The cones, domes, flows, and sequence, relations, and character of flow phases, in and adjacent to Toowa Valley, Olancha quadrangle, are described, with suggestions on the relative age of volcanism and geomorphic events. V. S.

Weber, Wilfred W. L.

Preliminary report on parts of Duverny and Landrienne Townships, Abitibi-East County: Quebec Dept. Mines, Mineral Deposits Br., Prelim. Rpt. 228, 16 p. (‡), geol. map, 1949. A brief report on the pre-Cambrian rocks, chiefly Keewatin-type volcanics, structure, and prospecting activity in the Duverny-Landrienne area of northern Quebec.

Weddle, Herman W. *See* Hazzard, J. C., 3.

Weeks, Alice Dowse.

(and Cisney, Evelyn A., and Sherwood, Alexander M.). Hummerite and montroseite, two new vanadium minerals from Montrose County, Colorado [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1513, Dec. 1950.

Weeks, Lewis G.

Concerning estimates of potential oil reserves: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 10, p. 1947–1953, Oct. 1950. The problem of estimating potential oil reserves in the world is discussed with particular reference to the variation in the incidence of oil occurrence in sediments and various other factors. V. S.

Weeks, Warren Brinson.

Frederick Morrill Swain, Jr., recipient of President's Award: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 5, p. 982–984, port., May 1950.

Weitz, Joseph Leonard. *See* Love, J. D., 2.

Welles, Samuel Paul.

A new elasmosaur from the Eagle Ford shale of Texas; systematic description: Fondren Science Series, no. 1, pt. 1, 28 p., illus., Southern Methodist Univ., Dallas, Texas, May 10, 1949. Describes the new species, *Elasmosaurus morgani*, discovered on the Anderson farm near Cedar Hill, Dallas County, Texas. The specimen was found in the Eagle Ford shale of Upper Cretaceous age. The species is compared with *Elasmosaurus platyurus* Cope, *Styxosaurus snowii* (Williston) Welles, and other elasmosaurs.

Wells, Dana.

Lower middle Mississippian of southeastern West Virginia: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 5, p. 882–922, illus., May 1950; discussion by D. B. Reger, no. 9, p. 1910–1912, Sept. 1950. A stratigraphic study of the lower middle Mississippian (lower Greenbrier age) of southeastern West Virginia, composed of the Hillsdale and Denmar (new) formations of the Meramecian series. These formations are predominantly calcarenites and calcilutites deposited in a transgressing sea along the flank of a miogeosyncline and are contemporaneous with purer limy sediments of the Mississippi Valley. Faunal lists and numerous stratigraphic sections are given. V. S.

Wells, Francis Gerritt. *See also* Cady, W. M., 3.

(and Cater, Frederick William, Jr.). Chromite deposits of Siskiyou County, California: Calif. Dept. Nat. Res., Div. Mines Bull. 134, pt. 1, chap. 2, p. 77–127, illus. incl. geol. map, Oct. 1950. Chromite occurs both as pod deposits and in disseminate form associated with peridotite in the Klamath Mts. of northern California. The ore is described, chemical analyses are given, and reserves estimated. Seven groups of deposits are recognized and described. A large map shows the distribution of peridotite and chromite mines; several smaller geologic maps of mines are included.

Wells, John D.

A study of the Eskridge shale: Kans. Acad. Sci. Trans., v. 53, p. 535–543, illus., 1950. The Eskridge shale (Permian) in northeastern Kansas was studied to evaluate the significance of color in relation to deposition. It is concluded that the non-marine phase is represented by red and black shales; the marine phase by all other colors. The environment of the various colors and lithologies is interpreted.

Wengerd, Sherman Alexander.

1. Triassic rocks of northwestern New Mexico and southwestern Colorado, *in* Guidebook of the San Juan Basin, New Mexico and Colorado, p. 67–75, illus., 1950. The formations are described briefly and correlations are discussed. A list of references is included.
2. Photogeologic characteristics of Paleozoic rocks on the Monument Upwarp, Utah, *in* Symposium of information relative to uses of aerial photographs by geologists: Photogrammetric Engineering, v. 16, no. 5, p. 770–781, illus., Dec. 1950. The interpretation of the stratigraphy and structure of a portion of the Monument Upwarp, in southeastern Utah, from aerial photographs, is discussed.

Wenner, Carl-Gösta.

Pollen diagrams from Labrador: Geografiska Annaler, Bd. 29, hefte 3–4, p. 137–373, illus., 1947; Stockholms Högskolas Geol. Institut Medd. no. 86, 241 p., illus. [1948]. A detailed, comprehensive account of the collection and analysis of pollen from Labrador. The geographical features, methods of surface sampling and pollen preparation, pollen analyses, and peat deposits are described. Pollen from Labrador is compared with that of other subarctic regions. Correlation of strata and pollen diagrams with strand lines is attempted. The pollen data are tabulated in detail and an extensive bibliography is given.

West, S. Stewart.

Dependence of seismic wave velocity upon depth and lithology: Geophysics, v. 15, no. 4, p. 653–662, illus., Oct. 1950. A relationship is deduced that determines the minimum velocity possible at a given depth and the maximum depth at which a given velocity can occur. The limit values are examined with reference to lithology; the relation of near-surface velocity to porosity is discussed; and it is shown how one can deduce the motion of shore lines during deposition. V. S.

West Texas Geological Society.

Guidebook, 1950 Field Trip, October 7–8, 1950; Sierra Blanca region, Franklin Mountains, Texas. 68 p., illus., 1950. The stratigraphy, structure, volcanic rocks, and intrusive rocks of the Sierra Blanca region are described, and a geologic map is shown. Brief sections on the Franklin Mts., Juarez Mts., bolsons, test drilling, and correlation of the El Paso formation are included. A bibliography is given.

Weyl, Richard.

1. Geología histórica de la Cordillera Central de la Isla de Santo Domingo y su posición en el arco de las Antilles: Soc. Mex. Geog. Est. Bol., v. 66, no. 3, p. 431–452, illus. incl. geol. sketch map, Nov.–Dec. 1948. Gives the general features of the structure of the Island of Santo Domingo, and discusses in detail the geologic history and structure of the Cordillera Central in Cretaceous and Tertiary time. The place of Santo Domingo in the tectonics of the eastern Antilles is discussed.
2. Eine neue Tiefenkarte der Caribischen See und ihre tektonische Ausdeutung: Petermanns Geog. Mitt., Jahrg. 93, Heft 4, p. 173–174, illus., 1949. The bathymetric chart of the Caribbean Sea, issued by the U. S. Hydrographic Office in 1939, contributes to an understanding of the structure of the West-Indies Basin. Four tectonic units are distinguished: foreland, foredeep, Antillean orogenic zone, and inner basin. A similarity is observed with circum-Pacific tectonic zones, especially the Indian and Antarctic. A sketch map is given. V. S.

Weyl, Woldemar A.

Surface structure and crystal growth [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1513, Dec. 1950.

Weyland, Hermann. *See* Kräusel, R.

Wheeler, Everett P., 2d.

Massive leucoxene in Adirondack titanium deposit: Econ. Geology, v. 45, no. 6, p. 574–577, Sept.–Oct. 1950. "A series of minerals from hornblende to chlorite have filled cavities in anorthosite adjacent to a titaniferous magnetite deposit [Lake Sanford, New York] and associated with faulting. Ilmenite crystals formed early in the series and their outer portions were subsequently altered to leucoxene of variable composition for a thickness of a centimeter."

Wheeler, G. V.

(and Burkhardt, W.). Semi-quantitative spectrographic analyses, *in* Analytical data on reference clay minerals: Am. Petrol. Inst. Project 49, Clay Mineral Standards, Prelim. Rpt. 7, p. 71–90, July 1950.

Wheeler, Harry Eugene.

1. (and others). Stratigraphic classification: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2361–2365, Dec. 1950. "The existence of the previously proposed categories of rock, time-rock, and time units is accepted. *Stage* and *zone*, which are customarily classified as time-rock units, are biostratigraphic or lithostratigraphic in character and therefore temporally transgressive. Because of this fundamental difference, these units are assigned to a new category, *para-time-rock*. The operational unit *sequence* is amended and recommended."
2. (and McNair, Andrew Hamilton). Late Tertiary thrusting in northeastern Nevada [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1513–1514, Dec. 1950.

Wheeler, Robert Reid.

1. (and Wallace, Louis S.). Significance of world's deepest well bore: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 6, p. 15–23, illus., 1950; abs., Volume of titles and abstracts, p. 37–38, 1948. The well, drilled by the Superior Oil Company to a total depth of 17,823 feet, penetrated 5,000 feet of Permian and more than 12,000 feet of Pennsylvanian rocks near the axis of the Anadarko Basin bordering the Wichita Mts. of western Oklahoma. The stratigraphic and structural data are discussed.

Wheeler, Robert Reid—Continued

2. (and Swesnik, Robert Malcolm). Stratigraphic convergence problems: World Oil, v. 130, no. 5, p. 57–60, 62, illus., Apr. 1950; abs., Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 6, p. 75, 1950; Volume of titles and abstracts, p. 38, 1948. Examination of geologic factors involved in stratigraphic convergence, and of respective terminology, shows that stratigraphic oil traps can be more simply defined and mapped than currently believed, and that historical geology furnishes the best approach in developing techniques for their discovery. V. S.
3. Golden Trend of Oklahoma, current problems: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 6, p. 1287–1292, illus., June 1950. This article carries forward the discussion of several problems presented in R. M. Swesnik's "Golden Trend of south-central Oklahoma" (v. 34, p. 386–422, 1950), namely, oil accumulation in Deese sands, complex trapping aspects along a fault, pre-Viola deformation and convergence, and the relation of accumulation to source beds. V. S.
4. Guadalupian folding and facies, trans-Pecos Texas and New Mexico [abs.]: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 6, p. 74, 1950; Volume of titles and abstracts, p. 38–39, 1948.
5. Relation of Anadarko Basin movements to theory of contracting continents [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 3, p. 618–619, Mar. 1950. Orogenic movements during Paleozoic time on the north flank of the Anadarko Basin, having no counterpart in the south, are explained by differential crustal shortening in continental areas on a shrinking globe. The theory, accounting for the positive gravity anomaly in the Gulf, is discussed. V. S.

White, Donald Edward. *See also* Guiza, R., Jr.

1. (and Guiza, Reinaldo, Jr.). Antimony deposits of El Antimonio district, Sonora, Mexico: U. S. Geol. Survey Bull. 962–B, p. 81–119, illus, incl. geol. maps, 1949. El Antimonio district lies in the northwestern part of Estado de Sonora, about 25 miles east of the Gulf of California, and is one of the chief antimony producing areas. The antimony occurs both in veins following faults in Triassic strata, and in placers. The geology of the area, the mineral deposits, and the mines are described, and the reserves are calculated. Several geologic maps of various mines and areas are included.
2. (and Brannock, Walter Wallace). The sources of heat and water supply of thermal springs, with particular reference to Steamboat Springs, Nevada: Am. Geophys. Union Trans., v. 31, no. 4, p. 566–574, illus., Aug. 1950; reprinted with modified title, Assoc. Internat. Hydrol. Sci., Assemblée Générale, Oslo, 1948, Comm. des Eaux Souterraines, Trav., p. 168–176, [1950?]; abs., Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1534, Dec. 1950. Thermal springs are classified as non-volcanic, intermediate, and volcanic on the basis of temperature relations, mineral content, associated gases, water levels, isotopic composition, and geology. Such evidence indicates that Steamboat Springs, Nevada, is volcanic. V. S.

White, George Willard.

1. Applied geology courses in the university: Ohio State Univ., Eng. Expt. Sta. News, v. 22, no. 2, p. 9, 25–27, Apr. 1950. Sets forth the usefulness of geology in various phases of engineering and briefly outlines a course for engineers.
2. Influence of Wisconsin glacial stages on soil-group boundaries in northeastern Ohio [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1574, Dec. 1950.

White, Maynard Pressly.

A fusulinid slide rule, *in* Symposium on fundamentals in paleontology: Jour. Paleontology, v. 24, no. 2, p. 123–129, illus., Mar. 1950. "An application of the natural laws of evolution, as shown by changes in wall structure and composition, arrangement of chambers, form of test, etc, considered in the order of their importance, points to a simple logical scheme covering the development of the fusulinids." Diagrammatic sketches show the evolution of the test.

White, V. L. *See* Thompson, Raymond M.

White, Walter Noy. *See* Lang, J. W.

White, Walter Stanley. *See also* Billings, M. P., 2.

(and Jahns, Richard Henry). Structure of central and east-central Vermont: Jour. Geology, v. 58, no. 3, p. 179–220, illus, incl. geol. maps, May 1950. The strata east of the Green Mountains comprise a great thickness of steeply dipping, highly folded Paleozoic metasediments and metavolcanics. Structurally, an eastern, central, and western tectonic belt can be distinguished. The formations are described, and geologic maps and sections are given. V. S.

White, William Alexander. *See also* Stuckey, J. L., 2.

Blue Ridge Front; a fault scarp: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 1, p. 1309–1346, illus., Dec. 1950. Evidence is presented pointing to a fault origin for the Blue Ridge scarp which extends from Georgia to northwestern New Jersey. Among the points considered are earlier theories of origin, the fault zone in North Carolina, South Carolina, and Georgia, lithologic and structural evidence of faulting, multiple-surface analysis of faulting, offsets, and, briefly, fault evidence in Virginia and areas to the north.

White, William H.

Plant anomalies related to some British Columbia ore deposits: Canadian Min. Met. Bull. no. 459, p. 368–371, illus., July 1950; Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 243–246, 1950. Investigations show that deposits containing Zn or Cu cast a "metal shadow" into the overlying soil that remains positioned regardless of overburden and ground water movement. The high content of Zn or Cu in trees within this area constitutes an anomaly which can be detected and plotted in the field. The field technique and characteristics of the anomalies are described.

Whitehead, Walter Lucius.

1. (and Breger, Irving A.). The origin of petroleum, effects of low temperature pyrolysis on the organic extract of a recent marine sediment: Science, v. 111, no. 2883, p. 335–337, Mar. 31, 1950. Thermal analyses were made of the total organic extract, water-soluble fraction, and water-insoluble fraction of Cuban marine mud at temperatures between 100–200 C to obtain data useful in the study of petroleum genesis. Results are given. V. S.
2. (and Sullivan, Geraldine R.). Potassium content of marine sediments [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1514, Dec. 1950.

Whitfield, R E. *See* Frondel, C., 4.

Whitham, K. *See* Slack, H. A.

Whiting, F. H. *See* Ahrens, L. H., 6.

Whitmore, Frank Clifford, Jr.

Sedimentary materials in military geology, *in* Applied sedimentation, p. 635–655, illus., 1950. The applications of knowledge of sedimentation and sedimentary materials to various phases of military activity are described. Among these are trafficability of a terrain, availability of water supply and construction materials, airfield siting and construction, and underground installations.

Whittington, Harry Blackmore.

1. Sixteen Ordovician genotype trilobites: Jour. Paleontology, v. 24, no. 5, p. 531–565, illus., Sept. 1950. Redescribes, with new illustrations, the genotypes of *Trinodus*, *Encrinuroides*, *Pterygometopus*, *Remopleurides*, *Robergia*, *Bronteopsis*, *Stygina*, *Raymondaspis*, *Homotelus*, *Ampyx*, *Ampyxina*, *Lonchodomas*, *Raphiophorus*, *Raymondella*, and *Törnquistia*. The true hypostome of *Phillipsinella* is redescribed, and the genus placed in a new family, the Phillipsinellidae. V. S.
2. Two silicified Middle Ordovician trilobites [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1514–1515, Dec. 1950.

Wier, Charles E.

1. Geology and coal deposits of the Jasonville quadrangle, Clay, Greene, and Sullivan Counties, Indiana: U. S. Geol. Survey Coal Inv. Map C 1. Scale 1 inch to 2000 feet. 1950. Descriptive notes on the Carboniferous stratigraphy, structure, and reserves accompany a geologic map, columnar section, and map of mined areas.
2. Coal in Indiana: Compass, v. 27, no. 4, p. 226–231, May 1950. The stratigraphic column of the Pennsylvanian coal-bearing formations in Indiana is given, and eight main coal beds are described briefly, with chemical analyses.
3. (and Wayne, William J., and Kottlowski, Frank Edward). Pennsylvanian of west central Indiana: Compass, v. 27, no. 4, p. 232–236, illus., May 1950. Brief notes on a field trip to western Indiana coal localities, including a columnar section of the Pennsylvanian formations in the area visited.

Wier, Kenneth L.

Comparisons of some aeromagnetic profiles with ground magnetic profiles: Am. Geophys. Union Trans., v. 31, no. 2, pt. 1, p. 191–195, illus., Apr. 1950. Discusses magnetic surveys and geologic conditions in the Iron River district, Michigan. The aeromagnetic profiles are much smoother than the ground magnetic profiles because of the merging and attenuation of anomalies with increasing height. Depth estimates from aeromagnetic data usually prove exaggerated. V. S.

Wiese, John Herbert.

1. (and others). Geology along the Electra and West Point tunnels, Amador County, California: Calif. Jour. Mines and Geology, v. 46, no. 1, p. 17–22, geol. sk. map, Jan. 1950. The igneous and metamorphic rocks, penetrated by the tunnels, and local faults, joints, and foliation are described in their relation to problems of tunnel construction. V. S.
2. Geology and mineral resources of the Neenach quadrangle, California: Calif. Dept. Nat. Res. Div. Mines Bull. 153, 53 p., illus. incl. geol. map, Mar. 1950. The Neenach quadrangle is located 60 miles northwest of Los Angeles. The pre-Cambrian(?) and Paleozoic(?) metamorphic complexes, Jurassic(?) intrusives, and Tertiary and Quaternary rocks are described. Faulting is prominent in the area. The Garlock faults and San Andreas fault zone are shown on the structure map of the quadrangle. Brief notes on the mineral deposits, particularly tin, are given.
3. (and Fine, Spencer Freeland). Structural features of western Antelope Valley, California: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1647–1658, illus. incl. geol. map, Aug. 1950. Describes Antelope Valley, in southern California, a wedge-shaped basin underlain by Tertiary marine and nonmarine sediments and volcanics, bounded by the Garlock and San Andreas fault zones, and broken into small, northwest tilted fault blocks. A geologic map and cross sections are given. V. S.

Wigglesworth, Edward, 1885–1945.

Properties of gem varieties of minerals. Gemological Institute of America, 541 South Alexandria, Los Angeles, California. 1948. Loose-leaf, ring binder file of cards giving physical properties of minerals used as gems. Data for more than 60 minerals are given.

Wilbert, Louis Joseph, Jr. *See* Murray, G. E., Jr., 1.

Wild, George O.

Examination of pearls by X-ray: Mineralogist, v. 18, no. 6, p. 323–324, illus., June 1950. The technique of examining undrilled pearls by X-ray methods is described briefly and figured. It has been found that the nuclei of cultured pearls luminesce strongly while the shell does not.

Wilgus, Wallace LaFetra.

The Elk City pool: World Oil, v. 130, no. 7, p. 123–124, 126, illus., June 1950. Briefly describes the stratigraphy and structure of the Elk City field in the Anadarko Basin of western Oklahoma. The structure is a narrow anticline about eight miles long, and production is obtained from the Missouri (Hoxbar) series of Pennsylvanian age at depths of 8,800–10,300 feet.

Wilhelm, Clarence John.

(and Harris, H. M., and Harlin, M. N.). Petroleum-engineering study of the Carthage gas field, Panola County, Tex.: U. S. Bur. Mines Rpt. Inv. 4698, 60 p. (‡), illus., Aug. 1950. The Carthage field, Panola County, Texas, fourth largest gas reserve in the United States, produces mainly from three reservoirs in the Rodessa and Sligo limestone formations of Lower Cretaceous age. The local stratigraphy and reservoirs are described. The total gas reserve of the field is estimated at 7.604 trillion cubic feet. V. S.

Wilkinson, William Donald.

Welded tuff member of the Rattlesnake formation [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1534, Dec. 1950.

Willard, Bradford. *See also* Howell, B. F., 2.

1. How thick is a stratum?: Pa. Acad. Sci. Proc., v. 24, p. 188–189, 1950. A scale of thicknesses for the various terms used in descriptions of strata is proposed. Limits in mm, cm, and m are given for laminated, platy, flaggy, thin, medium, heavy, and massive.
2. Paleozoic continental phases of sedimentation in the northern Appalachians: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 4, p. 29–37, illus., 1950; abs., Volume of titles and abstracts, p. 23, 1948. "Continental phases of sedimentary rocks occur at intervals among the marine phases throughout the Paleozoic systems in the northern Appalachian Mts. and the Allegheny Plateau of the eastern United States. Their origin and recurrence during the existence of the Appalachian geosyncline are attributed to the cyclic nature of certain of the Paleozoic systems . . .; diastrophic or orogenic movements . . .; and repetitive climatic conditions."
3. Mapping Pennsylvania's geology: Pa. Dept. Internal Affairs Monthly Bull., v. 18, no. 9, p. 4–8, Aug. 1950. An historical account of the progress of geologic mapping in the state.
4. (and Stevenson, Robert Evan). Northeastern Pennsylvania and central New York petroleum probabilities: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 12, p. 2269–2283, illus., Dec. 1950. The area of Paleozoic sediments, comprising the Allegheny and Pocono plateaus in northeastern Pennsylvania and the adjacent area in New York, including the Catskill Mountains, is characterized by a major Ordovician-Silurian unconformity, minor discontinuities, facies shifts, folding, and potential source and reservoir beds. These features suggest oil and gas possibilities, especially Ordovician and Devonian. The stratigraphic sequences and structures are discussed, and columnar lists and sections are given. V. S.

Williams, Alwyn.

New stropheodontid brachiopods: Washington Acad. Sci. Jour., v. 40, no. 9, p. 277–282, illus., Sept. 15, 1950. Describes two new genera of Middle Devonian stropheodontid brachiopods, *Hercostrophia* and *Glossostrophia* and several subgenera, from both North America and Europe.

Williams, Enrique Ruiz.

Coto minero de Jarahueca, en la Provincia de Las Villas, Cuba: Soc. Cubana Ing. Rev., v. 49, no. 8, p. 411–421, illus. incl. geol. sk. map, Aug. 1950. Brief discussion of the Cretaceous stratigraphy, geologic history, and economic geology of the Jarahueca oil and gas region in central Cuba. Production statistics are given.

Williams, Ernest.

Testudo cubensis and the evolution of western hemisphere tortoises: Am. Mus. Nat. History Bull., v. 95, art. 1, 36 p., illus., Mar. 30, 1950. Redefines and redescribes *Testudo cubensis*, with a discussion of the geological occurrence of the testudine fauna in Cuba, the interrelationships and nomenclature of western hemisphere testudines, and the phylogeny of the genus *Testudo* from the Tertiary to the present.

Williams, Harold L. *See* Kapner, H. H.

Williams, Howel.

1. Obituary, Prof. Bailey Willis [1857–1949]: Nature (London), v. 163, no. 4144, p. 519–520, Apr. 2, 1949.
2. Geology of the Macdoel quadrangle: Calif. Dept. Nat. Res., Div. Mines, Bull. 151, p. 7–60, illus. incl. geol. maps, Nov. 1949. Volcanics of the Western Cascade and High Cascade series (Tertiary-Recent) occupy most of the Macdoel quadrangle in northern California. Freshwater Eocene (Umpqua) sediments, resting on Upper Cretaceous (Chico) rocks, are believed to underlie the Shasta Valley. Stratigraphy, structure, petrology, and economic geology are described. V. S.
3. Volcanoes of the Parícutin region, Mexico: U. S. Geol. Survey Bull. 965–B, p. 165–279, illus. incl. geol. map, 1950. Report of an investgation of a 600 square mile area surrounding Parícutin Volcano to determine its relation to neighboring volcanic cones. Petrographic descriptions of the Tertiary and younger volcanics are given, together with 18 rock analyses. Numerous individual cones are described.

Williams, Marden Dean.

Tertiary stratigraphy of the Uinta Basin, *in* Petroleum geology of the Uinta Basin: Guidebook to the Geology of Utah, no. 5, p. 101–114, illus., 1950. The Tertiary strata of the Uinta Basin, Utah, comprise more than 9,000 feet of continental sediments ranging from Paleocene to Oligocene or Miocene age. The Wasatch group, Green River formation, Uinta formation, and Duchesne River formation are described.

Willman, Harold Bowen. *See* Leighton, M. M., 2.

Wilson, Alice Evelyn. *See* Satterly, J., 1, 2.

Wilson, Ben Hur.

Malaga, New Mexico, meteorite: Mineralogist, v. 18, no. 11, p. 512–514, illus., Nov. 1950. A brief description of a stony iron meteorite, collected in 1933 from the area southeast of Carlsbad, New Mexico.

Wilson, Eldred Dewey. *See also* Hogue, W. G.

1. (and Roseveare, George H.). Arizona nonmetallics; a summary of past production and present operations: Ariz. Bur. Mines, Mineral Technology Ser. no. 42, Bull. 155, 2d ed., 60 p., Apr. 1949.
2. Arizona zinc and lead deposits; general features: Ariz. Bur. Mines Bull. 156, Geol. Ser. 18, p. 7–17, illus., Apr. 1950. The main features of the geological occurrence of the zinc and lead deposits are summarized. Production data are given.
3. Arizona zinc and lead deposits; Pima district: Ariz. Bur. Mines Bull. 156, Geol. Ser. 18, p. 39–51, Apr. 1950. Stratigraphy, structure, and ore deposits are described, with notes on the San Xavier mine and several other smaller mines.
4. Arizona zinc and lead deposits; Aravaipa district: Ariz. Bur. Mines Bull. 156, Geol. Ser. 18, p. 51–63, Apr. 1950. Describes the stratigraphy, structure, and ore deposits of the area, with notes on several mines.
5. Arizona zinc and lead deposits; Superior area: Ariz. Bur. Mines Bull. 156, Geol. Ser. 18, p. 84–98, illus. incl. geol. map, Apr. 1950. The rocks, structure, and mineralization are described. Notes on the Magma, Belmont, and Silver King mines are included.

Wilson, Ivan Franklin.

(and Veytia, Mario). Geología y yacimientos minerales de la región manganesífera de Lucifer, al noroeste de Santa Rosalia, Baja California: México Inst. Nac. Inv. Rec. Miner. Bol. 25, 68 p., illus. incl. geol. maps, 1949. Spanish translation by Carl Fries, Jr., of U. S. Geol. Survey Bull. 960–F, 1949. Describes the geology and manganese deposits of the Lucifer district, on the eastern coast of the Baja California peninsula. The country rock consists of Miocene, Pliocene, and Pleistocene volcanics and sediments. The ores are believed to have been formed by hydrothermal solutions, with deposition controlled by structure.

Wilson, James Lee.

1. An Upper Cambrian pleospongid (?): Jour. Paleontology, v. 24, no. 5, p. 591–593, illus., Sept. 1950. "A small pleospongid-type organism is described from two specimens from Upper Cambrian beds in Texas, a new genus and species being named. It is typified by an irregular canal system radially arranged from a central cavity."
2. (and Frederickson, Edward Arthur, Jr.). The *Irvingella major* ("*Ptychopleurites*") faunizone of the Upper Cambrian: Am. Jour. Sci., v. 248, no. 12, p. 891–902, illus., Dec. 1950. "The fauna of the '*Ptychopleurites* zone' is reviewed and a new genus [*Comanchia*] erected for the trilobite *Ptychopleurites amplooculata* Frederickson. The geographic and vertical position of this assemblage in the standard faunal sequence of the North American Upper Cambrian is discussed. It is proposed that the name of the time-stratigraphic unit characterized by this fauna be changed from *Ptychopleurites* zone to *Irvingella major* faunizone."
3. Upper Cambrian trilobites from the Welge sandstone, eastern Llano Uplift, Texas [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1515, Dec. 1950.

Wilson, John Andrew. *See also* Hibbard, C. W., 4.

1. Cope's types of fossil reptiles in the collection of the Bureau of Economic Geology, the University of Texas: Jour. Paleontology, v. 24, no. 1, p. 113–115, illus., Jan. 1950. The types listed are *Palaeoctonus dumblianus*, *Phytosaurus superciliosus*, *Testudo hexagonata*, and *Testudo lauticaudata*. Illustrations are given of 3 bones of *Episcoposarus haplocerus*. V. S.
2. A platysomid from the Double Mountain group of Texas: Jour. Paleontology, v. 24, no. 3, p. 386–388, illus., May 1950. Reports the discovery of *Platysomus*, the first vertebrate to be found in the Blaine formation of the Double Mountain group (Permian) in King County, Texas. The change in habitat of the North American platysomids from fresh water to marine is discussed and found to parallel changing climatic conditions between the Pennsylvanian and Lower Triassic.

Wilson, John Tuzo. *See also* Scheidegger, A. E., 1.

1. An extension of Lake's hypothesis concerning mountain and island arcs: Nature (London), v. 164, no. 4160, p. 147–148, illus., July 23, 1949. Lake's hypothesis that the poles of East Asiatic island festoons and of southern Asia mountain arcs lie on two great circles, can be extended to include the poles of island and mountain arcs formed since Jurassic time. The only explanation so far, that of Lake, should be re-examined to determine the extent of its application, and other possible explanations should be considered.
2. Recent applications of geophysical methods to the study of the Canadian Shield: Am. Geophys. Union Trans., v. 31, no. 1, p. 101–114, illus. incl. geol. maps, Feb. 1950. A growth of continents by accretion of roots of marginal mountain ranges is suggested by evidence from gravimetric, aeromagnetic, radioactive, seismic, and geothermal studies of the Shield. The investigations are outlined, including recent measurements of temperatures and pressures at which minerals were deposited and studies of the distribution of radioactive elements and isotope ratios. V. S.

Wilson, John Tuzo—Continued

3. An analysis of the pattern and possible cause of young mountain ranges and island arcs: Geol. Assoc. Canada Proc., v. 3, p. 141–166, illus., Dec. 1950. "It is suggested that certain recent information upon the distribution and occurrence of earthquakes supports the view that contraction is the cause of mountain and island arcs. The arcs of the Mesozoic-Cenozoic orogenetic belts are classified into six types meeting in four kinds of junction. The arcs are described; the descriptions are discussed in connection with the contraction hypothesis, but are not dependent upon it."
4. An interpretation of some geological features in terms of the collapse of a contracting earth [abs.]: Royal Soc. Canada Proc., 3d ser., v. 44, p. 231, 1950.

Wilson, Malcolm E., Jr. *See* Shepherd, G. F.

Wilson, Robert Warren.

Supposed primates from the Torrejon fauna of the Nacimiento formation [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1515–1516, Dec. 1950.

Wilson, Walter Byron, 1885–1951.

1. Reef definition: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 2, p. 181, Feb. 1950; abs., Oil and Gas Jour., v. 47, no. 46, p. 108, Mar. 17, 1949. A reef is defined as a sedimentary rock aggregate composed of the remains of colonial-type organisms that lived near or below the surface of water bodies, mainly marine, and which developed relatively large vertical dimensions as compared with the proportions of adjacent sedimentary rocks. V. S.
2. Some aspects of petroleum migration [abs.]: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 6, p. 25, 1950; Volume of titles and abstracts, p. 39, 1948. Discussion is appended to the abstract.

Wilson, William Jay. *See* Rich, J. L., 2.

Winchell, Horace.

Crystal orientation on the Weissenberg goniometer: Acta Crystallographica, v. 3, pt. 5, p. 396, illus., Sept. 1950. Describes a modification of Bunn's method which can be used for accurately adjusting a crystal zone axis on the Weissenberg goniometer.

Windes, Stephen L.

Physical properties of mine rock, Part 2: U. S. Bur. Mines Rpt. Inv. 4727, 37 p. (‡), Sept. 1950. "This report presents physical and petrographic properties of approximately 60 types of rock from operating mines or mineral-investigation projects and supplements [U. S. Bur. Mines] Report of Investigations 4459 [March 1949]. Source and geologic identifications are supplied for each rock type, and petrographic descriptions are given in detail."

Winslow, A. G. *See* Lang, J. W.

Wisser, Edward Hollister.

1. Tomorrow's ore: Min. Cong. Jour., v. 36, no. 1, p. 26–32, 42, illus., Jan. 1950. The existence, possibilities of discovery, and methods of tracing ore deposits hidden by postmineral rock cappings are discussed. Systematic exploration should be based on a geologic study of the characteristics of caprocks. A discussion by 4 geologists follows. V. S.
2. "Nevadan"—"Laramide"—Tertiary upheaval and related ore deposits [abs.]: Econ. Geology, v. 45, no. 4, p. 386–387, June–July 1950.

Wolfe, Caleb Wroe. *See also* Ramsdell, L. S., 1.

This earth of ours—past and present. x, 374 p., illus. Revere, Mass. Earth Science Publishing Co. 1950. Textbook, with emphasis on the unsolved problems such as origin of the earth, nature of evolution, and causes of orogeny, glaciation and metamorphism.

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Womack, Robert, Jr.

Brookhaven oil field, Lincoln County, Mississippi: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 7, p. 1517–1529, illus., July 1950; abs., v. 33, no. 12, p. 2069, Dec. 1949; Oil and Gas Jour., v. 48, no. 25, p. 88, Oct. 27, 1949. The Brookhaven oil field, Mississippi, is on an anticlinal structure crossed by 3 normal faults forming a central graben. Oil is produced from the Tuscaloosa formation of Upper Cretaceous age, accumulation being controlled by structure and the lenticularity of the producing sands. A columnar section and structural and isopach maps are given. V. S.

Wood, Albert Elmer.

Porcupines, paleogeography, and parallelism: Evolution, v. 4, no. 1, p. 87–98, illus., Mar. 1950. The widespread distribution of hystricomorphs in South America throughout most of the Tertiary, their absence in North America until very recently, and their similarity to African forms, explained formerly (rather unsatisfactorily) by continental drift, land bridges, or trans-oceanic floating, are considered the result of parallel development.

Wood, E. Boyne. *See* Nelson, V. E.

Wood, Gordon H., Jr. *See* Read, C. B., 2, 3.

Wood, Hiram B. *See* Holdredge, C. P., 1, 2.

Wood, William H. *See also* McLaughlin, K. P., 2.

(and Jizba, Zdenek V.). Effects of grain elongation on fabric diagrams [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1534–1535, Dec. 1950.

Woodbury, Homer Olivin.

Snider Basin area, Sublette County, Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, p. 122, illus. facing p. 120, 1950. A very brief note on the Mesozoic strata and the structure in the Snider Basin area, Wyoming, accompanied by a cross section.

Woodring, Wendell Phillips.

(and Bramlette, Milton Nunn). Geology and paleontology of the Santa Maria district, California: U. S. Geol. Survey Prof. Paper 222, 185 p., illus. incl. geol. map, 1950. A comprehensive report on the Santa Maria district, Santa Barbara County, southern California. Jurassic, Miocene, Pliocene, and Pleistocene strata are described and correlated. Foraminifera, echinoids, gastropods, pelecypods, and other fossils are described. The geologic history is interpreted. The area has been an oil producer since 1901; brief descriptions of the fields and notes on potential production in undeveloped areas are included.

Woodward, Herbert Preston.

1. Cambrian system of West Virginia (with comments on older rocks and igneous dikes): W. Va. Geol. Survey [Rpt.], v. 20, 317 p., illus. incl. geol. sketch maps, 1949. This volume is the third in a series covering the geologic systems of West Virginia. Those dealing with the Silurian and Devonian were published in 1941 and 1943, and that on the Ordovician is in press. The occurrence and distribution of Cambrian strata are described in detail, with numerous sections and photographs. A section on the economic products of Cambrian rocks is included. An extensive bibliography is given.
2. Appalachian stratigraphic nomenclature [abs.]: Am. Assoc. Petrol. Geol. Bull., v. 34, no. 8, p. 1771–1772, Aug. 1950.

Workman, Lewis Edwin.

1. The Neda formation in northeastern Illinois: Ill. State Acad. Sci. Trans., v. 43, p. 176–182, illus., 1950; Ill. State Geol. Survey Circ. 170, 1951. Discusses the occurrence, composition, and geologic history of the Neda oolitic iron formation. The stratum occurs in outcrops along the Kankakee River and is penetrated by wells northwest of Chicago. The results of insoluble residue studies are reported.

Workman, Lewis Edwin—Continued

2. (and Swann, David Henry, and Atherton, Elwood). Summary of stratigraphy shown in geologic cross-section of Illinois basin: Ill. State Geol. Survey Circ. 160, 18 p. (‡), illus., 1950. Strata ranging from pre-Cambrian to Pleistocene, encountered in wells in southeastern Illinois, are described briefly on the basis of sample and electric-log data and are shown in a cross section. V. S.

Wormington, Hannah Marie.

Ancient man in North America. 198 p., illus., 3d ed. revised. Denver, Colorado. Denver Museum of Natural History, Popular series no. 4, 1949. Chapter headings include the stone industries, areal survey, human skeletal remains, and the first peopling of North America. A glossary and bibliography are included, together with an appendix by E. Antevs on the "Geology of the Clovis sites."

Worzel, John Lamar. *See* Ewing, W. M., 2, 3.

Wrather, William Embry.

Memorial to Donald Francis MacDonald [1875–1942]: Geol. Soc. Am. Proc. 1949, p. 197–200, port., June 1950.

Wright, Claud William.

1. Illegitimate "corrections" of orthography of generic names: Jour. Paleontology, v. 24, no. 4, p. 506, July 1950. Points out that, according to the Rules of Zoological Nomenclature, etymologically wrong names are nevertheless correct nomenclaturally. V. S.
2. Paleontologic classification: Jour. Paleontology, v. 24, no. 6, p. 746–748, Nov. 1950. Discussion of the paper of the same title by J. M. Weller, Jour. Paleontology, v. 23, no. 6, p. 680–690, Nov. 1949.

Wright, Dorothy. *See* Cohee, G. V.

Wright, Grant M.

Ghost Lake map-area, Northwest Territories (report and map): Canada Geol. Survey Paper 50–13, 10 p. (‡), geol. map, 1950. The Ghost Lake map-area, north of Great Slave Lake, Northwest Territories, contains granitic, volcanic, and sedimentary and metamorphic rocks of pre-Cambrian age. The rocks are mapped and described briefly, with attention to structure and economic possibilities. V. S.

Wright, Lauren Albert. *See also* Campbell, I., 3.

1. California talcs: Min. Eng., v. 187, no. 1, p. 122–128, illus., Jan. 1950; A. I. M. E. Trans., v 187, 1950. The talc resources of California occur in a northwest trending belt in San Bernardino and Inyo Counties along the Nevada border. Four contrasting areas, in which the deposits are geologically similar, can be distinguished. The Silver Lake mine, Western mine, and Talc City mine, representative respectively of the Silver Lake, Death Valley, and Inyo Range areas are described. The fourth area, Oasis-Palmetto in Esmeralda County, Nevada, is mentioned briefly.
2. Geology of the Silver Lake talc area, San Bernardino County, California [abs.]: Am. Mineralogist, v. 35, nos. 3–4, p. 291, Mar.–Apr. 1950.

Wright, Leo M.

Some geological problems of northeastern Oklahoma: Okla. Acad. Sci. Proc., v. 29 (1948), p. 39–41, Mar. 1950. The extent and thinning of the Atoka formation (Pennsylvanian) is being checked by investigation of the microfossil and heavy mineral content of several other rock units in northeastern Oklahoma, particularly the Spaniard limestone and Warner sandstone, with a view to possible petroleum occurrence. A columnar section for northeastern and southern Oklahoma is given.

Wright, Robert James. *See also* Kerr, P. F., 2; Thurlow, E. E.

Current status of atomic raw materials: Earth Sci. Digest, v. 4, no. 12, p. 3–8, illus., July 1950; Pt. 2, v. 5, no. 1, p. 3–10, illus., Aug. 1950. Recent discoveries of primary uranium ores in Canada and the United States are reviewed, and the use of secondary uranium minerals in exploration for primary ores is noted. The utilization of uranium bearing sedimentary rocks as a future source of uranium is discussed.

Wyant, Robert Kriss. *See* Roy, S. K., 1, 2.

Wyllie, M. R. J. *See* Rose, W. D.

Wynn, W. O. R. *See* Stacey, F. R.

Wynn, W. Turner. *See* Ellison, S. P., Jr., 1.

Wyoming Geological Association.

1. Fifth annual field conference guidebook, Southwest Wyoming, August 8–11, 1950. 196 p., illus., 1950. The guidebook contains, in addition to papers and maps which are cited under the individual authors, road logs, a physiographic diagram, a stratigraphic nomenclature chart, various cross sections of wells and tunnels, a tentative correlation chart, radioactivity logs, and other miscellaneous data.
2. Penetration chart of important oil and gas fields in southwestern Wyoming: Wyo. Geol. Assoc. Guidebook, Southwest Wyoming, facing p. 102, 1950. Formations penetrated, producing zones, and other pertinent data are given in tabular form for oil and gas fields in the Rawlins uplift, Great Divide-Washakie Basins, Rock Springs uplift, and Green River Basin.
3. Wyoming correlations; Penetration chart for Julesburg, Hanna, and Laramie Basin: Oil and Gas Jour., v. 49, no. 29, p. 76, Nov. 23, 1950. One of a series of charts compiled by a committee of the Wyoming Geological Association showing formations penetrated by producing wells, and the oil- and gas-producing zones.

Yen, Teng-Chien.

A molluscan fauna from the type section of the Truckee formation: Am. Jour. Sci., v. 248, no. 3, p. 180–193, illus., Mar. 1950. "Nineteen species and subspecies of freshwater mollusks are recorded from a saccharoidal limestone bed in Nevada. Previous records of the same formation exposed in this and its neighboring localities are reviewed. One genus and eight species and subspecies are herein described as new. This assemblage of molluscan species seems to indicate a Pliocene age of its enclosing rocks; it also indicates possibly a large size for the extinct body of water, bordered in part by muddy and in part by rocky shores; and the former existence of a rich growth of aquatic vegetation in the water."

Yoder, Hatten Schuyler, Jr.

1. The jadeite problem, Pts. 1–2: Am. Jour. Sci., v. 248, no. 4, p. 225-248, no. 5, p. 312–334, illus., Apr.–May 1950; abs., Geol. Soc. Am. Bull., v. 60, no. 12, pt. 2, p. 1933, Dec. 1949; Am. Mineralogist, v. 35, nos. 3–4, p. 291–292, Mar.–Apr. 1950. New data, redefining the probable stability range of jadeite, are presented concerning its structure, temperature of formation, and associations. The evidence indicates that the problem is distinct from that of eclogites. A bibliography is included. V. S.
2. Stability relations of grossularite: Jour. Geology, v. 58, no. 3, p. 221–253, illus., May 1950; abs., Geol. Soc. Am. Bull., v. 58, no. 12, pt. 2, p. 1242–1243, Dec. 1947; Am. Mineralogist, v. 33, nos. 3–4, p. 211, Mar.–Apr. 1948. The stability range of grossularite garnet was investigated in its dependence on temperature, pressure, stress, and composition by experiments to verify theories of the origin of garnet. Results suggest formation by the reaction of components in the solid state, with pressure a favorable but not indispensable factor. V. S.
3. High-low quartz inversion up to 10,000 bars: Am. Geophys. Union Trans., v. 31, no. 6, p. 827–835, illus., Dec. 1950. "The high-low quartz inversion temperature has been measured up to 10,000 bars. The relation of change of the inversion temperature with pressure to earth-structure problems is discussed. Apparatus which has a working range up to 1400° C and 10,000 bars is described."

Yoder, Hatten Schuyler, Jr.—Continued

4. (and Keith, Mackenzie Lawrence). Complete substitution of aluminum for silicon; the system $3MnO.Al_2O_3.3SiO_2–3Y_2O_3.5Al_2O_3$ [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1516–1517, Dec. 1950.

Young, Earl B.

The Pioche district, *in* Dunham, K. C., ed., Symposium on . . . lead and zinc: Internat. Geol. Cong., 18th, Great Britain, Rpt. pt. 7, p. 111–120, illus. incl. geol. maps, 1950; abs., Volume of titles and abstracts, p. 51, 1948. Lead-zinc ores in the Pioche district, Nevada, occur as sulfide replacements of Cambrian limestone, veins in quartzite, and replacement veins in limestone. The stratigraphy, structure, and mineralization of the area are described.

Young, R. O. *See* Barr, K. W.

Youngquist, Walter Lewellyn. *See also* Downs, H. R.

1. (and Miller, Arthur K., and Downs, Harold Robert). Burlington conodonts from Iowa: Jour. Paleontology, v. 24, no. 5, p. 525–530, illus., Sept. 1950. Describes and illustrates 18 species of conodonts of post-Kinderhookian Mississippian age, from a thin shale bed in the upper Burlington limestone near Cotter, southeastern Iowa. V. S.
2. (and Nielsen, Merrill L., and Miller, Arthur K.). Mississippian cephalopods from western Utah [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1542, Dec. 1950.

Yüngül, Sulhi.

Interpretation of spontaneous polarization anomalies caused by spheroidal ore bodies: Geophysics, v. 15, no. 2, p. 237–246, illus., Apr. 1950. A graphical method is given for determining the location, depth, and dip of polarized spheroidal ore bodies from equipotential lines of field data. Underlying theoretical considerations and topographic and regional corrections are discussed, and application is illustrated by examples. V. S.

Yzaguirre, Lauro A.

Estudio de la estructura de Reynosa con especial referencia a la lenticularidad de las arenas: Asoc. Mex. Geol. Petrol. Bol., v. 2, no. 9, p. 537–548, illus., Sept. 1950. The stratigraphy and structure of the Reynosa oil field, Tamaulipas, northeastern Mexico, are described with special reference to the lenticular character of the sands.

Zakis, William N.

Geology of the east flank of the Bighorn Mountains near Dayton, Wyoming [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1560, Dec. 1950.

Zapffe, Carl, 1880–1950.

A review, iron bearing deposits in Washington, Oregon, and Idaho: Raw Materials Survey, Resource Rpt. 5, 89 p., illus., Aug. 1949. The geology, composition, properties, and origin of eighteen iron-bearing deposits in Washington, Oregon, and Idaho are described. The deposits are small and contain highly varied specialty ores requiring adapted smelting processes. V. S.

Zapp, Alfred Dexter. *See* Read, C. B., 2, 3.

Zeller, Edward J.

Stratigraphic significance of Mississippian endothyroid Foraminifera: Kans. Univ. Paleont. Contr. no. 7, Protozoa, art. 4, 23 p., illus., Feb. 24, 1950. Extensive studies of Mississippian limestones, chiefly in the Mississippi Valley, indicate the wide distribution and also the differences in the forms included in the genus *Endothyra*. A new genus, *Plectogyra*, is set up for endothyroid forms that are not planispiral. The stratigraphic distribution and phylogenetic development of endothyroid forms are discussed.

Zerfoss, Samuel.

Mechanism of veil formation in crystals [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1517, Dec. 1950.

ZoBell, Claude E.

1. Bacterial activities and the origin of oil: World Oil, v. 130, no. 7, p. 128–129, 132, 134, 136, 138, illus., June 1950; Petróleos Mexicanos, no. 83, p. 61–76, illus., July 1950. "Bacteria are responsible for the first steps in formation of petroleum from organic matter deposits in marine sediments, the extent and manner of the microbial modification depending on environmental conditions. Other mechanisms also contribute to the process, including catalysts, pressure, and base exchange reactions." The article elaborates these points, and summarizes present information.
2. Annotated bibliography on the ecology of marine bacteria: Natl. Research Council, Report of the Committee on a treatise on marine ecology and paleoecology, 1949–1950, no. 10, p. 31–54, Nov. 1950.

Zodac, Peter.

1. Minerals of the Brooklyn-Battery tunnel: Rocks and Minerals, v. 25, nos. 5–6, p. 266–267, May–June 1950. Among the minerals found during the excavation of the Brooklyn-Battery tunnel, New York City, were quartz, feldspar, mica, serpentine, garnet, kyanite, chromite, pyrite, tourmaline, and molybdenite.
2. New Jersey brook, a carnelian locality: Rocks and Minerals, v. 25, nos. 9–10, p. 481–483, Sept.–Oct. 1950. Reports the occurrence and collecting of carnelian and associated minerals from a brook gravel near South Stirling, Somerset County, New Jersey.

Zuidema, Henry Peter.

A new fossil insect and plant locality in Montana: Mich. Acad. Sci. Papers, v. 34 (1948), p. 119–123, illus., 1950. Describes the Tertiary (Miocene?) strata in the vicinity of the Ruby River, southwestern Montana, in which plant and insect remains have been found. Tentative identification of more than 200 insect specimens shows 9 orders to be represented. Plant fragments of *Ailanthus* and *Sequoia* have been identified.

Zulberti, J. L. *See* Barger, R. M.

Zumberge, James Herbert.

Origin of bedrock lakes in northeastern Minnesota [abs.]: Geol. Soc. Am. Bull., v. 61, no. 12, pt. 2, p. 1517, Dec. 1950.

Zworykin, Elaine V. *See* Murata, K. J.

Anonymous.

1. Benitoite, California's exclusive gem: Mineralogist, v. 18, no. 11, p. 552, 554, 556, Nov. 1950. A brief description of the properties of benitoite.
2. Dr. George S. Rice [1866–1950]: Canadian Min. Jour., v. 71, no. 2, p. 131, Feb. 1950.
3. Earthquake patterns: Engineering and Science, v. 13, no. 9, p. 6–7, illus., June 1950. Brief report of the research of Dr. Hugo Benioff at the California Institute of Technology Seismological Laboratory on shallow earthquakes.
4. General bibliography of Idaho's mineral resources: 51st Ann. Rpt., Mining Industry of the State of Idaho for 1949, p. 63–93 [1950]; 52d Ann. Rpt., 1950, p. 87–116 [1951].
5. Geology as a career: Frontiers, v. 14, no. 3, p. 93–94, Feb. 1950. Reprint of "Careers in geology," Eng. Min. Jour., v. 149, no. 10, p. 95–98, illus., Oct. 1948.
6. Many geologic ages provide world's oil: Flying Red Horse, v. 16, no. 3, p. 8–10, illus., Summer 1950. A popular account of the occurrence of oil, with particular reference to the Pegasus field in Texas, for which a columnar section is given.
7. Prospecting with the airborne magnetometer: Western Miner, v. 23, no. 12, p. 56, 58, 60, illus., Dec. 1950. Describes the instrumentation and operation of the airborne magnetometer, the preparation of a map from the recorded data, and the application of the map to geologic problems.
8. Underground eye: Flying Red Horse, v. 16, no. 2, p. 18–21, 31, illus., Apr. 1950. A popular account of radioactivity well logging in petroleum exploration.

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