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Geologic Names of North America Introduced in 1936-1955

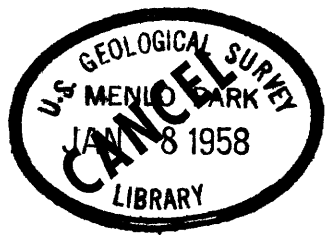
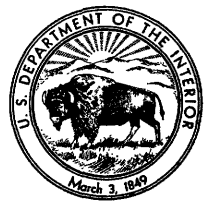
By DRUID WILSON, WILLIAM J. SANDO, and RUDOLPH W. KOPF

Prepared with the assistance of BARBARA BEDETTE, JEAN L. EGGLETON, GRACE C. KEROHER, CAROLYN MANN, WILLIAM G. MELTON, JR., KATHERINE DENNISON PALMER, and JACK E. SMEDLEY

GEOLOGIC NAMES OF NORTH AMERICA

U.S. GEOLOGICAL SURVEY BULLETIN 1056-A

A compilation of new geologic names of North America, including Greenland, the West Indies, the Pacific Island possessions of the United States, and the Trust Territory of the Pacific Islands

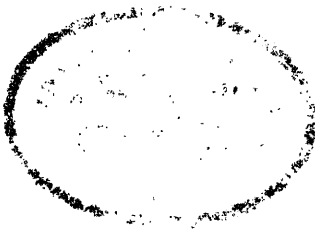


UNITED STATES DEPARTMENT OF THE INTERIOR

FRED A. SEATON, *Secretary*

GEOLOGICAL SURVEY

Thomas B. Nolan, *Director*



FOREWORD

The "Lexicon of geologic names of the United States" by M. Grace Wilmarth, published in 1938 and reprinted in 1951 and 1957, met a long standing need and continuing demand for a compilation of geologic names. Plans made for future compilations as new names and revisions appeared were interrupted during the years of World War II. In 1952 a sustained effort was begun toward review of geologic publications necessary to furnish a background for preparation of a new edition. After the review was brought up to date in 1956, the present compilation was prepared in order to furnish to the geologic profession, as quickly as possible, some of the essential data concerning the new names that have appeared since 1935. This compilation is the first step in the preparation of a revision of the lexicon.

The geologic names currently adopted for use by the U. S. Geological Survey are indicated in boldface type, as in Wilmarth's lexicon. The names so indicated have been used by Survey geologists in reports on areas in which they have made investigations; they constitute a part of the official nomenclature of the Survey and thus apply only to its members.

W. H. BRADLEY
Chief Geologist

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GEOLOGIC NAMES OF NORTH AMERICA

GEOLOGIC NAMES OF NORTH AMERICA INTRODUCED IN 1936-1955

By DRUID WILSON, WILLIAM J. SANDO, and RUDOLPH W. KOPF

Prepared with the assistance of BARBARA BEDETTE, JEAN L. EGGLETON, GRACE C. KEROHER, CAROLYN MANN, WILLIAM G. MELTON, JR., KATHERINE DENNISON PALMER, and JACK E. SMEDLEY

INTRODUCTION

The "Lexicon of geologic names of the United States (including Alaska)" by M. Grace Wilmarth was published as U. S. Geological Survey Bulletin 896 in 1938 and reprinted in 1951 and 1957. It has had wide circulation and use. The present work, listing the new names published in the period 1936-1955 and a few earlier names not included in Wilmarth's lexicon, is the initial result of a project begun in 1952 to continue for publication the compilation of new names and revisions of old names. More than 5,000 new names have appeared since publication of Wilmarth's lexicon. In order to publish a compilation of these names as quickly as possible, they were prepared in the present brief form, which, it is planned, will be superseded by a publication with more detailed information.

A majority of geologic names are formally proposed and defined in their initial publication; some, however, appear as formal names without being defined; and a few that are undefined and sometimes obscure seem to have potential value as formal names. If the initial reference is not sufficient to establish a name, a supplemental reference, when available, is added. For a few names of obscure usage, the reference or references cited indicate the known information, or lack of it.

The names of rock units of formal or seemingly formal usage derived from names of geographic localities or features are listed. Time terms and subsurface units are included if they have been defined or distinguished as a part of formal stratigraphy. Some names currently in use for rock units in Jamaica, British West Indies, that are based on faunal or descriptive terms are also included.

Not all of the formally proposed names in Pleistocene glacial geology are entered; but the names of stages and substages, used in glacial

chronology, and the names of local deposits of till, silt, drift, and gravel, defined as rock units, are included. The names applied to moraines, eskers, terraces, and boulder trains for which physiography is an essential part of the definition are excluded, as well as the names of hypothetical glaciers, lakes, and rivers and stages of these features.

The names of igneous bodies, such as batholiths, stocks, and sills, are omitted, but the rock units composing the bodies are entered if they are named. The names of units used in economic geology, such as coal beds, oil and gas sands, pegmatites, and mining terms, are omitted, inasmuch as they are not considered a part of formal stratigraphy and are, for the most part, of only local interest. The publications listed below contain useful information on the economic names in some local and particular areas.

L. E. Workman, chm., 1954, *Lexicon of geologic names in Alberta and adjacent portions of British Columbia and Northwest Territories*: Calgary, Alberta, Alberta Soc. Petroleum Geologists; supplement, 1955. (No pagination).

Louise Jordan, (in preparation), *Subsurface stratigraphic names of Oklahoma*: Okla. Geol. Survey.

O. P. Jenkins, 1943, *Glossary of the geologic units of California*: Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 4, p. 673-687.

C. W. Jennings and E. W. Hart, 1956, *Exploratory wells drilled outside of oil and gas fields in California to December 31, 1953*: Calif. Dept. Nat. Res., Div. Mines Special Rept. 45, p. 5-8 (glossary).

H. R. Wanless, 1939, *Pennsylvanian correlations in the eastern interior and Appalachian coal fields*: Geol. Soc. America Special Paper 17, p. 74-112 (glossary).

H. R. Wanless, 1946, *Pennsylvanian geology of a part of the southern Appalachian coal field*: Geol. Soc. America Mem. 13, p. 135-155 (glossary).

Anonymous, 1954, *Names of Oklahoma coal beds*: Hopper, v. 14, no. 8, p. 121-134.

Some units are listed as cyclothems in order to avoid entering several contiguous units with the same geographic name. The first appearance of a name of a cyclothem as the name of one of its components, such as a clay, limestone, sandstone, or shale, is credited as the introduction of the name. Thus, the first reference under a cyclothem may refer to one of its components. Original appearance as the name of a coal bed has been disregarded inasmuch as the names of coal beds are economic terms and are not commonly considered a part of formal geologic nomenclature.

Ages of the units are given in terms of the standard major divisions of geologic time, as used by the U. S. Geological Survey. These generally are the terms of the authors cited. The parenthetic position is reserved for the minor age or rank designations or, in a few instances, the distinctive age terms of the authors. For the sake of consistency,

the designation early or late, where used by the authors with the age of rock units, is changed to lower or upper.

The politico-geographic area covered includes the continent of North America and its adjacent islands, Greenland, Trinidad and other islands off the coast of South America that are politically a part of the West Indies, all of the possessions of the United States, and the Trust Territory of the Pacific Islands presently administered by the United States. The areas of the units are based primarily on the major political divisions, but names of the various states and territories are the only designations given for the United States, its possessions, and trust territories. The initial area for each unit contains, or is assumed to contain, the type locality.

Published variations of geologic names that are due to variations of the geographic part of the name are given cross references. The lithic and rank designations of units first described in foreign-language literature are translated, but the names are not anglicized; cross references are given, however, for later anglicizations. Various transliterations of many of the names of units described from the Trust Territory of the Pacific Islands have appeared in English, in the Romaji of Japanese publications, and in English translations of the Japanese. The published and unpublished recommendations of the Board on Geographic Names on the native place names from which the geologic names are derived have been followed, but there were no decisions on some of obscure origin. Cross references are given if the recommended forms and the published sources differ and if the transliterations are inconsistent.

Within the United States, its possessions, and trust territories, certain names have been adopted and others abandoned for use by the U. S. Geological Survey. The data for these names are given as the Survey currently defines them. Discrepancies between the data given and data in the references cited are due to subsequent published or unpublished work of Survey geologists. Decisions of the Survey to adopt or abandon names are based upon the work of its geologists during their tenure with the Survey. Therefore, recognition and adoption of names by the U. S. Geological Survey is dependent upon the work of Survey geologists in an area, the time at which the work was done, and the type of investigation made. Names adopted for use by the U. S. Geological Survey are printed in bold face type. Names abandoned for use by the Survey are preceded by a dagger (†).

Receipt of information on additional new geologic names, published in the period 1936-55, but not included in this compilation, would be appreciated by the staff of the lexicon project and would contribute to the completeness of future publications.

ACKNOWLEDGMENTS

The cooperation of George V. Cohee, chairman, and the staff of the Geologic Names Committee of the U. S. Geological Survey, in all stages of the preparation of this compilation, is gratefully acknowledged. For the unflinching fulfillment of numerous requests, appreciation is expressed to William H. Heers, librarian, and the staff of the library of the Survey, and to Ruth Reece King and the staff of the Bibliography of North American Geology. To Wendell P. Woodring appreciation is expressed for advice on some of the problems concerning the geologic names in the West Indies and Central America.

Thanks are extended to Alice S. Allen, Nell L. Bowen, and Helen V. Nicol for their early contributions to the background material of the compilation. Particular acknowledgment is made to Ruth A. M. Schmidt, to whom the organization of the project in its present form is largely due. Grateful acknowledgment is made to Blanche E. Hansen for her distinct contribution to the accuracy and consistency of the compilation and for the excellence of the typescript.

SYMBOLS

Names printed in boldface type have been adopted for use by the U. S. Geological Survey.

Names preceded by a dagger (†) have been abandoned for use by the Survey.

Names in roman type without a dagger are those that the Survey has had no occasion to consider for use.

Data within brackets have been derived from sources other than the references cited.

GEOLOGIC NAMES

Abbotsford gravel

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, Canada Geol. Survey Water Supply Paper 322, p. 11.

Abingdon cyclothem

Pennsylvanian: Illinois and Iowa.

J. M. Weller and H. R. Waness *in* J. M. Weller and others, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 10, p. 1588 (fig. 1), 1589.

Abiquiu tuff

Miocene: New Mexico.

H. T. U. Smith, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 103; 1938, Jour. Geology, v. 46, no. 7, p. 944-952, 958.

Absalona formation

Precambrian(?) : Rhode Island.

G. M. Richmond *in* G. M. Richmond and W. B. Allen, 1951, R. I. Port and Indus. Devel. Comm. Geol. Bull. 4, p. 10, 11-12.

Absaroka sequence

Mississippian (Chesterian) to Pennsylvanian (Des Moinesian) : Central and western United States.

L. L. Sloss, W. C. Krumbein, and E. C. Dapples *in* C. R. Longwell, chm., 1949, Geol. Soc. America Mem. 39, p. 110-111, 121.

Absher limestone

Pennsylvanian: Illinois.

J. M. Weller, L. G. Henbest, and C. O. Dunbar *in* C. O. Dunbar and L. G. Henbest, 1942, Ill. State Geol. Survey Bull. 67, p. 17, 23 [1943].

Abuillot formation

Eocene, lower: Dominican Republic.

W. M. Small, 1948, Seismol. Soc. America Bull., v. 38, no. 1, p. 24.

P. J. Bermudez, 1949, Cushman Lab. Foram. Research Special Pub. 25, p. 19.

Abymes tuffs

Miocene: Guadeloupe (Grande Terre), French West Indies.

Louis Barrabé, 1934 [France] Office national des combustibles liquides Annales, 9^e année, no. 4, p. 634, 636, 659.

Alfred Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1581.

Acalapa conglomerate

Pliocene: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, correlation chart.

Acatlán schists

Pre-Mesozoic: Oaxaca, Mexico.

G. P. Salas, 1949, Asociación Mexicana Geólogos Petroleros Bol., v. 1, no. 2, p. 92-97.

Ackley granite

Post-Silurian: Newfoundland, Canada.

B. L. Smith, 1953, Newfoundland Geol. Survey Rept. 2, p. 9-10.

Acme porphyry

Precambrian (Algonian): Ontario, Canada.

G. D. Furse, 1948, *in* Structural geology of Canadian ore deposits: Canadian Inst. Mining and Metallurgy, p. 487.

Active formation

Ordovician: British Columbia, Canada.

H. W. Little, 1950, Canada Geol. Survey Paper 50-19, p. 21-23.

Ada limestone

[Ordovician]: Oklahoma.

W. H. Shideler, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 367-368.

Adel Mountain volcanics

Upper Cretaceous: Montana.

J. B. Lyons, 1944, Geol. Soc. America Bull., v. 55, no. 4, p. 449, 452.

Adelina marl

Oligocene: Cuba.

D. K. Palmer and P. J. Bermudez, 1936, Soc. Cubana Historia Nat. Mem., v. 10, no. 4, p. 233.

Adirondack-Border series

Upper Cambrian: New York.

R. R. Wheeler, 1946, Harvard Univ. Summaries of Theses, 1942, p. 143, 145.

Adler series

See Alder group.

Adobe formation

Pennsylvanian (Missouri series): New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 61-62.

Aeolian Buttes till

Pleistocene: California.

W. C. Putnam, 1949, Geol. Soc. America Bull., v. 60, no. 8, p. 1289.

Afono trachyte

Pliocene or Pleistocene, lower: Samoa Islands (Tutuila).

R. A. Daly, 1924, Carnegie Inst. Washington Pub. 340, p. 108, 129-130.

Afton bed

Middle Devonian: Michigan.

[G. M. Ehlers], 1938, Mich. Acad. Sci. Arts and Letters Sec. Geology and Mineralogy [Guidebook] 8th Ann. Field Excursion, [fig. 2] after p. 8.

W. A. Kelly, 1940, Mich. Acad. Sci. Arts and Letters Sec. Geology and Mineralogy [Guidebook] 10th Ann. Field Excursion, [p. 1, figs. 3, 4, 6, 7], maps 1, 2.

Afton limestone member (of Wellington formation)

Permian: Kansas.

W. A. Ver Wiebe, 1937, Wichita Municipal Univ. Bull., v. 12, no. 5, p. 10-11.

Agamok sediments

Precambrian (Knife Lake): Minnesota.

J. W. Gruner, 1941, Geol. Soc. America Bull., v. 52, no. 10, p. 1583, 1615.

Agattu beds

Cretaceous or Tertiary: Alaska (Aleutian Islands).

R. P. Sharp, 1945, (abs.) *Geol. Soc. American Bull.*, v. 56, no. 12, pt. 2, p. 1197; 1946, *Jour. Geology*, v. 54, no. 3, p. 193-197.

Agency shale member (of Pierre formation)

[Upper Cretaceous]: South Dakota.

W. L. Russell, 1930, *S. Dak. Geol. Nat. History Survey Rept. Inv.* 7, p. 5.

Agnostus Cove formation

Upper Cambrian (Johannian): New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 76-77.

Agapat formation

Precambrian: West Greenland.

H. K. E. Krueger, 1928, *Meddel. om Grønland*, bind 74, nr. 8, p. 119-125, pl. 8.

Agua Caliente gabbro

Precambrian (Keweenawan?): New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 11, 25.

Aguada formation

Miocene, lower: Puerto Rico.

A. D. Zapp, H. R. Bergquist, and C. R. Thomas, 1948, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 85, sheets, 1, 2.

Aguadilla limestone

Miocene, lower: Puerto Rico.

C. J. Maury, 1919, *Am. Jour. Sci.*, v. 48, no. 285, p. 214 (correlation chart); 1919, *Science*, v. 70, no. 1825, p. 609.

Agua Nueva formation

Upper Cretaceous: Vera Cruz, Mexico.

J. M. Muir, 1934, *in Problems of Petroleum Geology: Am. Assoc. Petroleum Geologists*, p. 377, 382-383.

Agua Verde shale member (of Fayette formation)

Eocene (Jackson): Texas.

J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259 (fig. 2), 269-270.

Agua Zarca sandstone member (of Chinle formation)

Upper Triassic: New Mexico.

G. H. Wood and S. A. Northrop, 1946, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 57.

Aguijan limestone

Pliocene: Mariana Islands (Aguijan).

Risaburo Tayama and Yasushi Ota, 1940, *Geomorphology, geology, and coral reefs of Aguijan Island: Tropical Industry Inst., Palau, South Sea Islands, Bull.* 6 [English translation in library of U. S. Geol. Survey, p. 16-17, 19].

Risaburo Tayama, 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 55, table 4 [English translation in library of U. S. Geol. Survey, p. 66].

Aguja sandstone

Precambrian (Protozoic): Arizona.

[C. R.] Keyes, 1939, *Pan-Am. Geologist*, v. 71, no. 1, p. 69.

Ahearn member (of Chadron formation)

Oligocene, lower: South Dakota.

John Clark, 1954, *Carnegie Mus. Annals*, v. 33, art. 11, p. 197-198.

Ahern quartzite

See Ahorn quartzite.

Ahorn quartzite

Precambrian (Belt series) : Montana.

C. R. Waldron and R. H. Earhart, 1942, *Mont. Bur. Mines and Geology Mem.* 21, p. 243.

Charles Deless, 1943, *Geol. Soc. America Bull.*, v. 54, no. 2, p. 213, 217-218.

Aikens Lake granite

Precambrian : Manitoba, Canada.

G. A. Russell, 1948, *Manitoba Dept. Mines and Nat. Res. Prelim. Rept.* 47-1, p. 6.

Aillik formation

Precambrian : Newfoundland (Labrador), Canada.

E. H. Kranck, 1939, *Newfoundland Geol. Survey Bull.* 19, p. 15.

Aillik Bay quartzite

See Aillik formation.

Aimelik formation**Aimiliiki agglomerate**

See Aimiriiki (Aimiliiki) agglomerate.

Aimiriiki (Aimiliiki) agglomerate

Eocene : Caroline Islands (Babelthaup).

Risaburo Tayama and Misaburo Shimakura, 1937, *On the coal of Babelthaup Island, Palau group* : *Geol. Soc. Japan Jour.*, v. 44, no 6, p. 526 [English translation in library of U. S. Geol. Survey, p. 1].

Risaburo Tayama, 1952, *Coral reefs in the South Seas* : *Japan Hydrog. Office Bull.*, v. 11, p. 65, table 4 [English translation in library of U. S. Geol. Survey, p. 77].

Airai lignite bearing beds

Pliocene : Caroline Islands (Babelthaup).

Risaburo Tayama, 1939, *Brief report on the geology and ore resources of Babelthaup Island (Palau Island proper) : Tropical Industry Inst., Palau, South Sea Islands, Bull.* 3 [English translation in library of U. S. Geol. Survey, p. 6-7, 17]; 1952 *Coral reefs in the South Seas* : *Japan Hydrog. Office Bull.*, v. 11, p. 66, table 4 [English translation in library of U. S. Geol. Survey, p. 78-79].

Ajo volcanics

Tertiary, middle (?) : Arizona.

James Gilluly, 1937, *Ariz. Univ. Bull.*, v. 8, no. 1, p. 43-45.

Ajusco formation

Miocene : Mexico and Distrito Federal, Mexico.

R. M. Berbey, 1953, *Congreso Cient. Mexicano Mem.*, tomo 4, table 6.

Akaitcho flow (in Yellowknife group)

Precambrian : Northwest Territories (Mackenzie), Canada.

C. E. G. Brown and A. S. Dadson, 1953, *Canadian Inst. Mining and Metallurgy Trans.* v. 56, p. 70.

Aladdin sandstone

Middle Ordovician (Chazyan) : Wyoming and South Dakota.

M. R. McCoy, 1952, *Billings Geol. Soc. Guidebook 3d Ann. Field Conf.*, p. 46-47.

Alajuela formation

See Alhajuela sandstone member.

Alamo formation

Pliocene : California.

- A. S. Huey, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 335.
 Carlton Condit, 1938, *Carnegie Inst. Washington Pub.* 476, p. 224, 228.

Alamogordo member (of Lake Valley formation)

Mississippian (Osage) : New Mexico.

- L. R. Laudon and A. L. Bowsher, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 12, p. 2114-2116, 2125-2133, figs. 5, 6.

Alava formation

Oligocene, lower : Cuba.

- Jorge Brodermann, 1945, *Soc. Cubana Ingenieros Rev.*, v. 42, no. 1, p. 144, 145, chart.

Albanel group

Precambrian : Quebec, Canada.

- W. G. Wahl, 1947, *Quebec Dept. Mines Prelim. Rept.* 211, p. 7-8.

Albemarle group

Middle Silurian (Niagaran) : Ontario, Canada.

- T. E. Bolton, 1953, *Canada Geol. Survey Paper* 53-23, p. 13-18.

Albert formation

Mississippian : New Brunswick, Canada.

- H. Y. Hind, 1865, *A preliminary report on the geology of New Brunswick* : Fredericton, New Brunswick, G. E. Fenety, p. 85, 90.
 G. W. H. Norman, 1932, *Canada Geol. Survey Econ. Geology Series*, no. 9, p. 168-170.

Albertan system

Middle Cambrian : Western North America.

- A. W. Grabau, 1921, *A text book of geology*, pt. 2, *Historical geology* : New York, D. C. Heath & Co., p. 243 (footnote); 1936, *Paleozoic formations in the light of the pulsation theory*, v. 1, *Lower and Middle Cambrian pulsations* : 2d ed., Peiping, China, Univ. Press, Natl. Univ. Peiping, p. 10, 160.

Alberts Lake granodiorite

Precambrian : Manitoba, Canada.

- Jorma Kalliokoski, 1952, *Canada Geol. Survey Mem.* 270, p. 8.

Albion formation

Mississippian (Meramecian) : Oklahoma.

- 1954, *Ardmore Geol. Soc. [Guidebook] Field Trip October, 1954*, chart facing p. 1.

Albion glacial stage

Pleistocene (Wisconsin) : Colorado.

- R. L. Ives, 1950, *Sci. Monthly*, v. 71, no. 2, p. 114; 1953, *Geog. Review*, v. 43, no. 2,

Albion member (of Stellarton series)

Pennsylvanian : Nova Scotia, Canada.

- W. A. Bell, 1940, *Canada Geol. Survey Mem.* 225, p. 32-34 [1941].

Albion monzonite

Cretaceous(?) : Colorado.

- R. L. Ives, 1950, *Sci. Monthly*, v. 71, no. 2, p. 114; 1953, *Geog. Review*, v. 43, no. 2, p. 232 (fig. 3).

Albrechts Bay marl and limestone

See Albrechtsbugt facies.

Albrechtsbugt facies

Upper Cretaceous (Valanginian) : Northeast Greenland.

- Andreas Vischer, 1943, *Meddel. om Grønland*, bind 133, nr. 1, p. 87-91, pl. 2.

Alder group

Precambrian: Arizona.

E. D. Wilson, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 112; 1939, Geol. Soc. America Bull., v. 50, no. 7, p. 1118, 1121-1122.

Aldermac syenite porphyry

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 112.

Alectryonaria limestones

See *Ostrea* limestone.

Alectryonia limestone

See *Ostrea* limestone.

Alegria formation

Oligocene (Refugian): California.

T. W. Dibblee, Jr., 1950, Calif. Dept. Nat. Res., Div. Mines Bull. 150, p. 30-31.

Aleman formation

Upper Ordovician (Cincinnatian): New Mexico.

V. C. Kelley and Caswell Silver, 1952, N. Mex. Univ. Pubs. in Geology 4, p. 60-62, fig. 4.

Aleuts member (of Kialagvik formation)

Lower Jurassic: Alaska.

L. B. Kellum, 1945, N. Y. Acad. Sci. Trans., ser. 2, v. 7, no. 8, p. 203, 205-206.

Alexandra formation

Upper Devonian: Northwest Territories (Mackenzie), Canada.

C. H. Crickmay, 1953, New Spiriferidae from the Devonian of western Canada: Calgary, Canada, Imperial Oil Limited, p. 1, 11.

Alexo formation

Upper Devonian: Alberta, Canada.

R. deWit and D. J. McLaren, 1950, Canada Geol. Survey Paper 50-23, p. 6, 21.

Alferitz formation

Miocene, middle (Luisian): California.

Martin Van Couvering and H. B. Allen, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 496-500.

Alhajuela sandstone member (of Calmito formation)

Miocene, lower: Panama Canal Zone.

Charles Schuchert, 1935, Historical geology of the Antillean-Caribbean region: New York, John Wiley and Sons, p. 586.

W. P. Woodring and T. F. Thompson, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 2, p. 235-236.

Alhambra formation

Eocene, upper: California.

C. E. Weaver, 1953, Wash. [State] Univ. Pubs. in Geology, v. 7, p. 19 (chart), 50-53.

Aliamanu basalt

Quaternary: Hawaiian Islands (Oahu) (subsurface).

H. T. Stearns, 1940, Hawaii Div. Hydrography Bull. 5, p. 55.

Alisitos formation

Lower Cretaceous: Baja California, Mexico.

Manuel Santillán and Tomás Barrera, 1930, Inst. Geología México Anales, tomo 5, p. 9-10.

Alison quartzite

Precambrian: Quebec, Canada.

P. E. Auger, 1954, *Canadian Mining and Metall. Bull.*, v. 47, no. 8, p. 530.**Allah quartzite**

Paleozoic: Utah.

B. F. Stringham, 1942, *Geol. Soc. America Bull.*, v. 53, no. 2, p. 271, pl. 1.**Allamoore limestone or formation**

Precambrian: Texas.

P. B. King, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 148-149.**Allen Bay formation**

Silurian and Ordovician(?): Northwest Territories (Cornwallis Island), Canada.

R. Thorsteinsson and Y. O. Fortier, 1954, *Canada Geol. Survey Paper* 53-24, p. 8-9.**Allenby formation**

Oligocene: British Columbia, Canada.

W. S. Shaw, 1952, *Canada Geol. Survey Paper* 52-12, p. 7-9.**Allens Falls fanglomerate**

Precambrian (Algonkian): New York.

P. D. Krynine, 1948, (abs.) *Geol. Soc. America Bull.*, v. 59, no. 12, pt. 2, p. 1333-1334.**Allen Valley shale**

Upper Cretaceous: Utah.

E. M. Spieker, 1946, *U. S. Geol. Survey Prof. Paper* 205-D, p. 122, 127-128.**Alley Creek beds**

Oligocene: Trinidad, British West Indies.

R. J. L. Guppy, 1892, *Geol. Soc. London Quart. Jour.*, v. 48, p. 532, 535.R. J. L. Guppy and W. H. Dall, 1896, *U. S. Natl. Mus. Proc.*, v. 19, no. 1110, p. 304.H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1444-1445, 1451 (chart).**Alma glacial substage**

Pleistocene (Wisconsin): Colorado.

Q. D. Singewald, 1950, *U. S. Geol. Survey Bull.* 955-D, p. 120 [1951].**Almenan sub-age**

Pleistocene: Kansas, Nebraska, and Iowa.

J. C. Frye and A. B. Leonard, 1955, *Am. Jour. Sci.*, v. 253, no. 6, p. 363.**Almongui agglomerate**

See Arumonogui (Almongui) agglomerate.

Almont sandstone (in Tongue River member of Fort Union formation)

Paleocene: North Dakota.

R. V. Hennen, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 27, no. 12, p. 1573 (fig. 1), 1580.**Alofau volcanics**

Pliocene(?): Samoa Islands (Tutuila).

H. T. Stearns, 1944, *Geol. Soc. America Bull.*, v. 55, no. 11, p. 1286, 1289-1290.**Alouette gravel**

Recent: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 11.

Alpefjord series (of Eleonore Bay formation)

Precambrian : Northeast Greenland.

Erdhart Frankl, 1951, *Meddel. om Grønland*, bind 151, nr. 6, p. 6-14.

Alpine formation

Pleistocene and Recent : Utah.

K. C. Bullock, 1951, *Utah Geol. Mineralog. Survey Bull.* 41, p. 21.

C. B. Hunt, H. D. Varnes, and H. E. Thomas, 1953, *U. S. Geol. Survey Prof. Paper* 257-A, p. 17-20.

Alta formation

Oligocene (?) : Nevada.

V. P. Gianella, 1936, *Nev. Univ. Bull.*, v. 30, no. 9, p. 52-59.

Alta Loma sand

Pleistocene : Texas (subsurface).

N. A. Rose, 1943, *Progress report on the ground-water resources of the Texas City area, Texas* : Tex. Board of Water Engineers, p. 3-5.

Altar schists

Precambrian : Sonora, Mexico.

Charles Schuchert, 1935, *Historical geology of the Antillean-Caribbean region* : New York, John Wiley and Sons, p. 138.

Manuel Maldonado-Koerdell, 1954, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 6, nos. 3-4, p. 137.

Alumonogui agglomerate

See Arumonogui (Almongui) agglomerate.

Alum Rock rhyolite

Post-Cretaceous : California.

M. D. Crittenden, Jr., 1951, *Calif. Dept. Nat. Res., Div. Mines Bull.* 157, p. 47-48, pl. 3.

Alverson andesite lava

Miocene : California.

T. W. Dibblee, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, chap. 2, p. 22.

Alverson Canyon formation

Miocene, middle and upper : California.

L. A. Tarbet and W. H. Holman, 1944, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 12, p. 1781-1782.

Amabel formation

Middle Silurian (Niagaran) : Ontario, Canada.

T. E. Bolton, 1953, *Canada Geol. Survey Paper* 53-23, p. 15-17.

Amador group

Middle and Upper Jurassic : California.

W. D. Johnston, Jr., 1940, *U. S. Geol. Survey Prof. Paper* 194, p. 5.

N. L. Taliaferro, 1948, *Calif. Dept. Nat. Res., Div. Mines Bull.* 125, p. 282-284.

Amalia formation

Tertiary, middle or upper : New Mexico and Colorado.

P. F. McKinlay, [1955?], *N. Mex. State Bur. Mines Min. Res. Bull.* 42, p. 16 18, pl. 1.

Amana beds

Devonian : Iowa.

S. W. Stookey, 1933, (abs.) *Pan-Am. Geologist*, v. 60, no. 1, p. 78.

M. A. Stainbrook, 1945, *Geol. Soc. America Mem.* 14, p. 7-8.

Amaranth formation

Jurassic or older: Manitoba and Saskatchewan, Canada.

O. A. Saeger and others, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 8, p. 1415, 1421.

R. T. D. Wickenden, 1945, *Canada Geol. Survey Mem.* 239, p. 8.

Amargo formation

Jurassic: California.

H. S. Gale, 1946, *Calif. Jour. Mines and Geology*, v. 42, no. 4, p. 358

Amargosa chaos

Post-Miocene (?) : California.

L. F. Noble, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 1936; 1941, v. 52, no. 7, p. 963-965, 977-981.

Amasa formation

Precambrian (middle Huronian) : Michigan.

Stephen Royce, 1936, *Lake Superior Min. Inst. Proc. 29th Ann. Meeting*, p. 78, 81, 86, 97.

Amate (Lower and Upper) formation

Miocene: Tabasco and Chiapas, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.

G. P. Salas and Ernesto Lopez Ramos, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 1-2, p. 35-37.

Amawalk granite

Upper Ordovician (?) : New York.

T. W. Fluhr, 1948, *Rocks and Mineral Mag.*, v. 23, no. 8, p. 699.

Amco horizon (of Slave Point formation)

Middle Devonian: Northwest Territories (Mackenzie), Canada.

Neil Campbell, 1950, *Geol. Assoc. Canada Proc.*, v. 3, p. 90.

American Flat basalt

Quaternary: Nevada.

V. P. Gianella, 1936, *Nev. Univ. Bull.*, v. 30, no. 9, p. 76-77, pl. 1.

American Lakes glacial substage

Pleistocene (Wisconsin) : Colorado.

D. F. Eschman, 1952, (abs.) *Geol. Soc. America Bull.*, v. 63, no. 12, pt. 2, p. 1380; 1955, *Jour. Geology*, v. 63, no. 3, p. 206-207.

American Ravine andesite porphyry

Miocene (?) : Nevada.

V. P. Gianella, 1934, *Mining and Metallurgy*, v. 15, no. 331, p. 299; 1936, *Nev. Univ. Bull.*, v. 30, no. 9, p. 44-45, 50-52.

Amicalola gneiss

Precambrian: Georgia.

A. S. Furcron and K. H. Teague, 1945, *Ga. Geol. Survey Bull.* 51, p. 31-34.

Amoeba Lake graywackes, slates, and tuffs

Precambrian (Knife Lake) : Minnesota.

J. W. Gruner, 1941, *Geol. Soc. America Bull.*, v. 52, no. 10, p. 1583, 1603-1605.

Amole arkose

Upper Cretaceous: Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 716-720.

Amole granite

[Upper Cretaceous and/or Tertiary] (Laramide) : Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 721-722.

Amole latite

[Upper Cretaceous and/or Tertiary] (Laramide) : Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 725-726.

Amole quartz monzonite

[Upper Cretaceous and/or Tertiary] (Laramide) : Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 723-725.

Amoret limestone member (of Altamont formation)

Pennsylvanian (Desmoinesian) : Missouri, Iowa, and Kansas.

L. M. Cline and F. C. Greene *in* J. G. Grohskopf and Earl McCracken, 1949, *Mo. Geol. Survey and Water Res. Rept. Inv.* 10, p. 17.

L. M. Cline and F. C. Greene, 1950, *Mo. Geol. Survey and Water Res. Rept. Inv.* 12, p. 18-21.

Amos Wash member (of Supai formation)

[Pennsylvanian and/or Permian] : Arizona.

R. L. Jackson, 1951, *Plateau*, v. 24, no. 2, p. 86-88.

Amoura shale

Oligocene or lower Miocene : Costa Rica.

P. P. Goukoff and W. W. Porter, II, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 10, p. 1650-1653.

Anahuac formation

Oligocene : Texas (subsurface).

J. B. Eby, 1943, *Oil Weekly*, v. 111, no. 4, p. 22-23.

A. C. Ellisor, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 9, p. 1355-1368.

Anaktuvuk glaciation

Pleistocene (pre-Wisconsin) : Alaska.

R. L. Dettnerman *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 11, 13 (table 1).

Anaverde formation

Pliocene, lower to middle : California.

O. P. Jenkins, 1938, *Geologic map of California (1 : 500,000)* : Calif. Dept. Nat. Res., Div. Mines, sheet 4.

R. E. Wallace, 1949, *Geol. Soc. America Bull.*, v. 60, no. 4, p. 790-792.

Ancaster member (of Eramosa formation)

Middle Silurian (Niagaran) : Ontario, Canada.

E. W. Shaw, 1937, *Royal Canadian Inst. Trans.*, v. 21, pt. 2, p. 339.

Ancell group

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 12.

Ancha formation

Pliocene, upper, or Pleistocene : New Mexico.

E. H. Baltz, Jr., and others, 1952, *in* *N. Mex. Geol. Soc. Guidebook 3d Field Conf.*, p. 12, 15, 16.

Brewster Baldwin and F. E. Kottlowski, 1955, *N. Mex. State Bur. Mines Min. Res. Scenic Trips to the Geol. Past*, no. 1, p. 8, 21, 24.

Ancon Hill rhyolite

Pre-Pliocene: Panama Canal Zone.

[T. F. Thompson], 1943, Panama Canal, Special Eng. Div., 3d Locks Proj., pt. 2, chap. 3, p. 25.

Andersons Cove slates

Ordovician: Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 92.

B. L. Smith, 1953, Newfoundland Geol. Survey Rept. 2, p. 5-6.

Andrada formation

Pennsylvanian and Permian: Arizona.

R. E. Thurmond, W. E. Heinrichs, Jr., and E. D. Spaulding, 1954, *Mining Eng.*, v. 6, no. 2, p. 198 (fig. 1).D. L. Bryant, 1955, *Dissert. Abs.*, v. 15, no. 7, p. 1224.**Andrecito member (of Lake Valley formation)**

Mississippian (Osage): New Mexico.

L. R. Laudon and A. L. Bowsher, 1949, *Geol. Soc. America Bull.*, v. 60, no. 1, p. 12-13, fig. 4.**Andrew Bay volcanics**

Tertiary: Alaska (Aleutian Islands).

R. R. Coats, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 5, p. 78.

Androscoggin gneiss and schist

Cambro-Ordovician (?): Maine.

L. W. Fisher, 1936, *Am. Mineralogist*, v. 21, no. 5, p. 323.**Aneth formation**

Upper Devonian: Sursurface in Utah, Arizona, Colorado, and New Mexico.

R. L. Knight and J. C. Cooper, 1955, *Four Corners Geol. Soc. Guidebook* [1st] Field Conf., p. 56, 57, 58.**Angaur (Older and Younger) limestone**

Pleistocene and Recent: Caroline Islands (Angaur).

Risaburo Tayama, 1951, *Tohoku Univ., Inst. Geology and Paleontology Short Papers* no. 3, p. 105; 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 67, table 4 [English translation in library of U. S. Geol. Survey, p. 80].**Angmagsalik granites**

Lower Paleozoic (Caledonian?): Southeast Greenland.

L. R. Wager, 1934, *Meddel. om Grønland*, bind 105, nr. 2, p. 20-21.**Angostura formation**

Miocene, lower: Dominican Republic.

W. M. Small, 1948, *Seismol. Soc. America Bull.*, v. 38, no. 1, p. 26.P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Special Pub.* 25, p. 34.**Anguille series**

Mississippian: Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1937, *Newfoundland Dept. Nat. Res. Inf. Circ.* 3, p. 2, map; 1938, *Newfoundland Geol. Survey Bul.* 12, p. 9-11.**Anita shale**

Eocene, middle: California.

F. R. Kelley, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 27, no. 1, p. 6-7.

Anna cyclothem (including Anna shale)

Pennsylvanian (Des Moines) : Kansas, Missouri, and Nebraska.

J. M. Jewett, 1941, *Kans. State Geol. Survey Bull.* 38, pt. 11, p. 316-317; 1945, *Bull.* 58, p. 30-31, 64.

Annelly gypsum member (of Wellington formation)

Permian : Kansas.

W. A. Ver Wiebe, 1937, *Wichita Municipal Univ. Bull.*, v. 12, no. 5, p. 12.

Anse Cascon formation

Middle Silurian : Quebec, Canada.

S. A. Northrop, 1939, *Geol. Soc. America Special Paper* 21, p. 29-32.

Anstruther granite gneiss

Precambrian : Ontario, Canada.

Jack Satterly and D. F. Hewitt, 1955, *Ontario Dept. Mines Geol. Circ.* 2, p. 4.

Antelope shale

Upper Cretaceous : California.

N. L. Taliaferro, 1954, *in* Northern Calif. Geol. Soc. [Guidebook] Spring Field Trip. [p. 6], correlation chart.

Antelope shale member (of Monterey formation)

Miocene, upper : California.

E. B. Noble, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 7, p. 1332 (fig. 1).
R. R. Simonson and M. L. Krueger, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 10, p. 1611 (fig. 2), 1617.

Antelope Flats member (of Wellington formation)

Permian : Oklahoma.

G. O. Raasch, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1928.

Antero formation

Oligocene : Colorado.

J. H. Johnson, 1937, (abs.) *Colorado Univ. Studies*, v. 25, no. 1, p. 77.

J. T. Stark and others, 1949, *Geol. Soc. America Mem.* 33, p. 63-68.

Antes shale

Middle Ordovician (Mohawkian) : Pennsylvania.

G. M. Kay, 1944, *Jour. Geology*, v. 52, no. 1, p. 3; no. 2, p. 114.

Antes Gap shale

See Antes shale.

Anthony cyclothem (including Anthony shale and sandstone)

Pennsylvanian (Pottsville) : Ohio.

R. E. Lamborn, C. R. Austin, and Downs Schaaf, 1938, *Ohio Geol. Survey, ser. 4, Bull.* 39, p. 70-80.

N. K. Flint, 1951, *Ohio Geol. Survey, ser. 4, Bull.* 48, p. 21-23.

Anthony sandstone

Permian : Oklahoma.

Henry Schweer *in* O. E. Brown, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1553 (fig. 9).

Antler Peak limestone

Upper Pennsylvanian and Permian : Nevada.

R. J. Roberts, 1951, *Geology of the Antler Peak quadrangle, Nevada* : U. S. Geol. Survey Geol. Quadrangle Map [GQ 10].

Antropoceno periodo**Quaternary : Mexico.**

A. R. V. Arellano, 1953, Congreso Cient. Mexicano Mem., tomo 3, p. 181, 186.

Antwerp type granite**Precambrian : New York.**

A. F. Buddington, 1939, Geol. Soc. America Mem. 7, p. 135, 145, 160-161.

Anvil Points member (of Green River formation)**Eocene, upper : Colorado.**

J. W. Vanderwilt, 1947, Rocky Mtn. Assoc. Geologists Guidebook Field Conf., May 14-16, p. 16-17.

Apache formation**Miocene, upper : California.**

T. W. Dibblee, Jr., in Chester Stock, 1948, Southern Calif. Acad. Sci. Bull., v. 46, pt. 2, p. 84.

Aplington formation**Lower Mississippian : Iowa.**

M. A. Stainbrook, 1950, Jour. Paleontology, v. 24, no. 3, p. 365-372.

Apodaca formation**Pennsylvanian (Derry) : New Mexico.**

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 36.

Applegate group**Triassic (?) : Oregon.**

F. W. Libbey and others, 1942, Oreg. Dept. Geology and Mineral Industries Bull. 17, p. 21.

F. G. Wells, P. E. Hotz, and F. W. Cater, Jr., 1949, Oreg. Dept. Geology and Mineral Industries Bull. 40, p. 3-4.

Aptychi limestone or formation**Lower Cretaceous : Cuba.**

M. G. Ruten, 1936, Geog. Geol. Meded. (Utrecht Univ.) Physiog.-Geol. Reeks, no. 11, p. 10-12.

Aquacatal porphyritic andesite**Cretaceous (?) : Honduras.**

R. H. Carpenter, 1954, Geol. Soc. America Bull., v. 65, no. 1, p. 29-30, pl. 1 (geol. map).

Aquaqua formation**Oligocene, upper, and Miocene, lower : Panama.**

Karl Sapper, 1937, Mittelamerika, Handbuch der regionalen Geologie : Heidelberg, Band 8, Abt. 4a, Heft 29, p. 132-133, 134 (correlation chart).

Aquathuna limestone**Mississippi (Chesterian) : Newfoundland, Canada.**

J. M. Weller and others, 1948, Geol. Soc. America Bull., v. 59, no. 2, Chart 5, col. 116.

Aqua Torres formation**Permian : New Mexico.**

J. T. Stark and E. C. Dapples, 1946, Geol. Soc. America Bull., v. 57, no. 12, pt. 1, p. 1154-1155, pl. 1.

Arapaho glacial stage**Pleistocene (middle Wisconsin) : Colorado.**

R. L. Ives, 1937, (abs.) Colo. Univ. Studies, v. 25, no. 1, p. 75; 1938, Geol. Soc. America Bull., v. 49, no. 7, p. 1059.

Arapien shale

Upper Jurassic: Utah.

S. L. Schoff, 1938, Ohio State Univ. Abs. Doctors' Dissert. 25, p. 377-378.

E. M. Spieker, 1946, U. S. Geol. Survey Prof. Paper 205-D, p. 123-125.

Arc formation

Oligocene, lower: Haiti.

Jacques Butterlin, 1954, Inst. Français d'Haiti Mem. 1, p. 63.

Arcadia member (of Trempealeau formation)

Upper Cambrian (Croixan): Wisconsin and Minnesota.

G. O. Raasch, 1952, Ill. Acad. Sci. Trans., v. 44, p. 147.

Arcente member (of Lake Valley formation)

Mississippian (Osage): New Mexico.

L. R. Laudon and A. L. Bowsher, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 12, p. 2116, 2133-2136, fig. 7.

Arch marble

Paleozoic(?): Virginia.

W. R. Brown, 1951, (abs.) Geol. Soc. America Bull., v. 62, no. 12, pt. 2, p. 1547; 1953, Ky. Geol. Survey, ser. 9, Special Pub. 1, [p. 9] (fig. 1).

Archer Creek formation

Paleozoic(?): Virginia.

G. H. Espenshade, 1954, U. S. Geol. Survey Bull. 1008, p. 16-17.

Arch Point basalt

Quaternary: Alaska.

G. C. Kennedy and H. H. Waldron, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 2, p. 13.

Archusa shale member (of Cook Mountain formation)

Eocene (Claiborne group): Mississippi.

E. P. Thomas, 1942, Miss. State Geol. Survey Bull. 48, p. 49-52.

Arcola limestone member (of Mooreville chalk)

Upper Cretaceous (Selma group): Alabama and Mississippi.

L. W. Stephenson and W. H. Monroe, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 12, p. 1655-1657.

Ardian series (epoch)

Lower Pennsylvanian: North America.

R. C. Moore and M. L. Thompson, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 3, p. 286-292.

Ardmore bentonite bed (in Pierre formation)

Cretaceous: South Dakota.

R. C. Spivey, 1940, S. Dak. State Geol. Survey Rept. Inv. 36, p. 3, 23-34.

Arikareean age

Miocene: North America.

H. E. Wood, 2d, and others, 1941, Geol. Soc. America Bull., v. 52, no. 1, p. 11, 12, pl. 1.

Arizonan revolution

Precambrian: Western North America.

N. E. A. Hinds, 1936, Carnegie Inst. Washington Pub. 463, pt. 2, p. 100.

Arkill limestone (in Saavedra member of Lowell formation)

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 11.**Arkwright group**

Upper Devonian: New York.

I. H. Tesmer, 1954, *Hobbies*, v. 35, no. 2, p. 30, 31.**Arlington gravel member (of Vashon drift)**

Pleistocene: Washington.

R. C. Newcomb, 1952, *U. S. Geol. Survey Water-Supply Paper* 1135, p. 26, 27, pl. 1.**Armagh group**

Cambrian (?) : Quebec, Canada.

Jacques Béland, 1952, *Quebec Dept. Mines Prelim. Rept.* 279, p. 3, 4.**Armagosa member (of Red Rose formation)**

Upper Jurassic and Lower Cretaceous: British Columbia, Canada.

R. E. Sommers, 1955, *British Columbia Bur. Mines Ann. Rept.* 1954, p. A89-A90.**Armendaris group**

Pennsylvanian (Des Moines): New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 41-47.**Armenta horizon (of Becerra formation)**

Pleistocene: Distrito Federal, Mexico.

A. R. V. Arellano, 1946, *2º Congreso Mexicano de Cienc. Sociales Mem.*, tomo 5, p. 217.**Armuelles formation**

Pleistocene: Panama and Costa Rica.

R. A. Terry, 1941, *Geog. Review*, v. 31, no. 3, p. 382, fig. 5.A. A. Olsson, 1942, *Bull. Am. Paleontology*, v. 27, no. 106, p. 160-161 (8-9).**Arntully serpentine**

Pre-late Cretaceous: Jamaica, British West Indies.

G. M. Stockley, 1925, *Jamaica Gazette, Supplement*, v. 48, no. 5, p. 32.**Aromas red sands**

Pleistocene, middle: California.

J. E. Allen, 1946, *Calif. Dept. Nat. Res., Div. Mines Bull.* 133, p. 18 (fig. 2), 43-45.**Arp sand member (of Reklaw formation)**

Eocene (Claiborne): Texas and Louisiana.

B. W. Blanpied and R. T. Hazzard, 1939, *Shreveport Geol. Soc. Guidebook 14th Ann. Field Trip*, p. 128 (correlation chart).H. B. Stenzel, 1953, *Tex. Univ. Pub.* 5305, p. 83-95.**Arrey formation**

Pennsylvanian (Derry): New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 35-36.**Arrojos formation**

Middle Cambrian: Sonora, Mexico.

A. A. Stoyanow, 1942, *Geol. Soc. America Bull.*, v. 53, no. 9, p. 1263-1264.**Arroyo Blanco formation**

Miocene, lower: Dominican Republic.

W. M. Small, 1948, *Seismol. Soc. America Bull.*, v. 38, no. 1, p. 26.P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Special Pub.* 25, p. 27.

Arroyo Hondo formation

Eocene: California.

H. E. Vokes, 1939, *N. Y. Acad. Sci. Annals*, v. 38, p. 27-32.**Arroyo Hondo shale member (of Lodo formation)**

Eocene: California.

R. T. White, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 257; 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 10, p. 1738.**Arroyo Penasco formation**

Upper Mississippian: New Mexico.

A. K. Armstrong, 1955, *N. Mex. State Bur. Mines Min. Res. Circ.* 39, p. 3, 6-9.**Arroyo Seco formation**

Miocene, middle: Dominican Republic.

W. M. Small, 1948, *Seismol. Soc. America Bull.*, v. 38, no. 1, p. 26.P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Special Pub.* 25, p. 29.**Arsuk group**

Precambrian (Algonkian?): Southwest Greenland.

N. V. Ussing, 1911, *Meddel. om Grønland*, hefte 38, p. 9, pl. 1.**Arthur limestone (in Carbondale formation)**

Pennsylvanian: Indiana.

J. A. Culbertson, 1932, *The paleontology and stratigraphy of the Pennsylvanian strata between Caseyville, Ky. and Vincennes, Ind.*; *Abs. Thesis, Ill. Univ.*; Urbana, Ill., p. 3, 5.**Artillery formation**

Eocene, lower(?): Arizona.

S. G. Lasky and B. N. Webber, 1949, *U. S. Geol. Survey Bull.* 961, p. 16-22.**Artist Drive formation**

Oligocene and Miocene(?): California.

L. F. Noble, 1941, *Geol. Soc. America Bull.*, v. 52, no. 7, p. 955-956.**Arvison formation**

Lower Jurassic: California.

A. F. Sanborn, [1953], *Stanford Univ. Abs. Dissert.*, v. 27, p. 436.**Aruba formation**

Upper Cretaceous: Aruba, Netherlands West Indies.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1569.**Arumonogui (Almongui) agglomerate**

Oligocene: Caroline Islands (Babelthaup).

Risaburo Tayama, 1939, *Brief report on the geology and ore resources of Babelthaup Island (Palau Island proper)*: *Tropical Industry Inst., Palau, South Sea Islands, Bull.* 3 [English translation in library of U. S. Geol. Survey, p. 7-8, 17]; 1952, *Coral reefs in the South Seas*: *Japan Hydrog. Office Bull.*, v. 11, p. 65, table 4 [English translation in library of U. S. Geol. Survey, p. 78].**Arusa formation**

Oligocene, upper: Panama.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie: Heidelberg, Band 8, Abt. 4a, Heft 29*, p. 132-133, 134 (correlation chart).**Arvada formation**

Pleistocene: Wyoming.

L. B. Leopold and J. P. Miller, 1954, *U. S. Geol. Survey Water-Supply Paper* 1261, p. 8-10.

Asan limestone

Oligocene [Aquitania] : Mariana Islands (Guam).

Risaburo Tayama, 1952, Coral reefs in the South Seas : Japan Hydrog. Office Bull., v. 11, p. 52, table 4 [English translation in library of U. S. Geol. Survey, p. 62].

Ashcroft series

Jurassic : British Columbia, Canada.

C. H. Crickmay, 1930, Calif. Univ. Pub. Dept. Geol. Sci. Bull., v. 19, no. 2, p. 34, 37.

Ashern formation

Lower Devonian or Silurian : Manitoba, Canada.

A. D. Baillie, 1950, Manitoba Dept. Mines and Nat. Res. Mines Br. Pub. 49-2, p. 9-12.

Asherville alluvium

Pleistocene (?) : Missouri.

Willard Farrar and Lyle McManamy, 1937, Mo. Geol. Survey and Water Res. 59th Biennial Rept., App. 6, p. 38-41.

Ash Hollow formation

Pliocene : Nebraska.

A. L. Lugin, 1938, Am. Jour. Sci., 5th ser., v. 36, no. 213, p. 223-224, 227; 1939, Geol. Soc. America Bull., v. 50, no. 8, p. 1261.

Ashishik basalt

Tertiary and Quaternary : Alaska (Aleutian Islands).

F. M. Byers, Jr., and others, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 3, p. 25.

Ashland limestone

Devonian : Missouri.

E. B. Branson, 1941, Kans. Geol. Soc. Guidebook 15th Ann. Field Conf., p. 81, 83, 85.

Ashuanipi complex or series

Precambrian (Archean) : Quebec and Newfoundland (Labrador), Canada.

H. R. Rice, 1949, Canadian Mining Jour., v. 70, no. 9, p. 71.

J. M. Harrison, 1952, Canada Geol. Survey Paper 52-20, p. 6.

Asiento formation

Recent (Holocene) : Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, Geologie en geohydrologie van het Eiland Curaçao : Delft, J. Waltman, Jr., p. 29.

Asitka group

Permian and older (?) : British Columbia, Canada.

C. S. Lord, 1946, Canada Geol. Survey Paper 46-6, p. 2.

As Perdido (Asuberudedo) beds

Eocene : Mariana Islands (Saipan).

Risaburo Tayama, 1952, Coral reefs in the South Seas : Japan Hydrog. Office Bull., v. 11, p. 47-48, table 4 [English translation in library of U. S. Geol. Survey, p. 57].

Asphalt Ridge sandstone

Upper Cretaceous : Utah.

P. T. Walton, 1944, Geol. Soc. America Bull., v. 55, no. 1, p. 99, 110-111.

Assean Lake series

Precambrian : Manitoba, Canada.

A. S. Dawson, 1941, Manitoba Dept. Mines and Nat. Res. Geol. Rept. 39-1, p. 20-21.

Assignack member (of Burnt Bluff formation)

Middle Silurian (Niagaran) : Ontario, Canada.

E. W. Shaw, 1937, Royal Canadian Inst. Trans., v. 21, pt. 2, p. 320.

Asuberudedo beds

See As Perdido beds.

Asuncion group

Upper Cretaceous: California.

N. L. Taliaferro, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 132-134 [preprint 1941].

Asuncion limestone

See Sonson limestone.

Atalaya limestone

Upper Cretaceous: Puerto Rico.

R. C. Mitchell, 1954, Puerto Rico Univ. Agr. Expt. Sta. Tech. Paper 13, p. 47, 48.

Atan group

Lower and Middle Cambrian: British Columbia, Canada.

H. Gabrielse, 1955, Canada Geol. Survey Paper (Prelim. Map) 54-10.

Atane beds

Upper Cretaceous (Cenomanian): Northwest Greenland.

Oswald Heer, 1883, Meddel. om Grønland, hefte 5, pt. 3, p. 83, 93-112; pt. 5, p. 226-227.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 258-262.

Atanikerdluk beds

Miocene: Northwest Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 258-262.

Atarque member (of Mesaverde formation)

Upper Cretaceous: New Mexico.

W. S. Pike, Jr., 1947, Geol. Soc. American Mem. 24, p. 11, 35.

Atascosa formation

Cenozoic (?): Arizona.

B. P. Webb and K. C. Coryell, 1954, U. S. Atomic Energy Comm. RME-2009, p. 7, pl. 1.

Atchison formation

Pleistocene (Kansan): Kansas.

R. C. Moore and others, 1951, Kans. State Geol. Survey Bull. 89, p. 15.

Athertonville facies (of Brodhead formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 148-154.

Athona granite

Precambrian: Saskatchewan, Canada.

A. M. Christie, 1952, Canada Geol. Survey Mem. 269, p. 39-41.

Atil sandstone

Precambrian or Lower Paleozoic: Sonora, Mexico.

Charles Schuchert, 1935, Historical geology of the Antillean-Caribbean region: New York, John Wiley and Sons, p. 138.

Manuel Maldonado-Koerdell, 1954, Asociación Mexicana Geólogos Petroleros Bol., v. 6, nos. 3-4, p. 136.

Atkinson formation

Upper Cretaceous: Subsurface in Georgia, Florida, and Alabama.

P. L. Applin and E. R. Applin, 1947, U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 26.

Atlantic muck

Pleistocene and Recent: Panama Canal Zone.

[T. F. Thompson], 1943, Panama Canal, Special Eng. Div., 3d Locks Proj., pt. 2, chap. 3, p. 23, fig. 3-2.

S. M. Jones, 1950, Geol. Soc. America Bull., v. 61, no. 9, p. 904, table 2.

Atrasado member (of Madera limestone)

Pennsylvanian: New Mexico.

V. C. Kelley and G. H. Wood, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 47.

Attewell Lake gabbro

Precambrian: Ontario, Canada.

W. D. Harding, 1951, Ontario Dept. Mines Ann. Rept., v. 56, pt. 6, p. 22-24.

Attikamagen formation

Precambrian (Proterozoic): Quebec and Newfoundland (Labrador), Canada.

H. R. Rice, 1949, Canadian Mining Jour., v. 70, no. 9, p. 71-72.

J. M. Harrison, 1952, Canada Geol. Survey Paper 52-20, p. 7-8.

Auger Lake conglomerate

Precambrian (Temiscamian?): Quebec, Canada.

W. W. Longley, 1951, Quebec Dept. Mines Geol. Rept. 47, p. 7.

Augusta Mountain formation

Middle Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, Geology of the Mount Tobin quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].

August Town series

Miocene, upper: Jamaica, British West Indies.

C. A. Matley, 1940, Geol. Soc. London Abs. Proc. 1373, p. 101; 1951, Geology and physiography of the Kingston district, Jamaica: Inst. of Jamaica, p. 39-40, 61-62, geol. map.

Aunuu tuff

Recent: Samoa Islands (Aunuu).

R. A. Daly, 1924, Carnegie Inst. Washington Pub. 340, p. 113, pl. B (geol. map).

H. T. Stearns, 1944, Geol. Soc. America Bull., v. 55, no. 11, p. 1285, pl. 1 (geol. map).

Aurela Ridge group

Age unknown: California.

K. J. Hsu, 1955, Calif. Univ. Dept. Geol. Sci. Bull., v. 30, no. 4, p. 231-232, 259, map 1.

Austell granite

Precambrian (?): Georgia.

G. W. Crickmay, 1952, Ga. Geol. Survey Bull. 58, p. 41-42.

Austin Glen member (of Normanskill formation)

Middle Ordovician (Chazy): New York.

Rudolf Ruedemann, 1942, N. Y. State Mus. Bull. 327, p. 28; 1942, Bull. 331, p. 102, 107-108, 115-116 [1946].

Austinville dolomite member (of Shady dolomite)

Lower Cambrian: Virginia.

Charles Butts, 1940, Va. Geol. Survey Bull. 52, pt. 1, p. 41-42, 51-52.

Australian members (of Fraser River formation)

Eocene or older: British Columbia, Canada.

Douglas Lay, 1940, British Columbia Dept. Mines Bull. 3, p. 5, 15.

Avawatz formation

Pliocene, lower : California.

P. C. Henshaw, 1939, Carnegie Inst. Washington Pub. 514, p. 5-7 [preprint].

Avon Park limestone

Eocene, middle : Florida (subsurface and surface).

P. L. Applin and E. R. Applin, 1944, Am. Assoc. Petroleum Geologists Bull., v. 28, no. 12, p. 1680, 1686-1688.

R. O. Vernon, 1951, Fla. Geol. Survey Bull. 33, p. 95-111.

Axes Creek phase (of Cherry Creek series)

Precambrian : Montana.

E. S. Perry, 1948, Mont. Bur. Mines and Geology Mem. 27, p. 2.

Axtell formation

Tertiary, upper (?) : Utah.

E. M. Spieker, 1949, Utah Geol. Soc. Guidebook 4, p. 38, geol. map.

Aycross formation

Eocene, middle : Wyoming.

J. D. Love, 1939, Geol. Soc. America Special Paper 20, p. 66-73.

Ayers Cliff formation

Middle Ordovician (Trentonian or younger) : Quebec, Canada, and Vermont.

C. G. Doll, 1951, Vt. Geol. Survey Bull. 3, p. 15, 22-24.

Aylor member (of Big Saline formation)

Lower Pennsylvanian : Texas.

F. B. Plummer, 1947, Jour. Geology, v. 55, no. 3, pt. 2, p. 196, 197.

Aylor Bluff member

See Aylor member.

Aymamon limestone

Miocene, lower : Puerto Rico.

A. D. Zapp, H. R. Bergquist, and C. R. Thomas, 1948, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 85, sheets 1, 2.

Babcock Hill member (of Onondago formation)

Middle Devonian : New York.

R. E. Stevenson, 1949, N. Y. State Sci. Service Rept. Inv. 3, p. 7.

Babeldaob agglomerate

See Babelthaup agglomerate.

Babelthaup agglomerate

Eocene : Caroline Islands (Babelthaup).

Risaburo Tayama, 1935, Topography, geology, and coral reefs of the Palau Islands : Tohoku Univ., Inst. Geology and Paleontology Contr. in Japanese Language, no. 18, p. 18-20 40-41 [English translation in library of U. S. Geol. Survey]; 1939, Japanese Jour. Geology and Paleontology Trans. and Abs., nos. 1-2, Abs., p. 29.

Baca formation

Eocene (?) : New Mexico.

R. H. Wilpolt and others, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 61.

Bachelor Lake granite

Precambrian (Algoman?) : Quebec, Canada.

W. W. Longley, 1951, Quebec Dept. Mines Geol. Rept. 47, p. 18.

Backwater Creek shale member (of Fort Scott formation)

See Blackwater Creek shale member (of Fort Scott formation).

Bacolet formation

Cretaceous (?) : Tobago, British West Indies.

J. C. Maxwell, 1948, Geol. Soc. America Bull., v. 59, no. 8, p. 817-823.

Bacon limestone member (of Ferry Lake formation)

Lower Cretaceous (Glen Rose) : Texas (subsurface).

W. V. Jones, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 6, p. 839-844.

Bacon Ridge sandstone

Upper Cretaceous : Wyoming.

J. D. Love and others, 1948, Wyo. Geol. Survey Bull. 40, p. 1, 2-3.

Badger Bay series

Middle Ordovician (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, Newfoundland Geol. Survey Bull. 6, p. 6-11.

Badito quartzite member (of Hopewell series)

Precambrian : New Mexico.

Evan Just, 1937, N. Mex. School Mines Bull. 13, p. 21.

Baga shale and limestone (in Joserita member of Lowell formation)

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, Geol. Soc. America Mem. 38, p. 12.

Baggs Hill granite

Devonian : Newfoundland, Canada.

J. R. Cooper, 1954, Canada Geol. Survey Mem. 276, p. 25.

Baie d'Espoir series

Silurian (?) : Newfoundland, Canada.

W. B. Jewell, 1939, Newfoundland Geol. Survey Bull. 17, p. 6-8.

Baie Verte formation

Ordovician : Newfoundland, Canada.

H. A. Quinn, 1945, Canadian Mining Jour., v. 66, no. 5, p. 307.

K. D. Watson, 1947, Newfoundland Geol. Survey Bull. 21, p. 6-9.

Baker member (of Ladd formation)*See Baker Canyon conglomerate member.***Baker Canyon conglomerate member (of Ladd formation)**

Upper Cretaceous : California.

W. P. Popenoe, 1937, Jour. Paleontology, v. 11, no. 5, p. 380; 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 2, p. 170-171.

Baker Creek member (in Yellowknife group)

Precambrian : Northwest Territories (Mackenzie), Canada.

C. E. G. Brown and A. S. Dadson, 1953, Canadian Inst. Mining and Metallurgy Trans., v. 56, p. 70.

Baker Lake porphyry

Tertiary : Colorado.

J. T. Stark and others, 1949, Geol. Soc. America Mem. 33, p. 81, 83-84.

Baker Pond gneiss

Upper Devonian (?) (Oliverian magma series) : New Hampshire.

J. B. Hadley and others, 1938, Geologic map and structure sections of the New Hampshire portion of the Mt. Cube quadrangle (1 : 62,500) : N. H. Highway Dept.

J. B. Hadley, 1942, Geol. Soc. America Bull., v. 53, no. 1, p. 137.

Bakken formation

Mississippian (Kinderhook) : Subsurface in North Dakota, Montana, and Manitoba and Saskatchewan, Canada.

J. W. Nordquist, 1953, Billings Geol. Soc. Guidebook 4th Ann. Field Conf., p. 72-74, figs. 4, 5.

Balanos andesite

Eocene : Mariana Islands (Guam).

Risaburo Tayama, 1952, Coral reefs in the South Seas : Japan Hydrog. Office Bull., v. 11, p. 48, table 4 [English translation in library of U. S. Geol. Survey, p. 57].

Bald Hill agglomerate member (of Tuscan formation)

[Pliocene] : California.

R. C. Treasher, 1947, (abs.) Geol. Soc. America Bull., v. 58, no. 12, pt. 2, p. 1257.

Bald Knoll formation

Eocene, upper or Oligocene, lower : Utah.

W. N. Gilliland, 1949, Ohio State Univ. Abs. Doctors' Dissert. 57, p. 71; 1951, Nebr. Univ. Studies, new ser., no. 8, p. 43-47.

Bald Mountain formation

Precambrian : Utah.

D. J. Jones, 1955, Utah Geol. Mineralog. Survey Bull. 51, p. 13, 14.

Baldonnel formation

Triassic : British Columbia, Canada.

L. M. Clark, 1954, (abs.) Alberta Soc. Petroleum Geologists News Bull., v. 2, no. 6, p. 5.

Bald Rock granite

Late Jurassic (?) : California.

Anna Hietanen, 1951, Geol. Soc. America Bull., v. 62, no. 6, p. 583, 584.

Baldwin formation

Mississippian (Chester) : Illinois.

J. M. Weller *in* Stuart Weller and J. M. Weller, 1939, Ill. State Geol. Survey Rept. Inv. 59, p. 12-13.

Baldwin gneiss

Precambrian (?) : California.

R. B. Guillo, 1953, Calif. Dept. Nat. Res., Div. Mines Special Rept. 31, p. 5 (fig. 2), 6-7.

Baldwin sandstone member (of Mesaverde formation)

Upper Cretaceous : Colorado.

E. C. Dapples, 1939, Econ. Geology, v. 34, no. 4, p. 371.

Balfour formation

Oligocene, lower : Colorado.

J. H. Johnson, 1937, (abs.) Colorado Univ. Studies, v. 25, no. 1, p. 77.

J. T. Stark and others, 1949, Geol. Soc. America Mem. 33, p. 61-63.

Balls Lake formation

Mississippian and/or Pennsylvanian : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 113-114.

F. J. Alcock [1938], Canada Geol. Survey Mem. 216, p. 32.

Baltimore gabbro

Paleozoic (post-lower Ordovician) : Maryland.

Ernst Cloos *in* Ernst Cloos and others, 1937, Md. Geol. Survey [Rept.], v. 13, pt. 1, p. 33 (table 1), pl. 1.

C. J. Cohen *in* Ernst Cloos and others, 1937, Md. Geol. Survey [Rept.], v. 13, pt. 5, p. 217, 218.

Bandelier rhyolite tuff

Quaternary: New Mexico.

H. T. U. Smith, 1937, (abs) Geol. Soc. America Proc. 1936, p. 103; 1938, Jour. Geology, v. 46, no. 7, p. 937, 959.

Bandera Quarry sandstone member (of Bandera shale)

Pennsylvanian (Des Moines): Kansas, Missouri, and Oklahoma.

J. M. Jewett, 1941, Kans. State Geol. Survey Bull. 38, pt. 11, p. 292.

R. C. Moore, J. C. Frye, and J. M. Jewett, 1944, Kans. State Geol. Survey Bull. 52, pt. 4, p. 196.

Banner silt (in Turner Valley member of Livingstone formation)

Carboniferous: Alberta, Canada.

R. J. W. Douglas, 1953, Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium, p. 68.

Bao group

Oligocene, upper: Dominican Republic.

W. M. Small, 1948, Seismol. Soc. America Bull., v. 38, no. 1, p. 26.

Barachois series

Upper Carboniferous: Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1937, Newfoundland Dept. Nat. Res. Inf. Circ. 3, p. 2, map; 1938, Newfoundland Geol. Survey Bull. 12, p. 21-22.

Baranos andesite*See* Balanos andesite.**Barata limestone (in Saavedra member of Lowell formation)**

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1949, Geol. Soc. America Mem. 38, p. 11.

Bar B formation

Pennsylvanian (Magdalena): New Mexico.

V. C. Kelley and Caswell Silver, 1952, N. Mex. Univ. Pubs. in Geology 4, p. 93-94, fig. 2.

Barbacoas formation

Pre-Eocene: Panama Canal Zone.

R. T. Hill, 1898, Harvard Coll. Mus. Comp. Zoology Bull., v. 28, no. 5, p. 183-187, 209.

Barberian series

Mesozoic (Early Cretacic): Arizona and New Mexico.

Charles Keyes, 1940, Pan-Am. Geologist, v. 74, no. 2, p. 105, 147-149.

Barboursville silts

Pleistocene (Illinoian): West Virginia.

D. P. Stewart, 1952, W. Va. Acad. Sci. Proc., v. 23, p. 113-115.

Barbuda limestone

Pleistocene: Barbuda, British West Indies.

P. M. Duncan, 1863, Geol. Soc. London Quart. Jour., v. 19, p. 451.

Alfred Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1581.

Baril member (of Mount Head formation)

Carboniferous: Alberta, Canada.

R. J. W. Douglas, 1953, Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium, p. 68.



Barker Dome tongue (of Cliff House sandstone)

Upper Cretaceous: New Mexico.

P. T. Hays and A. D. Zapp, 1955, U. S. Geol. Survey Oil and Gas Inv. Map OM 144.

Barlow Ranch beds

Pleistocene, lower: California.

J. E. Eaton, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 204, 205 [preprint 1941].

Barnett Hill formation

Pennsylvanian (Morrow): Oklahoma.

B. H. Harlton, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 7, p. 908-912.

Barnsdall formation (of Ochelata group)

Pennsylvanian: Oklahoma.

M. C. Oakes, 1951, Tulsa Geol. Soc. Digest, v. 19, p. 119, 120.

Barrancón beds

Upper Cretaceous: Vera Cruz, Mexico.

J. M. Muir, 1936, Geology of the Tampico region, Mexico: Tulsa, Okla., Am. Assoc. Petroleum Geologists, p. 86.

Arnold Heim, 1940, *Eclogae Geologicae Helveticae*, v. 33, no. 2, p. 329.**Barraute gabbro**

Precambrian (Archean): Quebec, Canada.

W. W. Weber, 1951, Quebec Dept. Mines Prelim. Rept. 255, p. 12.

Barrettia limestone

Upper Cretaceous (Turonian): Jamaica, British West Indies.

C. T. Trechmann, 1922, *Geol. Mag.*, v. 59, no. 9, table facing p. 423; no. 11, p. 505-507.L. J. Chubb, 1955, *Geol. Mag.*, v. 92, no. 3, p. 188-190.**Barrigada limestone**

Pleistocene: Mariana Islands (Guam).

H. T. Stearns, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 1948.

Risaburo Tayama, 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 59, table 4 [English translation in library of U. S. Geol. Survey, p. 69].

Barrilaco caliche

Recent: Cuenca de Mexico, Mexico.

Kirk Bryan, 1948, *Soc. Geol. Mexicana Bol.*, tomo 13, p. 12, pl. 1.**Barril Viejo shale**

Lower Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1940, *Geol. Soc. America Bull.*, v. 51, no. 1, p. 121, 123.**Barry Lake gneiss**

Precambrian (post-Keewatin?): Quebec, Canada.

R. L. Milner, 1943, Quebec Dept. Mines Geol. Rept. 14, p. 11-12.

Barrys zone (in Headland gneiss)

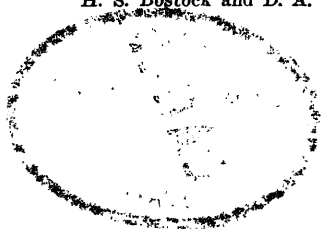
Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, Newfoundland Geol. Survey Bull. 15, p. 10-11.

Barslow formation

Triassic and/or older: British Columbia, Canada.

H. S. Bostock and D. A. McNaughton, 1940, Canada Geol. Survey Map 568A.



Barstovian age

Miocene: North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 12, pl. 1.

Bartholomew siltstone member (of Orangeville shale)

Mississippian: Pennsylvania.

Wallace de Witt, Jr., 1951, *Geol. Soc. America Bull.*, v. 62, no. 11, p. 1364.

Bartolo conglomerate

Miocene and Pliocene: California.

G. J. Bellemin, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 4, p. 652 (fig. 2), 653, 658.

Barton River formation

• Silurian: Vermont, and Quebec, Canada.

C. G. Doll, 1951, *Vt. Geol. Survey Bull.* 3, p. 15, 25-32.

Bascom formation

Ordovician: Vermont and Massachusetts.

W. M. Cady, 1945, *Geol. Soc. America Bull.*, v. 56, no. 5, p. 524, 542-545.

Baseline sandstone

Upper Cretaceous: Nevada and Arizona.

C. R. Longwell, 1949, *Geol. Soc. America Bull.*, v. 60, no. 5, p. 929, 932-933.

Basic City shale member (of Tallahatta formation)

Eocene: Mississippi.

G. F. Brown and R. W. Adams, 1943, *Miss. State Geol. Survey Bull.* 55, p. 43-44, 55-56.

Basin rhyolite

Tertiary: Colorado.

J. T. Stark and others, 1949, *Geol. Soc. America Mem.* 33, p. 81, 100-101.

Basin Creek member (of Katalla formation)

Oligocene: Alaska.

D. J. Miller, D. L. Rossman, and C. A. Hickcox, 1945, *Preliminary report on petroleum possibilities in the Katalla area, Alaska: U. S. Geol. Survey*, p. 9-10; *Topographic map and sections of the Katalla area, Alaska: U. S. Geol. Survey War-Minerals Inv. Prelim. Map.*

Basin Ridge group

Tertiary: Colorado.

J. T. Stark and others, 1949, *Geol. Soc. America Mem.* 33, p. 81, 95-101.

Bassignac tuffs

Miocene, middle: Martinique, French West Indies.

Jean Giraud, 1918, *Esquisse géologique de la Martinique avec carte géologique: Hanoi-Haiphong, Imprimerie d'Extrême-Orient*, p. 13-17, 19.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581, 1597.

Bassin Zim formation

Oligocene, lower: Haiti.

Jacques Butterlin, [1952], *Résumé de thèse présentée à la Sorbonne, La géologie de la République d'Haiti et ses rapports avec celle des régions voisines (mimeo.)*, p. 4; 1954, *Inst. Français d'Haiti Mém.* 1, p. 63.

Bastion formation

Lower Cambrian: Northwest Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 27; nr. 2, p. 225.

Batamote andesite

Pliocene (?) : Arizona.

James Gilluly, 1937, *Ariz. Univ. Bull.*, v. 8, no. 1, p. 48-49.

Bat Cave limestone

Lower Ordovician (Canadian) : New Mexico.

V. C. Kelley, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 10, p. 2201 (table).

V. C. Kelley and Caswell Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 45-52, 53, fig. 4.

Bates limestone

Cambro-Ordovician (?) : Maine.

L. W. Fisher, 1936, *Am. Mineralogist*, v. 21, no. 5, p. 321, 323.

Bath beds (in Oceanic formation)

Eocene, upper : Barbados, British West Indies.

Alfred Senn, 1948, *Ecolgae Geologicae Helvetiae*, v. 40, no. 2, p. 205, table 1.

Battell member (of Monastery formation)

Lower Cambrian : Vermont.

P. H. Osberg, 1952, *Vt. Geol. Survey Bull.* 5, p. 43, 44.

Battery Point formation

Middle Devonian : Quebec, Canada.

J. A. Dresser and T. C. Denis, 1944, *Quebec Dept. Mines Geol. Rept.* 20, v. 2, p. 300.

Battery Rock cyclothem (including Battery Rock sandstone or conglomerate)

Pennsylvanian : Kentucky and Illinois.

D. D. Owen, 1856, *Ky. Geol. Survey Rept. for 1854 and 1855*, p. 49.

J. M. Weller, 1940, *Ill. State Geol. Survey Rept. Inv.* 71, p. 37-38.

Battle formation

Middle Pennsylvanian : Nevada.

R. J. Roberts, 1951, *Geology of the Antler Peak quadrangle, Nevada* : U. S. Geol. Survey Geol. Quadrangle Map [GQ 10].

Battle formation

Upper Cretaceous : Saskatchewan, Canada.

G. M. Furnival, 1942, *Canada Geol. Survey Paper (Prelim. Map)* 42-5.

Battle Ax basalts

Pliocene to Pleistocene : Oregon.

T. P. Thayer, 1936, *Jour. Geology*, v. 44, no. 6, p. 706, 709 (fig. 2), 713 (fig. 3).

Battlemill beds

Cambrian and Ordovician : Ontario, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2, Cambro-Ordovician pulsation, pt. 1, Caledonian and St. Lawrence geosynclines : Peiping, China, University Press, Natl. Univ. Peking, p. 409.

Battle Mountain formation

Pennsylvanian : Colorado.

C. A. Arnold, 1941, *Mich. Univ. Mus. Paleontology Contr.*, v. 6, no. 4, p. 60, 68.

K. G. Brill, Jr., 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 8, p. 1379-1392.

Battle Spring formation

Eocene, lower and middle : Wyoming.

G. N. Pipiringos, 1955, *Wyo. Geol. Assoc. Guidebook 10th Ann. Field Conf.*, p. 101, 103.

Baum limestone member (of Paluxy sand)

Lower Cretaceous: Oklahoma.

C. W. Tomlinson, 1952, *in* Ardmore Geol. Soc. [Guidebook] Field Trip, p. 3, 4.**Baxter Hollow granite**

Age not stated: Wisconsin.

R. M. Gates, 1942, *Am. Mineralogist*, v. 27, no. 10, p. 699-711.**Bay mud**

Quaternary: California.

P. D. Trask and J. W. Rolston, 1951, *Geol. Soc. America Bull.*, v. 62, no. 9, p. 1079, 1082, 1105-1109.**Bayard paleosol complex**

Oligocene, upper, to Miocene: Nebraska.

C. B. Schultz and T. M. Stout, 1955, *Nebr. Univ. State Mus. Bull.*, v. 4, no. 2, p. 46, fig. 10.**Bay d'Est formation**

Precambrian (Proterozoic) or Lower Cambrian: Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 92.**Bay du Nord group**

Lower or Middle Devonian: Newfoundland, Canada.

J. R. Cooper, 1954, *Canada Geol. Survey Mem.* 276, p. 10-11.**Bay of Islands complex**

Post-Middle Ordovician, pre-Mississippian: Newfoundland, Canada.

J. R. Cooper, 1936, *Newfoundland Geol. Survey Bull.* 4, p. 7-8.**Bayou Calamus lentil (in Verda member of Yazoo clay)**

Eocene (Jackson): Louisiana.

J. Huner, Jr., 1939, *La. Dept. Conserv. Geol. Bull.* 15, p. 159-161.**Bayou Lenann member (of Pendleton formation)**

Eocene, lower (Wilcox): Louisiana and Texas.

Richard Wasem and L. J. Wilbert, Jr., 1943, *Jour. Paleontology*, v. 17, no. 2, p. 186, fig. 4.**Bay Point formation**

Pleistocene: California.

L. G. Hertlein and U. S. Grant, IV, 1939, *Calif. Jour. Mines and Geology*, v. 35, no. 1, p. 63 (fig. 4), 71-72.**Baytree member (of Cardium formation)**

Upper Cretaceous: Alberta, Canada.

Joseph Gleddie, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 4, p. 522.**Bead Lake formation**

Precambrian: Washington.

M. C. Schroeder, 1952, *Wash. Dept. Conserv. Devel., Div. Mines and Geology Bull.* 40, p. 7, 10-11.**Bealville fanglomerate**

Oligocene: California.

T. W. Dibblee, Jr., and C. W. Chesterman, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 168, p. 12, 36-37.**Bear [formation]**

Paleocene: Montana.

G. G. Simpson, 1937, *U. S. Natl. Mus. Bull.* 169, p. 17, 20.

Bear Canyon sandstone member (of Kreyenhagen formation)

Eocene, upper : California.

I. F. Wilson, 1943, *Calif. Jour. Mines and Geology*, v. 39, no. 2, p. 211, 226 (fig. 5).**Bear Island granodiorite**

Age uncertain : Maryland.

Ernst Cloos *in* Ernst Cloos and C. W. Cooke, 1953, *Geologic map of Montgomery County and the District of Columbia (1 : 62,500)* : Md. State Dept. Geology, Mines, and Water Res.**Bear Mountain granite**

[Precambrian] : Texas.

R. E. McAdams, 1936, *Am. Mineralogist*, v. 21, p. 129, 133, 134, 135.**Bear Point limestone**

Middle Cambrian : Northwest Territories (Devon Island), Canada.

V. E. Kurtz, A. H. McNair, and D. B. Wales, 1952, *Am. Jour. Sci.*, v. 250, no. 9, p. 648-649.**Bear River formation**

Devonian : Nova Scotia, Canada.

H. M. Ami, 1900, *Royal Soc. Canada Trans.*, ser. 2, v. 6, sec. 4, p. 206-207.**Bear Rock formation**

Silurian or Devonian : Northwest Territories (Mackenzie), Canada.

J. S. Stewart, 1944, *Canadian Inst. Mining and Metallurgy Trans.*, v. 47, p. 163 ; 1945, *Canada Geol. Survey Paper* 45-29, p. 5.**Bear Spring formation**

Middle Devonian : Texas.

V. E. Barnes, P. E. Cloud, Jr., and L. E. Warren, 1947, *Geol. Soc. America Bull.*, v. 58, no. 2, p. 136-138.**Bear Springs basalt**

Tertiary, upper : New Mexico.

H. L. Jicha, Jr., 1954, *N. Mex. State Bur. Mines Min. Res. Bull.* 37, p. 39, 48-49.**Bearwallow schist**

Age not stated : North Carolina.

C. E. Hunter and P. W. Mattocks, 1936, *TVA Div. Geology Bull.* 4, p. 13-14.**Beattie syenite porphyry**

Precambrian : Quebec, Canada.

Stanley Davidson and A. F. Banfield, 1944, *Econ. Geology*, v. 39, no. 8, p. 537-540.**Beattie Peak formation**

Upper Jurassic or Lower Cretaceous : British Columbia, Canada.

W. H. Matthews, 1947, *British Columbia Dept. Mines Bull.* 24, p. 11.**Beaver Bight formation**

Middle Ordovician (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 7-9.**Beaver Brook shale**

Cambrian : Newfoundland, Canada.

G. R. Heyl, 1937, *Newfoundland Geol. Survey Bull.* 8, p. 9.**Beaver Dam black shale member (of Needmore shale)**

Middle Devonian : Pennsylvania.

Bradford Willard *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, *Pa. Geol. Survey*, ser. 4, *Bull. G* 19, p. 141, 153.

Beaverdam sand

Pleistocene (early Aftonian) : Maryland.

W. C. Rasmussen and T. H. Slaughter, 1955, Md. Dept. Geology, Mines and Water Res. Bull. 16, p. 113-115.

Beaver Divide conglomerate member (of Chadron formation)

Oligocene, lower : Wyoming.

R. L. Nace, 1939, Wyo. Geol. Survey Bull. 27, p. 32-34, pl. 1.

Beaverhead formation

Upper Cretaceous, Paleocene, and Eocene : Montana.

A. J. Eardley, 1950, (abs.) Geol. Soc. America Bull., v. 61, no. 12, pt. 2, p. 1552.

W. R. Lowell and M. R. Klepper, 1953, Geol. Soc. America Bull., v. 64, no. 2, p. 235-243.

Beaverhead granite

Eocene : Montana and Idaho.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, Geol. Soc. America Bull., v. 66, no. 4, p. 370-372, pl. 1.

Beaverhill formation

See Beaverhill Lake formation.

Beaverhill Lake formation

Devonian : Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, Am. Assoc. Petroleum Geologists Bull., v. 34, no. 9, p. 1823-1824.

Beaverlodge series

Precambrian : Saskatchewan, Canada.

F. J. Alcock, 1936, Canada Geol. Survey Mem. 196, p. 16-18.

Bécancour River formation

Ordovician : Quebec, Canada.

T. H. Clark, 1947, Quebec Dept. Mines Prelim. Rept. 204, p. 13-15.

Becerra formation

Pleistocene, upper : Cuenca de Mexico, Mexico.

Helmut de Terra, 1947, Ciencia, v. 8, nos. 6-9, p. 154-155.

Beckett limestone or formation

Middle Ordovician : Missouri.

E. R. Larson, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 9, p. 2049-2052.

Becks limestone

Devonian : Utah.

N. C. Williams, 1940, Compass, v. 20, no. 2, p. 76 (fig. 1), 77.

Beck Spring dolomite

Precambrian (Pahrump series) : California.

D. F. Hewett, 1940, Washington Acad. Sci. Jour., v. 30, no. 6, p. 240.

Bedford Canyon formation

Triassic : California.

E. S. Larsen, Jr., 1948, Geol. Soc. America Mem. 29, p. 18-22.

Bee member (of Richfield formation)

Precambrian to Lower Cambrian (?) : British Columbia, Canada.

A. H. Lang, 1938, Canada Geol. Survey Paper 38-16, p. 8.

Beebe School formation

Middle Devonian: Michigan.

W. A. Kelly and G. W. Smith, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 3, p. 460-461.**Beechatuda tongue (of Cliff House sandstone)**

Upper Cretaceous: New Mexico.

P. T. Hays and A. D. Zapp, 1955, *U. S. Geol. Survey Oil and Gas Inv. Map OM 144*.**Beecher member (of Bluebell formation)**

Upper Ordovician and Silurian: Utah.

Paul Billingsley in J. M. Boutwell, 1933, 16th Internat. Geol. Cong. [United States] Guidebook 17, Excursion C-1, p. 110 (fig. 14).

J. K. Rigby, 1952, *Utah Geol. Mineralog. Survey Bull.* 45, p. 23, 27, fig. 6.**Beecher member (of Dunleith formation)**

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 33, figs. 3, 9.**Beehive rhyolite**

Tertiary: Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 740-741.**Beehive Mesa alluvium**

Pleistocene or Recent: California.

B. F. Howell, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, map sheet 10.**Beeman formation**

Pennsylvanian (Missourian): New Mexico.

L. C. Pray, 1954, *N. Mex. Geol. Soc. Guidebook 5th Field Conf.*, p. 93.**Bee Tree shale**

Pennsylvanian: Kentucky.

A. F. Crider, 1916, *Ky. Geol. Survey [Rept.]*, 4th ser., v. 4, pt. 1, p. 138, 142.H. R. Wanless, 1946, *Geol. Soc. America Mem.* 13, p. 88, 136.**Beirdneau sandstone member (of Jefferson formation)**

Devonian: Utah.

J. S. Williams, 1948, *Geol. Soc. America Bull.*, v. 59, no. 11, p. 1139, 1140.**Belanger member (of Bearpaw formation)**

Upper Cretaceous: Saskatchewan, Canada.

G. M. Furnival, 1941, *Royal Soc. Canada Trans.*, v. 35, sec. 4, p. 58-60.**Belcher Island series**

Precambrian (Proterozoic): Quebec, Canada.

J. A. Dresser and T. C. Denis, 1944, *Quebec Dept. Mines Geol. Rept.* 20, v. 2, p. 47.**Belden shale or formation**

Pennsylvanian: Colorado.

K. G. Brill, Jr., 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 8, p. 1385-1386.**Beldens formation**

Middle Ordovician (Chazyan): Vermont.

W. M. Cady, 1945, *Geol. Soc. America Bull.*, v. 56, no. 5, p. 524, 550-552.**Belem formation**

Miocene, upper: Tabasco, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.G. P. Salas and Ernesto Lopez Ramos, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 1-2, p. 39-40.

Belkofski tuff

Tertiary, upper: Alaska.

G. C. Kennedy and H. H. Waldron, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 2, p. 12.

Bella Union granite

Age not stated: Sonora, Mexico.

W. R. Wade and Alfred Wandtke, 1920, Am. Inst. Mining and Metall. Engineers Trans. v. 63, p. 383.

Bell Canyon formation

Permian (Guadalupe series): Texas.

P. B. King *in* R. K. DeFord and E. R. Lloyd, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 8.

P. B. King, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 4, p. 581-582, pl. 2.

Belle Bay volcanics

Ordovician (?): Newfoundland, Canada.

D. E. White, 1940, Econ. Geology, v. 35, no. 8, p. 968.

Bell Hill dolomite

Middle Silurian: Utah.

F. W. Osterwald, 1953, U. S. Geol. Survey Trace Elements Inv. Rept. TEI-330, p. 105.

Bell River anorthosite

Precambrian: Quebec, Canada.

B. C. Freeman, 1938, Jour. Geology, v. 46, p. 682.

Bell Top formation

Miocene: New Mexico.

F. E. Kottlowski, 1953, N. Mex. Geol. Soc. Guidebook 4th Field Conf., p. 145, 148 (chart).

Bellwood dolomite

Silurian (Niagaran): Illinois.

T. E. Savage *in* C. K. Swartz and others, 1942, Geol. Soc. America Bull., v. 53, no. 4, p. 536, Chart 3.

Belridge diatomite

Miocene, upper: California.

S. S. Siegfus, 1939, Am. Assoc. Petroleum Geologists Bull., v. 23, no. 1, p. 25.

Belton sandstone member (of Chanute formation)

Pennsylvanian (Missouri series): Missouri.

J. R. Clair, 1943, Mo. Geol. Survey and Water Res. 2d ser., v. 27, p. 20-25, pl. 1.

Bena gravels

Miocene: California.

T. W. Dibblee, Jr., and C. W. Chesterman, 1953, Calif. Dept. Nat. Res., Div. Mines Bull. 168, p. 12, 38-40.

Benbolt limestone

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, Geol. Soc. America Bull., v. 54, no. 6, p. 868-871.

Ben Bow limestone

Eocene: Jamaica, British West Indies.

C. A. Matley and Frank Raw, 1942, Geol. Mag., v. 79, no. 4, p. 246, 250-251.

Ben Day porphyry

Tertiary, lower: Texas.

B. L. Ives, 1941, Am. Jour. Sci., v. 239, no. 5, p. 344, 347.

Bengal limestone

Miocene: Jamaica, British West Indies.

V. A. Zans and H. R. Versey in V. A. Zans, 1954, Jamaica Geol. Survey Dept. Ann. Rept. 1952-53, p. 2.

Ben Hur limestone

Middle Ordovician: Virginia.

R. L. Miller and W. P. Brosge, 1950, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 104.

Benitie group

Eocene(?): Trinidad, British West Indies.

E. H. Cunningham-Craig, 1905, Trinidad Legislative Council Paper no. 25 of 1905, p. 7.

Benner limestone

Middle Ordovician (Mohawkian): Pennsylvania.

G. M. Kay, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1969.

Bennett formation

Pliocene, lower: California.

O. P. Jenkins, 1938, Geologic map of California (1:500,000): Calif. Dept. Nat. Res., Div. Mines, sheet 4.

Benson dolomite member (of Tribes Hill formation)

Lower Ordovician: New York.

R. R. Wheeler, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1938-1939; 1942, Am. Jour. Sci., v. 240, no. 7, p. 518, 522.

Benson facies (of Cow Bayou member of Logansport formation)

Paleocene (Midway): Louisiana.

G. E. Murray, 1948, La. Dept. Conserv. Geol. Bull. 25, p. 112-114.

Bentley formation

Pleistocene: Louisiana.

H. N. Fisk, 1938, La. Dept. Conserv. Geol. Bull. 10, p. 78, 157-160.

Bent Mountain member (of Bluestone formation)

Mississippian (Chester): West Virginia and Virginia.

B. N. Cooper, 1944, Va. Geol. Survey Bull. 60, p. 186.

Berdoo granite

Precambrian: California.

W. J. Miller, 1946, Geol. Soc. America Bull., v. 57, no. 5, p. 473.

Bergen shale member (of Lykins formation)

Permian: Colorado.

L. W. LeRoy, 1946, Colo. School Mines Quart., v. 41, no. 2, p. 31, 33, 35.

Berino member (of Magdalena formation)

Pennsylvanian: Texas.

L. A. Nelson, 1937, Colo. Univ. Studies, v. 25, no. 1, p. 89; 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 167, 168-170.

Bernal formation

Permian: New Mexico.

V. C. Kelley, 1949, N. Mex. Univ. Pubs. in Geology 2, fig. 2.

G. O. Bachman, 1953, U. S. Geol. Survey Oil and Gas Inv. Map OM 137.

Bernetz gneiss

Precambrian (post-Keewatin): Quebec, Canada.

W. W. Longley, 1946, Quebec Dept. Mines Geol. Rept. 24, p. 12.

Berry formation

Eocene to Miocene, lower: California.

R. R. Thorup, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1958;
1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 464, 465.

Berryessa formation

Cretaceous: California.

M. D. Crittenden, Jr., 1951, *Calif. Dept. Nat. Res., Div. Mines Bull.* 157, p. 22 (fig. 4),
33-35, pl. 1 (geol. map).

Bessmer sandstone or quartzite

Precambrian (Proterozoic): Michigan.

W. A. Seaman *in* A. K. Snelgrove, W. A. Seaman, and V. L. Ayres, 1944, *Mich. Dept. Conserv. Geol. Survey Div. Progress Rept.* 10, p. 16.

Betheden formation

Paleocene or Eocene: Mississippi.

F. F. Mellen, 1939, *Miss. State Geol. Survey Bull.* 38, p. 26-28.

Beulah Church sand lentil (in Slaughter Creek member of Pendleton formation)

Eocene, lower (Wilcox): Louisiana and Texas.

Richard Wasem and L. J. Wilbert, Jr., 1943, *Jour. Paleontology*, v. 17, no. 2, p. 187,
fig. 4.

Bevier cyclothem or formation (including Bevier clay)

Pennsylvanian (Des Moines): Missouri and Kansas.

G. E. Abernathy, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 18, 19,
23; 1938, *Kans. Acad. Sci. Trans.*, v. 41, p. 193, 195.

Biche limestone

Miocene, lower and middle: Trinidad, British West Indies.

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1451
(chart).

H. H. Renz, 1942, *8th Am. Sci. Cong. Proc.*, v. 4, p. 555.

Bidarka formation

Lower Jurassic: Alaska.

L. B. Kellum, 1945, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 7, no. 8, p. 203, 208.

Bide Arm formation

Ordovician: Newfoundland, Canada.

Frederick Betz, Jr., 1939, *Newfoundland Geol. Survey Bull.* 16, p. 19-20.

Bidwell member (of Cataract formation)

Lower Silurian (Alexandrian): Ontario, Canada.

E. W. Shaw, 1937, *Royal Canadian Inst. Trans.*, v. 21, pt. 2, p. 320.

Big Branch gneiss

Precambrian: Texas.

V. E. Barnes, 1940, *in Geol. Soc. America [Guidebook] 53d Ann. Meeting*, p. 53
(geol. map).

Big Butt quartzite

Precambrian: North Carolina, Georgia, and Tennessee.

G. W. Stose and A. J. Stose, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12,
pt. 2, p. 1233; 1949, v. 60, no. 2, p. 272-273, 284-285.

Bigelow glacial substage

Pleistocene (Tazewell): Colorado.

R. L. Nelson, 1954, *Jour. Geology*, v. 62, no. 4, p. 329-331.

Big Falls picritic basalt

Pleistocene (?) : Hawaiian Islands (Maui).

G. A. Macdonald *in* H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 231, 238-241.

Big Megantic nordmarkite or granite

Devonian : Quebec, Canada.

J. A. Dresser and T. C. Denis, 1944, Quebec Dept. Mines Geol. Rept. 20, v. 2, p. 462.

Bignell loess

Pleistocene and Recent : Nebraska.

C. B. Schultz and T. M. Stout, 1945, Am. Jour. Sci., v. 243, no. 5, p. 241-244.

Big Oak Flat shale and sandstone member (of Panoche group)

Upper Cretaceous : California.

I. F. Wilson, 1943, Calif. Jour. Mines and Geology, v. 39, no. 2, p. 203-204, 226 (fig. 5).

Big Run sandstone

Pennsylvanian (Monongahela) : Ohio.

A. T. Cross, W. H. Smith, and Thomas Arkle, Jr., 1950, Field guide for the special field conference on the stratigraphy, sedimentation and nomenclature of the Upper Pennsylvanian and Lower Permian strata (Monongahela, Washington and Greene series) in the northern portion of the Dunkard Basin of Ohio, West Virginia, and Pennsylvania : W. Va. Geol. and Econ. Survey, Section 12-A, [pl. 1].

Big Saline group

Pennsylvanian (Lampasas) : Texas.

M. G. Cheney, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 66, 83.

Big Spring member (of Conococheague limestone)

See Big Spring Station member.

Big Spring Station member (of Conococheague limestone)

Upper Cambrian (Dresbachian) : Maryland and Pennsylvania.

Ernst Cloos, 1951, Md. Dept. Geology, Mines and Water Res., Washington County [Rept. 14], p. 45, 55-56.

J. L. Wilson, 1952, Geol. Soc. America Bull., v. 63, no. 3, p. 307-308.

Big Valley member (of Wabamun formation)

Upper Devonian : Alberta, Canada (subsurface).

J. S. Wonfor and J. M. Andrichuck, 1953, Alberta Soc. Petroleum Geologists News Bull., v. 1, no. 9, p. 3.

Big Wash andesite

Tertiary : Arizona.

B. E. Thomas, 1949, Econ. Geology, v. 44, no. 8, p. 667-669.

Bijou formation

Miocene to Pliocene (Barstovian-Clarendonian) : South Dakota.

R. E. Stevenson and L. A. Carlson, 1950, Areal geology of the Bonesteel quadrangle (1 : 62,500) : S. Dak. State Geol. Survey.

R. E. Stevenson, 1953, S. Dak. Acad. Sci. Proc., v. 42, p. 86-89

Bijuco nepheline syenite

Age not stated : Panama.

Karl Sapper, 1937, Mittelamerika, Handbuch der regionalen Geologie : Heidelberg, Band 8, Abt. 4a, Heft 29, p. 134.

Bilk Creek sandstone member (of Wanakah formation)

Upper Jurassic: Colorado.

M. I. Goldman and A. C. Spencer, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 9, p. 1750, fig. 3.**Billings formation**

Ordovician: Ontario, Canada.

A. E. Wilson, 1937, *Royal Soc. Canada Trans.*, ser. 3, v. 31, sec. 4, p. 46; 1940, *Canada Geol. Survey Map* 588A.**Billings member** (of Burnt Bluff formation)

Middle Silurian (Niagaran): Ontario, Canada.

E. W. Shaw, 1937, *Royal Canadian Inst. Trans.*, v. 21, pt. 2, p. 320.**Billings member** (of Wellington formation)

Permian: Oklahoma.

G. O. Raasch, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1928.**Billy Lake quartz porphyry**

Precambrian (Algoman?): Quebec, Canada.

W. W. Longley, 1951, *Quebec Dept. Mines Geol. Rept.* 47, p. 17-18.**Binghamton drift**

Pleistocene (Wisconsin): New York and Pennsylvania.

Paul MacClintock and E. T. Apfel, 1944, *Geol. Soc. America Bull.*, v. 55, no. 10, p. 1155-1159.**Birchy schist**

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull.* 15, p. 14.**Bird River intrusive complex**

Precambrian (Archean): Manitoba, Canada.

J. D. Bateman, 1943, *Canadian Inst. Mining and Metallurgy Trans.*, v. 46, p. 161.**Birkmose member** (of Franconia formation)

Upper Cambrian: Wisconsin and Minnesota.

R. R. Berg, 1951, *Minn. Geologist*, v. 8, no. 4, p. [1].**Birse member** (of Stony Mountain formation)

Upper Ordovician (Richmond): Manitoba, Canada.

V. J. Okulitch, 1943, *Royal Soc. Canada Trans.*, sec. 4, v. 37, p. 63-64.**Bishop tuff**

Pleistocene: California.

C. M. Gilbert, 1938, *Geol. Soc. America Bull.*, v. 49, no. 12, p. 1830-1860.**Bishop Creek granite**

Upper Jurassic or Lower Cretaceous (?): California.

G. A. Schroter, 1938, *Eng. and Mining Jour.*, v. 139, no. 4, p. 43.**Bishops Cap member** (of Magdalena formation)

Pennsylvanian: Texas.

L. A. Nelson, 1937, *Colo. Univ. Studies*, v. 25, no. 1, p. 89; 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 166-168.**Bishops Lodge member** (of Tesuque formation)

Miocene, middle(?): New Mexico.

F. E. Kottowski, 1953, *N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 148 (chart).

Bissex Hill marl

Oligocene, upper: Barbados, British West Indies.

G. F. Franks and J. B. Harrison, 1898, *Geol. Soc. London Quart. Jour.*, v. 54, p. 544, 546.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1580, 1590.

Bisteneau member (of Hall Summit formation)

Paleocene (Midway): Louisiana.

D. P. Meagher and L. C. Aycock, 1942, *La. Dept. Conserv. Geol. Pamph.* 3, p. 12-16.

G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 59.

Bitterwater formation

Pliocene and Quaternary, upper: California.

O. P. Jenkins, 1938, *Geologic map of California (1:500,000)*: Calif. Dept. Nat. Res., Div. Mines, sheet 4.

Bjørne Ø conglomerate

Age not stated: Northeast Greenland.

Curt Teichert, 1933, *Meddel. om Grønland*, bind 95, nr. 1, p. 38-44, 60, pl. 1.

Blaa Mountain formation

Middle to Upper Triassic (Ladinian-Karnian): Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 74.

Black Butte till

Eocene: Montana.

H. W. Scott, 1938, *Jour. Geology*, v. 46, no. 4, p. 628-635.

Black Canyon group

Tertiary (?) (pre-Pliocene): Nevada.

C. R. Longwell, 1936, *Geol. Soc. America Bull.*, v. 47, no. 9, p. 1417-1419.

Black Eagle sandstone (in Bearpaw formation)

Upper Cretaceous: Alberta and Saskatchewan, Canada.

L. S. Russell, 1950, *Geol. Soc. America Bull.*, v. 61, no. 1, p. 31-32.

Blackfoot Canyon facies (of Belt series)

Precambrian: Alberta, Canada; and Montana.

C. L. Fenton and M. A. Fenton, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1877.

Blackford formation

Middle Ordovician: Virginia.

Charles Butts, 1940, *Va. Geol. Survey Bull.* 52, pt. 1, p. 126, 131-134.

Blackhead formation

Precambrian: Newfoundland, Canada.

A. O. Hayes, 1931, *Econ. Geology*, v. 26, no. 1, p. 46 (table), 47 (map).

Black Island member (of Winnipeg formation)

Ordovician: Saskatchewan and Manitoba, Canada.

W. O. Kupsch, 1953, *Saskatchewan Dept. Nat. Res. Rept.* 10, p. 11.

G. J. Genik, 1954, *Alberta Soc. Petroleum Geologists News Bull.*, v. 2, no. 5, p. 1.

Blackiston formation

Upper Devonian: Indiana, Kentucky, and Ohio.

Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, no. 9, p. 837, 842-847, 868-869, 875-879.

Blackjack Creek cyclothem (including Blackjack Creek limestone)

Pennsylvanian (Des Moines) : Missouri, Iowa, Kansas, and Nebraska.

L. M. Cline, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 1, p. 36-37.

J. M. Jewett, 1945, *Kans. State Geol. Survey Bull.* 58, p. 22-23, 62.

Blackjack Knob member (of Theodosia formation)

Lower Ordovician : Missouri and Arkansas.

J. S. Cullison, 1944, *Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser.*, v. 15, no. 2, p. 25, 27.

Black Knob dolomite (in Pacheta member of Lowell formation)

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 12.

Black Knob quartzite (in Pacheta member of Lowell formation)

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 12.

Black Lake lagunal facies

Middle Devonian : Michigan.

[G. M. Ehlers], 1938, *Mich. Acad. Sci. Arts and Letters Sec. Geology and Mineralogy [Guidebook] 8th Ann. Field Excursion*, [fig. 2] after p. 8.

W. A. Kelly, 1940, *Mich. Acad. Sci. Arts and Letters Sec. Geology and Mineralogy [Guidebook] 10th Ann. Field Excursion*, [fig. 1].

Black Point ash

Recent : Hawaiian Islands (Oahu).

H. T. Stearns, 1940, *Hawaii Div. Hydrography Bull.* 5, p. 53.

Black Point basalt

Quaternary : Alaska.

G. C. Kennedy and H. H. Waldron, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept.* 2, pt. 2, p. 13.

Black Point dolomite member (of Cherry Creek series)

Precambrian : Montana.

E. S. Perry, 1948, *Mont. Bur. Mines and Geology Mem.* 27, p. 7.

Black Point formation

Mississippian : Newfoundland, Canada.

L. J. Weeks, 1955, *Canada Geol. Survey Map* 1043A.

Black Point limestone

Age not stated : Hawaiian Islands (Oahu).

H. T. Stearns, 1940, *Hawaii Div. Hydrography Bull.* 5, p. 53.

Black Point limestone

Mississippian : Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1938, *Newfoundland Geol. Survey Bull.* 12, p. 13.

Black Prince limestone

Upper Mississippian or Lower Pennsylvanian (?) : Arizona.

T. M. Romslo, 1949, *U. S. Bur. Mines Rept. Inv.* 4504, p. 5.

James Gilluly, J. R. Cooper, and J. S. Williams, 1954, *U. S. Geol. Survey Prof. Paper* 266, p. 13-15.

Black River group

Precambrian : Quebec, Canada.

J. W. Ambrose and H. C. Gunning, 1939, *Canada Geol. Survey Paper (Prelim. Map)* 39-12.

Black Shale Brook formation

Upper Cambrian (Johannian) : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 77-79.

Blacktail formation

Cenozoic (?) : Arizona.

H. E. Enlows, 1955, *Geol. Soc. America Bull.*, v. 66, no. 10, p. 1217.

Blacktail granite gneiss

Precambrian (pre-Beltian) : Montana.

E. W. Heinrich, 1948, (abs.) *Geol. Soc. America Bull.*, v. 59, no. 12, pt. 2, p. 1329.

Blacktail Deer Creek basalts

Miocene, lower : Montana.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 374, pl. 1.

Black Trout diorite

Precambrian (Archean or Proterozoic) : Manitoba, Canada.

A. P. Fawley, 1949, *Manitoba Dept. Mines and Nat. Res. Rept. and Map* 48-6, p. 12-13.

Blackwater Creek shale member (of Fort Scott formation)

Pennsylvanian (Des Moines) : Missouri.

J. R. Clair, 1943, *Mo. Geol. Survey and Water Res.*, 2d ser., v. 27, pl. 2.

Blake River group

Precambrian : Quebec, Canada.

H. C. Gunning and J. W. Ambrose, 1937, *Canadian Inst. Mining and Metallurgy Trans.*, v. 40, p. 344-345.

Blancan age

Pliocene : North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 12-13, pl. 1.

Bianco sandstone (in Puente formation)

Miocene, middle : California.

M. L. Krueger, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 363.

A. O. Woodford, T. G. Moran, and J. S. Shelton, 1946, *Am. Assoc. Petroleum Geologists Bull.*, v. 30, no. 4, p. 521.

Blauwbaai conglomerate

Pleistocene : Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, *Geologie en geohydrologie van het Eiland Curaçao* : Delft, J. Waltman, Jr., p. 92, strat. table.

Blessington gabbroic anorthosite.

Precambrian : Ontario, Canada.

J. M. Harrison, 1944, *Geol. Soc. America Bull.*, v. 55, no. 12, p. 1409.

Blind Boy member (of Red Rose formation)

Upper Jurassic and Lower Cretaceous : British Columbia, Canada.

R. E. Sommers, 1955, *British Columbia Bur. Mines Ann. Rept.* 1954, p. A89-A90.

Blind Creek formation

Permian : British Columbia, Canada.

H. S. Bostock, 1940, *Canada Geol. Survey Map* 341A.

Blocher formation

Middle Devonian : Indiana.

Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, No. 9, p. 841-842, 845.

Blomsterbaek limestone member (of Cape Wood formation)

Middle Cambrian: Northwest Territories (Ellesmere Island), Canada; and North Greenland.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 43, 46.

Blomsterbukta quartzite and shale

Middle Cambrian (?): Northeast Greenland.

A. B. Cleaves and E. F. Fox, 1935, *Geol. Soc. America Bull.*, v. 46, no. 3, p. 473-474, pl. 43.

Blondeau limestone conglomerate

Ordovician (Chazyan): Quebec, Canada.

A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines: Peking, China, University Press, Natl. Univ. Peking, p. 415, 422.

Bloomsdale formation

Middle Ordovician: Missouri.

E. R. Larson, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 9, p. 2046-2048.

Blounts Creek member (of Fleming formation)

Miocene: Louisiana.

H. N. Fisk, 1940, *La. Dept. Conserv. Geol. Bull.* 18, p. 118, 163-170.

Blow-me-down complex

Upper Ordovician or Devonian: Newfoundland, Canada.

A. K. Snelgrove, F. W. Roebing, III, and J. L. Kemmerer, Jr., 1934, *Am. Mineralogist*, v. 19, no. 1, p. 22-23.

Bluebell limestone

Cambrian or Ordovician: British Columbia, Canada.

Anonymous, 1954, *Canadian Mining Jour.*, v. 75, no. 5, p. 177.

Bluebonnet member (of Lake Waco formation)

Cretaceous (Gulf): Texas.

W. S. Adkins and F. E. Lozo in F. E. Lozo, 1951, *Fondren Sci. Series*, no. 4, p. 122-123, fig. 25.

Blue Creek Canyon group

Cambrian: Oklahoma.

W. E. Ham, 1949, *Okl. Geol. Survey Circ.* 26, p. 19.

Blue Mountain gravel

Quaternary: Arizona.

Donaldson Koons, 1948, *Plateau*, v. 20, no. 4, p. 54 (fig. 1), 53-59.

Blue Ridge member (of Graminia formation)

Devonian: Alberta, Canada (subsurface).

A. L. Choquette, 1955, *Alberta Soc. Petroleum Geologists Jour.*, v. 3, no. 5, p. 70-73.

Bluesky formation

Lower Cretaceous: Alberta, Canada (subsurface).

P. C. Badgley, 1952, *Canada Geol. Survey Paper* 52-11, p. 9, 12.

Blue Springs muscovite schist

Precambrian: New Mexico.

J. T. Stark and E. C. Dapples, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1936; 1946, v. 57, no. 12, pt. 1, p. 1130-1133.

Bluestone facies (of New Providence formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 125-132.

Bluewater formation

Permian: New Mexico and Arizona.

S. B. Talmage and T. P. Wootton, 1937, N. Mex. State Bur. Mines Min. Res. Bull. 12, p. 30.

Bluff Head volcanics

Post-Middle Ordovician, pre-Mississippian: Newfoundland, Canada.

J. R. Cooper, 1936, Newfoundland Geol. Survey Bull. 4, p. 22.

Bluff Mesa formation

Lower Cretaceous: Texas.

Elliot Gillerman, 1953, U. S. Geol. Survey Bull. 987, p. 12, 16-18.

Blyklippen series

Middle Pennsylvanian: Northeast Greenland.

Emil Witzig, 1954, Meddel. om Grønland, bind 72, afd. 2, nr. 5, p. 8-9, 24.

Boardman formation

Lower Ordovician (Canadian): Vermont.

Phillip Fowler, 1950, Vt. Geol. Survey Bull. 2, p. 13, 24-27.

Boar Head formation

Lower Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 108-109.

Boarman member (of Mifflin formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., figs. 3, 10, 16.

Boca de Serpiente formation

Eocene, upper: Trinidad, British West Indies.

C. J. Maury, 1929, Jour. Geology, v. 37, no. 2, p. 181.

Boca Santo Preto conglomerate

Recent (Holocene): Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, Geologie en geohydrologie van het Eiland Curaçao: Delft, J. Waltman, Jr., p. 30, 92, strat. table.

Bode conglomerate

Precambrian: Northwest Territories (Mackenzie), Canada.

Neil Campbell, 1947, Canadian Inst. Mining and Metallurgy Trans., v. 50, p. 511-514.

Bofay formation

Cretaceous: Hidalgo, Mexico.

F. S. Simons, 1951, Stanford Univ. Abs. Dissert., v. 26, p. 333.

Boggs Mountain flows

Quaternary: California.

J. C. Brice, 1953, Calif. Dept. Nat. Res., Div. Mines Bull. 166, p. 12, pl. 7.

Bogota cyclothem (including Bogota limestone and shale)

Pennsylvanian: Illinois.

W. A. Newton and J. M. Weller, 1937, Ill. State Geol. Survey Rept. Inv. 45, p. 19-24.

Boice shale

Mississippian: Nebraska (subsurface).

E. C. Reed, 1946, Am. Assoc. Petroleum Geologists Bull., v. 30, no. 3, p. 348-349.

Bois Blanc formation

Middle Devonian : Michigan.

G. M. Ehlers *in* K. K. Landes, G. M. Ehlers, and G. M. Stanley, 1945, Mich. Dept. Conserv. Geol. Survey Div. Pub. 44, Geol. Ser. 37, p. 34, 35, 80-109.

Bolander group

Pennsylvanian (Des Moines) : New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 51-55.

Bolanos andesite

See Balanos andesite.

Bolarian series

Middle Ordovician : Virginia, Kentucky, West Virginia, Maryland, Pennsylvania, and New York, and Ontario, Canada.

Marshall Kay, 1947, (abs.) Geol. America Bull., v. 58, no. 12, pt. 2, p. 1198-1199; 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 8, p. 1401, 1402.

Boleo formation

Pliocene, lower : Baja California, Mexico.

I. F. Wilson, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 9, p. 1774-1780.

Boley conglomerate member (of Vamoosa formation)

Pennsylvanian (Virgil) : Oklahoma.

R. R. Ries, 1954, Okla. Geol. Survey Bull. 71, p. 82-83.

Bon Accord conglomerate

Eocene : Trinidad, British West Indies.

H. G. Kugler and others, [1939], Geological conference in Trinidad; notes on the excursions : Petroleum Assoc. Trinidad, p. 9.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 541.

Bon Accord formation

Lower Cretaceous : Trinidad, British West Indies.

H. G. Kugler, 1950, Asociación Venezolana de Geología y Petróleo Bol., tomo 2, no. 1, p. 48 (correlation chart).

Bonita Park formation

Cenozoic : Arizona.

H. E. Enlows, 1955, Geol. Soc. America Bull., v. 66, no. 10, p. 1217.

Bonnetian age and stage

Middle Cambrian : North America.

B. F. Howell and J. F. Mason, 1938, Jour. Paleontology, v. 12, no. 3, p. 297.

Bonneville formation

Pleistocene and Recent : Utah.

K. C. Bullock, 1951, Utah Geol. Mineralog. Survey Bull. 41, p. 21.

C. B. Hunt, H. D. Varness, and H. E. Thomas, 1953, U. S. Geol. Survey Prof. Paper 257-A, p. 20-21.

Bonsall tonalite

Upper Cretaceous : California.

C. S. Hurlbut, Jr., 1935, Am. Mineralogist, v. 20, no. 9, p. 611-613.

Bontour formation

Upper Cretaceous : Trinidad, British West Indies.

G. D. Harris *in* G. A. Waring, 1926, Johns Hopkins Univ. Studies in Geology, no. 7, p. 97.

H. G. Kugler, 1953, Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull., v. 20, no. 59, p. 38.

Bony Falls member (of Black River formation)

Middle Ordovician : Michigan.

R. C. Hussey, 1952, Mich. Dept. Conserv. Geol. Survey Div. Pub. 46, Geol. Ser. 39, p. 13-14.

Boone Gap facies (of New Providence formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 119-121.

Boott member (of Littleton formation)

Lower Devonian : New Hampshire.

M. P. Billings and others, 1945, Geologic map and structure sections of the Mt. Washington quadrangle, New Hampshire (1:62,500) : N. H. State Plan. Devel. Comm. and Highway Dept. ; 1946, Geol. Soc. America Bull., v. 57, no. 3, p. 264-265.

Boquilla formation

Pliocene, upper : Chihuahua, Mexico.

L. C. Pray, 1953, in Geological sciences at the California Institute of Technology : Calif. Inst. Technology, p. 32.

Boracho sandstone

Cretaceous (Comanche) : Texas.

W. E. Tipton, 1951, in W. Tex. Geol. Soc. Guidebook Fall Field Trip, Oct. 26-27, p. 29 (geol. map).

Børglum River limestone

Middle or Upper Ordovician (Champlainian or Cincinnati) : North Greenland.

J. C. Troelsen, 1949, Meddel. om Grønland, bind 149, nr. 2, p. 18-19, pl. 1.

Boring agglomerate

Pliocene, upper, or Pleistocene, lower : Oregon.

R. C. Treasher, 1942, Oreg. State Dept. Geology and Mineral Industries G. M. I. Short Paper 7, p. 10.

Boring lava

Pliocene, upper, or Pleistocene, lower : Oregon.

R. C. Treasher, 1942, Oreg. State Dept. Geology and Mineral Industries G. M. I. Short Paper 7, p. 10.

Borradaile member (of Mannville formation)

Lower Cretaceous : Alberta, Canada (subsurface).

A. W. Nauss, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 11, p. 1615.

Borrego formation

Pliocene, upper : California.

L. A. Tarbet and W. H. Holman, 1944, (abs.) Am. Assoc. Petroleum Geologists Bull., v. 28, no. 12, p. 1782.

Bose gravel

Pleistocene to Recent : British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, Canada Geol. Survey Water Supply Paper 322, p. 11.

Boskydell marine horizon (in Pottsville formation)

Pennsylvanian : Illinois.

H. R. Wanless, 1939, Geol. Soc. America Special Paper 17, p. 34.

Bossier formation

Upper Jurassic (Cotton Valley group) : Subsurface in Louisiana and Texas.

F. M. Swain, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 5, p. 582-594.

Boston glacial substage

Pleistocene (Wisconsin) : Massachusetts.

S. S. Judson, Jr., 1949, *Peabody Foundation for Archaeology Papers*, v. 4, no. 1, p. 12-23.

Boswarlis beds

Mississippian (Meramecian) : Newfoundland, Canada.

J. M. Weller and others, 1948, *Geol. Soc. America Bull.*, v. 59, no. 2, Chart 5, col. 116.

Botetourt limestone member (of Edinburg formation)

Middle Ordovician : Virginia.

B. N. Cooper and G. A. Cooper, 1946, *Geol. Soc. America Bull.*, v. 57, no. 1, p. 80.

Botwood formation

Silurian : Newfoundland, Canada.

W. H. Twenhofel and R. R. Shrock, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1749, 1767.

Boucher formation

Middle Cambrian : Vermont.

Phillip Fowler, 1950, *Vt. Geol. Survey Bull.* 2, pl. 1.

Boucher tongue

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, *Carnegie Inst. Washington Pub.* 563, p. 14, 29, 101-102.

Boulder Wash group

Precambrian or Tertiary : Nevada.

C. R. Longwell, 1936, *Geol. Soc. America Bull.*, v. 47, no. 9, p. 1407-1409.

Bouldin member (of Lake Waco formation)

Cretaceous (Gulf) : Texas.

W. S. Adkins and F. E. Lozo *in* F. E. Lozo, 1951, *Fondren Sci. Series*, no. 4, p. 120-122, fig. 25.

Boulter gabbro

Precambrian : Ontario, Canada.

D. F. Hewitt, 1955, *Ontario Dept. Mines Ann. Rept.*, v. 63, pt. 6, p. 12.

Boulter granite

Precambrian : Ontario, Canada.

D. F. Hewitt, 1955, *Ontario Dept. Mines Ann. Rept.*, v. 63, pt. 6, p. 15.

Bourg du Marin limestone

Oligocene : Martinique, French West Indies.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581, 1596.

Bourinot group

Middle Cambrian : Nova Scotia, Canada.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 8-10.

Bourlamaque granodiorite

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 133.

Bowen formation

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, *Geol. Soc. America Bull.*, v. 54, no. 6, p. 876-877.

Bowen Island group

Triassic (?) and/or older: British Columbia, Canada.

J. E. Armstrong, 1954, *Canada Geol. Survey Paper* 53-28, p. 1-2.

Bowes member (of Piper formation)

Middle Jurassic: Montana (subsurface and surface).

J. W. Nordquist, 1955, *Billings Geol. Soc. Guidebook 6th Ann. Field Conf.*, p. 97, 102-103.

Bow Lake flow (in Yellowknife group)

Precambrian: Northwest Territories (Mackenzie), Canada.

C. E. G. Brown and A. S. Dadson, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 70-71.

Bowmanstown chert

Middle Devonian: Pennsylvania.

F. M. Swartz in Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, *Pa. Geol. Survey*, ser. 4, *Bull. G* 19, p. 52, fig. 17.

Bowser member (of Tuxedni formation)

Middle Jurassic: Alaska.

C. E. Kirschner and D. L. Minard, 1948, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 95 [1949].

Box member (of Percha shale formation)

Upper Devonian: New Mexico.

F. V. Stevenson, 1944, *Dallas Digest Joint Ann. Meeting*, p. 95; 1945, *Jour. Geology*, v. 53, no. 4, p. 241-244.

Box Butte member (of Sheep Creek formation)

Miocene: Nebraska.

R. C. Cady, 1940, *Am. Jour. Sci.*, v. 238, no. 9, p. 663-667.

Box Canyon member (of Mutual quartzite)

Precambrian: Utah.

N. C. Williams, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 12, p. 2737, 2738.

Box Springs complex

Precambrian (?): California.

W. J. Miller, 1946, *Geol. Soc. America Bull.*, v. 57, no. 5, p. 477.

Boysen formation

Upper Cambrian: Wyoming.

Charles Deiss, 1938, *Geol. Soc. America Bull.*, v. 49, no. 7, p. 1104.

Brackett member (of Stowe formation)

Lower Cambrian (?): Vermont.

P. H. Osberg, 1952, *Vt. Geol. Survey Bull.* 5, p. 66.

Bradley granodiorite

Upper Jurassic: California.

W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, No. 1, p. 52-59.

Bradshaw formation

Triassic and/or older: British Columbia, Canada.

H. S. Bostock and D. A. McNaughton, 1940, *Canada Geol. Survey Map* 568A.

Brady soil

Pleistocene (Wisconsin) : Nebraska.

C. B. Schultz and T. M. Stout, 1948, *Geol. Soc. America Bull.*, v. 59, no. 6, p. 570.

Bradyan interglacial substage

Pleistocene (Wisconsin) : North America.

A. B. Leonard, 1951, *Jour. Geology*, v. 59, no. 4, p. 325.

Bralorne intrusives

Jurassic (?) : British Columbia, Canada.

C. E. Cairnes, 1937, *Canada Geol. Survey Mem.* 213, p. 21-27.

Brandt sandstone (in Kingsley member of Wellsburg monothem)

Upper Devonian (Chautauquan) : Pennsylvania.

K. E. Caster, 1938, *Jour. Paleontology*, v. 12, no. 1, p. 45 (fig. 7), 47.

Bransford sandstone member (of Gassaway formation)

Lower Mississippian : Tennessee and Alabama.

Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, no. 9, p. 884, 885.

Brassier-Dollard biotite granite

Precambrian (Archean) : Quebec, Canada.

A. S. MacLaren, 1950, *Canada Geol. Survey Map* 997A.

Brasso clay (in Manzanilla formation)

Miocene, middle : Trinidad, British West Indies.

G. A. Waring, 1926, *Johns Hopkins Univ. Studies in Geology*, no. 7, p. 69, 71, pl. 6 (geol. map).

Brasso conglomerate member (of Manzanilla formation)

Miocene, middle : Trinidad, British West Indies.

G. A. Waring, 1926, *Johns Hopkins Univ. Studies in Geology*, no. 7, p. 69-70.

Brasso formation

Oligocene, middle, to Miocene, middle : Trinidad, British West Indies.

A. B. Thompson, 1925, *Oil field exploration and development*, v. 1, *Oil field principles* : New York, D. VanNostrand Co., p. 389, 391.

H. H. Renz, 1942, *8th Am. Sci. Cong.*, v. 4, p. 545-549, 554-557.

Brawley formation

Pleistocene : California.

T. W. Dibblee, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, chap. 2, p. 24.

Breakheart basalt

Ordovician : Newfoundland, Canada.

G. R. Heyl, 1936, *Newfoundland Geol. Survey Bull.* 3, p. 8.

Breath member (of Nicolet River formation)

Ordovician : Quebec, Canada.

T. H. Clark, 1947, *Quebec Dept. Mines Prelim. Rept.* 204, p. 9, 12.

Breeches Lake granite

Devonian or younger : Quebec, Canada.

T. H. Clark *in* H. C. Cooke and T. H. Clark, 1937, *Canada Geol. Survey Mem.* 211, p. 76.

Breezy Hill limestone member (of Cherokee shale in Kansas; of Senora formation in Oklahoma)

Pennsylvania : Kansas and Oklahoma.

W. G. Pierce and W. H. Courtier, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 17; 1938, *Kans. State Geol. Survey Bull.* 24, p. 33, 35.

Breien member (of Hell Creek formation)

Cretaceous: North Dakota.

W. M. Laird and R. H. Mitchell, 1942, *N. Dak. Geol. Survey Bull.* 14, p. 14-15.**Breitenbush series**

Eocene (?) to Oligocene: California.

T. P. Thayer, 1936, *Jour. Geology*, v. 44, no. 6, p. 704, 705, 709 (fig. 2), 713 (fig. 3).**Bremo quartzite**

Silurian or younger: Virginia.

G. W. Stose and A. J. Stose, 1948, *Am. Jour. Sci.*, v. 246, no. 7, p. 397-401, 408.**Brent Island limestone**

Ordovician (?): Newfoundland, Canada.

J. R. Cooper, 1937, *Newfoundland Geol. Survey Bull.* 9, p. 6.**Brew group**

Lower Cretaceous: British Columbia, Canada.

S. Duffell and K. C. McTaggart, 1952, *Canada Geol. Survey Mem.* 262, p. 34-35.**Brian Boru formation**

Lower Cretaceous (?): British Columbia, Canada.

R. E. Sommers, 1955, *British Columbia Bur. Mines Ann. Rept.* 1954, p. A89-A90.**Brian Head formation**

Miocene (?): Utah.

H. E. Gregory, 1944, *Am. Jour. Sci.*, v. 242, no. 11, p. 591-597.**Briarcliff dolomite**

Upper Cambrian: New York.

E. B. Knopf, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, 1212.**Brickeys member (of Mifflin formation)**

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 10, 16.**Bridgerian age**

Eocene: North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 10, pl. 1.**Bridgewater conglomerate**

Pleistocene: Nova Scotia, Canada.

J. W. Goldthwaite, 1924, *Canada Geol. Survey Mem.* 140, p. 101-102.**Bridport dolomite**

Lower Ordovician (Beekmantownian): Vermont.

W. M. Cady, 1945, *Geol. Soc. America Bull.*, v. 56, no. 5, p. 524, 545-548.**Bridwell formation**

Pliocene, middle: Texas.

G. L. Evans, 1949, *W. Tex. Geol. Soc. Guidebook Field Trip 2*, Nov. 6-9, p. 6-7.**Brier Hill sandstone**

Permian: Pennsylvania.

W. O. Hickok, IV, and F. T. Moyer, 1940, *Pa. Geol. Survey, ser 4, Bull. C 26*, p. 152.**Brigand Hill limestone**

Miocene, lower: Trinidad, British West Indies.

H. H. Suter, 1951, *Colonial Geology and Min. Res.*, v. 2, no. 3, p. 204 (table 12) [1952].

Briggs formation

Permian: Texas.

C. C. Albritton, 1937, *Jour. Paleontology*, v. 11, no. 1, p. 19; 1938, *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 1, p. 1753-1757, pl. 1.

Brigham Hill graywacke

Lower Cambrian: Vermont.

E. C. Jacobs, 1935, (abs.) *Geol. Soc. America Proc.* 1934, p. 85; [1937], *Vt. State Geologist 20th Rept.*, p. 100-101.

Brightseat formation

Paleocene: Maryland and District of Columbia.

R. R. Bennett and G. G. Collins, 1952, *Washington Acad. Sci. Jour.*, v. 42, no. 4, p. 114-116.

Brimstone Hill limestone

Pleistocene, lower: St. Kitts, British West Indies.

K. W. Earle, [1924?], *Reports on the geology of St. Kitts-Nevis, British West Indies and the geology of Anguilla, British West Indies: London, The Crown Agents for the Colonies*, p. 13.

Brimstone Hill tuffs

Pleistocene, lower: St. Kitts, British West Indies.

K. W. Earle, [1924?], *Reports on the geology of St. Kitts-Nevis, British West Indies and the geology of Anguilla, British West Indies: London, The Crown Agents for the Colonies*, p. 7, 11.

Brindson Lake granite

Precambrian: Saskatchewan, Canada.

M. L. Miller, 1951, *Saskatchewan Geol. Survey (Precambrian Geology Ser.) Rept.* 3, p. 17-18.

Brisco glacial substage

Pleistocene (Wisconsin): Colorado.

Q. D. Singewald, 1950, *U. S. Geol. Survey Bull.*, 955-D, p. 120 [1951].

Brister member (of Big Saline formation)

Lower Pennsylvanian: Texas.

F. B. Plummer, 1947, *Jour. Geology*, v. 55, no. 3, pt. 2, p. 196, 198.

Brister Bluff lentil (in Big Saline formation)

See Brister member (of Big Saline formation).

Briton member (of Mifflin formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 10, 16.

Broadalbin passage beds

Upper Cambrian or Lower Ordovician (Cambrovisian): New York.

W. J. Miller, 1911, *N. Y. State Mus. Bull.* 153, p. 29.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2, *Cambrovisian pulsation*, pt. 1, *Caledonian and St. Lawrence geosynclines: Peiping, China, University Press, Natl. Univ. Peking*, p. 325-327, 350.

Broad Cove formation

Pennsylvanian: Nova Scotia, Canada.

G. W. H. Norman, 1935, *Canada Geol. Survey Mem.* 177, p. 48-49.

Broadwater formation

Pleistocene, lower: Nebraska.

C. B. Schultz and T. M. Stout, 1945, *Am. Jour. Sci.*, v. 243, no. 5, p. 232-236.

Brock group

Precambrian : Northwest Territories (Mackenzie), Canada.

J. D. Bateman, 1952, *Geol. Assoc. Canada Proc.*, v. 5, p. 101.

Brocklebank granite

Upper Devonian (?) : Vermont.

C. G. Doll, [1945?], *Vt. State Geologist 24th Rept.*, p. 20-21.

Brockville beds

Cambrian and Ordovician : Ontario, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines : Peiping, China, University Press, Natl. Univ. Peking, p. 407, 424, 425, 550, 551.

Brodhead formation

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper 22*, p. 135-191.

Brodhead member (of Marcellus formation)

Devonian : Pennsylvania.

Bradford Willard, 1938, *Pa. Geol. Survey*, ser. 4, *Bull. G 11*, p. 17.

Brodhead Creek member (of Marcellus formation)

See Brodhead member (of Marcellus formation).

Brodhead Creek member (of Tully formation)

Upper Devonian : Pennsylvania.

R. E. Stevenson and W. S. Skinner, 1949, *Pa. Acad. Sci. Proc.*, v. 23, p. 30-31.

Broken Jug limestone

Lower Cretaceous (Bisbee group) : New Mexico.

S. G. Lasky, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 5, p. 531, fig. 2.

Bronco volcanics

Cretaceous or lower Tertiary : Arizona.

James Gilluly, 1945, *Am. Jour. Sci.*, v. 243, no. 12, p. 645, 648.

Brønland Fjord dolomite

Cambrian (?) : North Greenland.

J. C. Troelsen, 1949, *Meddel. om Grønland*, bind 149, nr. 2, p. 13-15, pl. 1.

Brook lentil (in Big Saline formation)

See Brook Ranch member (of Big Saline formation).

Brook Ranch member (of Big Saline formation)

Lower Pennsylvanian : Texas.

F. B. Plummer, 1947, *Jour. Geology*, v. 55, no. 3, pt. 2, p. 196, 197, 198.

Brooks Lake glaciation

Pleistocene (Wisconsin) : Alaska.

E. H. Muller *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ. 289*, p. 2, 13 (table 1).

Broom Creek group

Pennsylvanian or Permian : Wyoming, Colorado, and South Dakota.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, *Nebr. Geol. Survey Bull.* 13, p. 2, 4, 19, 45.

Browne glaciation

Pleistocene (pre-Wisconsin) : Alaska.

Clyde Wahrhaftig *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ. 289*, p. 7, 13 (table 1).

Browning sandstone (in Carbondale formation)

Pennsylvanian: Illinois.

H. R. Wanless, 1939, Geol. Soc. America Special Paper 17, p. 26, 78.

Brownridge sediments

Precambrian (Keewatin): Ontario, Canada.

Jack Satterly, 1943, Ontario Dept. Mines Ann. Rept., v. 50, pt. 2, p. 27-28.

Brownridge volcanics

Precambrian (Keewatin): Ontario, Canada.

Jack Satterly, 1943, Ontario Dept. Mines Ann. Rept., v. 50, pt. 2, p. 28-29.

Browns Point formation

Miocene: Washington.

S. L. Glover, 1940, (abs.) Geol. Soc. America Bull., v. 51, no. 12, pt. 2, p. 2022.

Bruja Island dolerite

Miocene, lower: Panama Canal Zone.

[T. F. Thompson], 1943, Panama Canal, Special Eng. Div., 3d Locks Proj., pt. 2, chap. 3, p. 26.

S. M. Jones, 1950, Geol. Soc. America Bull., v. 61, no. 9, p. 901, table 2.

Brush Hollow limestone

Cenozoic (probably Quaternary): Colorado.

W. F. Tanner, [1955], Okla. Acad. Sci. Proc., v. 35 (1954), p. 95.

Brushy Canyon formation

Permian (Guadalupe series): Texas.

P. B. King *in* R. K. DeFord and E. R. Lloyd, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 8.

P. B. King, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 4, p. 577-579, pl. 2.

Brussels formation

Pleistocene (Sangamon? and Illinoian): Illinois and Missouri.

W. W. Rubey, 1952, U. S. Geol. Survey Prof. Paper 218, p. 82-87.

Bruton formation

Pennsylvanian (Virgil): New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 79-82.

Bryan sandstone

Eocene (Claiborne): Texas.

H. B. Stenzel, 1939, Tex. Univ. Bur. Econ. Geology Pub. 3945, pt. 2, p. 853 [1940].

A. A. L. Mathews, 1950, Tex. Eng. Expt. Sta. Research Rept. 14, p. 3, geol. map.

Bryantsville breccia (in Levias member of Ste. Genevieve limestone)

Mississippian: Indiana.

J. B. Patton, 1949, Ind. Dept. Conserv. Div. Geology Progress Rept. 3, p. 8.

C. A. Malott, 1952, Stratigraphy of the Ste. Genevieve and Chester formations of southern Indiana: Ann Arbor, Mich., The Edwards Letter Shop, p. 9.

Bucaro formation

See Bucarú formation.

Bucarú formation.

Eocene: Panama.

Karl Sapper, 1937, Mittelamerika, Handbuch der regionalen Geologie: Heidelberg. Band 8, Abt. 4a, Heft 29, p. 134 (correlation chart).

A. A. Olsson, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 235-236.

Buck Hill volcanic series

Eocene to Miocene (?) : Texas.

S. S. Goldich and C. L. Seward, 1948, *W. Tex. Geol. Soc. [Guidebook] Fall Field Trip*, p. 13-18.**Buckhorn asphalt**

Pennsylvanian : Oklahoma.

H. J. Smith, 1938, *The cephalopod fauna of the Buckhorn asphalt* : Dept. Geology and Paleontology, Chicago Univ., p. 1, 3.**Buckhorn conglomerate**

Lower Cretaceous (?) : Utah.

W. L. Stokes, 1944, *Geol. Soc. America Bull.*, v. 55, no. 8, p. 958, 965-966.**Buckhorn member (of Dunleith formation)**

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 9.**†Buckingham marl**

Miocene, upper : Florida.

W. C. Mansfield, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1916 ; 1939, *Fla. Dept. Conserv. Geol. Bull.* 18, p. 11-16.**Buckinghorse formation**

Lower Cretaceous : British Columbia, Canada.

C. O. Hage, 1944, *Canada Geol. Survey Paper* 44-30, p. 9-11.**Buckner formation in Mississippi****Buckner member (of Haynesville formation) in Arkansas, Louisiana, and Texas**

Upper Jurassic : Subsurface in Arkansas, Louisiana, Mississippi, and Texas.

H. K. Shearer, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 6, p. 724.W. B. Weeks, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 8, p. 961, 966.**Buck Ridge schist**

Age not stated : North Carolina.

C. E. Hunter and P. W. Mattocks, 1936, *TVA Div. Geology Bull.* 4, p. 14.**Bucks granodiorite**

Late Jurassic (?) : California.

Anna Hietanen, 1951, *Geol. Soc. American Bull.*, v. 62, no. 6, pl. 1.**Buckskin schist**

Pre-Ordovician (?) : Washington.

E. A. Youngberg and T. L. Wilson, 1952, *Econ. Geology*, v. 47, no. 1, p. 3.**Buckskinian series**

Cretaceous (Mid-Cretacic) : Kansas.

[C. R.] Keyes, 1941, *Pan-Am. Geologist*, v. 76, no. 4, p. 304 (chart).**Buck Spring formation**

Cambrian : Wyoming.

A. B. Shaw, 1954, *Wyo. Geol. Assoc. Guidebook 9th Ann. Field Conf.*, chart 2.**Buelna formation**

Lower Cambrian : Sonora, Mexico.

Christina Lochman, 1948, *Jour. Paleontology*, v. 22, no. 4, p. 455.G. A. Cooper and A. R. V. Arellano, 1952, *Smithsonian Misc. Coll.*, v. 119, no. 1, p. 4-5.

Bufo rhyolite series

Tertiary, lower: Chihuahua, Mexico.

R. T. Donald, 1935, Eng. and Mining Jour., v. 136, no. 12, p. 614.

Buffalo Hump formation

Precambrian (Beltian): Washington.

Ian Campbell and J. S. Loofbourow, Jr., 1946, (abs.) Geol. Soc. America Bull., v. 57, no. 12, pt. 2, p. 1250.

Buit Lake granite

Precambrian (post-Grenville): Quebec, Canada.

W. W. Longley, 1946, Quebec Dept. Mines Geol. Rept. 24, p. 16-17.

Buldir volcanics

Quaternary (?): Alaska (Aleutian Islands).

R. R. Coats, 1953, U. S. Geol. Survey Bull. 989-A, p. 8, 13-14.

Bulger Lake granite

Precambrian: Manitoba, Canada.

G. C. Milligan and W. F. Take, 1954, Manitoba Dept. Mines and Nat. Res. Mines Br. Pub. 53-1, p. 40-41.

Bulitan stage

Paleocene: California.

V. S. Mallory, 1953, (abs.) Jour. Paleontology, v. 27, no. 6, p. 903.

Bullitian stage.*See* Bulitan stage.**Bull Arm felsite member (of Musgravetown group)**

Precambrian (upper Proterozoic) or Lower Cambrian: Newfoundland, Canada.

A. O. Hayes, 1948, Newfoundland Geol. Survey Bull. 32, p. 16.

Bull Creek sand (in Hell Creek member of Lance formation)

Cretaceous: South Dakota.

E. P. Rothrock, 1937, S. Dak. State Geol. Survey Rept. Inv. 28, p. 10.

Bull Creek sandy limestone (in Greenhorn formation)

Upper Cretaceous: Montana and Wyoming.

M. N. Bramlette and W. W. Rubey *in* R. C. Moore, 1949, Geol. Soc. America Mem. 39, p. 27 (fig. 18).**Bull-Domingo agglomerate**

Age not stated: Colorado.

W. C. Peters, 1953, Econ. Geology, v. 48, no. 7, p. 599-600.

D. L. Reynolds, 1954, Am. Jour. Sci., v. 252, no. 10, p. 587.

Bullhead group

Lower Cretaceous: British Columbia, Canada.

R. T. D. Wickenden and George Shaw, 1943, Canada Geol. Survey Paper 43-13, p. 2-3.

Bullington member (of Magdalena formation)

Pennsylvania: New Mexico.

L. L. Ray and J. F. Smith, Jr., 1941, Geol. Soc. America Bull., v. 52, no. 2, p. 184.

Bullion Canyon volcanics

Tertiary: Utah.

Eugene Callaghan, 1939, Am. Geophys. Union Trans. 20th Ann. Meeting, pt. 3, p. 441-446.

Bull Mountain andesitic series

Tertiary : Arizona.

B. E. Thomas, 1949, *Econ. Geology*, v. 44, no. 8, p. 667-668.**Bull Shoals Mountain chert bed (in Powell dolomite)**

Lower Ordovician : Arkansas.

J. S. Cullison, 1944, *Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser.*, v. 15, no. 2, p. 39.**Bumpnose limestone member (of Crystal River limestone)**

Eocene (Jackson) : Florida.

W. E. Moore, 1955, *Fla. Geol. Survey Bull.* 37, p. 36-42.**Bunje cyclothem**

Pennsylvanian : Illinois.

H. R. Wanless, 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 9, p. 1764 (table 2).**Burchards limestone**

Middle Ordovician (Chazyan) : Vermont.

Marshall Kay and W. M. Cady, 1947, *Science*, v. 105, no. 2736, p. 601.**Burica sandstones**

Miocene, upper, or Pliocene, lower : Panama and Costa Rica.

R. A. Terry, 1941, *Geog. Review*, v. 31, no. 3, fig. 5.A. A. Olsson, 1942, *Bull. Am. Paleontology*, v. 27, no. 106, p. 173-175 (21-23).**Burin series**

Ordovician (?) : Newfoundland, Canada.

R. E. Van Alstine, 1948, *Newfoundland Geol. Survey Bull.* 23, p. 13.**Burkes Garden limestone member (of Benbolt limestone)**

Middle Ordovician : Virginia.

B. N. Cooper and C. E. Prouty, 1943, *Geol. Soc. America Bull.*, v. 54, no. 6, p. 869-871.**Burleigh granite gneiss**

Precambrian : Ontario, Canada.

Jack Satterly and D. F. Hewitt, 1955, *Ontario Dept. Mines Geol. Circ.* 2, p. 4.**Burlington granite**

Devonian : Newfoundland, Canada.

D. M. Baird, 1951, *Canada Geol. Survey Paper* 51-21, p. 45.**Burnais formation**

Silurian and/or Middle Devonian : British Columbia, Canada.

G. G. L. Henderson, 1954, *British Columbia Dept. Mines Bull.* 35, p. 25-27.**Burnam limestone**

Upper Ordovician : Texas.

V. E. Barnes, P. E. Cloud, Jr., and Helen Duncan, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 5, p. 1030-1043.**Burnt limestone**

Lower Cretaceous (Comanchean) : Texas.

Charles Schuchert, [1943], *Stratigraphy of the eastern and central United States* : New York, John Wiley and Sons, p. 957.**Burnt Canyon breccia**

Quaternary : California.

C. R. Allen, 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, map sheet 20.

Burnt Canyon limestone

Middle Cambrian : Nevada and Utah.

H. E. Wheeler, 1948, Nev. Univ. Bull., Geology and Mining Ser., no. 47, p. 36-38, fig. 5.

Burnt Gulch conglomerate

Miocene or Pliocene : Wyoming.

E. B. Branson and C. C. Branson, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 1, p. 143.

Burnt Lava flow

Recent : California.

M. A. Peacock, 1931, Geog. Review, v. 21, no. 2, p. 269-270.

H. A. Powers, 1932, Am. Mineralogist, v. 17, no. 7, p. 272, 275, pl. 1.

Burrego formation

Pennsylvanian (Missouri series) : New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 65.

Burro Canyon formation

Lower Cretaceous : Colorado, Arizona, and Utah.

W. L. Stokes and D. A. Phoenix, 1948, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 93.

Burroughs beds

Pennsylvanian : Illinois.

C. L. Cooper, 1946, Ill. State Geol. Survey Bull. 70, p. 12 (footnote), 13.

J. R. Ball, 1952, Ill. State Geol. Survey Bull. 77, p. 37-38.

Burrows dolomite

Middle Cambrian (Albertan) : Nevada.

H. E. Wheeler, 1940, Nev. Univ. Bull., Geology and Mining Ser., no. 34, p. 12, 27-29.

Burrows shale

Middle Cambrian : Nevada.

Charles Deiss, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 274.

Bursum formation

Permian (Wolfcamp age) : New Mexico.

R. H. Wilpolt and others, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 61.

Burtons Head group

Middle Ordovician (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, Newfoundland Geol. Survey Bull. 6, p. 10, 14.

Busby quartzite member (of Langston formation)

Cambrian : Utah and Idaho.

G. B. Maxey, 1955, Dissert. Abs., v. 15, no. 4, p. 558.

Butcherknife basalt

Tertiary or younger : Texas.

S. S. Goldich and M. A. Elms, 1949, Geol. Soc. America Bull., v. 60, no. 7, p. 1165-1168, pl. 1.

Butte Creek beds

Oligocene, upper, or Miocene, lower : Oregon.

W. D. Lowry, 1947, Geol. Soc. Oreg. Country News Letter, v. 13, no. 1, p. 5.

Butterly dolomite

Cambrian (Arbuckle group) : Oklahoma.

C. E. Decker, 1939, Geol. Soc. America Bull., v. 50, no. 7, p. 1317-1318, table 1.

Buttermilk Falls limestone

Devonian : Pennsylvania.

Bradford Willard, 1938, Pa. Geol. Survey, ser. 4, Bull. G 11, p. 5, 14, 16.

Butternut shale

Devonian : New York.

G. A. Cooper, 1941, Washington Acad. Sci. Jour., v. 31, no. 5, p. 180-181.

Buttrill Ranch member (of Dagger Flat formation)

Upper Cambrian : Texas.

J. L. Wilson, 1954, Jour. Paleontology, v. 28, no. 3, p. 251, 252.

Butts Ranch shale member (of Panoche group)

Upper Cretaceous : California.

I. F. Wilson, 1943, Calif. Jour. Mines and Geology, v. 39, no. 2, p. 203-204, 226 (fig. 5).

Buzzard Peak conglomerate member (of Topanga formation)

Miocene, middle : California.

A. O. Woodford, T. G. Moran, and J. S. Shelton, 1946, Am. Assoc. Petroleum Geologists Bull., v. 30, no. 4, p. 515, 518-519, 529-531.

Byron schist

Age not stated : Maine.

Kern Jackson, 1953, Maine State Geologist Rept. 1951-1952, p. 54-56.

Caballero formation

Mississippian (Kinderhook) : New Mexico.

L. R. Laudon and A. L. Bowsher, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 12, p. 2116-2117, 2122-2125.

Caballo Blanco rhyolite tuff

Tertiary : New Mexico.

F. J. Kuellmer and others, 1953, in N. Mex. Geol. Soc. Guidebook 4th Field Conf., p. 50 (geol. map).

Cabaniss group

Pennsylvanian (Des Moines series) : Oklahoma.

M. C. Oakes, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 6, p. 1525-1526.

Cable Canyon sandstone

Upper Ordovician (Cincinnatian) : New Mexico.

V. C. Kelley, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 10, p. 2201 (table).

V. C. Kelley and Caswell Silver, 1952, N. Mex. Univ. Pubs. in Geology 4, p. 58-59, fig. 4.

Caborca series

Upper Pennsylvanian : Sonora, Mexico.

Charles Schuchert, 1935, Historical geology of the Antillean-Caribbean region : New York, John Wiley and Sons, p. 138.

Cabot group

Precambrian : Newfoundland, Canada.

E. R. Rose, 1950, Canada Geol. Survey Paper (Prelim. Map) 50-24.

Cabresto metaquartzite

Precambrian : New Mexico.

P. F. McKinlay, [1955?], N. Mex. State Bur. Mines Min. Res. Bull. 42, p. 8.

Cacalote sandstone

Pre-Cretaceous : Oaxaca, Mexico.

Tomás Barrera, 1946, Guía geológica de Oaxaca : Mexico, Univ. Nac., Inst. Geología, p. 34, pl. 1.

Cacatro member (of Ciperó formation)

Oligocene: Trinidad, British West Indies.

R. M. Stainforth, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 7, p. 1300-1301.

Cache Lake gabbro

Precambrian: Quebec, Canada.

R. B. Graham, 1951, *Quebec Dept. Mines Prelim. Rept.* 259, p. 3.

Cachenian stage

Late Cretaceous: California.

P. O. Goudkoff, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 7, p. 991-993.

Caddo Pool formation

Pennsylvanian (Lampasas): Texas (subsurface).

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66, 86.

Cadillac granite

Upper Paleozoic: Maine.

G. H. Chadwick, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 73.

Cadillac group

Precambrian: Quebec, Canada.

H. C. Gunning and J. W. Ambrose, 1937, *Canadian Inst. Mining and Metallurgy Trans.*, v. 40, p. 345-346.

Cadotte member (of Peace River formation)

Lower Cretaceous: Alberta, Canada.

F. H. McLearn, 1944, *Canada Geol. Survey Paper* 44-17, p. 2, fig. 1.

Cahuenga beds

Cretaceous(?) : California.

G. J. Neunerburg, 1953, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 33, p. 6 (table 1), 19-20, pl. 1.

Caimito formation

Miocene, upper: Dominican Republic.

C. J. Maury, 1931, *Science*, v. 73, no. 1880, p. 43.

Caimitoan stage

Miocene, upper: Dominican Republic.

C. J. Maury, 1931, *Science*, v. 73, no. 1880, p. 43.

Cairn formation

Devonian: Alberta, Canada.

D. J. McLaren, 1955, *Canada Geol. Survey Bull.* 35, p. 17-19.

Calamity formation

Quaternary: Texas.

C. C. Albritton, Jr., and Kirk Bryan, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, p. 1863; 1939, v. 50, no. 9, p. 1434-1440.

Caldwell Canyon volcanics

Tertiary (post-Oligocene?): Wyoming.

J. D. Love, 1939, *Geol. Soc. America Special Paper* 20, p. 85-86.

Calef member (of Elliot formation)

Paleozoic (probably Ordovician and Silurian): New Hampshire.

Jacob Freedman, 1950, *Geol. Soc. America Bull.*, v. 61, no. 5, p. 456.

Calico phase (of Amargosa chaos)

Post-Miocene (?) : California.

L. F. Noble, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 1936; 1941, v. 52, no. 7, p. 968-972.

Caliente formation

Miocene, middle : California.

T. W. Dibblee, Jr., *in* Chester Stock, 1948, *Southern Calif. Acad. Sci. Bull.*, v. 46, pt. 2, p. 84.

Call sandstone member (of Panoche group)

Upper Cretaceous : California.

I. F. Wilson, 1943, *Calif. Jour. Mines and Geology*, v. 39, no. 2, p. 202-203, 226 (fig. 5).

Callahan flow

Recent : California.

M. A. Peacock, 1931, *Geog. Review*, v. 21, no. 2, p. 269-270.C. A. Anderson, 1941, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 25, no. 7, p. 370.

Calmar member (of Winterburn formation)

Devonian : Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, *Am. Soc. Petroleum Geologists Bull.*, v. 34, no. 9, p. 1815.

Caloso formation

Mississippian (Kinderhook) : New Mexico.

V. C. Kelley and Caswel Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 83, 86-87.A. K. Armstrong, 1955, *N. Mex. State Bur. Mines Min. Res. Circ.* 39, p. 3, 32.

Calumet granodiorite

Eocene, lower : Colorado.

C. H. Behre, Jr., E. F. Osborn, and E. H. Rainwater, 1936, *Econ. Geology*, v. 31, no. 8, p. 786-792.

Calvert ash bed (of Ash Hollow member of Ogallala formation)

Pliocene : Kansas.

J. S. Carey and others, 1952, *Kans. State Geol. Survey Bull.* 96, pt. 1, p. 9-11, 24-27.

Calvertian substage

Miocene, middle : Central Atlantic Coastal Plain.

D. S. Malkin, 1953, *Jour. Paleontology*, v. 27, no. 6, p. 767-768.

Camajan breccias (in Habana formation)

Upper Cretaceous (Maestrichtian) : Cuba.

H. J. MacGillavry, 1937, *Geog. Geol. Meded. (Utrecht Univ.) Physiol.-Geol. Reeks.*, no. 14, p. 20-21.

Camargo formation

Upper Ordovician (Richmond) : Tennessee.

C. W. Wilson, Jr., 1948, *Geol. Soc. America Bull.*, v. 59, no. 8, p. 742.

Camelback formation

Tertiary : Arizona.

D. A. Holm, 1938, *Oil Possibilities of Arizona* : Ariz. State Land Dept., p. 32-33.

Cameo member (of Price River formation)

Upper Cretaceous : Colorado.

R. G. Young, 1955, *Geol. Soc. America Bull.*, v. 66, no. 2, p. 191.

Cameron beds (of Tolchaco gravels)

Quaternary : Arizona.

Parry Reiche, 1937, *Am. Jour. Sci.*, 5th ser., v. 34, no. 200, p. 131-133.

Cameron Island granite

Precambrian: Saskatchewan, Canada.

D. A. W. Blake, 1951, Canada Geol. Survey Paper 51-7, p. 6.

Camino Cielo sandstone member (of Juncal formation)

Eocene, middle: California.

B. M. Page, J. G. Marks, and G. W. Walker, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 8, p. 1751-1752.

Camp member (of Denmark formation)

Middle Ordovician (Trentonian): New York.

P. A. Chenoweth, 1952, Geol. Soc. America Bull., v. 63, no. 6, p. 530.

Campana diabase and gabbro

Upper Mesozoic or Tertiary, lower: Sonora, Mexico.

W. G. Valentine, 1936, Geol. Soc. America Bull., v. 47, no. 1, p. 81-82.

Campanuladal sandstones and limestones

Age unknown: North Greenland.

P. J. Adams and J. W. Cowie, 1953, Meddel. om Grønland, bind 111, nr. 7, p. 9, 10.

Camp Davis formation

Pliocene, lower: Wyoming.

A. J. Eardley and others, 1944, Hoback-Gros Ventre-Teton Field Conference [geologic map]. Privately printed.

Leland Horberg, Vincent Nelson, and Victor Church, 1949, Geol. Soc. America Bull., v. 60, no. 1, p. 187, 190.

Camp Williams unit

Oligocene (?) to Pliocene (?) : Utah.

L. W. Slentz, 1955, Utah Geol. Soc. Guidebook 10, p. 24, 26-27.

Canada Head formation

Middle and Upper Ordovician: Newfoundland, Canada.

Frederick Betz, Jr., 1939, Newfoundland Geol. Survey Bull. 16, p. 22-23.

Cañas gypsum member (of Yeso formation)

Permian: New Mexico.

C. E. Needham and R. L. Bates, 1943, Geol. Soc. America Bull., v. 54, no. 11, p. 1660.

Cañas Arriba formation

Oligocene, lower: Puerto Rico.

R. C. Mitchell, 1954, Puerto Rico Univ. Agr. Expt. Sta. Tech. Paper 13, p. 36 (table 2), 54.

Candler formation

Paleozoic (?) : Virginia.

W. R. Brown, 1951, (abs.) Geol. Soc. America Bull., v. 62, no. 12, pt. 2, p. 1547; 1953, Ky. Geol. Survey, ser. 9, Special Pub. 1, [p. 9] (fig. 1).

Canebrake conglomerate

Pliocene: California.

T. W. Dibblee, Jr., 1954, Calif. Dept. Nat. Res., Div. Mines Bull. 170, chap. 2, p. 23.

Cane Hill member (of Hale formation)

Pennsylvanian: Arkansas.

L. G. Henbest, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 8, p. 1938-1939.

Canelo redbeds

Cretaceous (?) : Arizona.

J. H. Feth, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 1, p. 83, fig. 1.

Cane Spring formation

Upper Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada*: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].

Caney Creek member (of Brodhead formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper 22*, p. 159-160.

Caney Point marl member (of White Bluff formation)

Eocene (Jacksonian): Arkansas.

H. S. Puri, 1952, *Jour. Paleontology*, v. 26, no. 2, p. 202, 209.

L. J. Wilbert, Jr., 1953, *Ark. Div. Geology Bull.* 19, p. 56-69.

Canfmar formation

Miocene, middle: Cuba.

Jorge Brodermann, 1945, *Soc. Cubana Ingenieros Rev.*, v. 42, no. 1, p. 133, chart facing p. 144.

P. J. Bermudez, 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 295-296.

Canisteo shale member (of Perrysburg formation)

Upper Devonian: New York.

J. F. Pepper and Wallace de Witt, Jr., 1951, *U. S. Geol. Survey Oil and Gas Inv. Chart OC 45*.

Canjilon till

Quaternary: New Mexico.

H. T. U. Smith, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 103; 1938, *Jour. Geology*, v. 46, no. 7, p. 937, 959.

Cano member (of Mesaverde formation)

Upper Cretaceous: New Mexico.

C. E. Stearns, 1953, *Geol. Soc. America Bull.*, v. 64, no. 4, p. 463, 466, pl. 1.

Canoas siltstone member (of Kreyenhagen shale)

Eocene: California.

B. L. Clark, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 2, p. 189 [preprint 1941].

J. A. Cushman and S. S. Siegfus, 1942, *San Diego Soc. Nat. History Trans.*, v. 9, no. 34, p. 391.

Canoe Brook formation

Lower Cambrian: Nova Scotia, Canada.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 39-40.

Cañones andesite

Quaternary: New Mexico.

H. T. U. Smith, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 103; 1938, *Jour. Geology*, v. 46, no. 7, p. 937, 959.

Canso series

Pennsylvanian: Nova Scotia, Canada.

W. A. Bell, [1938], *Canada Geol. Survey Mem.* 215, p. 5.

Cantarranas formation

Cretaceous: Honduras.

R. H. Carpenter, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 27.

Cantinas sandstone

Upper Cretaceous: California.

N. L. Taliaferro, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 132 [preprint 1941].

Canutillo formation

Devonian: Texas.

L. A. Nelson, 1937, Colo. Univ. Studies, v. 25, no. 1, p. 89; 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 164.

Canyon basalt

Miocene and/or Pliocene: Wyoming.

A. D. Howard, 1937, Geol. Soc. America Special Paper 6, p. 36-39, 78.

Canyon sandstone (in Fort Creek formation)

Upper Devonian: Northwest Territories (Mackenzie), Canada.

J. S. Stewart, 1945, Canada Geol. Survey Paper 45-29, p. 20.

Canyon sandstone member (of Gething formation)

Lower Cretaceous: British Columbia, Canada.

F. H. McLearn and E. J. W. Irish, 1944, Canada Geol. Survey Paper 44-15, p. 8.

Canyon series (of Eleonore Bay formation)

Precambrian and (?) Lower Cambrian (Greenlandian): Northeast Greenland.

Erdhart Frankl, 1953, Meddel. om Grønland, bind 113, nr. 4, p. 16, 80, 82, 155.

Canyon Fjord formation

Middle Pennsylvanian: Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, Meddel. om Grønland, bind 149, nr. 7, p. 65-66.

Canyon Springs sandstone member (of Sundance formation)

Upper Jurassic: Wyoming and South Dakota.

R. M. Imlay, 1947, Am. Assoc. Petroleum Geologists Bull., v. 31, no. 2, p. 247-251.

Capdevila formation

Eocene, lower: Cuba.

R. H. Palmer, 1938, Field guide to geological excursion in Cuba: Habana, Cuba, Carasa y Cia, p. [16].

P. J. Bermudez, 1950, Soc. Cubana Historia Nat. Mem., v. 19, no. 3, p. 227-229.

Cape limestone

Upper Ordovician: Illinois and Missouri.

A. M. Gutstadt, 1954, Dissert. Abs., v. 14, no. 10, p. 1683.

Cape series

Precambrian: Miquelon Island, French North America.

Edgar Aubert de la Rüe, 1941, Exposé sur la géologie et les gites minéraux des Iles Saint-Pierre et Miquelon: St. Pierre, Imp. du Govt., p. 9.

Cape Anguille sandstone

Mississippian: Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1938, Newfoundland Geol. Survey Bull. 12, p. 11.

Cape Baird limestone

Ordovician: Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, Meddel. om Grønland, bind 149, nr. 7, p. 59.

Cape Biot formation

Upper Triassic: Northeast Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 1, p. 104, 111; nr. 2, p. 249-250.

Cape Brown and Hurry Inlet series

Permian or Lower Triassic: East Greenland.

Otto Nordenskjöld, 1907, Meddel. om Grønland, hefte 28, pt. 5, p. 178-184.

Cape Brule granite

Devonian: Newfoundland, Canada.

D. M. Baird, 1951, Canada Geol. Survey Paper 51-21, p. 49-52.

Cape Bull series

See Kap Bull series.

Cape Calhoun series

Middle and Upper Ordovician (Black River-Richmond): North Greenland.

G. T. Troedsson, 1926, Meddel. om Grønland, bind 71, nr. 1, p. 12, 111-115.

Cape Clay formation

Lower Ordovician (Upper Ozarkian): North Greenland.

Christian Poulsen, 1927, Meddel. om Grønland, bind 70, nr. 2, p. 245, 341-342.

Cape Columbia group

Precambrian or Paleozoic: Northwest Territories (Ellesmere Island).
Canada.

R. G. Blackadar, 1954, Canada Geol. Survey Paper 53-10, p. 8, 9.

Cape Dalton formation

Eocene: East Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 262.

Cape Edward Holm complex

Tertiary: Southeast Greenland.

L. R. Wager and W. A. Deer in L. R. Wager, 1937, Geog. Jour., v. 90, no. 5, p. 416.

L. R. Wager, 1947, Meddel. om Grønland, bind 134, nr. 5, p. 41-44, 46, pl. 6.

Cape Fear coquina

Pleistocene: North Carolina.

B. W. Wells, 1944, Elisha Mitchell Sci. Soc. Jour., v. 60, no. 2, p. 132.

Cape Fletcher series

Paleozoic: Northeast Greenland.

Otto Nordenskjöld, 1907, Meddel. om Grønland, hefte 28, pt. 5, p. 184-185, 196-208.

Cape Franklin conglomerate

See Kap Franklin conglomerate.

Cape Frederick VII formation

Cambrian (Lower Ozarkian?): North Greenland.

Christian Poulsen, 1927, Meddel. om Grønland, bind 70, nr. 2, p. 244, 341.

Cape Graah formation

Devonian: Northeast Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 242-243.

Cape Greg gneisses

Lower Paleozoic (Caledonian?): Northeast Greenland.

E. H. Kranck, 1935, Meddel. om Grønland, bind 95, nr. 7, p. 48-57.

Cape Gustav Holm series

See Kap Gustav Holm series.

Cape Hamburg formation

Lower Cretaceous (Neocomian) : Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 256-257.

Cape Ingersoll dolomite

Precambrian or Cambrian (Eo-Cambrian) : North Greenland, and Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 35-37.

Cape Kent formation

Lower Cambrian : North Greenland.

Christian Poulsen, 1927, *Meddel. om Grønland*, bind 70, nr. 2, p. 242, 339-340.

Cape Kolthoff series

See Kap Kolthoff series.

Cape Leiper dolomite

Precambrian or Cambrian (Eo-Cambrian) : North Greenland, and Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 35.

Cape Leslie sandstone

Jurassic : East Greenland.

Edvard Bay, 1895, *Meddel. om Grønland*, hefte 19, pt. 6, p. 162-163; pt. 9, p. 264.

Otto Nordenskjöld, 1907, *Meddel. om Grønland*, hefte 28, pt. 5, p. 188-189.

Cape Maurer formation

Upper Jurassic (Portlandian) : Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 256.

Cape Oswald formation

Precambrian or Lower Cambrian : Northeast Greenland.

Christian Poulsen, 1930, *Meddel. om Grønland*, bind 74, nr. 12, p. 300-305.

Cape Parry alkaline complex

Tertiary (?) : Northeast Greenland.

G. W. Tyrell, 1932, *Geol. Mag.*, v. 69, p. 520, 526-527.

Cape Rawson beds

Precambrian (Huronian?) : North Greenland, and Northwest Territories (Ellesmere Island), Canada.

W. H. Feilden and C. E. deRance, 1878, *Geol. Soc. London Quart. Jour.*, v. 34, p. 556, pl. 24.

Cape Rosier beds

Cambrian and Ordovician : Quebec, Canada.

E. M. Kindle, 1938, *Bull. Am. Paleontology*, v. 24, no. 82, p. 46 (12).

Cape Rouge series

Mississippian : Newfoundland, Canada.

G. R. Heyl, 1937, *Newfoundland Geol. Survey Bull.* 8, p. 14.

Cape Russell member (of Cape Wood formation)

Middle Cambrian : North Greenland, and Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 43-46.

Cape St. John group

Ordovician : Newfoundland, Canada.

D. M. Baird, 1951, *Canada Geol. Survey Paper* 51-21, p. 31-37.

Cape San Juan limestone

Upper Cretaceous : Puerto Rico.

C. J. Maury, 1929, *Science*, new ser., v. 70, no. 1825, p. 609.

Cape Schuchert formation

Middle Silurian (upper Llandovery) : North Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 237-238.

Cape Spencer flow

Triassic : Nova Scotia, Canada.

Sydney Powers and A. C. Lane, 1916, *Am. Inst. Mining Engineers Trans.*, v. 54, p. 446.

Cape Stewart formation

Upper Triassic (Rhaetic) : Northeast Greenland.

Alfred Rosenkrantz *in* Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1 p. 143.Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 251-252.

Cape Stosch formation

Permian : Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 115-118.

Cape Tyson formation

Middle Silurian (Tarannon-Wenlock) : North Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 239-241.

Cape Wardlaw complex

Pre-Devonian : Northeast Greenland.

Arne Noe-Nygaard, 1934, *Meddel. om Grønland*, bind 103, nr. 1, p. 14-16.

Cape Weber formation

Middle or Upper Ordovician (Black River or Richmond?) : Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 22-23.

Cape Webster formation

Middle Ordovician (Chazyan?) : North Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 233.

Cape With formation

Lower Jurassic(?) : Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 75.

Cape Wood formation

Middle Cambrian : North Greenland.

Christian Poulsen, 1927, *Meddel. om Grønland*, bind 70, nr. 2, p. 242-243, 340.

Capillano group

Recent : British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 11, map.

Capisit Lake granite

Precambrian : Quebec, Canada.

J. E. Gilbert, 1950, *Canadian Mining Jour.*, v. 71, no. 5, p. 76; 1951, *Quebec Dept. Mines Geol. Rept.* 48, p. 31-32.

Capita shale member (of Domengine formation)

Eocene: California.

M. B. Payne, 1951, Calif. Dept. Nat. Res., Div. Mines Special Rept. 9, p. 15.

Caplin Cove member (of Logy formation)

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, Newfoundland Geol. Survey Bull. 15, p. 13.

"Caprinula" limestone

See Titanosarcolithes limestone.

Capisit Lake granite

See Capisit Lake granite.

Capta zone (in Headland gneiss)

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, Newfoundland Geol. Survey Bull. 15, p. 11-12.

Capulin basalts

Recent: New Mexico.

Helen Stobbe, 1948, (abs.) Geol. Soc. America Bull., v. 59, no. 12, pt. 2, p. 1354-1355.

R. F. Collins, 1949, Geol. Soc. America Bull., v. 60, no. 6, p. 1023, 1031, pl. 1.

Caraba facies (of Calmito formation)

Oligocene, upper, to Miocene, lower: Panama Canal Zone.

S. M. Jones, 1950, Geol. Soc. America Bull., v. 61, no. 9, p. 901.

Caracol formation

Upper Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1937, Geol. Soc. America Bull., v. 48, no. 5, p. 616-620.

Carbon Butte shales

Precambrian (Kwaguntan): Arizona.

Charles Keyes, 1938, Pan-Am. Geologist, v. 70, no. 2, p. 107, 113.

Carbonear formation

Precambrian (Upper Proterozoic): Newfoundland, Canada.

R. D. Hutchinson, 1954, Canada Geol. Survey Mem. 275, p. 12-13.

Carbonera formation

Lower Cretaceous: Durango, Mexico.

R. W. Imlay, 1940, Geol. Soc. America Bull., v. 51, no. 1, p. 124.

Carcajou series

Upper Devonian: Northwest Territories (Mackenzie) and Yukon, Canada.

G. S. Hume and T. A. Link, 1945, Canada Geol. Survey Paper 45-16, p. 33.

Cardenas lava series

Precambrian: Arizona.

Charles Keyes, 1938, Pan-Am. Geologist, v. 70, no. 2, p. 110-111.

Cardenasan series

See Cardenas lava series.

Cardigan gneiss

Precambrian (?): Arizona.

James Gilluly, 1937, Ariz. Univ. Bull., v. 8, no. 1, p. 14-20.

Careaga sand or sandstone

Pliocene, upper: California.

C. R. Canfield, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 1, p. 54.

S. G. Wissler and F. E. Dreyer, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 2, p. 235 [preprint 1941].

Careage sand**Carega sand**

See Careaga sand or sandstone.

Caribou complex

Precambrian: Ontario, Canada.

G. M. Friedman, 1953, (abs.) *Geol. Soc. America Bull.*, v. 64, no. 12, pt. 2, p. 1425.

Caribou Hills glaciation

Pleistocene (pre-Wisconsin): Alaska.

D. B. Krinsley *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 5, 13 (table 1).

Caridad conglomerate

Age not stated: Sonora, Mexico.

W. R. Wade and Alfred Wandtke, 1920, *Am. Inst. Mining and Metall. Engineers Trans.*, v. 63, p. 383.

Caridad quartz monzonite

Age not stated: Sonora, Mexico.

W. R. Wade and Alfred Wandtke, 1920, *Am. Inst. Mining and Metall. Engineers Trans.*, v. 63, p. 383.

Carillon limestone

Cambrian and Ordovician: Quebec, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines: Peiping, China, University Press, Natl. Univ. Peking, p. 415, 424, 425, 550, 551.

Carimona member (of Platteville formation)

Middle Ordovician: Minnesota.

M. P. Weiss, 1955, *Jour. Paleontology*, v. 29, no. 5, p. 759-763.

Carl sandstone member (of Shenango formation)

Mississippian (middle Meramec or younger): Pennsylvania.

P. A. Dickey, R. E. Sherrill, and L. S. Matteson, 1943, *Pa. Geol. Survey, ser. 4, Bull. M 25*, p. 16.

Carlisle Center formation

Lower or Middle Devonian: New York.

Winifred Goldring and R. H. Flower, 1944, *Am. Jour. Sci.*, v. 242, no. 6, p. 340.

Carlotta formation

Pliocene to Pleistocene: California.

B. A. Ogle, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 164, p. 13 (fig. 3), 35-39, pl. 1.

Carlsbad formation

Upper Ordovician: Ontario, Canada.

A. E. Wilson, 1937, *Royal Soc. Canada Trans.*, ser. 3, v. 31, sec. 4, p. 46, 57; 1940, *Canada Geol. Survey Map* 588A.

Carlton slate

Precambrian: Minnesota.

A. E. Sandberg, 1938, *Geol. Soc. America Bull.*, v. 49, no. 5, p. 798, 810.

F. F. Grout and others, 1951, *Geol. Soc. America Bull.*, v. 62, no. 9, p. 1021, 1036.

Carman quartzite

Middle Ordovician (Chazyan): Vermont, and Quebec, Canada.

Marshall Kay, 1945 (abs.) *Geol. Soc. America Bull.*, v. 56, no. 12, pt. 2, p. 1172.

Carmel River member (of Bécancour River formation)

Ordovician: Quebec, Canada.

T. H. Clark, 1947, Quebec Dept. Mines Prelim. Rept. 204, p. 14.

Carmen [formation]

Eocene (Jackson): Vera Cruz, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.

Carmen formation

Pliocene, middle: Baja California, Mexico.

I. F. Wilson, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 9, p. 1768.

Carnahan Bayou member (of Fleming formation)

Miocene: Louisiana.

N. H. Fisk, 1940, *La. Dept. Conserv. Geol. Bull.* 18, p. 118, 154-158

Carnavon member (of Mount Head formation)

Carboniferous: Alberta, Canada.

R. J. W. Douglas, 1953, *Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 68.

Carolinás limestone

Pliocene or Pleistocene: Mariana Islands (Tinian).

Risaburo Tayama, 1936, *Geomorphology, geology, and coral reefs of Tinian Island together with Aguijan and Naftan Islands: Tōhoku Univ., Inst. Geology and Paleontology Contr. in Japanese Language*, no. 21, p. 21-26, 31 [English translation in library of U. S. Geol. Survey, p. 20-25, 31-32]; 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, table 4.

Caroline limestone

Pleistocene: Caroline Islands (Fais).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 347 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 68, table 5 [English translation in library of U. S. Geol. Survey, p. 82].

Carpenter limestone member (of Grayson formation)

Upper Cretaceous: Texas.

Elliot Gillerman, 1953, *U. S. Geol. Survey Bull.* 987, p. 27, 29, 30.

Carpenter sediments

Precambrian (Keewatin): Ontario, Canada.

G. L. Fletcher and T. N. Irvine, 1954, *Ontario Dept. Mines Ann. Rept.*, v. 63, pt. 5, p. 15.

Carpenter volcanics

Precambrian (Keewatin): Ontario, Canada.

G. L. Fletcher and T. N. Irvine, 1954, *Ontario Dept. Mines Ann. Rept.*, v. 63, pt. 5, p. 15.

Carriacou limestone

Miocene, lower (Aquitanian): The Grenadines (Carriacou), British West Indies.

E. Lehner, 1935, *Artesian water supply of Carriacou: St. Georges, Grenada, Govt. Printing Office*, p. 5, geol. map.

C. T. Trechmann, 1935, *Geol. Mag.*, v. 72, no. 12, p. 530, 532, 533, 539, 553.

Carrizozo lava flow

Recent: New Mexico.

J. E. Allen, 1951, *in* Roswell Geol. Soc. Guidebook 5th Field Conf., p. [8].**Carson conglomerate**

Tertiary, lower: New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.*, 13, p. 31, 48-49.**Carsonville granite**

Precambrian: Virginia.

A. J. Stose, 1942 (abs.) *Am. Geophys. Union Trans.* 23d Ann. Meeting, pt. 2, p. 342.**Carthew member (of Altyn formation)**

Precambrian (Belt): Alberta, Canada and Montana.

C. L. Fenton and M. A. Fenton, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1883-1884.**Casa Larga marls**

Eocene, upper: Panama Canal Zone.

[T. F. Thompson], 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap. 3, p. 8.**Cascajo conglomerate member (of San Joaquin formation)**

Pliocene, upper: California.

W. P. Woodring, Ralph Stewart, and R. W. Richards, 1940, *U. S. Geol. Survey Prof. Paper* 195, p. 49-54 [1941].**Cascan formation**

Pleistocene: Oregon.

E. T. Hodge, 1938, *Geol. Soc. America Bull.*, v. 49, no. 6, p. 879-886.**Casitas formation**

Pleistocene: California.

J. E. Upton, 1951, *U. S. Geol. Survey Water-Supply Paper* 1108, p. 21-23.**Cassa group**

Permian: Wyoming, Colorado, and South Dakota.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, *Nebr. Geol. Survey Bull.* 13, p. 2, 4, 19, 45.**Cassadaga stage**

Upper Devonian (Chautauquan): New York.

G. A. Cooper and others, 1942, *Geol. Soc. America Bull.*, v. 53, no. 12, pt. 1, p. 1734, Chart 4.**Cassel Hill member (of Catahoula formation)**

Miocene: Louisiana.

W. D. Chawner, 1936, *La. Dept. Conserv. Geol. Bull.* 9, p. 121-122.**Cass Fjord formation**

Lower Ordovician (Upper Ozarkian): North Greenland.

Christian Poulsen, 1927, *Meddel. om Grønland*, bind 70, nr. 2, p. 244, 341.**Castaic formation**

Miocene: California.

J. C. Crowell, 1955, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, map sheet 7.**Castalia sand**

Pleistocene: North Carolina.

B. W. Wells, 1944, *Elisha Mitchell Sci. Soc. Jour.*, v. 60, no. 2, p. 130-131.

Castiyo limestone

See Kasutesyo limestone.

Castle rhyolite

Tertiary: Wyoming.

R. E. Wilcox, 1944, *Geol. Soc. America Bull.*, v. 55, no. 9, p. 1053.

Castor Creek member (of Fleming formation)

Miocene: Louisiana.

H. N. Fisk, 1940, *La. Dept. Conserv. Geol. Bull.* 18, p. 118, 164-168.

Castro shale member (of Alhambra formation)

Eocene, upper: California.

C. E. Weaver, 1953, *Wash. [State] Univ. Pubs. in Geology*, v. 7, p. 19 (chart), 53-54.

Cataract basalt

Tertiary: Wyoming.

R. E. Wilcox, 1944, *Geol. Soc. America Bull.*, v. 55, no. 9, p. 1055-1056.

Cataract Falls sandstone (in Ste. Genevieve formation)

Mississippian: Indiana.

C. A. Malott, 1945, (abs.) *Ind. Acad. Sci. Proc.*, v. 55, p. 77 [1946].

Cathedral Valley agglomerate

Tertiary, upper: Alaska.

G. C. Kennedy and H. H. Waldron, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept.* 2, pt. 2, p. 12.

Cativa marl (in Gatun formation)

Miocene, middle: Panama.

H. N. Coryell and Suzanne Fields, 1937, *Am. Mus. Novitates* no. 956, p. 1.

Cat Mountain rhyolite

Tertiary: Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 729-731.

Caughnawaga member (of Laval formation)

Middle Ordovician (Chazy): Quebec, Canada.

T. H. Clark, 1944, *Royal Soc. Canada Trans.*, sec. 4, v. 38, p. 29.

Cave Creek formation

Cenozoic: Arizona.

H. E. Enlows, 1955, *Geol. Soc. America Bull.*, v. 66, no. 10, p. 1217.

Cayes limestone member (of Saint Bartholomew formation)

Eocene, middle: St. Bartholomew, French West Indies.

R. A. Christman, 1953, *Geol. Soc. America Bull.*, v. 64, no. 1, p. 70.

Cayuse limestone

Precambrian (Belt series): Montana.

Charles Deiss, 1943, *Geol. Soc. America Bull.*, v. 54, no. 2, p. 213, 215-216.

Cebada fine-grained member (of Careaga sandstone)

Pliocene, upper: California.

W. P. Woodring, M. N. Bramlette, and K. E. Lohman, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 27, no. 10, p. 1356-1358.

Cedar City tongue (of Kayenta formation)

Jurassic (?): Utah.

Paul Averitt and others, 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 12, p. 2521-2522.

Cedar Keys limestone

Paleocene : Florida (subsurface).

W. S. Cole, 1944, Fla. Geol. Survey Bull. 26, p. 27-28.

Cedar Mountain formation

Lower Cretaceous : Utah.

W. L. Stokes, 1944, Geol. Soc. America Bull., v. 55, no. 8, p. 966-967.

Cedar Mountain group

Lower Cretaceous : Utah and Colorado.

W. L. Stokes, 1944, Geol. Soc. America Bull., v. 55, no. 8, p. 989, fig. 2.

Cedar Rapids granite

Precambrian (post-Keewatin) : Quebec, Canada.

W. W. Longley, 1946, Quebec Dept. Mines Geol. Rept. 24, p. 11, 13.

Cedral formation

Miocene, upper : Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, correlation chart.

Manuel Alvarez, Jr., 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 2, p. 376.

Cedros beds

Pliocene and Pleistocene : Trinidad, British West Indies.

C. J. Maury, 1925, Bull. Am. Paleontology, v. 10, no. 42, p. 169 (17).

R. A. Liddle, [1928], The geology of Venezuela and Trinidad : Fort Worth, Tex., J. P. MacGowan, p. 487-488.

Cedros Point beds

See Cedros beds.

Céloron granite

Precambrian (post-Keewatin) : Quebec, Canada.

W. W. Longley, 1946, Quebec Dept. Mines Geol. Rept. 24, p. 13-14.

Centerpoint volcanic facies (of Eagleford formation)

Cretaceous : Arkansas, Louisiana, and Texas.

R. T. Hazzard, 1939, Shreveport Geol. Soc. Guidebook 14th Ann. Field Trip, p. 143, 147-148.

Central series

Precambrian : Ontario, Canada.

L. C. Gratton and others, 1933, Canadian Inst. Mining and Metallurgy Trans., v. 36, p. 3.

Central Fee unit (in Sycamore Canyon member of Puente formation)

Miocene, upper : California.

C. J. Kundert, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 18, p. 6-7.

Central Plain tuff formation

Oligocene : Antigua, British West Indies.

Alfred Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1581, 1594, 1596.

Centre Hill complex

Precambrian : Ontario, Canada.

Jack Satterly, 1952, Ontario Dept. Mines Ann. Rept., v. 60, pt. 8, p. 19.

Centre Lake leuco-granite gneiss

Precambrian : Ontario, Canada.

Jack Satterly and D. F. Hewitt, 1955, Ontario Dept. Mines Geol. Circ. 2, p. 5.

Centrum limestone

Ordovician and Silurian: North Greenland.

P. J. Adams and J. W. Cowie, 1953, *Meddel. om Grønland*, bind 111, nr. 7, p. 9, 12-14, 17.

Cerbat complex

Precambrian (Archean): Arizona.

B. E. Thomas, 1949, *Econ. Geology*, v. 44, no. 8, p. 666.

Cerro Gigante basalt

Miocene, lower: Panama.

S. M. Jones, 1950, *Geol. Soc. America Bull.*, v. 61, no. 9, p. 898 (correlation table), 901.

Cerro Ladron facies (of El Doctor limestone)

Lower Cretaceous: Queretaro, Mexico.

B. W. Wilson, J. P. Hernández M., and E. Meave T., 1955, *Soc. Geol. Mexicana Bol.*, tomo 18, no. 1, p. 5, fig. 2.

Cerro Prieto formation

Lower Cambrian: Sonora, Mexico.

G. A. Cooper and A. R. V. Arellano, 1952, *Smithsonian Misc. Coll.*, v. 119, no. 1, p. 5.

Cerros shale member (of Lodo formation)

Paleocene and Eocene: California.

R. T. White, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 257; 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 10, p. 1738.

Cerrotejonian stage

Pliocene, early: California.

D. E. Savage, 1955, *Calif. Univ. Pubs. Geol. Sci.*, v. 31, no. 1, p. 11-19.

Cerro Topila beds

Tertiary (Neogene): Tamaulipas and Vera Cruz, Mexico.

Walther Staub, 1928, *Eclogae Geologicae Helvetiae*, v. 21, no. 1, p. 123-124.

Chacha limestone

Pleistocene: Mariana Islands (Saipan).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 57-58, table 4 [English translation in library of U. S. Geol. Survey, p. 68-69.]

Chadbourne series

Precambrian: Quebec, Canada.

H. J. Conolly and R. C. Hart, 1936, *Canadian Inst. Mining and Metallurgy Trans.*, v. 39, p. 11.

Chadronian age

Oligocene: North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 11, pl. 1.

Chagres alluvium

Pleistocene and Recent: Panama and Panama Canal Zone.

S. M. Jones, 1950, *Geol. Soc., America Bull.*, v. 61, no. 9, p. 898 (correlation table), 904.

Chalk Hills member (of Catahoula formation)

Miocene: Louisiana.

W. D. Chawner, 1936, *La. Dept. Conserv. Geol. Bull.* 9, p. 122-124.

Chalma shale (of Chicontepec formation)

Eocene, lower : Tamaulipas, Mexico.

Arnold Heim, 1940, *Eclogae Geologicae Helvetiae*, v. 33, no. 2, p. 330.**Chalmers quartz monzonite**

Tertiary : Colorado.

J. T. Stark and others, 1949, *Geol. Soc. America Mem.* 33, p. 81, 84-86.**Chalybeate limestone member (of Porters Creek clay formation)**

Paleocene (Midway group) : Mississippi.

F. S. MacNeil, 1946, *U. S. Geol. Survey Strategic Minerals Inv. Prelim. Rept.* 3-195, p. 9.**Chambless limestone**

Lower Cambrian : California.

J. C. Hazzard, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 241.**Champion revolution**

Precambrian : Michigan.

W. A. Seaman *in* A. K. Snelgrove, W. A. Seaman, and V. L. Ayres, 1944, *Mich. Dept. Conserv. Geol. Survey Div. Progress Rept.* 10, p. 13-14, table 1.**Chana member (of Pecatonica formation)**

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 12.**Chance Harbour granite**

Post middle Carboniferous : New Brunswick, Canada.

H. R. Belyea, 1944, *Acadian Naturalist*, v. 1, no. 3, p. 88.**Chances Branch dolomite member (of Maynardville limestone)**

Upper Cambrian : Virginia.

R. L. Miller and J. O. Fuller, 1947, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 76.**Chandler formation**

Lower and Upper Cretaceous : Alaska.

George Gryc. W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 164.**Chandler Falls member (of Trenton formation)**

Middle Ordovician : Michigan.

R. C. Hussey, 1952, *Mich. Dept. Conserv. Geol. Survey Div. Pub.* 46, *Geol. Ser.* 39, p. 13-14.**Chaney Ranch sandstone formation**

Eocene : California.

M. B. Payne, 1951, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 9, p. 15-18.**Chapatan formation**

Eocene : Vera Cruz, Mexico.

G. P. Salas, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 8, p. 1393.**Chapin Wash formation**

Pliocene, lower : Arizona.

S. G. Lasky and B. N. Webber, 1949, *U. S. Geol. Survey Bull.* 961, p. 23-34.**Chapman Gulch glaciation**

Pleistocene (Cochrane?) : Colorado.

R. L. Nelson, 1954, *Jour. Geology*, v. 62, no. 4, p. 333-334.

Chapman Ridge sandstone

Middle Ordovician: Tennessee.

J. M. Cattermole, 1955, U. S. Geol. Survey Geol. Quadrangle Map GQ 76.

Chapparal sandstone (in Saavedra member of Lowell formation)

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1949, Geol. Soc. America Mem. 38, p. 11.

Charco Azul formation

Pliocene: Panama and Costa Rica.

R. A. Terry, 1941, Geog. Review, v. 31, no. 3, p. 382, fig. 5.

A. A. Olsson, 1942, Bull. Am. Paleontology, v. 27, no. 106, p. 164-167 (12-15).

Charco Redondo limestone

Eocene, middle: Cuba.

W. P. Woodring and S. N. Daviess, 1944, U. S. Geol. Survey Bull. 935-G, p. 367-374.

W. P. Woodring, 1952, Jour. Paleontology, v. 26, no. 1, p. 60.

Charcot Bay sandstone

See Charcotbucht sandstone.

Charcotbucht sandstone

Upper Jurassic (Oxfordian?): East Greenland.

Hermann Aldinger, 1935, Meddel. om Grønland, bind 99, nr. 1, p. 54-57, pl. 3.

Charles formation

Mississippian: Subsurface in Montana and North Dakota.

O. A. Seager, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 5, p. 863, 864.

Charlie Lake formation

Triassic: British Columbia, Canada.

L. M. Clark, 1954, (abs.) Alberta Soc. Petroleum Geologists News Bull., v. 2, no. 6, p. 5.

Charlotte group

Ordovician (?): New Brunswick, Canada.

F. J. Alcock, 1946, Canada Geol. Survey Paper (Prelim. Map) 46-3.

Charlottesville formation

Age not stated: Virginia.

W. A. Nelson, 1949, (abs.) Va. Acad. Sci. Proc. 1948-1949, p. 140.

Charney formation

Lower Cambrian: Quebec, Canada.

Franco Rasetti, 1946, Geol. Soc. America Bull., v. 57, no. 7, p. 698-700.

Charter member (of Mt. Simon formation)

Upper Cambrian: Illinois (subsurface).

J. S. Templeton, Jr., 1950, Ill. Acad. Sci. Trans., v. 43, p. 156.

Chase Channel formation

Pleistocene (Nebraskan and Aftonian): Kansas.

R. C. Moore, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 7, p. 1278.

O. S. Fent, 1950, Kans. State Geol. Survey Bull. 85, p. 64-65.

Chatcha limestone

See Chacha limestone.

Chatham limestone

Cambrian and Ordovician: Quebec, Canada.

A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines: Peiping, China, University Press, Natl. Univ. Peking, p. 415, 421, 424, 425, 550, 551.

Chatton Bay sandstone

Jurassic: East Greenland.

L. F. Spath, 1936, Meddel. om Grønland, bind 99, nr. 3, p. 10.

Chaudiere formation

Paleocene: Trinidad, British West Indies.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 529.

H. G. Kugler, 1953, Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull., v. 20, no. 59, p. 39, 41.

Chavez member (of Morrison formation)

Jurassic: New Mexico.

C. T. Smith, 1951, in N. Mex. Geol. Soc. Guidebook 2d Field Conf., p. 13, 38; 1954, N. Mex. Bur. Mines Min. Res. Bull. 31, p. 15-16.

Chemard Lake lignite lentil (of Naborton formation)

Paleocene (Midway): Louisiana.

D. P. Meagher and L. C. Aycock, 1942, La. Dept. Conserv. Geol. Pamph. 3, p. 12-16.

G. E. Murray, 1948, La. Dept. Conserv. Geol. Bull. 25, p. 98-100.

Chenango sandstone

Devonian: New York.

G. A. Cooper, 1941, Washington Acad. Sci. Jour., v. 31, no. 5, p. 180.

Cheneyan stage

Paleocene: California.

P. P. Goudkoff, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 7, p. 967-982.

Cherry Canyon formation

Permian (Guadalupe series): Texas.

P. B. King in R. K. DeFord and E. R. Lloyd, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 8.

P. B. King, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 4, p. 579-580, pl. 2.

Cherry Creek member (of Venango formation)

Upper Devonian (Conewangan): New York.

I. H. Tesmer, 1954, Dissert. Abs., v. 14, no. 12, p. 2317, 2318.

Cherryville quartz monzonite

Devonian (?): North Carolina and South Carolina.

W. R. Griffiths and W. C. Overstreet, 1952, Am. Jour. Sci., v. 250, no. 11, p. 783-786.

Chert Hill formation

Upper Cretaceous: Trinidad, British West Indies.

H. G. Kugler, 1950, Asociación Venezolano de Geología, Minería y Petróleo Bol., tomo 2, no. 1, p. 61.

Chertsey facies (of Morin anorthosite)

Precambrian: Quebec, Canada.

F. F. Osborne, 1949, Royal Soc. Canada Trans., sec. 4, v. 43, p. 104.

Chestnut Ridge sandstone

Lower Mississippian (Kinderhook): Pennsylvania.

W. M. Laird, 1941, Pa. Topog. and Geol. Survey Progress Rept. 126, p. 16 (footnote).

Chesuncook limestone

Silurian : Maine.

Bradford Willard, 1945, *Jour. Paleontology*, v. 19, no. 1, p. 67-68.**Chetwynd granite**

Devonian : Newfoundland, Canada.

J. R. Cooper, 1954, *Canada Geol. Survey Mem.* 276, p. 29.**Cheval beds**

Upper Cretaceous : Manitoba, Canada.

W. M. Tovell, 1951, *Manitoba Dept. Mines and Nat. Res. Mines Br. Prelim. Rept.* 47-7, p. 4.**Cheviot formation**

Devonian : Alberta, Canada.

F. G. Fox, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 4, p. 830-834.**Chicago Mound formation**

Permian : Kansas and Nebraska.

G. E. Condra and E. C. Reed, 1943, *Nebr. Geol. Survey Bull.* 14, p. 36, 37.**Chickahominy formation**

Eocene, upper (Jackson age) : Virginia (subsurface).

J. A. Cushman and D. J. Cederstrom, 1945, *Va. Geol. Survey Bull.* 67, p. 2-3.**Chickasaw Creek formation**

Pennsylvanian (Bendian) : Oklahoma.

B. H. Harlton, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 7, p. 854, 874-878.**Chico phonolites**

Quaternary : New Mexico.

Helen Stobbe, 1948, (abs.) *Geol. Soc. America Bull.*, v. 59, no. 12, pt. 2, p. 1354-1355.R. F. Collins, 1949, *Geol. Soc. America Bull.*, v. 60, no. 6, p. 1034-1036, pl. 1.**Chico Creek beds**

Upper Cretaceous : California.

F. M. Anderson, 1937, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1612.**Chicoma volcanic formation**

Tertiary, middle : New Mexico.

H. T. U. Smith, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 103; 1938, *Jour. Geology*, v. 46, no. 7, p. 939-940, 958.**Chicopee formation**

Pre-Carboniferous (?) : California.

R. B. Guillou, 1953, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 31, p. 5 (fig. 2), 7-10.**Chicopee Canyon formation***See* Chicopee formation.**Chico Shunie quartz monzonite**

Mesozoic (?) : Arizona.

James Gilluly, 1937, *Ariz. Univ. Bull.*, v. 8, no. 1, p. 23-27.**Chikaskia member (of Harper sandstone)**

Permian : Kansas and Oklahoma.

G. H. Norton, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1557; 1939, v. 23, no. 12, p. 1782-1785.

Childs latite

Pliocene (?) : Arizona.

James Gilluly, 1937, *Ariz. Univ. Bull.*, v. 8, no. 1, p. 47-48.

Chile limestone

Middle Cretaceous : Michoacan, Mexico.

E. J. Guzman, 1950, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 2, no. 2, strat. columns.

Chilibrillo limestone member (of Caimito formation)

Miocene, lower : Panama Canal Zone and Panama.

A. A. Olsson, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 234 (correlation chart).

W. P. Woodring and T. F. Thompson, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 2, p. 235.

Chimney Arm formation

Lower Ordovician : Newfoundland, Canada.

Frederick Betz, Jr., 1939, *Newfoundland Geol. Survey Bull.* 16, p. 17-19.

Chimney Rock tongue (of Blair formation)

Upper Cretaceous : Wyoming.

L. A. Hale, 1950, *Wyo. Geol. Assoc. Guidebook 5th Ann. Field Conf.*, p. 52, fig. 1.

China Creek andesite

Triassic : British Columbia, Canada.

J. S. Stevenson, 1945, *British Columbia Minister Mines Ann. Rept.* 1944, p. A-145.

Chinal limestone

Eocene, middle and upper : Tabasco and Chiapas, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 278, correlation chart.

Chinal shales

Eocene, middle and upper : Tabasco and Chiapas, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 278, correlation chart.

Chinameca limestone

Upper Jurassic to Lower Cretaceous : Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.

Luis Benavides G., 1950, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 2, no. 10, p. 604-606.

China Mountain formation

Lower and Middle (?) Triassic : Nevada.

H. G. Ferguson, S. W. Muller, and R. J. Roberts, 1951, *Geology of the Winnemucca quadrangle, Nevada* : U. S. Geol. Survey Geol. Quadrangle Map [GQ 11].

China Ranch beds

Quaternary : California.

J. F. Mason, 1948, *Geol. Soc. America Bull.*, v. 59, no. 4, p. 336 (table 1), pl. 2.

Chinchaga formation

Devonian : Alberta, Canada (subsurface).

J. Law, 1955, *Alberta Soc. Petroleum Geologists Jour.*, v. 3, no. 6, p. 83.

Chinook member (of Wapiabi formation)

Upper Cretaceous : Alberta, Canada.

Joseph Gleddie, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 4, p. 523-524.

Chioack conglomerate-sandstone

Precambrian : Quebec, Canada.

P. E. Auger, 1954, *Canadian Mining and Metall. Bull.*, v. 47, no. 8, p. 530.

Chipman group

Middle Ordovician (Chazyan) : Vermont.

Marshall Kay and W. M. Cady, 1947, *Science*, v. 105, no. 2736, p. 601.

Chiquito sandstone

Precambrian (Chuaran) : Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 112.

Chisholm Creek shale member (of Wellington formation)

Permian : Kansas.

W. A. Ver Wiebe, 1937, *Wichita Municipal Univ. Bull.*, v. 12, no. 5, p. 11-12.

Chiva Chiva andesite

Pre-Pliocene : Panama Canal Zone.

[T. F. Thompson] 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap. 3, p. 27.

Chival [formation]

Cretaceous (Albian) : Tabasco, Mexico.

G. P. Salas and Ernesto Lopez Ramos, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 1-2, table 1.

Chiwaukum schist

Pre-Ordovician : Washington.

B. M. Page, 1940, *Stanford Univ. Abs. Dissert.*, v. 15, p. 118.

Chloride granite

Precambrian : Arizona.

M. G. Dings, 1951, *U. S. Geol. Survey Bull.* 978-E, p. 129.

Cholla member (of Lowell formation)

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 10, 16.

Cholla Canyon tongue (of Cliff House sandstone)

Upper Cretaceous : New Mexico.

P. T. Hays and A. D. Zapp, 1955, *U. S. Geol. Survey Oil and Gas Inv. Map OM 144.*

Choptankian substage

Miocene, middle : Central Atlantic Coastal Plain.

D. S. Malkin, 1953, *Jour. Paleontology*, v. 27, no. 6, p. 767-768.

Chorrera basalt

Miocene, lower : Panama.

S. M. Jones, 1950, *Geol. Soc. America Bull.*, v. 61, no. 9, p. 898 (correlation table).

Christine member (of Yegua formation)

Eocene : Texas.

H. D. McCallum, 1947, *S. Tex. [Geol. Soc. Guidebook] 14th Ann. Meeting Field Trip*, p. 5.

Christopher formation

Lower Cretaceous or younger : Northwest Territories (Ellef Ringnes Island), Canada.

W. W. Heywood, 1955, *Canadian Mining and Metall. Bull.*, v. 48, no. 514, p. 60, 61.

Christy Creek siltstone member (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper 22*, p. 180-182.

- Chubbuck marble member** (of Essex series)
Precambrian (Archean) : California.
J. C. Hazzard and E. F. Dosch, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 309.
- Chuchi Lake syenite**
Upper Jurassic or Lower Cretaceous : British Columbia, Canada.
J. E. Armstrong, 1949, *Canada Geol. Survey Mem.* 252, p. 109-110.
- Chuckwalla complex**
Precambrian : California.
W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, no. 1, p. 16-20.
- Chuctanunda Creek dolomite**
Lower Ordovician (lower Canadian) : New York.
D. W. Fisher, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 76 (fig. 2), 77, 90-92.
- Chucunaque formation**
Miocene, upper : Panama.
Karl Sapper, 1937, *Mittelamerika, Handbüch der regionalen Geologie* : Heidelberg, Band 8, Abt. 4a, Heft 29, p. 133, 134 (correlation chart).
- Chumway rhyolite**
Oligocene : Colorado.
J. E. Vever, 1954, *Dissert. Abs.*, v. 14, no. 7, p. 1088.
- Chungo member** (of Brazeau formation)
Upper Cretaceous : Alberta, Canada.
A. H. Lang, 1946, *Canada Geol. Survey Paper* 46-5, p. 15.
- Church Creek beds**
Eocene to Oligocene : California.
Parry Reiche, 1937, *Calif. Univ. Pubs. Dept. Geol. Sci. Bull.*, v. 24, no. 7, p. 144-146, geol. map.
- Cialitos limestone**
Upper Cretaceous : Puerto Rico.
R. C. Mitchell, 1954, *Puerto Rico Univ. Agr. Expt. Sta. Tech. Paper* 13, p. 47, 48.
- Cienda limestone** (in Pacheta member of Lowell formation)
Lower Cretaceous : Arizona.
A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 33, p. 12.
- Cieneguilla formation**
Pennsylvanian (Des Moines) : New Mexico.
J. A. Young, Jr., 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1247.
- Cieneguilla limburgite**
Tertiary : New Mexico.
C. E. Stearns, 1953, *Geol. Soc. America Bull.*, v. 64, no. 4, p. 467 (fig. 3), 468, pl. 1.
- Ciervian stage**
Late Cretaceous : California.
P. P. Goukoff, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 7, p. 982-985.
- Cima sandstone lentil** (in Dos Palos shale member of Moreno formation)
Cretaceous or Paleocene (?) : California.
M. B. Payne, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1953.
- Cimarron anhydrite**
Permian : Oklahoma.
Henry Schweer, in O. E. Brown, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1553 (fig. 9).

Cinchona limestone (in Mt. Hybla beds)

Eocene, lower : Jamaica, British West Indies.

C. A. Matley, 1951, *Geology and physiography of the Kingston district, Jamaica* : Inst. of Jamaica, p. 57.

Cintalapa beds

Age not stated : Chiapas, Mexico.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie* : Heidelberg, Band 8, Abt. 4a, Heft 29, pls. 5a, 5b.

Cipero marl formation

Oligocene : Trinidad, British West Indies.

M. L. Thomas, 1924, *Oil Eng. and Finance*, v. 5, no. 98, p. 328.

R. M. Stainforth, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 7, p. 1292-1313.

Cipero Creek marl

See Cipero marl formation.

Cipiapa limestone

Middle Cretaceous : Puebla, Mexico.

J. G. Aguilera, 1906, 10^e Cong. Géol. Internat., Mexico, *Guide des Excursions* 7, p. 13, 17.

R. W. Imlay, 1944, *Geol. Soc. America Bull.*, v. 55, no. 8, p. 1017, Chart 10a.

Cisco Lake sandstone

Pennsylvanian : Texas.

F. B. Plummer, 1947, *Jour. Geology*, v. 55, no. 3, pt. 2, p. 194 (table 1).

Cistern member (of Yegua formation)

Eocene : Texas.

H. D. McCallum, 1947, *S. Tex. [Geol. Soc. Guidebook] 14th Ann. Meeting Field Trip*, p. 4, 5.

City Creek limestone

Upper Devonian : Utah.

A. E. Granger and others, 1952, *Utah Geol. Soc. Guidebook* 8, p. 8.

City Creek series

Precambrian : Arizona.

E. D. Wilson, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1118, 1126-1127.

Clackamas gravels

Pleistocene : Oregon.

R. C. Treasher, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 2034; 1942, *Geologic map of the Portland area, Oregon (1 : 96,000)* : Oreg. State Dept. Geology and Mineral Res.

Clairmont formation

See Claremont formation.

Clarabelle granite

Precambrian (Algoman?) : Ontario, Canada.

Anonymous, 1937, *Canadian Mining Jour.*, v. 58, no. 11, p. 593.

Claremont formation

Pennsylvanian (?) : Nova Scotia, Canada.

G. W. H. Norman and W. A. Bell, 1938, *Canada Geol. Survey Map* 409A.

Clarendonian age

Pliocene: North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 12, pl. 1.**Clarita limestone**

Oligocene, lower: Panama.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie: Heidelberg, Band 8, Abt. 4a, Heft 29*, p. 133, 134 (correlation chart).**Clark Canyon lavas**

Tertiary, upper, or Pleistocene: Montana.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 377, pl. 1.**Clarkforkian age**

Paleocene: North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 9, pl. 1.**Clarkston stage**

Pleistocene (pre-Wisconsin): Washington.

R. L. Lupper, 1944, *Geol. Soc. America Bull.*, v. 55, no. 12, p. 1433-1435; 1945, *Jour. Geology*, v. 53, no. 5, p. 337-348.**Claverack conglomerate (in Schodack formation)**

Cambrian: New York.

G. H. Chadwick, 1946, *Am. Jour. Sci.*, v. 244, no. 8, p. 585.**Claverny albite granodiorite**

Precambrian (Archean): Quebec, Canada.

W. W. Weber, 1951, *Quebec Dept. Mines Prelim. Rept.* 255, p. 2.**Clay City siltstone member (of New Providence formation)**

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 123-125.**Claymont clay bed (in Silverado formation)**

Paleocene: California.

W. P. Woodring and W. P. Popenoe, 1945, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart* 12.**Claypole Hills sandstone (in McLeansboro formation)**

Pennsylvanian: Indiana and Illinois.

J. A. Culbertson, 1932, *The paleontology and stratigraphy of the Pennsylvanian strata between Caseyville, Ky. and Vincennes, Ind.*; *Abs. Thesis, III, Univ.: Urbana, Ill.* p. 7.**Clayton basalts**

Quaternary: New Mexico.

Helen Stobbe, 1948, (abs.) *Geol. Soc. America Bull.*, v. 59, no. 12, pt. 2, p. 1354-1355.
R. F. Collins, 1949, *Geol. Soc. America Bull.*, v. 60, no. 6, p. 1028-1030, pl. 1.**Clear Creek gravels**

Tertiary, lower: Wyoming.

R. P. Sharp, 1948, *Jour. Geology*, v. 56, no. 1, p. 1.**Clearwater volcanics**

Precambrian (Keewatin): Ontario, Canada.

F. J. Pettijohn, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 765.
Jack Satterly, 1943, *Ontario Dept. Mines Ann. Rept.*, v. 50, pt. 2, p. 28.

Cle Elum formation

Cretaceous: Washington.

R. L. Lupper, 1944, Wash. Dept. Conserv. Devel., Div. Geology Rept. Inv. 11, p. 7, 12-15, pl. 1.

Clement member (of Grand Detour formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., fig. 3.

Clements ville limestone member (of Brodhead formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 161-162.

Cléricy granodiorite

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 126-127.

Cléricy porphyritic syenites

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 116.

Cléricy sediments

Precambrian: Quebec, Canada.

H. M. Bannerman, 1940, Quebec Dept. Mines Geol. Rept. 4, p. 10-11.

Cleveland Gulch quartzite member (of Hopewell series)

Precambrian (Proterozoic): New Mexico.

Evan Just, 1937, N. Mex. School Mines Bull. 13, p. 42.

Cliff field formation

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, Geol. Soc. America Bull., v. 54, no. 6, p. 862-868.

Climax porphyry

Tertiary: Colorado.

E. J. Eisenach and Edward Matsen, 1954, Mining Eng., v. 6, no. 3, p. 274.

J. W. Vanderwilt and R. U. King, 1955, Mining Eng., v. 7, no. 1, p. 43-44.

Clinetop algal limestone member (of Dotsero formation)

Upper Cambrian: Colorado.

N. W. Bass and S. A. Northrop, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 5, p. 899-904.

Cloice member (of Lake Waco formation)

Cretaceous (Gulf): Texas.

W. S. Adkins and F. E. Lozo *in* F. E. Lozo, 1951, Fondren Sci. Series, no. 4, p. 122, fig. 25.**Cloud Rapids formation**

Middle Cambrian: Newfoundland, Canada.

Frederick Betz, Jr., 1939, Newfoundland Geol. Survey Bull. 16, p. 15-16.

Cloud River granite

Precambrian: Newfoundland, Canada.

C. E. Fritts, 1953, Newfoundland Geol. Survey Rept. 4, p. 14-15.

Cloudy Pass diorite

Tertiary: Washington.

E. A. Youngberg and T. L. Wilson, 1952, *Econ. Geology*, v. 47, no. 1, p. 4, 5.

Clover member (of Loysburg formation)

Middle Ordovician (Chazyan?): Pennsylvania.

G. M. Kay, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1969.

Cloverdale sediments

Pleistocene to Recent: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 11, map.

Clovis beds

Pleistocene: New Mexico.

Ernst Antevs, 1935, *Acad. Nat. Sci. Phila. Proc.*, v. 87, p. 305-306.

Cloyd conglomerate member (of Price formation)

Mississippian: Virginia.

Charles Butts, 1940, *Va. Geol. Survey Bull.* 52, pt. 1, p. 343, 346, 347.

Coahuila group

Lower Cretaceous: Coahuila, Durango, and Nuevo Leon, Mexico, and Texas.

R. W. Imlay, 1940, *Geol. Soc. America Bull.*, v. 51, no. 1, p. 124-125.

Coal Brook member (of Stellarton series)

Pennsylvanian: Nova Scotia, Canada.

W. A. Bell, 1940, *Canada Geol. Survey Mem.* 225, p. 34-43 [1941].

Coal City limestone

Pennsylvanian (Des Moines): Iowa, Missouri, and Oklahoma.

L. M. Cline, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 1, p. 59-60, 64.

Coal Creek serpentine

Precambrian: Texas.

V. E. Barnes, 1940, *in Geol. Soc. America [Guidebook] 53d Ann. Meeting*, p. 53 (geol. map).

Coaldale chert

Ordovician (?): Nevada.

B. M. Page, 1949, (abs.) *Geol. Soc. America Bull.*, v. 60, no. 12, pt. 2, p. 1943.

Coalspur beds

Paleocene: Alberta, Canada.

Canada Geological Survey, 1951, *Canada Geol. Survey Map* 1002A.

Coalvale cyclothem or formation

Pennsylvanian (Des Moines): Kansas.

G. E. Abernathy, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 18, 20, 22; 1938, *Kans. Acad. Sci. Trans.*, v. 41, p. 193, 195.

Coane formation

Pennsylvanian (Missouri series): New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 60-61.

Coatzacoatlán formation

Oligocene: Vera Cruz, Mexico.

Ramiro Robles Ramos, 1942, *Irrigación en Mexico*, v. 23, no. 3, p. 45 (correlation chart).Luis Limón-Gutiérrez, 1950, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 2, no. 10, p. 617-619.

Cobalt tillite or conglomerate (in Gowganda formation)

Precambrian (Huronian) : Ontario, Canada.

A. P. Coleman, 1926, *Ice ages recent and past* : New York, MacMillan Co., p. 220-226.**Coban limestone**

Cretaceous : Guatemala.

Karl Sapper, 1899, *Petermanns geog. Mitt. Ergänzungsbd. 27, Heft 127*, p. 65; 1937, *Mittelamerika, Handbuch der regionalen Geologie* : Heidelberg, Band 8, Abt. 4a, Heft 29, p. 28-29.**Cobb Mountain volcanics**

Quaternary : California.

J. C. Brice, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull. 166*, p. 12, 37, pl. 7.**Cobre series**

Eocene : Cuba.

Stephen Taber, 1931, *Jour. Geology*, v. 39, no. 6, p. 537-541; 1934, *Geol. Soc. America Bull.*, v. 45, no. 8, p. 576-581, pl. 59.**Cobwebb basalt**

Pliocene, lower (?) : Arizona.

S. G. Lasky and B. N. Webber, 1949, *U. S. Geol. Survey Bull. 961*, p. 34-35.**Cochixtla beds**

Lower Cretaceous : Michoacan, Mexico.

E. J. Guzman, 1950, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 2, no. 2, strat. columns.**Cochrane glacial substage**

Pleistocene (Wisconsin) : North America.

Kirk Bryan and L. L. Ray, 1940, *Smithsonian Misc. Coll.*, v. 99, no. 2, p. 68.**Cochrane limestone member (of Chimneyhill formation)**

Lower Silurian : Oklahoma.

R. A. Maxwell, 1936, *Northwestern Univ. Summaries of Doctoral Dissert.*, v. 4, p. 132, 133.**Cockrum sandstone**

Upper Cretaceous : Kansas.

B. F. Latta, 1941, *Kans. State Geol. Survey Bull. 37*, p. 73-79.**Cocoran clay**

Pliocene, upper, to Pleistocene, middle : California (subsurface).

J. W. Frink and H. A. Kues, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 11, p. 2357-2371.**Codrington College marl**

Oligocene, lower : Barbados, British West Indies.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581, 1584.**Codroy breccia**

Mississippian : Newfoundland, Canada.

W. A. Bell, 1948, *Canada Geol. Survey Bull. 10*, p. 19.**Codroy series**

Mississippian : Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1937, *Newfoundland Dept. Nat. Res. Inf. Circ. 3*, p. 2, map; 1938, *Newfoundland Geol. Survey Bull. 12*, p. 11-12.

Codroy shale

Mississippian: Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1938, Newfoundland Geol. Survey Bull. 12, p. 12-13.

Coe group

Middle Silurian (Niagaran): Illinois.

H. A. Lowenstam, 1949, Ill. State Geol. Survey Rept. Inv. 145, p. 18.

Coffee Creek formation

Mississippian: Oregon.

C. W. Merriam, 1942, Jour. Paleontology, v. 16, no. 3, p. 372.

C. W. Merriam and S. A. Berthiaume, 1942, Geol. Soc. America Bull., v. 54, no. 2, p. 149-151.

Coffin Butte volcanics

Eocene, middle: Oregon.

I. S. Allison, 1953, Oreg. Dept. Geology and Mineral Industries Bull. 37, p. 3-5.

Cohn cyclothem

Pennsylvanian: Illinois.

W. A. Newton and J. M. Weller, 1937, Ill. State Geol. Survey Rept. Inv. 45, p. 18.

Cohutta schist

Precambrian: Georgia.

A. S. Furcron, K. H. Teague, and J. L. Calver, 1946, (abs.) Geol. Soc. America Bull., v. 57, no. 12, pt. 2, p. 1195; 1947, Ga. Geol. Survey Bull. 53, p. 6-9.

Coker formation

Upper Cretaceous (Tuscaloosa group): Alabama.

L. C. Conant and W. H. Monroe, 1945, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 37.

Colchester granodiorite-quartz diorite

Devonian (?): Newfoundland, Canada.

H. J. MacLean, 1947, Newfoundland Geol. Survey Bull. 22, p. 8.

Coldbrookian series

Middle Cambrian: Nova Scotia, Canada.

A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 1, Lower and Middle Cambrian pulsations: 2d ed., Peiping, China, University Press, Natl. Univ. Peking, p. 329-343.

Colebrook gravel

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, Canada Geol. Survey Water Supply Paper 322, p. 11, map.

Coleraine series

Pre-Ordovician: Quebec, Canada.

J. A. Dresser and T. C. Denis, 1944, Quebec Dept. Mines Geol. Rept. 20, p. 417, 426.

Coleraine shale or formation

Upper Cretaceous (Colorado series): Minnesota.

C. R. Stauffer in C. R. Stauffer and G. A. Thiel, 1933, Minn. Geol. Survey Bull. 23, p. 18.
H. R. Berquist, 1944, Jour. Paleontology, v. 18, no. 1, p. 8-10.

Colina limestone

Permian: Arizona.

James Gilluly, J. R. Cooper, and J. S. Williams, 1954, U. S. Geol. Survey Prof. Paper 266, p. 23-25.

Collierstown limestone

Middle Ordovician: Virginia.

B. N. Cooper and G. A. Cooper, 1946, *Geol. Soc. America Bull.*, v. 57, no. 1, p. 90.**Collings Ranch conglomerate**

Pennsylvanian: Oklahoma.

W. E. Ham, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 9, p. 2035-2045.**Collingston conglomerate***See* Collinston conglomerate.**Collinston conglomerate**

Miocene to Pliocene: Utah.

Neal Smith, 1953, *Intermountain Assoc. Petroleum Geologists [Guidebook] 4th Ann. Field Conf.*, p. 73, 75.R. D. Adamson, C. T. Hardy, and J. Stewart Williams, 1955, *Utah Geol. Soc. Guidebook 10*, p. 2, 4.**Colón formation**

Oligocene, middle: Cuba.

Jorge Brodermann, 1945, *Soc. Cubana Ingenieros Rev.*, v. 42, no. 1, p. 129, chart facing p. 144.**Colonia andesitic tuffs and breccias**

Cretaceous: Honduras.

R. H. Carpenter, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 27-28.**Colony Creek shale**

Upper Pennsylvanian: Texas.

M. G. Cheney, 1948, *Ablene Geol. Soc. [Guidebook] Spring Field Trip, June 11-12*, p. 20.**Colony School conglomerate**

Middle Pennsylvanian (Strawn): Texas.

F. B. Plummer, 1950, *Tex. Univ. Bur. Geology Pub. 4329*, p. 85.**Colorada quartz porphyry**

Upper Mesozoic or Tertiary, lower: Sonora, Mexico.

W. G. Valentine, 1936, *Geol. Soc. America Bull.*, v. 47, no. 1, p. 82-83.**Colorado limestone**

Age not stated: Costa Rica.

D. F. MacDonald and others, 1919, [Costa Rica] *La Gaceta, Diario Oficial*, año 41, no. 138, p. 352.B. N. Webber, 1942, *Am. Inst. Mining and Metall. Engineers Tech. Pub. 1445*, p. 3.**Colotepec formation**

Pleistocene, upper: Oaxaca, Mexico.

R. H. Palmer and L. G. Hertlein, 1936, *Calif. Acad. Sci. Bull.* 35, pt. 2, p. 65.**Colpitts group**

Middle Jurassic: Oregon.

R. L. Luper, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 227, 247-248, 249-255.**Colpoy Bay member (of Amabel formation)**

Middle Silurian (Niagaran): Ontario, Canada.

T. E. Bolton, 1953, *Canada Geol. Survey Paper 53-23*, p. 15-16.**Colton formation**

Eocene: Utah.

E. M. Spieker, 1946, *U. S. Geol. Survey Prof. Paper 205-D*, p. 139.

Comal series

Cretaceous (Neocomian): Vera Cruz and Istmo de Tehuantepec, Mexico.
 G. P. Salas and Ernesto Lopez Ramos, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 1-2, table 1.

Combs Mountain siltstone member (of Brodhead formation)

Lower Mississippian: Kentucky.
 P. B. Stockdale, 1939, *Geol. Soc. America Special Paper 22*, p. 170-172.

Comet shale

Middle Cambrian: Nevada.
 J. F. Mason *in* A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 1, Lower and Middle Cambrian pulsations: 2d ed., Peiping, China, University Press, Natl. Univ. Peking, p. 274-276.

Comitán limestone

Cretaceous: Chiapas, Mexico.
 Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie: Heidelberg*, Band 8, Abt. 4a, Heft 29, p. 29.

Commotion formation

Lower Cretaceous: British Columbia, Canada.
 R. T. D. Wickenden and George Shaw, 1943, *Canada Geol. Survey Paper 43-13*, p. 5.

Comparo formation

Pliocene: Trinidad, British West Indies.
 C. J. Maury, 1925, *Bull. Am. Paleontology*, v. 10, no. 42, p. 169 (17).
 H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1447, 1451 (chart).

Comparo Road beds

See Comparo formation.

Comstock formation

Eocene: Oregon.
 F. E. Turner, 1938, *Geol. Soc. America Special Paper 10*, p. 21, 24.

Comus formation

Lower Ordovician: Nevada.
 R. J. Roberts, 1951, *Geology of the Antler Peak quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 10]*.

Comyn formation

Pennsylvanian (Morrow): Texas (subsurface).
 M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66, 85.

Conasaugan series

Middle Cambrian: Southeastern United States.
 A. W. Grabau, 1937, *Paleozoic formations in the light of the pulsation theory*, v. 3, Cambroevian pulsation, pt. 2, Appalachian, Palaeocordilleran, Pre-Andean, Himalayan and Cathaysian geosynclines: Peiping, China, University Press, Natl. Univ. Peking, p. 10, 282.

Concentrator volcanics

Upper Cretaceous (?): Arizona.
 James Gilluly, 1937, *Ariz. Univ. Bull.*, v. 8, no. 1, p. 27-32.

Concepción (Lower and Upper) series

Miocene, lower: Vera Cruz, Mexico.
 J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 282-284, correlation chart.

Concha limestone

Permian : Arizona.

James Gilluly, J. R. Cooper, and J. S. Williams, 1954, U. S. Geol. Survey Prof. Paper 266, p. 29-30.

Concord member (of Brasso formation)

Miocene : Trinidad, British West Indies.

H. G. Kugler, 1953, Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull., v. 20, no. 59, p. 53-54.

Condor member (of Swasey limestone)

Middle Cambrian : Nevada and Utah.

H. E. Wheeler, 1948, Nev. Univ. Bull., Geology and Mining Ser.; no. 47, p. 39, fig. 5.

Confederation granophyre

Precambrian (Archean) : Ontario, Canada.

J. D. Bateman, 1940, Jour. Geology, v. 48, no. 6, p. 631.

Coniston series

Precambrian (pre-Huronian) : Ontario, Canada.

H. C. Cooke, 1943, Am. Jour. Sci., v. 241, no. 9, p. 568-577.

Connecting Point group

Precambrian : Newfoundland, Canada.

A. O. Hayes, 1948, Newfoundland Geol. Survey Bull. 32, p. 15-16.

Connell sandstone member (of Oil Creek formation)

Middle Ordovician : Texas (subsurface).

T. S. Jones and others, 1949, W. Tex. Geol. Soc. Strat. Problems Comm., Sept. 1949, p. 5. 6.

R. H. Schweers, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 12, p. 2029-2036.

Conner facies (of Dunham dolomite)

Lower Cambrian : Vermont.

Philip Fowler, 1950, Vt. Geol. Survey Bull. 2, pl. 1.

Conrad sandstone member (of Sawtooth formation)

Jurassic : Alberta, Canada (subsurface).

J. D. Weir, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 4, p. 551.

Consuelo formation

Eocene, upper : Cuba.

J. A. Cushman and P. J. Bermudez, 1949, Cushman Lab. Foram. Research Contrib., v. 25, pt. 2, p. 27, 43.

P. J. Bermudez, 1950, Soc. Cubana Historia Nat. Mem., v. 19, no. 3, p. 258-262.

Contadero formation

Upper Devonian : New Mexico.

F. V. Stevenson, 1944, Dallas Digest Joint Ann. Meeting, p. 94-95; 1945, Jour. Geology, v. 53, no. 4, p. 239-241.

Continental Peak formation

Eocene, upper (?) : Wyoming.

R. L. Nace, 1939, Wyo. Geol. Survey Bull. 27, p. 22-25, pl. 1.

Contra Costa group

Miocene, upper, to Pliocene, middle : California.

C. K. Ham, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 22, p. 6 (fig. 3), 15.

Conway Cut siltstone member (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 170.**Cooking Lake member (of Woodbend formation)**

Devonian : Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 9, p. 1823.**Cook Ranch rhyolites**

Oligocene, middle : Montana.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 373-374, pl. 1.**Cook Ranch volcanics**

Oligocene, middle : Montana.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 374, pl. 1.**Cooks limestone tongue (of Humber Arm series)**

Middle Ordovician (Chazyan) : Newfoundland, Canada.

T. N. Walthier, 1949, *Newfoundland Geol. Survey Bull.* 35, pt. 1, p. 23-24.**Coom Lake diorite-gabbro**

Precambrian (Keweenawan?) : Quebec, Canada.

J. M. Neilson, 1950, *Quebec Dept. Mines Prelim. Rept.* 238, p. 6-7.**Cooper Creek limestone**

Pennsylvanian (Des Moines) : Iowa, Missouri, and Nebraska.

L. M. Chine, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 1, p. 65.**Cooper Peak dolomite**

Lower Devonian : Nevada.

C. W. Merriam, 1940, *Geol. Soc. America Special Paper* 25, p. 35-36, pl. 1.**Copper City flow (in Portage Lake lava series)**

Precambrian (middle Keweenawan series) : Michigan.

W. S. White, H. R. Cornwall, and R. W. Swanson, 1953, *U. S. Geol. Survey Geol. Quadrangle Map GQ 27 [1954]*.**Copperhill formation**

Precambrian : Tennessee, Georgia, and North Carolina.

V. J. Hurst, 1955, *Ga. Geol. Survey Bull.* 63, p. 9-21.**Copper Mountain Group**

Lower Devonian : Quebec, Canada.

A. M. Bell, 1951, *Canadian Inst. Mining and Metallurgy Trans.*, v. 54, p. 241.**Coquille formation**

Pleistocene, upper : Oregon.

E. M. Baldwin, 1945, *Jour. Geology*, v. 53, no. 1, p. 39-42.**Corbett sandstone**

Lower Cretaceous (Bisbee group) : New Mexico.

S. G. Lasky, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 5, p. 533-534, fig. 2.**Corcoran member (of Price River formation)**

Upper Cretaceous : Colorado.

R. G. Young, 1955, *Geol. Soc. America Bull.*, v. 66, no. 2, p. 190-191.

Cordova dolomite

Silurian (Niagaran) : Illinois.

T. E. Savage *in* C. K. Swartz and others, 1942, Geol. Soc. America Bull., v. 53, no. 4, p. 537, Chart 3.

Corduroy member (of Supai formation)

[Pennsylvanian and/or Permian] : Arizona.

R. L. Jackson, 1951, Plateau, v. 24, no. 2, p. 86-88.

Cormorant limestone

Mississippian : Newfoundland, Canada.

W. A. Bell, 1948, Canada Geol. Survey Bull. 10, p. 21-22.

Cornelia quartz monzonite

Tertiary, lower (?) : Arizona.

James Gilluly, 1937, Ariz. Univ. Bull., v. 8, no. 1, p. 32-39.

Corner-of-the-Beach formation

Lower (?) Cambrian : Quebec, Canada.

C. H. Kindle, 1942, Am. Jour. Sci., v. 240, no. 9, p. 634.

Cornwallis formation

Upper Ordovician : Northwest Territories (Cornwallis Island), Canada.

R. Thorsteinnsson and Y. O. Fortier, 1954, Canada Geol. Survey Paper 53-24, p. 8.

Corona formation

Upper Jurassic : San Luis Potosí, Mexico.

D. E. White and Jenaro González Reyna, 1946, U. S. Geol. Survey Bull. 946-E, p. 134, 135.

Corral Creek glacial substage

Pleistocene (Wisconsin) : Colorado, Wyoming, and New Mexico.

L. L. Ray, 1938, (abs.) Geol. Soc. America Proc. 1937, p. 314; 1940, Geol. Soc. America Bull., v. 51, no. 12, pt. 1, p. 1860-1862.

Correo sandstone member (of Chinle formation)

Triassic : New Mexico.

V. C. Kelley and G. H. Wood, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 47.

Corta sandstone (in Joserita member of Lowell formation)

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, Geol. Soc. America Mem. 38, p. 11.

Cortado formation

Pennsylvanian (Des Moines) : New Mexico.

J. A. Young, Jr., 1946, (abs.) Geol. Soc. America Bull., v. 57, no. 12, pt. 2, p. 1247.

Coryell syenite

Jurassic : British Columbia, Canada.

Geoffrey Gilbert, 1948, Structural geology of Canadian ore deposits : Montreal, Quebec, Canadian Inst. Mining and Metallurgy, p. 189.

Cosmo series

Precambrian (Timiskaming?) : Ontario, Canada.

W. C. Gussow, 1942, Ontario Dept. Mines Ann. Rept., v. 49, pt. 6, p. 4, 6.

Coso formation

Pliocene, upper, to Pleistocene, lower : California.

J. R. Schultz, 1937, Carnegie Inst. Washington Pub. 487, p. 79.

Coso granodiorite

Upper Mesozoic: California.

V. C. Kelley, 1937, *Econ. Geology*, v. 32, no. 8, p. 994, 996; 1938, *Calif. Jour. Mines and Geology*, v. 34, no. 4, p. 514, pl. 7.**Costigan member (of Palliser formation)**

Upper Devonian: Alberta, Canada.

R. deWit and D. J. McLaren, 1950, *Canada Geol. Survey Paper* 50-23, p. 6-7.**Cosumnes formation**

Middle or Upper Jurassic: California.

N. L. Talliaferro, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 125, p. 283-284.**Cotton formation**

Upper Devonian: Pennsylvania and New York.

G. H. Chadwick, 1936, *N. Y. State Mus. Bull.* 307, p. 78, 96.†**Cottontale formation**

Upper Cretaceous: Alabama

L. C. Conant and W. H. Monroe, 1945, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 37.**Cotton Valley group**

Upper Jurassic: Subsurface in Louisiana, Arkansas, Mississippi, and Texas.

H. K. Shearer, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 6, p. 722, 723, 724-725.W. B. Weeks, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 8, p. 966-968.**Cottonwood beds**

Lower Cretaceous: California.

F. M. Anderson, 1938, *Geol. Soc. America Special Paper* 16, p. 38 (table 1), 63-67.**Cottonwood Spring basalt**

Tertiary: Texas.

S. S. Goldich and M. A. Elms, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1197; 1949, v. 60, no. 7, p. 1156-1159.**Couch formation**

Pliocene, lower: Texas.

G. L. Evans, 1949, *W. Tex. Geol. Soc. Guidebook Field Trip* 2, Nov. 6-9, p. 5-6.**Council Spring limestone**

Pennsylvanian (Missouri series): New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 62-63.**Cour d'Alene facies (of Belt series)**

Precambrian: Alberta, Canada; and Montana.

C. L. Fenton and M. A. Fenton, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1877.**Courtenay Bay formation**

Upper Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 116-117.**Cove quartz monzonite**

Jurassic: California.

O. P. Jenkins, 1938, *Geologic map of California (1:500,000)*: Calif. Dept. Nat. Res., Div. Mines, sheet 4.**Covel conglomerate (in Sumnum cyclothem)**

Pennsylvanian: Illinois.

H. B. Willman, 1939, *Ill. Acad. Sci. Trans.*, v. 32, no. 2, p. 174-176.

Cove Mountain member (of Pocono formation)

Lower Mississippian: Pennsylvania.

Bradford Willard and A. B. Cleaves, 1938, Pa. Geol. Survey, ser. 4, Bull. G 8, p. 18.

Cow Bayou member (of Logansport formation)

Paleocene (Midway): Louisiana.

D. P. Meagher and L. C. Aycock, 1942, La. Dept. Conserv. Geol. Pamph. 3, p. 12-16.
G. E. Murray, Jr. and E. P. Thomas, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 1, p. 57.**Cowden anhydrite member (of Salado formation)**

Permian: Texas and New Mexico.

G. A. Kroenlein, 1939, Am. Assoc. Petroleum Geologists Bull., v. 23, no. 11, p. 1639.
S. C. Giesey and F. F. Fulk, 1941, Am. Assoc. Petroleum Geologist Bull., v. 25, no. 4, p. 603.**Cowesett granite**

Mississippian (?): Rhode Island.

A. W. Quinn, 1952, Bedrock geology of the East Greenwich quadrangle, Rhode Island: U. S. Geol. Survey Geol. Quadrangle Map [GQ 17].

Cowley formation

Mississippian (Meramec series): Kansas (subsurface).

Wallace Lee in G. E. Abernathy, R. P. Keroher, and Wallace Lee, 1940, Kans. State Geol. Survey Bull. 31, p. 15.

Cowley Canyon limestone member (of Wasatch group)

Paleocene or Eocene, lower: Utah.

J. S. Williams, 1948, Geol. Soc. America Bull., v. 59, no. 11, p. 1144-1145.

Cow Springs sandstone

Upper Jurassic: Arizona, Colorado, New Mexico, and Utah.

E. D. McKee in C. R. Longwell, 1949, Geol. Soc. America Mem. 39, p. 46 (fig. 6).
J. W. Harshbarger, C. A. Repenning, and R. L. Jackson, 1951, N. Mex. Geol. Soc. Guidebook 2d Field Conf., p. 97-98.**Coxcomb granodiorite**

Upper Jurassic (?): California.

W. J. Miller, 1944, Calif. Jour. Mines and Geology, v. 40, no. 1, p. 64, pl. 3.

Coyote Butte formation

Permian: Oregon.

C. W. Merriam, 1942, Jour. Paleontology, v. 16, no. 3, p. 372.
C. W. Merriam and S. A. Berthiaume, 1943, Geol. Soc. America Bull., v. 54, no. 2, p. 156-158.**Cozzette member (of Price River formation)**

Upper Cretaceous: Colorado.

R. G. Young, 1955, Geol. Soc. America Bull., v. 66, no. 2, p. 191.

Crabbottom sandstone (in Wills Creek formation)

Silurian: Virginia and West Virginia.

C. K. Swartz and F. M. Swartz, 1940, (abs.) Geol. Soc. America Bull., v. 51, no. 12, pt. 2, p. 2008.

Crabbs limestone

Mississippian: Newfoundland, Canada.

W. A. Bell, Canada Geol. Survey Bull. 10, p. 23-24.

Crab Creek formation

Tertiary : Utah.

R. E. Metter, 1955, *Dissert. Abs.*, v. 15, no. 6, p. 1047.**Craborchard cyclothem (including Craborchard limestone)**

Pennsylvanian : Illinois.

J. M. Weller, L. G. Henbest, and C. O. Dunbar *in* C. O. Dunbar and L. G. Henbest, 1942, *Ill. State Geol. Survey Bull.* 67, p. 16, 17 (fig. 3) [1943].**Craddock clay**

Pennsylvanian (Cisco) : Texas.

F. B. Plummer, H. B. Bradley, and K. F. Pence, 1949, *Tex. Univ. Bur. Econ. Geol. Pub.* 4915, p. 21-23.**Cragleith formation**

Ordovician : Ontario, Canada.

B. A. Liberty, 1955, *Geol. Assoc. Canada Proc.*, v. 7, pt. 1, p. 145.**Craig limestone member (of Rogersville shale)**

Middle Cambrian : Tennessee.

John Rodgers, 1943, *Geologic map of Copper Ridge district, Hancock, and Grainger Counties, Tennessee (1 : 24,000)* : U. S. Geol. Survey Strategic Minerals Inv. Prelim. Map.John Rodgers and D. F. Kent, 1948, *Tenn. Dept. Conserv. Div. Geology Bull.* 55, p. 10.**Cram Hill formation**

Middle Ordovician : Vermont.

L. W. Currier and R. H. Jahns, 1941, *Geol. Soc. America Bull.*, v. 52, no. 9, p. 1493-1496.**Cranberry Point formation**

Upper Carboniferous : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 115-116.**Cranbourne series**

Devonian : Quebec, Canada.

Carl Tolman, 1936, *Canada Geol. Survey Mem.* 199, p. 14-16.**Crane member (of Mt. Simon formation)**

Upper Cambrian : Illinois (subsurface).

J. S. Templeton, Jr., 1950, *Ill. Acad. Sci. Trans.*, v. 43, p. 154.**Cranesville dolomite**

Lower Ordovician : (upper Canadian) New York.

D. W. Fisher, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 76 (fig. 2), 77, 92-93.**Crater Creek basalt**

Tertiary and Quaternary : Alaska (Aleutian Islands).

F. M. Byers, Jr., and others, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept.* 2, pt. 3, p. 25-26.**Cravatt formation**

Lower Devonian : Oklahoma.

R. A. Maxwell, 1936, *Northwestern Univ. Summaries of Doctoral Dissert.*, v. 4, p. 132, 134.**Crazy Hollow formation**

Tertiary : Utah.

E. M. Spieker, 1949, *Utah Geol. Soc. Guidebook* 4, p. 36-37, geol. map.

Crazy Johnson member (of Chadron formation)

Oligocene, lower: South Dakota.

John Clark, 1954, *Carnegie Mus. Annals*, v. 33, art. 11, p. 197-198.**Creggan Creek formation**

Precambrian and Cambrian: British Columbia, Canada.

W. H. White, 1950, *British Columbia Bur. Mines Ann. Rept.* 1949, p. A-171—A-172.**Creighton granite**

Precambrian: Ontario, Canada.

W. H. Collins, 1936, *Royal Soc. Canada Trans.*, sec. 4, v. 30, p. 34-35.**Creola member (of Yegua formation)**

Eocene (Claiborne): Louisiana.

H. B. Stenzel, 1939, *Tex. Univ. Bur. Econ. Geol. Pub.* 3945, pt. 2, p. 879, 881 [1940].**Crescent Hill basalt**

Miocene and/or Pliocene: Wyoming.

A. D. Howard, 1937, *Geol. Soc. America Special Paper* 6, p. 17-19, 78.**Crescent Lake formation**

Middle Ordovician (?): Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 10.**Crest Hill granite.**

Precambrian: Virginia.

L. R. Thiesmeyer, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1963,**Creston [formation]**

Eocene: California.

O. P. Jenkins, 1938, *Geologic map of California (1:500,000): Calif. Dept. Nat. Res., Div. Mines, sheet 4.***Crête formation**

Oligocene, middle: Haiti.

Jacques Butterlin, [1952], *Résumé de thèse présentée à la Sorbonne, La géologie de la République d'Haïti et ses rapports avec celle des régions voisines (mimeo.)*, p. 4; 1954, *Inst. Français d'Haïti Mem.* 1, p. 63.**Crete formation**

Pleistocene: Nebraska.

G. E. Condra, E. C. Reed, and E. D. Gordon, 1947, *Nebr. Geol. Survey Bull.* 15, p. 24-25.**Crevasse Canyon formation**

Upper Cretaceous: New Mexico and Arizona.

J. E. Allen and Robert Balk, 1954, *N. Mex. State Bur. Mines Min. Res. Bull.* 36, p. 91-92.**Crisfield member (of Salt Plain formation)**

Permian: Kansas.

G. H. Norton, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 12, p. 1788.R. C. Moore, J. C. Frye, and J. M. Jewett, 1944, *Kans. State Geol. Survey Bull.* 52, p. 159.**Croker Bay limestone**

Middle or Upper Ordovician: Northwest Territories (Devon Island), Canada.

V. E. Kurtz, A. H. McNair, and D. B. Wales, 1952, *Am. Jour. Sci.*, v. 250, no. 9, p. 640-641.

Crook formation

Upper Devonian: Arizona.

E. N. Harshman *in* M. N. Short and others, 1943, *Ariz. Bur. Mines Bull.* 151, Geol. Ser. 16, p. 27.**Crooked Creek formation**

Pleistocene: Kansas.

C. W. Hibbard, 1949, *Mich. Univ. Mus. Paleontology Contr.*, v. 7, no. 4, p. 70-71.**Crooked Lake granite pebble conglomerates**

Precambrian (Knife Lake): Minnesota.

J. W. Gruner, 1941, *Geol. Soc. America Bull.*, v. 52, no. 10, p. 1583, 1613.**Crossen trachyte**

Tertiary: Texas.

S. S. Goldich and M. A. Elms, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1197; 1949, v. 60, no. 7, p. 1151-1153.**Crossville sandstone (in Duskin Creek formation)**

Pennsylvanian: Tennessee.

H. R. Wanless, 1946, *Geol. Soc. American Mem.* 13, p. 37, 44, 139.**Crow Creek member (of Pierre shale)**

Upper Cretaceous: South Dakota.

J. P. Gries and E. P. Rothrock, 1941, *S. Dak. State Geol. Survey Rept. Inv.* 38, p. 5, 14-17.**Croweburg cyclothem or formation**

Pennsylvanian (Des Moines): Kansas.

G. E. Abernathy, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 18, 20, 22; 1938, *Kans. Acad. Sci. Trans.*, v. 41, p. 193, 195.**Crow Indian Lake member (of Sawtooth formation)**

Jurassic: Alberta, Canada (subsurface).

J. D. Weir, 1949, *Am. Assoc. Petroleum Geologists Bull.* v. 33, no. 4, p. 552.**Crow Mountain sandstone member (of Chugwater formation)**

Triassic: Wyoming.

J. D. Love, 1939, *Geol. Soc. America Special Paper* 20, p. 44.**Croydon group**

Upper Devonian(?) (Oliverian magma series): New Hampshire.

C. A. Chapman and others, 1938, *Geologic map and structure sections of the Mascoma quadrangle, New Hampshire, (1:62,500)*: N. H. Highway Dept.C. A. Chapman, 1939, *Geol. Soc. America Bull.*, v. 50, no. 1, p. 143-145.**Crucero tuffaceous dacite flows**

Cretaceous: Honduras.

R. H. Carpenter, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 28, pl. 1 (geol. map).**Cruiser formation**

Lower Cretaceous: British Columbia, Canada.

R. T. D. Wickenden and George Shaw, 1943, *Canada Geol. Survey Paper* 43-13, p. 8-10.**Crystal gray quartz monzonite**

Precambrian (middle Keweenawan): Minnesota.

M. S. Woyski, 1949, *Geol. Soc. America Bull.*, v. 60, no. 6, p. 1002, 1008-1009.**Crystal River formation**

Eocene, upper (Ocala group): Florida.

H. S. Puri, 1953, (abs.) *Jour. Sed. Petrology*, v. 23, no. 2, p. 130.

Crystal Spring formation

Precambrian (Pahrump series) : California.

D. F. Hewett, 1940, *Washington Acad. Sci. Jour.*, v. 30, no. 6, p. 240.**Cualac quartzite**

Triassic (?) : Guerrero, Mexico.

E. J. Guzman, 1950, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 2, no. 2, p. 108-111.**Cuare limestone**

Jurassic : Trinidad, British West Indies.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 520.

H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 31-32.**Cubierto shale (in Puente formation)**

Miocene, upper : California.

M. L. Krueger, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 363.A. O. Woodford, T. G. Moran, and J. S. Shelton, 1946, *Am. Assoc. Petroleum Geologists Bull.*, v. 30, no. 4, p. 521.**Cubitas limestones**

Eocene : Cuba.

H. J. MacGillivray, 1937, *Geog. Geol. Meded. (Utrecht Univ.) Physiol.-Geol. Reeks.*, no. 14, p. 28, 30.**Cucamonga complex**

Pre-Upper Cretaceous : California.

R. M. Alf, 1948, *Geol. Soc. America Bull.*, v. 59, no. 11, p. 1107-1108.**Cucamonga fan deposits**

Recent : California.

E. M. Mackevett, 1951, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 5, p. 11.**Cucamonga Canyon group**

Age unknown : California.

K. J. Hsu, 1955, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 30, no. 4, p. 259, map 1.**Cuche formation**

Cretaceous (Aptian) : Trinidad, British West Indies.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 523.

Cuche River beds

Cretaceous (Neocomian) : Trinidad, British West Indies.

A. G. Hutchinson, 1938, *Bol. Geologia y Minería (Venezuela)*, v. 2, nos. 2-4 (English ed.), p. 231, 235 (table).**Cuchillo Negro formation**

Pennsylvanian (Derry) : New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 39.**Cuerbio basalt**

Pleistocene : New Mexico.

C. E. Stearns, 1943, *Jour. Geology*, v. 51, no. 5, fig. 2 ; 1953, *Geol. Soc. America Bull.*, v. 64, no. 4, p. 476, 477, pl. 1.**Cuero formation**

Miocene, upper : Texas.

A. W. Weeks, 1941, (abs.) *Am. Assoc. Petroleum Geologists 26th Ann. Meeting Program*, p. 20 ; 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 12, p. 1724-1726.

Cuesta del Cura limestone

Lower Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1936, *Geol. Soc. America Bull.*, v. 47, no. 7, p. 1125-1126.

Cuicatlán formation

Tertiary: Oaxaca, Mexico.

Tomás Barrera, 1946, *Guía geológica de Oaxaca: Mexico Univ. Nac., Inst. Geología*, p. 23, 24, 26.

Culebra dolomite member (of Rustler formation)

Upper Permian: New Mexico.*

J. E. Adams, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 11, p. 1614.

Culver Springs shale member (of Brodhead formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper 22*, p. 147-148.

Cumana formation

Lower Cretaceous: Trinidad, British West Indies.

H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 32.

Cumberland facies (of Clinton formation)

Middle Silurian (Niagaran): Maryland and Virginia.

Charles Butts, 1940, *Va. Geol. Survey Bull.* 52, pt. 1, p. 238, 242-244.

Cummings member (of Mannville formation)

Lower Cretaceous: Alberta, Canada (subsurface).

A. W. Nauss, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 11, p. 1614.

Cummings member (of Mount Head formation)

Carboniferous: Alberta, Canada.

R. J. W. Douglas, 1953, *Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 68.

Cummingsville member (of Galena formation)

Middle Ordovician: Minnesota.

M. P. Weiss, 1955, *Jour. Paleontology*, v. 29, no. 5, p. 764-766.

Cummins Station shale member (of Muldraugh formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper 22*, p. 213-214.

Cunapo River argilline

Paleocene: Trinidad, British West Indies.

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1451 (chart).

Cunapo-Southern horizon (of Turure formation)

Upper Cretaceous: Trinidad, British West Indies.

R. A. Liddle, [1923], *The geology of Venezuela and Trinidad: Fort Worth, Tex.*, J. P. MacGowan, p. 439-440.

Cunningham granite

Precambrian: Georgia.

D. F. Hewett and G. W. Crickmay, 1937, *U. S. Geol. Survey Water-Supply Paper 819*, p. 29, 30.

Cunningham limestone

Precambrian and/or Cambrian: British Columbia, Canada.

S. S. Holland, 1954, *British Columbia Dept. Mines Bull.* 34, p. 16-17.

Cupido limestone

Lower Cretaceous: Coahuila, Mexico.

R. W. Inlay, 1937, *Geol. Soc. America Bull.*, v. 48, no. 5, p. 606-607.

Currant tuff

Miocene, upper, or Pliocene, lower: Nevada.

G. T. Faust and Eugene Callaghan, 1948, *Geol. Soc. America Bull.*, v. 59, no. 1, p. 33-40.

Currant Creek formation

Upper Cretaceous (?): Utah.

P. T. Walton, 1944, *Geol. Soc. America Bull.*, v. 55, no. 1, p. 117-120.

Curry clay

Upper Pennsylvanian (Cisco): Texas.

F. B. Plummer *in* M. G. Cheney, 1948, *Abilene Geol. Soc. [Guidebook] Spring Field Trip*, June 11-12, p. 8.

F. B. Plummer and H. B. Bradley, 1949, *Tex. Univ. Bur. Econ. Geology Pub.* 4915, p. 17-21.

Curtin limestone

Middle Ordovician (Mohawkian): Pennsylvania.

G. M. Kay, 1943, *Econ. Geology*, v. 38, no. 3, p. 194, 197.

Curved Tree Point sandstone member (of Gething formation)

Lower Cretaceous: British Columbia, Canada.

F. H. McLearn and E. J. W. Irish, 1944, *Canada Geol. Survey Paper* 44-15, p. 8.

Cust Island sandstone member (of Gething formation)

Lower Cretaceous: British Columbia, Canada.

F. H. McLearn and E. J. W. Irish, 1944, *Canada Geol. Survey Paper* 44-15, p. 8.

Cutoff shaly member (of Bone Spring limestone)

Permian (Leonard series): Texas and New Mexico.

P. B. King, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 4, p. 569-570, pl. 2.

Cutter formation

Upper Ordovician (Cincinnatian): New Mexico.

V. C. Kelley and Caswell Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 62-64, fig. 4.

Cutting dolomite

Lower Ordovician (Beekmantownian): Vermont.

W. M. Cady, 1945, *Geol. Soc. America Bull.*, v. 56, no. 5, p. 524, 541-542.

Cutwell group

Ordovician: Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 12-13.

Cygnian substage

Pennsylvanian (Desmoinesian): Iowa, Kansas, Missouri, Nebraska, and Oklahoma.

W. V. Searight *in* W. B. Howe and W. V. Searight, 1953, *Mo. Geol. Survey and Water Res. Rept. Inv.* 14, pl. 1.

Cynthia Falls sandstone member (of Tuxedni formation)

Middle Jurassic: Alaska.

L. B. Kellum, 1945, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 7, no. 8, p. 203.

Dagmar limestone member (of Ute formation)

Cambrian: Utah and Idaho.

G. B. Maxey, 1955, *Dissert. Abs.*, v. 15, no. 4, p. 558.**Dakin Hill member (of Littleton formation)**

Lower Devonian: New Hampshire.

M. T. Heald, 1950, *Geol. Soc. America Bull.*, v. 61, no. 1, p. 54-55, 70, 79.**Dalquier granite**

Precambrian: Quebec, Canada.

W. W. Weber, 1951, *Quebec Dept. Mines Prelim. Rept.* 257, p. 7.**Dalquier quartz gabbro****Dalquier-Kayrand quartz gabbro***See* Kayrand quartz gabbro.**Dana Bay beds**

Devonian: Northwest Territories (Ellesmere Island), Canada.

W. H. Fielden and C. E. deRance, 1878, *Geol. Soc. London Quart. Jour.*, v. 34, p. 559.**Dane member (of Pecatonica formation)**

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 41, figs. 3, 10, 12, 16.**Dangkulo limestone***See* Dankuro limestone.**Daniels conglomerate**

Tertiary, middle (?): Arizona.

James Gilluly, 1937, *Ariz. Univ. Bull.*, v. 8, no. 1, p. 46-47.**Danish Village formation**

Precambrian (upper Algonkian): North Greenland.

V. E. Kurtz and D. B. Wales, 1950, *Okla. Acad. Sci. Proc.*, v. 31, p. 83, 85.**Dankuro limestone**

Recent: Mariana Islands (Tinian).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 58, table 4 [English translation in library of U. S. Geol. Survey, p. 69].**Danmarks Fjord dolomite**

Lower Ordovician (Lower Canadian?): North Greenland.

Erdhart Frankl, 1955, *Meddel. om Grønland*, bind 103, nr. 7, p. 13, 18, 32.**Dantzie group**

Lower Cambrian and Precambrian (?): Newfoundland, Canada.

T. N. Walthier, 1950, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 12, no. 7, p. 210.**Dantzier formation**

Cretaceous (Comanche): Subsurface in Mississippi and Louisiana.

R. T. Hazzard, B. N. Blanpied, and W. C. Spooner, 1947, *Shreveport Geol. Soc. 1945 Ref. Rept.*, v. 2, p. 477.**Danville injection gneiss**

Middle Silurian: Maine.

L. W. Fisher, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 71.

Darling Creek glaciation

Pleistocene (pre-Wisconsin) : Alaska.

T. L. Péwé, 1952, (abs.) *Geol. Soc. America Bull.*, v. 63, no. 12, pt. 2, p. 1289.

T. L. Péwé in T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 9, 13 (table 1).

Darrough felsite

Permian (?) : Nevada.

H. G. Ferguson and S. H. Cathcart, 1954, *U. S. Geol. Survey Geol. Quadrangle Map* GQ 40.

Dartmouth River series

Silurian and Devonian : Quebec, Canada.

H. W. McGerrigle, 1950, *Quebec Dept. Mines Geol. Rept.* 35, p. 24.

Darty limestone.

Mississippian (Kinderhookian) : Illinois.

J. M. Weller and others, 1948, *Geol. Soc. America Bull.*, v. 59, no. 2, p. 153, Chart 5, column 73.

Darwin quartz diorite

Upper Mesozoic : California.

V. C. Kelley, 1937, *Econ. Geology*, v. 32, no. 8, p. 992, 996; 1938, *Calif. Jour. Mines and Geology*, v. 34, no. 4, p. 514-516, pl. 7.

Dastur metagabbro

Precambrian : Quebec, Canada.

K. R. Dawson, 1950, *Canada Geol. Survey Paper* 50-3, p. 12, 13.

Dauphin shale

Ordovician : Pennsylvania.

Bradford Willard, 1943, *Geol. Soc. America Bull.*, v. 54, no. 8, p. 1069 (footnote), 1070, 1090, 1118.

Dauversière granite

Precambrian : Quebec, Canada.

P. E. Imbault, 1951, *Quebec Dept. Mines Prelim. Rept.* 250, p. 8.

David formation

Eocene, upper : Panama.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie : Heidelberg*, Band 8, Abt. 4a, Heft 29, p. 131, 134 (correlation chart).

A. A. Olsson, 1942, *8th Am. Sci. Cong. Proc.*, v. 4, p. 236-237.

David Lake group

Precambrian : Quebec, Canada.

R. B. Graham, 1951, *Canadian Mining Jour.*, v. 72, no. 9, p. 65-66.

Davidson evaporite

Devonian : Saskatchewan, Canada (subsurface).

A. D. Baillie, 1953, *Manitoba Dept. Mines and Nat. Res. Mines Br. Pub.* 52-5, p. 30.

Davidson formation

Jurassic : Subsurface in Saskatchewan and Manitoba, Canada.

J. R. Ower, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 397.

Davidson granodiorite

Miocene (?) : Nevada.

V. P. Gianella, 1934, *Mining and Metallurgy*, v. 15, no. 331, p. 299; 1936, *Nev. Univ. Bull.*, v. 30, no. 9, p. 64-68.

Davis formation or cyclothem (including Davis sandstone)

Pennsylvanian: Illinois.

J. M. Weller, 1940, Ill. State Geol. Survey Rept. Inv. 71, p. 39, 41.

Davistown sandstone

Permian: Pennsylvania.

W. O. Hickok, IV, and F. T. Moyer, 1940, Pa. Geol. Survey, ser. 4, Bull. C 26, p. 151.

Davy Lake breccia

Precambrian: Quebec, Canada.

Jacques Claveau, 1949, Quebec Dept. Mines Geol. Rept. 37, p. 28-29.

Dawes sandstone

Middle Silurian (Niagaran): New York.

Tracy Gillette, 1947, N. Y. State Mus. Bull. 341, p. 99-100.

Dawn member (of Red Rose formation)

Upper Jurassic and Lower Cretaceous: British Columbia, Canada.

R. E. Sommers, 1955, British Columbia Bur. Mines Ann. Rept. 1954, p. A89-A90.

Dawson Bay formation

Devonian: Manitoba, Canada (subsurface).

A. D. Baillie, 1953, Manitoba Dept. Mines and Nat. Res. Pub. 52-5, p. 26-27.

Daysville formation

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., p. 21, figs. 3, 12.

Dead Horse conglomerate member (of Manitou formation)

Lower Ordovician: Colorado.

N. W. Bass and S. A. Northrop, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 5, p. 905-906.

Deadman quartzite

Precambrian: Arizona.

E. D. Wilson, 1938, in Ariz. Bur. Mines Bull. 145 (Geol. Ser. 12), pl. 3; 1939, Geol. Soc. America Bull., v. 50, no. 7, p. 1118, 1123.

Deadmans Cove member (of Giles Cove formation)

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1937, Newfoundland Geol. Survey Bull. 8, p. 10.

Dean formation

Precambrian: Georgia.

V. J. Hurst, 1955, Ga. Geol. Survey Bull. 63, p. 40-45.

Dean sandstone

Permian (Wolfcamp): Texas (subsurface).

Lamar McLennan, Jr., and H. W. Bradley, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 4, p. 899, 903.

Deansboro member (of Coeymans limestone)

Lower Devonian (Helderbergian): New York.

L. V. Rickard, 1955, N. Y. Geol. Assoc. Guidebook 27th Ann. Meeting, p. 7.

DeBeque formation

Paleocene and Eocene, lower: Colorado.

H. E. Wood, 2d, and others, 1941, Geol. Soc. America Bull., v. 52, no. 1, p. 18, pl. 1.

Debolt formation

Mississippian: Alberta, Canada (subsurface).

G. Macauley, 1955, (abs.) *Am. Assoc. Petroleum Geologists and Alberta Soc. Petroleum Geologists Program Western Canada Regional Meeting and 5th Ann. Field Trip*, p. 21.

Debris Dam sandstone

Upper Cretaceous: California.

B. M. Page, J. G. Marks, and G. W. Walker, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 8, p. 1739-1743.

Decie member (of Duff formation)

Oligocene and younger (?): Texas.

W. N. McNulty, 1955, *Geol. Soc. America Bull.*, v. 66, no. 5, p. 553, pl. 1.

Deer diorite

Pre-Upper Cretaceous: California.

R. M. Alf, 1948, *Geol. Soc. America Bull.*, v. 59, no. 11, p. 1109-1112.

Deer Bay formation

Lower Cretaceous: Northwest Territories (Ellef Ringnes Island), Canada.

W. W. Heywood, 1955, *Canadian Mining and Metall. Bull.*, v. 48, no. 514, p. 60, 61.

Deer Island member (of Winnipeg formation)

Ordovician: Saskatchewan and Manitoba, Canada.

W. O. Kupsch, 1953, *Saskatchewan Dept. Nat. Res. Rept.* 10, p. 11.

G. J. Genik, 1954, *Alberta Soc. Petroleum Geologists News Bull.*, v. 2, no. 5, p. 1.

Deer Lake [group]

Mississippian: Newfoundland, Canada.

1954, *Geological map of Newfoundland (1:760,320)*: Newfoundland Geol. Survey.

Deer Lake syenite

Precambrian: Ontario, Canada.

Jack Satterly and D. F. Hewitt, 1955, *Ontario Dept. Mines Geol. Circ.* 2, p. 5.

Deerpark stage

Lower Devonian (Ulsterian): New York.

G. A. Cooper and others, 1942, *Geol. Soc. America Bull.*, v. 53, no. 12, pt. 1, p. 1733, Chart 4.

Deer Plain formation

Pleistocene (Wisconsin): Illinois and Missouri.

W. W. Rubey, 1952, *U. S. Geol. Survey Prof. Paper* 218, p. 90-96.

Deer Rips lime-silicate gneiss

Middle Silurian: Maine.

L. W. Fisher, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 71.

De Grey member (of Pierre shale)

Upper Cretaceous: South Dakota.

D. R. Crandell, 1950, *Am. Asso. Petroleum Geologists Bull.*, v. 34, no. 12, p. 2341, 2343, table 1.

Delaney gravel

[Quaternary]: Texas.

R. W. Mathis, 1944, *Jour. Sed. Petrology*, v. 14, no. 2, p. 87-88.

Delano Peak latite member (of Bullion Canyon volcanics)

Tertiary: Utah.

Eugene Callaghan, 1939, *Am. Geophys. Union Trans.* 20th Ann. Meeting, pt. 3, p. 442, 445.

Delassus formation

Cambrian (Cambrian) : Missouri.

[C. R.] Keyes, 1941, *Pan-Am. Geologist*, v. 75, no. 3, p. 239.

Delburne formation

Upper Devonian : Alberta, Canada.

J. M. Andrichuk and J. S. Wonfor, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 12, p. 2505.

Del Cuerto formation

Pennsylvanian (Virgil) : New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 72.

De Leon formation

Pennsylvanian (Lampasas) : Texas (subsurface).

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1.

Delevanian stage

Late Cretaceous : California.

P. P. Goudkoff, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 7, p. 993-994.

Delia member (of Woodbend group)

Upper Devonian : Alberta, Canada.

H. R. Belyea, 1955, *Canada Geol. Survey Paper* 55-3, p. 4, 11-16.

Delight sand

Lower Cretaceous (Comanche series) : Arkansas.

R. W. Imlay, 1944, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart* 3.

Dellet sand member (of Moodys Branch marl)

Eocene (Jackson) : Alabama.

H. B. Stenzel, 1952, *Miss. Geol. Soc. [Guidebook] 9th Field Trip*, p. 41.

Dellvale ash bed (in Ash Hollow member of Ogallala formation)

Pliocene : Kansas.

Ada Swineford, J. C. Frye, and A. B. Leonard, 1955, *Jour. Sed. Petrology*, v. 25, no. 4, p. 254, fig. 1.

Delmore formation

Pliocene, middle : Kansas.

C. C. Williams and S. W. Lohman, 1949, *Kans. State Geol. Survey Bull.* 79, p. 57-59.

Deloro group

Precambrian (Keewatin) : Ontario, Canada.

W. R. Dunbar, 1948 *in* *Structural geology of Canadian ore deposits* : Canadian Inst. Mining and Metallurgy, p. 443.

Delphi Station member (of Skaneateles formation)

Devonian : New York.

G. A. Cooper, 1941, *Washington Acad. Sci. Jour.*, v. 31, no. 5, p. 180.

Delta glaciation

Pleistocene (Wisconsin) : Alaska.

T. L. Péwé, 1952, (abs.) *Geol. Soc. America Bull.*, v. 63, no. 12, pt. 2, p. 1239.

T. L. Péwé *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 9, 13 (table 1).

Delwood formation or cyclothem (including Delwood sandstone)

Pennsylvanian : Illinois.

J. M. Weller, 1940, *Ill. State Geol. Survey Rept. Inv.* 71, p. 39, 40.

Dement member (of Grand Detour formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 10, 16.**Denault dolomite**

Precambrian (Proterozoic): Quebec and Newfoundland (Laborador), Canada.

H. R. Rice, 1949, *Canadian Mining Jour.*, v. 70, no. 9, p. 71-72.J. M. Harrison, 1952, *Canada Geol. Survey Paper* 52-20, p. 8.**Denman formation**

Upper Cretaceous: British Columbia, Canada.

J. L. Usher, 1952, *Canada Geol. Survey Bull.* 21, p. 25-26.**Denmar formation**

Middle Mississippian: West Virginia.

Dana Wells, 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 5, p. 902-918.**Denmark member (of Sherman Fall formation)**

Middle Ordovician (Mohawkian): New York, and Ontario, Canada.

G. M. Kay, 1937, *Geol. Soc. America Bull.*, v. 48, no. 2, p. 267-268.**Densiyama formation**

Eocene, upper: Mariana Islands (Saipan).

Risaburo Tayama, 1938, *Geomorphology, geology, and coral reefs of Saipan Island: Tropical Industry Inst., Palau, South Sea Islands, Bull.* 1 [English translation in library of U. S. Geol. Survey, p. 53-56].Josiah Bridge in W. S. Cole and Josiah Bridge, 1953, *U. S. Geol. Survey Prof. Paper* 253, p. 8-9.**Depósito series**

Oligocene: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 280, correlation chart.**Depot Island formation**

Permian: East Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 104, 111; nr. 2, p. 246.**Deputy formation**

Middle Devonian: Indiana.

Guy Campbell, 1942, *Geol. Soc. America Bull.*, v. 53, no. 7, p. 1060-1061.**Derry series**

Pennsylvanian: New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 26-31.**Desert member (of Blackhawk formation)**

Upper Cretaceous: Utah.

R. G. Young, 1955, *Geol. Soc. America Bull.*, v. 66, no. 2, p. 183, 186.**Dessa Dawn formation**

Mississippian: British Columbia, Canada.

L. R. Laudon and others, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 9, p. 1536-1540.**Dessau formation**

Upper Cretaceous: Texas.

C. O. Durham, Jr., 1955, *Corpus Christi Geol. Soc. [Guidebook] Ann. Field Trip*, March 11-12, [p. 57], pl. 16.

Detroit glacial stage

Pleistocene: Oregon.

T. P. Thayer, 1939, *Oreg. State Dept. Geology and Mineral Res. Bull.* 15, p. 20, 23-24.**Deville formation**

Lower Cretaceous: Alberta, Canada (subsurface).

P. C. Badgley, 1952, *Canada Geol. Survey Paper* 52-11, p. 7.**Devils Canyon member (of Modin formation)**

Upper Triassic: California.

A. F. Sanborn, [1953], *Stanford Univ. Abs. Dissert.*, v. 27, p. 436.**Devils Cove formation**

Lower Cambrian: Newfoundland, Canada.

Frederick Betz, Jr., 1939, *Newfoundland Geol. Survey Bull.* 16, p. 13-14.**Devils Gate limestone**

Middle and Upper Devonian: Nevada.

C. W. Merriam, 1940, *Geol. Soc. America Special Paper* 25, p. 16-17.**Devils Hollow division (of Lexington limestone)**

Ordovician: Kentucky.

A. C. McFarlan and W. H. White, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 8, p. 1640.**Dewey Lake redbeds**

Permian (Ochoa series): Texas (subsurface).

L. R. Page and J. E. Adams, 1938, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 12, p. 1709; 1940, v. 24, no. 1, p. 62-63.**Dezadeash group**

Lower Cretaceous: Yukon, Canada.

E. D. Kindle, 1953, *Canada Geol. Survey Mem.* 268, p. 35-37.**Diablo formation**

Permian: Nevada.

H. G. Ferguson, S. W. Muller, and S. H. Cathcart, 1953, *Geology of the Coaldale quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map* [GQ 23].**Diablo formation**

Pliocene, lower: California.

B. L. Clark *in* C. H. Weaver and others, 1944, *Geol. Soc. America Bull.*, v. 55, no. 5, p. 585, Chart 11.**Diamond Creek sandstone**

Permian: Utah.

A. A. Baker and J. S. Williams, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 4, p. 625.**Diamond Valley complex**

Paleozoic and/or Mesozoic: California.

W. J. Miller, 1946, *Geol. Soc. America Bull.*, v. 57, no. 5, p. 477-480.**Diana granite**

Precambrian (Archean): Arizona.

B. E. Thomas, 1949, *Econ. Geology*, v. 44, no. 8, p. 666, 669.**Dicksburg Hills sandstone**

Upper Pennsylvanian: Indiana.

C. A. Malott, 1939, (abs.) *Ind. Acad. Sci. Proc.*, v. 48, p. 114; 1947, v. 57, p. 131 [1948].

Dicks River facies (of New Providence formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 117-119.

Difunta formation

Upper Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1936, *Geol. Soc. America Bull.*, v. 47, no. 7, p. 1133-1135.

Dike Lake slate

Precambrian (Knife Lake): Minnesota.

J. T. Stark and V. G. Sleight, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1032 (table 2), 1034.

Dillard limestone member (of Chimneyhill formation)

Lower Silurian: Oklahoma.

R. A. Maxwell, 1936, *Northwestern Univ. Summaries of Doctoral Dissert.*, v. 4, p. 132, 134.

Dillon granite gneiss

Precambrian (pre-Beltian): Montana.

E. W. Heinrich, 1953, (abs.) *Geol. Soc. America Bull.*, v. 64, no. 12, pt. 2, p. 1432.

Dime Box member (of Yegua formation)

Eocene: Texas.

H. D. McCallum, 1947, *S. Tex. [Geol. Soc. Guidebook] 14th Ann. Meeting Field Trip*, p. 4.

Dina member (of Mannville formation)

Lower Cretaceous: Alberta, Canada (subsurface).

A. W. Nauss, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 11, p. 1613-1614.

Dinosaur Canyon sandstone member (of Moenave formation)

Upper Triassic(?): Arizona.

E. H. Colbert and C. C. Mook, 1951, *Am. Mus. Nat. History Bull.*, v. 97, art. 3, p. 151-153.

Diozoptyxis shales

Upper Cretaceous (Turonian): Jamaica, British West Indies.

L. J. Chubb, 1955, *Geol. Mag.*, v. 92, no. 3, p. 187-188.

Dip Creek formation

Paleocene: California.

N. L. Taliáferro, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 4, p. 512-516.

Disappointment Bay formation

Upper Paleozoic or Mesozoic: Northwest Territories (Cornwallis Island), Canada.

R. Thorsteinsson and Y. O. Fortier, 1954, *Canada Geol. Survey Paper* 53-24, p. 13-14.

Disappointment Mountain conglomerate

Precambrian (Knife Lake): Minnesota.

J. W. Gruner, 1941, *Geol. Soc. America Bull.*, v. 52, no. 10, p. 1583, 1592.

Dismal Lake granodiorite-gneiss

Precambrian: Manitoba, Canada.

Jorma Kalliokoski, 1952, *Canada Geol. Survey Mem.* 270, p. 27.

Divide cyclothem

Pennsylvanian: Illinois.

J. R. Ball, 1943, *Ill. State Acad. Sci. Trans.*, v. 36, no. 2, p. 147, 150.

Divisadero facies

Lower Jurassic: Vera Cruz, Mexico.

H. K. Erben, 1954, *Soc. Geol. Mexicana Bol.*, tomo 17, no. 2, p. 35.

Divisadero rhyolite series

Tertiary, lower: Chihuahua, Mexico.

R. T. Donald, 1935, *Eng. and Mining Jour.*, v. 136, no. 12, p. 614.

Dixie Valley formation

Lower Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].*

Dixon granite

Precambrian: New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 24-25.

Dobie volcanics

Precambrian (Keewatin): Ontario, Canada.

G. L. Fletcher and T. N. Irvine, 1954, *Ontario Dept. Mines Ann. Rept.*, v. 63, pt. 5, p. 15.

Dodson member (of Cook Mountain formation)

Eocene (Claiborne): Louisiana.

J. Huner, Jr., 1939, *La. Dept. Conserv. Geol. Bull.* 15, p. 87-91.

Doe Creek sandstone (in Dunvegan formation)

Upper Cretaceous: Alberta and British Columbia, Canada.

P. S. Warren and C. R. Stelek, 1940, *Royal Soc. Canada Trans.*, ser. 3, v. 34, sec. 4, p. 144.

Doe Creek sandstone member (of Marlow formation)

Permian: Oklahoma.

O. F. Evans, 1954, *Okla. Acad. Sci. Proc.*, v. 33, p. 196-197.

Dogs Head andesites

Quaternary: Washington.

Jean Verhoogen, 1937, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 24, no. 9, p. 286.

Dolet Hills member (of Logansport formation)

Paleocene (Midway): Louisiana.

D. P. Meagher and L. C. Aycock, 1942, *La. Dept. Conserv. Geol. Pamph.* 3, p. 12-16
G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 57.

Dollond Arm Head quartz diorite

Devonian (?): Newfoundland, Canada.

H. J. MacLean, 1947, *Newfoundland Geol. Survey Bull.* 22, p. 8.

Dolman gneiss

Devonian: Newfoundland, Canada.

J. R. Cooper, 1954, *Canada Geol. Survey Mem.* 276, p. 21.

Dolomite Point formation

Cambrian (post-Lower Cambrian, pre-Upper Ozarkian). Northeast Greenland.

Christian Poulsen, 1930, *Meddel. om Grønland*, bind 74, nr. 12, p. 311.

Dombjerg paraschists

Precambrian: Northeast Greenland.

G. P. Leedal, 1952, *Meddel. om Grønland*, bind 142, nr. 6, p. 18.

Dome dacite (in Vipond formation)

Precambrian: Ontario, Canada.

B. S. W. Buffam, 1948, *in* Structural geology of Canadian ore deposits: Canadian Inst. Mining and Metallurgy, p. 459 (table).**Domenigoni granodiorite***See* Domenigoni Valley granodiorite.**Domenigoni Valley granodiorite**

Cretaceous: California.

E. S. Larsen, Jr., and N. B. Keevil, 1947, Geol. Soc. America Bull., v. 58, no. 6, p. 488.

E. S. Larsen, Jr., 1948, Geol. Soc. America Mem. 29, p. 69.

Domkirken series

Lower Permian (Saxonian): Northeast Greenland.

Emil Witzig, 1954, Meddel. om Grønland, bind 72, afd. 2, nr. 5, p. 8, 11, 25.

Dona Ana member (of Lake Valley formation)

Mississippian (Osage): New Mexico.

L. R. Laudon and A. L. Bowsler, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 12, p. 2116, 2136-2138, fig. 8.

Donalda formation

Upper Devonian: Alberta, Canada.

J. M. Andrichuk and J. S. Wonfor, 1954, Am. Assoc. Petroleum Geologists Bull., v. 38, no. 12, p. 2505.

Doneley limestone member (of Savanna formation)

Pennsylvanian (lower Desmoinesian): Oklahoma.

C. C. Branson, 1954, Okla. Acad. Sci. Proc., v. 33, p. 192, 193.

Donkey fanglomerate

Pliocene(?): Idaho.

C. P. Ross, 1947, Geol. Soc. America Bull., v. 58, no. 12, pt. 1, p. 1122.

Donnay beds*See* Donni sandstone member (of Tagpochau limestone).**Donnelly glaciation**

Pleistocene (Wisconsin): Alaska.

T. L. Péwé, 1952, (abs.) Geol. Soc. America Bull.; v. 63, no. 12, pt. 2, p. 1289.

T. L. Péwé *in* T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 9, 13 (table 1).**Donni sandstone member (of Tagpochau limestone)**

Miocene, lower: Mariana Islands (Saipan).

Risaburo Tayama, 1938, Geomorphology, geology, and coral reefs of Saipan Island: Tropical Industry Inst., Palau, South Sea Islands, Bull. 1 [English translation in library of U. S. Geol. Survey, p. 61-63].

Josiah Bridge *in* W. S. Cole and Josiah Bridge, 1953, U. S. Geol. Survey Prof. Paper 253, p. 10-11.**Donny sandy tuff***See* Donni sandstone member (of Tagpochau limestone).**Donovan formation**

Lower Jurassic (Lias): Oregon.

R. L. Lupper, 1941, Geol. Soc. America Bull., v. 52, no. 2, p. 227, 229-235.

Dora member (of Bluebell formation)

Silurian: Utah.

Paul Billingsley in J. M. Boutwell, 1933, 16th Internat. Geol. Cong. [United States] Guidebook 17, Excursion C-1, p. 110 (fig. 14).

J. K. Rigby, 1952, Utah Geol. Mineralog. Survey Bull. 45, p. 23, 27, fig. 6.

Dorcheat member (of Schuler formation)

Upper Jurassic: Subsurface in Arkansas, Louisiana, and Texas.

F. M. Swain, 1944, Am. Assoc. Petroleum Geologists Bull., v. 28, no. 5, p. 602-609.

Doré Lake group

Precambrian: Quebec, Canada.

R. B. Graham, 1951, Quebec Dept. Mines Prelim. Rept. 259, p. 3.

Dorena welded tuff

Tertiary: Oregon.

D. M. Hausen, [1954], Miss. Acad. Sci., Jour., v. 5, p. 212-216.

Door Run shale member (of Allegheny formation)

Pennsylvanian: Ohio.

M. T. Sturgeon and W. M. Merrill, 1949, Ohio Jour. Sci., v. 49, no. 1, p. 3-11.

Dosados sand and shale member (of Moreno formation)

Upper Cretaceous: California.

M. B. Payne, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1954.

Dos Bocas formation

Miocene: Quintana Roo, Mexico.

Manuel Alvarez, Jr., 1954, Asociación Mexicana Geólogos Petroleros Bol., v. 6, nos. 5-6, p. 210.

Dos Palmas rhyolite

Miocene(?): California.

T. W. Dibblee, Jr., 1954, Calif. Dept. Nat. Res., Div. Mines Bull. 170, chap. 2, p. 24.

Dos Palos shale member (of Moreno formation)

Cretaceous and Paleocene(?): California.

M. B. Payne, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1953.

Dos Picachos gravels

Pleistocene and Recent: California.

N. L. Taliaferro, [1949], Geologic map of the Hollister quadrangle, Calif. (1:62,500): Calif. Dept. Nat. Res., Div. Mines [preprint?] Bull. 143, pl. 1.

Dot limestone

Middle Ordovician: Virginia.

R. L. Miller and W. P. Brosgé, 1950, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 104.

Doten Cove formation

Lower Cambrian: Newfoundland, Canada.

W. H. Twenhofel, 1947, Am. Jour. Sci., v. 245, no. 2, p. 92.

Dotsero formation

Upper Cambrian: Colorado.

C. F. Bassett, 1939, Geol. Soc. America Bull., v. 50, no. 12, pt. 1, p. 1855-1858.

Double Horseshoe cyclothem

Pennsylvanian: Indiana and Illinois.

J. W. Alexander, 1943, Ill. State Acad. Sci. Trans., v. 36, no. 2, p. 141, 142.

Doublet group

Precambrian (Proterozoic) : Quebec, Canada.

W. F. Fabric, 1951, Canada Geol. Survey Paper (Prelim. Map) 51-23.

Doucens marble and limestone

Cambrian : Newfoundland, Canada.

G. R. Heyl, 1937, Newfoundland Geol. Survey Bull. 8, p. 9-10.

Dough Hills member (of Fleming formation)

Miocene : Louisiana.

H. N. Fisk, 1940, La. Dept. Conserv. Geol. Bull. 18, p. 118, 158-161.

Doughnut formation

Carboniferous : Utah.

A. E. Granger and others, 1952, Utah Geol. Soc. Guidebook 8, p. 10-11.

Douglas Lake member (of Lenoir limestone)

Middle Ordovician : Tennessee.

Josiah Bridge, 1955, Geol. Soc. America Bull., v. 66, no. 6, p. 727-728, pl. 1.

Dowelltown member (of Chattanooga shale)

Upper Devonian : Tennessee and Alabama.

Guy Campbell, 1946, Geol. Soc. America Bull., v. 57, no. 9, p. 883-884, 886.

Downeys Bluff member (of Renault formation)

Mississippian (Chester) : Illinois.

Elwood Atherton, 1947, Ill. Acad. Sci. Trans., v. 40, p. 129.

Doyleburg member (of Shippensburg formation)

Middle Ordovician (Bolarian) : Pennsylvania.

L. C. Craig, 1949, Geol. Soc. America Bull., v. 60, no. 4, p. 715 (fig. 1), 727-731.

Dragon formation

Jurassic or older : Venezuela, and Trinidad, British West Indies.

H. G. Kugler, 1953, Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull., v. 20, no. 59, p. 30.

Dragonian age

Paleocene : North America.

H. E. Wood, 2d, and others, 1941, Geol. Soc. America Bull., v. 52, no. 1, p. 9, pl. 1.

Draper dolomite member (of Nittany formation)

Lower Ordovician (Canadian) : Virginia.

B. N. Cooper, 1939, Va. Geol. Survey Bull. 55, p. 19-20.

Dreibuchten zone

Tertiary : Northeast Greenland.

H. P. Schaub *in* Wolf Maync and others, 1938, Meddel. om Grønland, bind 114, nr. 1, p. 40-44, fig. 1.

Drill Camp flow (in Yellowknife group)

Precambrian : Northwest Territories (Mackenzie), Canada.

C. E. G. Brown and A. S. Dadson, 1953, Canadian Inst. Mining and Metallurgy Trans., v. 56, p. 70.

Drinkard sandy member (of Yeso formation)

Permian : New Mexico (subsurface).

R. E. King, 1945, N. Mex. State Bur. Mines Min. Res. Bull. 23, p. 13-15, fig. 1.

- Drinker Creek sandstone member** (of Lanesboro formational suite)
Upper Devonian (Chautauquan) : Pennsylvania.
K. E. Caster, 1938, Jour. Paleontology, v. 12, no. 1, p. 46, 47-49.
- Dripping Springs formation**
Pleistocene : California.
J. F. Mann, Jr., 1955, Calif. Dept. Nat. Res., Div. Mines Special Rept. 43, p. 9, 14-15.
- Driscoll-Sevier sand**
Oligocene : Texas (subsurface).
Alexander Deussen and K. D. Owen, 1939, Am. Assoc. Petroleum Geologists Bull., v. 23, no. 11, p. 1634.
- Drømmebjerg limestone**
Middle Silurian (Niagaran) : North Greenland.
Erdhart Frankl, 1955, Meddel. om Grønland, bind 103, nr. 7, p. 13, 22, 33.
- Drumheller marine tongue** (of Edmonton formation)
Upper Cretaceous : Alberta, Canada.
J. A. Allan and J. O. G. Sanderson, 1945, Alberta Research Council Rept. 13, p. 62-63.
- Drumheller silts**
Quaternary (post-Wisconsin) : Washington.
[G. F. Beck], 1937, Central Wash. Coll. Education Geol. Bull., v. 2, no. 7.
- Dry Creek glaciation**
Pleistocene (pre-Wisconsin) : Alaska.
Clyde Wahrhaftig in T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 7, 13 (table 1).
- Dry Creek Canyon member** (of Dakota sandstone)
Lower Cretaceous : Colorado.
K. M. Waagé, 1953, U. S. Geol. Survey Bull. 993, p. 12, 13-17.
- Dry Hill granite gneiss**
Middle Paleozoic : Massachusetts.
M. E. Willard, 1951, Bedrock geology of the Mount Toby quadrangle, Massachusetts : U. S. Geol. Survey Geol. Quadrangle Map [GQ 8].
- Dry Hollow latite**
Tertiary : Utah.
Eugene Callaghan, 1939, Am. Geophys. Union Trans. 20th Ann. Meeting, pt. 3, p. 449.
- Drywood formation or coal cycle**
Pennsylvanian (Desmoinesian) : Oklahoma, Iowa, Kansas, Missouri, and Nebraska.
W. V. Searight and others, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 12, p. 2747-2749.
C. C. Branson, 1954, Okla. Geol. Survey Guidebook 2, p. 6.
- Drywood soil**
Pleistocene (Wisconsin) : Alberta, Canada.
Leland Horberg, 1954, Geol. Soc. America Bull., v. 65, no. 10, p. 1133-1134.
- Duarte conglomerate**
Pliocene (?) : California.
J. S. Shelton, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 63.
- Dubawnt group**
Precambrian : Northwest Territories (Keewatin), Canada.
G. M. Wright, 1955, Canada Geol. Survey Paper 55-17, p. 8-11.

Duchesnean age

Eocene: North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 10, pl. 1.

Duck Lake gabbro

Pre-Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 37-38.

Duckling Creek syenite

Upper Jurassic or Lower Cretaceous: British Columbia, Canada.

J. E. Armstrong, 1949, *Canada Geol. Survey Mem.* 252, p. 109-110.

Dufault diorite and quartz diorite

Precambrian (Archean): Quebec, Canada.

J. W. Ambrose, 1941, *Canada Geol. Survey Mem.* 233, p. 64.

Dufault granodiorite

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 118-126.

Duff formation

Tertiary: Texas.

S. S. Goldich and M. A. Elms, 1946, (abs.) *Geol. America Bull.*, v. 57, no. 12, pt. 2, p. 1197; 1949, v. 60, no. 7, p. 1159-1161.

Duffin sandstone and shale (in Chinle formation)

Upper Triassic: Utah.

P. D. Proctor, 1953, *Utah Geol. Mineralog. Survey Bull.* 44, p. 10-11, 36-37.

Dufrene slate

Jurassic: California.

G. R. Heyl and J. H. Eric, 1948, *Calif. Dept. Nat. Res., Div. Mines Bull.* 144, pt. 1, p. 52, 53, pl. 7.

Dugald formation

Middle Cambrian: Nova Scotia, Canada.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 11-18.

Dugald Brook series

Middle Cambrian: Nova Scotia, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 1, Lower and Middle Cambrian pulsations: 2d ed., Peiping, China, University Press, Natl. Univ. Peking, p. 331.

Dugaldian series

Middle Cambrian: Nova Scotia, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 1, Lower and Middle Cambrian pulsations: 2d ed., Peiping, China, University Press, Natl. Univ. Peking, p. 328-343.

Dugger formation

Pennsylvanian: Indiana.

C. E. Wier, 1950, *U. S. Geol. Survey Coal Inv. Map* C 1.

Dunamagon granite

Devonian: Newfoundland, Canada.

D. M. Baird, 1951, *Canada Geol. Survey Paper* 51-21, p. 52-53.

Duncan group

Miocene, upper: Arizona.

A. A. Stoyanow, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 297 (table).

Dun Glen formation

Upper Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada*: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].

Dunlap sandstone

Permian: Pennsylvania.

W. O. Hickok IV, and F. T. Moyer, 1940, *Pa. Geol. Survey*, ser. 4, Bull. C 26, p. 152-153.

Dunleith formation

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 6, 23-24, fig. 3.

Dunlevy formation

Lower Cretaceous: British Columbia, Canada.

F. H. McLearn and E. J. W. Irish, 1944, *Canada Geol. Survey Paper* 44-15, p. 2.

Dunmore quartzite

Lower Cambrian: Quebec, Canada.

H. C. Cooke, 1954, *Geol. Assoc. Canada Proc.*, v. 6, pt. 2, p. 40.

Dunmore Hill marl member (of Navet formation)

Eocene, lower: Trinidad, British West Indies.

V. C. Illing, 1928, *Geol. Soc. London Quart. Jour.* v. 84, p. 20-21.

J. A. Cushman and H. H. Renz, 1948, *Cushman Lab. Forum. Research Special Pub.* 24, p. 2-3.

Dunns Peak sandstone

Eocene: California.

Boris Laiming, 1940, *6th Pacific Sci. Cong. 1939 Proc.*, v. 2, p. 562, fig. 9.

Duparquet sediments

Precambrian: Quebec, Canada.

H. M. Bannerman, 1940, *Quebec Dept. Mines Geol. Rept.* 4, p. 12-15.

Duperow formation

Devonian: Manitoba, Canada (subsurface).

J. R. Ower, 1952, *Oil in Canada*, v. 5, no. 1, p. 54.

Durango group

Lower Cretaceous: Durango, Mexico.

R. W. Inlay, 1944, *Geol. Soc. America Bull.*, v. 55, no. 8, p. 1007, Chart 10a.

Durgin Brook member (of Littleton formation)

Lower Devonian: New Hampshire.

M. T. Heald, 1955, *The geology of the Gilmanton quadrangle, New Hampshire*: N. H. State Plan. Dev. Comm., p. 9, 10.

Durkee Hill greenstones

Upper or post-Devonian: Vermont.

C. G. Doll, [1945], *Vt. State Geologist 24th Rept.*, p. 20.

Durst silts

Pleistocene (Wisconsin?): Texas.

M. M. Leighton, 1936, *Medallion Papers* 24, p. 16, 39 (fig. 5).

Dushkin basalt

Quaternary: Alaska.

G. C. Kennedy and H. H. Waldron, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 2, p. 13-14.

Dutchtown formation

Lower Ordovician: Missouri.

H. S. McQueen, 1937, Mo. Geol. Survey and Water Res. 59th Bienn. Rept. App. 1, p. 12-25.

Duvernay member (of Woodbend formation)

Devonian: Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, Am. Assoc. Petroleum Geologists Bull., v. 34, no. 9, p. 1822-1823.

Duverny granite

Precambrian (Archean): Quebec, Canada.

W. W. Weber, 1951, Quebec Dept. Mines Prelim. Rept. 255, p. 2.

Dysart granite gneiss

Precambrian: Ontario, Canada.

Jack Satterly and D. F. Hewitt, 1955, Ontario Dept. Mines Geol. Circ. 2, p. 4.

Dyson member (of Rundle formation)

See Dyson Creek member (of Rundle formation).

Dyson Creek member (of Rundle formation)

Mississippian: Alberta, Canada.

L. M. Clark, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 4, p. 628.

F. W. Beales, 1950, Canada Geol. Survey Paper 50-27, p. 4, table 1.

Dyson Hollow limestone zone or member (of Stoner member of Stanton formation)

Pennsylvanian (Missouri series): Nebraska.

G. E. Condra, 1949, Nebr. Geol. Survey Bull. 16, p. 32.

Dyston member (of Rundle formation)

See Dyson Creek member (of Rundle formation)

Eagle member (of Bluebell formation)

Upper Ordovician: Utah.

Paul Billingsley in J. M. Boutwell, 1933, 16th Internat. Geol. Cong. [United States] Guidebook 17, Excursion C-1, p. 110 (fig. 14).

J. K. Rigby, 1952, Utah Geol. Mineralog. Survey Bull. 45, p. 23, 27, fig. 6.

Eagle Bay formation

Precambrian or Paleozoic: British Columbia, Canada.

A. G. Jones, 1948, Canada Geol. Survey Paper 48-4, p. 3.

Eagle Mills formation

Permian(?): Subsurface in Arkansas, Louisiana, Mississippi, and Texas.

H. K. Shearer, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 6, p. 724.

R. W. Imlay, 1940, Ark. Geol. Survey Inf. Circ. 12, p. 8-15, pl. 12.

Eagle Mountains sandstone member (of Grayson formation)

Upper Cretaceous: Texas.

Elliot Gillerman, 1953, U. S. Geol. Survey Bull. 987, p. 27, 28, 31.

Eagle Nest formation

Pliocene(?): New Mexico.

L. L. Ray and J. F. Smith, Jr., 1941, Geol. Soc. America Bull., v. 52, no. 2, p. 190-191, pl. 1.

Eagle Peak syenite

Tertiary: Texas.

Elliot Gillerman, 1953, U. S. Geol. Survey Bull. 987, p. 9, 38.

Eagle Point member (of Dunleith formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., p. 33, fig. 3.

Earp formation

Upper Pennsylvanian: Arizona.

James Gilluly, J. R. Cooper, and J. S. Williams, 1954, U. S. Geol. Survey Prof. Paper 266, p. 18-23.

Easley group

Mississippian (Kinderhookian): Missouri, Iowa, Illinois, Kentucky, and Indiana.

J. M. Weller and others, 1948, Geol. Soc. America Bull., v. 59, no. 2, p. 101, Chart 5.

East Arm formation

Upper Cambrian: Newfoundland, Canada.

J. C. Troelsen, 1947, Am. Jour. Sci., v. 245, no. 9, p. 537-538.

East Bay formation

Precambrian: Ontario, Canada.

F. J. Pettijohn, 1937, Geol. Soc. America Bull., v. 48, no. 2, p. 137, 190.

East Bull Lake gabbro

Precambrian (Haileyburian): Ontario, Canada.

E. S. Moore and H. S. Armstrong, 1945, Ontario Dept. Mines Ann. Rept., v. 52, pt. 6, p. 6-7.

East Cape volcanics

Quaternary: Alaska (Aleutian Islands).

R. R. Coats, 1953, U. S. Geol. Survey Bull. 989-A, p. 8-9, 14-16.

East Caroline beds

Miocene: Eastern Caroline Islands.

Risaburo Tayama, 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 69-70, table 5 [English translator in library of U. S. Geol. Survey, p. 84].

Easterwood shales

Eocene (Claiborne): Texas.

A. A. L. Mathews, 1950, Tex. Eng. Expt. Sta. Research Rept., 14, p. 3-4, geol. map.

East Fork formation or series

Upper Cretaceous: Northwest Territories (Mackenzie), Canada.

J. S. Stewart, 1944, Canadian Inst. Mining and Metallurgy Trans., v. 47, p. 163; 1945, Canada Geol. Survey Paper 45-29, p. 8

Eastland Lake formation

Pennsylvanian (Lampasas): Texas (subsurface).

M. G. Cheney, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 66, 86.

East Liberty bone bed (in Columbus formation)

Middle Devonian: Ohio.

J. W. Wells, 1944., Geol. Soc. America Bull., v. 55, no. 3, p. 280-281.

East Molokai volcanic series

Pliocene(?): Hawaiian Islands (Molokai).

H. T. Stearns, 1946, Hawaii Div. Hydrography Bull. 8, p. 69, 73.

East Ridge group

Age unknown: California.

K. J. Hsu, 1955, Calif. Univ. Dept. Geol. Sci. Bull., v. 30, no. 4, p. 278-279, map 1.

East Verde limestone

Paleozoic (Devonic): Arizona.

[C. R.] Keyes, 1942, Pan-Am. Geologist, v. 77, no. 3, p. 228.

Eastview formation

Ordovician: Ontario, Canada.

A. E. Wilson, 1937, Royal Soc. Canada Trans., ser. 3, v. 31, sec. 4, p. 46, 59; 1940, Canada Geol. Survey Map 588A.

East Waynesboro formation

Age not stated: Virginia.

W. A. Nelson, 1949, (abs.) Va. Acad. Sci. Proc. 1948-1949, p. 139.

Fatan sandstone member (of Saginaw formation)

Pennsylvanian: Michigan.

W. A. Kelly, 1936, Mich. Dept. Conserv. Geol. Survey Div. Pub. 40, Geol. Ser. 34, pt. 2, p. 207, 211-214.

Echo limestone or formation

Precambrian (Kwaguntan): Arizona.

Charles Keyes, 1938, Pan-Am. Geologist, v. 70, no. 2, p. 107, 113.

Echo Falls shale

Eocene, upper: California.

T. L. Bailey, 1947, Am. Assoc. Petroleum Geologists Bull., v. 31, no. 11, p. 1920 (fig. 3).

Echooka glaciation

Pleistocene (Wisconsin): Alaska.

R. L. Detterman in T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 12, 13 (table 1).

Edgecliff member (of Onondaga limestone)

Middle Devonian: New York.

W. A. Oliver, Jr., 1954, Geol. Soc. America Bull., v. 65, no. 7, p. 626-627, 635-636, 641-642.

Eddie School rhyolites

Pliocene: Idaho.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, Geol. Soc. America Bull., v. 66, no. 4, p. 376-377, pl. 1.

Edinburg formation

Middle Ordovician: Virginia.

B. N. Cooper and G. A. Cooper, 1946, Geol. Soc. America Bull., v. 57, no. 1, p. 78-86.

Edna dolomite

Precambrian (Beltian): Washington.

Ian Campbell and J. S. Loofbourow, Jr., 1946, (abs.) Geol. Soc. America Bull., v. 57, no. 12, pt. 2, p. 1250.

Edna Mountain formation

Permian: Nevada.

R. J. Roberts, 1951, Geology of the Antler Peak quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 10].

Eel River formation

Pliocene, lower: California.

B. A. Ogle, 1953, Calif. Dept. Nat. Res., Div. Mines Bull. 164, p. 13 (fig. 3), 28-31, pl. 1.

Effna limestone

Middle Ordovician: Virginia.

B. N. Cooper, 1944, Va. Geol. Survey Bull. 60, p. 59-64.

Egedesminde gneiss complex

Precambrian: West Greenland.

Hans Ramberg, 1948, Meddel. Dansk Geol. Foren., bind 11, hefte 3, p. 313, 319-320, fig. 1.

Eggners Ferry chert

Mississippian: Kentucky.

E. M. Luttrell and Ann Livesay, 1952, Ky. Geol. Survey, ser. 9, Bull. 11, p. 5, 11-12.

Eighteenmile Creek member (of Ludlowville formation)

Middle Devonian: New York.

R. G. Sutton, 1951, Rochester Acad. Sci. Proc., v. 9, no. 5-6, p. 366.

El Abra formation

Miocene, upper: Cuba.

J. A. Cushman and P. J. Bermudez, 1949, Cushman Lab. Foram. Research Contrib., v. 25, pt. 2, p. 27.

P. J. Bermudez, 1950, Soc. Cubana Historia Nat. Mem., v. 19, no. 3, p. 300-301.

Eldena member (of Nachusa formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., fig. 3.

Elder sandstone

Age not stated: Nevada.

James Gilluly, 1955, in Pacific Petroleum Geologist, v. 9, no. 8, p. 1.

Elder Creek group

Jurassic (Knoxville): California.

F. M. Anderson, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 184 [preprint 1941].

El Doctor limestone

Lower Cretaceous: Queretaro, Mexico.

B. W. Wilson, J. P. Hernández M., and E. Meave T., 1955, Soc. Geol. Mexicana Bol., tomo 18, no. 1, p. 2-3, fig. 2.

El Dorado Ridge gneissose quartz diorite

Age unknown: California.

K. J. Hsu, 1955, Calif. Univ. Dept. Geol. Sci. Bull., v. 30, no. 4, p. 298-300, map 1.

Eleonore Bay formation

Precambrian: Northeast Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 1, p. 15-57.

Elenores S \varnothing series

Precambrian (Greenlandian): Northeast Greenland.

H. R. Katz, 1952, Meddel. om Grønland, bind 144, nr. 8, p. 42-49.

John Haller, 1955, Meddel. om Grønland, bind 73, afd. 1, nr. 3, p. 39, 159.

Elephant Butte formation

Pennsylvanian (Des Moines): New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 48-49.

Elephant Hill breccia

Miocene, middle, or older: California.

J. S. Shelton, 1955, *Geol. Soc. America Bull.*, v. 66, no. 1, p. 56, pl. 1.**Elephant Mountain flow**

Miocene and Pliocene: Washington.

A. C. Waters, 1955, *Geol. Soc. America Bull.*, v. 66, no. 6, p. 673, pl. 1.**Eleventh Street limestone**

Pennsylvanian (Des Moines): Oklahoma.

R. C. Moore, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 102.R. H. Dott, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 8, p. 1592, 1593-1594.**Elise formation**

Triassic(?) : British Columbia, Canada.

H. W. Little, 1950, *Canada Geol. Survey Paper* 50-19, p. 25-26.**Elk conglomerate**

Lower Cretaceous: British Columbia, Canada.

B. R. MacKay, 1934, *Canada Geol. Survey Summ. Rept.* 1933, pt. B, p. 5.**Elk Butte member (of Pierre shale)**

Upper Cretaceous: South Dakota.

W. V. Searight, 1937, *S. Dak. State Geol. Survey Rept. Inv.* 27, p. 50-55, pl. 3.**Elk Creek basalt**

Miocene and/or Pliocene: Wyoming.

A. D. Howard, 1937, *Geol. Soc. America Special Paper* 6, p. 33-36, 78.**Elkhorn basalt**

Tertiary: Wyoming.

R. E. Wilcox, 1944, *Geol. Soc. America Bull.*, v. 55, no. 9, p. 1054.**Elk Point formation**

Silurian: Subsurface in Alberta and Saskatchewan, Canada.

J. R. McGehee, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 4, p. 603, 606-611.**Elk Ridge limestone member (of Minturn formation)**

Pennsylvanian: Colorado.

A. H. Koschmann and F. G. Wells, 1946, *Colo. Sci. Soc. Proc.*, v. 15, no. 2, p. 62, 67.Ogden Tweto, 1949, *Colo. Sci. Soc. Proc.*, v. 15, no. 4, p. 202-203.**Ella Island formation**

Lower Cambrian: Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 27; nr. 2, p. 226.**Ellerslie member (of Blairmore formation)**

Lower Cretaceous: Alberta, Canada (subsurface).

C. W. Hunt, 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 9, p. 1800.**Elliot Bay conglomerate**

Precambrian: Saskatchewan, Canada.

A. M. Christie, 1952, *Canada Geol. Survey Mem.* 269, p. 14.**Ellsworth formation**

Upper Cretaceous: Kansas.

R. C. Moore and K. K. Landes, 1937, *Geologic map of Kansas [1:500,000]*: Kans. State Geol. Survey.

El Luis Ridge group

Age unknown : California.

K. J. Hsu, 1955, Calif. Univ. Dept. Geol. Sci. Bull., v. 30, no. 4, p. 296, map 1.

Elm member (of Nachusa formation)

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., fig. 3.

Elm Creek silts

Pleistocene (Illinoian?) : Texas.

M. M. Leighton, 1936, Medallion Papers 24, p. 8-11, 39 (fig. 5).

Elmira formation

Eocene, middle : Cuba.

J. F. de Albear, 1941, Soc. Cubana Ingenieros Rev., v. 36, chart facing p. 564.

Jorge Brodermann, 1945, Soc. Cubana Ingenieros Rev., v. 42, no. 1, p. 124, chart facing p. 144.

El Modeno volcanics

Miocene : California.

J. E. Schoellhamer and others, 1954, U. S. Geol. Survey Oil and Gas Inv. Map OM 154.

El Monte limestone

Cretaceous (Albian-Cenomanian) : Hidalgo, Mexico.

F. S. Simons, 1951, Stanford Univ. Abs. Dissert., v. 26, p. 333.

El Morro fanglomerate

Tertiary, lower or middle : Hidalgo, Mexico.

F. S. Simons, 1951, Stanford Univ. Abs. Dissert., v. 26, p. 333.

El Plan formation

Upper Triassic : Honduras.

R. H. Carpenter, 1954, Geol. Soc. America Bull., v. 65, no. 1, p. 25-27.

El Rito formation

Tertiary (pre-upper Miocene) : New Mexico.

H. T. U. Smith, 1938, Jour. Geology, v. 46, no. 7, p. 940-944, 958.

Elsie Mountain greenstones

Precambrian (Keewatin) : Ontario, Canada.

Anonymous, 1937, Canadian Mining Jour., v. 58, no. 11, p. 591, 592.

Elsmere member (of Repetto formation)

Pliocene, lower : California.

U. S. Grant, IV; and L. G. Hertlein, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 202 (fig. 85) [preprint 1941].

G. B. Oakeshott, 1950, Calif. Jour. Mines and Geology, v. 46, no. 1, p. 54 (fig. 2), 55.

El Socavon facies (of El Doctor limestone)

Lower Cretaceous : Queretaro, Mexico.

B. W. Wilson, J. P. Hernández M., and E. Meave T., 1955, Soc. Geol. Mexicana Bol., tomo 18, no. 1, p. 5, fig. 2.

Elves Chasm tongue

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, Carnegie Inst. Washington Pub. 563, p. 14, 29, 37-88.

Elvira group

Mississippian (Chester) : Illinois and Missouri.

J. M. Weller, 1939, Kans. Geol. Soc. Guidebook 13th Ann. Field Conf., p. 131, 136.

Elway limestone

Middle Ordovician: Virginia.

B. N. Cooper, 1945, Va. Geol. Survey Bull. 66, p. 17, 42, 134, 206-207.

Embudo granite

Precambrian: New Mexico.

Arthur Montgomery, 1953, N. Mex. State Bur. Mines Min. Res. Bull. 30, p. 37-46.

Emilia group

Lower Paleozoic (Caledonian): Northeast Greenland.

C. E. Wegmann, 1935, Meddel. om Grønland, bind 103, nr. 3, p. 32, pl. 1.

†**Emma Creek formation**

Pleistocene: Kansas.

S. W. Lohman and J. C. Frye, 1939, (abs.) Econ. Geology, v. 34, no. 8, p. 942-943; 1940, v. 35, no. 7, p. 849-851.

Encajonado formation

Miocene: Tabasco and Chiapas, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, correlation chart.

G. P. Salas and Ernesto Lopez Ramos, 1951, Asociación Mexicana Geólogos Petroleros Bol., v. 3, nos. 1-2, p. 37-38.

Encanto series

Miocene, lower: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, p. 281, correlation chart.

Encarnación shale

Oligocene: Tabasco and Chiapas, Mexico.

G. P. Salas and Ernesto Lopez Ramos, 1951, Asociación Mexicana Geólogos Petroleros Bol., v. 3, nos. 1-2, p. 34-35.

Encina Sola quartz diorite

Cretaceous: Baja California, Mexico.

A. O. Woodford and T. F. Harriss, 1938, Geol. Soc. America Bull., v. 49, no. 9, p. 1313-1314.

Endako group

Oligocene or younger: British Columbia, Canada.

J. E. Armstrong, 1947, Canada Geol. Survey Paper 47-13 (Prelim. Map 47-13A).

Englee formation

Ordovician: Newfoundland, Canada.

Frederick Betz, Jr., 1939, Newfoundland Geol. Survey Bull. 16, p. 21-22.

Ennery formation

Eocene, upper: Haiti.

Jacques Butterlin, [1952], Résumé de thèse présentée à la Sorbonne, La géologie de la République d'Haïti et ses rapports avec celle des régions voisines (mimeo.), p. 3; 1954, Inst. Français d'Haïti Mem. 1, p. 59.

Enragé formation

Pennsylvanian: New Brunswick, Canada.

G. W. H. Norman, 1941, Canada Geol. Survey Map 647A.

Ensign Lake green slates, tuffs, and graywackes.

Precambrian (Knife Lake): Minnesota.

J. W. Gruner, 1941, Geol. Soc. America Bull., v. 52, no. 10, p. 1583, 1605-1606.

Ensign-Snowbank Lake agglomerate

Precambrian (Knife Lake): Minnesota.

W. Gruner, 1941, Geol. Soc. America Bull., v. 52, no. 10, p. 1583, 1609-1610.

Entrance conglomerate (in Edmonton formation)

Upper Cretaceous: Alberta, Canada.

A. H. Lang, 1944, Canada Geol. Survey Paper 44-1, p. 2, 7.

Eoline member (of Coker formation)

Upper Cretaceous (Tuscaloosa group): Alabama.

L. C. Conant and W. H. Monroe, 1945, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 37.

Epitaph dolomite

Permian: Arizona.

James Gilluly, J. R. Cooper, and J. S. Williams, 1954, U. S. Geol. Survey Prof. Paper 266, p. 25-27.

Eremitdal series (of Eleonore Bay formation)

Precambrian: Northeast Greenland.

Erdhart Frankl, 1951, Meddel. om Grønland, bind 151, nr. 6, p. 5, 6, 14.

H. R. Katz, 1952, Meddel. om Grønland, bind 111, nr. 1, p. 31-34, 52, 53-54, pl. 3.

Erin Point beds (in Moruga formation)

Miocene, upper: Trinidad, British West Indies.

Heinrich Gerth, 1935, K. Akad. Wetensch. Amsterdam, Sect. Sci. Proc., v. 38, no. 4, table facing p. 460.

R. A. Liddle, 1946, The Geology of Venezuela and Trinidad: Ithaca, N. Y., Paleont. Research Inst., p. 769.

Erna member (of Wilberns formation)

Cambrian: Texas.

F. B. Plummer, [1942], Tex. Univ. Bur. Econ. Geology Min. Res. Circ. 22, p. 1; 1944, Circ. 33, p. 8.

Escacado limestone

Paleozoic (Devonic): Arizona.

[C. R.] Keyes, 1942, Pan-Am. Geologist, v. 77, no. 3, p. 227, 228.

Escalante formation

Oligocene: British Columbia, Canada.

J. A. Jeletzky, 1950, Canada Geol. Survey Paper 50-37, p. 48.

Escanaba River group

Middle Ordovician: Michigan.

R. C. Hussey, 1950, Mich. Geol. Soc. [Guidebook 14th] Ann. Geol. Excursion, introd.

Escobales granodiorite

Pliocene(?): Honduras.

R. H. Carpenter, 1954, Geol. Soc. America Bull., v. 65, no. 1, p. 30-31, pl. 1 (geol. map).

Escobar sandstone

Eocene, upper: California.

C. E. Weaver, 1953, Wash. [State] Univ. Pubs. in Geology, v. 7, p. 19 (chart), 44-48.

Escolin series

Oligocene: Vera Cruz, Mexico.

G. P. Salas, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 8, p. 1391.

Luis Limón-Gutiérrez, 1950, Asociación Mexicana Geólogos Petroleros Bol., v. 2, no. 10, p. 618-619.

Escondido Creek leucogranodiorite

Cretaceous: California.

E. S. Larsen, Jr., and N. B. Keevil, 1947, *Geol. Soc. America Bull.*, v. 58, no. 6, p. 489.E. S. Larsen, Jr., 1948, *Geol. Soc. America Mem.* 29, p. 87-89.**Escudo sandstone**

Miocene, middle (Relizian): California.

Martin Van Covering and H. B. Allen, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 496-500.**Eshe porphyry**

Tertiary: Colorado.

J. T. Stark and others, 1949, *Geol. Soc. America Mem.* 33, p. 81-83.**Eskasoni formation**

Middle Cambrian: Nova Scotia, Canada.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 10-11.**Eskimo Hut formation**

Lower Ordovician (Ozarkian): Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 22-23; nr. 2, p. 231.**Esmeralda member (of Brasso formation)**

Oligocene, middle to upper: Trinidad, British West Indies.

H. H. Renz, 1942, *8th Am. Sci. Cong. Proc.*, v. 4, p. 545-546, 555.**Esmond granite**

Devonian (?) or earlier: Rhode Island and Massachusetts.

Alonzo Quinn, R. G. Ray, and W. L. Seymour in Alonzo Quinn and others, 1948,

R. I. Port and Indus. Devel. Comm. *Geol. Bull.* 3, p. 15, geol. map.**Esmont slate facies (of Candler formation)**

Age not stated: Virginia.

W. R. Brown and H. C. Sundermann, 1954, (abs.) *Geol. Soc. America Bull.*, v. 65, no. 12, pt. 2, p. 1356.**Espada formation**

Upper Jurassic and Lower Cretaceous: California.

T. W. Dibblee, Jr. 1950, *Calif. Dept. Nat. Res., Div. Mines Bull.* 150, p. 22-23, pl. 6.**Esperance sand member (of Vashon drift)**

Pleistocene: Washington.

R. C. Newcomb, 1952, *U. S. Geol. Survey Water-Supply Paper* 1135, p. 19-23, pl. 1.**Esperanza limestone**

Cambrian: Sonora, Mexico.

R. B. Mulchay and J. R. Velasco, [1951], Tentative correlation of the sedimentary rocks at Cananea, Sonora, Mexico, with the section at Bisbee, Ariz. Privately printed (mimeo.), p. 4-5; 1954, *Min. Eng.*, v. 6, no. 6, p. 628.**Espey Creek limestone member (of Chappel formation)**

Mississippian: Texas.

F. B. Plummer, 1950, *Tex. Univ. Bur. Econ. Geology Pub.* 4329, p. 28.**Espinal formation**

Paleozoic (Devonic): Arizona.

[C. R.] Keyes, 1942, *Pan-Am. Geologists*, v. 77, no. 3, p. 227, 228.

Espinal grit (in Joserita member of Lowell formation)

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 11-12.**Espinaso volcanics**

Tertiary: New Mexico.

C. E. Stearns, 1943, *Jour. Geology*, v. 51, no. 5, p. 309-310, fig. 2.**Espy formation**

Lower Cretaceous: Texas.

R. M. Huffington, 1943, *Geol. Soc. America Bull.*, v. 54, no. 7, p. 1004-1007.**Essex series**

Precambrian (Archean): California.

J. C. Hazzard and E. F. Dosch, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 309.**Establishment member (of Mifflin formation)**

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 10, 16.**Ester ash bed**

Pleistocene: Alaska.

T. L. Péwé, 1955, *Geol. Soc. America Bull.*, v. 67, no. 6, p. 713.**Ester Lake graywackes, slates, and tuffs**

Precambrian (Knife Lake): Minnesota.

J. W. Gruner, 1941, *Geol. Soc. America Bull.*, v. 52, no. 10, p. 1583, 1611-1613.**Estero Franco formation**

Miocene: Quintana Roo, Mexico.

Manuel Alvarez, Jr., 1954, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 6, nos. 5-6, p. 210.**Estes Park beds**

Precambrian: Colorado.

M. F. Boos, 1954, (abs.) *Geol. Soc. America Bull.*, v. 65, no. 12, pt. 2, p. 1372.**Etah formation**

Precambrian (Algonkian): North Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 219-220.**Etherington member (of Rocky Mountain formation)**

Carboniferous: Alberta, Canada.

R. J. W. Douglas, 1953, *Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 68.**Et-Then series**

Precambrian: Northwest Territories (Mackenzie), Canada.

C. H. Stockwell, 1933, *Canada Geol. Survey Summary Rept.* 1932, pt. C, p. 59.**Euless member (of Woodbine formation)**

Upper Cretaceous (Cenomanian): Texas.

R. T. Hazzard, B. W. Blanpied, and W. C. Spooner, [1947], *Shreveport Geol. Soc. 1945 Ref. Rept.*, v. 2, p. 475, 476, 477, 480.L. W. Stephenson, 1952, *U. S. Geol. Survey Prof. Paper* 242, p. 10, 27-28, 36, 37.**Eulie shale**

Lower Mississippian: Tennessee.

Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, no. 9, p. 885.

Eureka Sound group

Cretaceous or Cenozoic: Northwest Territories (Ellesmere Island), Canada.
J. C. Troelsen, 1950, Meddel. om Grønland, bind 149, nr. 7, p. 78-79.

Eustis porphyry

Silurian or Devonian: Quebec, Canada.

G. V. Douglas, 1941, Quebec Dept. Mines Geol. Rept. 8, p. 16-18.

Eustis-Moulton Hill series

Ordovician: Quebec, Canada.

J. E. Hawley and others, 1945, Canadian Inst. Mining and Metallurgy Trans., v. 48, p. 372 (geol. map).

Everett member (of Nachusa formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., figs. 3, 9.

Evington group

Paleozoic(?): Virginia.

W. R. Brown, 1953, Ky. Geol. Survey, ser. 9, Special Pub. 1, [p. 91] (fig. 1).

Excello formation

Pennsylvanian (Desmoinesian): Missouri, Iowa, Kansas, Nebraska, and Oklahoma.

W. V. Searight in W. B. Howe and W. V. Searight, 1953, Mo. Geol. Survey and Water Res. Rept. Inv. 14, pl. 1.

Exline cyclothem (including Exline limestone)

Pennsylvanian (Des Moines): Iowa, Illinois, and Missouri.

L. M. Cline, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 1, p. 65-66.

J. M. Weller, 1942, Ill. State Acad. Sci. Trans., v. 35, p. 145.

Exploits series

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1936, Newfoundland Geol. Survey Bull. 3, p. 3-12.

Exshaw shale

Upper Devonian: Alberta, Canada.

P. S. Warren, 1937, Am. Jour. Sci., ser. 5, v. 33, no. 198, p. 456-457.

Eyer member (of Hatter formation)

Middle Ordovician (Chazyan): Pennsylvania.

G. M. Kay, 1943, Econ. Geology, v. 38, no. 3, p. 193.

Fabius group

Devonian or Mississippian: Missouri, Iowa, Illinois, Kentucky, and Indiana.

J. M. Weller and others, 1948, Geol. Soc. America Bull., v. 59, no. 2, p. 101, Chart 5.

Fagasa gabbro

Pliocene and lower Pleistocene(?): Samoa Islands (Tutuila).

R. A. Daly, 1924, Carnegie Inst. Washington Pub. 340, p. 113-115.

H. T. Stearns, 1944, Geol. Soc. America Bull., v. 55, no. 11, p. 1296, pl. 1 (geol. map).

Fairbank formation

Pennsylvanian: Wyoming.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, Nebr. Geol. Survey Bull. 13, p. 2, 3, 32.

Fairfax schist

Precambrian (?) : Vermont.

E. C. Jacobs, 1935, (abs.) *Geol. Soc. America Proc.* 1934, p. 85.**Fairholme formation**

Devonian : Alberta, Canada.

G. S. Hume and H. H. Beach, 1941, *Canada Geol. Survey Paper (Prelim. Map)* 41-8.**Fairplay glacial substage**

Pleistocene (Wisconsin) : Colorado.

Q. D. Singewald, 1950, *U. S. Geol. Survey Bull.* 955-D, p. 123, 125, pl. 9 [1951].**Fairplay member (of Dunleith formation)**

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 33, fig. 3.**Fairview granodiorite**

Jurassic (?) : British Columbia, Canada.

H. S. Bostock, 1940, *Canada Geol. Survey Map* 341A.**Fairview Valley formation**

Permian : California.

O. E. Bowen, Jr., in L. A. Wright and others, 1953, *Calif. Jour. Mines and Geology*, v. 49, nos. 1-2, pl. 2.O. E. Bowen, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 165, p. 16 (fig. 2), 36-42.**Fairville granite**

Pre-Carboniferous : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 34-35.**Fais limestone**

Pleistocene : Caroline Islands (Fais).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands*: *Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 347 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, *Coral reefs in the South Seas*: *Japan Hydrog. Office Bull.*, v. 11, p. 68, table 5 [English translation in library of U. S. Geol. Survey, p. 82-83].**Falcon granite gneiss**

Precambrian : Colorado.

M. F. Boos, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1179.**Falcon limestone member (of Lykins formation)**

Permian : Colorado.

L. W. LeRoy, 1946, *Colo. School Mines Quart.*, v. 41, no. 2, p. 31, 33.**Falcon sandstone member (of Cook Mountain formation)**

Eocene (Claiborne) : Texas.

J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259 (fig. 2), 263.**Falher member (of Spray River formation)**

Lower Cretaceous : Alberta, Canada (subsurface).

P. C. Badgley, 1952, *Canada Geol. Survey Paper* 52-11, p. 9.**Falling Run member (of Sanderson formation)**

Lower Mississippian : Indiana and Kentucky.

Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, no. 9, p. 848-849, 857-858.

Falling Springs standstone member (of New Scotland formation)

Lower Devonian: Pennsylvania.

F. M. Swartz, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, p. 1923.F. M. Swartz *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, *Pa. Geol. Survey*, ser. 4, Bull. G 19, p. 57, 67, 83.**Falor formation**

Pliocene: California.

G. A. Manning and B. A. Ogle, 1950, *Calif. Dept. Nat. Res., Div. Mines Bull.* 148, p. 14 (fig. 2), 22-25, pl. 1.**Falskebugt beds**

Lower Cretaceous (Valanginian): Northeast Greenland.

Wolf Maync, 1949, *Meddel. om Grønland*, bind 133, nr. 3, p. 55-62, 187-192, 281.**Fannettsburg member (of Shippensburg formation)**

Middle Ordovician (Bolarian): Pennsylvania and Maryland.

L. C. Craig, 1949, *Geol. Soc. America Bull.*, v. 60, no. 4, p. 715 (fig. 1), 722-727.**Faraway Ranch formation**

Cenozoic: Arizona.

H. E. Enlows, 1951, *Tulsa Geol. Soc. Digest*, v. 19, p. 105-107; 1955, *Geol. Soc. America Bull.*, v. 66, no. 10 p. 1217.**Farewell glaciation**

Pleistocene (Wisconsin): Alaska.

A. T. Fernald *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 6-7, 13 (table 1).**Farewell group**

Ordovician (?): Newfoundland, Canada.

D. M. Baird, 1950, *Canada Geol. Survey Paper* 50-22, p. 28-32.**Fargo Canyon diorite**

Upper Jurassic: California.

W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, no. 1, p. 59-60.**Farmdale loess or substage**

Pleistocene (early Wisconsin): Illinois, Kentucky, and Indiana.

[M. M. Leighton], 1947, *in* *Itinerary State Geologists' Conference on the loess deposits*, p. 1, 3, 4.M. M. Leighton and H. B. Willman, 1950, *Jour. Geology*, v. 58, no. 6, p. 602, 603.**Farmers siltstone member (of New Providence formation)**

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 129-132.**Farmington Canyon complex**

Precambrian: Utah.

A. J. Eardley, 1939, *Geol. Soc. America Bull.*, v. 50, no. 8, p. 1282.A. J. Eardley and R. A. Hatch, 1940, *Jour. Geology*, v. 48, no. 1, p. 61-62.**Farragut limestone**

Middle Ordovician: Tennessee.

C. E. Prouty, 1946, *Am. Assoc. Petroleum Geologists Bull.*, v. 30, no. 7, p. 1156-1157**Farrington sand member (of Raritan formation)**

Upper Cretaceous: New Jersey.

H. C. Barksdale and others, 1943, *The ground-water supplies of Middlesex County, New Jersey*: N. J. State Water Policy Comm. [Special Rept. 8], p. 104.

Fauquier formation

Precambrian: Virginia.

A. S. Furcron, 1939, Va. Geol. Survey Bull. 54, p. 37-41.

Favel formation

Upper Cretaceous: Manitoba and Saskatchewan, Canada.

S. R. Kirk and others, 1941, Canada Geol. Survey Map 637A.

R. T. D. Wickenden, 1945, Canada Geol. Survey Mem. 239, p. 23-33.

Favret formation

Middle Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada*: U. S. Geol. Survey. Quadrangle Map [GG 7].**Fayette facies (of Flagstaff formation)**

Paleocene, upper: Utah.

W. N. Gilliland, 1951, Nebr. Univ. Studies, new ser., no. 8, p. 29.

Fearn Springs sand member (of Wilcox formation in Mississippi; of Nanafalia formation in Alabama and Georgia)

Eocene, lower: Mississippi, Georgia, and Alabama.

F. F. Mellen, 1939, Miss State Geol. Survey Bull. 38, p. 33-37.

Federal sediments

Lower Devonian: Quebec, Canada.

J. E. Gill and P. E. Auger, 1943, Canadian Inst. Mining and Metallurgy Trans., v. 46, p. 457, 459.

Felden group

Lower Permian or Upper Carboniferous: Northwest Territories (Ellesmere Island), Canada.

R. G. Blackadar, 1954, Canada Geol. Survey Paper 53-10, p. 15-16.

Feldt Ranch beds (in Ash Hollow formation)

Pliocene (Ogallala): Nebraska.

M. K. Elias, 1942, Geol. Soc. America Special Paper 41, p. 141-142.

Feliz granodiorite

Pre-Cretaceous (?): California.

G. J. Neuerburg, 1953, Calif. Dept. Nat. Res., Div. Mines Special Rept. 33, p. 7 (table 1), 12-14, pl. 1.

Fena beds

Eocene: Mariana Islands (Guam).

Risaburo Tayama, 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 51, table 4 [English translation in library of U. S. Geol. Survey, p. 61].

Fenimore iron formation

Precambrian: Quebec, Canada.

P. E. Auger, 1954, Canadian Mining and Metall. Bull., v. 47, no. 8, p. 530.

Fenn formation

Upper Devonian: Alberta, Canada.

J. M. Andrichuk and J. S. Wonfor, 1954, Am. Assoc. Petroleum Geologists Bull., v. 38, no. 12, p. 2505.

Fenner granite gneiss

Precambrian (Archean): California.

J. C. Hazzard and E. F. Dosch, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 309.

Ferdinand limestone

Pennsylvanian (Pottsville): Indiana.

D. W. Franklin, 1944, Ill. State Acad. Sci. Trans., v. 37, nos. 3-4, p. 86, 89.

Fergusson series

Permian (?) : British Columbia, Canada.

C. E. Cairnes, 1937, Canada Geol. Survey Mem. 213, p. 9-13.

Fern Creek formation

Precambrian : Michigan.

F. J. Pettijohn and F. A. Hildebrand, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1927.

F. J. Pettijohn, 1943, Jour. Geology, v. 51, no. 6, p. 397.

Ferndale sandstone

Pliocene, upper : California.

H. D. MacGinitie, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 633.

Fernow gneiss

Pre-Ordovician (?) : Washington.

E. A. Youngberg and T. L. Wilson, 1952, Econ. Geology, v. 47, no. 1, p. 3.

Ferriman series

Precambrian : Newfoundland (Laborador) and Quebec, Canada.

J. K. Gustafson and A. E. Moss, 1953, Mining Eng., v. 5, no. 6, p. 595 (table 1).

Ferry Lake anhydrite

Lower Cretaceous (Comanche series) : Subsurface in Arkansas, Louisiana, and Texas.

R. W. Imlay, 1940, Ark. Geol. Survey Inf. Circ. 12, p. 4, 35-36.

Fiedmont granodiorite

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 134.

Fifes Peak andesite

Miocene (Keechelus andesite series) : Washington.

W. C. Warren, 1940 (abs.) Geol. Soc. America Bull., v. 51, no. 12, pt. 2, p. 2034-2035 ; 1941, Jour. Geology, v. 49, no. 8, p. 800-802.

Figuery granodiorite

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 133.

File granite

Precambrian : Manitoba, Canada.

J. M. Harrison, 1949, Canada Geol. Survey Mem. 250, p. 19, 20.

Filel sandstone lentil (in Amherstburg formation)

Middle Devonian : Michigan (subsurface).

K. K. Landes, U. S. Geol. Survey Circ. 133, p. 9, 12.

Filelola series

Miocene, lower : Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, p. 281, 282-283, correlation chart.

Fillmore limestone

Lower Ordovician (Canadian) : Utah and Nevada.

L. F. Hintze, 1951, Utah Geol. Mineralog. Survey Bull. 39, p. 13-16.

Final shales

Precambrian (Chuaran) : Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 113.

Finger Bay volcanics

Paleozoic(?) : Alaska (Aleutian Islands).

R. R. Coats, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2*, pt. 5, p. 75-76.

Finger Lakes stage

Upper Devonian (Senecan) : New York.

G. A. Cooper and others, 1942, *Geol. Soc. America Bull.*, v. 53, no. 12, pt. 1, p. 1734, Chart 4.

Finnefjeld complex

Precambrian : West Greenland.

Asger Berthelsen, 1950, *Meddel. Dansk Geol. Foren.*, bind 11, p. 559-560.

Fire Clay Hill bentonitic shale (in Chinle formation)

Upper Triassic : Utah.

P. D. Proctor, 1953, *Utah Geol. Mineralog. Survey Bull. 44*, p. 10-11, 19-22.

Firemoon limestone member (of Piper formation)

Middle Jurassic : Montana (subsurface and surface) and North Dakota (subsurface).

J. W. Nordquist, 1955, *Billings Geol. Soc. Guidebook 6th Ann. Field Conf.*, p. 97, 101-102.

Fish Creek gypsum

Miocene : California.

T. W. Dibblee, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull. 170*, chap. 2, p. 22.

Fish Creek shale

Lower Silurian : New York, and Ontario, Canada.

D. W. Fisher, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 9, p. 1987-1988.

Fishells conglomerate

Mississippian : Newfoundland, Canada.

D. M. Baird, 1951, *Canadian Inst. Mining and Metallurgy Trans.*, v. 54, p. 86.

Fishels limestone

Mississippian : Newfoundland, Canada.

W. A. Bell, 1948, *Canada Geol. Survey Bull. 10*, p. 31.

Fisk formation

Permian (Wolfcamp) : Texas.

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66, 95-96.

Fitt Trace marl

Eocene : Trinidad, British West Indies.

H. G. Kugler and others, [1939], *Geological conference in Trinidad; notes on the excursions : Petroleum Assoc. Trinidad, cross section through eastern Central Range and northern depression.*

J. A. Cushman and H. H. Renz, 1948, *Cushman Lab. Foram. Research Special Pub. 24*, p. 2, 3.

Five Oaks limestone member (of Cliffield formation)

Middle Ordovician : Virginia.

B. N. Cooper and C. E. Prouty, 1943, *Geol. Soc. America Bull.*, v. 54, no. 6, p. 863.

Fizzle Flat lentil (in Terlingua formation)

Cretaceous (Gulf series) : Texas.

C. G. Moon, 1953, *Geol. Soc. America Bull.*, v. 64, no. 2, p. 164, 169-170, fig. 2.**Flag Rock formation**

Precambrian : South Dakota.

T. A. Dodge, 1942, *Geol. Soc. America Bull.*, v. 53, no. 4, p. 563.J. A. Noble and J. O. Harder, 1948, *Geol. Soc. America Bull.*, v. 59, no. 9, p. 944, 949-952, pl. 1.**Flamand limestone member (of Saint Bartholomew formation)**

Eocene, middle : St. Bartholomew, French West Indies.

R. A. Christman, 1953, *Geol. Soc. America Bull.*, v. 64, no. 1, p. 69-70.**Flannigan cyclothem**

Pennsylvanian : Illinois.

W. A. Newton and J. M. Weller, 1937, *Ill. State Geol. Survey Rept. Inv.* 45, p. 9, 10.**Flat Creek cyclothem**

Pennsylvanian : Illinois.

H. R. Wanless, 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 9, p. 1764 (table 2).**Flatiron coquinite member (of Riceville formation)**

Upper Devonian : Pennsylvania.

Bradford Willard *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, *Pa. Geol. Survey*, ser. 4, *Bull. G* 19, p. 14 (footnote), 278 (footnote).**Flat Rock tongue (of San Fernando formation)**

Oligocene : Trinidad, British West Indies.

R. M. Stainforth, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 7, p. 1318.**Flat Rock Creek granite**

Age not stated : Virginia.

J. P. Meador, 1949, (abs.) *Va. Acad. Sci. Proc.* 1948-1949, p. 137.**Flavrian granite**

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 127-128.**Flavrian Lake granite***See* Flavrian granite.**Fleming chert breccia**

Precambrian (Proterozoic) : Quebec and Newfoundland (Labrador), Canada.

H. R. Rice, 1949, *Canadian Mining Jour.*, v. 70, no. 9, p. 71-72.J. M. Harrison, 1952, *Canada Geol. Survey Paper* 52-20, p. 8-9.**Fleming cyclothem or formation**

Pennsylvanian (Des Moines) : Kansas.

G. E. Abernathy, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 18, 20, 23 ; 1938, *Kans. Acad. Sci. Trans.*, v. 41, p. 193, 195.**Fleming Inlet series**

Triassic : Northeast Greenland.

Otto Nordenskjöld, 1907, *Meddel. om Grønland*, hefte 28, pt. 5, p. 175-177.

Fletcher anhydrite member (of Salado formation)

Permian: Subsurface in New Mexico and Texas.

W. B. Lang, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 1, p. 69, 75-78.

Fleur de Lys group

Precambrian: Newfoundland, Canada.

D. M. Baird, 1951, *Canada Geol. Survey Paper* 51-21, p. 13-16.

Flint Hill sandstone member (of Fort Scott formation)

Pennsylvanian (Desmoinesian): Missouri.

A. G. Unklesbay in F. C. Greene and M. V. Searight, 1949, *Mo. Geol. Survey and Water Res. Rept. Inv.* 11, p. 6, fig. 1.

Florentino formation

Oligocene, upper: Dominican Republic.

P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Special Pub.* 25, p. 27.

Floride dolomite

Middle Silurian: Utah.

F. W. Osterwald, 1953, *U. S. Geol. Survey Trace Elements Inv. Rept.* TEI-330, p. 105.

Flour Bluff sand

Oligocene: Texas (subsurface).

Alexander Deussen and K. D. Owen, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 11, p. 1634.

Flour Sack member (of Bright Angel shale)

Lower and/or Middle Cambrian: Arizona.

E. D. McKee, 1945, *Carnegie Inst. Washington Pub.* 563, p. 14, 29, 82-84.

Fly sandstone

Pennsylvanian (Monongahela): Ohio.

A. T. Cross, W. H. Smith, and Thomas Arkle, Jr., 1950, *Field guide for the special field conference on the stratigraphy, sedimentation and nomenclature of the Upper Pennsylvanian and Lower Permian strata (Monongahela, Washington and Greene series) in the northern portion of the Dunkard Basin of Ohio, West Virginia, and Pennsylvania: W. Va. Geol. and Econ. Survey, Section 26 (upper part).*

Fogo group

Ordovician (?): Newfoundland, Canada.

D. M. Baird, 1950, *Canada Geol. Survey Paper* 50-22, p. 15-28.

Foldvik Creek formation

Lower Carboniferous (?): Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland, bind* 73, afd. 2, nr. 1, p. 95; nr. 2, p. 244.

Foley formation

Pliocene: Louisiana (subsurface).

P. H. Jones in P. H. Jones, A. N. Turcan, Jr., and H. E. Skjibitzke, 1954, *La. Dept. Conserv. Geol. Bull.* 30, p. 56-61.

Fonda limestone member (of Tribes Hill formation)

Lower Ordovician (lower Canadian): New York.

D. W. Fisher, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 76 (fig. 2), 89-90.

Fond Moustique tuffs

Oligocene, lower: Martinique, French West Indies.

Louis Barrabé, 1928 [France] *Office national des combustibles liquides Annales*, 3^e année, no. 1, p. 9-11, 26.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581, 1593.

Fontenelle member (of Green River formation)

Eocene, middle: Wyoming.

J. H. Donovan, 1950, Wyo. Geol. Assoc. Guidebook 5th Ann. Field Conf., p. 63.

Fool Creek conglomerate

Oligocene (?): Utah.

F. W. Christiansen, 1951, Utah Geol. Mineralog. Survey [Utah Geol. Soc.] Guidebook 6, p. 9, 10-11.

Forbes formation

Upper Cretaceous (Chico): California.

J. M. Kirby, 1942, (abs.) Am. Assoc. Petroleum Geologists Bull., v. 26, no. 5, p. 899; 1943, v. 27, no. 3, p. 282-283.

Forbush Creek facies (of New Providence formation)

Lower Mississippian: Kentucky.

H. J. Klepser, 1937, Ohio State Univ. Abs. Doctors' Dissert. 24, p. 182-183.

Ford River granite

Precambrian (Huronian); Michigan.

R. M. Dickey, 1938, Jour. Geology, v. 46, no. 3, pt. 1, p. 321-335.

Forestville member (of Canadaway formation)

Upper Devonian (Senecan): New York.

I. H. Tesmer, 1954, Dissert. Abs., v. 14, no. 12, p. 2317, 2318.

Forge Hollow member (of Bertie formation)

Upper Silurian (Cayugan): New York.

L. V. Rickard, 1955, N. Y. Geol. Assoc. Guidebook 27th Ann. Meeting, p. 7.

Forlorn Hope shale

Lower Cambrian: Nevada.

J. F. Mason in A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 1, Lower and Middle Cambrian pulsations: 2d ed., Peiping, China, University Press, Natl. Univ. Peking, p. 274-276.

Forman volcanics

Miocene: Nevada.

V. P. Gianella, 1934, Mining and Metallurgy, v. 15, no. 331, p. 299.

Forreston member (of Grand Detour formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., fig. 3.

Fort Ann limestone member (of Tribes Hill formation)

Lower Ordovician: New York.

R. R. Wheeler, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1938-1939; 1942, Am. Jour. Sci., v. 240, no. 7, p. 518, 522.

Fort Buchanan formation

Upper Cretaceous: Arizona.

A. A. Stoyanow, 1949, Geol. Soc. America Mem. 38, p. 59.

Fort Chimo group

Precambrian: Quebec, Canada.

P. E. Auger, 1954, Canadian Mining and Metall. Bull., v. 47, no. 8, p. 530.

Fort Crittenden formation

Upper Cretaceous: Arizona.

A. A. Stoyanow, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 297 (table); 1949, *Geol. Soc. America Mem.* 38, p. 59-60.**Fort Hunter sandstone member (of Mahantango formation)**

Middle Devonian: Pennsylvania.

Bradford Willard *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, Pa. *Geol. Survey, ser. 4, Bull. G 19, p. 138, 139, 180-182.***Fortin series**

Devonian: Quebec, Canada.

H. W. McGerrigle, 1946, *Royal Soc. Canada Trans., sec. 4, v. 40, p. 47-49.***Fort Johnson member (of Tribes Hill formation)**

Lower Ordovician (lower Canadian): New York.

D. W. Fisher, 1954, *Geol. Soc. America Bull., v. 65, no. 1, p. 76 (fig. 2), 84-85.***Fort Kent shale**

Lower Devonian: Maine, and New Brunswick, Canada.

O. O. Nylander, 1940, *Geological formations of the St. Johns River valley, northern Maine and New Brunswick: Caribou, Maine, p. 3-4.***Fort Mountain gneiss**

Precambrian: Georgia.

A. S. Furcron, K. H. Teague, and J. L. Calver, 1946, (abs.) *Geol. Soc. America Bull., v. 57, no. 12, pt. 2, p. 1195; 1947, Ga. Geol. Survey Bull. 53, p. 9-11.***Fort Nelson formation**

Upper Cretaceous: British Columbia and Yukon, Canada.

E. D. Kindle, 1944, *Canada Geol. Survey Paper 44-16, p. 13-15.***Fort Steele formation**

Precambrian (Proterozoic): British Columbia, Canada.

H. M. A. Rice, 1937, *Canada Geol. Survey Mem.* 207, p. 4-6.**Fortune formation**

Devonian: Missouri.

J. G. Grohskopf, E. L. Clark, and S. P. Ellison, Jr., 1943, *Mo. Geol. Survey and Water Res. 62d Bienn. Rept., App. 4, p. 9-15.***Fortune tuffs and cherts**

Ordovician, Newfoundland, Canada.

G. R. Heyl, 1936, *Newfoundland Geol. Survey Bull. 3, p. 9.***Fortune Brook formation**

Lower and Middle Cambrian: Newfoundland, Canada.

T. N. Walthier, 1950, *N. Y. Acad. Sci. Trans., ser. 2, v. 12, no. 7, p. 210.***Fort Vermilion member (of Slave Point formation)**

Middle Devonian: Alberta, Canada.

J. Law, 1955, *Alberta Soc. Petroleum Geologists Jour., v. 3, no. 6, p. 82.***Fort Wallace ash bed (in Ash Hollow member of Ogallala formation)**

Pliocene: Kansas.

Ada Swineford, J. C. Frye, and A. B. Leonard, 1955, *Jour. Sed. Petrology, v. 25, no. 4, p. 253-254, fig. 1.***Fossil Brook formation**

Middle Cambrian (Loch Lomond): New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper 5, p. 69-72.*

Fossil Hill formation

Middle Silurian (Niagaran) : Ontario, Canada.

G. S. Hume, 1925, Canada Geol. Survey Mem. 145, p. 37.

T. E. Bolton, 1953, Canada Geol. Survey Paper 53-23, p. 12-13.

Fossil Mountain formation

Upper Jurassic (Oxfordian) : East Greenland.

Alfred Rosenkrantz in Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 1, p. 146-147.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 254.

Foulke Cove slate and shale

Ordovician : Newfoundland, Canada.

G. R. Heyl, 1936, Newfoundland Geol. Survey Bull. 3, p. 7.

Fountain Peak rhyolite

Miocene (?) : California.

J. C. Hazzard, 1954, Calif. Dept. Nat. Res., Div. Mines Bull. 170, chap. 4, p. 33, pl. 2.

Fourchu group

Precambrian (Proterozoic) : Nova Scotia, Canada.

L. J. Weeks, 1954, Canada Geol. Survey Mem. 277, p. 16-25.

Four Mile Brook member (of Heppel sandstone)

Upper Devonian (Senecan) : Quebec, Canada.

E. M. Kindle, 1938, Bull. Am. Paleontology, v. 24, no. 82, p. 73 (39).

Four Mile Dam formation

Middle Devonian : Michigan.

G. A. Cooper and A. S. Warthin, 1941, Washington Acad. Sci. Jour., v. 31, no. 6, p. 260.

Fournière sediments

Precambrian : Quebec, Canada.

H. C. Gunning, 1937, Canada Geol. Survey Mem. 206, p. 19.

Fox flows

Precambrian : Northwest Territories (Mackenzie), Canada.

J. F. Henderson and I. C. Brown, 1950, Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 418.

Fox Canyon member (of San Pedro formation)

Pleistocene, lower : California.

T. L. Bailey, 1954, in Pacific Petroleum Geologist, v. 8, no. 9, p. 1.

R. G. Thomas and others, 1954, Calif. Dept. Nat. Res., Div. Mines Bull. 170, chap. 6, p. 20, pl. 2.

Fra Cristobal formation

Middle Pennsylvanian : New Mexico.

M. L. Thompson, 1948, Kans. Univ. Paleont. Contr. 4, Protozoa, art. 1, p. 73, 74-75.

Fraileys shale

Mississippian (Chester) : Kentucky.

A. C. McFarlan and others, 1955, Ky. Geol. Survey, ser. 9, Bull. 16, p. 18.

Franklin Creek basalt

Triassic : British Columbia, Canada.

J. S. Stevenson, 1945, British Columbia Minister Mines Ann. Rept. 1944, p. A-145.

Franz Josef beds

Lower Paleozoic : Northeast Greenland.

J. M. Wordie, 1927, Geog. Jour., v. 70, no. 3, p. 252.

Frazier Well gravel

Pre-Pleistocene: Arizona.

Donaldson Koons, 1948, *Science*, v. 107, no. 2784, p. 475-476.**Freedhem tonalite**

Precambrian (Algoman): Minnesota.

M. S. Woyski, 1949, *Geol. Soc. America Bull.*, v. 60, no. 6, p. 1002, 1010, pl. 1.**Freemans Bay limestone**

Miocene: Trinidad, British West Indies.

Ernest Lehner, 1935, [France] *Office national des combustibles liquides Annales*, 10e année, no. 4, p. 717 (table).H. H. Suter, 1951, *Colonial Geology and Min. Res.*, v. 2, no. 3, p. 204 (table 12) [1952].**Frenchburg siltstone member (of Brodhead formation)**

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 180, 182-184.**French Flat sandstone**

Miocene, upper, to Pliocene: California.

D. I. Axelrod, 1950, *Carnegie Inst. Washington Pub.* 590, pl. 1.**Frenchman formation**

Upper Cretaceous: Saskatchewan, Canada.

G. M. Furnival, 1942, *Canada Geol. Survey Paper (Prelim. Map)* 42-5.**Frenchmans Bay series**

Silurian: Maine.

G. H. Chadwick, 1944, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 6, no. 6, p. 172, 176-177.**Frensley limestone**

Pennsylvanian (Lampasas): Oklahoma.

B. H. Harlton, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 7, p. 854 (fig. 1).R. M. Jeffords, 1942, *Kans. State Geol. Survey Bull.* 41, pt. 5, p. 250.**Fresh Pond granodiorite**

Precambrian: Newfoundland, Canada.

R. E. Van Alstine, 1948, *Newfoundland Geol. Survey Bull.* 23, p. 17.**Fresnal group**

Pennsylvanian (Virgil): New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 73-79.**Fresnian stage**

Eocene, late: California.

V. S. Mallory, 1953, (abs.) *Jour. Paleontology*, v. 27, no. 6, p. 903.**Fresnoian stage***See* Fresnoian stage.**Friant formation**

Miocene: California.

G. H. Jones, 1940, *Am. Geophys. Union Trans.*, v. 21, pt. 1, p. 62 (fig. 2), 66.**Friendship Quarry marl (of Navet formation)**

Eocene, lower or middle: Trinidad, British West Indies.

J. A. Cushman and H. H. Renz, 1948, *Cushman Lab. Foram. Research Special Pub.* 24, p. 2.

Frontiere group

Ordovician (?) : Quebec, Canada.

Jacques Béland, 1952, Quebec Dept. Mines Prelim. Rept. 279, p. 6.

Frontier Lake conglomerate

Precambrian : Saskatchewan, Canada.

A. M. Christie, 1952, Canada Geol. Survey Mem. 269, p. 14.

Frood series

Precambrian : Ontario, Canada.

Anonymous, 1937, Canadian Mining Jour., v. 58, no. 11, p. 592.

Fulda limestone

Pennsylvanian (Pottsville) : Indiana.

D. W. Franklin, 1944, Ill. State Acad. Sci. Trans., v. 37, nos. 3-4, p. 86, 88-89.

Funks formation

Upper Cretaceous (Chico) : California.

J. M. Kirby, 1942, (abs.) Am. Assoc. Petroleum Geologists Bull., v. 26, no. 5, p. 899 ;
1943, v. 27, no. 3, p. 284.**Funk Valley formation**

Upper Cretaceous : Utah.

E. M. Speker, 1946, U. S. Geol. Survey Prof. Paper 205-D, p. 122, 128.

Furnace Creek formation

Miocene or Pliocene : California.

H. D. Curry *in* D. I. Axelrod, 1940, Jour. Geology, v. 48, no. 5, p. 527-528, 531.**Furnace Creek quartz diorite gneiss**

Precambrian : Pennsylvania.

T. V. Buckwalter, 1955, Pittsburgh Geol. Soc. Field Guidebook Appalachian Geology,
p. 93, 95.**Fuy sandstone member (of Rondout waterlime)**

Upper Silurian : New York.

G. H. Chadwick, 1940, N. Y. State Geol. Assoc. 16th Ann. Meeting Field Guide
Leaflets, p. 2 ; 1944, N. Y. State Mus. Bull. 336, p. 45-51 [1946].**Fyns S ϕ dolomite**

Age unknown : North Greenland.

P. J. Adams and J. W. Cowie, 1953, Meddel. om Grønland, bind 111, nr. 7, p. 9, 11-12.

Gadsden limestone

Eocene (Jackson) : Florida (subsurface).

W. E. Moore, 1955, Fla. Geol. Survey Bull. 37, p. 42-44.

Gaikema sandstone member (of Tuxedni formation)

Middle Jurassic : Alaska.

C. E. Kirschner and D. L. Minard, 1948, U. S. Geol. Survey Oil and Gas Inv. Prelim.
Map 95 [1949].**Gailor dolomite**

Lower Ordovician : New York.

D. W. Fisher and G. F. Hanson, 1951, Am. Jour. Sci., v. 249, no. 11, p. 807-808.

Gaines group

Upper Cretaceous : California.

F. M. Anderson, 1937, (abs.) Am. Assoc. Petroleum Geologists Bull., v. 21, no. 12,
p. 1612.

Gainesville sandstone (in Blackjack Knob member of Theodosia formation)

Lower Ordovician: Missouri and Arkansas.

J. S. Cullison, 1944, Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser., v. 15, no. 2, p. 27.

Galantry breccia

Post-Cambrian: St. Pierre Island, French North America.

Edgar Aubert de la Rüe, 1932, Rev. de géographie physique et de géologie dynamique, v. 5, fasc. 4, p. 427, 429, 452.

Galata ash

[Recent]: Montana, and Alberta, Canada.

Leland Horberg and R. A. Robie, 1955, Geol. Soc. America Bull., v. 66, no. 8, p. 949-955.

Galdock beds**Galdog beds or formation**

See Ngardok beds.

Galeota group

Eocene (?): Trinidad, British West Indies.

E. H. Cunningham-Craig, 1905, Trinidad Legislative Council Paper no. 25 of 1905, p. 7.

Galera formation

Lower Cretaceous: Trinidad, British West Indies.

H. G. Kugler, 1953, Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull., v. 20, no. 59, p. 32.

Galera Grit member (of Galera formation)

Lower Cretaceous: Trinidad, British West Indies.

H. G. Kugler, 1953, Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull., v. 20, no. 59, p. 32.

Galet beds

Middle Ordovician: Quebec, Canada.

G. W. Sinclair, 1953, Am. Jour. Sci., v. 251, no. 12, p. 847.

Galkyoku limestone

See Ngarekeukl limestone.

Galloway beds

Miocene: California.

C. E. Weaver, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 630, 631 (fig. 280).

Galloway sandstone member (of Gething formation)

Lower Cretaceous: British Columbia, Canada.

F. H. McLearn and E. J. W. Irish, 1944, Canada Geol. Survey Paper 44-15, p. 8.

Gambier group

Triassic (?) and/or older: British Columbia, Canada.

J. E. Armstrong, 1954, Canada Geol. Survey Paper 53-28, p. 2-3.

Gamboa formation

Oligocene: Panama Canal Zone.

Karl Sapper, 1905, Petermanns Mitt. Ergänzungsbd. 32, Heft 151, p. 39, 56, pl. 3 (cross section 29).

Game Lodge granite

Precambrian: South Dakota.

G. L. Taylor, 1935, Am. Jour. Sci., 5th ser., v. 29, no. 171, p. 281-282.

Gamerco formation

Recent: New Mexico.

L. B. Leopold and C. T. Snyder, 1951, U. S. Geol. Survey Water-Supply Paper 1110-A, p. 6-9.

Gamsetu agglomerate*See* Kameset (Gamusetsu) agglomerate.**Gamusa beds**

Lower Pennsylvanian: Sonora, Mexico.

Charles Schuchert, 1935, *Historical geology of the Antillean-Caribbean region*: New York, John Wiley and Sons, p. 138.**Gander Lake series**

Silurian: Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 82.**Ganteaume conglomerate**

Paleocene: Trinidad, British West Indies.

H. H. Suter, 1951, *Colonial Geology and Min. Res.*, v. 2, no. 3, p. 193, table 5 [1952].**Gap Ridge sandstone member (of Stanley formation)**

Pennsylvanian: Arkansas.

N. H. Stearn *in* J. M. Hansell and J. C. Reed, 1935, *Am. Inst. Mining and Metall. Eng. Trans.*, v. 115, p. 245; 1936, *Econ. Geology*, v. 31, no. 1, p. 12-15.**Garas beds***See* Garzas beds.**Garbutt formation**

Lower Cretaceous: British Columbia and Yukon, Canada.

E. D. Kindle, 1944, *Canada Geol. Survey Paper* 44-16, p. 10.**Garceno sandstone member (of Cook Mountain formation)**

Eocene (Claiborne): Texas.

J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259 (fig. 2), 261-262.**Garcia formation**

Pennsylvanian (Des Moines): New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 50-51.**Gardar formation**

Precambrian: Southwest Greenland.

R. D. Crommelin, 1937, *Meddel. om Grønland*, bind 113, nr. 1, p. 6.C. E. Wegmann, 1938, *Meddel. om Grønland*, bind 113, nr. 2, p. 14, 60-123, 134.**Garden Island formation**

Lower Devonian: Michigan.

G. M. Ehlers *in* K. K. Landes, G. M. Ehlers, and G. M. Stanley, 1945, *Mich. Dept. Conserv. Geol. Survey Div. Pub.* 44, *Geol. Ser.* 37, p. 34, 35, 73-80.**Garim limestone**

Pleistocene: Caroline Islands (Garim, island off Yap).

Risaburo Tayama, 1935, *Topography, geology, and coral reefs of the Yap Islands*: Tohoku Univ., *Inst. Geology and Paleontology Contr. in Japanese Language*, no. 19, p. 27-29 [English translation in library of U. S. Geol. Survey, p. 24-25]; 1952, *Coral reefs in the South Seas*: Japan Hydrog. Office Bull., v. 11, p. 63, table 4 [English translation in library of U. S. Geol. Survey, p. 74].

Garland Peak syenite

Carboniferous (?) (White Mountain magma series) : New Hampshire.

Alonzo Quinn, 1937, *Geol. Soc. American Bull.*, v. 48, no. 3, p. 389.

Garlock series

Permian : California.

T. W. Dibblee, Jr., 1952, *Calif. Dept. Nat. Res., Div. Mines Bull.* 160, p. 12, 15-19.

Garnavillo member (of Guttenberg formation)

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs 3, 9.

Garnet Canyon tongue

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, *Carnegie Inst. Washington Pub.* 563, p. 14, 29, 92.

Garo sandstone

Jurassic (?) : Colorado.

D. B. Gould and others, 1947, *in Rocky Mtn. Assoc. Geologists Guidebook Field Conf.*, June 16-19, p. 39.

J. T. Stark and others, 1949, *Geol. Soc. America Mem.* 33, p. 47-48.

Garrison Hills granite

Upper Silurian or younger : Newfoundland, Canada.

W. B. Jewell, 1939, *Newfoundland Geol. Survey Bull.* 17, p. 11.

Gartra grit member (of Stanaker formation)

Upper Triassic : Utah.

H. D. Thomas and M. L. Krueger, 1946, *Am. Assoc. Petroleum Geologists Bull.*, v. 30, no. 8, pt. 1, p. 1271, 1274.

Garudokku beds**Garukijokku limestone**

See Ngarekeukl limestone.

Garzas beds

Upper Cretaceous : California.

F. M. Anderson, 1937, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1612; 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 2, p. 185 (fig. 69), 186 [preprint 1941].

Gassaway member (of Chattanooga shale)

Upper Devonian : Tennessee and Alabama.

Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, no. 9, p. 884, 886.

Gateway Canyon member (of Muav formation)

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, *Carnegie Inst. Washington Pub.* 563, p. 14, 29, 105-109.

Gatuña formation

Pleistocene (?) : New Mexico and Texas.

W. B. Lang *in* T. W. Robinson and W. B. Lang, 1938, *N. Mex. State Engineer 12th-13th Bienn. Rept.*, p. 84-85 [1939].

Gatuncillo formation

Eocene, middle and upper : Panama and Panama Canal Zone.

T. F. Thompson, 1944, *Geological explorations in the vicinity of Rio Quebrancha for the Panama Cement Company : Panama Canal, Special Eng. Div.*, p. 12-13.

W. P. Woodring and T. F. Thompson, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 2, p. 227-228.

Gautier formation

Upper Cretaceous: Trinidad, British West Indies.

H. G. Kugler, 1950, *Asociación Venezolano de Geología. Minería y Petróleo Bol.*, tomo 2, no. 1, p. 48 (correlation chart).Hans Bolli, 1951, *Jour. Paleontology*, v. 25, no. 2, p. 193.**Gavilan Peak gabbro**

Jurassic (?): California.

E. F. Osborn, 1939, *Geol. Soc. America Bull.*, v. 50, no. 6, p. 925-926.**Geddes limestone**

Middle Cambrian: Nevada.

H. E. Wheeler and D. M. Lemon, 1939, *Nev. Univ. Bull., Geology and Mining Ser.*, no. 31, p. 20-23.**Geers Corners gabbro**

Precambrian: New York.

A. F. Buddington, 1936, 16th Internat. Geol. Cong. Rept., v. 1, p. 348; 1939, *Geol. Soc. America Mem.* 7, p. 57, 59, 61**Geiser Quarry member (of Dutchtown formation)**

Lower Ordovician: Missouri.

H. S. McQueen, 1937, *Mo. Geol. Survey and Water Res. 59th Bienn. Rept. App. 1*, p. 18-19.**Gemuk group**

Carboniferous (?) to Lower Cretaceous: Alaska.

W. M. Cady and others, 1955, *U. S. Geol. Survey Prof. Paper* 268, p. 27-34.**Genoa member (of Oneota formation)**

Lower Ordovician: Wisconsin.

G. O. Raasch, 1952, *Ill. Acad. Sci. Trans.*, v. 45, p. 88-90, 91-92.**Gensoille tuffs**

Miocene: Guadeloupe (Grande Terre), French West Indies.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581.**Geode Creek basalt**

Miocene and/or Pliocene: Wyoming.

A. D. Howard, 1937, *Geol. Soc. America Special Paper* 6, p. 19-21, 78.**Geoffrey formation**

Upper Cretaceous: British Columbia, Canada.

J. L. Usher, 1952, *Canada Geol. Survey Bull.* 21, p. 28.**George Pond breccia**

Silurian: Quebec, Canada.

T. H. Clark, 1936, *Canadian Field Naturalist*, v. 50, no. 3, p. 32-33.**Germaine Brook granite**

Pre-Carboniferous: New Brunswick, Canada.

F. J. Alcock, [1938], *Canada Geol. Survey Mem.* 216, p. 26, map.**Germania formation**

Upper Devonian: Pennsylvania and New York.

J. G. Woodruff, 1942, *N. Y. State Mus. Bull.* 326, p. 47-50.**Getaway limestone member (of Cherry Canyon formation)**

Permian: Texas and New Mexico.

P. B. King in A. K. Miller and W. M. Furnish, 1940, *Geol. Soc. America Special Paper* 26, p. 9.P. B. King, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 4, p. 580-581, pl. 2.

Getmuna rhyolite group

Eocene: Alaska.

W. M. Cady and others, 1955, U. S. Geol. Survey Prof. Paper 268, p. 50-53.

Getsuyoto beds*See* Getuyoto beds.**Getuyoto beds**

Miocene: Caroline Islands (Truk).

Risaburo Tayama, 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 69, table 5 [English translation in library of U. S. Geol. Survey, p. 84].

Geuda Springs shale member (of Wellington formation)

Permian: Kansas.

W. A. Ver Wiebe, 1937, Wichita Municipal Univ. Bull., v. 12, no. 5, p. 12-14.

Ghost Range complex

Precambrian (pre-Algoman): Ontario, Canada.

Jack Satterly, 1954, Ontario Dept. Mines Ann. Rept., v. 62, pt. 7, p. 15-16.

Gibbons conglomerate lentil (in Marble Falls formation)

Lower Pennsylvanian: Texas.

F. B. Plummer, 1945, Tex. Univ. Bur. Econ. Geology Pub. 4401, p. 65-66.

Gibson limestone member (of Grindstone Creek formation)

Middle Pennsylvanian (Strawn): Texas.

H. T. Mann *in* R. J. Cordell, H. J. Fitzgeorge, and J. E. Sparks, 1954, Abilene Geol. Soc. Guidebook, p. 22, fig. 16.**Gila cyclothem (including Gila limestone)**

Pennsylvanian: Illinois.

W. A. Newton and J. M. Weller, 1937, Ill. State Geol. Survey Rept. Inv. 45, p. 27-28.

Gilbert andesite

Pliocene: Nevada.

H. G. Ferguson, S. W. Muller, and S. H. Cathcart, 1953, Geology of the Coaldale quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 23].

Gile Mountain formation

Middle Ordovician (?): Vermont and New Hampshire.

C. G. Doll, [1945?], Vt. State Geologist 24th Rept., p. 18-19.

Giles Cove formation

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1937, Newfoundland Geol. Survey Bull. 8, p. 10-11.

Gillies Lake porphyry

Precambrian (Algoman): Ontario, Canada.

G. D. Furse, 1948, *in* Structural geology of Canadian ore deposits: Canadian Inst. Mining and Metallurgy, p. 487.**Gilman sandstone member (of Leadville dolomite)**

Mississippian: Colorado.

Ogden Tweto and T. S. Lovering, 1947, Colo. Min. Res. Board [Bull.], p. 380 (chart)
Ogden, Tweto, 1949, Colo. Sci. Soc. Proc., v. 15, no. 4, p. 177-184, table 1.**Ginseng siltstone member (of Brodhead formation)**

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 151-153.

Glacier Park facies (of Belt series)

Precambrian: Alberta, Canada; and Montana.

C. L. Fenton and M. A. Fenton, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1877**Glamorgan granite gneiss**

Precambrian: Ontario, Canada.

Jack Satterly and D. F. Hewitt, 1955, *Ontario Dept. Mines Geol. Circ.* 2, p. 4.**Glasco limestone lentil (of Rondout waterlime)**

Upper Silurian: New York.

G. H. Chadwick, 1944, *N. Y. State Mus. Bull.* 336, p. 44-51 [1946].**Glass Mountain lava**

Recent: California.

C. A. Anderson, 1941, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 25, no. 7, p. 374, 375-376**Glenbrooke shale**

Silurian: Quebec, Canada.

T. H. Clark, 1936, *Canadian Field Naturalist*, v. 50, no. 3, p. 33.**Glendale member (of Denmark formation)**

Middle Ordovician (Trentonian): New York.

P. A. Chenoweth, 1952, *Geol. Soc. America Bull.*, v. 63, no. 6, p. 530-531.**Glendo shale**

Permian: Wyoming and South Dakota.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, *Nebr. Geol. Survey Bull.* 13, p. 2, 4, 45.**Glendora volcanics**

Miocene: California.

J. S. Shelton, 1946, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 63.**Glen Ellen formation**

Pliocene (?) and Pleistocene: California.

C. E. Weaver, 1949, *Geol. Soc. America Mem.* 35, p. 16 (table 3), 98-99.**Glen Falls formation**

Lower Cambrian (Hanfordian): New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 64-66**Glenhaven member (of Guttenberg formation)**

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 9.**Glenlyon granodiorite**

Upper Jurassic or Cretaceous (?): Yukon, Canada.

J. R. Johnston, 1936, *Canada Geol. Survey Mem.* 200, p. 14.**Glennon limestone member (of Lykins formation)**

Permian: Colorado.

L. W. LeRoy, 1946, *Colo. School Mines Quart.*, v. 41, no. 2, p. 31, 36-40.**Glenwood series**

Precambrian: Quebec, Canada.

H. J. Conolly and R. C. Hart, 1936, *Canadian Inst. Mining and Metallurgy Trans.*, v. 39, p. 11.

Glenwood tongue (of Weber sandstone)

Pennsylvanian to Permian: Colorado.

J. W. Vanderwilt, 1953, *in* Rocky Mtn. Assoc. Geologists Guidebook Field Conf., May 14-16, p. 15, fig. facing p. 12.

Glenwood tuff

[Quaternary]: Hawaiian Islands (Hawaii).

J. B. Stone, 1926, Bernice P. Bishop Mus. Bull. 33, p. 26, 27.

C. K. Wentworth, 1938, Hawaiian Volcano Observatory 3d Special Rept., p. 55-56

Glenwood Canyon member (of Dotsero formation)

Upper Cambrian: Colorado.

N. W. Bass and S. A. Northrop, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 5, p. 897-899.

Gloria formation

Pliocene, middle: Baja California, Mexico.

I. F. Wilson, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 9, p. 1780-1781.

Goat Island member (of Lockport formation)

Middle Silurian (upper Niagaran): New York.

B. F. Howell and J. T. Sanford, 1947, Wagner Free Inst. Sci. Bull., v. 22, no. 4, p. 34.

Goat River horizon (of McBride group)

Precambrian: Alberta, Canada.

M. K. Sorensen, 1955, Alberta Soc. Petroleum Geologists Guidebook 5th Ann. Field Conf., p. 57.

Goat Rock pyroclastic deposits

Quaternary: Washington.

Jean Verhoogen, 1937, Calif. Univ. Dept. Geol. Sci. Bull., v. 24, no. 9, p. 274-277.

Goat Seep limestone

Permian (Guadalupe series): Texas and New Mexico.

F. B. King, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 4, p. 588-589, 593, pl. 2.

Gobbler formation

Pennsylvanian (Morrowan?-Missourian): New Mexico.

L. C. Pray, 1954, N. Mex. Geol. Soc. Guidebook 5th Field Conf., p. 93.

Goble volcanic series

Eocene, upper: Oregon and Washington.

W. C. Warren, Hans Norblisrath, and R. M. Grivetti, 1945, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 42.

Goddard shale member (of Springer formation)

Pennsylvanian: Oklahoma.

M. G. Cheney and others, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 2, p. 143.

H. D. Miser and others, 1954, Geologic Map of Okla. (1:500,000), U. S. Geol. Survey.

Godfrey shales

Upper Cretaceous: California.

N. L. Tallaferrro, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 132 [preprint 1941].

Godineau beds

Pleistocene: Trinidad, British West Indies.

H. G. Kugler, 1936, Am. Assoc. Petroleum Geologists Bull., v. 20, no. 11, p. 1451 (chart).

H. H. Suter, 1951, Colonial Geology and Min. Res., v. 2, no. 3, p. 212 (table 17), 213 [1952].

Godineau River marls

Oligocene, Trinidad, British West Indies.

C. J. Maury, 1925, *Bull. Am. Paleontology*, v. 10, no. 42, p. 169 (17).

R. A. Liddle, [1928], *The geology of Venezuela and Trinidad: Forth Worth, Tex., J. P. MacGowan*, p. 458-459.

Goeland granite

Precambrian: Quebec, Canada.

P. E. Imbault, 1948, *Quebec Dept. Mines Prelim. Rept.* 218, p. 8.

Gog formation

Lower Cambrian: Alberta and British Columbia, Canada.

Charles Deiss, 1939, (abs.) *Geol. Soc. America Bull.*, v. 50, no. 12, p. 1906; 1940, v. 51, no. 5, p. 771-773.

Goldale formation

Precambrian: Ontario, Canada.

B. S. W. Buffam, 1948, *in Structural geology of Canadian ore deposits: Canadian Inst. Mining and Metallurgy*, p. 459.

Gold Butte granite

Age unknown: Nevada.

C. R. Longwell, 1936, *Geol. Soc. America Bull.*, v. 47, no. 9, p. 1405.

Gold Centre series

Precambrian (Keewatin): Ontario, Canada.

G. B. Langford, 1941, *Am. Inst. Mining Engineers Trans.*, v. 144, p. 153.

Golden member (of Arapahoe-Denver formation)

Tertiary: Colorado.

L. W. LeRoy, 1946, *Colo. School Mines Quart.*, v. 41, no. 2, p. 100, 103, 104.

Golden Gate formation

Upper Cretaceous: California.

J. M. Kirby, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 606.

Golden Grove intrusives

Pre-Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 25-39.

Goldens Ranch formation

Eocene: Utah.

Siegfried Muessig, 1951, *Science*, v. 114, no. 2957, p. 234.

Golden Valley formation

Eocene: North Dakota and Montana.

W. E. Benson and W. M. Laird, 1947, (abs.) *Geol. Soc. America Bull.*, v. 58, no. 12, pt. 2, p. 1166, 1167.

W. D. Johnson, Jr., and R. P. Kunkel, 1954, *U. S. Geol. Survey Oil and Gas Inv. Map OM 148*.

Gold Park gabbro-diorite

Precambrian: California.

W. J. Miller, 1938, *Geol. Soc. America Bull.*, v. 49, no. 3, p. 419-420.

Goldsborough formation

Cretaceous (?): Tobago, British West Indies.

J. C. Maxwell, 1948, *Geol. Soc. America Bull.*, v. 59, no. 8, p. 816-817.

Goldson formation

Silurian : Newfoundland, Canada.

W. H. Twenhofel and R. R. Shrock, 1937, *Geol. Soc. American Bull.*, v. 48, no. 12, p. 1749, 1767.

Goldvue quartz diorite

Precambrian (Archean) : Quebec, Canada.

W. W. Weber, 1951, *Quebec Dept. Mines Prelim. Rept.* 255, p. 2, 11.

Goler formation

Eocene to Miocene : California.

T. W. Dibblee, Jr., 1952, *Calif. Dept. Nat. Res., Div. Mines Bull.* 160, p. 19-25.

Goniceras Bay formation

Middle Ordovician (Black River) : North Greenland.

G. T. Troedsson, 1926, *Meddel. om Grønland*, bind 71, nr. 1, p. 12, 110-111.

Gonzalez sands

Miocene : Tabasco and Chiapas, Mexico.

Ramiro Robles Ramos, 1942, *Irrigación en Mexico*, v. 23, no. 3, p. 45 (correlation chart).

G. P. Salas and Ernesto Lopez Ramos, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 1-2, p. 36-37.

Good Hope limestone

Eocene, lower : Jamaica, British West Indies.

C. A. Matley, 1924, *Pan-Am. Geologist*, v. 42, no. 4, p. 312.

Goodrich formation

Lower Cretaceous : British Columbia, Canada.

R. T. D. Wickenden and George Shaw, 1943, *Canada Geol. Survey Paper* 43-13, p. 7-8.

Goose Cove formation

Lower Cambrian : Newfoundland, Canada.

E. R. Rose, 1948, *Newfoundland Geol. Survey Bull.* 32, pt. 2, p. 44.

Goose Cove schist

Ordovician (?) : Newfoundland, Canada.

J. R. Cooper, 1937, *Newfoundland Geol. Survey Bull.* 9, p. 24.

Goose Lake clay

Pennsylvanian : Illinois.

H. R. Wanless, 1939, *Geol. Soc. America Special Paper* 17, p. 25-26, 84.

Goose Tickle slate

Ordovician : Newfoundland, Canada.

J. R. Cooper, 1937, *Newfoundland Geol. Survey Bull.* 9, p. 8-9.

Gorbut member (of Gravel Point formation)

Middle Devonian : Michigan.

W. A. Kelly and G. W. Smith, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 3, p. 457.

Gordo formation

Upper Cretaceous (Tuscaloosa group) : Alabama, Mississippi, and Georgia.

L. C. Conant and W. H. Monroe, 1945, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 37.

Good Creek shale member (of Cook Mountain formation)

Eocene (Claiborne group) : Mississippi.

E. P. Thomas, 1942, *Miss. State Geol. Survey Bull.* 48, p. 57-59.

Gore Mountain gabbro

Precambrian (Algonian) : New York.

M. H. Krieger, 1937, N. Y. State Mus. Bull. 308, p. 28-32, 36.

Gorgora shale member (of Fayette formation)

Eocene (Jackson) : Texas.

J. M. Patterson, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 2, p. 259 (fig. 2), 268-269.

Gorman formation (in Ellenburger group)

Lower Ordovician : Texas.

V. E. Barnes and P. E. Cloud, Jr., 1945, Tex. Univ. Bur. Econ. Geology Min. Res. Circ. 34, p. 1, 8-19.

Goss Pond volcanics

Ordovician (?) : Newfoundland, Canada.

A. K. Snelgrove, 1931, Canadian Mining and Metall. Bull. 228, p. 485-487.

Gothic formation

Pennsylvanian (Des Moinesian) : Colorado.

R. L. Langenheim, Jr., 1951, (abs.) in Am. Assoc. Petroleum Geologists 36th Ann. Meeting [program], p. 29; 1952, Am. Assoc. Petroleum Geologists Bull., v. 36, no. 4, p. 561-563, 568-569.

Goudron sands (in Moruga formation)

Miocene, upper : Trinidad, British West Indies.

Ernst Lehner, 1935, [France] Office national des combustibles liquides Annales, 10^e année, no. 4, p. 717 (table).

H. H. Suter, 1951, Colonial Geology and Min. Res., v. 2, no. 3, p. 205 (table 13), 209 [1952].

Gould glacial substage

Pleistocene (Wisconsin) : Colorado.

D. F. Eschman, 1952, (abs.) Geol. Soc. America Bull., v. 63, no. 12, pt. 2, p. 1380; 1955, Jour. Geology, v. 63, no. 3, p. 203-205.

Gouldbusk limestone member (of Moran formation)

Permian (Wolfcamp age) : Texas.

R. C. Moore in M. G. Cheney, 1948, Abilene Geol. Soc. [Guidebook] Spring Field Trip, June 11-12, p. 5, 13, sheets 3, 4.

R. C. Moore, 1949, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 80, sheets 1, 2.

Gove chalk

Cretaceous (Mid-Cretacic) : Kansas.

[C. R.] Keyes, 1941, Pan-Am. Geologist, v. 76, no. 4, p. 304 (chart).

Gove member (of Berwick formation)

Paleozoic (probably Ordovician and Silurian) : New Hampshire.

Jacob Freedman, 1950, Geol. Soc. America Bull., v. 61, no. 5, p. 460, 464.

Governor diorite

Miocene, upper : Colorado.

McClelland Dings, 1941, Geol. Soc. America Bull., v. 52, no. 5, p. 701-707.

Gracias formation

Pliocene, lower : Honduras.

E. C. Olson and P. O. McGrew, 1938, (abs.) Geol. Soc. America Bull., v. 49, no. 12, pt. 2, p. 1895.

Graciosa coarse-grained member (of Careaga sandstone)

Pliocene, upper: California.

W. P. Woodring, M. N. Bramlette, and K. E. Lohman, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 27, no. 10, p. 1356-1358.

Graham Ferry formation

Pliocene and Pleistocene: Mississippi.

G. F. Brown and others, 1944, *Miss. State Geol. Survey Bull.* 60, p. 45-54.

Grahamville formation

Cambro-Ordovician: Vermont.

W. F. Brace, 1953, *Vt. Geol. Survey Bull.* 6, p. 47-48, tables 2, 3.

Graminia member (of Winterburn formation)

Devonian: Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 9, p. 1815.

Grampian Hills member (of Nanafalia formation)

Eocene (Wilcox): Alabama.

B. W. Blanpied and R. T. Hazzard, 1939, *Shreveport Geol. Soc. Guidebook 14th Ann. Field Trip*, p. 126, 128 (correlation chart).

Granada conglomerate

Precambrian (Timiskaming): Quebec, Canada.

M. E. Wilson, 1943, *Royal Soc. Canada Trans.*, ser. 3, v. 37, sec. 4, p. 126, 127.

Granada greywacke

Precambrian (Timiskaming): Quebec, Canada.

M. E. Wilson, 1943, *Royal Soc. Canada Trans.*, ser. 3, v. 37, sec. 4, p. 126, 127.

Grand Bay beds

Miocene, lower: The Grenadines (Carriacou), British West Indies.

C. T. Trechmann, 1935, *Geol. Mag.*, v. 72, no. 12, p. 541, 553.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581, 1597.

Grand Bayou member (of Hall Summit formation)

Paleocene (Midway): Louisiana.

D. P. Meagher and L. C. Aycock, 1942, *La. Dept. Conserv. Geol. Pamph.* 3, p. 12-16.

G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 59.

Grand Beach rhyolite-porphry

Devonian(?): Newfoundland, Canada.

R. E. Van Alstine, 1948, *Newfoundland Geol. Survey Bull.* 23, p. 21.

Grand Detour formation

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 6, fig. 3.

Grande Anse formation

Pennsylvanian: New Brunswick, Canada.

G. W. H. Norman, 1941, *Canada Geol. Survey Map* 647A.

Grande River-Portage River formation

Silurian and Devonian: Quebec, Canada.

H. W. McGerrigle, 1950, *Quebec Dept. Mines Geol. Rept.* 35, p. 24.

Grande Riviere formation

Lower Cretaceous: Trinidad, British West Indies.

A. G. Hutchison, 1938, *Bol. Geología y Minería (Venezuela)*, v. 2, nos. 2-4 (English ed.), p. 235 (table).H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 32.**Grande Riviere Road limestone**

Cretaceous (Aptian or Albian): Trinidad, British West Indies.

A. G. Hutchison, 1938, *Bol. Geología y Minería (Venezuela)*, v. 2, nos. 2-4 (English ed.), p. 232, 235 (table).**Grande Terre limestone**

Miocene: Gaudeloupe (Grande Terre), French West Indies.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581.**Grand Falls drift**

Quaternary: New Brunswick and Quebec, Canada.

H. A. Lee, 1955, *Canada Geol. Survey Paper* 55-15, p. 6.**Grande slate**

Lower Ordovician: Vermont.

Charles Schuchert, 1937, *Geol. Soc. America Bull.*, v. 48, no. 7, p. 1072-1074, 1075.**Grand Lake Brook series**

Cambrian: Newfoundland, Canada.

T. N. Walthier, 1949, *Newfoundland Geol. Survey Bull.* 35, pt. 1, p. 18-20.**Grand Ledge cyclothem (in Saginaw formation)**

Pennsylvanian: Michigan.

Michigan Geol. Soc., 1954, *in* *Geologic cross section of Paleozoic rocks central Mississippi to northern Michigan*: *Am. Assoc. Petroleum Geologists*, p. 28.**Grand River formation**

Pennsylvanian: Michigan.

W. A. Kelly, 1936, *Mich. Dept. Conserv. Geol. Div. Pub.* 40, *Geol. Ser.* 34, p. [206]-214.**Grand River limestone**

Mississippian (Chesterian): Oklahoma.

J. M. Weller and others, 1948, *Geol. Soc. America Bull.*, v. 59, no. 2, p. 146, Chart 5.**Grand Savanna gravel series**

Pleistocene: Dominica, British West Indies.

J. W. W. Spencer, 1902, *Geol. Soc. London Quart. Jour.*, v. 58, pt. 3, p. 349.**Grandview limestone**

Pennsylvanian (Pottsville): Indiana.

D. W. Franklin, 1944, *Ill. State Acad. Sci. Trans.*, v. 37, nos. 3-4, p. 86, 89.**Granite Falls limestone**

Pennsylvanian and/or Permian: Washington.

R. A. Anderson, 1941, *Wash. State Coll. Research Studies*, v. 9, no. 3, p. 189, 201.**Graniteville granite**

Precambrian: Missouri.

H. B. Graves, 1938, *Acad. Sci. St. Louis Trans.*, v. 29, no. 5, p. 119.**Grantmire member (of Windsor series)**

Mississippian: Nova Scotia, Canada.

W. A. Bell and E. A. Goranson, 1938, *Canada Geol. Survey Map* 359A.

Grantsville formation

Middle Triassic: Nevada.

S. W. Muller and H. G. Ferguson, 1939, *Geol. Soc. America Bull.*, v. 50, no. 10, p. 1592-1594.

Granville formation

Lower Cambrian: Vermont.

P. H. Osberg, 1952, *Vt. Geol. Survey Bull.* 5, p. 49-55, 116.

Grasselli dolomite (in Kingsport formation)

Lower Ordovician (Canadian): Tennessee.

C. R. L. Oder and H. W. Miller, 1945, *Am. Inst. Mining and Metall. Engineers (Mining Technology)*, v. 9, no. 3) *Tech. Pub.* 1818, p. 4, 6 (table 2).

Grass Valley formation

Upper Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7]*.

Grassy member (of Blackhawk formation)

Upper Cretaceous: Utah.

R. G. Young, 1955, *Geol. Soc. America Bull.*, v. 66, no. 2, p. 186.

Gratiot flow (in Portage Lake lava series)

Precambrian (middle Keweenawan series): Michigan.

J. C. Wright and H. R. Cornwall, 1954, *Bedrock geology of the Bruneau Creek quadrangle, Michigan: U. S. Geol. Survey Geol. Quadrangle Map [GQ 35]*.

Gratton limestone

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, *Geol. Soc. America Bull.*, v. 54, no. 6, p. 872-873.

Gravelbourg formation

Jurassic: Saskatchewan, Canada (subsurface).

J. R. Ower, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 397-398.

R. L. Milner and G. E. Thomas, 1954, *Western Canada sedimentary basin: Tulsa, Okla., Am. Assoc. Petroleum Geologists*, p. 257-260.

Grayburg formation (in Whitehorse group)

Permian: Subsurface in New Mexico and Texas.

R. K. DeFord in Addison Young, Max David, and E. A. Wahlstrom, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 10, p. 1551.

R. I. Dickey, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 44-47.

Gray Gulch formation

Tertiary: Utah.

E. M. Spieker, 1949, *Utah Geol. Soc. Guidebook* 4, p. 37, 38, *geol. map*.

Grayling formation

Lower Triassic: British Columbia and Yukon, Canada.

E. D. Kindle, 1944, *Canada Geol. Survey Paper* 44-16, p. 6-10.

Gray Mesa member (of Madera limestone)

Pennsylvanian: New Mexico.

V. C. Kelley and G. H. Wood, 1946, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 47.

Grazier member (of Hatter formation)

Middle Ordovician (Chazyan): Pennsylvania.

G. M. Kay, 1943, *Econ. Geology*, v. 38, no. 3, p. 193.

Greasy Creek facies (of Fort Payne formation)

Lower Mississippian: Kentucky and Tennessee.

H. J. Klepser, 1937, Ohio State Univ. Abs. Doctors' Dissert. 24, p. 182.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 53.

Great Falls lake sands

Pleistocene: Montana.

J. B. Lyons, 1944, Geol. Soc. America Bull., v. 55, no. 4, p. 449 (fig. 2), 452.

Great Harbour Deep granite

Precambrian: Newfoundland, Canada.

F. C. Foley, 1937, Newfoundland Geol. Survey Bull. 10, p. 11.

Great Sitkin volcanics

Tertiary and Quaternary: Alaska (Aleutian Islands).

F. S. Simons and D. E. Mathewson, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 4, p. 63.

Gredal formation

Eocene, upper: California.

Martin Van Couvering and H. B. Allen, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 496-500.

Greely Fjord group

Permian: Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, Meddel. om Grønland, bind 149, nr. 7, p. 67-73.

Green Canyon group

Pennsylvanian (Derry): New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 32-33, 35-36.

Green Head formation

Precambrian: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 23-25.

Greenhorn Mountain quartzite

Precambrian (Belt): Montana.

Adolph Knopf, 1950, Am. Mineralogist, v. 35, nos. 9-10, p. 839.

Greenland sandstone member (of Atoka formation)

Pennsylvanian: Arkansas.

L. G. Henbest, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 8, p. 1946-1947.

Greenlandian

Late Precambrian: Greenland.

Lauge Koch, 1933, Meddel. om Grønland, v. 73, afd. 1, nr. 2, p. 36; ~~in~~ Erich Krenkel, editor, 1935, Geologie von Grønland, Geologie der Erde, p. 3-24.**Green Mountain conglomerate**

Tertiary (post-Eocene, pre-Miocene): Colorado.

L. W. LeRoy, 1946, Colo. School Mines Quart., v. 41, no. 2, p. 111-113.

Greenock formation

Carboniferous: Alberta, Canada.

R. A. C. Brown, 1952, Canada Geol. Survey Mem. 264, p. 22-25.

Greenup cyclothem (including Greenup limestone)

Pennsylvanian: Illinois.

W. A. Newton and J. M. Weller, 1937, Ill. State Geol. Survey Rept. Inv. 45, p. 26-27.

Green Valley formation

Pliocene, lower: California.

Carlton Condit, 1938, Carnegie Inst. Washington Pub. 476, p. 248.

B. L. Clark, 1940, (abs.) Geol. Soc. America Bull., v. 51, no. 12, pt. 2, p. 1957.

Green Valley tonalite

Upper Cretaceous: California.

F. S. Miller, 1937, Geol. Soc. America Bull., v. 48, no. 10, p. 1408-1409.

E. S. Larsen and George Switzer, 1939, Am. Jour. Sci., v. 237, no. 8, p. 562-563.

Green Valley volcanic series

Tertiary: Texas.

S. S. Goldich and M. A. Elms, 1946, (abs.) Geol. Soc. American Bull., v. 57, no. 12, pt. 2, p. 1197.

Gregory member (of Pierre shale)

Upper Cretaceous: South Dakota.

W. V. Searight, 1937, S. Dak. State Geol. Survey Rept. Inv. 27, p. 10-20, pl. 3.

Gregory series

Precambrian: Northeast Greenland.

N. E. Odell, 1939, Meddel. om Grønland, bind 119, nr. 6, p. 15-20, 31, pl. 2.

Gregwa formation

Middle Cambrian: Nova Scotia, Canada.

R. D. Hutchinson, 1952, Canada Geol. Survey Mem. 263, p. 18-20.

Grejsdalen granite

Lower Paleozoic (Caledonian?): Northeast Greenland.

Erdhart Frankl, 1953, Meddel. om Grønland, bind 113, nr. 4, p. 98, 139-141, 157.

Griffith beds

Cretaceous(?): California.

G. J. Neuerburg, 1953, Calif. Dept. Nat. Res., Div. Mines Special Rept. 33, p. 7 (table 1), 18-19, pl. 1.

Griffon Cove River beds

Devonian: Quebec, Canada.

E. M. Kindle, 1938, Bull. Am. Paleontology, v. 24, no. 82, p. 51-52 (17-18).

Grimes Canyon sand and gravel member (of Santa Barbara formation)

Pleistocene, lower: California.

T. L. Bailey, 1954, *in* Pacific Petroleum Geologist, v. 8, no. 3, p. 1.

R. G. Thomas and others, 1954, Calif. Dept. Nat. Res., Div. Mines Bull. 170, chap. 6, p. 20, pl. 2.

Grindstone group

Jurassic (Knoxville): California.

F. M. Anderson, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 184 [preprint, 1941].

Grindstone Point unit (in Winnipeg formation)

Ordovician: Saskatchewan, Canada.

W. O. Kupsch, 1953, Saskatchewan Dept. Nat. Res. Rept. 10, p. 11.

Grizzly formation

Precambrian: South Dakota.

T. A. Dodge, 1942, Geol. Soc. America Bull., v. 53, no. 4, p. 563.

J. A. Noble and J. O. Harder, 1948, Geol. Soc. America Bull., v. 59, no. 9, p. 944, 952, pl. 1.

Groos Quarry member (of Trenton formation)

Middle Ordovician: Michigan.

R. C. Hussey, 1952, Mich. Dept. Conserv. Geol. Survey Div. Pub. 46, Geol. Ser. 39, p. 13-14.

Grosmont member (of Woodbend formation)

Upper Devonian: Alberta, Canada (subsurface).

H. R. Belyea, 1952, Canada Geol. Survey Paper 52-27, p. 21.

Grove Creek formation

Upper Cambrian: Montana.

Erling Dorf and Christina Lochman, 1938, (abs.) Geol. Soc. America Proc. 1937, p. 275-276.

Grover gravel

Miocene (?): Missouri and Illinois.

Leland Horberg, 1950, Ill. Acad. Sci. Trans., v. 43, p. 173.

W. W. Rubey, 1952, U. S. Geol. Survey Prof. Paper 218, p. 61-74.

Grumbler formation

Upper Devonian: Northwest Territories (Mackenzie), Canada.

C. H. Crickmay, 1953, New Spiriferidae from the Devonian of western Canada: Calgary, Canada, Imperial Oil Limited, p. 1, 11.

Grundy Knob limestone

Pennsylvanian: Kentucky.

J. A. Culberston, 1932, The paleontology and stratigraphy of the Pennsylvanian strata between Caseyville, Ky., and Vincennes, Ind.; Abs. Thesis, Ill. Univ.: Urbana, Ill., p. 3, 8.

H. R. Wanless, 1939, Geol. Soc. America Special Paper 17, p. 85.

Grupera formation

Permian (Wolfcamp): Chiapas, Mexico.

M. L. Thompson and A. K. Miller, 1944, Jour. Paleontology, v. 18, no. 6, p. 484.

Guacamaya beds

Permian: Tamaulipas, Mexico.

Manuel Maldonado-Koerdell, 1954, Asociación Mexicana Geólogos Petroleros Bol., v. 6, nos. 3-4, p. 119.

Guacamayas dacitic tuffs and flows

Pliocene (?): Honduras.

R. H. Carpenter, 1954, Geol. Soc. America Bull., v. 65, no. 1, p. 29, fig. 2.

Guadalcázar limestone

Upper Cretaceous (Gulf series): San Luis Potosí, Mexico.

J. P. Larios, 1948, Soc. Mexicana Geografía y Estadística Bol., tomo 65, nos. 2-3, p. 291.

Guajalote formation

Miocene, lower: Tamaulipas and Nuevo Leon, Mexico.

Julia Gardner, 1945, Geol. Soc. America Mem. 11, p. 19-21.

Guajataca member (of Cibao marl)

Oligocene: Puerto Rico.

A. D. Zapp, H. R. Bergquist, and C. R. Thomas, 1948, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 85, sheets 1, 2.

Guanajibo formation

Miocene, upper, or Pliocene, lower : Puerto Rico (subsurface).

C. L. McGuinness, 1948, *Ground-water resources of Puerto Rico*: [San Juan?] Puerto Rico Aqueduct and Sewer Service, p. 226-227.

Guato formation

Eocene to Oligocene : Cuba.

J. F. de Albear, 1941, *Soc. Cubana Ingenieros Rev.*, v. 36, chart facing p. 564.

Jorge Brodermann, 1945, *Soc. Cubana Ingenieros Rev.*, v. 42, no. 1, p. 127-128, chart facing p. 144.

Guaxaro andesite

Age not stated : Panama.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie*: Heidelberg, Band 8, Abt. 4a, Heft 29, p. 134.

Guayaguayare beds

Upper Cretaceous : Trinidad, British West Indies (subsurface).

Hans Bolli, 1952, *Jour. Paleontology*, v. 26, no. 4, p. 671.

Guayal limestone

Cretaceous (Aptian-Albian) : Tabasco, Mexico.

G. P. Salas, 1949, *Soc. Geol. Mexicana Bol.*, tomo 14, p. 54.

Guffey volcanics

Oligocene : Colorado.

J. E. Bever, 1954, *Dissert. Abs.*, v. 14, no. 7, p. 1088.

Guide Hill group

Upper Carboniferous or Lower Permian : Northwest Territories (Ellesmere Island), Canada.

R. G. Blackadar, 1954, *Canada Geol. Survey Paper* 53-10, p. 14-15.

Guilarte limestone

Upper Cretaceous : Puerto Rico.

R. C. Mitchell, 1954, *Puerto Rico Univ. Agr. Expt. Sta. Tech. Paper* 13, p. 47, 48.

Guilford granite

Age unknown (post-Glenarm series) : Maryland.

Ernst Cloos and C. H. Broedel, 1940, *Geologic map of Howard County and adjacent parts of Montgomery and Baltimore Counties (1:62,500)*: Md. Geol. Survey.

Guinda formation

Upper Cretaceous (Chico) : California.

J. M. Kirby, 1942, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 5, p. 899; 1943, v. 27, no. 3, p. 283-284.

Gulf Hammock limestone

Eocene (Claiborne or Jackson) : Florida.

D. B. Ericson, 1945, *Science*, v. 102, no. 2644, p. 234.

Gull Island formation

Middle Ordovician (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 9.

Gull Lake anorthosite

Precambrian : Quebec, Canada.

B. C. Freeman, 1939, *Jour. Geology*, v. 47, p. 28.

Gull River formation

Middle Ordovician (Black River) : Ontario, Canada.

V. J. Okulitch, 1939, Royal Canadian Inst. Trans., v. 22, pt. 2, p. 325-329.

Gullwing Lake conglomerate

Precambrian : Ontario, Canada.

W. D. Harding, 1951, Ontario Dept. Mines Ann. Rept., v. 59, pt. 4, p. 15-16.

Gullwing Lake volcanics

Precambrian : Ontario, Canada.

W. D. Harding, 1951, Ontario Dept. Mines Ann. Rept., v. 59, pt. 4, p. 13.

Gum Sulphur siltstone member (of New Providence formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 118-119.

Gunn member (of Mt. Simon formation)

Upper Cambrian : Illinois (subsurface).

J. S. Templeton, Jr., 1950, Ill. Acad. Sci. Trans., v. 43, p. 155.

Gun River formation

Silurian : Quebec, Canada.

W. H. Twenhofel, 1928, Canada Geol. Survey Mem. 154, p. 16.

Gunther dolomite

Precambrian (Chuaran) : Arizona.

Charles Keyes, 1938, Pan-Am. Geologist, v. 70, no. 2, p. 107, 112.

Gunton member (of Stony Mountain formation)

Upper Ordovician (Richmond) : Manitoba, Canada.

V. J. Okulitch, 1943, Royal Soc. Canada Trans., sec. 4, v. 37, p. 60.

Guymard quartzite

Lower to Middle Silurian : New York.

C. F. Kilfoyle, 1954, N. Y. State Mus. Bull. 348, p. 499-500, 650.

Gypsum Spring formation

Middle Jurassic : Wyoming, South Dakota, and Montana.

J. D. Love, 1939, Geol. Soc. America Special Paper 20, p. 45-46.

Gypsy quartzite

Cambrian : Washington.

C. F. Park, Jr., 1933, Econ. Geology, v. 33, no. 7, p. 713, 714 (fig. 2).

C. F. Park, Jr., and R. S. Cannon, Jr., 1943, U. S. Geol. Survey Prof. Paper 202, p. 6, 13-15, pl. 1.

Hagan shale member (of Clinch sandstone)

Lower Silurian : Virginia.

R. L. Miller and J. O. Fuller, 1947, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 76.

Hagar group

Lower Paleozoic (Caledonian) : Northeast Greenland.

C. E. Wegmann, 1935, Meddel. om Grønland, bind 103, nr. 3, p. 32, pl. 1.

Hager limestone or formation

Middle Ordovician : Missouri.

E. R. Larson, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 9, p. 2053-2058.

Haggard limestone (in Cumberland sandstone)

Upper Ordovician: Kentucky.

W. R. Jillson, 1953, *The Haggard limestone: Frankfort, Ky.*, Roberts Printing Co., p. 9-12.**Hagman formation**

Eocene, upper: Mariana Islands (Saipan).

Risaburo Tayama, 1938, *Geomorphology, geology, and coral reefs of Saipan Island: Tropical Industry Inst., Palau, South Sea Islands*, Bull. 1 [English translation in library of U. S. Geol. Survey, p. 50-51].Josiah Bridge *in* W. S. Cole and Josiah Bridge, 1953, *U. S. Geol. Survey Prof. Paper* 253, p. 7.**Halberstadt limestone**

Eocene, lower: Jamaica, British West Indies.

J. G. Sawkins, 1869, *Reports on the geology of Jamaica: [Great Britain] Geol. Survey Mem.*, p. 91, 93.C. A. Matley, 1951, *Geology and physiography of the Kingston district, Jamaica: Inst. of Jamaica*, p. 32, geol. map.**Halberstadt volcanic group**

Eocene, lower: Jamaica, British West Indies.

C. A. Matley, 1940, *Geol. Soc. London Abs. Proc.* 1373, p. 100; 1951, *Geology and physiography of the Kingston district, Jamaica: Inst. of Jamaica*, p. 32, geol. map.**Halcyon Lake calc-dolomite**

Lower Ordovician: New York.

E. B. Knopf, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1212.**Haldeman siltstone member (of Brodhead formation)**

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 180, 182-187.**Hall cyclothem (including Hall limestone)**

Pennsylvanian: Illinois.

R. C. Moore and others, 1944, *Geol. Soc. America Bull.*, v. 55, no. 6, Chart 6, column 29.C. L. Cooper, 1946, *Ill. State Geol. Survey Bull.* 70, p. 12, 16.**Halle Mountains formation**

Upper Carboniferous (Namurian): Northeast Greenland.

Lauge Koch *in* Erich Krenkel, editor, 1935, *Geologie von Grönland, Geologie der Erde*, p. 56, 62-66.**Hallian stage**

Pliocene: California.

Manley Natland, 1953, *Pacific Petroleum Geologist*, v. 7, no. 2, p. 2.**Hall Lake member (of McRae formation)**

Upper Cretaceous and Tertiary, lower: New Mexico.

H. P. Bushnell, 1955, *Compass*, v. 33, no. 1, p. 14-16.**Hallnor conglomerate**

Precambrian: Ontario, Canada.

Peter Price and R. C. E. Bray, 1948, *in Structural geology of Canadian ore deposits: Canadian Inst. Mining and Metallurgy*, p. 559.**Halloran complex**

Precambrian: California.

W. J. Miller, 1946, *Geol. Soc. America Bull.*, v. 57, no. 5, p. 499.**Halloran Spring complex***See* Halloran complex.

Hallowell member (of Cobourg formation)

Middle Ordovician (Mohawkian) : Ontario, Canada ; and New York.

G. M. Kay, 1937, *Geol. Soc. America Bull.*, v. 48, no. 2, p. 278-280.

Halls diorite porphyry

Miocene, middle or upper : Oregon.

T. P. Thayer, 1939, *Oreg. Dept. Geology and Mineral Industries Bull.* 15, p. 10.

Halls Town formation

Precambrian (Upper Proterozoic) : Newfoundland, Canada.

R. D. Hutchinson, 1954, *Canada Geol. Survey Mem.* 275, p. 14-16.

Hall Summit formation

Paleocene (Midway) : Louisiana.

G. [E.] Murray, Jr., 1941, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 5, p. 941-942.

G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 58-60.

Ham granite

Precambrian : Manitoba, Canada.

J. M. Harrison, 1949, *Canada Geol. Survey Mem.* 250, p. 19.

Hamakua volcanic series

Tertiary, upper, to Quaternary : Hawaiian Islands (Hawaii).

G. A. Macdonald, 1945, *Am. Jour. Sci.*, v. 243, no. 4, p. 211-214.

Hamilton series

Precambrian : Newfoundland (Labrador) and Quebec, Canada.

J. K. Gustafson and A. E. Moss, 1953, *Mining Eng.*, v. 5, no. 6, p. 595 (table 1).

Hammond River formation

Lower or Upper Carboniferous : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 111-113.

Hana volcanic series

Pleistocene and Recent : Hawaiian Islands (Maui).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 90-102.

Hanawi basaltic andesite

Pleistocene (?) : Hawaiian Islands (Maui).

G. A. Macdonald in H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 230, 253-254.

Hancock member (of Pinney Hollow formation)

Lower Cambrian : Vermont.

P. H. Osberg, 1952, *Vt. Geol. Survey Bull.* 5, p. 55, 61.

Haney limestone

Mississippian (Chester) : Kentucky.

A. C. McFarlan and others, 1955, *Ky. Geol. Survey*, ser. 9, Bull. 16, p. 18.

Hanford Brook formation

Lower Cambrian (Hanfordian) : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 66-69.

Hanley sandstone (in Cattaraugus formation)

Devonian : Pennsylvania.

C. R. Fettke, 1938, *Pa. Geol. Survey*, ser. 4, Bull. M 21, p. 37-38.

Hannah formation

Miocene, lower : California.

Martin Van Couvering and H. B. Allen, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 496-500.

Hannan limestone

Mississippian : Montana.

Charles Deiss, 1941, Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1896; 1943, v. 54, no. 2, p. 228-230.

Hanover granodiorite porphyry

Cretaceous or younger : New Mexico.

P. F. Kerr and others, 1950, Geol. Soc. America Bull., v. 61, no. 4, p. 287-288.

Hanover limestone (in Carbondale formation)

Pennsylvanian : Illinois.

H. R. Wanless, 1939, Geol. Soc. America Special Paper 17, p. 22.

Hanover pebble bed (in Cuyahoga formation)

Mississippian : Ohio.

J. E. Hyde, 1953, Ohio Div. Geol. Survey Bull. 51, p. 98.

Hansonburg group

Pennsylvanian (Missouri series) : New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 63-65.

Hanson Creek formation

Upper Ordovician : Nevada.

C. W. Merriam, 1940, Geol. Soc. America Special Paper 25, p. 10-11.

Harbour Main volcanics

Precambrian : Newfoundland, Canada.

B. F. Howell, 1925, Bull. Am. Paleontology, v. 11, no. 43, p. 20.

Hardrock "porphyry"

Precambrian : Ontario, Canada.

J. A. Reid, 1945, Econ. Geology, v. 40, no. 8, p. 509-511.

Hardscrabble limestone

Mississippian : Colorado.

J. C. Maher, 1950, U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 39.

Hardwood Point shales and flags

Mississippian (Kinderhook) : Michigan.

H. M. Martin, 1936, The centennial geological map of the southern peninsula of Michigan (1 : 500,000) : Mich. Geol. Survey Div. Pub. 39 (Geol. Ser. 33).

Hardwood Ridge flow

Pennsylvanian or older : New Brunswick, Canada.

J. E. Muller, 1951, Canada Geol. Survey Mem. 260, p. 12, 13.

Hardy Creek limestone (of Moccasin limestone)

Middle Ordovician : Virginia.

B. L. Miller and J. C. Fuller, 1947, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 76.

Hardy Hill quartzite member (of Orfordville formation)

Middle Ordovician (?) : New Hampshire and Vermont.

C. A. Chapman and others, 1938, Geologic map and structure sections of the Mascoma quadrangle, New Hampshire (1 : 62,500) : N. H. Highway Dept.

C. A. Chapman, 1939, Geol. Soc. America Bull., v. 50, no. 1, p. 132-133.

Hare Island limestone

Middle Ordovician (Chazy) : Newfoundland, Canada.

J. R. Cooper, 1937, Newfoundland Geol. Survey Bull. 9, p. 7.

Harg shale facies (of Portwood formation)

Middle Devonian : Kentucky.

Guy Campbell, 1946, Geol. Soc. America Bull., v. 57, no. 9, p. 862-864, 866.

Harkers fanglomerate

Pliocene : Utah.

L. W. Slentz, 1955, Utah Geol. Soc. Guidebook 10, p. 24, 28-30.

Harlow Bridge quartzite member (of Cram Hill formation)

Middle Ordovician : Vermont.

L. W. Currier and R. H. Jahns, 1941, Geol. Soc. America Bull., v. 52, no. 9, p. 1493, 1495.

Harmon member (of Peace River formation)

Lower Cretaceous : Alberta, Canada.

P. C. Badgley, 1952, Canada Geol. Survey Paper 52-11, p. 8.

Harmony formation

Upper Cambrian (?) : Nevada.

R. J. Roberts, 1951, Geology of the Antler Peak quadrangle, Nevada : U. S. Geol. Survey Geol. Quadrangle Map [GQ 10].

Harmony Hill formation

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., p. 21, figs. 3, 12.

Harold formation

Pleistocene, upper : California.

L. F. Noble, 1953, Geology of the Pearland quadrangle, California : U. S. Geol. Survey Geol. Quadrangle Map [GQ 24].

Harp Lake anorthosite

Precambrian : Newfoundland (Labrador), Canada.

D. M. Baird, 1953, Newfoundland Geol. Survey Inf. Circ. 4 (revised), p. 137.

Harriett formation

Silurian : Ohio.

Wilbur Stout, 1941, Ohio Geol. Survey, ser. 4, Bull. 42, p. 90-91.

Harriman shale member (of Lykins formation)

Permian : Colorado.

L. W. LeRoy, 1946, Colo. School Mines Quart., v. 41, no. 2, p. 31-33.

Harrington soil

Pleistocene : Bermuda Islands.

R. W. Sayles, 1931, Am. Acad. Arts Sci. Proc., v. 66, no. 11, p. 394-395.

Harrisite dolomite

Middle Silurian : Utah.

F. W. Osterwald, 1953, U. S. Geol. Survey Trace Elements Inv. Rept. TEI-330, p. 105.

Harter member (of Frankfort formation)

Upper Ordovician (Cincinnatian) : New York.

Marshall Kay, 1953, N. Y. State Mus. Bull. 347, p. 64, 66.

Hartford Hill rhyolite tuff

Oligocene(?) : Nevada.

V. P. Gianella, 1934, *Mining and Metallurgy*, v. 15, no. 331, p. 299; 1936, *Nev. Univ. Bull.*, v. 30, no. 9, p. 45-52.**Hartley shale and sandstone (in Chinle formation)**

Upper Triassic: Utah.

P. D. Proctor, 1953, *Utah Geol. Mineralog. Survey Bull.* 44, p. 10-11, 19.**Hartline chert**

Mississippian: Illinois.

J. M. Weller in J. M. Weller and G. E. Ekblaw, 1940, *Ill. State Geol. Survey Rept. Inv.* 70, p. 19-20.**Hartz Fjaeld formation**

Lower Cretaceous (Neocomian) : East Greenland.

Alfred Rosenkrantz in Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 149.**Harvey group**

Pre-Carboniferous: Yukon, Canada.

R. B. Campbell, 1954, *Canada Geol. Survey Paper (Prelim. Map)* 54-12.**Hasenclever member (of Frankfort formation)**

Upper Ordovician (Cincinnatian) : New York.

Marshall Kay, 1953, *N. Y. State Mus. Bull.* 347, p. 64, 66.**Hasler formation**

Lower Cretaceous: British Columbia, Canada.

R. T. D. Wickenden and George Shaw, 1943, *Canada Geol. Survey Paper* 43-13, p. 6-7.**Hassel formation**

Lower Cretaceous or younger: Northwest Territories (Ellef Ringnes Island), Canada.

W. W. Heywood, 1955, *Canadian Mining and Metall. Bull.*, v. 48, no. 514, p. 60, 61.**Hastings Cove formation**

Middle Cambrian (Loch Lomond) : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 73-76.†**Hatbox tongue (of Chandler formation)**

Lower Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.* v. 41, no. 5, p. 164.**Hat Creek basalt**

Recent: California.

C. A. Anderson, 1940, *Am. Jour. Sci.* v. 238, no. 7, p. 477, 479 (fig. 2), 480-485.**Hatter limestone**

Middle Ordovician (Chazyan?) : Pennsylvania.

G. M. Kay, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1969.**Hatterian subseries**

Middle Ordovician (Bolarian) : Pennsylvania, Kentucky, West Virginia, Virginia, Maryland, and New York, and Ontario, Canada.

Marshall Kay, 1947, (abs.) *Geol. Soc. America Bull.*, v. 58, no. 12, pt. 2, p. 1198; 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 8, p. 1406-1409.

Haupt formation

Pliocene (?) : Hawaiian Islands (Kauai).

H. T. Stearns, 1946, Hawaii Div. Hydrography Bull. 8, p. 85, 87.

Havallah formation

Permian (Wolfcamp and Leonard? age) : Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, Geology of the Mount Tobin quadrangle, Nevada : U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].

Havasu member (of Muav formation)

Middle Cambrian : Arizona.

E. D. McKee, 1945, Carnegie Inst. Washington Pub. 563, p. 14, 29, 109-110.

Haverhill granodiorite

Upper Devonian (?) (New Hampshire magma series) : New Hampshire.

J. B. Hadley and others, 1938, Geologic map and structure sections of the New Hampshire portion of the Mt. Cube quadrangle (1:62,500) : N. H. Highway Dept.
J. B. Hadley, 1942, Geol. Soc. America Bull., v. 53, no. 1, p. 148.

Hawi volcanic series

Pleistocene : Hawaiian Islands (Hawaii).

H. T. Stearns and G. A. Macdonald, 1946, Hawaii Div. Hydrography Bull. 9, p. 173, 178-180.

Hawkesbury series

Pennsylvanian : Nova Scotia, Canada.

G. W. H. Norman, 1935, Canada Geol. Survey Mem. 177, p. 45.

Hawkhill formation

Eocene, middle : California.

Ralph Stewart, 1949, U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 34, sheet 2.

Hawkins limestone member (of Chimneyhill formation)

Lower Silurian : Oklahoma.

R. A. Maxwell, 1936, Northwestern Univ. Summaries of Doctoral Dissert., v. 4, p. 132, 133.

Hawkins Creek member (of Modin formation)

Upper Triassic : California.

A. F. Sanborn, [1953], Stanford Univ. Abs. Dissert., v. 27, p. 436.

Hawks Bill formation

Cretaceous (?) : Tobago, British West Indies.

J. C. Maxwell, 1948, Geol. Soc. America Bull., v. 59, no. 8, p. 828-830.

Hayden group

Pennsylvanian : Wyoming and Colorado.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, Nebr. Geol. Survey Bull. 13, p. 2, 3, 22, 45.

Hayden Branch formation

Upper Pennsylvanian : Indiana and Illinois.

C. A. Malott in K. A. Payne, 1937, Jour. Paleontology, v. 11, no. 4, p. 276-279.

Hayes conglomerate

Miocene or younger : Jamaica, British West Indies.

C. A. Matley, 1929, Geol. Soc. London Quart. Jour., v. 85, pt. 4, p. 462.

Hay Flat limestone

Cretaceous (Albian) : Arizona.

A. A. Stoyanow, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 296, 297 (table).

Haymeadow Creek member (of Trenton formation)

Middle Ordovician: Michigan.

R. C. Hussey, 1952, Mich. Dept. Conserv. Geol. Survey Div. Pub. 46, Geol. Ser. 39, p. 13-14.

Haynesville formation

Upper Jurassic: Subsurface in Louisiana, Alabama, Arkansas, Mississippi, and Texas.

T. H. Philpott and R. T. Hazzard, 1949, *in* Shreveport Geol. Soc. Guidebook 17th Ann. Field Trip, fig. 5 (correlation chart).

L. A. Goebel, 1950, Am. Assoc. Petroleum Geologists Bull., v. 34, no. 10, p. 1978-1979.

Hay River series

Upper Devonian: Northwest Territories (Mackenzie), Canada.

A. E. Cameron, 1922, Canada Geol. Survey Summ. Rept. 1921, pt. B, p. 25-29.

Hazel Green member (of Quimbys Mill formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., figs. 3, 9.

Hazelwood member (of Mifflin formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., figs. 3, 10, 16.

Hazleton Bridge formation

Upper Pennsylvanian: Indiana.

C. A. Malott, 1939, (abs.) Ind. Acad. Sci. Proc., v. 48, p. 114.

Headland gneiss

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, Newfoundland Geol. Survey Bull. 15, p. 10.

Healy glaciation

Pleistocene (Wisconsin): Alaska.

Clyde Wahrhaftig *in* T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 8, 13 (table 1).**Heatherton limestone**

Mississippian: Newfoundland, Canada.

W. A. Bell, 1948, Canada Geol. Survey Bull. 10, p. 31, 32.

Hedley diorite-gabbro

Pre-upper Lower Cretaceous: British Columbia, Canada.

H. M. A. Rice, 1947, Canada Geol. Survey Mem. 243, p. 34.

Hedley formation

Triassic: British Columbia, Canada.

H. S. Bostock and D. A. McNaughton, 1940, Canada Geol. Survey Map 568A.

Hegler limestone member (of Cherry Canyon formation)

Permian: Texas and New Mexico.

P. B. King *in* A. K. Miller and W. M. Furnish, 1940, Geol. Soc. America Special Paper 26, p. 9.

P. B. King, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 4, p. 582, pl. 2.

Helenmode member (of Erwin formation)

Lower Cambrian: Tennessee and North Carolina.

P. B. King and others, 1944, Tenn. Div. Geology Bull. 52, p. 31-32, 56.

Hell Gate glacial substage

Pleistocene (Mankato) : Colorado.

R. L. Nelson, 1954, *Jour. Geology*, v. 62, no. 4, p. 333.**Hell Inlet glacial stage**

Pleistocene : Colorado.

R. L. Ives, 1942, *Geog. Review*, v. 32, no. 3, p. 450.**Hell Roaring member (of Altyn formation)**

Precambrian (Belt) : Alberta, Canada ; and Montana.

C. L. Fenton and M. A. Fenton, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1882-1883.**Hells Canyon formation**

Pennsylvanian : Colorado and Utah.

M. L. Thompson, 1945, *Kans. State Geol. Survey Bull.* 60, pt. 2, p. 31-34.**Hells Mesa member (of Datil formation)**

(?) Miocene, upper : New Mexico.

W. H. Tonking, 1954, *Dissert. Abs.*, v. 14, no. 2, p. 340; [1954?], *Geologic map and sections of the Puertecito quadrangle, New Mexico (1 : 48,000)* : N. Mex. Bur. Mines Min. Res. [preprint?] *Bull.* 41, pl. 1.**Helmick formation**

Eocene : Oregon.

J. A. Cushman, R. E. Stewart, and K. C. Stewart, 1947, *Oreg. Dept. Geology and Mineral Industries Bull.* 36, pt. 5, p. 95-96.**Helveker volcanics**

Upper Cretaceous : British Columbia, Canada.

F. A. Kerr, 1948, *Canada Geol. Survey Mem.* 246, p. 36-37.**Hely member (of Grand Detour formation)**

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, fig. 3.**Hemingford group**

Miocene : Nebraska and Wyoming.

A. L. Lugin, 1938, *Am. Jour. Sci.*, 5th ser., v. 36, no. 213, p. 226, 227; 1939, *Geol. Soc. America Bull.*, v. 50, no 8, p. 1253-1254.**Hemingfordian age**

Miocene : North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 12, pl. 1.**Hemphillian age**

Pliocene : North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 12, pl. 1.**Henefer formation**

Upper Cretaceous : Utah.

A. J. Eardley, 1944, *Geol. Soc. America Bull.*, v. 55, no. 7, p. 840-842.**Hennepin member (of Pecatonica formation)**

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 12.**Hennessey Bayou member (of Bucatunna marl and clay)**

Oligocene (Vicksburg) : Mississippi.

E. C. Tonti, 1955, *Dissert. Abs.*, v. 15 no. 8, p. 1372.

Henry formation

Triassic: British Columbia, Canada.

H. S. Bostock and D. A. McNaughton, 1940 Canada Geol. Survey Map 568A.

Henryville formation

Lower Mississippian: Indiana.

Guy Campbell, 1946, Geol. Soc. America Bull., v. 57, no. 9, p. 851.

Hepler sandstone formation

Pennsylvanian (Missouri series): Kansas, Missouri, and Nebraska.

J. M. Jewett, 1940, Kans. State Geol. Survey Bull. 30, p. 8-9.

Hercules Tower sandstone (in Lutie member of Theodosia formation)

Lower Ordovician: Missouri and Arkansas.

J. S. Cullison, 1944, Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser., v. 15, no. 2, p. 29.

Hermosa lens (in Newcastle formation)

Upper Cretaceous: South Dakota.

R. M. Grace, 1952, Wyo. Geol. Survey Bull. 44, p. 14, 17.

Heron Creek sandstone member (of Gething formation)

Lower Cretaceous: British Columbia, Canada.

F. H. McLearn and E. J. W. Irish, 1944, Canada Geol. Survey Paper 44-15, p. 8.

Herrera sandstone

Miocene, lower: Trinidad, British West Indies.

G. A. Waring, 1926, Johns Hopkins Univ. Studies in Geology, no. 7, p. 50.

Herrick gravels

Pleistocene: South Dakota.

R. E. Stevenson and L. A. Carlson, 1950, Areal geology of the Bonesteel quadrangle (1:62,500): S. Dak. State Geol. Survey.

Herring Head conglomerate

Silurian: Newfoundland, Canada.

D. M. Baird, 1953, Newfoundland Geol. Survey Rept. 1, p. 11-16.

Hershey limestone

Ordovician (lower Trenton): Pennsylvania.

Carlyle Gray, 1952, Pa. Geol. Survey Progress Rept. 140, p. 4-5.

Hibbs Hole formation

Precambrian (Middle Proterozoic): Newfoundland, Canada.

R. D. Hutchinson, 1954, Canada Geol. Survey Mem. 275, p. 11-12.

Hickory Ridge member (of Oneota formation)

Lower Ordovician: Wisconsin.

G. O. Raasch, 1952, Ill. Acad. Sci. Trans., v. 45, p. 87-88, 92-93.

Hicks cyclothem (including Hicks limestone)

Pennsylvanian: Illinois.

R. C. Moore and others, 1944, Geol. Soc. America Bull., v. 55, no. 6, Chart 6, column 29.

C. L. Cooper, 1946, Ill. State Geol. Survey Bull. 70, p. 12, 16.

Hidalgo volcanics

Lower Cretaceous (Bisbee group): New Mexico.

S. G. Lasky, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 5, p. 532, fig. 2.

Hidalgos formation

Eocene, middle: Dominican Republic.

P. J. Bermudez, 1949, Cushman Lab. Foram. Research Special Pub. 25, p. 11.

Hidden Valley dolomite

Silurian and Lower Devonian : California.

J. F. McAllister, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 25, p. 3, 15-18.

Hidden Valley formation

Middle Cambrian (?) : Northeast Greenland.

A. B. Cleaves and E. F. Fox, 1935, Geol. Soc. America Bull., v. 46, no. 3, p. 475, pl. 43.

Hidden Valley group

Silurian and Devonian : British Columbia, Canada.

H. Gabrielse, 1955, Canada Geol. Survey Paper (Prelim. Map) 54-10.

Higginsville cyclothem (including Higginsville limestone)

Pennsylvanian (Des Moines) : Missouri, Iowa, Kansas, and Nebraska.

L. M. Cline, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 1, p. 36.

J. M. Jewett, 1945, Kans. State Geol. Survey Bull. 53, p. 25-26, 62-63.

High Bluff member (of Pendleton formation)

Eocene, lower (Wilcox) : Louisiana and Texas.

Richard Wasem and L. J. Wilbert, Jr., 1943, Jour. Paleontology, v. 17, no. 2, p. 187, fig. 4.

High Cascade series

Pliocene to Recent : California.

Howel Williams, 1949, Calif. Dept. Nat. Res., Div. Mines Bull. 151, p. 35-38.

High Falls granite

Precambrian : Quebec, Canada.

M. E. Wilson, 1920, Canada Geol. Survey Pub. (Map) 1691.

Pierre Mauffette, 1949, Quebec Dept. Mines Prelim. Rept. 223, p. 12.

Highland shale member (of Wellington formation)

Permian : Kansas.

W. A. Ver Wiebe, 1937, Wichita Municipal Univ. Bull. v. 12, no. 5, p. 5-6.

Highlands formation

Precambrian : Newfoundland, Canada.

C. E. Fritts, 1953, Newfoundland Geol. Survey Rept. 4, p. 10-13.

Highlands sandstone

Mississippian : Newfoundland, Canada.

D. M. Baird, 1951, Canadian Inst. Mining and Metallurgy Trans., v. 54, p. 86, 90.

Highway limestone

Middle Pennsylvanian : Nevada.

H. G. Ferguson, R. J. Roberts, and S. W. Muller, 1952, Geology of the Golconda quadrangle, Nevada : U. S. Geol. Survey Geol. Quadrangle Map [GQ 15].

Highwood sandstone (in Wapiabi formation)

Upper Cretaceous : Alberta, Canada.

J. B. Webb and L. G. Hertlein, 1934, Am. Assoc. Petroleum Geologists Bull., v. 18, no. 11, p. 1402.

Higuerito member (of Arroyo Blanco formation)

Miocene, lower : Dominican Republic.

P. J. Bermudez, 1949, Cushman Lab. Foram. Research Special Pub. 25, p. 29.

Hirrippo limestone

See Hirrippo limestone.

Hilina volcanic series

Pleistocene (?) : Hawaiian Islands (Hawaii).

H. T. Stearns and G. A. Macdonald, 1946, *Hawaii Div. Hydrography Bull.* 9, p. 100, 101, 102.

Hill Group

Precambrian (pre-Huronian) : Ontario, Canada.

H. C. Cooke, 1946, *Canada Geol. Survey Bull.* 3, p. 18-19.

Hillier member (of Cobourg formation)

Middle Ordovician (Mohawkian) : Ontario, Canada ; and New York.

G. M. Kay, 1937, *Geol. Soc. America Bull.*, v. 48, no. 2, p. 280-281.

Hillman gneissoid tonalite

Precambrian (Algoman) : Minnesota.

M. S. Woyski, 1949, *Geol. Soc. America Bull.*, v. 60, no. 6, p. 1002, 1011, pl. 1.

Hill Ridge biotite schist

Cambro-Ordovician (?) : Maine.

L. W. Fisher, 1936, *Am. Mineralogist*, v. 21, no. 5, p. 323.

Hills Pond peridotite

Cretaceous (?) : Kansas.

H. C. Wagner, 1954, *U. S. Geol. Survey Geol. Quadrangle Map GQ 49*.

Hilltop formation

Pennsylvanian : Oklahoma.

W. F. Tanner, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 8, p. 2046-2050.

Hinchinbrooke granite

Precambrian : Ontario, Canada.

J. M. Harrison, 1944, *Geol. Soc. America Bull.*, v. 55, no. 12, p. 1404-1405.

Hinkley Valley complex

Precambrian : California.

W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, no. 1, p. 77-79.

Hirippo limestone

Miocene [Aquitanian] : Mariana Islands (Rota).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands* : *Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey] ; 1952, *Coral reefs in the South Seas* : *Japan Hydrog. Office Bull.*, v. 11, p. 54, table 4 [English translation in library of U. S. Geol. Survey, p. 65].

Hoadley formation

Precambrian (Belt series) : Montana.

Charles Deiss, 1943, *Geol. Soc. America Bull.*, v. 54, no. 2, p. 213, 216-217.

Hoback formation

Eocene, lower : Wyoming.

A. J. Eardley and others, 1944, *Hoback-Gros Ventre-Teton Field Conference* [geologic map]. Privately printed.

Leland Horberg, Vincent Nelson, and Victor Church, 1949, *Geol. Soc. America Bull.*, v. 60, no. 1, p. 187, 190.

Hobble formation

Pennsylvanian : Utah.

H. J. Bissell, 1936, *Iowa Acad. Sci. Proc.*, v. 43, p. 240, 241-242.

Hobsons clay

Upper Cretaceous: Trinidad, British West Indies.

P. W. Jarvis, 1929, *Inst. Petroleum Technologists Jour.*, v. 15, no. 75, p. 440.**Hockingport sandstone**

Upper Carboniferous: Ohio.

W. D. Martin, 1953, *Dissert. Abs.*, v. 15, no. 8, p. 1371.**Hodge complex**

Precambrian: California.

W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, no. 1, p. 79, 97-98.**Hodge volcanic series**

Upper Paleozoic (?): California.

O. E. Bowen, Jr., in L. A. Wright and others, 1953, *Calif. Jour. Mines and Geology*, v. 49, nos. 1-2, pl. 2.O. E. Bowen, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 165, p. 16 (fig. 2), 34-36.**Hodgewater group**

Precambrian (Upper Proterozoic): Newfoundland, Canada.

R. D. Hutchinson, 1954, *Canada Geol. Survey Mem.* 275, p. 12.**Hoffmann flow**

Recent: California.

H. A. Powers, 1932, *Am. Mineralogist*, v. 17, no. 7, p. 276-278, 288, pl. 1.**Hoffner member (of Ste. Genevieve limestone)**

Mississippian (Iowa series): Illinois.

J. M. Weller in Stuart Weller and F. F. Krey, 1939, *Ill. State Geol. Survey Rept. Inv.* 60, p. 7.**Holcomb quartz monzonite**

Cretaceous (?): California.

L. F. Noble, 1954, *U. S. Geol. Survey Geol. Quadrangle Map GQ 50*.**Holder formation**

Pennsylvanian (Virgilian): New Mexico.

L. C. Pray, 1954, *N. Mex. Geol. Soc. Guidebook 5th Field Conf.*, p. 93.**Holitna group**

Middle or Upper Silurian: Alaska.

W. M. Cady and others, 1955, *U. S. Geol. Survey Prof. Paper* 268, p. 23-27.**Holland limestone**

Pennsylvanian: Indiana.

H. R. Wanless, 1939, *Geol. Soc. America Special Paper* 17, p. 30, 87.**Hollis limestone member (of Deese formation)**

[Pennsylvanian]: Oklahoma.

C. C. Branson, 1955, *Hopper*, v. 15, nos. 10-11, p. 129.**Hollis Reservoir formation**

Upper Jurassic: Trinidad, British West Indies.

R. A. Liddle, 1946, *The geology of Venezuela and Trinidad*, 2d ed.: Ithaca, N. Y., Paleont. Research Inst., p. 701.**Hollycrest formation**

Miocene, middle: California.

G. J. Neuberger, 1953, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 33, p. 6 (table 1), 23-24, pl. 1.

Holmes gneiss

Precambrian (post-Keewatin) : Quebec, Canada.

W. W. Longley, 1946, Quebec Dept. Mines Geol. Rept. 24, p. 11.

Holokuk basalt

Tertiary : Alaska.

W. M. Cady and others, 1955, U. S. Geol. Survey Prof. Paper 268, p. 53-55.

Holtsclaw Hill facies (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 139-145.

Holy Cross sandstone

Silurian : Kentucky.

W. R. Jillson, 1952, *The Holy Cross sandstone* : Frankfort, Ky., Roberts Printing Co., p. 5-14.

Hollyrood granite

Precambrian : Newfoundland (Labrador), Canada.

M. E. Wilson, 1939, *Geologie der Erde, North America*, v. 1, p. 282.

Holz shale member (of Ladd formation)

Upper Cretaceous : California.

W. P. Popenoe, 1937, *Jour. Paleontology*, v. 11, no. 5, p. 380.

Homberg group

Mississippian (Chester) : Illinois and Missouri.

J. M. Weller, 1939, *Kans. Geol. Soc. Guidebook 13th Ann. Field Conf.*, p. 131, 135.

Home glacial substage

Pleistocene (Wisconsin) : Colorado, Wyoming, and New Mexico.

L. L. Ray, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 314 ; 1940, *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 1, p. 1857-1860.

Home Foreland beds

Lower Cretaceous (Aptian-Albian?) : Northeast Greenland.

Wolf Maync, 1949, *Meddel. om Grønland*, bind 133, nr. 3, p. 137, 211-217, 281.

Homer quartzite

Triassic (?) : California.

Cordell Durrell, 1940, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 25, no. 1, p. 15, 116.

Homochitto member (of Pascagoula formation)

Miocene : Mississippi.

G. F. Brown and W. F. Guyton, 1943, *Miss. State Geol. Survey Bull.* 56, p. 22-23, 32-37.

Honakta formation

Upper Triassic : British Columbia, Canada.

F. A. Kerr, 1945, *Canada Geol. Survey Paper (Prelim. Map)* 45-30 ; 1948, *Mem.* 248, p. 20 (table), 28, geol. map.

Honda formation

Upper Jurassic : California.

T. W. Dibblee, Jr., 1950, *Calif. Dept. Nat. Res., Div. Mines Bull.* 150, p. 22.

Hondo member (of Woodbend formation)

Upper Devonian : Alberta, Canada (subsurface).

H. R. Belyea, 1952, *Canada Geol. Survey Paper* 52-27, p. 25-28.

Hondo shale or formation

See Arroyo Hondo shale member (of Lodo formation).

Hondo slate

Precambrian: New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 23.**Honeycut formation (of Ellenburger group)**

Lower Ordovician: Texas.

V. E. Barnes and P. E. Cloud, Jr., 1945, *Tex. Univ. Bur. Econ. Geology Min. Res. Circ.* 34, p. 1, 3-7, 31-41.**Honolua volcanic series**

Pliocene, upper (?), or Pleistocene, lower: Hawaiian Islands (Maui).

H. T. Stearns *in* H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 159, 173-179.**Honomanu volcanic series**

Tertiary, upper (?): Hawaiian Islands (Maui).

H. T. Stearns *in* H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 65, 68-74.**Hoodoo lavas**

Quaternary: British Columbia, Canada.

F. A. Kerr, 1948, *Canada Geol. Survey Mem.* 246, p. 41-45.**Hook limestone member (of Macy formation)**

Middle Ordovician: Missouri.

E. R. Larson, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 9, p. 2060-2061.**Hookton formation**

Pleistocene, upper: California.

B. A. Ogle, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 164, p. 13 (fig. 3), 57-63, pl. 1.**Hooper formation**

Eocene, lower (Wilcox): Texas.

W. W. Sharp, Jr., 1953, *in* AAPG, SEPM, SEG Guidebook Field Trip Routes Joint Ann. Meeting, March, p. 53 (geol. map).**Hoover conglomerate unit (in Sycamore Canyon member of Puente formation)**

Miocene, upper: California.

C. J. Kundert, 1952, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 18, p. 6-7.**Hopedale gneiss**

Precambrian: Newfoundland (Labrador), Canada.

S. K. Roy, 1941, *Field Mus. Nat. History Geol. Mem.*, v. 2, p. 20.E. H. Kranck, 1953, *Canada Geol. Survey Bull.* 26, p. 33, 34.**Hope Gate limestone or series.**

Miocene, middle or upper: Jamaica, British West Indies.

H. R. Versey, 1953, *Jamaica Geol. Survey Dept. Ann. Rept.* 1951-52, p. 2, 4.**Hopewell series**

Precambrian: New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 21-23, 42-43.**Hopkintonian series**

Silurian (Early Yorkie): Missouri.

[C. R.] Keyes, 1941, *Pan-Am. Geologist*, v. 75, no. 2, p. 157 (chart).**Hopwood conglomerate**

Lower Mississippian (Oil Lake): Pennsylvania.

W. M. Laird, 1941, *Pa. Topog. and Geol. Survey Progress Rept.* 126, p. 14 (footnote).

Horcones formation

Eocene to Oligocene : Vera Cruz, Mexico.

Ramiro Robles Ramos, 1942, *Irrigación en Mexico*, v. 23, no. 3, p. 45 (correlation chart).

Rudolfo Suarez C., 1950, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 2, no. 11, p. 653-654.

Hornbrook formation

Upper Cretaceous : Oregon and California.

F. G. Wells, 1955, U. S. Geol. Survey Mineral Inv. Field Studies Map MF 38.

Hornby formation

Upper Cretaceous : British Columbia, Canada.

J. L. Usher, 1952, *Canada Geol. Survey Bull.* 21, p. 21, 29-30.

Hornby Bay series

Precambrian : Northwest Territories (Mackenzie), Canada.

D. F. Kidd, 1933, *Canada Geol. Survey Summ. Rept.* 132, pt. C, p. 13, Map 296A.

Horne rhyolites

Precambrian : Quebec, Canada.

J. A. Dresser and T. C. Denis, 1949, *Quebec Dept. Mines Geol. Rept.* 20, v. 3, p. 339-340.

Hornet conglomerate

Ordovician : Newfoundland, Canada.

G. R. Heyl, 1936, *Newfoundland Geol. Survey Bull.* 3, p. 6.

Hornsilver dolomite member (of Minturn formation)

Pennsylvanian : Colorado.

Ogden Tweto, 1949, *Colo. Sci. Soc. Proc.*, v. 15, no. 4, p. 152, 199.

Horquilla limestone

Pennsylvanian : Arizona.

James Gilluly, J. R. Cooper, and J. S. Williams, 1954, U. S. Geol. Survey Prof. Paper 266, p. 16-18.

Horry clay

Pleistocene (probably early Peorian) : South Carolina.

C. W. Cooke, 1937, *Washington Acad. Sci. Jour.*, v. 27, no. 1, p. 1-5.

Horsehead tongue (of Mancos shale)

Upper Cretaceous : New Mexico.

W. S. Pike, Jr., 1947, *Geol. Soc. America Mem.* 24, p. 9, 35.

Horseranch group

Lower and Middle Cambrian : British Columbia, Canada.

H. Gabrielse, 1955, *Canada Geol. Survey Paper (Prelim. Map)* 54-10.

Horsethief formation

Pliocene : California.

O. P. Jenkins, 1938, *Geologic map of California (1 : 500,000)* : Calif. Dept. Nat. Res., Div. Mines, sheet 4.

Hospital porphyry

Pliocene(?) : Nevada.

James Gilluly, 1946, U. S. Geol. Survey Prof. Paper 209, p. 44.

Hospital Hill formation

Eocene, upper : Trinidad, British West Indies.

J. A. Cushman and H. H. Renz, 1948, *Cushman Lab. Foram. Research Special Pub.* 24, p. 3-4.

Hosston formation

Lower Cretaceous : Subsurface in Louisiana, Arkansas, and Texas.

R. W. Imlay, 1940, *Ark. Geol. Survey Inf. Circ.* 12, p. 28-30.

Hostetter limestone

Permian (Greene) : Ohio.

A. T. Cross, W. H. Smith, and Thomas Arkle, Jr., 1950, *Field guide for the special field conference on the stratigraphy, sedimentation and nomenclature of the Upper Pennsylvanian and Lower Permian strata (Monongahela, Washington and Greene series) in the northern portion of the Dunkard Basin of Ohio, West Virginia, and Pennsylvania* : W. Va. Geol. and Econ. Survey, [pl. 1].

Hostler member (of Hatter formation)

Middle Ordovician (Chazyan) : Pennsylvania.

G. M. Kay, 1943, *Econ. Geology*, v. 38, no. 3, p. 193, 195.

Hothouse formation

Precambrian : Georgia and North Carolina.

V. J. Hurst, 1955, *Ga. Geol. Survey Bull.* 63, p. 35-40.

Hot Springs formation

Pennsylvanian (Derry) : New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 38-39.

House limestone

Lower Ordovician (Canadian) : Utah.

L. F. Hintze, 1951, *Utah Geol. Mineralog. Survey Bull.* 39, p. 12-13.

Housum member (of Mercersburg formation)

Middle Ordovician (Trentonian) : Pennsylvania.

L. C. Craig, 1949, *Geol. Soc. America Bull.*, v. 60, no. 4, p. 715 (fig. 1), 732-733.

Houx cyclothem (including Houx limestone)

Pennsylvanian (Des Moines) : Missouri, Iowa, Kansas, and Nebraska.

L. M. Cline, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 1, p. 36, 37.

J. M. Jewett, 1945, *Kans. State Geol. Survey Bull.* 58, p. 63.

Howard Creek sand (in Kaskapau formation)

Cretaceous (Cenomanian) : Alberta, Canada.

C. R. Stelck and J. H. Wall, 1954, *Alberta Research Council Rept.* 68, p. 6, 8.

Howard Quarry sandstone

Upper Devonian : Pennsylvania.

K. E. Caster, 1939, *Jour. Paleontology*, v. 13, no. 5, p. 532.

Howells Ridge formation

Lower Cretaceous (Bisbee group) : New Mexico.

S. G. Lasky, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 5, p. 533, fig. 2.

Howey diorite

Precambrian (pre-Algoman) : Ontario, Canada.

H. C. Horwood and N. B. Keevil, 1943, *Jour. Geology*, v. 51, no. 1, p. 20.

Howse group

Precambrian (Proterozoic) : Quebec and Newfoundland, Canada.

M. J. Frarey, 1952, *Canada Geol. Survey Paper* 52-16, p. 2.

Hoyle sedimentary series

Precambrian : Ontario, Canada.

W. R. Dunbar, 1948, *in* *Structural geology of Canadian ore deposits* : Canadian Inst. Mining and Metallurgy, p. 445, fig. 1.

Huajuapán beds

Tertiary(?) : Oaxaca, Mexico.

G. P. Salas, 1949, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 1, no. 2, p. 120.

Hualalai volcanic series

Pleistocene and Recent : Hawaiian Islands (Hawaii).

C. K. Wentworth, 1938, *Hawaiian Volcano Observatory 3d Special Rept.*, p. 88-89.

H. T. Stearns and G. A. Macdonald, 1946, *Hawaii Div. Hydrography Bull.* 9, p. 139-148.

Hualpai limestone

Pliocene(?) : Nevada.

C. R. Longwell, 1936, *Geol. Soc. America Bull.*, v. 47, no. 9, p. 1429-1433.

Huasteca formation

Oligocene, lower : Vera Cruz, Mexico.

J. M. Muir, 1936, *Geology of the Tampico region, Mexico : Tulsa, Okla., Am. Assoc. Petroleum Geologists*, p. 124-131.

Huayacocotla formation

Lower Jurassic : Vera Cruz, Puebla, and Hidalgo, Mexico.

R. W. Imlay and others, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 9, p. 1750-1753.

Hubbard Hill member (of Littleton formation)

Lower Devonian : New Hampshire.

M. T. Heald, 1950, *Geol. Soc. America Bull.*, v. 61, no. 1, p. 46-50, 69-70, 78-79.

Hub Lake syenite

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 111-112.

Huckleberry conglomerate

Lower Cambrian(?) : Washington.

W. A. G. Bennett, 1941, *Wash. State Dept. Conserv. Devel., Div. Geology, Rept. Inv.* 5, p. 8.

Huckleberry greenstone

Lower Cambrian(?) : Washington.

H. E. Culver, 1939, *Wash. State Coll. Monthly Bull.*, v. 22, no. 7, pt. 1, p. 19.

W. A. G. Bennett, 1941, *Wash. State Dept. Conserv. Devel., Div. Geology, Rept. Inv.* 5, p. 8.

Hudson member (of Richfield formation)

Precambrian : British Columbia, Canada.

W. E. Cockfield and A. H. Lang, 1937, *Canadian Inst. Mining and Metallurgy Trans.*, v. 40, p. 465.

Hudson Bay formation

Devonian : Manitoba, Canada (subsurface).

J. R. Ower, 1952, *Oil in Canada*, v. 5, no. 1, p. 54; 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 395.

Hudson Highlands complex

Precambrian : New York.

K. E. Lowe, 1950, *Geol. Soc. America Bull.*, v. 61, no. 3, p. 142.

Huehue flow

Recent : Hawaiian Islands (Hawaii).

G. A. Macdonald, 1949, *U. S. Geol. Survey Prof. Paper* 214-D, p. 75.

Huelster formation

Tertiary: Texas.

G. K. Eifer, Jr., 1951, *Geol. Soc. America Bull.*, v. 62, no. 4, p. 342-345, pl. 1.**Hughes Gap formation**

Precambrian: Georgia and North Carolina.

V. J. Hurst, 1955, *Ga. Geol. Survey Bull.* 63, p. 21-35.**Hughes Lake conglomerate**

Precambrian: Manitoba, Canada.

J. D. Allan, 1948, *Precambrian*, v. 21, no. 3, p. 6.**Huichica formation**

Pleistocene: California.

C. E. Weaver, 1949, *Geol. Soc. America Mem.* 35, p. 16 (table 3), 98.**Huizachal formation**

Jurassic: Tamaulipas, Hidalgo, Durango, Vera Cruz, Puebla, San Luis Potosi; and Nuevo Leon, Mexico.

R. W. Imlay and others, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 9, p. 1750-1753.**Hulen beds**

Lower Cretaceous: California.

F. M. Anderson, 1938, *Geol. Soc. America Special Paper* 16, p. 38 (table 1), 67-68, table 2.**Hulett sandstone member (of Sundance formation)**

Upper Jurassic: Wyoming and South Dakota.

R. W. Imlay, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 2, p. 255-257.**Humber Falls formation**

Lower Carboniferous: Newfoundland, Canada.

A. O. Hayes, 1949, *Newfoundland Geol. Survey Inf. Circ.* 6, Map 2.**Hume shale member (of Perrysburg formation)**

Upper Devonian: New York.

J. F. Pepper and Wallace de Witt, Jr., 1951, *U. S. Geol. Survey Oil and Gas Inv. Chart* OC 45.**Hummel facies (of Muldraugh formation)**

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 214-217.**Humpback gneiss**

Precambrian (Archean?): North Carolina.

C. E. Hunter and P. W. Mattocks, 1936, *TVA Div. Geology Bull.* 4, p. 11-12.**Hungerford formation**

Upper Cambrian: Vermont.

Charles Schuchert, 1937, *Geol. Soc. America Bull.*, v. 48, no. 7, p. 1047-1049.**Hungry Hollow formation**

Middle Devonian: Ontario, Canada.

G. A. Cooper and A. S. Warthin, 1941, *Washington Acad. Sci. Jour.*, v. 31, no. 6, p. 260.**Hungry Run sandstone member (of Orangeville shale)**

Mississippian: Pennsylvania.

Wallace de Witt, Jr., 1951, *Geol. Soc. America Bull.*, v. 62, no. 11, p. 1364-1366.

Hungry Valley formation

Pliocene, upper: California.

J. C. Crowell, 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 8, p. 1629 (fig. 5), 1633-1638.**Hunter sandstone and conglomerate in Puente formation**

Miocene, upper: California.

M. L. Krueger, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 363.A. O. Woodford, T. G. Moran, and J. S. Shelton, 1946, *Am. Assoc. Petroleum Geologists Bull.*, v. 30, no. 4, p. 521, 527.**Hunterian subseries**

Middle Ordovician (Bolarian): Pennsylvania, Kentucky, West Virginia, Virginia, Maryland, and New York, and Ontario, Canada.

Marshall Kay, 1947, (abs.) *Geol. Soc. America Bull.*, v. 58, no. 12, pt. 2, p. 1199; 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 8, p. 1409-1410.**Hunting Hill greenstone**

Precambrian (?): Rhode Island and Massachusetts.

Alonzo Quinn, R. G. Ray, and W. L. Seymour *in* Alonzo Quinn and others, 1948, R. I. Port and Indus. Devel. Comm. Geol. Bull. 3, p. 12, geol. map.**Huntsville fanglomerate**

Pliocene, upper: Utah.

A. J. Eardley, 1955, *Utah Geol. Soc. Gudebook* 10, p. 39, fig. 9.**Hurley formation**

Jurassic: British Columbia, Canada.

C. E. Cairnes, 1937, *Canada Geol. Survey Mem.* 213, p. 18-21.**Hurley Creek formation**

Pennsylvanian: New Brunswick, Canada.

J. E. Muller, 1949, *Canada Geol. Survey Paper* 49-13 (Prelim. Map 49-13A); 1950, *Mem.* 260, p. 8 (table), 19-20, geol. map.**Huron City sandstones and shales**

Mississippian (Kinderhook): Michigan.

H. M. Martin, 1936, *The centennial geological map of the southern peninsula of Michigan* (1:500,000): *Mich. Geol. Survey Div. Pub.* 39 (Geol. Ser. 33).**Hurricane graywacke**

Precambrian: North Carolina, Georgia, and Tennessee.

G. W. Stose and A. J. Stose, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1233; 1949, v. 60, no. 2, p. 271-272, 274-278.**Hurricane marine lentil (in Landrum member of Cook Mountain formation)**

Eocene (Claiborne): Texas.

H. B. Stenzel, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1665-1670.**Hurricane Bridge limestone**

Middle Ordovician: Virginia.

R. L. Miller and W. P. Brosgé, 1950, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 104.**Hurry Fjord granite***See* Hurry Inlet granite.**Hurry Inlet formation**

Cambro-Ordovician (?): Northeast Greenland.

E. H. Kranck, 1935, *Meddel. om Grønland*, bind 95, nr. 7, p. 11, pl. 3.

Hurry Inlet gneisses

Lower Paleozoic (Caledonian?): Northeast Greenland.

E. H. Kranck, 1935, *Meddel. om Grønland*, bind 95, nr. 7, p. 10, 26-47.

Hurry Inlet granite

Devonian (?): Northeast Greenland.

E. H. Kranck, 1935, *Meddel. om Grønland*, bind 95, nr. 7, p. 10, 84-89, pl. 3.

Hurry Inlet series

See Cape Brown and Hurry Inlet series.

Hurwal formation

Upper Triassic: Oregon.

W. D. Smith and J. E. Allen, 1941, *Oreg. Dept. Geology and Mineral Industries Bull.* 12, p. 6, 13-14.

Hurwitz group

Precambrian: Northwest Territories (Keewatin), Canada.

G. M. Wright, 1955, *Canada Geol. Survey Paper* 55-17, p. 6-7.

Hyde formation

Middle Jurassic: Oregon.

R. L. Lupper, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 227, 255-259.

Hye granite

Precambrian: Texas.

V. E. Barnes, R. F. Dawson, and G. A. Parkinson, 1947, *Tex. Univ. Bur. Econ. Geology* Pub. 4246, p. 50 (fig. 3).

Hylithes Creek formation

See Hylolithus Creek formation.

Hylolithus Creek formation

Cambrian (post-Lower Cambrian, pre-Upper Ozarkian): Northeast Greenland.

Christian Poulsen, 1930, *Meddel. om Grønland*, bind 74, nr. 12, p. 310-311.

Hyrum dolomite member (of Jefferson formation)

Devonian: Utah.

J. S. Williams, 1948, *Geol. Soc. America Bull.*, v. 59, no. 11, p. 1139, 1140.

Ibex limestone

Lower Permian: Texas.

M. G. Cheney, 1948, *Abilene Geol. Soc. [Guidebook] Spring Field Trip*, June 11-12, p. 5.

Icaiché formation

Oligocene or Miocene: Yucatan, Mexico; and Guatemala.

Karl Sapper, 1937, *Mittelamerika*, Handbuch der regionalen Geologie: Heidelberg, Band 8, Abt. 4a, Heft 29, pls. 3, 4.

Manuel Alvarez, Jr., 1954, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 6, nos. 5-6, p. 209.

Ice Box shale

Middle Ordovician (Mohawkian): South Dakota.

M. R. McCoy, 1952, *Billings Geol. Soc. Guidebook 3d Ann. Field Conf.*, p. 45-46.

Ice Springs Craters flow

Recent: Utah.

G. B. Maxey, 1946, *Am. Jour. Sci.*, v. 244, no. 5, p. 328.

Idak basalt

Tertiary and Quaternary: Alaska (Aleutian Islands).

F. M. Byers, Jr., and others, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 3, p. 28.

Idenbro cyclothem (including Idenbro limestone)

Pennsylvanian (Des Moines): Kansas, Missouri, and Nebraska.

J. M. Jewett, 1941, Kans. State Geol. Survey Bull. 38, pt. 11, p. 340; 1945, Bull. 58, p. 47-48, 69, 70.

Iditarod basalt

Upper Cretaceous and Paleocene(?): Alaska.

W. M. Cady and others, 1955, U. S. Geol. Survey Prof. Paper 268, p. 47-50.

Igaliko sandstone

Devonian(?): Southwest Greenland.

N. V. Ussing, 1911, Meddel. om Grønland, hefte 38, p. 13-22.

Iisa beds

Pliocene: Caroline Islands (Kusaie).

Risaburo Tayama, 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 70, table 5 [English translation in library of U. S. Geol. Survey, p. 85].

Ijamsville phyllite

Precambrian(?): Maryland.

A. I. Jonas and G. W. Stose, 1938, Washington Acad. Sci. Jour., v. 28, no. 8, p. 346.

Ikertoq gneiss complex

Precambrian: Southwest Greenland.

Hans Ramberg, 1948, Meddel. Dansk Geol. Foren., bind 11, hefte 3, p. 313, 318-319, fig. 1.

Ilimausak complex

Devonian(?): Southwest Greenland.

N. V. Ussing, 1911, Meddel. om Grønland, hefte 38, p. 23, 108-120.

Ilimausak porphyries

Devonian(?): Southwest Greenland.

N. V. Ussing, 1911, Meddel. om Grønland, hefte 38, p. 90-92, 217-221.

Ilipah formation

Upper Mississippian: Nevada and Utah.

F. W. Christiansen, 1951, Utah Geol. Mineralog. Survey [Utah Geol. Soc.] Guidebook 6, p. 76.

R. C. Spivey, 1954, Pacific Petroleum Geologist, v. 8, no. 7, p. 1.

IImon basalt

(?)Miocene, lower: California.

T. W. Dibblee, Jr., and C. W. Chesterman, 1953, Calif. Dept. Nat. Res., Div. Mines Bull., 168, p. 12, 37-38.

Imperial formation

Upper Devonian: Northwest Territories (Mackenzie) and Yukon, Canada.

G. S. Hume and T. A. Link, 1945, Canada Geol. Survey Paper 45-16, p. 34-39.

Indart sandstone

Eocene: California.

N. L. Tallafarro, [1949], Geologic map of the Hollister quadrangle, California (1:62,500): Calif. Dept. Nat. Res., Div. Mines [preprint?] Bull. 143, pl. 1.

Independence formation

Triassic and/or older: British Columbia, Canada.

H. S. Bostock and D. A. McNaughton, 1940, Canada Geol. Survey Map 568A.

Indian Creek granite

Precambrian: Colorado.

M. F. Boos and E. J. Aberdeen, 1936, (abs.) Geol. Soc. America Proc. 1935, p. 67;
1940, Geol. Soc. America Bull., v. 51, no. 5, p. 699, 728.

Indian Fort shale member (of Brodhead formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 174-176, 188-189.

Indian Island group

Silurian: Newfoundland, Canada.

D. M. Baird, 1950, Canada Geol. Survey Paper 50-22, p. 32-36.

Indian Meadows formation

Eocene, lower: Wyoming.

J. D. Love, 1939, Geol. Soc. America Special Paper 20, p. 58-63.

Indian Mountain leucogranodiorite

Cretaceous: California.

E. S. Larsen, Jr., 1948, Geol. Soc. America Mem. 29, p. 85-87.

Indianola formation or group

Upper Cretaceous: Utah.

S. L. Schoff, 1938, Ohio State Univ. Abs. Doctors' Dissert. 25, p. 378.

E. M. Spieker, 1946, U. S. Geol. Survey Prof. Paper 205-D, p. 123-130.

Indian River hornblende syenite

Precambrian: New York.

A. F. Buddington, 1939, Geol. Soc. America Mem. 7, p. 85, 235, 236.

Indiantown gabbro

Pre-Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 33-34.

Infierno formation

Pliocene, upper: Baja California, Mexico.

I. F. Wilson, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 9, p. 1781-1782.

Ingenika group

Lower Cambrian: British Columbia, Canada.

E. F. Roots, 1948, Canada Geol. Survey Paper 48-5, p. 6-9.

Ingleside formation

Recent: Texas.

W. A. Price, 1939 (abs.) Am. Assoc. Petroleum Geologists Bull., v. 23, no. 12, p. 1875.

Inglis member (of Moodys Branch formation)

Eocene (Jackson): Florida.

R. O. Vernon, 1951, Fla. Geol. Survey Bull. 33, p. 115-140.

Ingramian stage

Late Cretaceous: California.

P. P. Goudkoff, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 7, p. 985-987.

Inklin group

Lower Cretaceous(?) : British Columbia, Canada.

F. A. Kerr, 1945, *Canada Geol. Survey Papar (Prelim. Map)* 45-30; 1948, *Mem.* 248, p. 19 (table), 37-38, *geol. map.*

Inman formation

Ordovician : Tennessee.

C. W. Willson, Jr., 1949, *Tenn. Div. Geology Bull.* 56, p. 175-179.

Inoceramus series

Upper Cretaceous (Cenomanian) : Jamaica, British West Indies.

V. A. Zans, 1953, *Jamaica Geol. Survey Dept. Ann. Rept.* 1951-52, p. 2.

L. J. Chubb, 1955, *Geol. Mag.*, v. 92, no. 3, p. 190-192.

Inskip formation

Permian(?) : Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada* : U. S. Geol. Survey *Geol. Quadrangle Map* [GQ 7].

Interlake group

Silurian : Manitoba, Canada.

A. D. Baillie, 1951, *Manitoba Dept. Mines and Nat. Res. Div. Mines Pub.* 50-1, p. 6.

Intrepid Bay formation

Cretaceous or Tertiary(?) : Northwest Territories (Cornwallis Island), Canada.

R. Thorsteinsson and Y. O. Fortier, 1954, *Canada Geol. Survey Paper* 53-24, p. 14-15.

Inverness formation

Pennsylvanian : Nova Scotia, Canada.

G. W. H. Norman, 1935, *Canada Geol. Survey Mem.* 177, p. 47-48.

Iowa Gulch porphyry

Upper Cretaceous(?) or Tertiary, lower : Colorado.

C. H. Behre, Jr., E. N. Goddard, and A. E. Sandberg, 1939, *Preliminary geologic map of west slope of Mosquito Range in the vicinity of Leadville, Colorado (1 : 12,000)* : U. S. Geol. Survey.

C. H. Behre, Jr., 1939, *Colo. Sci. Soc. Proc.*, v. 14, no. 2, p. 64.

Ipsorisok strata

Miocene : West Greenland.

A. E. Nordenskiöld, 1872, *Geol. Mag.*, v. 9, p. 458-459.

Ireland Point volcanics (in Maiden Point sandstone)

Ordovician : Newfoundland, Canada.

J. R. Cooper, 1937, *Newfoundland Geol. Survey Bull.* 9, p. 10.

Ireson felsite

Upper Silurian or Lower Devonian : Maine.

G. H. Chadwick, 1939, *Am. Jour. Sci.*, v. 237, no. 5, p. 361; 1942 (abs.) *Geol. Soc. America Bull.*, v. 53, no. 12, pt. 2, p. 1796-1797.

Ireton member (of Woodbend formation)

Devonian : Alberta, Canada (subsurface).

D. B. Layer and others, 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 9, p. 1821.

Iron Canyon agglomerate member (of Tuscan formation)

[Pliocene] : California.

E. C. Treasher, 1947 (abs.) *Geol. Soc. America Bull.*, v. 68, no. 12, pt. 2, p. 1257.

Iron Creek glaciation

Pleistocene (pre-Wisconsin) : Alaska.

D. M. Hopkins *in* T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 10, 13 (table 1).**Iron Gate facies (of Clinton formation)**

Middle Silurian (Nlagaran) : Virginia.

Charles Butts, 1940, Va. Geol. Survey Bull. 52, pt. 1, p. 238, 239, 242-243, 439b.

Iron Springs formation

Upper Cretaceous (?) : Utah.

J. H. Mackin, 1947, Utah Geol. Soc. Guidebook 2, p. 7-8, 9.

Ironton granite

Precambrian, Missouri.

H. B. Graves, 1938, Acad. Sci. St. Louis Trans., v. 29, no. 5, p. 119.

Iroquois flow (in Portage Lake lava series)

Precambrian (middle Keweenawan series) : Michigan.

W. S. White, H. R. Cornwall, and R. W. Swanson, 1953, U. S. Geol. Survey Geol. Quadrangle Map GQ 27 [1954].

Irvine facies (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 166-177.

Irvine shale (in Santiago formation)

Eocene : California.

George Lunetta, 1953, Calif. Dept. Nat. Res., Div. Mines Min. Inf. Service, v. 6, no. 10, p. 4-6.

Irvingtonian age.

Pleistocene, early : North America.

D. E. Savage, 1951, Calif. Univ. Pubs. Dept., Geol. Sci. Bull., v. 28, no 10, p. 289.

Irwinton sand member (of Barnwell formation)

Eocene, upper : Georgia.

P. E. LaMoreaux, 1946, Ga. Geol. Survey Bull. 50, pt. 1, p. 17-21.

Isachsen formation

Lower Cretaceous or younger : Northwest Territories (Ellef Ringnes Island), Canada.

W. W. Heywood, 1955, Canadian Mining and Metall. Bull., v. 48, no. 514, p. 60, 61

Isfjord zone

Lower Paleozoic (Caledonian) : Northeast Greenland.

C. E. Wegmann, 1935, Meddel. om Grønland, bind 103, nr. 3, p. 30-31, pl. 1.

Ishpa formation

Precambrian or Lower Cambrian : British Columbia, Canada.

A. H. Lang, 1938, Canada Geol. Survey Paper 38-16, p. 12-13.

Iskut River lava

Quaternary : British Columbia, Canada.

F. A. Kerr, 1948, Canada Geol. Survey Mem. 246, p. 40-41.

Island Lakes gabbroic anorthosite

Precambrian : Ontario, Canada.

J. M. Harrison, 1944, Geol. Soc. America Bull., v. 55, no. 12, p. 1409.

Islay member (of Mannville formation)

Lower Cretaceous: Albert, Canada (subsurface).

A. W. Nauss, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 11, p. 1614.

Isortoq gneiss complex

Precambrian: Southwest Greenland.

Hans Ramberg, 1948, *Meddel. Dansk Geol. Foren.*, bind 11, hefte 3, p. 313, 319-320, fig. 1.

Ithaca Peak granite

Mesozoic(?): Arizona.

B. E. Thomas, 1949, *Econ. Geology*, v. 44, no. 8, p. 667.

Itkillik glaciation

Pleistocene (Wisconsin): Alaska.

R. L. Detterman *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 11, 13 (table 1).

Ivanhoe glacial substage

Pleistocene (Cary): Colorado.

R. L. Nelson, 1954, *Jour. Geology*, v. 62, no. 4, p. 331-333.

Iversen basalt

"Between late Cretaceous and Oligocene": California.

C. E. Weaver, 1944, *Wash. [State] Univ. Pubs. in Geology*, v. 6, no. 1, p. 4. (table), 5, 17-18.

Ives breccia

Mississippian: Texas.

F. B. Plummer, 1939, *in* *W. Tex. Geol. Soc. [Guidebook]* Nov. 11-12, p. 15.

V. E. Barnes, P. E. Cloud, Jr., and L. E. Warren, 1947, *Geol. Soc. America Bull.*, v. 58, no. 2, p. 132-135.

Ixcoy limestone

Mesozoic: Guatemala.

Franz Termer, 1932, *Gesell. Erdkunde Berlin Zeitschr.* no. 7/8, p. 243-244, 247.

Izee group

Middle Jurassic: Oregon.

R. L. Lupper, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 227, 255.

Jabaco formation

Eocene, upper: Cuba.

P. J. Bermudez, 1937, *Soc. Cubana Historia Nat. Mem.*, v. 11, no. 5, p. 325-336; 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 247-249.

Jack Creek formation

Upper Cretaceous: California.

N. L. Tallafarro, 1941, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 11, p. 2095; 1944, v. 28, no. 4, p. 474-484.

Jackpot limestone

Permian and/or Carboniferous: British Columbia, Canada.

A. H. Lang, 1938, *Canada Geol. Survey Paper* 38-16, p. 14.

Jacksons Arm conglomerate member (of Giles Cove formation)

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1937, *Newfoundland Geol. Survey Bull.* 8, p. 11.

Jaco sandstone (of Chicontepec formation)

Eocene, lower: Tamaulipas, Mexico.

Arnold Helm, 1940, *Eclogae Geologicae Helvetiae*, v. 33, no. 2, p. 330.

Jacobs Chapel shale

Lower Mississippian: Indiana.

Guy Campbell, 1946, *Geo. Soc. America Bull.*, v. 57, no. 9, p. 855-856.**Jagua formation**

Upper Jurassic: Cuba.

R. H. Palmer, 1945, *Jour. Geology*, v. 53, no. 1, p. 5 (table 1), 6.R. W. Imlay, 1952, *Geol. Soc. America Bull.*, v. 63, no. 9, p. 969, Chart 8C.**Jaimanitas formation**

Pleistocene: Cuba.

Jorge Brodermann, 1940, *Soc. Cubana Ingenieros Rev.*, v. 34, no. 2, geol. map and cross sections.P. J. Bermudez, 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 306-307.**Jalama formation**

Upper Cretaceous: California.

T. W. Dibblee, Jr., 1950, *Calif. Dept. Nat. Res., Div. Mines Bull.* 150, p. 23-24.**James limestone**

Lower Cretaceous (Comanche series): Subsurface in Arkansas, Louisiana, and Texas.

W. B. Weeks, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 8, p. 970.**Jameson shale member (of Markley sandstone)**

Eocene: California.

C. E. Weaver, 1949, *Geol. Soc. America Mem.* 35, p. 17 (table 3), 62-64.**James River granite**

Lower Ordovician (?): Nova Scotia, Canada.

M. Y. Williams, 1914, *Canada Geol. Survey Mem.* 60, p. 101-105.**Janssen clay member (of Dakota formation)**

Upper Cretaceous: Kansas.

Norman Plummer, 1942, (abs.) *Compass*, v. 22, no. 4, p. 327.Norman Plummer and J. F. Romary, 1942, *Kans. State Geol. Survey Bull.* 41, pt. 9, p. 319, 328, 336-340.**Jardine "basalt"**

Age unknown: Wyoming.

A. D. Howard, 1937, *Geol. Soc. America Special Paper* 6, p. 16-17.**Jaronú limestone**

Upper Cretaceous: Cuba.

R. H. Palmer, 1945, *Jour. Geology*, v. 53, no. 1, p. 13.**Jaruco formation**

Oligocene, middle: Cuba.

Jorge Brodermann, 1940, *Soc. Cubana Ingenieros Rev.*, v. 34, no. 2, geol. map and cross sections.P. J. Bermudez, 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 270.**Jasper Lake greenstone conglomerate or agglomerate**

Precambrian (Knife Lake): Minnesota.

J. W. Gruner, 1941, *Geol. Soc. America Bull.*, v. 52, no. 10, p. 1583, 1593-1594.**Jasso formation**

Upper Cretaceous (?): Mexico and Distrito Federal, Mexico.

R. M. Berbeyer, 1953, *Congreso Cient. Mexicano Mem.*, tomo 4, table 6.

Jayville granite

Precambrian: New York.

A. F. Buddington, 1939, *Geol. Soc. America Mem.* 7, p. 84-85, 285, 286.**Jcaiché beds***See* Icaiché formation.**Jealousy formation**

Oligocene: St. Croix, Virgin Islands.

D. J. Cederstrom, 1941, *Am. Jour. Sci.*, v. 239, no. 8, p. 557; 1950, U. S. Geol. Survey Water-Supply Paper 1067, p. 19-20.**Jeddito formation**

Quaternary: Arizona.

J. T. Hack, 1941, *Geog. Review*, v. 31, no. 2, p. 262-263; 1942, Harvard Univ. Peabody Mus. *Am. Archaeology and Ethnology Papers*, v. 35, no. 1, p. 48-51.**Jeff conglomerate member (of Huelster formation)**

Tertiary: Texas.

G. K. Eifler, Jr., 1951, *Geol. Soc. America Bull.*, v. 62, no. 4, p. 343-345, pl. 1.**Jeff Davis granite**

Precambrian (?): Georgia.

J. W. Clarke, 1952, *Ga. Geol. Survey Bull.* 59, p. 23-28.**Jeffreys limestone**

Mississippian: Newfoundland, Canada.

W. A. Bell, 1948, *Canada Geol. Survey Bull.* 10, p. 24, 26.**Jenkins Branch chert bed (in Cotter dolomite)**

Lower Ordovician: Missouri.

J. S. Cullison, 1944, *Mo. Univ. School Mines and Metallurgy Bull.*, Tech. Ser., v. 15, no. 2, p. 35.**Jenness Pond member (of Littleton formation)**

Lower Devonian: New Hampshire.

M. T. Heald, 1955, *The geology of the Gilmanton quadrangle, New Hampshire: N. H. State Plan. Devel. Comm.*, p. 8-9, 10.**Jicotea member (of Jabaco formation)**

Eocene, upper: Cuba.

Jorge Bordermann, 1940, *Soc. Cubana Ingenieros Rev.*, v. 34, no. 2, geol. map and cross sections.P. J. Bermudez, 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 249-251.**Jimaní formation**

Pliocene: Dominican Republic.

P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Special Pub.* 25, p. 36.**Jim Ned shale member (of Belle Plains formation)**

Permian (Leonard? age): Texas.

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66, 96.**Joaquin Ridge sandstone member (of Panoche formation)**

Upper Cretaceous: California.

P. P. Goudkoff, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 7, p. 989, 1006.A. S. Huey, 1948, *Calif. Dept. Nat. Res., Div. Mines Bull.* 140, p. 31.**Joe Lott tuff**

Tertiary: Utah.

Eugene Callaghan, 1939, *Am. Geophys. Union Trans.* 20th Ann. Meeting, pt. 3, p. 449-450.

Joes River beds

Eocene, upper : Barbados, British West Indies.

- A. B. Thompson, 1925, Oil field exploration and development, v. 1, Oil field principles : New York, N. Y., D. Van Nostrand Co., p. 395.
 Alferd Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1572-1577, 1581.

Joes Valley member (of North Horn formation)

Paleocene : Utah.

- C. L. Gazin, 1941, U. S. Natl. Mus. Proc., v. 91, no. 3121, p. 6.

John Brown formation

Middle or Upper Jurassic : British Columbia, Canada.

- R. E. Sommers, 1955, British Columbia Bur. Mines Ann. Rept. 1954, p. A89-A90.

Johnson Mill graphite schist

Age not stated : Virginia.

- W. A. Nelson, 1949, (abs.) Va. Acad. Sci. Proc. 1948-1949, p. 140.

Johnson Peak tuff breccia

Miocene, middle, or older : California.

- J. S. Shelton, 1955, Geol. Soc. America Bull., v. 66, no. 1, p. 65, pl. 1.

Johnston Hill glaciation

Pleistocene (pre-Wisconsin) : Alaska.

- E. H. Muller *in* T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 2, 13 (table 1).

Jojoba formation

Precambrian (Algonkian) : Sonora, Mexico.

- A. A. Stoyanow, 1942, Geol. Soc. America Bull., v. 53, no. 9, p. 1264.

Joli Fou formation

Lower or Upper Cretaceous : Alberta, Canada.

- R. T. D. Wickenden, 1949, Canada Geol. Survey Paper 49-15, p. 16-21.

Jonas Creek formation

Precambrian and (?) Lower Cambrian : Alberta, Canada.

- R. D. Hughes, 1955, Alberta Soc. Petroleum Geologists Guidebook 5th Ann. Field Conf., p. 74-78.

Jones Creek formation

Upper Silurian : New Brunswick, Canada.

- G. S. Mackenzie, 1951, Canada Geol. Survey Paper (Prelim. Map) 51-15.

Jones Ranch beds

Pleistocene : Kansas.

- H. T. U. Smith, 1940, Kans. State Geol. Survey Bull. 34, p. 110-111.

Jonestown beds or formation

Ordovician : Pennsylvania.

- Bradford Willard, 1939, Pa. Acad. Sci. Proc., v. 13, p. 129, 131.

Jordan Narrows unit

Oligocene (?) to Miocene, middle : Utah.

- L. W. Slentz, 1955, Utah Geol. Soc. Guidebook 10, p. 24-26.

Jornada limestone

Upper Ordovician : New Mexico.

- V. C. Kelley, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 10, p. 2201 (table).

José shale member (of Yegua formation)

Eocene (Claiborne) : Texas, and Tamaulipas, Mexico.

J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259 (fig. 2), 265.**Jose Creek member (of McRae formation)**

Upper Cretaceous and Tertiary, lower : New Mexico.

H. P. Bushnell, 1955, *Compass*, v. 33, no. 1, p. 12-14.**Joserita member (of Lowell formation)**

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 11-12, 15.**Joshua schist**

Paleozoic(?) : Virginia.

W. R. Brown, 1951, (abs.) *Geol. Soc. America Bull.*, v. 62, no. 12, pt. 2, p. 1547 ; 1953, *Ky. Geol. Survey*, ser. 9, Special Pub. 1, [p. 9] (fig. 1).**Joshua schist**

Pre-Triassic : Massachusetts.

M. E. Willard, 1951, *Bedrock geology of the Mount Toby quadrangle, Massachusetts* : U. S. Geol. Survey Geol. Quadrangle Map [GQ 8].**Joshua submember (of Otisco member of Ludlowville formation)**

Middle Devonian : New York.

W. A. Oliver, Jr., 1951, *Am. Jour. Sci.*, v. 249, no. 10, p. 716-717.**Josselin gneiss**

Precambrian (post-Keewatin) : Quebec, Canada.

W. W. Longley, 1946, *Quebec Dept. Mines Geol. Rept.* 24, p. 11.**Joyita sandstone member (of Yeso formation)**

Permian : New Mexico.

C. E. Needham and R. L. Bates, 1943, *Geol. Soc. America Bull.*, v. 54, no. 11, p. 1660.**Juab limestone**

Lower Ordovician (Chazyan) : Utah.

L. F. Hintze, 1951, *Utah Geol. Mineralog. Survey Bull.* 39, p. 17-18.**Juana Lopez sandstone member (of Carlile shale)**

Upper Cretaceous : New Mexico and Colorado.

C. H. Rankin, 1944, *N. Mex. State Bur. Mines Min. Res. Bull.* 20, p. 7, 12.**Jubilee phase (of Amargosa chaos)**

Post-Miocene(?) : California.

L. F. Nobel, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 1936 ; 1941, v. 52, no. 7, p. 972-977.**Judkins formation**

Quaternary : Texas.

R. M. Huffington and C. C. Albritton, Jr. 1941, *Am. Jour. Sci.*, v. 239, no. 5, p. 327-329.**Judson member (of St. Lawrence formation)**

Upper Cambrian (St. Croixian) : Minnesota.

C. R. Stauffer, G. M. Schwartz, and G. A. Thiel, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1902.**Julianehaab granite**

Precambrian (upper Algonkian?) : Southwest Greenland.

N. V. Ussing, 1911, *Meddel. om Grønland*, hefte 38, p. 10-13.

Julies Harbour group

Middle Ordovician (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, Newfoundland Geol. Survey Bull. 6, p. 9-10.

Jumonville sandstone

Upper Devonian (Conewango) : Pennsylvania.

W. M. Laird, 1941, Pa. Topog. and Geol. Survey Progress Rept. 126, p. 11 (footnote).

Jumpingpound member (of Alberta shale)

Upper Cretaceous : Alberta, Canada.

G. S. Hume, 1938, Canada Geol. Survey Paper 38-22, p. 11.

Juncal formation

Eocene, middle : California.

B. M. Page, J. G. Marks, and G. W. Walker, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 8, p. 1749-1756.

Junction City facies (of New Providence formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 115-117.

Junction Creek sandstone

Upper Jurassic : Colorado.

M. I. Goldman and A. C. Spencer, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 9, p. 1750-1751, fig. 2.

June Lake basalt

Pleistocene : California.

W. C. Putman, 1940, (abs.) Geol. Soc. America Bull., v. 51, no. 12, pt. 2, p. 1939.

Jungle Ridge limestone member (of Fort Creek formation)

Upper Devonian : Northwest Territories (Mackenzie) and Yukon, Canada.

G. S. Hume and T. A. Link, 1945, Canada Geol. Survey Paper 45-16, p. 30.

Juniperan stage

Eocene, early : California.

V. S. Mallory, 1953, (abs.) Jour. Paleontology, v. 27, no. 6, p. 903.

Juniperian stage

See Juniperan stage.

Junipero sandstone

Eocene : California.

R. R. Thorup, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1958 ; 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 463-465.

Jupiter shales

Precambrian (Chuaran) : Arizona.

Charles Keyes, 1938, Pan-Am. Geologist, v. 70, no. 2, p. 107, 112.

Jutiapa rhyolitic tuffs and sediments

Pliocene (?) : Honduras.

R. H. Carpenter, 1954, Geol. Soc. America Bull., v. 65, no. 1, p. 29.

Kaaterskillian series

Devonian (Devonic) : Missouri.

[C. R.] Keyes, 1941, Pan-Am. Geologist, v. 75, no. 4, p. 311.

Kaau mud flow

Quaternary : Hawaiian Islands (Oahu).

H. T. Stearns, 1940, Hawaii Div. Hydrography Bull. 5, p. 51-52.

Kagman andesite

See Hagman formation.

Kahochella formation

Precambrian (Proterozoic) : Northwest Territories (Mackenzie), Canada.
C. H. Stockwell, 1936, Canada Geol. Survey Map 377A.

Kahuku volcanic series

Pleistocene : Hawaiian Islands (Hawaii).

H. T. Stearns and G. A. Macdonald, 1946, Hawaii Div. Hydrography Bull. 9, p. 68-71.

Kaipokok gneiss

Precambrian : Newfoundland (Labrador), Canada.

E. H. Kranck, 1953, Canada Geol. Survey Bull. 26, p. 37.

Kakarsuak porphyrite

Devonian (?) : Southwest Greenland.

N. V. Ussing, 1911, Meddel. om Grønland, hefte 38, p. 101.

Kalaupapa basalt

Pleistocene (?) : Hawaiian Islands (Molokai).

H. T. Stearns, 1946, Hawaii Div. Hydrography Bull. 8, p. 73, fig. 18.

Kameset (Gamusetsu) agglomerate

Eocene : Caroline Island (Babelthau).

Risaburo Tayama, 1939, Brief report on the geology and ore resources of Babelthau Island (Palau Island proper) : Tropical Industry Inst., Palau South Sea Islands, Bull. 3 [English translation in library of U. S. Geol. Survey, p. 15, 18] ; 1952, Coral reefs in the South Seas : Japan Hydrog. Office Bull., v. 11, p. 64, table 4 [English translation in library of U. S. Geol. Survey, p. 75-76].

Kanab Canyon member (of Muav formation)

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, Carnegie Inst. Washington Pub. 563, p. 14, 29, 102-105.

Kanapou volcanic series

Pliocene (?) : Hawaiian Islands (Kahoolawe).

H. T. Stearns, 1946, Hawaii Div. Hydrography Bull. 8, p. 63, fig. 16.

Kanawha volcanic zone (of Eagleford formation)

Cretaceous : Texas.

R. T. Hazzard, 1939, Shreveport Geol. Soc. Guidebook 14th Ann. Field Trip, p. 138-140.

Kangamiut diabases

Precambrian : Southwest Greenland.

Hans Ramberg, 1948, Meddel. Dansk Geol. Foren., bind 11, hefte 3, p. 315-319.

Kangamiut gneiss complex

Precambrian : Southwest Greenland.

Hans Ramberg, 1948, Meddel. Dansk Geol. Foren., bind 11, hefte 3, p. 313, 315-319, fig. 1.

Kangerdlugssuaq complex

Tertiary : Southeast Greenland.

L. R. Wager and W. A. Deer *in* L. R. Wager, 1937, Geog. Jour. v. 90, no. 5, p. 416.

L. R. Wager, 1947, Meddel. om Grønland, bind 134, nr. 5, p. 41-44, 46, pl. 6.

Kangerdlugsuak series

Upper Cretaceous (?) : Southeast Greenland.

L. R. Wager, 1934, Meddel. om Grønland, bind 105, nr. 2, p. 25-27.

Kaniapiskau series

Precambrian (Proterozoic) : Newfoundland (Labrador), Canada.

Carl Faessler, 1948, *Le Naturaliste Canadien*, v. 75, nos. 1-2, p. 16-17.

Kanosh shale

Lower Ordovician (Chazyan) : Utah and Nevada.

L. F. Hintze, 1951, *Utah Geol. Mineralog. Survey Bull.* 39, p. 18-19.

Kapaula basaltic andesite

Pleistocene (?) : Hawaiian Islands (Maui).

G. A. Macdonald in H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 230, 244-246.

Kap Biot formation

See Cape Biot formation.

Kap Bull series

Devonian : Northeast Greenland.

Heinrich Butler, 1935, *Naturf. Gesell., Schaffhausen, Mitt., Heft* 12, p. 26-29, fig. 4.

Kap Calhoun formation

See Cape Calhoun series.

Kap Clay formation

See Cape Clay formation.

Kap Dalton series

See Cape Dalton formation.

Kap Edvard Holm complex

See Cape Edward Holm complex.

Kap Fletcher series

See Cape Fletcher series.

Kap Franklin conglomerate

Devonian : Northeast Greenland.

Wolf Mayne, 1940, *Meddel. om Grønland*, bind 114, nr. 5, p. 10, 11; 1949, bind 114, nr. 2, p. 17, 53, 61.

Kap Franklin-Vildtal granite

Middle Devonian : Northeast Greenland.

Heinrich Butler, 1954, *Meddel. om Grønland*, bind 116, nr. 7, p. 69-71.

Kap Frederick VII formation

See Cape Frederick VII formation.

Kap Graah series

See Cape Graah formation.

Kap Gustav Holm series

Upper Cretaceous : Southeast Greenland.

L. R. Wager, 1934, *Meddel. om Grønland*, bind 105, nr. 2, p. 22-25.

Kap Holbaek sandstone

Cambrian or Ordovician (pre-upper Canadian, post-upper Precambrian) : North Greenland.

P. J. Adams and J. W. Cowie, 1953, *Meddel. om Grønland*, bind 111, nr. 7, p. 9, 12.

Kap Kent formation

See Cape Kent formation.

Kap Kolthoff series

Devonian: Northeast Greenland.

Heinrich Butler, 1935, *Naturf. Gesell. Schaffhausen, Mitt., Heft 12*, p. 26-29, fig. 4.**Kap Oswald formation***See* Cape Oswald formation.**Kap Parry complex***See* Cape Parry alkaline complex.**Kap Schuchert formation***See* Cape Schuchert formation.**Kap Simpson complex**

Tertiary: Northeast Greenland.

H. B. Schaub *in* Wolf Mayne and others, 1938, *Meddel. om Grønland, bind 114, nr. 1*, p. 32, 40-44, fig. 1.**Kap Stosch formation***See* Cape Stosch formation.**Kap Tyson formation***See* Cape Tyson formation.**Kapukapu tuff**

[Quaternary]: Hawaiian Islands (Hawaii).

C. K. Wentworth, 1938, *Hawaiian Volcano Observatory 3d Special Rept.*, p. 36.**Kapur limestone**

Oligocene: Trinidad, British West Indies.

J. A. Cushman and H. H. Renz, 1947, *Cushman Lab. Foram. Research Special Pub. 22*, p. 1.R. M. Stainforth, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 7, p. 1312.**Kapur Ridge limestone.***See* Kapur limestone.**Kap Weber formation***See* Cape Weber formation.**Kap Webster formation***See* Cape Webster formation.**Kap Wood formation***See* Cape Wood formation.**Karamat formation**

Oligocene: Trinidad, British West Indies.

J. A. Cushman and H. H. Renz, 1947, *Cushman Lab. Foram. Research Special Pub. 22*, p. 1.H. G. Kugler, 1950, *Asociación Venezolano de Geología, Minería y Petróleo Bol.*, tomo 2, no. 1, p. 48 (correlation chart), 70.**Kashabowie series**

Precambrian: Ontario, Canada.

H. S. Perdue, 1938, *Jour. Geology*, v. 46, no. 6, p. 844, 845 (fig. 1).**Kaskaskia sequence**

Devonian (Chautauquan) to Mississippian (Osagean): Central and western United States.

L. L. Sloss, W. C. Krumbein, and E. C. Dapples *in* C. R. Longwell, chm., 1949, *Geol. Soc. America Mem.* 39, p. 110-111, 115.

Kaskawulsh group

Carboniferous or Permian: Yukon, Canada.

E. D. Kindle, 1953, *Canada Geol. Survey Mem.* 268, p. 29-31.**Kassler sandstone member (of South Platte formation)**

Lower Cretaceous: Colorado.

K. M. Waagé, 1955, *U. S. Geol. Survey Prof. Paper* 274-B, p. 31.**Kastasakau complex**

Precambrian: Quebec, Canada.

J. M. Neilson, 1950, *Quebec Dept. Mines Prelim. Rept.* 238, p. 4.**Kasuteshio limestone***See Kasutesyo limestone.***Kasutesyo limestone**

Oligocene [Aquitanian]: Mariana Islands (Tinian).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 52, table 4 [English translation in library of U. S. Geol. Survey, p. 62].

Kate Peak formation

Miocene, upper, or Pliocene: Nevada.

V. P. Gianella, 1936, *Nev. Univ. Bull.*, v. 30, no. 9, p. 68-73.**Katherine group**

Cambrian and/or older: Northwest Territories (Mackenzie) and Yukon, Canada.

J. S. Stewart, 1944, *Canadian Inst. Mining and Metallurgy Trans.*, v. 47, p. 163.G. S. Hume and T. A. Link, 1945, *Canada Geol. Survey Paper* 45-16, p. 7.**Kau volcanic series**

Pleistocene, upper (?) and Recent: Hawaiian Islands (Hawaii).

H. T. Stearns and G. A. Macdonald, 1946, *Hawaii Div. Hydrography Bull.* 9, p. 76-78.**Kauai lavas**

Age not stated: Hawaiian Islands (Kauai).

N. E. A. Hinds, 1930, *Bernice P. Bishop Mus. Bull.* 71, p. 56-58.**Kauffman member (of Mercersburg formation)**

Middle Ordovician (Trentonian): Pennsylvania.

L. C. Craig, 1949, *Geol. Soc. America Bull.*, v. 60, no. 4, p. 715 (fig. 1), 734-738.**Kaumajet volcanic series**

Precambrian: Newfoundland (Labrador), Canada.

N. E. Odell, 1938, *Am. Geog. Soc. Special Pub.* 22, p. 202.**Kaupo mud flow**

Pleistocene: Hawaiian Islands (Maui).

H. T. Stearns *in* H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 107-108.**Kaweah series**

Triassic (?): California.

Cordell Durrell, 1940, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 25, no. 1, p. 13, 116.**Kawvian series (epoch)**

Upper Pennsylvanian: North America.

R. C. Moore and M. L. Thompson, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 3, p. 288-289, 297-300.

Kayrand quartz gabbro

Precambrian (Archean) : Quebec, Canada.

W. W. Weber, 1951, Quebec Dept. Mines Prelim. Rept. 255, map ; Prelim. Rept. 257, p. 2, 7, map.

Kaycee formation

Recent : Wyoming.

L. B. Leopold and J. P. Miller, 1954, U. S. Geol. Survey Water-Supply Paper 1261, p. 10-11.

Keanae basalt

Pleistocene (?) : Hawaiian Islands (Maui).

H. T. Stearns *in* H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 95, 96.

Keanakakoi formation

Recent : Hawaiian Islands (Hawaii).

C. K. Wentworth, 1938, Hawaiian Volcano Observatory 3d Special Rept. p. 37, 92-102.

Kearny formation

Pennsylvanian (Morrow) : Kansas (subsurface).

M. L. Thompson, 1944, Kans. State Geol. Survey Bull. 52, pt. 7, p. 414-417.

Kedahda formation

Permian : British Columbia, Canada.

K. D. Watson and W. H. Matthews, 1944, British Columbia Dept. Mines Bull. 19, p. 15.

Keel limestone member (of Chimneyhill formation).

Lower Silurian : Oklahoma.

R. A. Maxwell, 1936, Northwestern Univ. Summaries of Doctoral Dissert., v. 4, p. 132, 133.

Keepings gneiss

Pre-Devonian : Newfoundland, Canada.

J. R. Cooper, 1954, Canada Geol. Survey Mem. 276, p. 8-9.

Kee Scarp limestone member (of Fort Creek formation)

Upper Devonian : Northwest Territories (Mackenzie) and Yukon, Canada.

G. S. Hume and T. A. Link, 1945, Canada Geol. Survey Paper 45-16, p. 30.

Keg River formation

Devonian : Alberta, Canada (subsurface).

J. Law, 1955, Alberta Soc. Petroleum Geologists Jour., v. 3, no. 6, p. 83.

Keith Knob facies (of New Providence formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 112-114.

Kekekabic tuffs, agglomerates, slates, and andesite porphyry

Precambrian (Knife Lake) : Minnesota.

J. W. Gruner, 1941, Geol. Soc. America Bull., v. 52, no. 10, p. 1583, 1606-1608.

Kekekabic Lake tuffs, agglomerates, slates, and andesite porphyry

See Kekekabic tuffs, agglomerates, slates, and andesite porphyry.

Keller group

Pennsylvanian (Virgil) : New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 69-72.

Kellogg shale

Eocene, upper : California.

B. L. Clark and A. S. Campbell, 1942, Geol. Soc. America Special Paper 39, p. 5-9.

Kelly formation

Pennsylvanian: Utah.

H. J. Bissell, 1936, Iowa Acad. Sci. Proc., v. 43, p. 239-241.

Kelso shale

Lower Cambrian: California.

J. C. Hazzard, 1938, (abs.) Geol. Soc. America Proc. 1937, p. 241.

Kelvin Glen group

Middle Cambrian: Nova Scotia, Canada.

L. J. Weeks, 1954, Canada Geol. Survey Mem. 277, p. 53-55.

Kenilworth member (of Blackhawk formation)

Upper Cretaceous: Utah.

R. G. Young, 1955, Geol. Soc. America Bull., v. 66, no. 2, p. 183, 184-185.

Kennebec volcanics

Precambrian: Ontario, Canada.

W. D. Harding, 1944, Ontario Dept. Mines Ann. Rept., v. 51, pt. 4, p. 59.

Kennebecasis formation or series

Lower Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 107-108.

Kennebecasis granite

Pre-Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 39.

Kenoran volcanics

Precambrian: Ontario, Canada.

F. J. Pettijohn, 1937, Geol. Soc. America Bull., v. 48, no. 2, p. 187, 190.

Kensington granite-gneiss

Age unknown: Maryland.

Ernst Cloos *in* C. W. Cooke and Ernst Cloos, 1951, Geologic map of Prince Georges County and the District of Columbia (1:62,500): Md. State Dept. Geology, Mines, and Water Res.**Kensington syenite**

Precambrian: Quebec, Canada.

Edgar Aubert de la Rüe, 1953, Quebec Dept. Mines Geol. Rept. 50, p. 19-21.

Kenwood River granite

Precambrian: Saskatchewan, Canada.

A. R. Byers, 1949, Saskatchewan Geol. Survey (Precambrian Geology Ser.) Rept. 1, p. 14.

Kenyon member (of Mt. Simon formation)

Upper Cambrian: Illinois (subsurface).

J. S. Templeton, Jr., 1950, Ill. Acad. Sci. Trans., v. 43, p. 154-155.

Kerr Ranch schist

Pre-Devonian: California.

G. A. Manning and B. A. Ogle, 1950, Calif. Dept. Nat. Res., Div. Mines Bull. 148, p. 13-18, pl. 1.

Ketilidian period

Precambrian: Southwest Greenland.

C. E. Wegmann, 1938, Meddel. om Grønland, bind 113, nr. 2, p. 13.

Kettle Point black shale

Upper Devonian (Senecan-Chautauquan) : Ontario, Canada.

W. E. Logan, 1863, Canada Geol. Survey Progress Rept. to 1863, p. 387.

G. A. Cooper and others, 1942, Geol. Soc. America Bull., v. 53, no. 12, pt. 1, p. 1769, Chart 4.

Kewagama group

Precambrian : Quebec, Canada.

H. C. Gunning and J. W. Ambrose, 1937, Canadian Inst. Mining and Metallurgy Trans., v. 40, p. 344.

Keweenaw Point volcanic series

Precambrian (middle Keweenawan) : Minnesota.

R. M. Grogan, 1946, (abs.) Geol. Soc. America Bull., v. 57, no. 12, pt. 2, p. 1198.

Kickapoo Creek group

Pennsylvanian (Lampasas) : Texas.

M. G. Cheney, 1947, Jour. Geology, v. 55, no. 3, p. 209-210.

Kiekie volcanic series

Pleistocene : Hawaiian Islands (Niihau).

H. T. Stearns, 1946, Hawaii Div. Hydrography Bull. 8, p. 91.

Kii Point limestone

[Quaternary] : Hawaiian Islands (Oahu).

C. K. Wentworth and J. E. Hoffmeister, 1939, Geol. Soc. America Bull., v. 50, no. 10, p. 1560-1561.

Kilbeck granite gneiss

Precambrian (Archean) : California.

J. C. Hazzard and E. F. Dosch, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 309.

Kilea volcanics

Pleistocene(?) : Hawaiian Islands (Maui).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 158, 181.

Killarnean granites

Precambrian : Ontario, Canada.

T. T. Quirke, 1924, Pan-Am. Geologist, v. 42, no. 4, p. 308.

W. H. Collins, 1937, Geol. Soc. America Bull., v. 48, no. 10, p. 1445-1446, 1456.

Killbuck shale facies (of Cuyahoga formation)

Mississippian : Ohio.

F. T. Holden, 1941, Ill. Acad. Sci. Trans., v. 34, no. 2, p. 172.

Killigrews Brook formation

Middle Cambrian : Newfoundland, Canada.

L. J. Weeks, 1955, Canada Geol. Survey Map 1043A.

Killingworth leuco-tonalite

Mid-Carboniferous : Connecticut.

W. G. Foye, 1949, Conn. Geol. Nat. History Survey Bull. 74, p. 53.

Kimball formation

Pliocene : Nebraska.

A. L. Lugin, 1938, Am. Jour. Sci., 5th ser., v. 36, no. 213, p. 224, 227 ; 1939, Geol. Soc. America Bull., v. 50, no. 8, p. 1262-1263.

Kimball formation

Precambrian or Lower Cambrian : British Columbia, Canada.

A. H. Lang, 1938, Canada Geol. Survey Paper 38-16, p. 13.

Kindblade formation

Lower Ordovician (Arbuckle group): Oklahoma.

C. E. Decker, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1320, table 1.

Kindle formation

Mississippian: British Columbia, Canada.

L. R. Laudon and B. J. Chronic, Jr., 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 2, p. 198, 210.

King City formation

Pliocene: California.

B. L. Clark, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 1936-1957.

King Creek marl member (of Chappel formation)

Mississippian: Texas.

F. B. Plummer, 1950, *Tex. Univ. Bur. Econ. Geology Pub.* 4329, p. 26-27.

Kingdom formation

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 12.

King Edward formation

Precambrian or Paleozoic: British Columbia, Canada.

A. G. Jones, 1948, *Canada Geol. Survey Paper* 48-4, p. 2.

Kingman sandstone member (of Harper sandstone)

Permian: Kansas and Oklahoma.

G. H. Norton, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1557; 1939, v. 23, no. 12, p. 1785-1786.

Kingman series

Tertiary: Arizona.

B. E. Thomas, 1949, *Econ. Geology*, v. 44, no. 8, p. 667-669.

King Salmon group

Upper Triassic: British Columbia, Canada.

F. A. Kerr, 1945, *Canada Geol. Survey Paper (Prelim. Map)* 45-30; 1948, *Mem.* 248, p. 20 (table), 24-25, *geol. map*.

Kingshill marl

Oligocene and Miocene: St. Croix, Virgin Islands.

J. F. Kemp, 1926, *New York Acad. Sci., Sci. Survey of Porto Rico and the Virgin Islands*, v. 4, pt. 1, p. 49 (reprinted? from J. F. Kemp, 1923, *Report to H. H. Hough, Captain, U. S. N., Governor, Virgin Islands. Printed at the Naval Station, St. Thomas [not seen]*).

D. J. Cederstrom, 1941, *Am. Jour. Sci.*, v. 239, no. 8, p. 556-557.

Kingsport formation or dolomite

Lower Ordovician: Tennessee and Virginia.

John Rodgers, 1943, *Geologic map of Copper Ridge district, Hancock and Grainger Counties, Tenn. (1:24,000)*: U. S. *Geol. Survey Strategic Minerals Inv. Prelim. Map*.

C. R. L. Oder and H. W. Miller, 1945, *Am. Inst. Min. Metall. Engineers (Mining Technology)*, v. 9, no. 3) *Tech. Pub.* 1818, p. 1, 2 (table 1).

Kingston Peak formation

Precambrian (Pahrump series): California.

D. F. Hewett, 1940, *Washington Acad. Sci. Jour.*, v. 30, no. 6, p. 240.

Kingston Range monzonite porphyry

Upper Cretaceous or Tertiary, lower: California.

D. F. Hewett, 1948, *Calif. Dept. Nat. Res., Div. Mines Bull.* 129, pt. M, p. 199-200.

Kingsvale group

Lower Cretaceous (Albian) : British Columbia, Canada.

H. M. A. Rice, 1947, Canada Geol. Survey Mem. 243, p. 25-27.

Kings Valley siltstone member (of Siletz River volcanic series)

Eocene : Oregon.

H. E. Vokes, D. A. Myers, and Linn Hoover, 1954, U. S. Geol. Survey Oil and Gas Inv. Map OM 150.

Kinnison shale member (of Cherokee formation)

Pennsylvanian (Desmoinesian) : Oklahoma.

W. B. Howe, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 9, p. 2087, 2092, 2093.

Kinojevis group

Precambrian (Archean) : Quebec, Canada.

G. W. H. Norman, 1944, Canada Geol. Survey Paper 44-9, p. 2 (Prelim. Map 44-9A).

Kipahulu formation

Pleistocene (?) : Hawaiian Islands (Maui).

H. T. Stearns *in* H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 91-94.

Kippens formation

Cambrian : Newfoundland, Canada.

T. N. Walthier, 1949, Newfoundland Geol. Survey Bull. 35, pt. 1, p. 70-73.

Kirby Lake dolomite

Permian (Leonard) : Texas.

Gayle Scott and others, 1941, W. Tex. Geol. Soc. [Guidebook] Spring Field Trip, May 10-11, correction sheet.

V. C. Perini, Jr., and J. R. Day, 1946, Abilene Geol. Soc. [Guidebook] November Field Trip, p. 5, 26.

Kirkman limestone

Permian : Utah.

A. A. Baker and J. S. Williams, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 4, p. 625-626.

Kirschberg evaporite (in Edwards limestone)

Cretaceous : Texas.

V. E. Barnes, 1946, Tex. Univ. Bur. Econ. Geology Pub. 4301, p. 40-43 [1944].

Kitchigama granite

Precambrian (post-Keewatin) : Quebec, Canada.

W. W. Longley, 1943, Quebec Dept. Mines Geol. Rept. 12, p. 19-20.

Kite group

Lower Devonian : Oklahoma.

R. A. Maxwell, 1936, Northwestern Univ. Summaries of Doctoral Dissert., v. 4, p. 132, 134.

Kline member (of Nesson formation)

Jurassic : Subsurface in North Dakota and Montana, and Manitoba, Canada.

J. W. Nordquist, 1955, Billings Geol. Soc. Guidebook 6th Ann. Field Conf., p. 104, 105-106, fig. 2.

Klitdal formation

Permo-Triassic (?) : East Greenland.

Alfred Rosenkrantz *in* Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 1, p. 140-142.

Kløft I formation

Upper Jurassic (Oxfordian-Kimmeridgian) : Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 254-255.

Kluane schists

Cambrian (?) : Yukon, Canada.

R. G. McConnell, 1905, *Canada Geol. Survey Summary Rept. 1904*, p. 4-6, map 894.

Kluane silt

Recent : Yukon, Canada.

C. S. Denny, 1952, *Geol. Soc. America Bull.*, v. 63, no. 9, p. 920, table 4.

Kneehills tuff

Upper Cretaceous : Alberta, Canada.

J. O. G. Sanderson, 1931, *Royal Soc. Canada Trans.*, ser. 3, v. 25, sec. 4, p. 65-66.

Kneeling Nun rhyolite tuff

Tertiary, upper : New Mexico.

F. J. Kuellmer and others, 1953, *in N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 42 (map), 50 (map), 57.

H. L. Jicha, Jr., 1954, *N. Mex. State Bur. Mines Min. Res. Bull.* 37, p. 39, 44-45.

Knickerbocker andesite

Pliocene, upper, or Pleistocene : Nevada.

V. P. Gianella, 1936, *Nev. Univ. Bull.*, v. 30, no. 9, p. 73-76.

Knifeton cyclothem or formation

Pennsylvanian (Des Moines) : Kansas.

G. E. Abernathy, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 18, 20, 22 ; 1938, *Kans. Acad. Sci. Trans.*, v. 41, p. 193, 196.

Knip beds

Cretaceous (?) : Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, *Geologie en geohydrologie van het Eiland Curaçao : Delft*, J. Waltman, Jr., p. 3-5, 15-22, 53-54.

Knob Hill andesite

Eocene : Washington.

L. B. Wright, 1947, *Am. Inst. Mining and Metall. Engineers Tech. Pub.* 2197, p. 5.

Knob Lake group

Precambrian (Proterozoic) : Quebec and Newfoundland (Labrador), Canada.

J. M. Harrison, 1952, *Canada Geol. Survey Paper* 52-20, p. 7.

Knoxville member (of Pascagoula formation)

Miocene : Mississippi.

1940, *Miss. Geol. Soc. [Guidebook 1] Field Trip*, Feb. 10-11, p. 4.

G. F. Brown and W. F. Guyton, 1943, *Miss. State Geol. Survey Bull.* 56, p. 22, 26, 31.

Knudshoved beds

Upper Cretaceous (Senonian) : Northeast Greenland.

Wolf Maync, 1949, *Meddel. om Grønland*, bind 133, nr. 3, p. 144, 211-217, 281.

Kobau group

Carboniferous (?) : British Columbia, Canada.

H. S. Bostock, 1940, *Canada Geol. Survey Map* 341A.

Koch Fjæld formation

Upper Jurassic (Kimmeridgian) : East Greenland.

Alfred Rosenkrantz *in* Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 147.

Koehler limestone

Middle Devonian: Michigan.

W. A. Kelly and G. W. Smith, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 3, p. 454-455.

Kogosukruk tongue (of Prince Creek formation)

Upper Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 166-167.

Kokernot formation

Quaternary: Texas.

C. C. Albritton, Jr., and Kirk Bryan, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1863; 1939, v. 50, no. 9, p. 1441-1442.

Koksoak series

Precambrian: Quebec, Canada.

M. E. Wilson, 1939, *Geologie der Erde, North America*, v. 1, p. 279.

Kolekole volcanics

Pleistocene (?) : Hawaiian Islands (Oahu).

H. T. Stearns, 1946, *Hawaii Div. Hydrography Bull.* 8, p. 77.

Koloa volcanic series

Pleistocene and Recent: Hawaiian Islands (Kauai).

N. E. A. Hinds, 1930, *Bernice P. Bishop Mus. Bull.* 71, p. 58-59.

H. T. Stearns, 1946, *Hawaii Div. Hydrography Bull.* 8, p. 85, 87-89.

Kolosh member (of Kialaguik formation)

Lower Jurassic: Alaska.

L. B. Kellum, 1945, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 7, no. 8, p. 203.

Kome beds

Lower Cretaceous (Urgonian) : Northwest Greenland.

Oswald Heer, 1883, *Meddel. om Grønland*, hefte 5, pt. 3, p. 83, 84-92; pt. 5, p. 226-227.
Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 258-262.

Kona tuff formation

Pleistocene, upper (?), and Recent: Hawaiian Islands (Hawaii).

C. K. Wentworth, 1938, *Hawaiian Volcano Observatory 3d Special Rept.*, p. 90-91, 172.

Konocti volcanics

Quaternary: California.

J. C. Brice, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 166, p. 12, pl. 7.

Kosk member (of Modin formation)

Upper Triassic: California.

A. F. Sanborn, [1953], *Stanford Univ. Abs. Dissert.*, v. 27, p. 436.

Kotaneelee formation

Upper Cretaceous: British Columbia, Yukon, and Northwest Territories (Mackenzie), Canada.

C. O. Hage, 1945, *Canada Geol. Survey Paper* 45-22, p. 21-23.

Kramer Lake beds (in Ricardo formation)

Miocene, upper: California.

H. S. Gale, 1946, *Calif. Jour. Mines and Geology*, v. 42, no. 4, p. 326.

Krebs group

Pennsylvanian (Des Moines age) : Oklahoma.

M. C. Oakes, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 6, p. 1523-1524, 1525-1526.

Krist fragmental [unit]

Precambrian : Ontario Canada.

B. S. W. Buffam, 1948, in *Structural geology of Canadian ore deposits: Canadian Inst. Mining and Metallurgy*, p. 458.

E. S. Moore, 1953, *Royal Soc. Canada Trans.*, ser. 3, v. 47, sec. 4, p. 41, 46.

Křiž lens (in Hueco formation)

Permian (Wolfcampian) : Texas.

C. O. Dunbar, 1953, *Am. Jour. Sci.* v. 251, no. 11, p. 802-804, figs. 1, 2.

Kruger Mountain malignite

Mesozoic : Washington.

A. C. Waters and Konrad Krauskopf, 1941, *Geol. Soc. America Bull.*, v. 52, no. 9, pl. 1.

Kuhiwa basaltic andesite

Pleistocene(?) : Hawaiian Islands (Maui).

G. A. Macdonald in H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 230, 249-251.

Kuhn beds

Upper Jurassic (upper Kimmeridgian) : Northeast Greenland.

Wolf Maync, 1947, *Meddel. om Grønland*, bind 132, nr. 2, p. 38-43, 119, 131-132, pl. 6.

Kuhnps facies

Lower Cretaceous (Valanginian) : Northeast Greenland.

Andreas Vischer, 1943, *Meddel. om Grønland*, bind 133, nr. 1, p. 87-91, pl. 2.

Kula volcanic series

Tertiary, upper(?) : Hawaiian Islands (Maui).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 65, 74-90.

Kungnat granite

Precambrian : Southwest Greenland.

C. E. Wegmann, 1938, *Meddel. om Grønland*, bind 113, nr. 2, p. 94-98.

Kure sandstone

Pleistocene : North Carolina.

B. W. Wells, 1944, *Elisha Mitchell Sci. Soc. Jour.*, v. 60, no. 2, p. 129-130.

Kuskokwim group

Lower(?) and Upper Cretaceous : Alaska.

W. M. Cady and others, 1955, *U. S. Geol. Survey Prof. Paper* 268, p. 35-47.

Kwaguntan series

Precambrian : Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 109.

Laberdie cyclothem (including Laberdie limestone)

Pennsylvanian (Des Moines) : Kansas, Missouri, Nebraska, and Oklahoma.

J. M. Jewett, 1941, *Kans. State Geol. Survey Bull.* 38, pt. 11, p. 320-321; 1945, *Bull.* 58, p. 34-35, 63, 65.

La Boca marine member (of Panama formation)

Miocene, lower : Panama Canal Zone.

[T. F. Thomson], 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap. 3, p. 16-17.

W. P. Woodring and T. F. Thompson, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 2, p. 241-242.

Labrador series

Lower Cambrian : Newfoundland.

Charles Schuchert and C. O. Dunbar, 1934, *Geol. Soc. America Mem.* 1, p. 16, 17-20.

Labradoran system

Labradorian

See Labrador series .

La Brea formation

Miocene, upper : Trinidad, British West Indies.

E. H. Cunningham-Craig, 1906, *Trinidad Legislative Council Paper* no. 30 of 1906, p. 4 ; 1907, *Paper* no. 60 of 1907, p. 9.

H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 55.

Labyrinth Lake granite

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 129.

La Caja formation

Upper Jurassic : Coahuila and Zacatecas, Mexico.

R. W. Imlay, 1938, *Geol. Soc. America Bull.*, v. 49, no. 11, p. 1659-1662.

La Casita formation

Upper Jurassic : Coahuila, Mexico.

R. W. Imlay, 1936, *Geol. Soc. America Bull.*, v. 47, no. 7, p. 1110.

Lacey member (of Mt. Simon formation)

Upper Cambrian : Illinois (subsurface).

J. S. Templeton, Jr. 1950, *Ill. Acad. Sci. Trans.*, v. 43, p. 155.

Lachine formation

Ordovician : Quebec, Canada.

T. H. Clark, 1944, *Royal Soc. Canada Trans.*, sec. 4, v. 38, p. 29 ; 1952, *Quebec Dept. Mines Geol. Rept.* 46, p. 77-80.

Lachute beds

Cambrian and Ordovician : Quebec, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2, *Cambroevian pulsation*, pt. 1, *Caledonian and St. Lawrence geosynclines : Peiping, China*, University Press, *Natl. Univ. Peking*, p. 424, 425.

Lacomb gravels

Pleistocene : Oregon.

I. S. Allison, 1953, *Oreg. Dept. Geology and Mineral Industries Bull.* 37, p. 9.

LaCorne hornblende-granodiorite

Precambrian : Quebec, Canada.

W. C. Gussow, 1937, *Royal Soc. Canada Trans.*, ser. 3, v. 31, sec. 4, p. 150.

Lacorocah meta-andesite tuff member (of Greenstone complex)

Precambrian : New Mexico.

Parry Reiche, 1949, *Geol. Soc. America Bull.*, v. 60, no. 7, p. 1186, 1188.

La Crête formation

See Crête formation.

La Cruz Peak formation

Upper Cretaceous : New Mexico.

W. H. Tonking, [1954?], *Geologic map and sections of the Puertecito quadrangle, New Mexico (1 : 48,000)* : *N. Mex. Bur. Mines Min. Res. [preprint?] Bull.* 41, pl. 1.

Ladd formation

Upper Cretaceous: California.

W. P. Popenoe, 1937, *Jour. Paleontology*, v. 11, no. 5, p. 380.**La Fé limestones**

Upper Cretaceous (Santonian or Campanian): Cuba.

J. F. de Albear, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 1, p. 76-77.**La Gloria formation**

Upper Jurassic: Coahuila, Mexico.

R. W. Imlay, 1936, *Geol. Soc. America Bull.*, v. 47, no. 7, p. 1105-1110.**Lagoon Navête group**

Eocene(?) : Trinidad, British West Indies.

E. H. Cunningham-Craig, 1905, *Trinidad Legislative Council Paper no. 25 of 1905*, p. 7, 8.**Lagoon Palmiste group**

Eocene(?) : Trinidad, British West Indies.

E. H. Cunningham-Craig, 1905, *Trinidad Legislative Council Paper no. 25 of 1905*, p. 7, 8.**La Grulla granodiorite**

Cretaceous: Baja California, Mexico.

A. O. Woodford and T. F. Harriss, 1938, *Geol. Soc. America Bull.*, v. 49, no. 9, p. 1316-1317.**Laguna series**

Precambrian (Archaen): Manitoba, Canada.

J. E. Armstrong, 1941, *Canada Geol. Survey Map 665A*.**Laguna Seca formation**

Paleocene and Eocene: California.

M. B. Payne, 1951, *Calif. Dept. Nat. Res., Div. Mines Special Rept. 9*, p. 11-13.**Lahaina volcanic series**

Pleistocene or Recent(?) : Hawaiian Islands (Maul).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hygrography Bull. 7*, p. 180-181.**La Huerta siltstone member (of Salado formation)**

Permian: Subsurface in New Mexico and Texas.

W. B. Lang, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 1, p. 68, 72-74.**Laib group**

Lower Cambrian: British Columbia, Canada.

H. W. Little, 1950, *Canada Geol. Survey Paper 50-19*, p. 15-18.**Laina volcanics**

Pleistocene or Recent(?) : Hawaiian Islands (Maul).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hygrography Bull. 7*, p. 158, 180-181.**Laird sandstone**

Miocene(?) : California.

C. E. Weaver, 1949, *Geol. Soc. America Mem. 35*, p. 17 (table 3), 65-67.**La Jara member (of Datil formation)***See* La Jara Peak member (of Datil formation).

La Jara Peak member (of Datil formation)

(?) Miocene, upper : New Mexico.

W. H. Tonking, 1954, *Dissert. Abs.*, v. 14, no. 2, p. 340 ; [1954?], *Geologic map and sections of the Puertecito quadrangle, New Mexico (1 : 48,000) : N. Mex. Bur. Mines Min. Res. [preprint?] Bull. 41, pl. 1.*

Lak member (of Sundance formation)

Upper Jurassic : Wyoming and South Dakota.

R. W. Imlay, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 2, p. 257-259.

Lake basalt

Pliocene (?) : California.

H. A. Powers, 1932, *Am. Mineralogist*, v. 17, no. 7, p. 262-264.

Lake Agnes quartz monzonite

Tertiary : Colorado.

K. A. Gorton, 1953, *Wyo. Geol. Assoc. Guidebook 8th Ann. Field Conf.*, p. 89-90.

Lake Agnes shale lentil (of Mount Whyte formation)

Middle Cambrian : British Columbia, Canada.

C. D. Walcott, 1917, *Smithsonian Misc. Coll.*, v. 67, no. 3, p. 93.

Franco Rasetti, 1951, *Smithsonian Misc. Coll.*, v. 116, no. 5, p. 62-63.

Lake Branch formation

Devonian : Quebec, Canada.

H. W. McGerrigle, 1954, *Quebec Dept. Mines Geol. Rept. 62*, p. 45.

Lake Charles formation

Recent : Texas.

W. A. Price, 1939, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 12, p. 1875.

Lake City limestone

Eocene, middle : Florida (subsurface).

P. L. Applin and E. R. Applin, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 12, p. 1680-1681, 1693-1695.

Lake Coahuila deposits

Pleistocene, upper : California.

L. A. Tarbet and W. H. Holman, 1944, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 12, p. 1782.

T. W. Dibblee, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull. 170*, chap. 2, p. 23, 25.

Lake Crockett formation

Cretaceous (Eagle Ford) : Texas.

C. L. McNulty, Jr., 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 2, p. 335-337

Lake Enchantment sediments

Precambrian : Michigan.

Justin Zinn and others, 1955, *Studies of stratified rocks occurring below the Huronian succession in the Marquette district, Michigan : Minn. Univ. Center for Continuation Study, Inst. of Lake Superior Geology [no pagination].*

Lake Kitchigama granite

See Kitchigama granite.

Lake Mistassini group

Precambrian : Quebec, Canada.

W. G. Wahl, 1947, *Quebec Dept. Mines Prelim. Rept. 211*, p. 5, 7.

Lake Neosho shale member (of Altamont limestone)

Pennsylvanian (Des Moines) : Kansas, Missouri, and Nebraska.

J. M. Jewett, 1941, *Kans. State Geol. Survey Bull. 38*, pt. 11, p. 331-332.

Lake Robertson granite

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 132-133.**Lake Vantage lavas**

Miocene, upper: Washington.

G. F. Beck, 1936, *Northwest Science*, v. 10, no. 3, p. 22.**Lakeview Mountain tonalite**

Cretaceous: California.

E. S. Larsen, Jr., 1948, *Geol. Soc. America Mem.* 29, p. 57-58.**Lake Waco formation**

Cretaceous (Gulf): Texas.

W. S. Adkins and F. E. Lozo *in* F. E. Lozo, 1951, *Fondren Sci. Series*, no. 4, p. 120-123, fig. 25.**Lake Wolford leucogranodiorite**

Cretaceous: California.

E. S. Larsen, Jr., and N. B. Keevil, 1947, *Geol. Soc. America Bull.*, v. 58, no. 6, p. 490.
E. S. Larsen, Jr., 1948, *Geol. Soc. America Mem.* 29, p. 82-85.**La Laja series**

Oligocene: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 280, correlation chart.**Lambert formation**

Upper Cretaceous: British Columbia, Canada.

J. L. Usher, 1952, *Canada Geol. Survey Bull.* 21, p. 26-27.**Lamb Point tongue (of Navajo sandstone)**

Jurassic and Jurassic (?): Utah.

Paul Averitt and others, 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 12, p. 2521.**La Motte granite**

Precambrian: Quebec, Canada.

G. W. H. Norman, 1945, *Econ. Geology*, v. 40, no. 1, p. 4.**LaMotte-LaCorne granite**

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 136-138.**Lampasas series**

Pennsylvanian: Texas.

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 81-82.**La Mula shales**

Lower Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1940, *Geol. Soc. America Bull.*, v. 51, no. 1, p. 122, 123.**Lancha limestone (in Pacheta member of Lowell formation)**

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 12.**Landrienne gabbro-peridotite complex**

Precambrian (Archean): Quebec, Canada.

W. W. Weber, 1951, *Quebec Dept. Mines Prelim. Rept.* 255, p. 2, 3.

Landrum shale member (of Crockett formation)

Eocene, middle (Claiborne) : Texas.

H. B. Stenzel, 1938, *Tex. Univ. Bur. Econ. Geol. Pub.* 3818, p. 20, 125, 134-148 [1939].

La Negra facies (of El Doctor limestone)

Lower Cretaceous : Queretaro, Mexico.

B. W. Wilson, J. P. Hernández M., and E. Meave T., 1955, *Soc. Geol. Mexicana Bol.*, tomo 18, no. 1, p. 4, fig. 2.

Lanes tongue (of Ankareh formation)

Triassic : Idaho and Wyoming.

Bernhard Kummel, 1954, *U. S. Geol. Survey Prof. Paper* 254-H, p. 173, fig. 18.

Langdon shale

Pennsylvanian (Virgilian) : Missouri, Iowa, Kansas, and Nebraska.

G. E. Condra and E. C. Reed, 1943, *Nebr. Geol. Survey Bull.* 14, p. 42, 43, 44.

Lansingan series

Cambrian : Minnesota, Iowa, Missouri, and Arkansas.

[C. R.] Keyes, 1941, *Pan-Am. Geologist*, v. 75, no. 1, p. 74-76.

Lantern marl (in Chaudiere shale)

Upper Cretaceous : Trinidad, British West Indies.

J. A. Cushman and H. H. Renz, 1947, *Cushman Lab. Foram. Research Contr.*, v. 23, pt. 2, p. 32.

Lantz Mills facies (of Edinburg formation)

Middle Ordovician : Virginia.

B. N. Cooper and G. A. Cooper, 1946, *Geol. Soc. America Bull.*, v. 57, no. 1, p. 78.

La Pause syenites

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 117.

La Peña formation

Lower Cretaceous : Coahuila, Mexico.

B. W. Imlay, 1936, *Geol. Soc. America Bull.*, v. 47, no. 7, p. 1119-1124.

La Perla shale member (of Yegua formation)

Eocene (Claiborne) : Texas, and Tamaulipas, Mexico.

J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259 (fig. 2), 264.

La Poile group

Devonian : Newfoundland, Canada.

J. R. Cooper, 1954, *Canada Geol. Survey Mem.* 276, p. 15-18.

Laporte group

Precambrian (Proterozoic) : Quebec, Canada.

W. F. Fahrig, 1951, *Canada Geol. Survey Paper (Prelim. Map)* 51-23.

La Providencia granite

Cretaceous : Baja California, Mexico.

A. O. Woodford and T. F. Harriss, 1938, *Geol. Soc. America Bull.*, v. 49, no. 9, p. 1317-1318.

Lar quartz diorite

Pre-Cretaceous (?) : California.

G. J. Neuerburg, 1953, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 33, p. 7 (table 1), 11-12, pl. 1.

Laredo formation

Eocene, middle: Texas.

Julia Gardner, 1938, Washington Acad. Sci. Jour., v. 23, no. 7, p. 297-298.

La Reine granite

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 131-132.

Large Island beds (of Romaine formation)

Ordovician (Beekmantown): Quebec, Canada.

A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines: Peiping, China, University Press, Natl. Univ. Peking, p. 522.

Larkin formation

Precambrian or Paleozoic: British Columbia, Canada.

A. G. Jones, 1948, Canada Geol. Survey Paper 48-4, p. 2.

La Ronge group

Precambrian: Saskatchewan, Canada.

J. B. Mawdsley and F. F. Grout, 1951, Saskatchewan Dept. Nat. Res. Rept. 4, p. 8.

Larrabee member (of Glens Falls formation)

Middle Ordovician (Mohawkian): Vermont and New York.

G. M. Kay, 1937, Geol. Soc. America Bull., v. 48, no. 2, p. 262-263.

Larry sandstone member (of Gething formation)

Lower Cretaceous: British Columbia, Canada.

F. H. McLearn and E. J. W. Irish, 1944, Canada Geol. Survey Paper 44-15, p. 8.

Lasca formation

Cretaceous: Texas.

R. M. Huffington, 1947, Harvard Univ. Summaries of Theses, 1943-45, p. 196.

Las Colorados conglomerates

Oligocene, middle: Dominican Republic.

P. J. Bermudez, 1949, Cushman Lab. Foram. Research Special Pub. 25, p. 23.

Las Cortinas formation

Cretaceous: Coahuila, Mexico.

W. E. Humphrey, 1941, S. Tex. Geol. Soc. [Guidebook] 13th Ann. Meeting, p. 3.

Las Cruces formation

Mississippian (Meramec): New Mexico.

L. R. Laudon and A. L. Bowsher, 1949, Geol. Soc. America Bull., v. 60, no. 1, p. 17, fig. 4.

Las Espinas volcanics

Tertiary, middle or upper: Hidalgo, Mexico.

F. S. Simons, 1951, Stanford Univ. Abs. Dissert., v. 26, p. 333.

Las Feveras formation

Tertiary or Quaternary: New Mexico.

G. O. Bachman, 1953, U. S. Geol. Survey Oil and Gas Inv. Map OM 137.

La Sierra tonalite

Cretaceous: California.

E. S. Larsen, Jr., and N. B. Keevil, 1947, Geol. Soc. America Bull., v. 58, no. 6, p. 488-489.

E. S. Larsen, Jr., 1948, Geol. Soc. America Mem. 29, p. 71-72.

Las Juntas shale

Eocene, lower: California.

C. E. Weaver, 1953, Wash. [State] Univ. Pubs. in Geology, v. 7, p. 19 (chart), 30-32.

Las Marías limestone

Upper Cretaceous: Puerto Rico.

R. C. Mitchell, 1954, Puerto Rico Univ. Agr. Expt. Sta. Tech. Paper 13, p. 47, 48, 93 (fig. 10).

Lasso limestone

Oligocene [Aquitanian]: Mariana Islands (Tinian).

Risaburo Tayama, 1939, Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour., v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 54, table 4 [English translation in library of U. S. Geol. Survey, p. 65].

Last Chance quartz monzonite

Post-Pennsylvanian: Utah.

Bronson Stringham, 1953, Geol. Soc. America Bull., v. 64, no. 8, p. 965.

Latham shale

Lower Cambrian: California.

J. C. Hazard, 1954, Calif. Dept. Nat. Res., Div. Mines Bull. 170, chap. 4, p. 30 (table 1), pl. 2.

Latir Peak latite

Tertiary: New Mexico.

P. F. McKinlay, [1955?], N. Mex. State Bur. Mines Min. Res. Bull. 42, p. 14, pl. 1.

La Tuna member (of Magdalena formation)

Pennsylvanian: Texas.

L. A. Nelson, 1937, Colo. Univ. Studies, v. 25, no. 1, p. 89; 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 167, 170.

Laulau limestone

Miocene (Aquitanian): Mariana Islands (Saipan).

Risaburo Tayama, 1938, Geomorphology, geology, and coral reefs of Saipan Island: Tropical Industry Inst., Palau, South Sea Islands, Bull. 1 [English translation in library of U. S. Geol. Survey, p. 56-60].

Josiah Bridge *in* W. S. Cole and Josiah Bridge, 1953, U. S. Geol. Survey Prof. Paper 253, p. 9-10.**Laupahoehoe volcanic series**

Pleistocene and Recent (?): Hawaiian Islands (Hawaii).

G. A. Macdonald, 1945, Am. Jour. Sci., v. 243, no. 4, p. 211-213, 214-215.

Laurel migmatite

Age unknown (post-Glenarm series): Maryland.

Ernst Cloos and C. H. Broedel, 1940, Geologic map of Howard County and adjacent parts of Montgomery and Baltimore Counties (1:62,500): Md. Geol. Survey.

R. W. Chapman, 1942, Geol. Soc. America Bull., v. 53, no. 9, p. 1300-1328.

Laurel Canyon formation

Paleozoic: California.

O. P. Jenkins, 1938, Geologic map of California (1:500,000): Calif. Dept. Nat. Res., Div. Mines, sheet 4.

Lava Falls tongue

Lower and/or Middle Cambrian: Arizona.

E. D. McKee, 1945, Carnegie Inst. Washington Pub. 563, p. 14, 29, 95.

La Vainilla limestone

Permian: Chiapas, Mexico.

M. L. Thompson and A. K. Miller, 1944, *Jour. Paleontology*, v. 18, no. 6, p. 486.

Laval formation

Middle Ordovician (Chazy): Quebec, Canada.

T. H. Clark, 1944, *Royal Soc. Canada Trans.*, sec. 4, v. 38, p. 29; 1952, Quebec Dept. Mines Geol. Rept. 46, p. 43-45.

Lavender shale member (of Fort Payne chert)

Mississippian: Georgia.

Charles Butts *in* Charles Butts and Benjamin Gildersleeve, 1948, *Ga. Geol. Survey Bull.* 54, p. 43-44.

La Vida member (of Puente formation)

Miocene, upper: California.

J. E. Schoelhamer and others, 1954, *U. S. Geol. Survey Oil and Gas Inv. Map OM 154*.

Lawler tuff

See Lawlor tuff.

Lawlor tuff

Pliocene, lower: California.

B. L. Clark, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 2, p. 189 (fig. 72), 191 [preprint 1941].

C. E. Weaver, 1949, *Geol. Soc. America Mem.* 35, p. 121-122.

Lawrence Harbour shale

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1936, *Newfoundland Geol. Survey Bull.* 3, p. 8-9.

Lawrenceville shale (in McLeansboro formation)

Pennsylvanian: Illinois and Indiana.

J. A. Culbertson, 1932, *The paleontology and stratigraphy of the Pennsylvanian strata between Caseyville, Ky. and Vincennes, Ind.*; *Abs. Thesis, Ill. Univ.*: Urbana, Ill., p. 3, 8.

Lawson limestone

Upper Cretaceous: Florida (subsurface).

P. L. Applin and E. R. Applin, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 12, p. 1681, 1708-1709.

Layton formation

Pliocene: Jamaica, British West Indies.

J. W. Spencer, 1898, *Canadian Inst. [Toronto] Trans.*, v. 5, pt. 2, p. 338-342.

Leach formation

Pennsylvanian(?): Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada*: *U. S. Geol. Survey Geol. Quadrangle Map [GQ 71]*.

Leach River [formation]

Carboniferous and younger: British Columbia, Canada.

1948, *Canada Geol. Survey Map 932A*.

Leahurst formation

Upper Devonian: Alberta, Canada.

J. M. Andrichuk and J. S. Wonfor, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 12, p. 2505.

Leatham formation

Mississippian (Kinderhookian) : Utah.

F. D. Holland, Jr., 1952, *Am. Assoc. Petroleum Geologists Bull.* v. 36, no. 9, p. 1719-1723.

Levenworth glacial stage

Pleistocene : Washington.

B. M. Page, 1939, *Jour. Geology*, v. 47, no. 8, p. 795-805.

Lebanon Junction siltstone member (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 147.

Lebeau member (of Le Moyen formation)

Recent : Louisiana (subsurface and surface).

P. H. Jones *in* P. H. Jones, A. N. Turcan, Jr., and H. E. Skibitzke, 1954, *La. Dept. Conserv. Geol. Bull.* 30, p. 89-90.

Lebec quartz monzonite

Jurassic (?) : California.

J. C. Crowell, 1952, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 24, p. 8-10.

Leckie group

Lower or Upper Cretaceous : British Columbia, Canada.

C. E. Cairnes, 1943, *Canada Geol. Survey Paper* 43-15, p. 7.

Leclercville shale

Ordovician : Quebec, Canada.

T. H. Clark, 1947, *Quebec Dept. Mines Prelim. Rept.* 204, p. 8, 11.

Ledbetter slate

Ordovician : Washington.

C. F. Park, Jr., 1938, *Econ. Geology*, v. 33, no. 7, p. 713, 714 (fig. 2).

C. F. Park, Jr., and R. S. Cannon, Jr., 1943, *U. S. Geol. Survey Prof. Paper* 202, p. 6, 19-22, pl. 1.

Leduc member (of Woodbend formation)

Devonian : Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 9, p. 1821-1822.

Leecher metamorphics

Age uncertain (pre-Chelan batholith) : Washington.

J. D. Barksdale, 1948, *Northwest Science*, v. 22, no. 4, p. 165, 166.

Leeds facies (of Schoharie formation)

Middle Devonian : New York.

Winifred Goldring and R. H. Flower, 1942, *Am. Jour. Sci.*, v. 240, no. 10, p. 683, 686, 691-693.

Leeds sandstone (in Silver Reef sandstone member of Chinle formation)

Upper Triassic : Utah.

P. D. Proctor, 1953, *Utah Geol. Mineralog. Survey Bull.* 44, p. 10-11, 25, 28.

Leelic period

Carboniferous (includes Mississippian, Chartresan, and Oshawanian of Keyes) : Iowa and upper Mississippi Valley.

[C. R.] Keyes, 1941, *Pan. Am. Geologist*, v. 75, no. 2, p. 98, 149-150.

Le Fever limestone

Upper Silurian : New York.

G. H. Chadwick, 1944, *N. Y. State Mus. Bull.* 336, p. 47 (fig. 11), 51, 52 [1946].

Leffler gravels

Pleistocene: Oregon.

I. S. Allison, 1953, *Oreg. Dept. Geology and Mineral Industries Bull.* 37, p. 9-10.**Lefulufulua trachyte**

Pliocene and lower Pleistocene(?) : Samoa Islands (Tutuila).

H. T. Stearns, 1944, *Geol. Soc. America Bull.*, v. 55, no. 11, p. 1285.**Legion Creek granite**

Precambrian: Texas.

V. E. Barnes, 1940, *in Geol. Soc. America [Guidebook] 53d Ann. Meeting*, p. 47, 53 (geol. map).**Leighton member (of Tully formation).**

Upper Devonian: Pennsylvania.

R. E. Stevenson and W. S. Skinner, 1949, *Pa. Acad. Sci. Proc.*, v. 23, p. 31.**Lehman formation**

Lower Ordovician (Chazyan): Nevada and Utah.

L. F. Hirtze, 1951, *Utah Geol. Mineralog. Survey Bull.* 39, p. 19-20.**Leicester marcasite member (of Moscow formation)**

Middle Devonian: New York.

R. G. Sutton, 1951, *Rochester Acad. Sci. Proc.*, v. 9, no. 5-6, p. 379-380.**Leila trachyte**

Pliocene and lower Pleistocene(?) : Samoa Islands (Tutuila).

H. T. Stearns, 1944, *Geol. Soc. America Bull.*, v. 55, no. 11, p. 1285.**Lemba formation**

Oligocene, upper: Dominican Republic.

P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Special Pub.* 25, p. 33.**Lemhi quartzite**

Precambrian (Belt series): Idaho.

C. P. Ross, 1947, *Geol. Soc. America Bull.*, v. 58, no. 12, pt. 1, p. 1096-1097, pl. 1.**Lemon Cove schist**

Triassic(?): California.

Cordell Durrell, 1940, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 25, no. 1, p. 14-15, 116.**Lemons Bluff member (of Marble Falls formation)**

Pennsylvanian (Morrow): Texas.

F. B. Plummer, 1944, *Tex. Univ. Bur. Econ. Geology Min. Res. Circ.* 33, p. 3, 5, 8; 1945, *Tex. Univ. Pub.* 4401, p. 67-69.**Lemont drift**

Pleistocene (Illinoian): Illinois.

J. H. Bretz, 1939, *Ill. State Geol. Survey Bull.* 65, pt. 1, p. 53.Leland Horberg and P. E. Potter, 1955, *Ill. State Geol. Survey Rept. Inv.* 185, p. 7-19.**Le Moyen formation**

Recent: Louisiana (subsurface and surface).

P. H. Jones *in* P. H. Jones, A. N. Turcan, Jr., and H. E. Skilbitzke, 1954, *La. Dept. Conserv. Geol. Bull.* 30, p. 88-94.**Lena member (of Fleming formation)**

Miocene: Louisiana.

H. N. Fisk, 1940, *La. Dept. Conserv. Geol. Bull.* 18, p. 118, 151-154.

Lengua beds

Miocene: Trinidad, British West Indies.

H. G. Kugler and others, [1939], *Geological conference in Trinidad; notes on the excursions: Petroleum Assoc. Trinidad, correlation table.*

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 560, table facing p. 572.

Lenzie silt

Pleistocene (Tazewell or Cary): Alberta, Canada.

Leland Horberg, 1952, *Jour. Geology*, v. 60, no. 4, p. 313-316.

Leola volcanics

Precambrian: Washington.

C. F. Park, Jr. and R. S. Cannon, Jr., 1943, *U. S. Geol. Survey Prof. Paper* 202, p. 6, 9-11, pl. 1.

Leone volcanics

Recent (?): Samoa Islands (Tutuila).

R. A. Daly, 1924, *Carnegie Inst. Washington Pub.* 340, p. 110-113, 136.

H. T. Stearns, 1944, *Geol. Soc. America Bull.*, v. 55, no. 11, p. 1285, 1306-1308.

Lepine formation

Lower Cretaceous: British Columbia and Yukon, Canada.

E. D. Kindle, 1944, *Canada Geol. Survey Paper* 44-16, p. 12-13.

Lepreau diorite

Middle Devonian (?): New Brunswick, Canada.

H. R. Belyea, 1944, *Acadian Naturalist*, v. 1, no. 3, p. 88.

Lepreau formation

Triassic: New Brunswick, Canada.

W. J. Wright and C. S. Clements, 1943, *Acadian Naturalist*, v. 1, no. 1, pl. 1.

F. J. Alcock, 1945, *Canada Geol. Survey Paper (Prelim. Map)* 45-2.

Letham formation

Mississippian (Kinderhookian): Utah.

F. D. Holland, Jr., 1952, *Am. Assoc. Petroleum Geologists Bull.*, v. 36, no. 9, p. 1719-1720, 1724.

Lethbridge member (of Oldman formation)

Upper Cretaceous: Alberta, Canada.

M. B. B. Crockford, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 4, p. 503-505.

Levack granite

Precambrian: Ontario, Canada.

H. C. Cooke, 1946, *Canada Geol. Survey Bull.* 3, p. 51-52.

Lexington glacial substage

Pleistocene (Wisconsin): Massachusetts.

S. S. Judson, Jr., 1949, *Peabody Foundation for Archaeology Papers*, v. 4, no. 1, p. 23-34.

Lezard limestone member (of Saint Bartholomew formation)

Eocene, middle: St. Bartholomew, French West Indies.

R. A. Christman, 1953, *Geol. Soc. America Bull.*, v. 64, no. 1, p. 70.

Liard formation

Middle Triassic: British Columbia, Canada.

E. D. Kindle, 1946, *Canada Geol. Survey Paper* 46-1, App. 1, p. 21-23.

Libby formation

Precambrian (Belt series) : Montana.

Russell Gibson, 1948, U. S. Geol. Survey Bull. 956, p. 9, 17-19.

Liberty facies (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 154-166.

Liberty Memorial shale member (of Chanute formation)

Pennsylvanian (Missouri series) : Missouri.

J. R. Clair, 1943, Mo. Geol. Survey and Water Res., 2d ser., v. 27, pl. 1.

Libertytown metarhyolite

Precambrian (?) : Maryland.

A. J. Stose and G. W. Stose, 1946, Md. Dept. Geology, Mines and Water Res., Carroll and Frederick Counties Rept., p. 58, 65.

Lichen Lake granite

Precambrian (Algonian?) : Quebec, Canada.

W. W. Longley, 1951, Quebec Dept. Mines Geol. Rept. 47, p. 16.

Licking Creek limestone

Lower Devonian : Pennsylvania.

F. M. Swartz, 1938, (abs.) Geol. Soc. America Bull., v. 49, no. 12, p. 1923.

F. M. Swartz *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, Pa. Geol. Survey, ser. 4, Bull. G 19, p. 69-71.**Lick Run conglomerate**

Lower Mississippian (Oil Lake) : Pennsylvania.

W. M. Laird, 1941, Pa. Topog. and Geol. Survey Progress Rept. 126, p. 16 (footnote).

Liebre quartz monzonite

Jurassic (?) : California.

J. C. Crowell, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 24, p. 10-11.

Lighthouse conglomerate

Mississippian (Kinderhook) : Michigan.

H. M. Martin, 1936, The centennial geological map of the southern peninsula of Michigan (1 : 500,000) : Mich. Geol. Survey Div. Pub. 39 (Geol. Ser. 33).

Lightning formation

Recent : Wyoming.

L. B. Leopold and J. P. Miller, 1954, U. S. Geol. Survey Water-Supply Paper 1261, p. 11.

Liguanea formation

Pleistocene : Jamaica, British West Indies.

J. W. Spencer, 1898, Canadian Inst. [Toronto] Trans., v. 5, pt. 2, p. 347-349.

C. A. Matley, 1951, Geology and physiography of the Kingston district, Jamaica : Inst. of Jamaica, p. 40-43, 63, geol. map.

Lille member (of Fernie formation)

Jurassic : Alberta, Canada.

F. H. McLearn, 1929, Canada Natl. Mus. Bull. 58, p. 83.

J. Spivak, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 4, p. 537.

Lilloise complex

Eocene (?) : Southeast Greenland.

L. R. Wager, 1947, Meddel. om Grønland, bind 134, nr. 5, p. 42-44, 46.

Lillooet group

Lower Cretaceous : British Columbia, Canada.

S. Duffell and K. C. McTaggart, 1952, Canada Geol. Survey Mem. 262, p. 36-39.

Lima granite

Age unknown: Pennsylvania.

W. H. Tomlinson, 1954, Pa. Acad. Sci. Proc., v. 28, p. 189-192.

Lime Creek glacial stage

Pleistocene (Illinoian?): Colorado.

R. L. Nelson, 1954, Jour. Geology, v. 62, no. 4, p. 327-328.

Lime Hill member (of Logansport formation)

Paleocene (Midway): Louisiana.

D. P. Meagher and L. C. Aycock, 1942, La. Dept. Conserv. Geol. Pamph. 3, p. 12-16.

G. E. Murray, Jr., and E. P. Thomas, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 1, p. 57-58.

Limeport limestone

Upper Cambrian (Dresbachian): Pennsylvania.

B. F. Howell, Henry Roberts, and Bradford Willard, 1950, Geol. Soc. America Bull., v. 61, no. 12, p. 1360-1361, 1362, 1364-1366.

Limestone Gap shale

Pennsylvanian (Morrow): Oklahoma.

B. H. Harlton, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 7, p. 854, 901-902.

Limonar formation

Miocene, lower: Cuba.

J. F. de Albear, 1941, Soc. Cubana Ingenieros Rev., v. 36, p. 493, chart facing p. 564.

Limon Bocas formation

Pliocene: Panama.

Alfred Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1578 (correlation chart).

Limones shale

Miocene, upper: Panama and Costa Rica.

H. N. Coryell and R. W. Mossman, 1942, Jour. Paleontology, v. 16, no. 2, p. 233.

J. W. Durham, 1950, Geol. Soc. America Mem. 43, pt. 2, table 10.

Lince-a-Jardin member (of Logy formation)

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, Newfoundland Geol. Survey Bull. 15, p. 13, 14.

Lincoln sandstone

Middle Cambrian: Kentucky (subsurface).

W. B. Jillson, 1948, New oil horizons in Kentucky: Frankfort, Ky., Roberts Printing Co., p. 27-29.

Lincolnshire limestone

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, Geol. Soc. America Bull., v. 54, no. 6, p. 863.

Lincolnshirian stage

Middle Ordovician (Chazyan): Virginia, West Virginia, and Kentucky.

Marshall Kay, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 8, p. 1402-1403, 1405, 1406.

Lindemansbugt facies

Lower Cretaceous (Valanginian): Northeast Greenland.

Andreas Vischer, 1943, Meddel. om Grønland, bind 133, nr. 1, p. 87-91, pl. 2.

Linderman sandstone

Lower Mississippian (Oil Lake) : Pennsylvania.

W. M. Laird, 1941, Pa. Topog. and Geol. Survey Progress Rept. 126, p. 12 (footnote).

Linklater formation

Precambrian (Keewatin) : Ontario, Canada.

W. C. Gussow, 1942, Ontario Dept. Mines Ann. Rept., v. 49, pt. 6, p. 5-6.

Linn gravels

Pleistocene : Oregon.

I. S. Allison, 1953, Oreg. Dept. Geology and Mineral Industries Bull. 37, p. 11-12.

Linn subgroup

Pennsylvanian (Missourian) : Kansas, Iowa, Missouri, Nebraska, and Oklahoma.

R. C. Moore, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 11, p. 2029-2030, 2031.

Linnian series

Devonian (Devonic) : Iowa and Missouri.

[C. R.] Keyes, 1939, Pan-Am. Geologist, v. 72, no. 1, p. 64.

Linton formation

Pennsylvanian : Indiana.

C. E. Wier, 1950, U. S. Geol. Survey Coal Inv. Map C 1.

Linwood shales

Pennsylvanian : Kansas.

[C. R.] Keyes, 1937, Pan-Am. Geologist, v. 67, no. 5, p. 366.

Lion Head member (of Manistique formation)

Middle Silurian (Niagaran) : Ontario, Canada.

E. W. Shaw, 1937, Royal Canadian Inst. Trans., v. 21, pt. 2, p. 320.

Lippincott member (of Lost Burro formation)

Middle (?) and Upper Devonian : California.

J. F. McAllister, 1955, Calif. Dept. Nat. Res., Div. Mines Special Rept. 42, p. 12, pl. 2.

Lisco member (of Broadwater formation)

Pleistocene, lower : Nebraska.

C. B. Schultz and T. M. Stout, 1945, Am. Jour. Sci., v. 243, no. 5, p. 232-236.

Lithonia granite-gneiss

Precambrian (?) : Georgia.

T. L. Watson, 1902, Ga. Geol. Survey Bull. 9-A, p. 54, 125-127.

L. A. Herrmann, 1954, Ga. Geol. Survey Bull. 61, p. 8-15, 34-41, 68-73, 78-79.

Little Bay Head lavas

Lower Ordovician : Newfoundland, Canada.

H. J. MacLean *in* G. V. Douglas and others, 1940, Newfoundland Geol. Survey Bull. 20, p. 89.

H. J. MacLean, 1947, Newfoundland Geol. Survey Bull. 22, p. 17.

Little Bear formation

Upper Cretaceous : Northwest Territories (Mackenzie), Canada.

J. S. Stewart, 1944, Canadian Inst. Mining and Metallurgy Trans., v. 47, p. 163 ; 1945, Canada Geol. Survey Paper 45-29, p. 7.

Little Bear formation or residuum

Lower Cretaceous : Mississippi, Alabama, Tennessee, and Kentucky.

F. F. Mellen, 1937, Miss. State Geol. Survey Bull. 34, p. 8-20, 27-29.

Little Chain limestone (in McLeansboro formation)

Pennsylvanian : Illinois.

J. A. Culbertson, 1932, *The paleontology and stratigraphy of the Pennsylvanian strata between Caseyville, Ky., and Vincennes, Ind.*, Abs. Thesis, Ill. Univ.; Urbana, Ill., p. 3, 8.

Little Chief Canyon member (of Lodgepole limestone)

Lower Mississippian : Montana.

M. M. Knechtel, J. E. Smedley, and R. J. Ross, Jr., 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 11, p. 2395-2399.

Little Elk gneissoid granite

Precambrian : South Dakota.

G. L. Taylor, 1935, *Am. Jour. Sci.*, 5th ser., v. 29, no. 171, p. 283-284.

Little Indian Pool beds

Upper Ordovician : Quebec, Canada.

H. W. McGerrigle, 1950, *Quebec Dept. Mines Geol. Rept.* 35, p. 31.

Little Osage shale member (of Fort Scott formation)

Pennsylvanian (Des Moines) : Kansas, Missouri, and Nebraska.

J. M. Jewett, 1941, *Kans. State Geol. Survey Bull.* 38, pt. 11, p. 306-309.

Little Lawn formation

Ordovician (?) : Newfoundland, Canada.

R. E. Van Alstine, 1948, *Newfoundland Geol. Survey Bull.* 23, p. 13-14.

Little Missouri lens (in Newcastle formation)

Upper Cretaceous : Wyoming.

R. M. Grace, 1952, *Wyo. Geol. Survey Bull.* 44, p. 14, 15-16.

Little Natches member (of Cook Mountain formation)

Eocene (Claiborne) : Louisiana.

J. Huner, Jr., 1939, *La. Dept. Conserv. Geol. Bull.* 15, p. 101-109.

Little Pavlof agglomerate

Quaternary : Alaska.

G. C. Kennedy and H. H. Waldron, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept.* 2, pt. 2, pl. 2 (geol. map).

Little Pawnee shale member (of Cass formation)

Pennsylvanian (Virgil) : Nebraska.

G. E. Condra, 1949, *Nebr. Geol. Survey Bull.* 16, p. 29.

Little River series

Paleozoic (?) : Georgia.

A. L. Peyton and H. E. Cofer, Jr., 1950, *U. S. Bur. Mines Rept. Inv.* 4665, p. 4-5.

G. W. Crickway, 1952, *Ga. Geol. Survey Bull.* 58, p. 31-33.

Little Rock Creek limestone

Devonian : Indiana.

G. A. Cooper, 1941, *Washington Acad. Sci. Jour.*, v. 31, no. 5, p. 181.

Little Shades sandstone member (of Parkwood formation)

Mississippian (Chester) : Alabama.

R. B. Morton, 1949, *Miss. Geol. Soc. Guidebook 7th Field Trip*, p. 37, 38, 40, 41.

Little Union quartz latite

Tertiary, upper, or lower Pleistocene(?) : Colorado.

C. H. Behre, Jr., E. N. Goddard, and A. E. Sandberg, 1939, Preliminary geologic map of west slope of Mosquito Range in the vicinity of Leadville, Colorado (1:12,000) : U. S. Geol. Survey.

C. H. Behre, Jr., 1939, *Colo. Sci. Soc. Proc.*, v. 14, no. 2, p. 66-67.

Little Valley limestone

Mississippian (Warsaw age) : Virginia.

Paul Averitt, 1941, *Va. Geol. Survey Bull.* 56, p. 17-21.

Little Vermilion cyclothem (including Little Vermilion limestone)

Pennsylvanian : Illinois.

R. C. Moore and others, 1944, *Geol. Soc. America Bull.*, v. 55, no. 6, Chart 6, column 29.

C. L. Cooper, 1946, *Ill. State Geol. Survey Bull.* 70, p. 14, 16.

Little Wabash sandstone (In McLeansboro formation)

Pennsylvanian : Illinois and Indiana.

J. A. Culbertson, 1932, The paleontology and stratigraphy of the Pennsylvanian strata between Caseyville, Ky. and Vincennes, Ind.; *Abs. Thesis, Ill. Univ. : Urbana*, Ill., p. 9.

Little Willow series

Precambrian : Utah.

A. E. Granger and others, 1952, *Utah. Geol. Soc. Guidebook* 8, p. 3.

Liveoak member (of Tejon formation)

Eocene : California.

J. G. Marks, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1922.

Livingstone formation

Carboniferous : Alberta, Canada.

R. J. W. Douglas, 1953, *Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 68.

Lizard Springs formation

Paleocene, lower : Trinidad, British West Indies.

Ernst Lehner, 1935, [France] *Office national des combustibles liquides annales*, 10^e année, no. 4, p. 717 (table).

J. A. Cushman and H. H. Benz, 1946, *Cushman Lab. Foram. Research Special Pub.* 18, p. 1-12.

Lloydminster shale

Upper Cretaceous : Alberta, Canada (subsurface).

A. W. Nauss, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 11, p. 1615-1618.

Lobato basaltic lavas

Quaternary : New Mexico.

H. T. U. Smith, 1938, *Jour. Geology*, v. 46, no. 7, p. 959.

Loch Lomond series

Middle Cambrian : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 69-76.

Locomotive fanglomerate

Tertiary, middle(?) : Arizona.

James Gilluly, 1937, *Ariz. Univ. Bull.*, v. 8, no. 1, p. 40-43.

Lodge Bay granite

Precambrian : Saskatchewan, Canada.

A. M. Christie, 1952, *Canada Geol. Survey Mem.* 269, p. 32.

Lodgepole rhyolite and obsidian

Tertiary : Wyoming.

R. E. Wilcox, 1944, *Geol. Soc. America Bull.*, v. 55, no. 9, p. 1054-1055, pl. 2.**Lodo formation**

Paleocene and Eocene : California.

R. T. White, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 257; 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 10, p. 1735-1745.**Logan Hill formation**

Pleistocene, lower : Washington.

P. D. Snavely, Jr., and others, 1951, *U. S. Geol. Survey Coal Inv. Map C 8*, sheet 1.**Logansport formation**

Paleocene (Midway) : Louisiana.

G. [E.] Murray, Jr., 1941 (abs) *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 5, p. 941-942.G. E. Murray, Jr., and E. P. Thomas, 1945, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 57-58.**Logansport limestone**

Middle Devonian : Indiana.

G. A. Cooper and A. S. Warthin, 1941, *Washington Acad. Sci. Jour.*, v. 31, no. 6, p. 259.**Loggy Bayou member (of Hall Summit formation)**

Paleocene (Midway) : Louisiana.

D. P. Meagher and L. C. Aycock, 1942, *La. Dept. Conserv. Geol. Pamph.* 3, p. 12-16.
G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 59.**Log Springs formation**

Lower Pennsylvanian (Morrow) : New Mexico.

A. K. Armstrong, 1955, *N. Mex. State Bur. Mines Min. Res. Circ.* 39, p. 5, 9-10.**Logtown Ridge formation**

Middle or Upper Jurassic : California.

N. L. Tallaferra, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 125, p. 233.**Logy formation**

Precambrian : Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull.* 15, p. 13-14.**Loma Blanca tongue (of Yegua formation)**

Eocene (Claiborne) : Texas.

W. G. Kane and G. B. Gierhart, 1935, *Am. Assoc. Petroleum Geologists Bull.*, v. 19, no. 9, p. 1374-1375.J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259 (fig. 2), 265-266.**Loma Candela formation**

Eocene, middle : Cuba.

J. A. Cushman and P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Contrib.*, v. 25, pt. 2, p. 27, 45.P. J. Bermudez, 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 239-244.**Loma Yucatan limestone**

Upper Cretaceous (Campanian) : Cuba.

H. J. MacGillavry, 1937, *Geog. Geol. Meded. (Utrecht Univ.) Physiol.-Geol. Reeks*, no. 14, p. 20.

Lonesome formation

Upper Jurassic (?) : Oregon.

R. L. Lupper, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 227, 265-266.**Long Draw glacial substage**

Pleistocene (Wisconsin) : Colorado, Wyoming, and New Mexico.

L. L. Ray, 1939, (abs.) *Geol. Soc. America Bull.*, v. 50, no. 12, pt. 2, p. 2007.Kirk Bryan and L. L. Ray, 1940, *Smithsonian Misc. Coll.*, v. 99, no. 2, p. 34.**Long Harbor series**

Ordovician (?) : Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 92.**Long Mountain granite**

Upper Devonian (?) : New Hampshire.

R. W. Chapman, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1187;
1948, v. 59, no. 11, p. 1079-1081, pl. 1.**Long Rapids shale**

Devonian : Ontario, Canada.

E. M. Kindle, 1939, *Geologie der Erde, North America*, v. 1, p. 197, 199, 202.**Long Reach formation**

Upper Silurian : New Brunswick, Canada.

G. S. Mackenzie, 1951, *Canada Geol. Survey Paper (Prelim. Map)* 51-15.**Longs Peak-St. Vrain granite**

Precambrian : Colorado.

E. E. Wahlstrom, 1940, *Econ. Geology*, v. 35, no. 4, p. 480.**Looma member (of Grand Rapids formation)**

Lower Cretaceous : Alberta, Canada (subsurface).

P. C. Badgley, 1952, *Canada Geol. Survey Paper* 52-11, p. 6.**Loomis member (of Mount Head formation)**

Mississippian : Alberta, Canada.

R. J. W. Douglas and P. Harker, 1955, (abs.) *Am. Assoc. Petroleum Geologists and Alberta Soc. Petroleum Geologists, Program Western Canada Regional Meeting and 5th Ann. Field Trip*, p. 18.**Loon Lake quartz-syenitic complex**

Precambrian : New York.

A. F. Buddington, 1948, *Geol. Soc. America Mem.* 28, p. 25; 1953, *N. Y. State Mus. Bull.* 346, p. 71, 81-84.**Lorane shale member (of Spencer formation)**

Eocene : Oregon.

H. E. Vokes, P. D. Snavely, Jr., and D. A. Myers, 1951, *U. S. Geol. Survey Oil and Gas Inv. Map OM* 110.**Los Arrieros shale member (of Yegua formation)**

Eocene (Claiborne) : Texas.

J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259 (fig. 2), 266.**Los Arrojos formation***See* Arrojos formation.

Los Atajos member (of Brasso formation)

Miocene, upper: Trinidad, British West Indies.

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1451 (chart).

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 554.

Los Banos Creek member (of "Quinto B" reef beds)

Upper Cretaceous: California.

C. T. Smith, 1945, *Jour. Paleontology*, v. 19, no. 1, p. 38.

Los Gatos beds

Upper Cretaceous: California.

F. M. Anderson, 1937, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1612.

Los Medanos formation

Pliocene, lower: California.

B. L. Clark, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull. 118*, pt. 2, p. 189 (fig. 72), 191 [preprint 1941].

Los Muertos Creek formation

Eocene, middle: California.

I. F. Wilson, 1943, *Calif. Jour. Mines and Geology*, v. 39, no. 2, p. 205-206, 226 (fig. 5).

Lospe formation

(?) Miocene, lower: California.

C. F. Tolman, 1927, *Econ. Geology*, v. 22, no. 5, p. 459.

S. G. Wisster and F. E. Dreyer, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull. 118*, pt. 2, p. 237, 238 [preprint 1941].

Los Pinos granite

Precambrian: New Mexico.

J. T. Stark and E. C. Dapples, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1936; 1946, v. 57, no. 12, pt. 1, p. 1136-1138.

Lost Burro formation

Middle (?) and Upper Devonian: California.

J. F. McAllister, 1952, *Calif. Dept. Nat. Res., Div. Mines Special Rept. 25*, p. 18-20.

Lost conglomerate member (of Pepetto formation)

Pliocene, lower: California.

C. J. Kundert, 1952, *Calif. Dept. Nat. Res., Div. Mines Special Rept. 18*, p. 9, 10 (fig. 9).

Lost Creek trachyte

Miocene and/or Pliocene: Wyoming.

A. D. Howard, 1937, *Geol. Soc. America Special Paper 6*, p. 21-24, 78.

Lost Nation quartz diorite

Upper Ordovician: New Hampshire.

R. W. Champman, 1935, *Am. Jour. Sci.*, 5th ser., v. 30, no. 179, p. 405, fig. 1.

Lost Run conglomerate

Ordovician: Pennsylvania.

F. M. Swartz, 1948, *Field Conf. Pa. Geologists Guidebook 14th Ann. [Meeting] [Supp.]*, p. 4-5.

Lost Sheep dolomite

Middle Silurian: Utah.

F. W. Osterwald, 1953, *U. S. Geol. Survey Trace Elements Inv. Rept. TEI-330*, p. 105.

- Lostway member** (of Richfield formation)
Precambrian or Lower Cambrian: British Columbia, Canada.
A. H. Laug, 1938, Canada Geol. Survey Paper 38-16, p. 8.
- Los Vallos member** (of Yeso formation)
Permian: New Mexico.
V. C. Kelley and G. H. Wood, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 47.
- Lotbinière shale**
Ordovician: Quebec, Canada.
T. H. Clark, 1947, Quebec Dept. Mines Prelim. Rept. 204, p. 7-8.
- Louann salt**
Permian: Subsurface in Arkansas, Louisiana, and Texas.
R. T. Hazard, W. C. Spooner, and B. W. Blanpied, [1947], Shreveport Geol. Soc. 1945 Ref. Rept. v. 2, p. 483, 484, 488.
- Loughridge formation**
Middle Ordovician: Illinois.
J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., p. 21, figs. 3, 12.
- Lousetown formation**
Pliocene upper, or Pleistocene: Nevada.
J. P. Thayer, 1937, Geol. Soc. America Bull., v. 48, no. 11, p. 1648-1649.
- Loutre formation**
Pennsylvanian (Des Moines): Missouri.
H. S. McQueen, 1943, Mo. Geol. Survey and Water Res., 2d ser., v. 28, p. 71-78.
- Louvicourt granodiorite**
Precambrian (Archean): Quebec, Canada.
A. S. MacLaren, 1950, Canada Geol. Survey Map 997A.
- Lovell member** (of Mt. Simon formation)
Upper Cambrian: Illinois (subsurface).
J. S. Templeton, Jr., 1950, Ill. Acad. Sci. Trans., v. 43, p. 155.
- Lovington sandstone member** (of San Andres formation)
Permian (Leonard): New Mexico and Texas.
J. M. Hills in R. L. Bates, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 18, p. 269, 270-271.
- Lowell formation**
Lower Cretaceous: Arizona.
A. A. Stoyanow, 1949, Geol. Soc. America Mem. 38, p. 8-18.
- Lower Amate formation**
See Amate (Lower and Upper) formation.
- Lower Medinilla limestone**
See Medinilla (Lower and Upper) limestone.
- Lowes Grove beds**
Triassic: North Carolina.
Grover Murray, Jr., 1938, Science, v. 87, no. 2261, p. 390.
- Low Hollow limestone member** (of Maynardville limestone)
Upper Cambrian: Virginia.
R. L. Miller and J. O. Fuller, 1947, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 76.

Low Lands formation

Miocene: St. Martin, Netherlands and French West Indies.

G. A. F. Molengraaf, 1931, *Leidsche Geol. Meded.*, Deel 5, p. 737.

Low Layton pillow lavas

Miocene to Pliocene: Jamaica, British West Indies.

C. T. Trechmann, 1929, *Geol. Mag.*, v. 73, no. 6, p. 255; 1942, v. 79, no. 3, p. 174.

Lucia shale

Eocene: California.

R. B. Thorup, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1958; 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 464, 465.

Lucile series

Upper Triassic: Idaho.

W. R. Wagner, 1945, *Idaho Bur. Mines and Geology Pamph.* 74, p. 5-6.

Lucky Bill formation

Miocene(?): New Mexico.

R. M. Hennon, W. R. Jones, and S. L. Moore, 1953, *N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 120.

Lucky Jim limestone (in Zintcon member of Slocan series)

Triassic: British Columbia, Canada.

M. S. Hedley, 1947, *British Columbia Dept. Mines Bull.* 22, p. 9.

Lue Point member (of Logy formation)

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull.* 15, p. 13, 14.

Luke Arm formation

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1936, *Newfoundland Geol. Survey Bull.* 3, p. 4-6.

Lukfata sandstone formation

Cambrian(?): Oklahoma.

W. D. Pitt, 1955, *Okla. Geol. Survey Circ.* 34, p. 13-15, pl. 1.

Lula facies (of Cow Bayou member of Logansport formation)

Paleocene (Midway): Louisiana.

G. E. Murray, 1948, *La. Dept. Conserv. Geol. Bull.* 25, p. 112-114.

Luman tongue (of Green River formation)

Eocene, lower: Wyoming.

G. N. Pippingos, 1955, *Wyo. Geol. Assoc. Guidebook 10th Ann. Field Conf.*, p. 100, 101.

Lushs Bight group

Ordovician(?): Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 13.

Lusk formation or cyclothem

Pennsylvanian: Illinois.

J. M. Weller, 1940, *Ill. State Geol. Survey Rept. Inv.* 71, p. 36-37.

Lutie member (of Theodosia formation)

Lower Ordovician: Missouri and Arkansas.

J. S. Cullison, 1944, *Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser.*, v. 15, no. 2, p. 25, 27, pl. 8.

Lydia granodiorite

Age not stated: Virginia.

W. A. Nelson, 1949, (abs.) *Va. Acad. Sci. Proc.* 1948-1949, p. 139.

Lyleton shale

Devonian: Manitoba, Canada (subsurface).

J. D. Allan and L. B. Kerr, 1950, *Precambrian*, v. 23, no. 10, p. 10.

Lynn outwash

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper 322*, p. 48, table, map.

Lyre formation

Eocene: Washington.

C. E. Weaver, 1937, *Wash. [State] Univ. Pubs. in Geology*, v. 4, p. 121.

Lytle sand

Devonian: Pennsylvania.

P. A. Dickey, R. F. Sherrill, and L. S. Matteson, 1943, *Pa. Geol. Survey*, ser. 4, Bull. M 25, p. 22, 25-26.

Maalebjerg series (of Eleonore Bay formation)

Precambrian (Greenlandian): Northeast Greenland.

John Haller, 1953, *Meddel. om Grønland*, bind 113, nr. 5, p. 25-28, 190, pl. 1.

Mabou Mines formation

Pennsylvanian: Nova Scotia and New Brunswick, Canada.

M. J. Copeland, 1955, *Dissert. Abs.*, v. 15, no. 8, p. 1370.

Mabury formation

Eocene, middle: California.

Martin Van Couvering and H. B. Allen, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 496-500.

Macabou limestone

Oligocene, upper: Martinique, French West Indies.

Jean Giraud, 1918, *Esquisse geologique de la Martinique avec carte geologique: Hanoi-Haiphong*, Imprimerie d'Extreme-Orient, p. 12.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581, 1596.

McAdam Lake formation

Lower or Middle Devonian: Nova Scotia, Canada.

W. A. Bell and E. A. Goranson, 1938, *Canada Geol. Survey Map 360A*.

Macaya formation

Upper Cretaceous: Haiti.

Jacques Butterlin, 1954, *Inst. Français d'Haïti Mem.* 1, p. 52.

McBride group

Precambrian: Alberta, Canada.

M. K. Sorensen, 1955, *Alberta Soc. Petroleum Geologists Guidebook 5th Ann. Field Conf.*, p. 57.

McBryde limestone member (of Clayton formation)

Paleocene (Midway age): Alabama.

F. S. MacNeil, 1946, *U. S. Geol. Survey Strategic Minerals Inv. Prelim. Rept.* 3-195, p. 7-8.

MacCodrum formation

Lower Cambrian: Nova Scotia, Canada.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 37-39.

McCombs limestone member (of Bell Canyon formation)

Permian (Guadalupe series) : Texas.

N. D. Newell and others, 1953, The Permian reef complex of the Guadalupe Mountains region, Texas and New Mexico : San Francisco, W. H. Freeman and Co., p. 15, 53.

W. C. Warren *in* P. B. King, N. D. Newell, and D. W. Boyd, 1955, Permian field conference to the Guadalupe Mountains : Soc. Econ. Paleontologists and Mineralogists, p. 10, 60.

McConnell formation

Devonian : British Columbia, Canada.

L. R. Laudon and B. J. Chronic, Jr., 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 2, p. 197.

McCoy Head formation

Upper Carboniferous : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 118.

McCoy Mountains formation

Upper Paleozoic or Triassic : California.

W. J. Miller, 1944, Calif. Jour. Mines and Geology, v. 40, no. 1, p. 32, 49-52.

McCracken member (of Elbert formation)

Upper Devonian : Subsurface in Utah, Arizona, Colorado, and New Mexico.

R. L. Knight and J. C. Cooper, 1955, Four Corners Geol. Soc. Guidebook [1st] Field Conf., p. 56, fig. 1.

McCraney limestone

Lower Mississippian : Illinois.

R. E. Grim, J. E. Lamar, and W. F. Bradley, 1937, Jour. Geology, v. 45, no. 8, p. 832, 836.

M. A. Stanbrook, 1950, Am. Jour. Sci., v. 248, no. 3, p. 194-212.

McCutcheon volcanic series

Tertiary : Texas.

G. K. Eifer, Jr., 1951, Geol. Soc. America Bull., v. 62, no. 4, p. 342.

McDonald shale member (of Monterey formation)

Miocene, upper : California.

J. A. Cushman and P. P. Goukoff, 1938, Cushman Lab. Foram. Research Contr. v. 14, pt. 1, pl. 1.

R. R. Simonson and M. L. Krueger, 1942, Am. Assoc. Petroleum Geologist Bull., v. 26, no. 10, p. 1616-1617.

Macdonald Glen formation

Pennsylvanian : New Brunswick and Nova Scotia, Canada.

M. J. Copeland, 1955, Dissert. Abs., v. 15, no. 8, p. 1370.

Macdougall group

Cambrian : Northwest Territories (Mackenzie) and Yukon, Canada.

J. S. Stewart, 1944, Canadian Inst. Mining and Metallurgy Trans., v. 47, p. 163.

G. S. Hume and T. A. Link, 1945, Canada Geol. Survey Paper 45-16, p. 7-9.

Macedonia formation or cyclothem

Pennsylvanian : Illinois.

J. M. Weller, 1940, Ill. State Geol. Survey Rept. Inv. 71, p. 39, 40.

McGalls soil

Pleistocene : Bermuda Islands.

R. W. Sayles, 1931, Am. Acad. Arts Sci. Proc., v. 66, no. 11, p. 396.

McGrath gneiss

Precambrian (Algomian) : Minnesota.

M. S. Woyski, 1949, *Geol. Soc. America Bull.*, v. 60, no. 6, p. 1002, 1014, pl. 1.**McHale slate**

Precambrian (Beltian) : Washington.

Ian Campbell and J. S. Loofbourov, Jr., 1946, (abs.) *Geol. Soc. America Bull.* v. 57, no. 12, pt. 2, p. 1250.**Machegit conglomerate member (of Tagpochau limestone)**

Miocene, lower : Mariana Islands (Saipan).

P. E. Cloud, Jr., R. G. Schmidt, and H. W. Burke, 1955, in *Military Geology of Saipan, Mariana Islands* : U. S. Army Corps of Engineers, Far East Command, v. 1, p. 9, pl. 2.**Macho pyroxene andesites**

Tertiary, lower (?) : New Mexico.

H. L. Jicha, Jr., 1954, *N. Mex. State Bur. Mines Min. Res. Bull.* 37, p. 39-40.**McIntosh formation**

Eocene, middle to upper : Washington.

P. D. Snavely, Jr., and others, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 5, p. 1052-1060.**McKee sandstone**

Middle Ordovician : Texas (subsurface).

Taylor Cole, C. D. Cordry, and H. A. Hemphill, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 279-281.**Mackentire "red-beds" tongue (of Phosphoria formation)**

Permian : Utah.

J. S. Williams, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 1, p. 91-93.**MacKenzie Island graywacke**

Precambrian : Ontario, Canada.

F. J. Pettijohn, 1937, *Geol. Soc. America Bull.*, v. 48, no. 2, p. 187, 190.**McKinney Knob member (of Brodhead formation)**

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 162.**Mackintosh Bay granite**

Precambrian : Saskatchewan, Canada.

A. M. Christie, 1952, *Canada Geol. Survey Mem.* 269, p. 41-43.**MacLean Brook formation**

Middle Cambrian : Nova Scotia, Canada.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 42-45.**McLellan Brook sub-member (of Thorburn member of Stellarton series)**

Pennsylvanian : Nova Scotia, Canada.

W. A. Bell, 1940, *Canada Geol. Survey Mem.* 225, p. 44, 45 [1941].**McLeod Brook formation**

Upper Cambrian (?) and Lower Ordovician : Nova Scotia, Canada.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 28-30.**McMichel member (of McKenzie Hill formation)**

Lower Ordovician : Oklahoma.

C. E. Decker, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1319, table 1.

MacMullin formation

Middle Cambrian : Nova Scotia, Canada.

R. D. Hutchinson, 1952, Canada Geol. Survey Mem. 263, p. 20-26.

McNabb limestone (in Senora formation)

Pennsylvanian (Desmoinesian) : Oklahoma.

C. C. Branson, 1954, Okla. Geol. Survey Guidebook 2, p. 3, 5.

MacNeil formation

Upper Cambrian : Nova Scotia, Canada.

R. D. Hutchinson, 1952, Canada Geol. Survey Mem. 263, p. 26-28.

McRae formation

Upper Cretaceous and Tertiary (?) : New Mexico.

V. C. Kelley and Caswell Silver, 1952, N. Mex. Univ. Pubs. in Geology 4, p. 114, 115-120.

McShan formation

Upper Cretaceous : Alabama and Mississippi.

L. C. Conant and W. H. Monroe, 1945, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 37.

Macumber formation

Mississippian : Nova Scotia, Canada.

L. J. Weeks, 1945, Canada Geol. Survey Paper (Prelim. Map) 45-26.

Macuspana limestone

Oligocene : Tabasco, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, p. 280, correlation chart.

G. P. Salas and Ernesto Lopez Ramos, 1951, Asociación Mexicana Geólogos Petroleros Bol., v. 3, nos. 1-2, p. 33-34.

Macuspana shale

Oligocene : Tabasco, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, p. 280, correlation chart.

McWain sandstone

Pennsylvanian : Illinois.

J. R. Ball, 1943, Ill. State Acad. Sci. Trans., v. 36, no. 2, p. 150; 1952, Ill. State Geol. Survey Bull. 77, p. 44-45.

McWatters group

Precambrian (Archean) : Quebec, Canada.

M. E. Wilson, 1943, Royal Soc. Canada Trans., ser. 3, v. 37, sec. 4, p. 128-129.

Macy limestone or formation

Middle Ordovician : Missouri.

E. R. Larson, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 9, p. 2058-2060.

Mafeking formation

Middle Devonian : Manitoba, Canada.

C. H. Crickmay, 1954, Western Canada sedimentary basin : Tulsa, Okla., Am. Assoc. Petroleum Geologists, p. 149-150.

Magdalena series

Middle Cretaceous : Oaxaca, Mexico.

Tomás Barrera, 1946, Guía geol. de Oaxaca : Mexico Universidad Nac., Inst. Geología, p. 54.

Magenta member (of Rustler formation)

Permian (Ochoa) : New Mexico.

J. E. Adams, 1944, Am. Assoc. Petroleum Geologists Bull., v. 28, no. 11, p. 1614.

Mahala sandstone and conglomerate

Miocene, upper: California.

M. L. Krueger, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 363.

A. O. Woodford, T. G. Moran, and J. S. Shelton, 1946, Am. Assoc. Petroleum Geologists Bull., v. 30, no. 4, p. 521.

Mahogany member (of Ankareh formation)

Triassic: Utah.

Bernhard Kummel, 1954, U. S. Geol. Survey Prof. Paper 254-H, p. 180, fig. 18.

Maiden Point sandstone

Ordovician: Newfoundland, Canada.

J. R. Cooper, 1937, Newfoundland Geol. Survey Bull. 9, p. 9-10.

Malkasagi River gneiss

Precambrian: Quebec, Canada.

J. E. Gilbert, 1947, Quebec Dept. Mines Prelim. Rept. 210, p. 8.

Mainchi formation*See* Mainsjie formation.**Main Ridge formation**

Cretaceous (?): Tobago, British West Indies.

J. C. Maxwell, 1948, Geol. Soc. America Bull., v. 59, no. 8, p. 806.

Mainsjie formation

Eocene, upper: Curaçao, Netherlands West Indies.

H. P. Schaub, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 7, p. 1283, 1285-1288.

Maitland beds

Cambrian and Ordovician: Ontario, Canada.

A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 2, Cambroevian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines: Peiping, China, University Press, Natl. Univ. Peking, p. 406, 414, 424, 425, 550, 551.

Maitlen phyllite

Cambrian: Washington.

C. F. Park, Jr., 1938, Econ. Geology, v. 33, no. 7, p. 713, 714 (fig. 2).

C. F. Park, Jr., and R. S. Cannon, Jr., 1943, U. S. Geol. Survey Prof. Paper 202, p. 6, 15-17, pl. 1.

Makaino basaltic andesite

Pleistocene (?): Hawaiian Islands (Maui).

G. A. Macdonald *in* H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 230, 246-247.**Makanaka drift and stage**

Pleistocene: Hawaiian Islands (Hawaii).

C. K. Wentworth, 1939, (abs.) Geol. Soc. America Bull., v. 50, no. 12, pt. 2, p. 1942.

C. K. Wentworth and W. E. Powers, 1941, Geol. Soc. America Bull., v. 52, no. 8, p. 1206-1207.

Makapipi basalt

Pleistocene (?): Hawaiian Islands (Maui).

G. A. Macdonald *in* H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 231, 241-243.**Makaweli formation**

Pliocene (?): Hawaiian Islands (Kauai).

G. A. Macdonald, D. A. Davis, and D. C. Cox, 1954, Volcano Letter 526, p. 2.

Mak Hill glaciation

Pleistocene (Wisconsin) : Alaska.

E. H. Muller *in* T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 2, 13 (table 1).

Makkovik granite

Precambrian (Timiskaming) : Newfoundland (Labrador), Canada.

E. H. Kranck, 1939, Newfoundland Geol. Survey Bull. 19, p. 32.

Malagan series

Paleozoic (Late Carbonic) : Arizona and New Mexico.

Charles Keyes, 1940, Pan-Am. Geologist, v. 74, no. 2, p. 106 (chart).

Malam (Maremu) beds

Miocene : Caroline Islands (Kusaie).

Risaburo Tayama, 1952, Coral reefs in the South Seas : Japan Hydrog. Office Bull., v. 11, p. 69, table 5 [English translation in library of U. S. Geol. Survey, p. 84].

Malartic granodiorite

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 134.

Malartic volcanics

Precambrian : Quebec, Canada.

H. C. Gunning, 1937, Canada Geol. Survey Mem. 206, p. 4-5.

Mallard Lake metagabbro

Precambrian : Ontario, Canada.

D. F. Hewitt, 1955, Ontario Dept. Mines Ann. Rept., v. 63, pt. 6, p. 14.

Mallemuk formation

See Mallemuk Mountain formation.

Mallemuk Mountain formation

Upper Carboniferous : Northeast Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 245-246.

Mamou member (of Foley formation)

Pliocene : Louisiana (subsurface).

P. H. Jones *in* P. H. Jones, A. N. Turcan, Jr., and H. E. Skibitzke, 1954, La. Dept. Conserv. Geol. Bull. 30, p. 60-61.

Mamural clay (of Springvale formation)

Miocene, upper : Trinidad, British West Indies.

H. H. Suter, 1951, Colonial Geology and Min. Res., v. 2, no. 3, p. 205 (table 13) [1952].

Manchester schist

Precambrian : Georgia.

D. F. Hewett and G. W. Crickmay, 1937, U. S. Geol. Survey Water-Supply Paper 819, p. 29.

Mandata formation

Lower Devonian : Pennsylvania.

F. M. Swartz, 1938, (abs.) Geol. Soc. America Bull., v. 49, no. 12, pt. 2, p. 1923.

F. M. Swartz *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, Pa. Geol. Survey, ser. 4, Bull. G 19, p. 65-69.

Maness shale member (of South Tyler formation)

Cretaceous (Comanche) : Texas (subsurface).

T. L. Bailey, F. G. Evans, and W. S. Adkins, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 2, p. 176-178.

R. T. Hazzard, B. W. Blanpied, and W. C. Spooner, 1947, *Shreveport Geol. Soc.* 1945 Ref. Rept., v. 2, p. 475, 476.

Manila agglomerate

Eocene : Mariana Islands (Rota).

Risaburo Tayama, 1939, Correlation of the strata of the South Sea Islands : *Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, Coral reefs in the South Seas : *Japan Hydrog. Office Bull.*, v. 11, p. 48, table 4 [English translation in library of U. S. Geol. Survey, p. 57].

Mannville formation

Lower Cretaceous : Alberta, Canada (subsurface).

A. W. Nauss, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 11, p. 1609-1615.

Mansfield Head granodiorite

Devonian (?) : Newfoundland, Canada.

H. J. MacLean, 1947, *Newfoundland Geol. Survey Bull.* 22, p. 8.

Mantua lentil (of Polecat Bench formation)

Paleocene : Wyoming.

G. L. Jepsen *in* W. B. Scott, 1937, A history of land mammals in the Western Hemisphere : New York, Macmillan Co., p. 99; 1940, *Am. Philos. Soc. Proc.*, v. 83, no. 2, p. 233-234.

Manville formation

See Mannville formation.

Manyberries member (of Bearpaw formation)

Upper Cretaceous : Alberta, Canada.

D. M. Loranger and J. Gleddie, 1953, *Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 160-161, 167.

Manzanillo formation

Miocene : Cuba.

Stephen Taber, 1934, *Geol. Soc. America Bull.*, v. 45, no. 8, p. 586-588.

Manzanita limestone member (of Cherry Canyon formation)

Permian (Guadalupe series) : Texas and New Mexico.

F. E. Lewis, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 1, p. 92.

P. B. King, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 4, p. 580-581.

Map formation

Miocene : Caroline Islands (Map and Yap).

Risaburo Tayama, 1935, Topography, geology, and coral reefs of the Yap Islands : *Tohoku Univ., Inst. Geology and Paleontology Contr. in Japanese Language*, no. 19, p. 30-36 [English translation in library of U. S. Geol. Survey, p. 26-32]; 1952, Coral reefs in the South Seas : *Japan Hydrog. Office Bull.*, v. 11, p. 61-62, table 4 [English translation in library of U. S. Geol. Survey, p. 72-73].

Maple Summit sandstone

Upper Devonian (Chautauquan) : Pennsylvania.

W. M. Laird, 1941, *Pa. Topog. and Geol. Survey Progress Rept.* 126, p. 8 (footnote).

Maquam group

Middle Ordovician (Chazyan) : Vermont.

Marshall Kay and W. M. Cady, 1947, *Science*, v. 105, no. 2736, p. 601.

Mara formation

Precambrian or Paleozoic: British Columbia, Canada.

A. G. Jones, 1948, Canada Geol. Survey Paper 48-4, p. 3.

Maracas beds

Jurassic: Trinidad, British West Indies.

H. H. Suter, 1951, Colonial Geology and Min. Res., v. 2, no. 3, p. 190 [1952].

Maraval beds

Jurassic: Trinidad, British West Indies.

H. H. Suter, 1951, Colonial Geology and Min. Res., v. 2, no. 3, p. 190 [1952].

Marble limestone

Precambrian (Chuaran): Arizona.

Charles Keyes, 1938, Pan-Am. Geologist, v. 70, no. 2, p. 107, 112-113.

Marble Island quartzite

Precambrian (Huronian): Northwest Territories (Keewatin), Canada.

J. B. Tyrrell, 1897, Canada Geol. Survey Ann. Rept., v. 9, p. 170.

Marburg schist

Precambrian (?): Pennsylvania and Maryland.

A. I. Jonas and G. W. Stose, 1938, Washington Acad. Sci. Jour., v. 28, no. 8, p. 346-347.

Marca shale member (of Moreno formation)

Upper Cretaceous: California.

M. B. Payne, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1954.

March formation

Lower Ordovician (Beekmantown): Ontario, Canada.

A. E. Wilson, 1937, Royal Soc. Canada Trans., ser. 3, v. 31, sec. 4, p. 46, 52.

Maremu beds

See Malam beds.

Maretburg facies (of Muldraugh formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 212-214.

Margrethetal series

Middle Devonian: Northeast Greenland.

Heinrich Butler, 1954, Meddel. om Grønland, bind 116, nr. 7, p. 45-54, 93-94, 97-98, 108, 113-114.

Maria formation

Post-Cambrian: California.

W. J. Miller, 1944, Calif. Jour. Mines and Geology, v. 40, no. 1, p. 25-28.

Maria plutonic complex

Paleozoic or Mesozoic: California.

W. J. Miller, 1944, Calif. Jour. Mines and Geology, v. 40, no. 1, p. 29-32.

Maria Creek limestone member (of Shelburn formation)

Pennsylvanian: Indiana.

C. A. Malott, 1947, Ind. Acad. Sci. Proc., v. 57, p. 125 [1948].

F. E. Kottlowski, 1954, U. S. Geol. Survey Coal Inv. Map C 11.

Marian group

Precambrian (Archean): Northwest Territories (Mackenzie), Canada.

C. S. Lord, 1939, Canada Geol. Survey Paper 39-5, p. 6-7.

Mariana limestone

Pleistocene: Mariana Islands (Tinian and Saipan).

Risaburo Tayama, 1936, Geomorphology, geology, and coral reefs of Tinian Island together with Aguijan and Naftan Islands: Tohoku Univ., Inst. Geology and Paleontology Contr. in Japanese Language, no. 21, p. 26-27, 31 [English translation in library of U. S. Geol. Survey, p. 25-27, 31-32].

Josiah Bridge in W. S. Cole and Josiah Bridge, 1953, U. S. Geol. Survey Prof. Paper 253, p. 12-13.

Maridale formation

Cretaceous (Aptian or Albian): Trinidad, British West Indies.

A. G. Hutchison, 1938, Bol. Geología y Minería (Venezuela), v. 2, nos. 2-4 (English ed.), p. 232-233, 235 (table).

Marigot formation

Paleocene: Haiti.

Jacques Butterlin, [1952], Résumé de thèse présentée à la Sorbonne, La géologie de la République d'Haïti et ses rapports avec celle des régions voisines (mimeo.), p. 3; 1954, Inst. Français d'Haïti Mem. 1, p. 57.

Mariiru beds

Eocene: Mariana Islands (Rota).

Risaburo Tayama, 1939, Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour., v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey; 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 49, table 4 [English translation in library of U. S. Geol. Survey, p. 59].

Maringouin formation

Mississippian and/or Pennsylvanian: New Brunswick, Canada.

G. W. H. Norman, 1941, Canada Geol. Survey Map 647A.

Marino agglomerate

Eocene: Mariana Islands (Tinian).

Risaburo Tayama, 1939, Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour., v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey; 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 48, table 4 [English translation in library of U. S. Geol. Survey, p. 57].

Marino beds

Eocene: Mariana Islands (Tinian).

Risaburo Tayama, 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 51, table 4 [English translation in library of U. S. Geol. Survey, p. 61].

Marjo Canyon diorite

Age unknown: California.

K. J. Hsu, 1955, Calif. Univ. Dept. Geol. Sci. Bull., v. 30, no. 4, p. 300-301, map 1.

Markgraf member (of Joliet formation)

Silurian (Niagaran): Illinois.

D. L. Graf, 1952, Ill. Geol. Survey Rept. Inv. 161, p. 3.

Markham Mill formation

Pennsylvanian (Bendian): Oklahoma.

B. H. Harlton, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 7, p. 854, 884-886.

Marlboro member (of Hudson River formation)

Ordovician: New York.

P. H. Bird, 1941, N. Y. Acad. Sci. Trans., ser. 2, v. 3, no. 5, p. 113-114.

Marmolejo formation

Lower Cretaceous: California.

N. L. Talliaferro, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 4, p. 459.

Marmorvigen conglomerate

Upper Precambrian (Greenlandian) (?): North Greenland.

Erdhart Frankl, 1955, *Meddel. om Grønland*, bind 103, nr. 7, p. 13, 16, 32 (footnote).

Marquer formation

Pliocene, upper: Baja California, Mexico.

I. F. Wilson, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 9, p. 1768.

Marquez shale member (of Reklaw formation)

Eocene, middle (Claiborne): Texas.

H. B. Stenzel, 1938, *Tex. Univ. Bur. Econ. Geol. Pub.* 3818, p. 20, 71-78 [1939].

Marron formation

Eocene: British Columbia, Canada.

H. S. Bostock, 1940, *Canada Geol. Survey Map* 341A.

Marrowstone shale

Oligocene: Washington.

J. W. Durham, 1944, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 27, no. 5, p. 104 (fig. 2), 106.

Marshall diorite

Precambrian (?): Washington.

M. C. Schroeder, 1952, *Wash. Dept. Conserv. Devel., Div. Mines and Geology Bull.* 40, p. 7, 21-23, pl. 1.

Marshall Bay formation

Lower Cambrian: North Greenland.

Christian Poulsen, 1940, *Meddel. Dansk Geol. Foren.*, bind 9, hefte 5, p. 638-639, 641.

Marshall Creek breccia

Upper Cretaceous (?): Utah.

J. H. Mackin, 1947, *Utah Geol. Soc. Guidebook* 2, p. 9-12.

Marsh Brook submember (of Thorburn member of Stellarton series)

Pennsylvanian: Nova Scotia, Canada.

W. A. Bell, 1940, *Canada Geol. Survey Mem.* 225, p. 44, 45 [1941].

Marsland formation

Miocene: Nebraska and Wyoming.

C. B. Schultz, 1938, *Am. Jour. Sci.*, 5th ser., v. 35, no. 210, p. 443-444.

Marston member (of Mount Head formation)

Carboniferous: Alberta, Canada.

R. J. W. Douglas, 1953, *Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 68.

Marten River granite

Precambrian (Archean): Ontario, Canada.

W. G. Q. Johnston, 1954, *Geol. Soc. America Bull.*, v. 65, no. 11, p. 1054.

Marthaville formation

Eocene (Wilcox): Louisiana.

B. W. Blanpied and R. T. Hazzard, 1939, *Shreveport Geol. Soc. Guidebook 14th Ann. Field Trip*, p. 128 (correlation chart).

G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 60-61.

Martin Creek limestone

Middle Ordovician : Virginia.

R. L. Miller and W. P. Brosgé, 1950, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 104.

Martin Ridge schist

Pre-Ordovician (?) : Washington.

E. A. Youngberg and T. L. Wilson, 1952, Econ. Geology, v. 47, no. 1, p. 3.

Marvin beds*See* Marvin Quarry bed.**Marvin Quarry bed**

Middle Devonian : Michigan.

[G. M. Ehlers], 1938, Mich. Acad. Sci., Arts and Letters Sec. Geology and Mineralogy [Guidebook] 8th Ann. Field Excursion, [fig. 2] after p. 8.

W. A. Kelly, 1940, Mich. Acad. Sci., Arts and Letters Sec. Geology and Mineralogy [Guidebook] 10th Ann. Field Excursion, [p. 1, figs. 4, 6, 7], map 1.

Marysville sand member (of Vashon drift)

Pleistocene : Washington.

R. C. Newcomb, 1952, U. S. Geol. Survey Water-Supply Paper 1135, p. 26, 27, pl. 1.

Mascoma group

Upper Devonian (?) (Oliverian magma series) : New Hampshire.

C. A. Chapman and others, 1938, Geologic map and structure sections of the Mascoma quadrangle, New Hampshire (1 : 62,500) : N. H. Highway Dept.

C. A. Chapman, 1939, Geol. Soc. America Bull., v. 50, no. 1, p. 143.

Mascot dolomite

Lower Ordovician : Tennessee and Virginia.

John Rodgers, 1943, Geologic map of Copper Ridge district, Hancock and Grainger Counties, Tennessee (1 : 24,000) : U. S. Geol. Survey Strategic Minerals Inv. Prelim. Map.

C. R. L. Oder and H. W. Miller, 1945, Am. Inst. Mining and Metall. Engineers (Mining Technology, v. 9, no. 3) Tech. Pub. 1818, p. 1, 2 (table 1).

Masefau volcanics

Pliocene (?) : Samoa Islands (Tutuila).

H. T. Stearns, 1944, Geol. Soc. America Bull., v. 55, no. 11, p. 1285-1288.

G. A. Macdonald, 1944, Geol. Soc. America Bull., v. 55, no. 11, p. 1336-1337.

Maskerchugg granite

Mississippian (?) : Rhode Island.

A. W. Quinn, 1952, Bedrock geology of the East Greenwich quadrangle, Rhode Island : U. S. Geol. Survey Geol. Quadrangle Map [GQ 17].

Mata Chin formation

Cretaceous and Eocene : Panama Canal Zone.

R. T. Hill, 1898, Harvard Coll. Mus. Comp. Zoology Bull., v. 28, no. 5, p. 187-189.

Matafoa breccia

Pliocene or Pleistocene, lower : Samoa Islands (Tutuila).

R. A. Daly, 1924, Carnegie Inst. Washington Pub. 340, p. 100, 105, 129.

Matafao trachyte

Pliocene or Pleistocene, lower : Samoa Islands (Tutuila).

R. A. Daly, 1924, Carnegie Inst. Washington Pub. 340, p. 105, 129-130.

Matalanim beds*See* Metalanim beds.

Matane shale

Lower Ordovician : Quebec, Canada.

Rudolf Ruedemann, 1937, *Am. Jour. Sci.*, ser. 5, v. 33, p. 59, 62.

Matansa limestone

Eocene, upper : Mariana Islands (Saipan).

Risaburo Tayama, 1938, *Geomorphology, geology, and coral reefs of Saipan Island : Tropical Industry Inst., Palau, South Sea Islands, Bull. 1* [English translation in library of U. S. Geol. Survey, p. 52-53].

Josiah Bridge *in* W. S. Cole and Josiah Bridge, 1953, *U. S. Geol. Survey Prof. Paper 253*, p. 7-8.

Matansya limestone

See Matansa limestone.

Mataranim beds

See Metalanim beds.

Mather sediments

Precambrian (Keewatin) : Ontario, Canada.

G. L. Fletcher and T. N. Irvine, 1954, *Ontario Dept. Mines Ann. Rept.*, v. 63, pt. 5, p. 15.

Matthew formation

Precambrian or Lower Cambrian : British Columbia, Canada.

A. H. Lang, 1938, *Canada Geol. Survey Paper 38-16*, p. 13.

Maudlow conglomerate lentil (in Livingston formation)

Paleocene : Montana.

W. J. McMannis, 1955, *Geol. Soc. America Bull.*, v. 66, no. 11, p. 1410, pl. 7.

Maurice formation

Upper Cambrian : Montana.

Erling Dorf and Christina Lochman, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 275-276.

Maverick shale

Precambrian : Arizona.

B. S. Butler and E. D. Wilson, 1938, *Ariz. Bur. Mines Bull. 145, Geol. Ser. 12*, pl. 3.

Max Meadows fault breccia

Upper Paleozoic : Virginia.

B. N. Cooper and J. C. Haff, 1940, *Jour. Geology*, v. 48, no. 8, pt. 2, p. 945-974.

Maya formation

See Moya formation.

Mayfield member (of Mt. Simon formation)

Upper Cambrian : Illinois (subsurface).

J. S. Templeton, Jr., 1950, *Ill. Acad. Sci. Trans.*, v. 43, p. 155.

Mayflower Lake quartz diorite

Pre-Carboniferous : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper 5*, p. 38.

May Pond member (of Littleton formation)

Lower Devonian : New Hampshire.

M. T. Heald, 1950, *Geol. Soc. America Bull.*, v. 61, no. 1, p. 50-51, 70, 79.

Mayrán formation

Pleistocene (?) : Coahuila, Mexico.

R. W. Imlay, 1936, *Geol. Soc. America Bull.*, v. 47, no. 7, p. 1135.

Mazapil conglomerate

Tertiary: Zacatecas, Mexico.

Roger Van Vloten, 1955, *Leidse Geol. Meded.*, deel 19, p. 154.**Mazatzal granite**

Precambrian: Colorado and Arizona.

N. E. A. Hinds, 1936, *Carnegie Inst. Washington Pub.* 463, pt. 2, p. 101.**Meach Lake conglomerate**

Precambrian: Ontario, Canada.

J. B. Mawdsley, 1930, *Royal Soc. Canada Trans.*, ser. 3, v. 24, sec. 4, p. 104-107.**Mead limestone**

Middle Cambrian: Arizona.

E. T. Schenk and H. E. Wheeler, 1942, *Jour. Geology*, v. 50, no. 7, p. 894-896.**Meadow rhyolitic tuff**

Tertiary: Wyoming.

R. E. Wilcox, 1944, *Geol. Soc. America Bull.*, v. 55, no. 9, p. 1052.**Meagher facies (of Belt series)**

Precambrian: Alberta, Canada; and Montana.

C. L. Fenton and M. A. Fenton, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1877.**Mealy Mountains anorthosite**

Precambrian: Newfoundland (Labrador), Canada.

D. M. Baird, 1953, *Newfoundland Geol. Survey Inf. Circ.* 4 (revised), p. 137.**Mecca formation**

Miocene: California.

T. W. Dibblee, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, chap. 2, p. 24.**Medicine flow**

Recent: California.

H. A. Powers, 1932, *Am. Mineralogist*, v. 17, no. 7, p. 276, 288, pl. 1.**Medicine Bow Peak quartzite**

Precambrian: Wyoming.

W. J. Kivi and R. W. Mallory, 1940, *in Kans. Geol. Soc. Guidebook 14th Ann. Field Conf.*, p. 107.**Medicine Lodge beds**

Miocene(?) : Idaho and Montana.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 369-370, pl. 1.**Medicine Lodge member (of Bearpaw formation)**

Upper Cretaceous: Alberta, Canada.

D. M. Loranger and J. Gledlie, 1953, *Alberta, Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 164-165, 167.**Medicine Lodge volcanics**

Oligocene, upper, to Miocene, lower: Montana.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 375-376, pl. 1.**Medill volcanic zone (of Eagleford formation)**

Cretaceous: Texas.

R. T. Hazzard, 1939, *Shreveport Geol. Soc. Guidebook 14th Ann. Field Trip*, p. 138, 139.

Medinilla (Lower and Upper) limestone

Oligocene [Aquitanian]: Mariana Islands (Farallon de Medinilla).

Risaburo Tayama, 1952, Japan Hydrog. Office Bull., v. 11, table 4.

Medusa member (of Pecatonica formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., figs. 3, 10, 16.

Meek group

Pennsylvanian: Wyoming and Colorado.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, Nebr. Geol. Survey Bull. 13, p. 2, 3, 22, 44.

Meetinghouse slate

Middle Ordovician (?): Vermont and New Hampshire.

C. G. Doll, [1945?], Vt. State Geologist 24th Rept., p. 19.

Mejas beds or limestone

See Mejas limestone.

Mejas limestone

Oligocene: Trinidad, British West Indies.

Alfred Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1580 (chart).

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, table facing p. 572.

Melajo clay

Pleistocene: Trinidad, British West Indies.

H. G. Kugler, 1950, Asociación Venezolano de Geología, Minería y Petróleo Bol., tomo 2, no. 1, p. 48 (correlation chart), 74.

Melbourne limestone

Lower Cambrian: Quebec, Canada.

H. C. Cooke, 1954, Geol. Assoc. Canada Proc., v. 6, pt. 2, p. 40-41.

Melita formation

Upper Jurassic: Manitoba, Canada; and North Dakota.

D. F. Stott, 1955, Manitoba Dept. Mines and Nat. Res. Pub. 54-2, p. 22-25, 37, 45-47.

Melville formation

Paleocene: Montana.

G. G. Simpson, 1937, U. S. Natl. Mus. Bull. 169, p. 25.

Memramcook formation

Mississippian: New Brunswick, Canada.

G. W. H. Norman, 1941, Canada Geol. Survey Map 647A.

Menan tuff

Pleistocene: Idaho.

H. T. Stearns, Lynn Crandall, and W. G. Steward, 1938, U. S. Geol. Survey Water-Supply Paper 774, pl. 4 (geol. map).

Menchaca limestone

Lower Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1940, Geol. Soc. America Bull., v. 51, no. 1, p. 123.

Menihék formation

Precambrian (Proterozoic): Quebec and Newfoundland (Labrador), Canada.

H. R. Rice, 1949, Canadian Mining Jour., v. 70, no. 9, p. 71-72.

J. M. Harrison, 1952, Canada Geol. Survey Paper 52-20, p. 13.

Mercersburg formation

Middle Ordovician : Pennsylvania.

L. C. Craig, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1964.

Merchiston formation

Cretaceous (?) : Tobago, British West Indies.

J. C. Maxwell, 1948, Geol. Soc. America Bull., v. 59, no. 8, p. 823, 828.

Mercy sandstone lentil (in Tierra Loma shale member of Moreno formation)

Upper Cretaceous : California.

M. B. Payne, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1954.

Meriwitica tongue

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, Carnegie Inst. Washington Pub. 563, p. 14, 29, 80-82.

Merizo limestone

Recent : Mariana Islands (Guam).

Risaburo Tayama, 1952, Coral reefs in the South Seas : Japan Hydrog. Office Bull. v. 11, p. 58-59, table 4 [English translation in library of U. S. Geol. Survey. p. 69].

Mermentau member (of Le Moyen formation)

Recent : Louisiana (subsurface and surface).

P. H. Jones *in* P. H. Jones, A. N. Turcan, Jr., and H. E. Skibitzke, 1954, La. Dept. Conserv. Geol. Bull. 30, p. 90-94.**Merrimac granodiorite**

Late Jurassic (?) : California.

Anna Hietanen, 1951, Geol. Soc. America Bull., v. 62, no. 6, p. 583, 584, pl. 1.

Mesa formation

Upper Mesozoic or Tertiary, lower : Sonora, Mexico.

W. G. Valentine, 1936, Geol. Soc. America Bull., v. 47, no. 1, p. 74-76.

Mesa Rica sandstone member (of Purgatoire formation)

Lower Cretaceous : New Mexico.

Ernest Dobrovoly and C. H. Summerson, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 62, sheet 1.

Mescalera series

Paleozoic (Late Carbonic) : Arizona and New Mexico.

Charles Keyes, 1940, Pan-Am. Geologist, v. 74, no. 2, p. 106 (chart).

Meseta Blanca sandstone member (of Yeso formation)

Permian : New Mexico.

G. H. Wood and S. A. Northrop, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 57.

Mesillan series

Paleozoic (Mid-Siluric) : New Mexico.

[C. R.] Keyes, 1942, Pan-Am. Geologist, v. 77, no. 4, p. 319.

Mesquite schist

Precambrian (?) : California.

T. W. Dibblee, Jr., 1952, Calif. Dept. Nat. Res., Div. Mines Bull. 160, p. 14.

Metacom granite-gneiss

Pre-Carboniferous : Rhode Island.

A. W. Quinn and G. H. Springer, 1954, U. S. Geol. Survey Geol. Quadrangle Map GQ 42.

Metalanim (Matalanim) beds

Miocene: Caroline Islands (Ponape).

Risaburo Tayama, 1939, Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour., v. 46, no. 549, p. 347 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 69, table 5 [English translation in library of U. S. Geol. Survey, p. 84].

Metaline limestone formation

Middle Cambrian: Washington.

C. F. Park, Jr., 1938, Econ. Geology, v. 33, no. 7, p. 713, 714 (fig. 2).

C. F. Park, Jr., and R. S. Cannon, Jr., 1943, U. S. Geol. Survey Prof. Paper 202, p. 6, 17-19, pl. 1.

Methow gneiss

Age uncertain (pre-Chelan batholith): Washington.

J. D. Barksdale, 1948, Northwest Science, v. 22, no. 4, p. 165, 166-167.

Metis shale

Lower Ordovician: Quebec, Canada.

C. D. Walcott, 1920, Smithsonian Misc. Coll., v. 67, no. 6, p. 267-268.

Metralla sandstone member (of Tejon formation)

Eocene: California.

J. G. Marks, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1922.

Mexicana stage

Quaternary: Mexico.

A. R. V. Arellano, 1953, Congreso Cient. Mexicano Mem., tomo 3, p. 182, 186.

Mezcal beds

Lower Cretaceous: Michoacan, Mexico.

E. J. Guzman, 1950, Asociación Mexicana Geólogos Petroleros Bol., v. 2, no. 2, strat. columns.

Midas formation

Precambrian and/or Cambrian: British Columbia, Canada.

S. S. Holland, 1954, British Columbia Dept. Mines Bull. 34, p. 19-22.

Midas limestone member (of Midas formation)

Precambrian and/or Cambrian: British Columbia, Canada.

S. S. Holland, 1954, British Columbia Dept. Mines Bull. 34, p. 22.

Midco (lacustrine) member (of Wellington formation)

Permian: Oklahoma.

G. O. Raasch, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1928.

Midden-Curaçao beds

Upper Cretaceous or Paleocene: Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, Geologie en geohydrologie van het Eiland Curaçao: Delft, J. Waltman, Jr., p. 23-25, 56.

Middlebury limestone

Middle Ordovician (Chazyan): Vermont.

W. M. Cady, 1945, Geol. Soc. America Bull., v. 56, no. 5, p. 524, 552-554.

Middle Creek limestone ledge (in Graneros formation)

Cretaceous: South Dakota.

M. E. Wing, 1940, S. Dak. State Geol. Survey Rept. Inv. 35, p. 6, chart facing p. 10.

Middle Curaçao beds

See Midden-Curaçao beds.

Middle River group

Silurian or Lower Devonian: Nova Scotia, Canada.

L. J. Weeks, 1954, *Canada Geol. Survey Mem.* 277, p. 57-62.

Midnight Peak formation

Upper Cretaceous: Washington.

J. D. Barksdale, 1948, *Northwest Science*, v. 22, no. 4, p. 165, 173-174.

Midridge limestone

Lower Mississippian (Kinderhook): Utah.

C. S. Bacon, Jr., 1948, *Geol. Soc. America Bull.*, v. 59, no. 10, p. 1037, fig. 2.

Miette member (of Minnewanka formation)

Devonian: Alberta, Canada.

E. M. Kindle, 1929, *Am. Jour. Sci.*, ser. 5, v. 18, p. 180-181.

Mifflin member (of Platteville formation)

Middle Ordovician: Wisconsin.

C. A. Bays, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 269.

Milan limestone member (of Wellington formation)

Permian: Kansas.

G. H. Norton, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1557; 1939, v. 23, no. 12, p. 1757-1759.

Mildale gabbro

Precambrian (Archean): Quebec, Canada.

W. W. Weber, 1951, *Quebec Dept. Mines Prelim. Rept.* 255, p. 11.

Mile End formation

Middle Ordovician (Trenton): Quebec, Canada.

T. H. Clark, 1944, *Royal Soc. Canada Trans.*, sec. 4, v. 38, p. 29; 1952, *Quebec Dept. Mines Geol. Rept.* 46, p. 63-64.

Miles Canyon basalts

Tertiary: Yukon, Canada.

J. O. Wheeler, 1952, *Canada Geol. Survey Paper* 52-30, p. 8-9.

Milk Creek beds

Pliocene, lower or middle: Arizona.

C. O. Reed, 1950, *Plateau*, v. 22, no. 4, p. 75-76.

Milkish Head granite and granodiorite

Pre-Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 38-39.

Mill member (of Red Rose formation)

Upper Jurassic and Lower Cretaceous: British Columbia, Canada.

R. E. Sommers, 1955, *British Columbia Bur. Mines Ann. Rept.* 1954, p. A89-A90.

Millard limestone

Middle Cambrian: Utah.

H. E. Wheeler, 1948, *Nev. Univ. Bull., Geology and Mining Ser.*, no. 47, p. 35-36.

Millboro shale

Middle and Upper Devonian: Virginia.

B. N. Cooper, 1939, *Va. Geol. Survey Bull.* 53, p. 42-44.

Charles Butts, 1940, *Va. Geol. Survey Bull.* 52, pt. 1, p. 308-314.

Mill City glacial stage

Pleistocene: Oregon.

T. P. Thayer, 1939, *Oreg. State Dept. Geology and Mineral Res. Bull.* 15, p. 20, 21-23.**Miller Lake porphyry**

Precambrian: Ontario, Canada.

A. N. Miller, 1938, *Canadian Mining Jour.*, v. 59, no. 11, p. 608.**Miller Mountain formation**

Lower Cambrian: Nevada.

H. G. Ferguson, S. W. Muller, and S. H. Cathcart, 1954, *U. S. Geol. Survey Geol. Quadrangle Map GQ 45*.**Millersville cyclothem (including Millersville limestone)**

Pennsylvanian: Illinois.

E. F. Taylor and G. H. Cady, 1944, *Ill. State Geol. Survey Rept. Inv.* 93, p. 22-24.H. B. Wanless, 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 9, p. 1764 (table 2).**Millerton porphyry**

Precambrian: Ontario, Canada.

J. Blackshaw, 1943, *Canadian Inst. Mining and Metallurgy Trans.*, v. 46, p. 227.**Mills formation**

Upper Cretaceous (Chico): California.

J. M. Kirby, 1942, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 5, p. 899; 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 606.**Millsite flow (in Yellowknife group)**

Precambrian: Northwest Territories (Mackenzie), Canada.

C. E. G. Brown and A. S. Dadson, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 70-71.**Mill Street conglomerate (of Woodhill member of Franconia formation)**

Upper Cambrian: Minnesota.

C. A. Nelson, 1951, *Jour. Paleontology*, v. 25, no. 6, p. 774.R. B. Berg, 1954, *Geol. Soc. America Bull.*, v. 65, no. 9, p. 869-870.**Milneland granite**

Lower Paleozoic (Caledonian): East Greenland.

Herman Aldinger, 1935, *Meddel. om Grønland*, bind 99, nr. 1, p. 54, pl. 3.**Milne Land quartzite**

Age unknown: East Greenland.

Alfred Rosenkrantz *in* Lauge Koch, 1929, bind 73, afd. 2, nr. 1, p. 139.**Milo tongue (of West River shale)**

Upper Devonian: New York.

W. L. Grossman, 1944, *Geol. Soc. America Bull.*, v. 55, no. 1, p. 65-66.**Mimbres conglomerate**

Miocene(?) to Pliocene: New Mexico.

R. M. Hernon, W. R. Jones, and S. L. Moore, 1953, *N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 118 (map), 120.**Mimbres Peak formation**

Tertiary, upper: New Mexico.

F. J. Kuellmer and others, 1953, *in* *N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 42 (map), 47, 50 (map).H. L. Jicha, Jr., 1954, *N. Mex. State Bur. Mines Min. Res., Bull.* 37, p. 39, 45-47.

Miminiska series

Precambrian: Ontario, Canada.

V. K. Prest, 1944, Ontario Dept. Mines Ann. Rept., v. 51, pt. 3, p. 5-7.

Mina Grande formation

Permian: Texas.

C. C. Rix, 1953, in W. Tex. Geol. Soc. [Guidebook] Spring Field Trip, May 28-30, p. 5, 14, 15.

Minaville member (of Canajoharie formation)

Middle Ordovician (Mohawkian): New York.

G. M. Kay, 1937, Geol. Soc. America Bull., v. 48, no. 2, p. 268-270.

Minco division

Permian: Oklahoma and Kansas.

D. A. Green, 1937, Am. Assoc. Petroleum Geologists Bull., v. 21, no. 12, p. 1521-1525.

Mindi Hill beds

Eocene: Panama Canal Zone.

R. T. Hill, 1898, Harvard Coll. Mus. Comp. Zoology Bull., v. 28, no. 5 p. 180-181, 236.

Mine Creek cyclothem (including Mine Creek shale)

Pennsylvanian (Des Moines): Kansas, Missouri, and Nebraska.

J. M. Jewett, 1941, Kans. State Geol. Survey Bull. 38, pt. 11, p. 318-320; 1945, Bull. 58, p. 32-34, 65.

Mineral cyclothem or formation

Pennsylvanian (Des Moines) † Kansas.

G. E. Abernathy, 1937, Kans. Geol. Soc. Guidebook 11th Ann. Field Conf., p. 18, 20, 22; 1938, Kans. Geol. Soc. Trans., v. 41, p. 193, 195.

Mineral Bluff formation

Cambrian: Georgia.

V. J. Hurst, 1955, Ga. Geol. Survey Bull. 63, p. 55-56.

Mineral Fork tillite

Precambrian: Utah.

A. E. Granger and others, 1952, Utah Geol. Soc. Guidebook 8, p. 4-6.

Minersville shale member (of Friedrich formation)

Pennsylvanian (Virgil): Nebraska and Iowa.

G. E. Condra and E. C. Reed, 1938, Nebr. Geol. Survey Paper 12, p. 9.

Mingo River formation

Lower Ordovician: Northwest Territories (Devon Island), Canada.

V. E. Kurtz, A. H. McNair, and D. B. Wales, 1952, Am. Jour. Sci., v. 250, no. 9, p. 645-646.

Mings Bight formation

Ordovician (?): Newfoundland, Canada.

K. D. Watson, 1947, Newfoundland Geol. Survey Bull. 21, p. 10.

Mining Mountain granite gneiss

Precambrian: Ontario, Canada.

D. F. Hewitt, 1954, Ontario Dept. Mines Ann. Rept., v. 62, pt. 5, p. 27.

Mink Creek conglomerate

Pliocene: Idaho and Utah.

R. D. Adamson, C. T. Hardy, and J. Stewart Williams, 1955, Utah Geol. Soc. Guidebook 10, p. 2, 7-8.

Minnechaduzza beds (in Ash Hollow formation)

Pliocene (Ogallala) : Nebraska.

R. A. Stirton, 1939, *Am. Jour. Sci.*, v. 237, no. 6, p. 433.M. K. Elias, 1942, *Geol. Soc. America Special Paper* 41, p. 142.**Minneiska member (of Franconia formation)**

Upper Cambrian (St. Croixian) : Minnesota.

C. R. Stauffer, G. M. Schwartz, and G. A. Thiel, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1902; 1939, v. 50, no. 8, p. 1239.**Minto basalts**

Pliocene to Pleistocene : Oregon.

T. P. Thayer, 1936, *Jour. Geology*, v. 44, no. 6, p. 705, 709 (fig. 2), 713 (fig. 3).**Minto formation**

Pennsylvanian : New Brunswick, Canada.

J. E. Muller, 1949, *Canada Geol. Survey Paper* 49-13 (Prelim. Map 49-13A).**Minturn formation**

Pennsylvanian and Permian (?) : Colorado.

Ogden Tweto, 1949, *Colo. Sci. Soc. Proc.*, v. 15, no. 4, p. 152, 194-198, 205-206.**Minwah limy gneiss**

Cambro-Ordovician (?) : Maine.

L. W. Fisher, 1936, *Am. Mineralogist*, v. 21, no. 5, p. 323.**Miraflores basalt**

Miocene, lower : Panama Canal Zone. *

[T. F. Thompson], 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap. 3, p. 26.S. M. Jones, 1950, *Geol. Soc. America Bull.*, v. 61, no. 9, table 2.**Miroflores pumice**

Pre-Eocene : Panama Canal Zone.

R. T. Hill, 1898, *Harvard Coll. Mus. Comp. Zoology Bull.*, v. 28, no. 5, p. 198-199, 209.**Mirikattan limestone**

Recent : Mariana Islands (Rota).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands* : *Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, *Coral reefs in the South Seas* : *Japan Hydrog. Office Bull.*, v. 11, p. 58, table 4 [English translation in library of U. S. Geol. Survey, p. 69].**Misopá shales**

Oligocene : Tabasco and Chiapas, Mexico.

G. P. Salas and Ernesto Lopez Ramos, 1950, *Asociación Mexicana Geólogos Petroleros Bol.* v. 3, nos. 1-2, p. 30-31.**Missisquoibay series**

Cambrian and Ordovician : Quebec, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2, *Cambroevian pulsation*, pt. 1, *Caledonian and St. Lawrence geosynclines* : Peiping, China, University Press, Natl. Univ. Peking, p. 364.**Missler member (of Meade formation)**

Pleistocene : Kansas.

C. W. Hibbard, 1949, *Mich. Univ. Mus. Paleontology Contr.*, v. 7, no. 4, p. 67-68.

Mitchell Mesa rhyolite

Tertiary: Texas.

S. S. Goldich and M. A. Elms, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1197; 1949, v. 60, no. 7, p. 1161-1162.**Mitre Peak complex**

Tertiary, lower: Texas.

R. L. Ives, 1941, *Am. Jour. Sci.*, v. 239, no. 5, p. 346-348, 351-352.**Mixtepec-El Consuelo beds**

Lower Jurassic: Oaxaca, Mexico.

G. P. Salas, 1949, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 1, no. 2, p. 92-97.**Mobridge member (of Pierre shale)**

Upper Cretaceous: South Dakota.

W. V. Searight, 1937, *S. Dak. State Geol. Survey Rept. Inv.* 27, p. 44-49, pl. 3.**Moccasin Gap member (of Unicoi formation)**

Lower Cambrian: Tennessee.

H. W. Ferguson and W. B. Jewell, 1951, *Tenn. Div. Geol. Bull.* 57, p. 22-23.**Moccasin Springs formation**

Middle Silurian (Niagaran): Missouri, Oklahoma, and Illinois.

H. A. Lowenstam, 1949, *Ill. State Geol. Survey Rept. Inv.* 145, p. 16-18.**Moenave formation**

Upper Triassic (?): Arizona.

G. A. Williams, 1954, *U. S. Geol. Survey Trace Elements Inv. Rept. TEI-440*, p. 34.
Paul Averitt and others, 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 12, p. 2517, 2519.**Moisie series**

Precambrian (Grenville): Quebec, Canada.

H. R. Hogan, 1954, (abs.) *Canadian Mining Jour.*, v. 75, no. 6, p. 104.**Mokelumne formation**

Permian: California.

N. L. Taliaferro, 1951, *Calif. Dept. Nat. Res., Div. Mines Bull.* 154, pl. 1.**Mokuone member (of Makaweli formation)**

Pliocene (?): Hawaiian Islands (Kauai).

G. A. Macdonald, D. A. Davis, and D. C. Cox, 1954, *Volcano Letter* 526, p. 2.**Molalla formation**

Pliocene: Oregon.

E. M. Baldwin, 1950, *Geol. Soc. Oreg. Country News Letter*, v. 16, no. 11, p. 92.W. D. Lowry and E. M. Baldwin, 1952, *Geol. Soc. America Bull.*, v. 63, no. 1, p. 13-14, pl. 2.**Moleen formation**

Lower Pennsylvanian (Springeran-Atokan): Nevada.

R. H. Dott, Jr., 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 11, p. 2234-2243, fig. 2.**Molly Gibson formation**

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 297 (table); 1949, *Geol. Soc. America Mem.* 38, p. 30-31.**Monach formation**

Upper Jurassic or Lower Cretaceous: British Columbia, Canada.

W. H. Matthews, 1947, *British Columbia Dept. Mines Bull.* 24, p. 11-12.

Monahans formation

Quaternary : Texas.

R. M. Huffington and C. C. Albritton, Jr., 1941, *Am. Jour. Sci.*, v. 239, no. 5, p. 329-331.**Monarch glacial stage**

Pleistocene (upper Wisconsin) : Colorado.

R. L. Ives, 1937, (abs.) *Colo. Univ. Studies*, v. 25, no. 1, p. 75; 1938, *Geol. Soc. America Bull.*, v. 49, no. 7, p. 1060.**Monastery formation**

Lower Cambrian : Vermont.

P. H. Osberg, 1952, *Vt. Geol. Survey Bull.* 5, p. 42-49, 116.**Monck Lake leuco-granite gneiss**

Precambrian : Ontario, Canada.

Jack Satterly and D. F. Hewitt, 1955, *Ontario Dept. Mines Geol. Circ.* 2, p. 5.**Moncrief member (of Wasatch formation)**

Eocene, lower : Wyoming.

R. P. Sharp, 1948, *Jour. Geology*, v. 56, no. 1, p. 1-2.**Moncton group**

Mississippian : New Brunswick, Canada.

J. S. Stewart, 1941, *Canada Geol. Survey Map* 604A.**Mongean limestone member (of Saint Bartholomew formation)**

Eocene, middle : St. Bartholomew, French West Indies.

R. A. Christman, 1953, *Geol. Soc. America Bull.*, v. 64, no. 1, p. 69.**Mono Craters obsidian**

Pleistocene : California.

W. C. Putnam, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 1939.**Monos beds**

Upper Pennsylvanian : Sonora, Mexico.

Charles Schuchert, 1935, *Historical geology of the Antillean-Caribbean region* : New York, John Wiley and Sons, p. 138.**Montana Peak formation**

Cenozoic (?) : Arizona.

B. P. Webb and K. C. Coryell, 1954, *U. S. Atomic Energy Comm. RME-2009*, p. 7, pl. 1.**Mont Celsius series**

Devonian : Northeast Greenland.

Heinrich Butler, 1935, *Naturf. Gesell. Schaffhausen Mitt.*, Heft 12, p. 26-29, fig. 4.**Montediablan stage**

Pliocene, early : California.

D. E. Savage, 1955, *Calif. Univ. Pubs. Geol. Sci.*, v. 31, no. 1, p. 19-24.**Monteith formation**

Upper Jurassic or Lower Cretaceous : British Columbia, Canada.

W. H. Matthews, 1947, *British Columbia Dept. Mines Bull.* 24, p. 10-11.**Montezuma formation**

Pleistocene : California.

C. E. Weaver, 1949, *Geol. Soc. America Mem.* 35, p. 16 (table 3), 103-106.**Montgomery formation**

Pleistocene : Louisiana.

H. N. Fisk, 1938, *La. Dept. Conserv. Geol. Bull.* 10, p. 160-163.

Mont Hogbom series

Upper Devonian : Northeast Greenland.

Henrich Butler, 1935, *Naturf. Gesell. Schaffhausen Mitt.*, Heft 13, p. 5.**Montreal formation**

Middle Ordovician (Trenton) : Quebec, Canada.

T. H. Clark, 1944, *Royal Soc. Canada Trans.*, sec. 4, v. 38, p. 29; 1952, Quebec Dept. Mines Geol. Rept. 46, p. 65.**Montserrat sand member (of Upper Brasso formation)**

Miocene : Trinidad, British West Indies.

Ernst Lehner, 1935, [France] *Office national des combustibles liquides Annales*, 10^e année, no. 4, p. 700, 716 (table).H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 54.**Moon Hill quartzite member (of Skookum formation)**

Precambrian : Washington.

M. C. Schroeder, 1952, *Wash. Dept. Conserv. Devel., Div. Mines and Geology Bull.* 40, p. 9, 13-14.**Moore formation**

Pennsylvanian (Atokan) : Oklahoma (subsurface).

R. R. Wheeler, 1947, *World Oil*, v. 127, no. 7, p. 156, 161.**Moore Hill formation**

Middle Ordovician (Black River) : Ontario, Canada.

V. J. Okulitch, 1939, *Royal Canadian Inst. Trans.*, v. 22, pt. 2, p. 329-331.**Moorehouse member (of Onondaga limestone)**

Middle Devonian : New York.

W. A. Oliver, Jr., 1954, *Geol. Soc. America Bull.*, v. 65, no. 7, p. 628-629, 637.**Moorling Cove volcanics**

Ordovician (?) : Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 92.**Mooringsport formation**

Lower Cretaceous (Comanche series) : Subsurface in Arkansas, Louisiana, and Texas.

R. W. Imlay, 1940, *Ark. Geol. Survey Inf. Circ.* 12, p. 36-37.**Moose Jaw group**

Devonian : Subsurface in Saskatchewan and Manitoba, Canada.

J. R. Ower, 1952, *Oil in Canada*, v. 5, no. 1, p. 54; 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 395.**Moose Lake conglomerate**

Precambrian (Knife Lake) : Minnesota.

J. T. Stark and V. G. Sleight, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1032 (table 2), 1038 (fig. 4).**Moose Lake granite**

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 128-129.**Moose Mountain member (of Kootenay formation)**

Lower Cretaceous : Alberta, Canada.

H. H. Beach, 1943, *Canada Geol. Survey Mem.* 236, p. 37.

Moose River formation

Lower and Middle Devonian : Ontario, Canada.

A. E. Wilson, J. S. Stewart, and J. F. Caley, 1941, *Royal Soc. Canada Trans.*, ser. 3, v. 35, sec. 4, p. 169.

Moqui member (of Moenkopi formation)

Lower Triassic : Arizona.

E. D. McKee, 1954, *Geol. Soc. America Mem.* 61, p. 18, 19.

Morales caliche

Pleistocene : Cuenca de México, Mexico.

Kirk Bryan, 1948, *Soc. Geol. Mexicana Bol.*, tomo 13, p. 12, pl. 1.

Moravian Heights formation

Precambrian : Pennsylvania.

B. L. Miller, 1939, *Pa. Geol. Survey*, ser. 4, Bull. G 16, p. 6.

D. M. Fraser *in* B. L. Miller, D. M. Fraser, and R. L. Miller, 1939, *Pa. Geol. Survey*, ser. 4, Bull. C 48, p. 170-175.

Morcate formation

Oligocene, lower : Cuba.

Jorge Brodermann, 1949, *Soc. Cubana Ingenieros Rev.*, v. 48, no. 3, chart facing p. 330.

Moreau gravels

Pleistocene (pre-Wisconsin) : South Dakota.

J. C. Mickelson and C. L. Baker, 1950, *Areal geology of the Mouth of Moreau quadrangle [geol. map, 1 : 62,500]* : S. Dak. Geol. Survey.

Morehead facies (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 177-191.

Morehouse formation

Pennsylvanian (?) : Subsurface in Louisiana and Arkansas.

R. W. Imlay, 1940, *Ark. Geol. Survey Inf. Circ.* 12, p. 7-8.

Moretown formation

Ordovician : Vermont.

P. H. Osberg, 1952, *Vt. Geol. Survey Bull.* 5, p. 116, 117.

Morgan Creek limestone member (of Wilberns formation)

Upper Cambrian : Texas.

Frederick Romberg and V. E. Barnes, 1944, *Geophysics*, v. 9, no. 1, p. 88.

P. E. Cloud, Jr., V. E. Barnes, and Josiah Bridge, 1946, *Tex. Univ. Bur. Econ. Geology Pub.* 4301, p. 149, 155 [1945].

Morgan Lewis beds (in Scotland formation)

Eocene, lower : Barbados, British West Indies.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1553.

Mørkebjerg formation

Upper Precambrian (Greenlandian) : Northeast Greenland.

H. R. Katz, 1954, *Meddel. om Grønland*, bind 72, afd. 2, nr. 4, p. 51-54, 59-61.

Morne Daniel gravel series

Pleistocene : Dominica, British West Indies.

J. W. W. Spencer, 1902, *Geol. Soc. London Quart. Jour.*, v. 58, pl. 3, p. 348.

F. R. C. Reed, 1921, *Geology of the British Empire* : London, Edward Arnold and Co., p. 170 ; 1949, 2d ed., p. 252.

Morne Delmas formation

Miocene: Haiti.

Jacques Butterlin, 1950, *Rev. Soc. Haïtienne Histoire, Géographie et Géologie*, v. 21, no. 76, p. 56; 1954, *Inst. Français d'Haïti Mem.* 1, p. 65.

Morne Diablo beds

Oligocene: Trinidad, British West Indies.

R. A. Liddle, [1928], *The geology of Venezuela and Trinidad: Fort Worth, Tex.*, J. P. MacGowan, p. 458-459.

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1444-1445, 1451 (chart).

Morne Roche beds

Eocene, upper: Trinidad, British West Indies.

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1451 (chart); 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 42, 45.

Morne Vent limestone

Oligocene, upper: Martinique, French West Indies.

Jean Giraud, 1918, *Esquisse géologique de la Martinique avec carte géologique: Hanoi-Haiphong*, Imprimerie d'Extrême-Orient, p. 12.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581, 1596.

Moroni formation

Tertiary, middle or upper: Utah.

S. L. Schoff, 1938, *Ohio State Univ. Abs. Doctors' Dissert.* 25, p. 381.

Morrison formation

Cambrian and older (?): Nova Scotia, Canada.

L. J. Weeks, 1947, *Canada Geol. Survey Paper (Prelim. Map)* 47-17.

Morrison River formation

Lower Cambrian: Nova Scotia, Canada.

Nova Scotia Department of Mines Engineering Staff, [1950?], *Geology of Nova Scotia: Halifax, Nova Scotia*, p. 7.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 34-36.

Morro member (of Palliser formation)

Upper Devonian: Alberta, Canada.

R. deWit and D. J. McLaren, 1950, *Canada Geol. Survey Paper* 50-23, p. 6.

Morses Line slate

Lower Ordovician: Vermont.

Phillip Fowler, 1950, *Vt. Geol. Survey Bull.* 2, pl. 1.

A. B. Shaw, 1951, *Jour. Paleontology*, v. 25, no. 1, p. 98.

Mortimer member (of Dunleith formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 33, fig. 3.

Morton granite gneiss

Precambrian: Minnesota.

G. A. Thiel and C. E. Dutton, 1935, *Minn. Geol. Survey Bull.* 25, p. 88-94, pl. 5.

E. H. Lund, 1953, *Econ. Geology*, v. 48, no. 1, p. 46-52.

Morton shale

Pennsylvanian (Virgilian): Nebraska, Iowa, and Kansas.

G. E. Condra and E. C. Reed, 1943, *Nebr. Geol. Survey Bull.* 14, p. 41-42, 43, 44.

Mortons volcanics

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1936, Newfoundland Geol. Survey Bull. 3, p. 7-8.

Moses Hill beds

Upper Cambrian to Lower Ordovician (Ozarkian): New York.

A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines: Peking, China, University Press, Natl. Univ. Peking, p. 518.

Mosherville sandstone member (of Gailor dolomite)

Lower Ordovician: New York.

D. W. Fisher and G. F. Hanson, 1951, Am. Jour. Sci., v. 249, no. 11, p. 806.

Mosley Hill formation

Oligocene (Vicksburg): Louisiana.

G. E. Murray, 1952, Am. Assoc. Petroleum Geologists Bull., v. 36, no. 4, p. 703-706.

Moss Back member (of Chinle formation)

Upper Triassic: Utah and Colorado.

J. H. Stewart and J. F. Smith, Jr., 1954, Intermountain Assoc. Petroleum Geologists [Guidebook] 5th Ann. Field Con., p. 29, 31, 32.

Mossman picritic basalt

Pleistocene (?): Hawaiian Islands (Maui).

G. A. Macdonald in H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 230, 247-249.

Mossy Ridge lentil (of Verda member of Yazoo clay)

Eocene, upper: Louisiana.

H. N. Fisk, 1938, La. Dept. Conserv. Geol. Bull. 10, p. 78, 103-104.

Motherlode series

Precambrian: British Columbia, Canada.

R. A. McGuire, 1941, The Miner, v. 14, no. 10, p. 58.

Moulton sandstone member (of Oakville formation)

Miocene: Texas.

B. C. Renick, 1936, Tex. Univ. Bur. Econ. Geology Bull. 3619, p. 77, 78-79, table 1.

Moulton Hill granite

Ordovician or Silurian: Quebec, Canada.

R. C. Rowe, 1944, Canadian Mining Jour., v. 65, no. 1, p. 4 (map).

Mound Ridge member (of Oneota formation)

Lower Ordovician: Wisconsin.

G. O. Raasch, 1952, Ill. Acad. Sci. Trans., v. 45, p. 87-88, 92.

Mountain Meadows dacite porphyry

Mesozoic or younger (pre-middle Miocene): California.

A. O. Woodford, J. S. Shelton, and T. G. Moran, 1944, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 23.

J. S. Shelton, 1955, Geol. Soc. America Bull., v. 66, no. 1, p. 54, pl. 1.

Mountain Spring volcanics

Jurassic: California.

G. R. Heyl and J. H. Eric, 1948, Calif. Dept. Nat. Res., Div. Mines Bull. 144, pt. 1, p. 52, 53, pl. 7.

Mount Alexander series

Middle Silurian: Quebec, Canada.

H. W. McGerrigle, 1950, Quebec Dept. Mines Geol. Rept. 35, p. 24, 25.

Mount All beds (in Scotland formation)

Eocene, middle: Barbados, British West Indies.

A. B. Thompson, 1925, Oil field exploration and development, v. 1, Oil field principles: New York, N. Y., D. Van Nostrand Co., p. 395.

Alfred Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1557-1558, 1581.

Mount Aylmer granite

Devonian or younger: Quebec, Canada.

T. H. Clark *in* H. C. Cooke and T. H. Clark, 1937, Canada Geol. Survey Mem. 211, p. 75.

Mt. Barren metamorphic complex

Post-Middle Ordovician: Newfoundland, Canada.

J. R. Cooper, 1936, Newfoundland Geol. Survey Bull. 4, p. 17, 22.

Mount Belknap rhyolite

Tertiary: Utah.

Eugene Callaghan, 1939, Am. Geophys. Union Trans. 20th Ann. Meeting, pt. 3, p. 447-449.

Mount Dillon formation

Cretaceous (?): Tobago, British West Indies.

J. C. Maxwell, 1948, Geol. Soc. America Bull., v. 59, no. 8, p. 809-810.

Mount Disraeli group

Precambrian or Paleozoic: Northwest Territories (Ellesmere Island), Canada.

R. G. Blackadar, 1954, Canada Geol. Survey Paper 53-10, p. 8, 10.

Mount Edgar limestone

Lower Permian: California.

J. C. Hazzard, 1938, (abs.) Geol. Soc. America Proc. 1937, p. 240.

Mt. Elden formation

Upper Devonian: Arizona.

Louis Hussakof, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1988; 1942, Am. Mus. Novitates, no. 1186, p. 1-2.

Mt. Emmons volcanics

Quaternary: Alaska.

G. C. Kennedy and H. H. Waldron, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 2, pl. 2 (geol. map).

Mt. Evans quartz monzonite

Precambrian: Colorado.

M. F. Boos and Esther Aberdeen, 1940, Geol. Soc. America Bull., v. 51, no. 5, p. 725, pl. 1.

Mount Greenock formation

See Greenock formation.

Mt. Hague volcanics

Quaternary: Alaska.

G. C. Kennedy and H. H. Waldron, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 2, pl. 2 (geol. map).

Mount Harris beds (of Pointe-à-Pierre formation)

Eocene, lower or middle: Trinidad, British West Indies.

R. A. Liddle, [1928], The geology of Venezuela and Trinidad: Fort Worth, Tex., J. P. MacGowan, p. 446-447.

Mount Hawk formation

Upper Devonian: Alberta, Canada.

R. deWit and D. J. McLaren, 1950, Canada Geol. Survey Paper 50-23, p. 5.

Mount Head formation

Carboniferous: Alberta, Canada.

R. J. W. Douglas, 1953, Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium, p. 68.

Mount Hillaby beds

Eocene: Barbados, British West Indies.

Alfred Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1581, 1584.

Mount Hoffmann complex

Pleistocene to Recent (?): California.

C. A. Anderson, 1941, Calif. Univ. Dept. Geol. Sci. Bull., v. 25, no. 7, p. 365-367.

Mount Hole granodiorite

Cretaceous: California.

E. S. Larsen, Jr., and N. B. Keevil, 1947, Geol. Soc. America Bull., v. 58, no. 6, p. 489-490.

E. S. Larsen, Jr., 1948, Geol. Soc. America Mem. 29, p. 89-90.

Mt. Hood lavas

Pliocene and Pleistocene: Oregon.

W. D. Lowry and E. M. Baldwin, 1952, Geol. Soc. America Bull., v. 63, no. 1, pt. 2.

Mount Hybla group

Eocene, lower: Jamaica, British West Indies.

C. A. Matley, 1929, Geol. Soc. London Quart. Jour., v. 85, pt. 4, p. 451, 452.

Mount Ida group

Precambrian or Paleozoic: British Columbia, Canada.

A. G. Jones, 1948, Canada Geol. Survey Paper 48-4, p. 2.

Mountignais formation

Precambrian: Newfoundland (Labrador), Canada.

E. H. Kranck, 1953, Canada Geol. Survey Bull. 26, p. 37.

Mt. Jefferson sandstone member (of Rockfish conglomerate)

Age not stated: Virginia.

H. B. Cooke, Jr., 1952, (abs.) Va. Jour Sci., v. 3, new ser., no. 4, p. 336.

Mount Kate volcanics

Pliocene: Nevada.

V. P. Gianella, 1934, Mining and Metallurgy, v. 15, no. 331, p. 299.

Mt. Katherine series

See Katherine group.

Mt. Macdougall series

See Macdougall group.

Mt. Margaret volcanics

Ordovician (?): Newfoundland, Canada.

R. E. Van Alstine, 1948, Newfoundland Geol. Survey Bull. 23, p. 14.

Mount Merino chert and shale member (of Normanskill formation)

Middle Ordovician (Chazy): New York.

Rudolf Ruedemann, 1942, N. Y. State Mus. Bull. 327, p. 23, 24; 1942, Bull. 331, p. 90, 93-101 [1946].

Mount Morrison formation

Precambrian: Colorado.

M. F. Boos, 1954, *Geol. Soc. America Bull.*, v. 65, no. 2, p. 118-119.**Mount Nansen group**

Upper Jurassic or Lower Cretaceous: Yukon, Canada.

H. S. Bostock, 1936, *Canada Geol. Survey Mem.* 189, p. 13.**Mt. Nordenskiöld formation**

Permo-Triassic: East Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 104, 111; nr. 2, p. 248.**Mt. Ord pyroxenite**

Precambrian: Arizona.

E. D. Wilson, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1128.**Mt. Ord series**

Mesozoic (Jura-Trias): California.

O. P. Jenkins, 1938, *Geologic map of California (1:500,000)*: Calif. Dept. Nat. Res., Div. Mines, sheet 4.**Mount Osborn glaciation**

Pleistocene (Wisconsin): Alaska.

D. M. Hopkins *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 11, 13 (table 1).**Mt. Pictet formation**

Lower Carboniferous: Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 96-98; nr. 2, p. 244-245.**Mount Pleasant greensand horizon (of Manzanilla formation)**

Miocene: Trinidad, British West Indies.

G. A. Waring, 1926, *Johns Hopkins Univ. Studies in Geology*, no. 7, p. 29, 71.R. A. Liddle, [1928], *The geology of Venezuela and Trinidad*: Fort Worth, Tex., J. P. MacGowan, p. 482-483.**Mt. Poyer sandstone (in Scotland beds)**

Eocene: Barbados, British West Indies.

J. B. Harrison *in* C. T. Trechmann, 1933, *Geol. Mag.*, v. 70, no. 823, p. 43.**Mount Rogers volcanic group**

Precambrian (?): Tennessee, Virginia, and North Carolina.

G. W. Stose and A. J. Stose, 1944, *Am. Jour. Sci.*, v. 242, no. 8, p. 410-411.**Mt. Ronning formation***See* Ronning group.**Mt. Rowe member (of Miller Peak formation)**

Precambrian (Belt): Alberta, Canada.

C. L. Fenton and M. A. Fenton, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1902-1903.**Mount St. Helens lavas**

Quaternary: Washington.

Jean Verhoogen, 1937, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 24, no. 9, p. 283-294.**Mt. Serrat glauconite***See* Montserrat sand member (of Upper Brasso formation).

- Mount Stevens greenstone and amphibolite**
Carboniferous and Permian : British Columbia, Canada.
J. E. Armstrong, 1946, *Canada Geol. Survey Bull.* 5, p. 8.
- Mount Susitna glaciation**
Pleistocene (pre-Wisconsin) : Alaska.
T. N. V. Karlstrom in T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 3, 13 (table 1).
- Mount Tabor shale member (of Crockett formation)**
Eocene, middle (Claiborne) : Texas.
H. B. Stenzel, 1938, *Tex. Univ. Bur. Econ. Geol. Pub.* 3818, p. 20, 125, 151-154 [1939].
- Mt. Tripyramid complex**
Carboniferous(?) (White Mountain magma series) : New Hampshire.
A. P. Smith and others, 1938, *Geologic map and structure sections of the Mt. Chocorua quadrangle, New Hampshire (1 : 62,500)* : N. H. Highway Dept.
- Mt. Werner series**
Middle Devonian : Northeast Greenland.
H. G. Backlund, 1937, *Geol. Rundschau, Band 28, Heft 5*, p. 411.
- Mowich group**
Lower Jurassic (Lias) : Oregon.
F. L. Davis, 1937, *Geol. Soc. Oreg. Country News Letter*, v. 3, no. 2, p. 14.
R. L. Lupper, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 235-238, 240-247.
- Mowitch formation**
See Mowich group.
- Moya formation**
Pennsylvanian (Virgil) : New Mexico.
M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 72-73.
- Moyer member (of Frankfort formation)**
Upper Ordovician (Cincinnati) : New York.
Marshall Kay, 1953, *N. Y. State Mus. Bull.* 347, p. 66-67.
- Moyers formation**
Pennsylvanian (Bendian) : Oklahoma.
B. H. Harlton, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 7, p. 870-872, 874.
- Muddy Creek beds**
Oligocene (?) : Montana.
Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 369, pl. 1.
- Muddy Creek volcanics**
Oligocene, middle : Montana.
Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 374-375, pl. 1.
- Mud Fork member (of Bluestone formation)**
Mississippian (Chester) : West Virginia and Virginia.
B. N. Cooper, 1944, *Va. Geol. Survey Bull.* 60, p. 184.
- Mud Springs group**
Pennsylvanian (Derry) : New Mexico.
M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 36-39.

Muir sandstone

Eocene, middle: California.

C. E. Weaver, 1953, Wash. [State] Univ. Pubs. in Geology, v. 7, p. 19 (chart), 36-44.

Muldraugh formation

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 200-222.

Mulga tongue

Upper Cretaceous: Alberta, Canada (subsurface).

A. W. Nauss, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 11, p. 1622-1623.

Mulholland formation

Pliocene, lower to middle: California.

C. K. Ham, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 22, p. 6 (fig. 3), 14-16.

Mulky cyclothem or formation

Pennsylvanian (Des Moines): Kansas.

G. E. Abernathy, 1937, Kans. Geol. Soc. Guidebook 11th Ann. Field Conf., p. 18, 19, 23; 1938, Kans. Acad. Sci. Trans. v. 41, p. 193, 195.

Mumford formation

Pennsylvanian: Indiana.

C. E. Wier, 1955, Dissert. Abs., v. 15, no. 12, p. 2515.

Mumford Hills sandstone (in McLeansboro formation)

Pennsylvanian: Indiana and Illinois.

J. A. Culbertson, 1932, The paleontology and stratigraphy of the Pennsylvania strata between Caseyville, Ky. and Vincennes, Ind.; Abs. Thesis, Ill. Univ.: Urbana, Ill., p. 7.

Muncho formation

Devonian: British Columbia, Canada.

L. R. Laudon and B. J. Chronic, Jr., 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 2, p. 217.

Munterville cyclothem (including Munterville limestone)

Pennsylvanian: Iowa.

L. M. Cline and D. G. Stookey in J. M. Weller and others, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 10, p. 1587-1588.

Murdock group

Precambrian (Proterozoic): Quebec and Newfoundland, Canada.

M. J. Frarey, 1952, Canada Geol. Survey Paper 52-16, p. 2-3.

Murphys beds (in Scotland formation)

Eocene, middle: Barbados, British West Indies.

Alfred Senn, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 9, p. 1554.

Murphys Bluff sandstone

Upper Pennsylvanian: Illinois and Indiana.

C. A. Malott in K. A. Payne, 1937, Jour. Paleontology, v. 11, no. 4, p. 276-279.

Murray granite

Precambrian: Ontario, Canada.

W. H. Collins, 1936, Royal Soc. Canada Trans., sec. 4, v. 30, p. 32-34.

Murray Bluff sandstone (in Macedonia formation)

Pennsylvanian: Illinois.

J. M. Weller, 1940, Ill. State Geol. Survey Rept. Inv. 71, p. 40.

Murray Iron Works member (of Platteville formation)

Ordovician: Iowa (subsurface).

A. F. Agnew, 1949, Stanford Univ. Bull., Abs. Dissert. 1948-49, p. 241-242.

Muscatine sandstone

Pennsylvanian: Iowa.

[C. R.] Keyes, 1941, Pan-Am. Geologist, v. 75, no. 1, p. 78.

Musgravetown group

Precambrian (?): Newfoundland, Canada.

A. O. Hayes, 1948, Newfoundland Geol. Survey Bull. 32, p. 16-17.

Mush Lake group

Jurassic and Triassic (?): Yukon, Canada.

E. D. Kindle, 1953, Canada Geol. Survey Mem. 268, p. 31-35.

Muskeg formation

Devonian: Alberta, Canada (subsurface).

J. Law, 1955, Alberta Soc. Petroleum Geologists Jour., v. 3, no. 6, p. 83.

Musquash granite

Middle Devonian (?): New Brunswick, Canada.

H. R. Belyea, 1944, Acadian Naturalist, v. 1, no. 3, p. 88.

Mussey Brook schist

Precambrian (?): Rhode Island and Massachusetts.

Alonzo Quinn, R. G. Ray, and W. L. Seymour *in* Alonzo Quinn and others, 1948, R. 1. Port and Indus. Devel. Comm. Geol. Bull. 3, p. 10, geol. map.**Mustang shale***See* Mustang Creek formation.**Mustang Creek formation**

Upper Cretaceous: California.

O. P. Jenkins, 1943, Am. Assoc. Petroleum Geologists Bull., v. 27, no. 3, p. 251 (fig. 1).

L. I. Briggs, Jr., 1953, Calif. Dept. Nat. Res., Div. Mines Bull. 167, p. 31.

Mutual formation

Precambrian: Utah.

A. E. Granger and others, 1952, Utah Geol. Soc. Guidebook 8, p. 6.

Myatt lentil (in Verda member of Yazoo clay)

Eocene (Jackson): Louisiana.

J. Huner, Jr., 1939, La. Dept. Conserv. Geol. Bull. 15, p. 161-163.

Myerstown limestone

Ordovician (Black River to Trenton): Pennsylvania.

Carlyle Gray, 1952, Pa. Geol. Survey Progress Rept. 140, p. 4.

Myrabayan series

Middle Cambrian (?): Nova Scotia, Canada.

A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 1, Lower and Middle Cambrian pulsations: 2d ed., Peiping, China, University Press, Natl. Univ. Peking, p. 329, 343.

Myrick Station cyclothem (including Myrick Station limestone)

Pennsylvanian (Des Moines): Missouri, Iowa, Kansas, and Nebraska.

L. M. Cline, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 1, p. 37.

J. M. Jewett, 1945, Kans. State Geol. Survey Bull. 58, p. 31-32, 63-64.

Myrtle Beach peat

Pleistocene: South Carolina.

D. G. Frey, 1952, *Am. Jour. Sci.*, v. 250, no. 3, p. 212-224.**Mystery quartzite series**

Precambrian: Northeast Greenland.

Eduard Wenk and John Haller, 1953, *Meddel. om Grønland*, bind 111, nr. 3, p. 16-20.**Naborton formation**

Paleocene (Midway): Louisiana.

G. [E.] Murray, Jr., 1941, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 5, p. 941-942.G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 56-57.**Nachusa formation**

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 6, 37, figs. 3, 9.**Nacozari granite**

Age not stated: Sonora, Mexico.

W. R. Wade and Alfred Wandtke, 1920, *Am. Inst. Mining and Metall. Engineers Trans.*, v. 63, p. 383.**Nacozari limestone**

Upper Pennsylvanian: Sonora, Mexico.

W. R. Wade and Alfred Wandtke, 1920, *Am. Inst. Mining and Metall. Engineers Trans.*, v. 63, p. 383.Manuel Maldonado-Koerdell, 1954, *Asociación Mexicana Geólogos Petroleros*, v. 6, nos. 3-4, p. 123.**Nadeau gravel**

Pleistocene, upper (?): California.

L. F. Noble, 1953, *Geology of the Pearland quadrangle, California: U. S. Geol. Survey Geol. Quadrangle Map [GQ 24]*.**Nadlo Point limestone**

Lower Ordovician: Northwest Territories (Devon Island), Canada.

V. E. Kurtz, A. H. McNair, and D. B. Wales, 1952, *Am. Jour. Sci.*, v. 250, no. 9, p. 642-645.**Naftan limestone**

Pliocene-Pleistocene: Mariana Islands (Saipan).

Risaburo Tayama, 1938, *Geomorphology, geology, and coral reefs of Saipan Island: Tropical Industry Inst., Palau, South Sea Islands, Bull. 1 [English translation in library of U. S. Geol. Survey, p. 69-71]*.Josiah Bridge *in* W. S. Cole and Josiah Bridge, 1953, *U. S. Geol. Survey Prof. Paper 253*, p. 12.**Nafutan limestone***See Naftan limestone.***Nagany limestone**

Middle Ordovician (Blackriveran): Pennsylvania.

R. S. Bassler, 1950, *Geol. Soc. America Mem.* 44, p. 12, 270.**Nagas beds**

Eocene: Mariana Islands (Guam).

Risaburo Tayama, 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 49, table 4 [English translation in library of U. S. Geol. Survey, p. 59].

Naha formation

Quaternary: Arizona.

J. T. Hack, 1941, *Geog. Review*, v. 31, no. 2, p. 262-263; 1942, *Harvard Univ. Peabody Mus. Am. Archaeology and Ethnology Papers*, v. 35, no. 1, p. 53-54.

Nahanni formation

Middle Devonian: British Columbia, Yukon, and Northwest Territories (Mackenzie), Canada.

C. O. Hage, 1945, *Canada Geol. Survey Paper* 45-22, p. 5-6.

Nain anorthosite

Precambrian: Newfoundland (Labrador), Canada.

S. K. Roy, 1941, *Field Mus. Nat. History Geol. Mem.*, v. 2, p. 20.

D. M. Baird, 1953, *Newfoundland Geol. Survey Inf. Circ.* 4 (revised), p. 137.

Naiset formation

Middle Cambrian: Alberta and British Columbia, Canada.

Charles Deiss, 1939, (abs.) *Geol. Soc. America Bull.*, v. 50, no. 12, p. 1906; 1940, v. 51, no. 5, p. 773-775.

Nakaibito formation

Recent: New Mexico.

L. B. Leopold and C. T. Snyder, 1951, *U. S. Geol. Survey Water-Supply Paper* 1110-A, p. 9-12.

Nakaye formation

Pennsylvanian (Magdalena): New Mexico.

V. C. Kelley and Caswell Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 92-93, fig. 2.

Nanchital conglomerate series

Eocene, middle and upper: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 278, correlation chart.

Nanchital shales

Eocene, lower: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 277, correlation chart.

Nankoweap group

Precambrian (Algonkian): Arizona.

C. E. Van Gundy, 1934, *Grand Canyon Nature Notes*, v. 9, no. 8, p. 345-346; 1951, *Geol. Soc. America Bull.*, v. 62, no. 8, p. 953-959.

Naomi Peak limestone member (of Langston formation)

Cambrian: Utah and Idaho.

G. B. Maxey, 1955, *Dissert. Abs.*, v. 15, no. 4, p. 558.

Naosap granodiorite

Precambrian: Manitoba, Canada.

Jorma Kalliokoski, 1952, *Canada Geol. Survey Mem.* 270, p. 23-24.

Napali formation

Pliocene(?): Hawaiian Islands (Kauai).

G. A. Macdonald, D. A. Davis, and D. C. Cox, 1954, *Volcano Letter* 526, p. 2.

Napanee member (of Rockland formation)

Middle Ordovician (Mohawkian): Ontario, Canada and New York.

G. M. Kay, 1937, *Geol. Soc. America Bull.*, v. 48, no. 2, p. 255-256.

Naparima Hill formation

Upper Cretaceous : Trinidad, British West Indies.

H. G. Kugler, 1950, *Asociación Venezolana de Geología, Minería y Petróleo Bol.* tomo 2, no. 1, p. 48 (correlation chart), 61-63.

Napa Valley series

Pliocene, lower : California.

O. P. Jenkins, 1938, *Geologic map of California (1 : 500,000)* : Calif. Dept. Nat. Res., Div. Mines, sheet 4.

Naptowne glaciation

Pleistocene (Wisconsin) : Alaska.

T. N. V. Karistrom *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 4, 13 (table 1).

Naranjo formation

Triassic : New Mexico.

G. O. Bachman, 1953, *U. S. Geol. Survey Oil and Gas Inv. Map* OM 137.

Narhval formation**Narhval Sund formation**

See Narwhale Sound formation.

Nariva River marl

Eocene, lower and middle : Trinidad, British West Indies.

A. B. Thompson, 1925, *Oil field exploration and development*, v. 1, *Oil field principles* : New York, D. Van Nostrand Co., p. 389, 390.

J. A. Cushman and H. H. Renz, 1948, *Cushman Lab. Foram. Research Special Pub.* 24, p. 2, 3.

Narizian stage

Eocene, late : California.

V. S. Mallory, 1953, (abs.) *Jour. Paleontology*, v. 27, no. 6, p. 903.

Narrows formation

Cambrian (post-Olenian) : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 80-81.

Narssarsuk formation

Precambrian (upper Algonkian) : North Greenland.

V. E. Kurtz and D. B. Wales, 1950, *Okla. Acad. Sci. Proc.*, v. 31, p. 83, 85-86.

Narwhal Sound formation

See Narwhale Sound formation.

Narwhale Sound formation

Ordovician : Northeast Greenland.

Christian Poulsen, 1930, *Meddel. om Grønland*, bind 74, nr. 12, p. 316.

Narwhal Sound formation

See Narwhale Sound formation.

Nashoba formation

Carboniferous : Massachusetts.

L. W. Currier and R. H. Jahns, 1952, *Guidebook for field trips in New England* : *Geol. Soc. America*, p. 106-108, 110.

Natchez Pass formation

Middle Triassic : Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada* : *U. S. Geol. Survey Geol. Quadrangle Map* [GQ 7].

Natlins Cove formation

Silurian : Newfoundland, Canada.

G. R. Heyl, 1937, Newfoundland Geol. Survey Bull. 8, p. 12.

Natsy member (of Deese formation)

Pennsylvanian (Des Moines) : Oklahoma.

C. W. Tomlinson, 1937, Ardmore Geol. Soc. [Guidebook] Field Trip, March 13, p. 1-2.

Navada member (of Quartzite Range formation)

Precambrian (?) : British Columbia, Canada.

W. H. Matthews, 1953, British Columbia Dept. Mines Bull. 31, p. 21.

Navarro River member (of Brasso formation)

Miocene, lower or middle : Trinidad, British West Indies.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 554.

Navet formation

Eocene, lower and middle : Trinidad, British West Indies.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 535.

J. A. Cushman and H. H. Renz, 1948, Cushman Lab. Foram. Research Special Pub. 24, p. 1-3.

Navy Island formation

Lower Ordovician (Canadian) : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 81-83.

Nazareno bed (in Cupido limestone)

Lower Cretaceous : Zacatecas, Mexico.

W. H. Triplett, 1952, Am. Inst. Mining and Metall. Engineers Trans., v. 193, p. 584 (fig. 1).

Nazcha formation

Lower to Middle Jurassic : British Columbia, Canada.

K. D. Watson and W. H. Matthews, 1944, British Columbia Dept. Mines Bull. 19, p. 17-19.

Nealmont limestone

Middle Ordovician (Mohawkian) : Pennsylvania.

G. M. Kay, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1969.

Nedrow member (of Onondaga limestone)

Middle Devonian : New York.

W. A. Oliver, Jr., 1954, Geol. Soc. America Bull., v. 65, no. 7, p. 627-628, 636-637.

Needle chert

Lower Devonian : Quebec, Canada.

A. M. Bell, 1951, Canadian Inst. Mining and Metallurgy Trans., v. 54, p. 241.

Needle Mountain group

Lower Devonian : Quebec, Canada.

A. M. Bell, 1951, Canadian Inst. Mining and Metallurgy Trans., v. 54, p. 241.

Needle Mountain limestone

Lower Devonian : Quebec, Canada.

A. M. Bell, 1951, Canadian Inst. Mining and Metallurgy Trans., v. 54, p. 241.

Needles complex

Precambrian : California.

W. J. Miller, 1944, Calif. Jour. Mines and Geology, v. 40, no. 1, p. 116-119, pl. 7.

Needmore shale

Middle Devonian : Pennsylvania.

Bradford Willard *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, Pa. Geol. Survey, ser. 4, Bull. G 19, p. 149-150.

Neepawa volcanics

Precambrian : Ontario, Canada.

F. J. Pettijohn, 1936, Jour. Geology, v. 44, no. 3, p. 348-349.

Negus flow

Precambrian : Northwest Territories (Mackenzie), Canada.

J. F. Henderson and I. C. Brown, 1950, Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 420.

Nehalem formation

Eocene, upper, to Oligocene, lower : Oregon.

M. L. Steere, 1955, Geol. Soc. Oreg. Country News Letter, v. 21, no. 10, p. 85.

Neiba formation

Eocene, upper : Dominican Republic.

W. M. Small, 1948, Seismol. Soc. America Bull., v. 38, no. 1, p. 26.

P. J. Bernudez, 1949, Cushman Lab. Foram. Research Special Pub. 25, p. 21.

Neills Cliff formation

Lower Jurassic (middle and upper Liassic) : East Greenland.

Alfred Rosenkrantz *in* Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 1, p. 143-145.

Nekik granodiorite

Precambrian : Manitoba, Canada.

Jorma Kalliokoski, 1952, Canada Geol. Survey Mem. 270, p. 25.

Nelson beds

Triassic : North Carolina.

Grover Murray, Jr., 1938, Science, v. 87, no. 2261, p. 390.

Nelson Lake granite

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 129.

Nelway formation

Middle Cambrian : British Columbia, Canada.

H. W. Little, 1950, Canada Geol. Survey Paper 50-19, p. 18-21.

Nepean sandstone

Lower Ordovician and Upper Cambrian (?) : Ontario, Canada.

A. E. Wilson, 1937, Royal Soc. Canada Trans., ser. 3, v. 31, sec. 4, p. 46, 47.

Nescatunga gypsum member (of Blaine formation)

Permian (Leonardian) : Kansas.

G. H. Norton, 1939, Am. Assoc. Petroleum Geologists Bull., v. 23, no. 12, p. 1794-1795, 1797.

R. C. Moore, J. C. Frye, and J. M. Jewett, 1944, Kans. State Geol. Survey Bull. 52, pt. 4, p. 158.

Neshoba sand member (of Tallahatta formation)

Eocene, middle (Claiborne group) : Mississippi.

E. P. Thomas, 1942, Miss. State Geol. Survey Bull. 48, p. 24-28.

Nesson formation

Jurassic: Subsurface in North Dakota and Montana, and Manitoba, Canada.
 J. W. Nordquist, 1955, Billings Geol. Soc. Guidebook 6th Ann. Field Conf., p. 104, fig. 2.

Nestucca formation

Eocene, upper: Oregon.

P. D. Snavey, Jr., and H. E. Vokes, 1949, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 97.

Neutral cyclothem or formation

Pennsylvanian (Des Moines): Kansas.

G. E. Abernathy, 1937, Kans. Geol. Soc. Guidebook 11th Ann. Field Conf., p. 18, 20, 22; 1938, Kans. Acad. Sci. Trans., v. 41, p. 193, 196.

Neva glacial stage

Pleistocene: Colorado.

R. L. Ives, 1942, Geog. Review, v. 32, no. 3, p. 450.

Neville formation

Quaternary: Texas.

C. C. Albritton, Jr., and Kirk Bryan, 1938, (abs.) Geol. Soc. America Bull., v. 49, no. 12, pt. 2, p. 1863; 1939, v. 50, no. 9, p. 1430-1432.

Newbec breccia

Precambrian (Archean): Quebec, Canada.

M. E. Wilson, 1941, Canada Geol. Survey Mem. 229, p. 43-45.

Newberry formation

Precambrian (Grand Canyon): Arizona.

Charles Keyes, 1938, Pan-Am. Geologist, v. 70, no. 2, p. 107, 110.

New Bremen granite

Precambrian: New York.

A. F. Buddington, 1939, Geol. Soc. America Mem. 7, p. 84.

Newby formation

Triassic(?): Washington.

J. D. Barksdale, 1948, Northwest Science, v. 22, no. 4, p. 165, 167-169.

Newby glauconitic sand member (of Reklaw formation)

Eocene, middle (Claiborne): Texas.

H. B. Stenzel, 1938, Tex. Univ. Bur. Econ. Geol. Pub. 3818, p. 20, 65-71 [1939].

New Canaan formation

Silurian(?): Nova Scotia, Canada.

D. G. Crosby, Jr., 1953, Stanford Univ. Bull., Abs. Dissert., v. 27, p. 418.

Newcastle lens (in Newcastle formation)

Upper Cretaceous: Wyoming.

R. M. Grace, 1952, Wyo. Geol. Survey Bull. 44, p. 14-15.

New Castle porphyry

Eocene, upper(?): Jamaica, British West Indies.

C. A. Matley, 1937, Geol. Mag., v. 74, no. 11, p. 506; 1951, Geology and physiography of the Kingston district, Jamaica: Inst. of Jamaica, p. 35, 83-87, 99-102, geol. map.

New Design group

Mississippian (Chester): Illinois and Missouri.

J. M. Weller, 1939, Kans. Geol. Soc. Guidebook 13th Ann. Field Conf., p. 131, 134.

Newfield diabase

Precambrian (Keweenawan?): Ontario, Canada.

Jack Satterly, 1948, Ontario Dept. Mines Prelim. Rept. 1948-2, p. 5.

New Fork tongue (of Wasatch formation)

Eocene, middle: Wyoming.

J. H. Donovan, 1950, Wyo. Geol. Assoc. Guidebook 5th Ann. Field Conf., p. 64.

New Glarus member (of Pecatonica formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., p. 41, figs. 3, 10, 16.

New Goldvue quartz diorite*See* Goldvue quartz diorite.**New Hampshire sequence**

Ordovician to Lower Devonian: New Hampshire and Vermont.

W. S. White and R. H. Jahns, 1950, Jour. Geology, v. 58, no. 3, p. 182.

New Harmony sandstone (in McLeansboro formation)

Pennsylvanian: Indiana and Illinois.

J. A. Culbertson, 1932, The paleontology and stratigraphy of the Pennsylvanian strata between Caseyville, Ky. and Vincennes, Ind.; Abs. Thesis, Ill. Univ.; Urbana, Ill., p. 8.

New Haven arkose

Triassic: Connecticut.

P. D. Krynine, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1919; 1950, Conn. State Geol. Nat. History Survey Bull. 73, p. 37-57.

New Haven lens (in Newcastle formation)

Upper Cretaceous: Wyoming.

R. M. Grace, 1952, Wyo. Geol. Survey Bull., 44, p. 14, 15.

New Market limestone

Middle Ordovician: Virginia.

B. N. Cooper and G. A. Cooper, 1946, Geol. Soc. America Bull., v. 57, no. 1, p. 71-74.

Newport albitized quartz diorite

Precambrian (Archean): Quebec, Canada.

W. W. Weber, 1951, Quebec Dept. Mines Prelim. Rept. 255, map.

Newport group

Precambrian: Washington.

M. C. Schroeder, 1952, Wash. Dept. Conserv. Devel., Div. Mines and Geology Bull. 40, p. 7, 9, 20.

Newport limestone member (of White Limestone formation)

Oligocene, upper, to Miocene, lower: Jamaica, British West Indies.

V. A. Zans, H. R. Versey, and J. B. E. Williams in V. A. Zans, 1955, Jamaica Geol. Survey Dept. Ann. Rept. 1953-54, p. 4.

Newspaper Rock sandstone

Upper Triassic: Arizona.

H. R. Stagner in L. H. Daugherty, 1941, Carnegie Inst. Washington Pub. 526, p. 10, 11-12.

Newton cyclothem (including Newton limestone)

Pennsylvanian: Illinois.

W. A. Newton and J. M. Weller, 1937, Ill. State Geol. Survey Rept. Inv. 45, p. 24-25.

Newton stony clay

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, Canada Geol. Survey Water Supply Paper 322, p. 10, map.

Newton Creek limestone

Middle Devonian: Michigan.

G. A. Cooper and A. S. Warthin, 1941, Washington Acad. Sci. Jour., v. 31, no. 6, p. 260.

Newton Mine volcanics

Jurassic: California.

G. R. Heyl and J. H. Eric, 1948, Calif. Dept. Nat. Res., Div. Mines Bull. 144, pt. 1, p. 52, 53, pl. 7.

Newville group

Jurassic (Knoxville): California.

F. M. Anderson, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 184 [preprint 1941].

Ngardok (Galdog) beds

Eocene: Caroline Islands (Babelthaup).

Risaburo Tayama, 1935, Topography, geology, and coral reefs of the Palau Islands: Tohoku Univ., Inst. Geology and Paleontology Contr. in Japanese Language, no. 18, p. 17, 39 [English translation in library of U. S. Geol. Survey]; 1939, Japanese Jour. Geology and Paleontology Trans. and Abs. nos. 1-2, Abs., p. 29; 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 64-65, table 4 [English translation in library of U. S. Geol. Survey, p. 76-77].

Ngarekeukl (Galkyoku) limestone

Recent: Caroline Islands (Peleliu).

Risaburo Tayama, 1939, Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour., v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 67, table 4 [English translation in library of U. S. Geol. Survey, p. 80].

Ngeremlengui formation**Nghmesed volcanic breccia**

See Kameset (Gamusetsu) agglomerate.

Niakogon tongue (of Chandler formation)

Upper Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, Washington Acad. Sci. Jour., v. 41, no. 5, p. 164.

Nicely shale

Lower Jurassic (Lias): Oregon.

R. L. Lupter, 1941, Geol. Soc. America Bull., v. 52, no. 2, p. 227, 239-240.

Nicolet River formation

Ordovician: Quebec, Canada.

T. H. Clark, 1947, Quebec Dept. Mines Prelim. Rept. 204, p. 9-12.

Nicollet Creek member (of St. Lawrence formation)

Upper Cambrian (St. Croixian): Minnesota.

C. R. Stauffer, G. M. Schwartz, and G. A. Thiel, 1939, Geol. Soc. America Bull., v. 50, no. 8, p. 1239-1240.

Nicomekl silt

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, Canada Geol. Survey Water Supply Paper 322, p. 11, 48, table, map.

Nictaux beds

Silurian: Nova Scotia, Canada.

H. M. Ami, 1900, Royal Soc. Canada Trans., 2d ser., v. 6, sec. 4, p. 203.

Niesen beds

Lower Cretaceous (Infravalanginian-Valanginian): Northeast Greenland.

Wolf Maync, 1947, Meddel. om Grønland, bind 132, nr. 2, p. 64-68, 119, pl. 6.

Nieva shale

Lower Cretaceous: Zacatecas, Mexico.

W. H. Triplett, 1952, Am. Inst. Mining and Metall. Engineers Trans., v. 193, p. 584 (fig. 1).

Nigger Canyon volcanics

Pleistocene: California.

J. F. Mann, Jr., 1955, Calif. Dept. Nat. Res., Div. Mines Special Rept. 43, p. 9, 15.

Nikolai Creek glaciation

Pleistocene (Wisconsin): Alaska.

D. B. Krimley in T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 6, 13 (table 1).

Niland tongue (of Wasatch formation)

Eocene, lower: Wyoming.

G. N. Pipiringos, 1955, Wyo. Geol. Assoc. Guidebook 10th Ann. Field Conf., p. 100-102.

Ninnescah shale

Permian (Leonard series): Kansas.

G. H. Norton, 1937, Am. Assoc. Petroleum Geologists Bull., v. 21, no. 12, p. 1557; 1939, v. 23, no. 12, p. 1767-1773.

Niobrara River channel sands (in Valentine formation)

Miocene to Pliocene: Nebraska.

M. K. Elias, 1942, Geol. Soc. America Special Paper 41, p. 137.

Nipe series

Oligocene and Miocene: Cuba.

F. G. Keijzer, 1945, Geog. Geol. Meded. (Utrecht Univ.) Physiol.-Geol. Reeks, ser. 2, no. 6, p. 50.

Nippers Harbour group

Ordovician: Newfoundland, Canada.

D. M. Baird, 1948, Canadian Inst. Mining and Metallurgy Bull., v. 41, p. 211, 212 (fig. 1); 1951, Canada Geol. Survey Paper 51-21, p. 29-31.

Nippewalla group

Permian (Leonard series): Kansas.

G. H. Norton, 1939, Am. Assoc. Petroleum Geologists Bull., v. 23, no. 12, p. 1782.
R. C. Moore, J. C. Frye, and J. M. Jewett, 1944, Kans. State Geol. Survey Bull. 52, pt. 4, p. 157-158.

Nipsachuck gneiss

Precambrian (?): Rhode Island.

G. M. Richmond in G. M. Richmond and W. B. Allen, 1951, R. I. Port and Indus. Devel. Comm. Geol. Bull. 4, p. 10, 11.

Nisku member (of Winterburn formation)

Devonian: Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 9, p. 1815-1816.

Nistoassini-Nayelles Lakes granite

Precambrian: Saskatchewan, Canada.

A. R. Byers, 1949, *Saskatchewan Geol. Survey (Precambrian Geology Ser.) Rept. 1*, p. 13-14.

Nivaje shale

[Miocene]: Dominican Republic.

William Lonsdale *in* T. S. Heneken, 1853, *Geol. Soc. London Quart. Jour.*, v. 9, p. 133, 134.

Nix porphyrite

Carboniferous: California.

O. P. Jenkins, 1938, *Geologic map of California (1:500,000)*: Calif. Dept. Nat. Res., Div. Mines, sheet 4.

Nizi formation

Upper Mississippian and Pennsylvanian (?): British Columbia, Canada.

H. Gabrielse, 1955, *Canada Geol. Survey Paper (Prelim. Map) 54-10*.

Noah member (of Blubell formation)

Silurian: Utah.

Paul Billingsley *in* J. M. Boutwell, 1933, 16th Internat. Geol. Cong. [United States] Guidebook 17, Excursion C-1, p. 110 (fig. 14).

J. K. Rigby, 1952, *Utah Geol. Mineralog. Survey Bull.* 45, p. 23, 27, fig. 6.

Noa Lake quartzite

Middle Cambrian (?): Northeast Greenland.

A. B. Cleaves and E. F. Fox, 1935, *Geol. Soc. America Bull.*, v. 46, no. 3, p. 474, pl. 43.

Nob Hill flow (in Yellowknife group)

Precambrian: Northwest Territories (Mackenzie), Canada.

C. E. G. Brown and A. S. Dadson, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 70, 71.

Noche Buena formation

Recent: Cuenca de México, Mexico.

Kirk Bryan, 1948, *Soc. Geol. Mexicana Bol.*, tomo 13, p. 12, pl. 1.

Noel formation

Upper Triassic: British Columbia, Canada.

C. E. Cairnes, 1937, *Canada Geol. Survey Mem.* 213, p. 14-15.

Noisy Brook gneiss

Age not stated: Maine.

Kern Jackson, 1953, *Maine State Geologist Rept. 1951-1952*, p. 62-66.

Nokomis group

Precambrian: Manitoba, Canada.

D. S. Robertson, 1949, *Canada Geol. Survey Paper (Prelim. Map) 49-20*.

Nome River glaciation

Pleistocene (pre-Wisconsin): Alaska.

D. M. Hopkins *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 10, 13 (table 1).

Nonacho series

Precambrian: Northwest Territories (**Mackenzie**), **Canada**.

J. F. Henderson, 1937, *Canada Geol. Survey Paper* 37-2, p. 6.

Nonada sand member (of Domengine formation)

Eocene: California.

M. B. Payne, 1951, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 9, p. 15.

No Name argillite

Precambrian: Washington.

M. C. Schroeder, 1952, *Wash. Dept. Conserv. Devel., Div. Mines and Geology Bull.* 40, p. 7, 9, 11-13.

Nonewaug granite

Paleozoic: Connecticut.

R. M. Gates, 1953, *New England Intercollegiate Geol. Conf. [Guidebook] 40th [Ann. Meeting], Field Trip B*; 1954, *Conn. Geol. Nat. History Survey Quadrangle Rept.* 3, p. 3, 6-7, 15-19.

Noonday dolomite

Lower Cambrian: California.

J. C. Hazzard, 1937, *Calif. Jour. Mines and Geology*, v. 33, no. 4, p. 279 (fig. 3e), 300-301.

Nopah formation

Upper Cambrian: California.

J. C. Hazzard, 1937, *Calif. Jour. Mines and Geology*, v. 33, no. 4, p. 276 (fig. 3b), 320-322.

Noranda Lake granite

Precambrian: Quebec, **Canada**.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 128.

Nordegg member (of Fernie formation)

Jurassic, Alberta, **Canada**.

J. Spivak, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 4, p. 535.

Norfleet cyclothem (including Norfleet limestone)

Pennsylvanian (Des Moines): Kansas, Missouri, and Nebraska.

J. M. Jewett, 1941, *Kans. State Geol. Survey Bull.* 38, pt. 11, p. 338-339; 1945, *Bull.* 58, p. 44-45, 69.

Norfolk formation

Devonian: Ontario, **Canada**.

J. F. Caley, 1940, *Canada Geol. Survey Paper* 40-22, p. 4; 1941, *Mem.* 226, p. 49-57.

Noriss granite

Precambrian: Manitoba, **Canada**.

J. M. Harrison, 1949, *Canada Geol. Survey Mem.* 250, p. 19, 20.

Norma gravel

Miocene, lower: Nuevo Leon, Mexico.

1952, *Corpus Christi Geol. Soc. [Guidebook] Ann. Field Trip*, May 9-10, p. 3, geol. map.

Norphlet formation

Permian: Subsurface in Arkansas, Louisiana, and Texas.

R. T. Hazzard, W. T. Spooner, and B. W. Blanpied, [1947], *Shreveport Geol. Soc.* 1945 *Ref. Rept.*, v. 2, p. 483, 484, 488.

Norquay Mountain member (of Rocky Mountain formation)

Permian and Pennsylvanian (?): Alberta, Canada.

F. W. Beales, 1950, *Canada Geol. Survey Paper* 50-27, p. 6.

Norsemandal sandstone

Upper Precambrian (?): North Greenland.

P. J. Adams and J. W. Cowie, 1953, *Meddel. om Grønland*, bind 111, nr. 7, p. 9-10.

North Arm complex

Age not stated: Newfoundland, Canada.

A. K. Snelgrove, 1934, *Newfoundland Geol. Survey Bull.* 1, p. 10.

North Bay granite

Devonian (?): Newfoundland, Canada.

W. B. Jewell, 1939, *Newfoundland Geol. Survey Bull.* 17, p. 10-12.

North Boulder group

Precambrian: Montana.

C. P. Ross, 1949, *Washington Acad. Sci. Jour.*, v. 39, no. 3, p. 111, 113.

North Brook granite

Post-Ordovician: Newfoundland, Canada.

T. N. Walthier, 1949, *Newfoundland Geol. Survey Bull.* 35, pt. 1, p. 28.

North Coast schist group

Cretaceous (?): Tobago, British West Indies.

J. C. Maxwell, 1948, *Geol. Soc. America Bull.*, v. 59, no. 8, p. 805-812.

Northcraft formation

Eocene, upper: Washington.

P. D. Snavely, Jr., and others, 1951, *U. S. Geol. Survey Coal Inv. Map C 8*, sheet 1.

North Creek member (of Yazoo clay)

Eocene, upper (Jackson group): Alabama.

G. E. Murray, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 10, p. 1838, 1839 (footnote).

L. D. Toulmin, P. E. LaMoreaux, and C. R. Lanphere, 1951, *Ala. Geol. Survey Special Rept.* 21, p. 120-122, pl. 3.

Northern Bight granite

Devonian (?): Newfoundland, Canada.

E. R. Rose, 1948, *Newfoundland, Geol. Survey Bull.* 32, pt. 2, p. 42,47.

North Hogback tongue (of Point Lookout sandstone)

Upper Cretaceous: New Mexico.

P. T. Hays and A. D. Zapp, 1955, *U. S. Geol. Survey Oil and Gas Inv. Map OM 144*.

North Horn formation

Upper Cretaceous and Paleocene: Utah.

S. L. Schoff, 1938, *Ohio State Univ. Abs. Doctors' Dissert.* 25, p. 379.

E. M. Spieker, 1946, *U. S. Geol. Survey Prof. Paper* 205-D, p. 132-135.

North Keys sand

Miocene (?): Maryland.

J. T. Hack, 1955, *U. S. Geol. Survey Prof. Paper* 267-A, p. 8-10.

Northrip member (of Yegua formation)

Eocene: Texas.

H. D. McCallum, 1947, *S. Tex. [Geol. Soc. Guidebook] 14th Ann. Meeting Field Trip*, p. 5.

Northwest Arm formation

Ordovician: Newfoundland, Canada.

J. R. Cooper, 1937, Newfoundland Geol. Survey Bull. 9, p. 7-8.

Norton limestone member (of Tribes Hill formation)

Lower Ordovician: New York.

R. R. Wheeler, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1938-1939; 1942, Am. Jour. Sci., v. 240, no. 7, p. 518, 522, 523.

Nortonville shale member (of Kreyenhagen formation)

Eocene, upper: California.

P. P. Goudkoff, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 248 (fig. 99a), 150 [preprint 1941].

Ralph Stewart, 1949, U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 34, sheet 2.

Norway quartz monzonite

Upper Devonian (?) (New Hampshire magma series): New Hampshire.

A. P. Smith and others, 1938, Geologic map and structure sections of the Mt. Chocorua quadrangle, New Hampshire (1:62,500): N. H. Highway Dept.

Norwood shale

Middle Devonian: Michigan.

[G. M. Ehlers], 1938, Mich. Acad. Sci., Arts and Letters Sec. Geology and Mineralogy [Guidebook] 8th Ann. Field Excursion, p. 3, [figs. 1-3] after p. 8.

Norwood tuff

Oligocene: Utah.

A. J. Eardley, 1944, Geol. Soc. America Bull., v. 55, no. 7, p. 845-846.

Notikewin member (of Spirit River formation)

Lower Cretaceous: Alberta, Canada.

P. C. Badgley, 1952, Canada Geol. Survey Paper 52-11, p. 9.

Notre Dame series

Silurian: Newfoundland, Canada.

W. H. Twenhofel and R. R. Shrock, 1937, Geol. Soc. America Bull., v. 48, no. 12, p. 1767.

Nottawasaga group

Ordovician: Ontario, Canada (subsurface).

B. A. Liberty, 1955, Geol. Assoc. Canada Proc., v. 7, pt. 1, p. 146.

Nova formation

(?) Miocene, upper: California.

R. H. Hopper, 1947, Geol. Soc. America Bull., v. 58, no. 5, p. 414.

Novato conglomerate

Cretaceous (?): California.

C. E. Weaver, 1949, Geol. Soc. America Mem. 35, p. 18 (table 3), 46.

Noxie sandstone lentil or member (of Chanute formation)

Pennsylvanian (Missouri subseries): Kansas and Oklahoma.

R. C. Moore and others, 1937, Kans. Geol. Soc. Guidebook 11th Ann. Field Conf., p. 40, 42.

M. C. Oakes, 1940, Okla. Geol. Survey Bull. 62, p. 61.

Noxubee sand

Eocene (Wilcox): Mississippi.

F. F. Mellen, 1950, Miss. State Geol. Survey Bull. 69, p. 10-11.

Nuevo León group

Lower Cretaceous: Nueva León, Mexico.

R. W. Imlay, 1944, *Geol. Soc. America Bull.*, v. 55, no. 8, p. 1005, 1007, Chart 10a.

Nugget series

Precambrian: British Columbia, Canada.

R. A. McGuire, 1941, *The Miner*, v. 14, no. 10, p. 58-59.

Nugsuak formation

Cretaceous-Tertiary: West Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 258-262.

Nunarsuit granite

Precambrian: Southwest Greenland.

C. E. Wegmann, 1938, *Meddel. om Grønland*, bind 113, nr. 2, p. 98-105.

Nunatami formation

Lower Ordovician (Upper Canadian): North Greenland.

Christian Poulsen, 1927, *Meddel. om Grønland*, bind 70, nr. 2, p. 246-248, 342.

Nunkoweap sandstone

Precambrian (Kwaguntan): Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 114.

Nunn member (of Lake Valley formation)

Mississippian (Osage): New Mexico.

L. E. Laudon and A. L. Bowsher, 1949, *Geol. Soc. America Bull.*, v. 60, no. 1, p. 13, fig. 4.

Nuwok formation

Pliocene: Alaska.

W. H. Dall, 1919, *Report of the Canadian Arctic expedition 1913-1918*, v. 8, pt. A, p. 26A.

Nygaard Bay limestone

Lower Ordovician (Canadian): North Greenland.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 50.

Oacoma zone (in Sully member of Pierre formation)

Cretaceous: South Dakota.

W. V. Searight, 1937, *S. Dak. State Geol. Survey Rept. Inv. 27*, p. 23-25, pl. 3.

Oak Bay formation

Silurian: New Brunswick, Canada.

F. J. Alcock, 1946, *Canada Geol. Survey Paper (Prelim. Map) 46-3*.

Oak Creek member (of Supai formation)

Pennsylvanian: Arizona.

R. L. Jackson, 1951, *Plateau*, v. 24, no. 2, p. 87-88, 91.

Oak Hall member (of Nealmont limestone)

Middle Ordovician (Mohawkian): Pennsylvania.

G. M. Kay, 1944, *Jour. Geology*, v. 52, no. 1, p. 3; no. 2, p. 97.

Oak Hill member (of Naheola formation)

Paleocene (Midway): Alabama.

L. D. Toulmin, P. E. LaMoreaux, and C. R. Lanphere, 1951, *Ala. Geol. Survey Special Rept. 21*, p. 42-44.

Oak Orchard member (of Lockport formation)

Middle Silurian (upper Niagaran) : New York.

B. F. Howell and J. T. Sanford, 1947, *Wagner Free Inst. Sci. Bull.*, v. 22, no. 4, p. 33-34.**Obatogamau granite**

Precambrian : Quebec, Canada.

G. W. H. Norman, 1936, *Royal Soc. Canada Trans.*, ser. 3, v. 30, sec. 4, p. 124.**Obispo tuff member (of Monterey formation)**

Miocene, lower : California.

M. N. Bramlette, 1946, *U. S. Geol. Survey Prof. Paper* 212, p. 22-23.**Oblique Creek formation**

Age unknown : British Columbia, Canada.

K. D. Watson and W. H. Matthews, 1944, *British Columbia Dept. Mines Bull.* 19, p. 14-15.**Obregon formation**

Pennsylvanian (Cisco) : Texas.

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66, 91.**O'Carroll member (of Martin limestone)**

Devonian : Arizona.

S. L. Tainter, 1948, *U. S. Bur. Mines Rept. Inv.* 4293, p. 5.†**Ocate sandstone**

Jurassic : New Mexico.

G. O. Bachman, 1953, *U. S. Geol. Survey Oil and Gas Inv. Map* OM 137.**Oceanic formation**

Eocene, upper, to Oligocene : Barbados, British West Indies.

J. B. Harrison and A. J. Jukes-Brown, 1890, *The geology of Barbados* : Salisbury, Bennett Brothers, p. 7, 17-26.Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1577-1586.**Ochoa series**

Permian : New Mexico and Texas.

J. E. Adams and others, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 11, p. 1676-1677.**Ocoa formation**

Eocene : Dominican Republic.

Richard Weyl, 1941, *Deutsch-Dominikanischen Tropenforschungsinstituts Veröff.*, Band 2, p. 25, 29.**Oconto gabbroic anorthosite**

Precambrian : Ontario, Canada.

J. M. Harrison, 1944, *Geol. Soc. America Bull.*, v. 55, no. 12, p. 1409.**Ocotillo conglomerate**

Pliocene, upper, of Pleistocene, lower : California.

T. W. Dibblee, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, chap. 2, p. 24.**Ocotillo silt member (of Tansill formation)**

Permian (Guadalupe) : New Mexico and Texas.

W. Tex. Geol. Soc. [Guidebook] Fall Field Trip, Sept. 1940, p. 7, 14, fig. 2.

R. K. DeFord and G. D. Riggs, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 9, p. 1717, 1722, table 2.

Ocozocualta [formation]

Upper Cretaceous: Tabasco, Mexico.

E. J. Guzman, Rodolfo Suarez, and Ernesto Lopez Ramos, 1953, 19^o Cong. Géol. Internat. Comptes rendus, fasc. 16, pl. 1 (geol. map) [1954].

Odee formation

Pleistocene: Kansas.

H. T. U. Smith, 1940, Kans. State Geol. Survey Bull. 34, p. 100-108.

Offley Island formation

Middle Silurian (upper Llandovery): North Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 238-239.

Oglesby marble member (of Nittany formation)

Lower Ordovician (Canadian): Virginia.

B. N. Cooper, 1939, Va. Geol. Survey Bull. 55, p. 17-19.

Oglesby member (of Pecatonica formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., fig. 3.

Oglethorpe formation

Precambrian: Georgia.

A. S. Furcron and K. H. Teague, 1945, Ga. Geol. Survey Bull. 51, p. 35-36.

Ohia basalt

Pleistocene(?): Hawaiian Islands (Maui).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 94-96.

Oklan series (epoch)

Middle Pennsylvanian: North America.

R. C. Moore and M. L. Thompson, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 3, p. 288-289, 292-297.

Okmok volcanics

Quaternary: Alaska (Aleutian Islands).

F. M. Byers, Jr., and others, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 3, p. 31.

Okpikruak formation

Lower Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, Washington Acad. Sci. Jour., v. 41, no. 5, p. 159-160.

Olaa agglomerate

[Quaternary]: Hawaiian Islands (Hawaii).

C. K. Wentworth, 1938, Hawaiian Volcano Observatory 3d Special Rept., p. 34, 38.

Olalla pyroxenite

Jurassic(?): British Columbia, Canada.

H. S. Bostock, 1940, Canada Geol. Survey Map 341A.

Olalla syenite

Jurassic and/or younger: British Columbia, Canada.

H. S. Bostock, 1940, Canada Geol. Survey Map 341A.

Olallie lavas

Pleistocene: Oregon.

T. P. Thayer, 1936, Jour. Geology, v. 44, no. 6, p. 706, 709 (fig. 2), 713 (fig. 3).

Old Bridge sand member (of Raritan formation)

Upper Cretaceous: New Jersey.

H. C. Barksdale and others, 1943, The ground-water supplies of Middlesex County, New Jersey: N. J. State Water Policy Comm. [Special Rept. 8], p. 67.

Olden gabbro

Precambrian: Ontario, Canada.

W. D. Harding, 1951, Ontario Dept. Mines Ann. Rept., v. 56, pt. 6, p. 24-25.

Older Angaur limestone*See* Angaur (Older and Younger) limestone.**Oldman formation**

Upper Cretaceous: Alberta, Canada.

L. S. Russell and R. W. Landes, 1940, Canada Geol. Survey Mem. 221, p. 62-72.

Old Ocean shale

Oligocene: Texas (subsurface).

Alexander Deussen and K. D. Owen, 1939, Am. Assoc. Petroleum Geologists Bull., v. 23, no. 11, p. 1634.

Oldsmar limestone

Eocene, lower: Florida (subsurface).

P. L. Applin and E. R. Applin, 1944, Am. Assoc. Petroleum Geologists Bull., v. 28, no. 12, p. 1681, 1698-1701.

Old Tom formation

Triassic or older: British Columbia, Canada.

H. S. Bostock, 1940, Canada Geol. Survey Map 341A.

Olean drift

Pleistocene (Wisconsin): New York and Pennsylvania.

Paul MacClintock and E. T. Apfel, 1944, Geol. Soc. America Bull., v. 55, no. 10, p. 1152-1155.

Olequa Creek member (of Cowlitz formation)

Eocene, upper: Washington.

D. A. Henriksen, 1954, Dissert. Abs., v. 14, no. 12, p. 2316.

Olga quartz diorite

Precambrian: Quebec, Canada.

B. C. Freeman, 1938, Jour. Geology, v. 46, no. 5, p. 691.

Olive Hill facies (of Muldraugh formation)

Lower Mississippian: Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 217-222.

Oliver syenite

Jurassic and/or younger: British Columbia, Canada.

H. S. Bostock, 1940, Canada Geol. Survey Map 341A.

Olokele formation

Pliocene(?): Hawaiian Islands (Kauai).

G. A. Macdonald, D. A. Davis, and D. C. Cox, 1954, Volcano Letter 526, p. 2 (fig. 1).

Olomoana volcanics

Pliocene(?): Samoa Islands (Tutuila).

H. T. Stearns, 1944, Geol. Soc. America Bull., v. 55, no. 11, p. 1286, 1288-1289.

Olvido formation

Jurassic: Tamaulipas, Mexico.

Arnold Heim, 1940, Eclogae Geologicae Helvetiae, v. 33, no. 2, p. 320.

Olympic sand member (of Senora formation)

Pennsylvanian: Oklahoma (subsurface).

A. W. Tillotson, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 11, p. 1579-1585.

Omadi sandstone

Cretaceous: Nebraska.

G. E. Condra and E. C. Reed, 1943, *Nebr. Geol. Survey Bull.* 14, p. 18-19, 20.

Onate formation

Middle Devonian: New Mexico.

F. V. Stevenson, 1945, *Jour. Geology*, v. 53, no. 4, p. 222-227.

Onesquethaw stage

Lower or Middle Devonian (Ulsterian): New York.

G. A. Cooper and others, 1942, *Geol. Soc. America Bull.*, v. 53, no. 12, pt. 1, p. 1733, Chart 4.

One Tree formation

Lower Cretaceous: British Columbia, Canada.

J. A. Jeletsky, 1950, *Canada Geol. Survey Paper* 50-37, p. 38.

Ooyahgah formation

Middle Cambrian: Northwest Territories (Devon Island), Canada.

V. E. Kurtz, A. H. McNair, and D. B. Wales, 1952, *Am. Jour. Sci.*, v. 250, no. 9, p. 646-648.

Opaoka complex

See Opaoka River complex.

Opaoka River complex

Precambrian: Quebec, Canada.

J. A. Dresser and T. C. Denis, 1949, *Quebec Dept. Mines Geol. Rept.* 20, v. 3, p. 31.

Open Door limestone

Cambrian: Wyoming.

A. B. Shaw and C. R. DeLand, 1955, *Wyo. Geol. Assoc. Guidebook 10th Ann. Field Conf.*, p. 38, 41, figs. 1, 2.

Opuntia formation

Jurassic: British Columbia, Canada.

C. H. Crickmay, 1930, *Calif. Univ. Pub. Dept. Geol. Sci. Bull.*, v. 19, no. 2, p. 33, 35.

Oracle granite

Precambrian: Arizona.

N. P. Peterson, 1938, *Ariz. Bur. Mines Bull.* 144, *Geol. Ser.* 11, p. 8-9, 10.

Ora Loma formation

See Oro Loma formation.

Oranda formation

Middle Ordovician: Virginia.

B. N. Cooper and G. A. Cooper, 1946, *Geol. Soc. America Bull.*, v. 57, no. 1, p. 86-89.

Orchard Point conglomerate member (of Blakeley formation)

Oligocene, middle: Washington.

C. E. Weaver, 1937, *Wash. [State] Univ. Pubs. in Geology*, v. 4, p. 114.

Ord Mountain group

Triassic (?): California.

D. L. Gardner, 1940, *Calif. Jour. Mines and Geology*, v. 36, no. 3, p. 266-267.

Orella member (of Brule formation)

Oligocene: Nebraska.

C. B. Schultz and T. M. Stout, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1921; 1955, *Nebr. Univ. State Mus. Bull.*, v. 4, no. 2, p. 41-44.**Orellan age**

Oligocene: North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 11, pl. 1.**Ore Mountain diorite**

Paleozoic (pre-late Devonian): Maine.

S. S. Philbrick, 1936, *Am. Jour. Sci.*, 5th ser., v. 31, no. 181, p. 9-10.**Orestimba group**

Upper Cretaceous: California.

F. M. Anderson, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1863.**Orfordville formation**

Middle Ordovician (?): New Hampshire and Vermont.

C. A. Chapman and others, 1938, *Geologic map and structure sections of the Mascoma quadrangle, New Hampshire (1:62,500)*: N. H. Highway Dept.C. A. Chapman, 1939, *Geol. Soc. America Bull.*, v. 50, no. 1, p. 132-134.**Orient formation**

Paleozoic: Utah.

B. F. Stringham, 1942, *Geol. Soc. America Bull.*, v. 53, no. 2, p. 271, pl. 1.**Orient granite porphyry**

Tertiary: Utah.

B. F. Stringham, 1942, *Geol. Soc. America Bull.*, v. 53, no. 2, p. 275.**Oriskany Falls member (of Oriskany sandstone)**

Lower Devonian: New York.

Charles Schuchert, [1943], *Stratigraphy of the eastern and central United States: New York*, John Wiley and Sons, p. 85.**Orman Lake limestone member (of Greenhorn formation)**

Upper Cretaceous: South Dakota and Wyoming.

B. C. Petsch, 1949, *S. Dak. State Geol. Survey Rept. Inv.* 65, p. 9-10.**Oro Blanco conglomerate**

Mesozoic: Arizona.

G. M. Fowler, 1938, *Ariz. Bur. Mines Bull.* 145, *Geol. Ser.* 12, p. 121, pl. 32.**Orocopia schist**

Precambrian: California.

W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, no. 1, p. 21.**Orocovis limestone**

Upper Cretaceous: Puerto Rico.

R. C. Mitchell, 1954, *Puerto Rico Univ. Agr. Expt. Sta. Tech. Paper* 13, p. 47, 48.**Oro Loma formation**

Pliocene, lower and middle: California.

F. F. Davis and D. W. Carlson, 1952, *Calif. Jour. Mines and Geology*, v. 48, no. 3, p. 212.L. I. Briggs, Jr., 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 167, p. 12, 46-48.**Oronoco formation**

Cambrian: Virginia.

R. O. Bloomer and R. R. Bloomer, 1947, *Jour. Geology*, v. 55, no. 2, p. 95-97, 102-106.

Oro Plaja granite porphyry

Tertiary: Utah.

B. F. Stringham, 1942, *Geol. Soc. America Bull.*, v. 53, no. 2, p. 275.**Oropouche formation**

Pleistocene: Trinidad, British West Indies.

E. W. Berry, 1925, *U. S. Natl. Mus. Proc.*, v. 66, art. 21, p. 1, 2, 3.**Ortega formation**

Tertiary: New Mexico.

H. T. U. Smith, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 103.**Ortega quartzite**

Precambrian: New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 21-22, 43.**Orton gravels**

Pleistocene: South Dakota.

B. C. Petsch and E. J. Bolin, 1950, *Areal geology of the Fort Bennett quadrangle* [geol. map, 1:62,500]: S. Dak. State Geol. Survey.**Orwell limestone**

Middle Ordovician (Black River-Trenton): Vermont.

W. M. Cady, 1945, *Geol. Soc. America Bull.*, v. 56, no. 5, p. 524, 555, 556-557.**Osage lens (in Newcastle formation)**

Upper Cretaceous: Wyoming.

R. M. Grace, 1952, *Wyo. Geol. Survey Bull.* 44, p. 14, 15.**Osgood Mountain quartzite**

Lower Cambrian (?): Nevada.

H. G. Ferguson, S. W. Muller, and R. J. Roberts, 1951, *Geology of the Winnemucca quadrangle, Nevada*: U. S. Geol. Survey Geol. Quadrangle Map [GQ 11].**Osila sand**

Cretaceous or Eocene: California.

F. C. Hodges and E. R. Murray-Aaron, 1943, *Calif. Oil Fields*, v. 29, no. 1, p. 14, pl. 6 [1944].C. E. Leach, 1948, *in* *Structure of typical American oil fields*: Tulsa, Okla., Am. Assoc. Petroleum Geologists, v. 3, p. 34.**Osisko Lake rhyolites**

Precambrian: Quebec, Canada.

H. J. Conolly and R. C. Hart, 1936, *Canadian Inst. Mining and Metallurgy Trans.*, v. 39, p. 11.**Oso beds**

Precambrian (Chuaran): Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 112.**Osobb formation**

Upper Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada*: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].**Ostrander member (of Dakota formation)**

Lower Cretaceous (Dakota): Minnesota.

C. R. Stauffer and G. A. Thiel, 1941, *Minn. Geol. Survey Bull.* 29, p. 103.**Ostrea limestone**

Upper Cretaceous: Jamaica, British West Indies.

L. J. Chubb, 1955, *Geol. Mag.*, v. 92, no. 3, p. 183.

O'Sullivan member (of Mannville formation)

Lower Cretaceous: Alberta, Canada (subsurface).

A. W. Nauss, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 11, p. 1615.**Otates horizon (of Tamaulipas limestone)**

Middle Cretaceous: Tamaulipas, Mexico.

J. M. Muir, 1936, *Geology of the Tampico region, Mexico: Tulsa, Okla., Am. Assoc. Petroleum Geologists*, p. 27-28.**Otoe redbed member (of Wellington formation)**

Permian: Oklahoma.

G. O. Raasch, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1928.**Otoe shale member (of Friedrich formation)**

Pennsylvanian (Virgil): Nebraska and Iowa.

G. E. Condra and E. C. Reed, 1938, *Nebr. Geol. Survey Paper* 12, p. 9.**Ouareau transition beds**

Middle Ordovician (Black River): Quebec, Canada.

V. J. Okulitch, 1939, *Am. Jour. Sci.*, v. 237, no. 2, p. 83.**Outerson basalts**

Pliocene: Oregon.

T. P. Thayer, 1936, *Jour. Geology*, v. 44, no. 6, p. 705, 706, 709 (fig. 2).**Outlaw formation**

Lower Cretaceous: Arizona.

H. E. Enlows, 1955, *Geol. Soc. America Bull.*, v. 66, no. 10, p. 1217.**Oveja formation**

Precambrian (Kwaguntan): Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 113.**Overall limestone member (of Admiral formation)**

Permian (Wolfcamp age): Texas.

R. C. Moore *in* A. K. Miller and Walter Youngquist, 1947, *Kans. Univ. Paleont. Contr.* 2, Mollusca, art. 1, p. 1 (footnote).R. C. Moore, 1949, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 80.**Overland Mountain granite**

Precambrian: Colorado.

J. M. Bray, 1942, *Geol. Soc. America Bull.*, v. 53, no. 5, p. 770.**Ovid formation**

Upper Cambrian: Idaho and Utah.

C. D. Walcott, 1925, *Smithsonian Misc. Coll.*, v. 75, no. 3, p. 96, 104, 105.E. O. Ulrich and G. A. Cooper, 1938, *Geol. Soc. America Special Paper* 13, p. 25.**Owego shale member (of Cayuta monothem)**

Upper Devonian (Chautauquan): Pennsylvania.

K. E. Caster, 1938, *Jour. Paleontology*, v. 12, no. 1, p. 45 (fig. 7), 47.**Owl Canyon formation**

Permian: Colorado and South Dakota.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, *Nebr. Geol. Survey Bull.* 13, p. 2, 4, 19, 45.**Owl Mountain glacial substage**

Pleistocene (pre-Wisconsin): Colorado.

D. F. Eschman, 1952, (abs.) *Geol. Soc. America Bull.*, v. 63, no. 12, pt. 2, p. 1380; 1955, *Jour. Geology*, v. 63, no. 3, p. 201-203.

Oxarart member (of Bearpaw formation)

Upper Cretaceous: Saskatchewan, Canada.

G. M. Furnival, 1941, *Royal Soc. Canada Trans.*, v. 35, sec. 4, p. 60-63.**Oxbow Creek basalt**

Miocene and/or Pliocene: Wyoming.

A. D. Howard, 1937, *Geol. Soc. America Special Paper* 6, p. 77-79.**Oxford formation**

Lower Ordovician (Beekmantown): Ontario, Canada.

A. E. Wilson, 1937, *Royal Soc. Canada Trans.*, ser. 3, v. 31, sec. 4, p. 49, 52.**Oxford group**

Precambrian: Manitoba, Canada.

J. F. Wright, 1932, *Canada Geol. Survey Summ. Rept.* 1931, pt. C, p. 9-11.**Paakea basalt**

Pleistocene (?): Hawaiian Islands (Maui).

G. A. Macdonald *in* H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 230, 251-252.**Pablo formation**

Permian (?): Nevada.

H. G. Ferguson and S. H. Cathcart, 1954, *U. S. Geol. Survey Geol. Quadrangle Map* GQ 40.**Pacheco group**

Upper Cretaceous: California.

N. L. Talliaferro, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 2, p. 131 [preprint 1941].**Pacheta member (of Lowell formation)**

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 12, 14.**Pachuta marl member (of Yazoo clay)**

Eocene, upper (Jackson group): Alabama.

G. E. Murray, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 10, p. 1838, 1839 (footnote).L. D. Toulmin, P. E. LaMoreaux, and C. R. Lanphere, 1951, *Ala. Geol. Survey Special Rept.* 21, p. 120-122, pl. 3.**Pacific muck**

Pleistocene and Recent: Panama Canal Zone.

[T. R. Thompson], 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap 3, p. 23-24.S. M. Jones, 1950, *Geol. Soc. America Bull.*, v. 61, no. 9, table 2.**Packard Ranch member (of Supai formation)**

Pennsylvanian: Arizona.

R. L. Jackson, 1951, *Plateau*, v. 24, no. 2, p. 87-88, 91.**Packwood gravels**

Pliocene to Pleistocene: California.

M. D. Crittenden, Jr., 1951, *Calif. Dept. Nat. Res., Div. Mines Bull.* 157, p. 42-43, pl. 1 (geol. map).**Pacoima formation**

Pleistocene, upper: California.

G. B. Oakeshott, 1952, *Petroleum World*, v. 49, no. 1, p. 21 (map), 22.

Paddy member (of Peace River formation)

Lower Cretaceous: Alberta, Canada.

P. C. Badgley, 1952, Canada Geol. Survey Paper 52-11, p. 8.

Padilla limestone

Lower Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1940, Geol. Soc. America Bull., v. 51, no. 1, p. 121, 123.

Pagan limestone

Recent: Mariana Islands (Pagan).

Risaburo Tayama, 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 46, table 4 [English translation in library of U. S. Geol. Survey, p. 55].

Pago volcanic series

Pliocene and Pleistocene(?): Samoa Islands (Tutuila).

H. T. Stearns, 1944, Geol. Soc. America Bull., v. 55, no. 11, p. 1286, 1290-1299.

Pahrump series

Precambrian: California.

D. F. Hewett, 1940, Washington Acad. Sci. Jour., v. 30, no. 6, p. 239-240.

Painted formation

Middle Ordovician(?): Northeast Greenland.

A. B. Cleaves and E. F. Fox, 1935, Geol. Soc. America Bull., v. 46, no. 3, p. 476, pl. 43.

Painted Hill formation

Pliocene: California.

C. R. Allen, 1954, Calif. Dept. Nat. Res., Div. Mines Bull. 170, map sheet 20.

Painted Rock formation

Miocene, lower: California.

T. W. Dibblee, Jr., 1952, in AAPG, SEPM, SEG, Joint Ann. Meeting Guidebook, p. 82.

Paint Pot Crater flow

Recent: California.

C. A. Anderson, 1941, Calif. Univ. Dept. Geol. Sci. Bull., v. 25, no. 7, p. 371.

Paint River greenstones

Precambrian (Huronian): Michigan.

H. M. Martin, 1936, The centennial geological map of the northern peninsula of Michigan (1:500,000): Mich. Geol. Survey Div. Pub. 39 (Geol. Ser. 33).

Pajarito lavas

Mesozoic(?): Arizona.

B. P. Webb and K. C. Coryell, 1954, U. S. Atomic Energy Comm. RME-2009, p. 8, pl. 1.

Pajarito shale member (of Purgatoire formation)

Lower Cretaceous: New Mexico.

Ernest Dobrovolsky and C. H. Summerson, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 62, sheet 1.

Pajaritos [formation]

Miocene, middle: Istmo de Tehautepec, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, correlation chart.

Pakoon limestone

Permian (Wolfcampian): Arizona.

A. H. McNair, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 3, p. 524-525.

Palao limestone

See Palau limestone.

Palatine Bridge limestone member (of Tribes Hill formation)

Lower Ordovician (lower Canadian) : New York.

D. W. Fisher, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 76 (fig. 2), 85-87.

Palau limestone

Pleistocene: Caroline Islands (Babelthaup).

Risaburo Tayama, 1935, *Topography, geology, and coral reefs of the Palau Islands*: Tohoku Univ., *Inst. Geology and Paleontology Contr. in Japanese Language*, no. 18, p. 14, 39 [English translation in library of U. S. Geol. Survey]; 1939, *Japanese Jour. Geology and Paleontology Trans. and Abs.*, nos. 1-2, *Abs.*, p. 29.

Palikea formation

Pleistocene: Hawaiian Islands (Kauai).

G. A. Macdonald, D. A. Davis, and D. C. Cox, 1954, *Volcano Letter* 526, p. 3.

Palliser formation

Devonian: Alberta, Canada.

G. S. Hume and H. H. Beach, 1941, *Canada Geol. Survey Paper (Prelim. Map)* 41-8.

Palmar formation

Lower Cretaceous: Senora, Mexico.

R. E. King, 1939, *Geol. Soc. America Bull.*, v. 50, no. 11, p. 1660-1661.

Palmarolle granodiorite

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 129.

Palm Canyon complex

Paleozoic or older: California.

W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, no. 1, p. 21-25.

Palmerton sandstone

Middle Devonian: Pennsylvania.

F. M. Swartz *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves 1939, *Pa. Geol. Survey*, ser. 4, *Bull. G* 19, p. 52, fig. 17.

Palmetto type granite

Paleozoic (epi-Paleozoic) : Georgia.

G. W. Crickmay, 1952, *Ga. Geol. Survey Bull.* 58, p. 40, 44.

Palmiste clays

Pliocene: Trinidad, British West Indies.

M. E. Lehner, 1935, [France] *Office national des combustibles liquides Annales*, 10^e année, no. 4, p. 717 (table).

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1451 (chart).

Palm Park formation

Oligocene: New Mexico.

V. C. Kelley and Caswell Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 114, 120-121.

Palms granite

Precambrian: California.

W. J. Miller, 1938, *Geol. Soc. America Bull.*, v. 49, no. 3, p. 421-424.

Palmyra limestone member (of Friedrich formation)

Pennsylvanian (Virgil) : Nebraska and Iowa.

G. E. Condra and E. C. Reed, 1938, *Nebr. Geol. Survey Paper* 12, p. 9.

Palo Alto formation

Oligocene: Tamaulipas, Mexico.

Manuel Alvarez, Jr., 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 2, p. 365.**Palo Seco formation**

Miocene: Trinidad, British West Indies.

R. A. Liddle, [1928], the geology of Venezuela and Trinidad: Fort Worth, Tex., J. P. MacGowan, p. 450-453.

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 11, p. 1445, 1451 (chart).**Palzo sandstone**

Pennsylvanian: Illinois.

J. M. Weller, L. G. Henbest, and C. O. Dunbar *in* C. O. Dunbar and L. G. Henbest, 1942, *Ill. State Geol. Survey Bull.* 67, p. 10, 15 (fig. 2) [1943].**Pamoranes beds (in San Fernando formation)**

Miocene: Tamaulipas, Mexico.

Ramiro Robles Ramos, 1942, *Irrigación en Mexico*, v. 23, no. 3, p. 45 (correlation chart).**Pamour conglomerate**

Precambrian: Ontario, Canada.

Peter Price and R. C. E. Bray, 1948, *in* *Structural geology of Canadian ore deposits*: Canadian Inst. Mining and Metallurgy, p. 559.**Pampa schist**

Jurassic or older: California.

T. W. Dibblee, Jr., and C. W. Chesterman, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 168, p. 12, 18-22.**Pando porphyry**

Tertiary, lower: Colorado.

Ogden Tweto, 1951, *Geol. Soc. America Bull.*, v. 62, no. 5, p. 510.**Paniau volcanic series**

Pliocene (?): Hawaiian Islands (Niihau).

H. T. Stearns, 1946, *Hawaii Div. Hydrography Bull.* 8, p. 90, 91.H. T. Stearns *in* H. T. Stearns and G. A. Macdonald, 1947, *Hawaii Div. Hydrography Bull.* 12, p. 18-19.**Panola granite**

Age not given: Georgia.

L. A. Herrmann, 1954, *Ga. Geol. Survey Bull.* 61, p. 85.**Panther Canyon formation**

Middle Triassic: Nevada.

H. G. Ferguson, S. W. Muller, and R. J. Roberts, 1951, *Geology of the Winnemucca quadrangle, Nevada*: U. S. Geol. Survey Geol. Quadrangle Map [GQ 11].**Papaskwasati group**

Precambrian: Quebec, Canada.

J. M. Neilson, 1951, *Quebec Dept. Mines Prelim. Rept.* 254, p. 6.**Papatele trachyte**

Pliocene or Pleistocene, lower: Samoa Islands (Tutuila).

R. A. Daly, 1924, *Carnegie Inst. Washington Pub.* 340, p. 106-108, 129-130.**Papel Blanco shale (in Puente formation)**

Miocene, upper: California.

M. L. Krueger, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 363.A. O. Woodford, T. G. Moran, and J. S. Shelton, 1946, *Am. Assoc. Petroleum Geologists Bull.*, v. 30, no. 4, p. 521.

Paradise member (of Cipero formation)

Oligocene: Trinidad, British West Indies.

R. M. Stainforth, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 7, p. 1300-1301.**Paraje Solo formation**

Miocene, middle: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 230, 234, correlation chart.**Parashant tongue**

Lower and/or Middle Cambrian: Arizona.

E. D. McKee, 1945, *Carnegie Inst. Washington Pub.* 563, p. 14, 29, 98-99.**Pardee gneiss**

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull.* 15, p. 15.**Pardonet member (of Schooler Creek formation)**

Triassic: British Columbia, Canada.

F. H. McLearn, 1940, *Royal Soc. Canada Trans.*, ser. 3, v. 34, sec. 4, p. 67.**Parham gabbro**

Precambrian: Ontario, Canada.

W. G. Miller, 1899, *Ontario Bur. Mines Rept.*, v. 8, pt. 2, p. 228-229.J. M. Harrison, 1944, *Geol. Soc. America Bull.*, v. 55, no. 12, p. 1409.**Park City volcanics**

Oligocene, lower: Utah.

A. J. Eardley, 1955, *Utah Geol. Soc. Guidebook* 10, p. 38, fig. 9.**Parker Hill sandstone member (of Stanley formation)**

Pennsylvanian: Arkansas.

N. H. Stearn *in* J. M. Hansell and J. C. Reed, 1935, *Am. Inst. Mining and Metall. Eng. Trans.*, v. 115, p. 245; 1936, *Econ. Geology*, v. 31, no. 1, p. 15-16.**Parks formation**

Pennsylvanian (Lampasas): Texas (subsurface).

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66, 86.**Parlatuvier formation**

Cretaceous(?): Tobago, British West Indies.

J. C. Maxwell, 1948, *Geol. Soc. America Bull.*, v. 59, no. 8, p. 806-809.**Parras shale**

Upper Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1936, *Geol. Soc. America Bull.*, v. 47, no. 7, p. 1132-1133.**Parritas formation**

Lower Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1936, *Geol. Soc. America Bull.*, v. 47, no. 7, p. 1117-1119.**Parsonsborg sand**

Pleistocene (late Wisconsin): Maryland.

W. C. Rasmussen and T. H. Slaughter, 1955, *Md. Dept. Geology, Mines and Water Res. Bull.* 16, p. 114-115, 118-119.**Parsons Pond beds**

Ordovician: Newfoundland, Canada.

Rudolf Ruedemann, 1947, *Geol. Soc. America Mem.* 19, p. 59.

Partridge granite

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, Newfoundland Geol. Survey Bull. 15, p. 16.

Partridge Island formation

Upper Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 117-118.

Parunuweap formation

Pliocene(?) : Utah.

H. E. Gregory, 1945, Jour. Geology, v. 53, no. 2, p. 110-115.

Par Value member (of Montoya dolomite)

Upper Ordovician: New Mexico.

L. P. Entwistle, 1944, N. Mex. State Bur. Mines Min. Res. Bull. 19, p. 17, 18.

Pascalis-Tiblemont granodiorite

Precambrian (Archean): Quebec, Canada.

A. S. MacLaren, 1950, Canada Geol. Survey Map 997A.

Paseo Hondo formation

Permian: Chiapas, Mexico.

M. L. Thompson and A. K. Miller, 1944, Jour. Paleontology, v. 18, no. 6, p. 486.

Paso Mono limestone

Upper Cretaceous: Tabasco, Mexico.

Ramiro Robles Ramos, 1942, Irrigación en Mexico, v. 23, no. 3, p. 45 (correlation chart).

G. P. Salas, 1949, Soc. Geológica Mexicana Bol., tomo 14, p. 54.

Paso Real formation

Oligocene to Miocene: Cuba.

P. J. Bermudez, 1950, Soc. Cubana Historia Nat. Mem., v. 19, no. 3, p. 283-284.

Passaconway syenite

Carboniferous(?) (White Mountain magma series): New Hampshire.

A. P. Smith and others, 1938, Geologic map and structure sections of the Mt. Chocorua quadrangle, New Hampshire (1:62,500): N. H. Highway Dept.

Pass Peak conglomerate

Eocene, middle: Wyoming.

A. J. Eardley and others, 1944, Hoback-Gros Ventre-Teton Field Conference [geologic map]. Privately printed.

Leland Horberg, Vincent Nelson, and Victor Church, 1949, Geol. Soc. America Bull., v. 60, no. 1, p. 187, 190.

Pastoria sand member (of White Bluff formation)

Eocene (Jacksonian): Arkansas.

L. J. Wilbert, Jr., 1953, Ark. Div. Geology Bull. 19, p. 40-56.

Patagonia group

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1937, (abs.) Geol. Soc. America Proc. 1936; p. 297 (table); 1949, Geol. Soc. America Mem. 38, p. 30, 53.

Patagonia limestone

Paleozoic (Devonic): Arizona.

[C. B.] Keyes, 1942, Pan-Am. Geologist, v. 77, no. 3, p. 227, 228.

Patoot beds

Upper Cretaceous (Senonian) : Northwest Greenland.

Oswald Heer, 1883, *Meddel. om Grønland*, hefte 5, pt. 3, p. 83, 112-118; pt. 5, p. 226-228.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 258-262.

Patterson Ranch group

Ordovician : Oklahoma.

C. E. Decker, 1942, *Okla. Acad. Sci. Proc.*, v. 22, p. 153-155.

Patula arkose

Lower Cretaceous : Coahuila, Mexico.

R. W. Imlay, 1940, *Geol. Soc. America Bull.*, v. 51, no. 1, p. 121.

Pauba formation

Pleistocene : California.

J. F. Mann, Jr., 1955, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 43, p. 9, 13-14.

Pauwalu basalt

Pleistocene (?) : Hawaiian Islands (Maui).

H. T. Stearns *in* H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 94, 95.

Pavant flow

Pliocene, upper, or Pleistocene, lower : Utah.

G. B. Maxey, 1946, *Am. Jour. Sci.*, v. 244, no. 5, p. 328.

Pavlof volcanics

Quaternary : Alaska.

G. C. Kennedy and H. H. Waldron, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept.* 2, pt. 2, pl. 2 (geol. map).

Pavlof Sister volcanics

Quaternary : Alaska.

G. C. Kennedy and H. H. Waldron, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept.* 2, pt. 2, pl. 2 (geol. map).

Pawtuckaway complex

Mississippian (?) (White Mountain magma series) : New Hampshire.

C. J. Roy and Jacob Freedman, 1944, *Geol. Soc. America Bull.*, v. 55, no. 7, p. 908-914.

Paxton Creek conglomerate (in Martinsburg shale)

Ordovician : Pennsylvania.

Bradford Willard and A. B. Cleaves, 1938, *Pa. Geol. Survey, ser. 4, Bull. G 8*, p. 5, 6.

Paynes shale and sandstone member (of Panoche group)

Upper Cretaceous : California.

I. F. Wilson, 1943, *Calif. Jour. Mines and Geology*, v. 39, no. 2, p. 201-202, 226 (fig. 5).

Paynes Hammock sand

Miocene : Alabama and Mississippi.

F. S. MacNeil, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 9, p. 1346-1354.

Peace Valley beds

Pliocene, middle : California.

J. C. Crowell, 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 8, p. 1629 (fig. 5), 1631-1632, 1637.

Peach Springs member (of Muav formation)

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, *Carnegie Inst. Washington Pub.* 563, p. 14, 29, 99-101.

Peanut Peak member (of Chadron formation)

Oligocene, lower : South Dakota.

John Clark, 1954, *Carnegie Mus. Annals*, v. 33, art. 11, p. 197-198.**Pearl Lake porphyry**

Precambrian (Algonian) : Ontario, Canada.

H. S. Robinson, 1923, *Econ. Geology*, v. 18, no. 7, p. 753, 760.G. B. Langford and E. G. Hancox, 1936, *Econ. Geology*, v. 31, no. 6, p. 601.**Pearsall formation**

Lower Cretaceous (Comanche series) : Texas (subsurface).

R. W. Inlay, 1944, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 3*.**Pearson formation**

Precambrian (Proterozoic) : Northwest Territories (Mackenzie), Canada.

C. H. Stockwell, 1936, *Canada Geol. Survey Map 377A*.**Pearson glauconite member (of Sabinetown formation)**

Eocene, lower (Wilcox) : Louisiana and Texas.

Richard Wasem and L. J. Wilbert, Jr., 1943, *Jour. Paleontology*, v. 17, no. 2, p. 182 (footnote).G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 63.**Pease River group**

Permian (Leonard series) : Texas.

H. C. Fountain, 1939, *in Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 5, p. 764.Robert Roth, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 8, p. 1412-1413.**Peasley limestone**

Middle Cambrian (Albertan) : Nevada.

H. E. Wheeler, 1940, *Nev. Univ. Bull., Geology and Mining Ser.*, no. 34, p. 17-27.**Peasley Pond conglomerate and sandstone**

Silurian : Quebec, Canada.

T. H. Clark, 1936, *Canadian Field Naturalist*, v. 50, no. 3, p. 33.**Pebble Island conglomerate**

Precambrian : Saskatchewan, Canada.

A. M. Christie, 1952, *Canada Geol. Survey Mem.* 269, p. 13-14.**Peckham formation**

Pleistocene, upper : California.

C. J. Leith, 1949, *Calif. Dept. Nat. Res., Div. Mines Bull.* 147, p. 26-27.**Peculiar shale (in Puente formation)**

Miocene, upper : California.

M. L. Krueger, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, p. 363.A. O. Woodford, T. G. Moran, and J. S. Shelton, 1946, *Am. Assoc. Petroleum Geologists Bull.*, v. 30, no. 4, p. 521.**Pederal chert member (of Abiquiu tuff)**

Miocene (?) : New Mexico.

F. S. Church and J. T. Hack, 1939, *Jour. Geology*, v. 47, no. 6, p. 618, pt. 3, 622.**†Pederal dolomite member (of Wilberns formation)**

Upper Cambrian : Texas.

Frederick Romberg and V. E. Barnes, 1944, *Geophysics*, v. 9, no. 1, p. 88.P. E. Cloud, Jr., V. E. Barnes, and Josiah Bridge, 1946, *Tex. Univ. Bur. Econ. Geology Pub.* 4301, p. 150, 155 [1945].

Pedlar formation

Precambrian : Virginia.

R. O. Bloomer and H. J. Werner, 1955, *Geol. Soc. America Bull.*, v. 66, no. 5, p. 582.**Pedregosa member (of Lowell formation)**

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 8-9, 17-18.**Pedro Miguel agglomerate member (of Panama formation)**

Miocene, lower : Panama Canal Zone.

[T. F. Thompson], 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap. 3, p. 17-18.W. P. Woodring and T. F. Thompson, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 2, p. 242.**Pebbles granite facies (of Ogishke conglomerate)**

Precambrian (Knife Lake) : Minnesota.

J. T. Stark and V. G. Sleight, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1032 (table 2), 1034-1035.**Pe Ell volcanics member (of Cowlitz formation)**

Eocene, upper : Washington.

D. A. Henriksen, 1954, *Dissert. Abs.*, v. 14, no. 12, p. 2316.**Peery limestone member (of Clifffield formation)**

Middle Ordovician : Virginia.

B. N. Cooper and C. E. Prouty, 1943, *Geol. Soc. America Bull.*, v. 54, no. 6, p. 863-864.**Peewatai Lake granite**

Precambrian (Archean) : Ontario, Canada.

T. L. Tanton, 1938, *Canada Geol. Survey Map* 432A.**Pejepscot gneiss**

Cambrian (?) : Maine.

L. W. Fisher, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 81; 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 113-115, table 1.**Pekisko member (of Livingstone formation)**

Carboniferous : Alberta, Canada.

R. J. W. Douglass, 1953, *Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 68.**Peleliu limestone**

Pleistocene : Caroline Islands (Peleliu, Ngemelis, and Angaur).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands* : *Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, *Coral reefs in the South Seas* : *Japan Hydrog. Office Bull.*, v. 11, p. 67, table 4 [English translation in library of U. S. Geol. Survey, p. 80].**Pelican Rock marls**

Eocene, middle : Trinidad, British West Indies.

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, No. 11, p. 1443, 1451 (chart).**Peller schist**

Paleozoic (?) : Virginia.

W. R. Brown, 1951, (abs.) *Geol. Soc. America Bull.*, v. 62, no. 12, pt. 2, p. 1547; 1953, *Ky. Geol. Survey, ser. 9, Special Pub. 1*, [p. 9] (fig. 1).

Pembroke eolianite

Pleistocene: Bermuda Islands.

R. W. Sayles, 1931, *Am. Acad. Arts and Sci. Proc.*, v. 66, no. 11, p. 395.**Pembroke formation**

Mississippian: Nova Scotia, Canada.

L. J. Weeks, 1945, *Canada Geol. Survey Paper (Prelim. Map)* 45-26.**Pemmican River formation**

Upper Cambrian(?) (Lower Ozarkian?): North Greenland.

Christian Poulsen, 1927, *Meddel. om Grønland*, bind 70, nr. 2, p. 244, 341.**Peñal shales***See* Peñal Quarry horizon.**Peñal Quarry horizon (of Palo Seco formation)**

Eocene, lower and middle: Trinidad, British West Indies.

R. A. Liddle, [1928], *The geology of Venezuela and Trinidad: Fort Worth, Tex.*, J. P. MacGowan, p. 450-453.**Pendejo tongue (of Abo formation)**

Permian (Wolfcampian): New Mexico.

L. C. Pray, 1954, *N. Mex. Geol. Soc. Guidebook 5th Field Conf.*, p. 93.**Pendleton formation**

Eocene, lower (Wilcox): Texas and Louisiana.

Richard Wasem and L. J. Wilbert, Jr., 1943, *Jour. Paleontology*, v. 17, no. 2, p. 182-186.**Pendleton Ferry formation**

Eocene (Wilcox): Texas and Louisiana.

G. E. Murray, Jr., and E. P. Thomas, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 1, p. 56 (footnote).**Pendola shale**

Upper Cretaceous: California.

B. M. Page, J. G. Marks, and G. W. Walker, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 8, p. 1743-1744.**Pend Oreille andesite***See* Pend Oreille Valley andesite.**Pend Oreille Valley andesite**

Tertiary, upper(?): Washington.

M. C. Schroeder, 1949, (abs.) *Northwest Science*, v. 23, no. 1, p. 39-40.**Penitas formation**

Pliocene: [Costa Rica].

H. N. Coryell and R. W. Mossman, 1942, *Jour. Paleontology*, v. 16, no. 2, p. 233.**Penitence Hill marl (of Navet formation)**

Eocene, lower or middle: Trinidad, British West Indies.

J. A. Cushman and H. H. Renz, 1948, *Cushman Lab. Foram. Research Special Pub.* 24, p. 2, 3.**Penitentiary member (of Stony Mountain formation)**

Upper Ordovician (Richmond): Manitoba, Canada.

V. J. Okulitch, 1943, *Royal Soc. Canada Trans.*, sec. 4, v. 37, p. 60.**Penn Yan tongue (of West River shale)**

Upper Devonian: New York.

W. L. Grossman, 1944, *Geol. Soc. America Bull.*, v. 55, no. 1, p. 64-65.

- Peñón formation**
Eocene, middle: Cuba.
Jorge Brodermann, 1945, *Soc. Cubana Ingenieros Rev.*, v. 42, no. 1, p. 144.
- Pentecote granite**
Precambrian (?): Quebec, Canada.
Carl Faessler, 1942, *Quebec Dept. Mines Geol. Rept.* 11, p. 18-19.
- Pentoga greenstones**
Precambrian (Huronian): Michigan.
H. M. Martin, 1936, *The centennial geological map of the northern peninsula of Michigan* (1:500,000): *Mich. Geol. Survey Div. Pub.* 39 (Geol. Ser. 33).
- Peñuela limestone**
Cretaceous (Senonian): Vera Cruz, Mexico.
Fernando Lozano Romen, 1955, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 7, nos. 1-2, p. 20, table facing p. 52.
- Peoria silt member (of Sanborn formation)**
Pleistocene (Peorian): Kansas.
J. C. Frye and O. S. Fent, 1947, *Kans. State Geol. Survey Bull.* 70, p. 45-50.
- Percé Rock beds**
Lower Devonian: Quebec, Canada.
J. A. Dresser and T. C. Denis, 1944, *Quebec Dept. Mines Geol. Report.* 20, p. 236.
- Perdido formation**
Mississippian: California.
J. F. McAllister, 1952, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 25, p. 22-25.
- Peregrina formation**
Mississippian: Tamaulipas, Mexico.
Arnold Heim, 1940, *Eclogae Geologicae Helvetiae*, v. 33, no. 2, p. 318.
- Pereira shale member (of Alhambra formation)**
Eocene, upper: California.
C. E. Weaver, 1953, *Wash. [State] Univ. Pubs. in Geology*, v. 7, p. 19 (chart), 55-56.
- Perilla member (of Lowell formation)**
Lower Cretaceous: Arizona.
A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 9, 17.
- Perini Hill flows**
Quaternary: California.
J. C. Brice, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 166, p. 12, 36, 41, pl. 1.
- Permenters Farm beds**
Miocene, middle: Florida.
R. H. Smith, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 2, p. 269-274.
- Perote member (of Providence sand)**
Upper Cretaceous: Alabama.
D. H. Barge, 1948, *Southeastern Geol. Soc. [Guidebook] 6th Field Trip*, p. 44, 51-53.
- Perry Branch siltstone member (of Brodhead formation)**
Lower Mississippian: Kentucky.
P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 189-191.

Perry Farm cyclothem (including Perry Farm shale)

Pennsylvanian (Des Moines) : Kansas.

J. M. Jewett, 1941, *Kans. State Geol. Survey Bull.* 38, pt. 11, p. 339-340; 1945, *Bull.* 58, p. 45-46, 69.**Perrysburg formation**

Upper Devonian : New York.

J. F. Pepper and Wallace de Witt, Jr., 1951, *U. S. Geol. Survey Oil and Gas Inv. Chart* OC 45.**Persimmon Gap shale or formation**

Upper Ordovician : Texas.

J. L. Wilson, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 12, p. 2462, 2470.**Pescado tongue (of Mancos shale)**

Upper Cretaceous : New Mexico.

W. S. Pike, Jr., 1947, *Geol. Soc. America Mem.* 24, p. 9, 34-35.**Peshastin glacial stage**

Pleistocene : Washington.

B. M. Page, 1939, *Jour. Geology*, v. 47, no. 8, p. 787-795.**Petaca schist phase (of Ortega quartzite)**

Precambrian : New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 43.**Petapa [formation]**

Cretaceous (Neocomian) : Chiapas, Mexico.

G. P. Salas, 1949, *Soc. Geol. Mexicana Bol.*, tomo 14, p. 55 (table 1).**Peten formation**

Pre-Upper Triassic : Honduras.

R. H. Carpenter, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 25.**Petén marls and limestones**

Upper Cretaceous(?), Eocene(?), or Oligocene(?) : Guatemala, British Honduras, and Mexico.

Hakon Wadell, 1926, *Sydsvenska geografiska sällskapets Årsbok 1926 (Meddelanden från Lunds universitets geografiska inst., ser. C, no. 17)*, p. 149, 151, fig. 2; 1938, *in* S. G. Morley, *Carnegie Inst. Washington Pub.* 437, v. 4, p. 344, 345.Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie : Heidelberg, Band 8, Abt. 4a, Heft 29*, p. 76-77.**Petermann series**

Precambrian (?) : Northeast Greenland.

J. M. Wordie and W. F. Whittard, 1930, *Geol. Mag.*, v. 67, p. 148-152.**Pethei formation**

Precambrian (Proterozoic) : Northwest Territories (Mackenzie), Canada.

C. H. Stockwell, 1936, *Canada Geol. Survey Map* 377A.**Petit Jardin formation**

Middle Cambrian : Newfoundland, Canada.

Christina Lochman, 1938, *Jour. Paleontology*, v. 12, no. 5, p. 463.**Petlalcingo limestone**

Upper Cretaceous : Oaxaca, Mexico.

G. P. Salas, 1949, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 1, no. 2, p. 114-118.

Petrified Forest member (of Chinle formation)

Upper Triassic : Utah, Arizona, and New Mexico.

G. B. Maxey, 1946, *Am. Jour. Sci.*, v. 244, no. 5, p. 337.

H. E. Gregory, 1950, *U. S. Geol. Survey Prof. Paper 220*, p. 52, 67-68 [1952].

Peyto limestone member (of St. Piran sandstone)

Lower Cambrian : British Columbia, Canada.

Franco Rasetti, 1951, *Smithsonian Misc. Coll.*, v. 116, no. 5, p. 55-56.

Phantom migmatite

Precambrian (Archean) : Arizona.

Ian Campbell and J. H. Maxson, 1937, 17th Internat. Geol. Cong. Abs. of Papers, p. 65 (1939, Rept., v. 2, p. 260) ; 1938, *Carnegie Inst. Washington Year Book 37*, p. 363.

Phantom Island slate

Precambrian : Ontario, Canada.

F. J. Pettijohn, 1937, *Geol. Soc. America Bull.*, v. 48, no. 2, p. 174, pl. 3.

Phelan limestone

Carboniferous (?) : Utah.

V. E. Peterson, 1942, *Econ. Geology*, v. 37, no. 6, p. 471 (table 1).

Philcot-Crossecho Lakes volcanics

Precambrian : Ontario, Canada.

W. D. Harding, 1951, *Ontario Dept. Mines Ann. Rept.*, v. 59, pt. 4, p. 18-19.

Philippo limestone

See Hirippo limestone.

Picard shale member (of Nesson formation)

Jurassic : Subsurface in Montana and North Dakota, and Manitoba, Canada.

J. W. Nordquist, 1955, *Billings Geol. Soc. Guidebook 6th Ann. Field Conf.*, p. 104, 105, fig. 2.

Pichagua limestone

Permian : Coahuila, Mexico.

Wilhelm Haack, 1914, *Deutschen Geol. Gesell. Zeitschr.*, Band 66, p. 489, 502.

Pichualco beds

Eocene or Oligocene : Tabasco and Chiapas, Mexico.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie : Heidelberg*, Band 8, Abt. 4a, Heft 29, pls. 5a, 5b.

Pico series

See Pico Peak series.

Pico Peak series

Cambrian (?) : Vermont.

H. E. Hawkes, Jr., 1941, *Geol. Soc. America Bull.*, v. 52, no. 5, p. 653, 654, 657.

Picton limestone member (of Laventille formation)

Jurassic : Trinidad, British West Indies.

H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 31.

Picuris basalts

Precambrian : New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 23-24, 44.

Picuris tuff

Tertiary (pre-Santa Fe) : New Mexico.

E. C. Cabot, 1938, *Jour. Geology*, v. 46, no. 1, p. 91.**Piedmont sandstone**

Permian : Oklahoma.

Henry Schweer *in* O. E. Brown, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1553 (fig. 9).**Piedras Atlas formation**

Upper Cretaceous : California.

N. L. Taliaferro, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 2, p. 132 [preprint 1941].**Piegan group**

Precambrian (Belt series) : Montana, and Alberta, Canada.

C. L. Fenton and M. A. Fenton, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1890-1892.**Pierce Estate sands**

Oligocene : Texas (subsurface).

Alexander Deussen and K. D. Owen, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 11, p. 1634.**Piermont member (of Albee formation)**

Ordovician (?) : New Hampshire.

J. B. Hadley and others, 1938, *Geologic map and structure sections of the New Hampshire portion of the Mt. Cube quadrangle (1:62,500)*: N. H. Highway Dept.
J. B. Hadley, 1942, *Geol. Soc. America Bull.*, v. 53, no. 1, p. 126.**Pierre Point beds (of Ponte-à-Pierre formation)**

Eocene, lower or middle : Trinidad, British West Indies.

R. A. Liddle, [1928], *The geology of Venezuela and Trinidad* : Fort Worth, Tex., J. P. MacGowan, p. 446-447.**Pierreville clay**

Pleistocene : Trinidad, British West Indies.

H. H. Suter, 1951, *Colonial Geology and Min. Res.*, v. 2, no. 3, p. 212, 213 [1952].**Pierreville member (of Bécancour River formation)**

Ordovician : Quebec, Canada.

T. H. Clark, 1947, *Quebec Dept. Mines Prelim. Rept.* 204, p. 14-15.**Pierson glauconite***See* Pearson glauconite member (of Sabinetown formation).**Pigeon gneiss**

Precambrian : Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull.* 15, p. 14.**Pigeon Creek member (of Fernie formation)**

Jurassic : Alberta, Canada.

M. B. B. Crockford, 1949, *Alberta Research Council Rept.* 52, p. 25, 27.**Piinaau basalt**

Pleistocene (?) : Hawaiian Islands (Maui).

H. T. Stearns *in* H. T. Stearns and G. A. Macdonald, 1942, *Hawaii Div. Hydrography Bull.* 7, p. 95, 96.

Pika formation

Upper Cambrian : Alberta, Canada.

Charles Deiss, 1939, *Geol. Soc. America Bull.*, v. 50, no. 6, p. 1008-1009.

Pike Arm formation

Silurian : Newfoundland, Canada.

W. H. Twenhofel and R. R. Shrock, 1937, *Geol. Soc. America Bull.*, v. 48, no. 12, p. 1749, 1767.

Pikes Island conglomerate

Silurian : Newfoundland, Canada.

D. M. Baird, 1953, *Newfoundland Geol. Survey Rept. 1*, p. 13-14.

Pilar phyllite member (of Ortega formation)

Precambrian : New Mexico.

Arthur Montgomery, 1953, *N. Mex. State Bur. Mines Min. Res. Bull. 30*, p. 19-21.

Pilares monzonite

Age not stated : Sonora, Mexico.

W. R. Wade and Alfred Wandtke, 1920, *Am. Inst. Mining and Metall. Engineers Trans.*, v. 63, p. 383.

Pilchuck clay member (of Vashon drift)

Pleistocene : Washington.

R. C. Newcomb, 1952, *U. S. Geol. Survey Water-Supply Paper 1135*, p. 19, pl. 1.

Pilier conglomerate and sandstone

Lower Mississippian : Nova Scotia, Canada.

Frederick Betz, Jr., 1948, *Newfoundland Geol. Survey Bull. 24*, p. 10.

Piliguilla conglomerate

Pliocene : Panama.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie: Heidelberg, Band 8, Abt. 4a, Heft 29*, p. 134 (correlation chart), pl. 10 (geol. map).

Pillage Bay sandstone (of Romaine formation)

Ordovician (Beekmantown) : Quebec, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines : Peiping, China, University Press, Natl. Univ. Peking, p. 523, 524.

Pillar sandstones

Lower Ordovician : Quebec, Canada.

H. W. McGerrigle, 1954, *Quebec Dept. Mines Geol. Rept. 62*, p. 27.

Pillar Bluff limestone

Lower Devonian (Helderberg stage) : Texas.

V. E. Barnes, P. E. Cloud, Jr., and L. E. Warren, 1946, *Tex. Univ. Bur. Econ. Geology Pub. 4301*, p. 166-169 [1945].

Pilleys series

Ordovician (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull. 6*, p. 12-13.

Pilot cyclothem or formation

Pennsylvanian (Des Moines) : Kansas.

G. E. Abernathy, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 18, 20, 22; 1938, *Kans. Acad. Sci. Trans.*, v. 41, p. 193, 195.

Pilot Knob facies (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper 22*, p. 146-148.

Pilot Knob tuff

Upper Cretaceous: Texas

C. O. Durham, Jr., 1955, Corpus Christi Geol. Soc. [Guidebook] Ann. Field Trip, March 11-12, [p. 58], pl. 16

Pine sand

Pleistocene: North Carolina.

B. W. Wells, 1944, Elisha Mitchell Sci. Soc. Jour., v. 60, no. 2, p. 131-132.

Pine Bluff volcanic zone (of Eagleford formation)

Cretaceous: Texas.

R. T. Hazzard, 1939, Shreveport Geol. Soc. Guidebook 14th Ann. Field Trip, p. 139, 140-141.

Pine Hill syenite

Precambrian: Quebec, Canada.

F. F. Osborne, 1933, Quebec Dept. Mines Ann. Rept. 1932, pt. E, p. 52.

Pine Island shale in Arkansas, Louisiana, and east Texas**Pine Island shale member (of Pearsall formation) in south Texas**

Lower Cretaceous (Comanche series): Subsurface in Arkansas, Louisiana, and Texas.

H. K. Shearer, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 6, p. 721, 722, 725.

R. W. Imlay, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 10, p. 1447.

Pine Knob sandstone

Lower Mississippian (Oil Lake): Pennsylvania.

W. M. Laird, 1941, Pa. Topog. and Geol. Survey Progress Rept. 126, p. 14 (footnote).

Pine Mountain porphyry

Precambrian: Arizona.

E. D. Wilson, 1939, Geol. Soc. America Bull., v. 50, no. 7, p. 1139, pl. 2.

Pine Plains formation

Upper Cambrian: New York.

E. B. Knopf, 1946, (abs.) Geol. Soc. America Bull., v. 57, no. 12, pt. 2, p. 1212.

Piney limestone member (of Cherry Canyon formation)

Permian: Texas and New Mexico.

P. B. King *in* A. K. Miller and W. M. Furnish, 1940, Geol. Soc. America Special Paper 26, p. 9.

P. B. King, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 4, p. 582-583, pl. 2.

Pinesburg member (of Shippensburg formation)

Middle Ordovician (Bolarian): Pennsylvania and Maryland.

L. C. Craig, 1949, Geol. Soc. America Bull., v. 60, no. 4, p. 715 (fig. 1), 718-722.

Pine Valley quartzite

Cambrian: Utah.

J. D. Forrester, 1937, Geol. Soc. America Bull., v. 48, no. 5, p. 638, pls. 2, 3.

Piney Creek alluvium

Recent: Colorado.

C. B. Hunt, 1954, U. S. Geol. Survey Bull. 996-C, p. 114-117.

Piney Point formation

Eocene (Jackson age): Subsurface in Maryland, Delaware, and Virginia.

E. G. Otton, 1955, Md. Dept. Geology, Mines and Water Res. Bull. 15, p. 85-88.

Pinkerton Trail limestone.

Pennsylvanian (Atoka and Des Moines) : Colorado and Utah.

S. A. Wengerd and J. W. Strickland, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 10, p. 2168-2169, fig. 7.

Pinnacles formation

Miocene (?) : California.

Philip Andrews, 1936, *Calif. Univ. Pubs. Dept. Geol. Sci. Bull.*, v. 24, no. 1, p. 19, 25, 26, map 1.

Pinole formation

Oligocene : Tamaulipas, Mexico.

Manuel Alvarez, Jr., 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 2, p. 365.

Pinto gneiss

Precambrian : California.

W. J. Miller, 1938, *Geol. Soc. America Bull.*, v. 49, no. 3, p. 419, 424-428.

Pinyon Ridge granodiorite

Jurassic (?) : California.

L. F. Noble, 1954, *U. S. Geol. Survey Geol. Quadrangle Map GQ 50*.

Pioa breccia

Pliocene or Pleistocene, lower : Samoa Islands (Tutuila).

R. A. Daly, 1924, *Carnegie Inst. Washington Pub.* 340, p. 100, 106, 129.

Pioa rhyolite

Pliocene or Pleistocene, lower : Samoa Islands (Tutuila).

R. A. Daly, 1924, *Carnegie Inst. Washington Pub.* 340, p. 106-108, 129-130.

Pioneer formation

Upper Triassic or Jurassic : British Columbia, Canada.

C. E. Cairnes, 1937, *Canada Geol. Survey Mem.* 213, p. 16-18.

Pioneer group

Upper Cretaceous : California.

F. M. Anderson, 1938, (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1863

Pipeline shale

Permian (Leonard-Guadalupe) : Texas.

W. C. Warren in P. B. King, N. D. Newell, and D. W. Boyd, 1955, *Permian field conference to the Guadalupe Mountains : Soc. Econ. Paleontologists and Mineralogists*, p. 11.

Piper formation

Middle Jurassic : Montana.

R. W. Imlay and others, 1948, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart* 32.

Pipestone Canyon formation

Eocene (?) : Washington.

J. D. Barksdale, 1948, *Northwest Science*, v. 22, no. 4, p. 165, 175.

Piru formation

Eocene : California.

S. J. Křřž, 1955, *Dissert. Abs.*, 1. 15, no. 3, p. 393.

Piru Gorge sandstone

Pliocene, middle : California.

D. I. Axelrod, 1950, *Carnegie Inst. Washington Pub.* 590, p. 169.

Pitcairn gneiss complex

Precambrian (Grenville) : New York.

A. F. Buddington, 1939, *Geol. Soc. America Mem.* 7, p. 15-17.**Pittsburg formation**

Carboniferous : Idaho and Oregon.

W. R. Wagner, 1945, *Idaho Bur. Mines and Geology Pamph.* 74, p. 4-5.**Pittsburg formation**

Pleistocene : California.

C. F. Tolman, 1931, *Calif. Dept. Public Works, Div. Water Res. Bull.* 28, p. 354, pl. D-IX, D-X.**Pittsfield member (of Littleton formation)**

Lower Devonian : New Hampshire.

M. T. Heald, 1955, *The geology of the Gilmanton quadrangle, New Hampshire* : N. H. State Plan. Devel. Comm., p. 8, 10.**Plainview sandstone member (of South Platte formation)**

Lower Cretaceous : Colorado.

K. M. Waagé, 1955, *U. S. Geol. Survey Prof. Paper* 274-B, p. 28-29.**Plaisance conglomerate**

Eocene, upper : Trinidad, British West Indies.

G. A. Waring, 1926, *Johns Hopkins Univ. Studies in Geology*, no. 7, p. 44-45, pl. 6 (geol. map).**Plancitos formation**

Cretaceous : Honduras.

B. H. Carpenter, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 28.**Playas Peak formation**

Lower Cretaceous (Bisbee group) : New Mexico.

S. G. Lasky, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 5, p. 534, fig. 2.**Pleasant Lake gabbro**

Precambrian : New York.

A. F. Buddington, 1939, *Geol. Soc. America Mem.* 7, p. 59, 61.**Pleasants sandstone member (of Williams formation)**

Upper Cretaceous : California.

W. P. Popenoe, 1937, *Jour. Paleontology*, v. 11, no. 5, p. 380.**Pleasant Valley member (of Cuyahoga formation)**

Mississippian : Ohio.

F. T. Holden, 1941, *Ill. Acad. Sci. Trans.*, v. 34, no. 2, p. 172.**Pleasant View complex**

Paleozoic and Mesozoic : California.

L. F. Noble, 1954, *U. S. Geol. Survey Geol. Quadrangle Map* GQ 50.**Pleasant View member (of Arapahoe-Denver formation)**

Tertiary : Colorado.

L. W. LeRoy, 1946, *Colo. School Mines Quart.*, v. 41, no. 2, p. 100, 103-104.**Plum Brook shale**

Devonian : Ohio.

G. A. Cooper, 1941, *Washington Acad. Sci. Jour.*, v. 31, no. 5, p. 181.

Plum Road formation

Lower Cretaceous: Trinidad, British West Indies.

R. A. Liddle, [1928], *The geology of Venezuela and Trinidad*: Fort Worth, Tex., J. P. MacGowan, p. 436-439.

Plutos Cave basalt

Recent: California.

Howel Williams, 1949, *Calif. Dept. Nat. Res., Div. Mines Bull.* 151, p. 42-43.

Plymouth Union series

Cambrian (?): Vermont.

H. E. Hawkes, Jr., 1941, *Geol. Soc. America Bull.*, v. 52, no. 5, p. 653, 654, 657.

Pocatello formation

Precambrian: Idaho.

J. C. Ludlum, 1942, *Jour. Geology*, v. 50, no. 1, p. 89-90.

Pocaterra Creek member (of Blairmore formation)

Lower Cretaceous: Alberta, Canada.

J. A. Allan and J. L. Carr, 1947, *Alberta Research Council Rept.* 49, p. 28.

Poe evaporate member (of Nesson formation)

Jurassic: Subsurface in North Dakota and Montana, and Manitoba, Canada.

J. W. Nordquist, 1955, *Billings Geol. Soc. Guidebook 6th Ann. Field Conf.*, p. 104-105, fig. 2.

Pohakuloa drift and stage

Pleistocene: Hawaiian Islands (Hawaii).

C. K. Wentworth, 1939, (abs.) *Geol. Soc. America Bull.*, v. 50, no. 12, pt. 2, p. 1942.

C. K. Wentworth and W. E. Powers, 1941, *Geol. Soc. America Bull.*, v. 52, no. 8, p. 1207-1210.

Point series

Precambrian: Newfoundland (Labrador) and Quebec, Canada.

J. K. Gustafson and A. E. Moss, 1953, *Mining Eng.*, v. 5, no. 6, p. 595 (table 1).

Point Arena beds

Miocene, upper: California.

C. E. Weaver, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 630, 631.

Point Bontour formation

See Bontour formation.

Pointe-à-Pierre Railway Cut marl

See Railway Cut marl.

Pointe aux Chenes formation

Upper Silurian (Cayugan): Michigan.

G. M. Ehlers in K. K. Landes, G. M. Ehlers, and G. M. Stanley, 1945, *Mich. Dept. Conserv. Geol. Survey Div. Pub.* 44, *Geol. Ser.* 37, p. 33, 35-52.

Pointe Blanche formation

Upper Cretaceous (?): St. Martin, Netherlands and French West Indies.

G. A. F. Molengraaf, 1888, *Het geologisch Verband tusschen de West-Indische Eilanden: Natuur- en Geneeskundig Cong. 1 Handl.*, Amsterdam, 1887, p. 289; 1931, *Leidsche Geol. Meded.*, Deel 5, p. 730-736.

Pointe Noir beds

Miocene: Trinidad, British West Indies.

C. J. Maury, 1925, *Bull. Am. Paleontology*, v. 10, no. 42, p. 162 (10).

Point Farfan diorite

Pre-Pliocene: Panama Canal Zone.

[T. F. Thompson], 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap. 3, p. 26.

Point Lake phase (of Point Lake-Wilson Island group)

Precambrian (Archean?): Northwest Territories (Mackenzie), Canada.
C. H. Stockwell, 1936, Canada Geol. Survey Map 377A.

Point Lake-Wilson Island group

Precambrian (Archean?): Northwest Territories (Mackenzie), Canada.
C. H. Stockwell, 1936, Canada Geol. Survey Map 377A.

Point of Rocks sandstone

Upper Eocene: California.

R. D. Reed and J. S. Hollister, 1936, Am. Assoc. Petroleum Geologists Bull., v. 20, no. 12, p. 1566, 1568.
Martin Van Couvering and H. B. Allen, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 496-500.

Point Peak shale member (of Wilberns formation)

Upper Cambrian: Texas.

Frederick Romberg and V. E. Barnes, 1944, Geophysics, v. 9, no. 1, p. 88.
P. E. Cloud, Jr., V. E. Barnes, and Josiah Bridge, 1946, Tex. Univ. Bur. Econ. Geology Pub. 4301, p. 149, 155 [1945].

Point Rock shale member (of Wilberns formation)

Upper Cambrian: Texas.

B. F. Howell and others, 1944, Geol. Soc. America Bull., v. 55, no. 8, pl. 1.

Point Sal formation

Miocene, middle: California.

C. R. Canfield, 1939, Am. Assoc. Petroleum Geologists Bull., v. 23, no. 1, p. 66 (foot-note).
W. P. Woodring, M. N. Bramlette, and K. E. Löhman, 1943, Am. Assoc. Petroleum Geologists Bull., v. 27, no. 10, p. 1341 (table 1), 1344-1345.

Point Wilkins member (of Manitoban formation)

Middle or Upper Devonian: Manitoba, Canada.

A. D. Baillie, 1950, Manitoba Dept. Mines and Nat. Res. Mines Br. Pub. 49-2, p. 41.

Pokeberry limestone (in McLeansboro formation)

Pennsylvanian: Illinois.

H. R. Wanless, 1939, Geol. Soc. America Special Paper 17, p. 17, 98.

Poland limestone member (of Denmark formation)

Middle Ordovician (Mohawkian): New York.

G. M. Kay, 1943, Am. Jour. Sci., v. 241, no. 10, p. 598-601.

Polaris Harbour formation

Silurian: North Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 241-242.

Polecat Bench formation

Paleocene: Wyoming.

G. L. Jepsen, 1940, Am. Philos. Soc. Proc., v. 83, no. 2, p. 231-238.

Police Post limestone

Lower Cambrian: Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, Meddel. om Grønland, bind 149, nr. 7, p. 38.

Pollack quartz latite

Tertiary, upper: New Mexico.

H. L. Jicha, Jr., 1954, N. Mex. State Bur. Mines Min. Res. Bull. 37, p. 39-47.

Pololu volcanic series

Pliocene (?) : Hawaiian Islands (Hawaii).

H. T. Stearns and G. A. Macdonald, 1946, *Hawaii Div. Hydrography Bull.* 9, p. 171-176.

Pomeroy member (of Naknek formation)

Upper Jurassic : Alaska.

C. E. Kirschner and D. L. Minard, 1948, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 95* [1949].

Ponia limestone

See Poniya limestone.

Poniya limestone

Pliocene (?) : Mariana Islands (Rota).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands* : *Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 345, 346 (correlation table) [English translation in *Library of U. S. Geol. Survey*, p. 2, correlation table].

Sho Sugawara, [1941], *A consideration of the stratigraphic relation between the Mariana and Ponia limestones on Rota Island* : *Yabe Jubilee Pub.*, v. 2, p. 735-736, 737, 738-740 (English abs., p. 740-741) [English translation in *Library of U. S. Geol. Survey*, p. 1-2, 4, 9-12].

Pontgravé River formation

Ordovician : Quebec, Canada.

T. H. Clark, 1947, *Quebec Dept. Mines Prelim. Rept.* 204, p. 13.

Pools Cove formation

Lower Cambrian : Newfoundland, Canada.

B. F. Howell, 1939, *Wagner Free Inst. Sci. Bull.*, v. 14, no. 4, p. 49-50.

Poor Valley Ridge member (of Clinch sandstone)

Silurian : Virginia.

R. L. Miller and J. C. Fuller, 1947, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 76*.

Pope Springs sandstone

[Upper Paleozoic] : Wyoming.

C. M. Boos, 1941, *Colo.-Wyo. Acad. Sci. Jour.*, v. 3, no. 1, p. 25-26.

Poplar Mountain gneiss

Pre-Triassic : Massachusetts.

M. E. Willard, 1951, *Bedrock geology of the Mount Toby quadrangle, Massachusetts* : *U. S. Geol. Survey Geol. Quadrangle Map* [GQ 8].

Popotosa formation

Miocene, upper : Mexico.

C. S. Denny, 1940, *Jour. Geology*, v. 48, no. 1, p. 77-84.

Porphyry Mountain group

Lower Devonian : Quebec, Canada.

A. M. Bell, 1951, *Canadian Inst. Mining and Metallurgy Trans.*, v. 54, p. 241.

Porphyry Peaks conglomerate

Pleistocene (?) : Colorado.

R. L. Ives, 1938, *Geol. Soc. America Bull.*, v. 49, no. 7, p. 1049-1050.

Portage Lake lava series

Precambrian (middle Keweenawan series) : Michigan.

W. S. White, 1952, *Jour. Sed. Petrology*, v. 22, no. 4, p. 190.

W. S. White, H. R. Cornwall, and R. W. Swanson, 1953, *U. S. Geol. Survey Geol. Quadrangle Map GQ 27* [1954].

Port-au-Prince beds

Miocene, middle: Haiti.

H. N. Coryell and F. C. Rivero, 1940, *Jour. Paleontology*, v. 14, no. 4, p. 324.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1582.

Porter Road formation

Middle Cambrian (Loch Lomond): New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 72-73.

Port Harrison series

Precambrian: Quebec, Canada.

E. H. Kranck, 1951, *Acta Geographica*, v. 11, no. 2, p. 40.

Portland arkose

Triassic: Connecticut.

P. D. Kryniene, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1919;

1950, *Conn. State Geol. Nat. History Survey Bull.* 73, p. 69-70.

Portland Head group

Middle Ordovician: Newfoundland, Canada.

Helgi Johnson, 1940, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 3, no. 6, p. 142.

Portland Hills silt member (of Troutdale formation)

Pliocene, upper, or Pleistocene, lower: Oregon.

W. D. Lowry and E. M. Baldwin, 1952, *Geol. Soc. America Bull.*, v. 63, no. 1, p. 10-13, pl. 2.

Port Maria conglomerate

Eocene: Jamaica, British West Indies.

C. A. Matley, 1929, *Geol. Soc. London Quart. Jour.*, v. 85, pt. 4, p. 462.

Port Orford formation

Pliocene, middle: Oregon.

E. M. Baldwin, 1945, *Jour. Geology*, v. 53, no. 1, p. 37-39.

Port Royal clay shales

Age not stated: Jamaica, British West Indies.

J. G. Sawkins, 1869, *Reports on the geology of Jamaica: [Great Britain] Geol. Survey Mem.*, p. 90, 92, 93.

Port Wing brownstone member (of Orienta formation)

Cambrian: Wisconsin.

G. O. Raasch, 1950, *Ill. Acad. Sci. Trans.* v. 43, p. 147, fig. 8.

Portwood formation

Middle Devonian: Kentucky.

Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, no. 9, p. 862-866.

Posey formation

Quaternary: California.

P. D. Trask and J. W. Rolston, 1951, *Geol. Soc. America Bull.*, v. 62, no. 9, p. 1079, 1082, 1103.

Post Oak conglomerate member (of Wichita formation)

Permian: Oklahoma.

G. W. Chase, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 9, p. 234.

Post Pond volcanic member (of Orfordville formation)

Middle Ordovician (?): New Hampshire and Vermont.

C. A. Chapman and others, 1938, *Geologic map and structure sections of the Mascoma quadrangle, New Hampshire (1:62,500): N. H. Highway Dept.*

C. A. Chapman, 1939, *Geol. Soc. America Bull.*, v. 50, no. 1, p. 133-134.

Potato Hill andesite

Tertiary : Texas.

S. S. Goldich and M. A. Elms, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1197; 1949, v. 60, no. 7, p. 1155-1156.**Poteet limestone**

Middle Ordovician : Virginia.

R. L. Miller and W. P. Brosgé, 1950, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 104*.**Potrero formation**

Lower Cretaceous : Sonora, Mexico.

R. E. King, 1939, *Geol. Soc. America Bull.*, v. 50, no. 11, p. 1660-1661.**Potterchitto sand member (of Cook Mountain formation)**

Eocene (Claiborne group) : Mississippi.

E. P. Thomas, 1942, *Miss. State Geol. Survey Bull.* 48, p. 53-57.**Pouce Coupe sandstone (in Smoky River shale)**

Upper Cretaceous : Alberta and British Columbia, Canada.

P. S. Warren and C. R. Stelck, 1940, *Royal Soc. Canada Trans.*, ser. 3, v. 34, sec. 4, p. 144.**Poulsen Cliff shale**

Lower Ordovician (Canadian) : North Greenland.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 48-50.**Pounds formation, sandstone, or cyclothem**

Pennsylvanian : Illinois.

J. M. Weller, 1940, *Ill. State Geol. Survey Rept. Inv.* 71, p. 38-39.**Powder Horn diorite**

Devonian (?) : Newfoundland, Canada.

E. R. Rose, 1948, *Newfoundland Geol. Survey Bull.* 32, pt. 2, p. 46.**Powder House flow (in Yellowknife group)**

Precambrian : Northwest Territories (Mackenzie), Canada.

C. E. G. Brown and A. S. Dadson, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 70-71.**Powell granite**

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 128.**Power Glen formation**

Lower Silurian (Alexandrian) : Ontario, Canada.

T. E. Bolton, 1953, *Canada Geol. Survey Paper* 53-23, p. 4-5.**Prairie evaporite**

Middle Devonian : Subsurface in North Dakota, and Manitoba and Saskatchewan, Canada.

A. D. Baillie, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 2, p. 444, 445, 446.**Prairie formation**

Pleistocene : Louisiana.

H. N. Fisk, 1938, *La. Dept. Conserv. Geol. Bull.* 10, p. 163-166.

Prairie Creek limestone lentil (in Gueda Springs shale member of Wellington formation)

Permian : Kansas.

W. A. Ver Wiebe: 1937, Wichita Municipal Univ. Bull., v. 12, no. 5, p. 13.

Prairie Divide glacial stage

Pleistocene (pre-Wisconsin) : Colorado.

Kirk Bryan and L. L. Ray, 1940, Smithsonian Misc. Colls., v. 99, no. 2, p. 28-29.

Prairie Grove member (of Hale formation)

Pennsylvanian : Arkansas.

L. G. Henbest, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 8, p. 1940-1942.

Prairie Hollow member (of Prairie Mountain formation)

Mississippian : Oklahoma.

1954, Ardmore Geol. Soc. [Guidebook] Field Trip October, 1954, chart facing p. 10.

Prairie Mountain formation

Pennsylvanian (Bendian) : Oklahoma.

B. H. Harlton, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 7, p. 854, 880-884.

Preble formation

Middle or Upper Cambrian : Nevada.

H. G. Ferguson, S. W. Muller, and R. J. Roberts, 1951, Geology of the Winnemucca quadrangle, Nevada : U. S. Geol. Survey Geol. Quadrangle Map [GQ 11].

Preble formation

Precambrian (Proterozoic) : Northwest Territories (Mackenzie), Canada.

C. H. Stockwell, 1936, Canada Geol. Survey Map 377A.

Preissac granite

Precambrian : Quebec, Canada.

G. W. H. Norman, 1945, Econ. Geology, v. 40, no. 1, p. 4.

Preissac syenites

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 117.

Prescott series

Cambrian and Ordovician : Ontario, Canada.

A. W. Grabau, 1936, Paleozoic formations in the light of the pulsation theory, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines : Peiping, China, University Press, Natl. Univ. Peking, p. 409, 424, 550, 551.

Prettypmarsh diorite

Devonian : Maine.

G. H. Chadwick, 1942, (abs.) Geol. Soc. America Bull., v. 53, no. 12, pt. 2, p. 1796-1797.

Pretty Meadow glacial stage

Pleistocene (Illinoian?) : Colorado.

R. L. Ives, 1953, Geog. Review, v. 43, no. 2, p. 235-237, 249.

Pretty Run sandstone facies (of Logan formation)

Mississippian : Ohio.

F. T. Holden, 1941, Ill. Acad. Sci. Trans., v. 34, no. 2, p. 172.

Prewitt sandstone member (of Morrison formation)

Jurassic: New Mexico.

C. T. Smith, 1951, *in* N. Mex. Geol. Soc. Guidebook 2d Field Conf., p. 13, 38; 1954, N. Mex. Bur. Mines Min. Res. Bull. 31, p. 16-17.

Price conglomerate

Devonian: Quebec, Canada.

T. H. Clark, 1942, Royal Soc. Canada Trans., ser. 3, v. 36, sec. 4, p. 15.

Prickly Pear member (of Spokane formation)

Precambrian (Belt): Montana.

C. L. Fenton and M. A. Fenton, 1937, Geol. Soc. America Bull., v. 48, no. 12, p. 1898.

Prida formation

Lower(?) and Middle Triassic: Nevada.

S. W. Muller, H. G. Ferguson and R. J. Roberts, 1951, Geology of the Mount Tobin quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].

Priest granite

Precambrian: New Mexico.

J. T. Stark and E. C. Dapples, 1946, Geol. Soc. America Bull., v. 57, no. 12, pt. 1, p. 1138-1139.

Priest Canyon member (of Fremont formation)

Upper Ordovician (Richmond): Colorado.

W. C. Sweet, 1954, Am. Assoc. Petroleum Geologists Bull., v. 38, no. 2, p. 295-296, 302.

Prince Creek formation

Upper Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, Washington Acad. Sci. Jour., v. 41, no. 5, p. 166-167.

Princeton group

Eocene or Oligocene: British Columbia, Canada.

H. M. A. Rice, 1945, Canada Geol. Survey Paper (Prelim. Map) 45-5.

Prinsen af Wales Bjaerge lavas

Eocene(?): Northeast Greenland.

L. R. Wager, 1947, Meddel. om Grønland, bind 134, nr. 5, p. 20, 21, 46, pl. 6.

Proaño group

Middle Cretaceous or older: Zacatecas, Mexico.

J. B. Stone, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1956-1957.

Profiljeldet shales

Silurian(?) (post-Niagaran?): North Greenland.

Erdhart Fraukl, 1954, Meddel. om Grønland, bind 116, nr. 2, p. 27, 56, 79, pl. 1.

Prosperous granite

See Prosperous Lake granite.

Prosperous Lake granite

Precambrian: Northwest Territories (Mackenzie), Canada.

A. W. Jolliffe, 1942, Canada Geol. Survey Map 709A.

Provedora formation

Lower Cambrian: Sonora, Mexico.

G. A. Cooper and A. R. V. Arellano, 1952, Smithsonian Misc. Coll., v. 119, no. 1, p. 4.

Providence shales

Upper Cretaceous (Campanian) : Jamaica, British West Indies.

C. T. Trechmann, 1927, *Geol. Mag.*, v. 64, no. 1, p. 31, 33.

L. J. Chubb, 1955, *Geol. Mag.*, v. 92, no. 3, p. 186.

Providence Island limestone

Lower Ordovician (upper Canadian) : Vermont.

E. O. Ulrich *in* E. O. Ulrich and G. A. Cooper, 1938, *Geol. Soc. America Special Paper* 13, p. 26, pl. 58 (column 27).

Providence Mountains limestone

Pennsylvanian : California.

J. C. Hazzard, 1938, (abs.) *Geol. Soc. America Proc.* 1937, p. 240.

Provincial limestones (in Tuff formation)

Upper Cretaceous (Cenomanian-Turonian) : Cuba.

A. A. Thiadens, 1937, *Geog. Geol. Meded. (Utrecht Univ.) Physiol.-Geol. Reeks*, no. 12, p. 11-12, 17-18.

Provo formation

Pleistocene and Recent : Utah.

K. C. Bullock, 1951, *Utah Geol. Mineralog. Survey Bull.* 41, p. 21.

Prudencia sandstone

Miocene, lower : Tabasco, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.

Pruett formation

Tertiary : Texas.

S. S. Goldich and M. A. Elms, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1197; 1949, v. 60, no. 7, p. 1145-1151.

Pucro sandstone

Miocene, middle : Panama.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie : Heidelberg, Band 8, Abt. 4a, Heft 29, p. 132, 134 (correlation chart).*

Pueblan series

Cretaceous (Mid-Cretacic) : New Mexico.

Charles Keyes, 1936, *Pan-Am. Geologist*, v. 66, no. 2, p. 119 (chart); 1940, v. 74, no. 3, p. 213.

Puente de Piedra conglomerate

Eocene, middle and upper : Tabasco and Chiapas, Mexico.

G. P. Salas and Ernesto Lopez Ramos, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 1-2, p. 25-26.

Puercan age

Paleocene : North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 8, pl. 1.

Puerto Blanco formation

Lower Cambrian : Senora, Mexico.

G. A. Cooper and A. R. V. Arellano, 1952, *Smithsonian Misc. Coll.*, v. 119, no. 1, p. 4.

Puerto Carballo arenaceous limestone series

Eocene (?) : Costa Rica.

D. F. MacDonald and others, 1919, [*Costa Rica*] *La Gaceta, Diario Oficial*, año 41, no. 138, p. 352; no. 140, p. 357.

B. N. Webber, 1942, *Am. Inst. Mining and Metall. Engineers Tech. Pub.* 1445, p. 3.

Pullen formation

Miocene, upper, to Pliocene, lower (?) : California.

B. A. Ogle, 1953, Calif. Dept. Nat. Res. Div. Mines Bull. 164, p. 13 (fig. 3), 26-28, pl. 1.

Pulpit conglomerate division (of Almy conglomerate)

Paleocene : Utah.

A. J. Eardley, 1944, Geol. Soc. America Bull., v. 55, no. 7, p. 842.

Pumpnickel formation

Pennsylvanian (?) : Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, Geology of the Mount Tobin quadrangle, Nevada : U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].

Pumpkin Valley shale

Middle Cambrian : Tennessee.

Josiah Bridge, 1945, Geologic map and structure sections of the Mascot-Jefferson City zinc mining district, Tennessee (1 : 31,680) : Tenn. State Dept. Conserv., Div. Geology.

Puna volcanic series

Pleistocene, upper (?) and Recent : Hawaiian Islands (Hawaii).

H. T. Stearns and G. A. Macdonald, 1946, Hawaii Div. Hydrography Bull. 9, p. 103-110.

Punchbowl formation

Miocene, upper : California.

L. F. Noble, 1953, Geology of the Pearland quadrangle, California : U. S. Geol. Survey Geol. Quadrangle Map [GQ 24].

Punta Carballo arenaceous limestone series

See Puerto Carballo arenaceous limestone series.

Punta Gorda [formation]

Miocene : Istmo de Tehuantepec, Mexico.

Ramiro Robles Ramos, 1942, Irrigación en Mexico, v. 23, no. 3, p. 45 (correlation chart).

Purísima Nueva formation

Oligocene (?) : Baja California, Mexico.

Arnold Heim, 1921, Zeitschr. für Vulkanologie, Band 6, Heft 1, tafel 4.

Purple Conglomerate group

Upper Cretaceous : Jamaica, British West Indies.

J. G. Sawkins, 1869, Reports on the geology of Jamaica : [Great Britain] Geol. Survey Mem., p. 103-104, 111-112.

C. A. Matley, 1929, Geol. Soc. London Quart. Jour., v. 85, pt. 4, p. 449, 450, 452 (fig. 2).

Pushmataha series

Pennsylvanian (Bendian) : Oklahoma.

B. H. Harlton, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 7, p. 854, 855-856.

Putnam Highland formation

Ordovician : Northwest Territories (Baffin Island), Canada.

A. K. Miller and others, 1954, Geol. Soc. America Mem. 62, p. 14.

Putnam Peak basalt

Pliocene : California.

C. E. Weaver, 1949, Geol. Soc. America Mem. 35, p. 110 (table 24), 130-131.

Puyé gravel

Quaternary: New Mexico.

H. T. U. Smith, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 103; 1938, *Jour. Geology*, v. 46, no. 7, p. 937, 959.

P. W. A. Quarry limestone member (of Drum formation)

Pennsylvanian (Missouri series): Nebraska.

G. E. Condra, 1949, *Nebr. Geol. Survey Bull.* 16, p. 37.

Pyramid Rock basalt

Quaternary: Hawaiian Islands (Oahu).

H. T. Stearns, 1940, *Hawaii Div. Hydrography Bull.* 5, p. 50-51.

Quadeville metagabbro

Precambrian: Ontario, Canada.

D. F. Hewitt, 1954, *Ontario Dept. Mines Ann. Rept.*, v. 62, pt. 5, p. 16.

Quadra group

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 48, map.

Quajote member (of Lowell formation)

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 9-10, 16-17.

Qualicum formation

Upper Cretaceous: British Columbia, Canada.

J. L. Usher, 1952, *Canada Geol. Survey Bull.* 21, p. 22.

Qu'Appelle group

Devonian: Subsurface in Manitoba and Saskatchewan, Canada, Montana, and North Dakota.

A. D. Baillie, 1953, *Manitoba Dept. Mines and Nat. Res. Mines Br. Pub.* 52-5, p. 34, 35.

Quaré limestone (of Hollis Reservoir formation)

Upper Jurassic: Trinidad, British West Indies.

R. A. Liddle, 1946, *The geology of Venezuela and Trinidad*, 2d ed.: Ithaca, N. Y., Paleont. Research Inst., p. 701.

Quarry conglomerate

Miocene and Pliocene: California.

G. J. Bellemin, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 4, p. 652 (fig. 2), 653, 656-657.

Quarry Island beds (of Romaine formation)

Ordovician (Beekmantown): Quebec, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2, Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines: Peiping, China, University Press, Natl. Univ. Peking, p. 522.

Qatal red clay member (of Santa Margarita formation)

Miocene, upper: California.

W. E. Ver Planck, 1952, *Calif. Dept. Nat. Res., Div. Mines Bull.* 163, p. 35-37, pl. 33.

Queantoweap sandstone

Lower Permian: Arizona.

A. H. McNair, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 3, p. 525-526.

Quebrancha limestone member (of Caimito formation)

Oligocene, upper : Panama.

T. F. Thompson, 1944, Geological explorations in the vicinity of Rio Quebrancha for the Panama Cement Company : Panama Canal, Special Eng. Div., p. 17-20.

W. P. Woodring and T. F. Thompson, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 2, p. 234.

Queets beds

Pleistocene, upper : Washington.

S. L. Glover, 1940, Northwest Science, v. 14, no. 3, p. 69.

Quemado formation

Upper Jurassic : Cuba.

R. H. Palmer, 1945, Jour. Geology, v. 53, no. 1, p. 5 (table 1), 7.

R. W. Imlay, 1952, Geol. Soc. America Bull., v. 63, no. 9, p. 969, Chart 8C.

Quien Sabe volcanics

Miocene, middle (?) : California.

N. L. Taliaferro, [1949], Geologic map of the Hollister quadrangle, California (1:62,500) : Calif. Dept. Nat. Res., Div. Mines [preprint?] Bull. 143, pl. 1.

C. J. Leith, 1949, Calif. Dept. Nat. Res., Div. Mines Bull. 147, p. 22-24, pl. 1.

Quimbo dolomite (in Joserita member of Lowell formation)

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, Geol. Soc. America Mem. 38, p. 11.

Quimbys Mill member (of Platteville formation)

Middle Ordovician : Wisconsin, Iowa, and Illinois.

A. F. Agnew and A. V. Heyl, Jr., 1946, Am. Assoc. Petroleum Geologists Bull., v. 30, no. 9, p. 1585-1587.

Quimper sandstone

Oligocene, lower : Washington.

J. W. Durham, 1942, Jour. Paleontology, v. 16, no. 1, p. 86-87.

Quinam limestone

Oligocene : Trinidad, British West Indies.

Ernst Lehner, 1935 [France] Office national des combustibles liquides Annales, 10^e année, no. 4, p. 701 (table).

H. H. Suter, 1951, Colonial Geology and Min. Res., v. 2, no. 3, p. 204 (table 12) ; no. 4, p. 277 [1952].

Quinn clay

Upper Pennsylvanian (Cisco) : Texas.

F. B. Plummer in M. G. Cheney, 1948, Abilene Geol. Soc. [Guidebook] Spring Field Trip, June 11-12, p. 7, 12.

F. B. Plummer and H. B. Bradley, 1949, Tex. Univ. Bur. Econ. Geology Pub. 4915, p. 5-17.

Quintero limestone

Tertiary, upper : Tamaulipas, Mexico.

Arnold Heim, 1940, Eclogae Geologicae Helvetiae, v. 33, no. 2, p. 331.

Quinto member (of Moreno group)

Upper Cretaceous : California.

F. M. Anderson, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 185 (fig. 69), 186 [preprint 1941].

Quinville granite

Precambrian : Quebec, Canada.

M. E. Wilson, 1920, Canada Geol. Survey Pub. (map) 1691.

Pierre Mauffette, 1949, Quebec Dept. Mines Prelim. Rept. 223, p. 12.

Quita Coraza formation

Oligocene, upper : Dominican Republic.

W. M. Small, 1948, *Seismol. Soc. America Bull.*, v. 38, no. 1, p. 26.**Quitman quartz monzonite**

Oligocene (?) : Texas.

R. M. Huffington, 1943, *Geol. Soc. America Bull.*, v. 54, no. 7, p. 1034-1036.**Rabbit Point sandstone**

Lower Cambrian : Northwest Territories (Devon Island), Canada.

V. E. Kurtz, A. H. McNair, and D. B. Wales, 1952, *Am. Jour. Sci.*, v. 250, no. 9, p. 649-650.**Rabens Branch bed (in Parkers formation)**

Upper Pennsylvanian : Indiana.

C. A. Malott, 1947, *Ind. Acad. Sci. Proc.*, v. 57, p. 132 [1948].**Raber bed**

Silurian : Michigan.

W. A. Kelly, 1954, *Mich. Geol. Soc. [Guidebook 18th] Ann. Field Trip*, p. 21.**Racetrack dolomite**

Middle and Upper Cambrian : California.

J. F. McAllister, 1952, *Calif. Dept. Nat. Res., Div. Mines Special Rept. 25*, p. 8-9.**Rader limestone member (of Cherry Canyon formation)**

Permian : Texas and New Mexico.

P. B. King in A. K. Miller and W. M. Furnish, 1940, *Geol. Soc. America Special Paper 26*, p. 9.P. B. King, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 4, p. 583, pl. 2.**Ragg quartzite**

Precambrian (Keweenawic) : Iowa.

Charles Keyes, 1941, *Pan-Am. Geologist*, v. 75, no. 2, p. 99, 107.**Ragged Valley shale member (of Arroyo Hondo formation)**

Eocene : California.

H. E. Vokes, 1939, *N. Y. Acad. Sci. Annals*, v. 38, p. 27-28.**Raglan metagabbro**

Precambrian : Ontario, Canada.

D. F. Hewitt, 1954, *Ontario Dept. Mines Ann. Rept.*, v. 62, pt. 5, p. 15-16.**Railway Cut marl (in Chaudiere shale)**

Upper Cretaceous : Trinidad, British West Indies.

H. H. Renz, 1942, *8th Am. Sci. Cong. Proc.*, v. 4, p. 529.J. A. Cushman and H. H. Renz, 1947, *Cushman Lab. Foram. Reesarch Contr.*, v. 23, pt. 2, p. 31-32.**Rainbow Flat group**

Age unknown : California.

K. J. Hsu, 1955, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 30, no. 4, p. 294, map 1.**Rainvalley formation**

Permian : Arizona.

D. L. Bryant, 1955, *Dissert. Abs.*, v. 15, no. 7, p. 1224.**Raleigh graphite**

Precambrian : North Carolina.

J. W. Harrington, 1947, *Jour. Geology*, v. 55, no. 6, p. 516-521.

Ralph Lake conglomerate

Precambrian : Manitoba, Canada.

J. D. Allan, 1946, Manitoba Dept. Mines and Nat. Res. Mines Br., Notes to accompany Prelim. Map 46-2, p. 2.

Ralston formation

Jurassic : Colorado.

L. W. LeRoy, 1946, Colo. School Mines Quart., v. 41, no. 2, p. 46-55.

Ramdat marl (of Navet formation)

Eocene, lower : Trinidad, British West Indies.

J. A. Cushman and H. H. Renz, 1948, Cushman Lab. Foram. Research Special Pub. 24, p. 2.

Rampart Cave member (of Muav formation)

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, Carnegie Inst. Washington Pub. 563, p. 14, 29, 84-87.

Rancheria formation

Mississippian (Meramec) : New Mexico.

L. R. Laudon and A. L. Bowsler, 1949, Geol. Soc. America Bull., v. 60, no. 1, p. 17-19, fig. 4.

Rancholabrean age

Pleistocene, late : North America.

D. E. Savage, 1951, Calif. Univ. Pubs. Dept. Geol. Sci. Bull., v. 28, no. 10, p. 289.

Rancho Quemado dacite

Pliocene (?) : Honduras.

R. H. Carpenter, 1954, Geol. Soc. America Bull., v. 65, no. 1, p. 30, pl. 1 (geol. map).

Randbøl conglomerate

Devonian or younger : Northeast Greenland.

Wolf Maync, 1949, Meddel. om Grønland, bind 114, nr. 2, p. 21-24.

Rapid formation

Tertiary : British Columbia, Canada.

H. Gabrielse, 1955, Canada Geol. Survey Paper (Prelim. Map) 54-10.

Rapid City lens (in Newcastle formation)

Upper Cretaceous : South Dakota.

R. M. Grace, 1952, Wyo. Geol. Survey Bull. 44, p. 14, 17.

Raspberry formation

Upper Triassic : Nevada.

H. G. Ferguson, S. W. Muller, and R. J. Roberts, 1951, Geology of the Winnemucca quadrangle, Nevada : U. S. Geol. Survey Geol. Quadrangle Map [GQ 11].

Ratcliffe Brook formation

Lower Cambrian (Etcheminian) : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 58-63.

Rathbun limestone member (of Denmark formation)

Middle Ordovician (Mohawkian) : New York.

G. M. Kay, 1943, Am. Jour. Sci., v. 241, no. 10, p. 598-600.

Raton basalts

Quaternary : New Mexico.

Helen Stobbe, 1948, (abs.) Geol. Soc. America Bull., v. 59, no. 12, pt. 2, p. 1354-1355.

R. F. Collins, 1949, Geol. Soc. America Bull., v. 60, no. 6, p. 1027-1028, pl. 1.

Rattling Brook group

Precambrian (?) : Newfoundland, Canada.

K. D. Watson, 1947, Newfoundland Geol. Survey Bull. 21, p. 4-5.

Raven member (of Montoya dolomite)

Upper Ordovician : New Mexico.

L. P. Entwistle, 1944, N. Mex. State Bur. Mines Min. Res. Bull. 19, p. 18.

Ravenna shale facies (of Portwood formation)

Middle Devonian ; Kentucky.

Guy Campbell, 1946, Geol. Soc. America Bull., v. 57, no. 9, p. 864, 865.

Ravnefjeld formation

Middle Devonian : Northeast Greenland.

Arne Noe-Nygaard, 1934, Meddel. om Grønland, bind 103, nr. 1, p. 16-25.

Rawlins ash bed (in Ash Hollow member of Ogallala formation)

Pliocene : Kansas and Nebraska.

Ada Swineford, J. C. Frye, and A. B. Leonard, 1955, Jour. Sed. Petrology, v. 25, no. 4, p. 253, fig. 1.

Rawlinsian series

Cretaceous (Cretacic) : Kansas.

[C. R.] Keyes, 1941, Pan-Am. Geologist, v. 76, no. 4, p. 304, 313.

Rawls basalt

Miocene (?) : Texas.

S. S. Goldich and C. L. Seward, 1948, W. Tex. Geol. Soc. [Guidebook] Fall Field Trip, p. 22.

Rayville formation

Pennsylvanian (Lampasas) : Texas.

M. G. Cheney, 1947, Jour. Geology, v. 55, no. 3, p. 210-211.

Razorback formation

Tertiary, upper : New Mexico.

F. J. Kuellmer and others, 1953, in N. Mex. Geol. Soc. Guidebook 4th Field Conf., p. 50 (map).

H. L. Jicha, Jr., 1954, N. Mex. State Bur. Mines Min. Res. Bull. 37, p. 39, 47-48.

Read Bay formation

Ordovician and Silurian : Northwest Territories (Cornwallis Island), Canada.

R. Thorsteinsson and Y. O. Fortier, 1954, Canada Geol. Survey Paper 53-24, p. 9-12.

Ready Pay member (of Percha shale formation)

Upper Devonian : New Mexico and Texas.

F. V. Stevenson, 1944, Dallas Digest Joint Ann. Meeting, p. 95 ; 1945, Jour. Geology, v. 53, no. 4, p. 241-243.

Reager ash bed (of Ash Hollow member of Ogallala formation)

Pliocene : Kansas.

J. S. Carey and others, 1952, Kans. State Geol. Survey Bull. 96, pt. 1, p. 9-11, 27.

Reamsville ash bed (in Ash Hollow member of Ogallala formation)

Pliocene : Kansas.

Ada Swineford, J. C. Frye, and A. B. Leonard, 1955, Jour. Sed. Petrology, v. 25, no. 4, p. 254-255, fig. 1.

Reclamation group

Pennsylvanian : Wyoming.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, *Nebr. Geol. Survey Bull.* 13, p. 2, 3, 32.

Recreation red beds

Cretaceous : Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 715-716.

Red Bluff granite

Precambrian : Texas.

L. A. Nelson, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 160.

Red Branch member (of Woodbine formation)

Upper Cretaceous : Texas.

H. R. Bergquist, 1949, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 98.

Red Chute quartz diorite

Precambrian : Quebec, Canada.

P. E. Imbault, 1947, *Quebec Dept. Mines Prelim. Rept.* 207, p. 6-7.

Red Cliff volcanics

Ordovician (?) : Newfoundland, Canada.

A. K. Snelgrove, 1931, *Canadian Mining and Metall. Bull.* 228, p. 486, 487.

Red Cloud sand and gravel

Pleistocene : Nebraska.

C. B. Schultz, E. C. Reed, and A. L. Lugin, 1951, *Science*, v. 114, no. 2969, p. 548.

Red Desert tongue (of Wasatch formation)

Eocene, lower : Wyoming.

G. N. Pippingos, 1955, *Wyo. Geol. Assoc. Guidebook 10th Ann. Field Conf.*, p. 100, 101.

Redfield formation

Eocene (Jacksonian) : Arkansas.

L. J. Wilbert, Jr., 1953, *Ark. Div. Geology Bull.* 19, p. 80-87.

Red Hill complex

Carboniferous (?) (White Mountain magma series) : New Hampshire.

A. P. Smith and others, 1938, *Geologic map and structure sections of the Mt. Chocorua quadrangle, New Hampshire (1 : 62,500)* : N. H. Highway Dept.

Red House formation

Pennsylvanian (Magdalena) : New Mexico.

V. C. Kelley and Caswell Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 91-92, fig. 2.

Red Mesa member (of Entrada formation)

Upper Jurassic : Utah, Arizona, Colorado, and New Mexico.

W. B. Hoover, 1950, *N. Mex. Geol. Soc. Guidebook 1st Field Conf.*, p. 76, 77, 78.

Red Mountain dacites

Quaternary : New Mexico.

Helen Stobbe, 1948, (abs.) *Geol. Soc. America Bull.*, v. 59, no. 12, pt. 2, p. 1354-1355.

R. F. Collins, 1949, *Geol. Soc. America Bull.*, v. 60, no. 6, p. 1031-1033, pl. 1.

Red Mountain gneiss

Precambrian : Texas.

Frederick Romberg and V. E. Barnes, 1949, *Geophysics*, v. 14, no. 2, fig. 1 facing p. 154.

V. E. Barnes in V. E. Barnes, D. A. Shook, and W. A. Cunningham, 1950, *Tex. Univ. Bur. Econ. Geology Pub.* 5020, p. 7.

Redonda member (of Chinle formation)

Triassic: New Mexico.

Ernest Dobrovolny and C. H. Summerson *in* Ernest Dobrovolny, C. H. Summerson, and R. L. Bates, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 62, sheets 1, 2.

Redondo sandstone

Cretaceous (Early Cretacic): New Mexico.

Charles Keyes, 1940, Pan-Am. Geologist, v. 74, no. 2, p. 105 (chart).

Red Peak member (of Chugwater formation)

Triassic: Wyoming.

J. D. Love, 1939, Geol. Soc. America Special Paper 20, p. 44.

Red Pine shale

Precambrian: Utah.

N. C. Williams, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 12, p. 2738.

Red Rock limestone

Triassic (Karnic?): Nevada.

F. N. Johnston, 1941, Jour. Paleontology, v. 15, no. 5, p. 448.

Red Rock rhyolite

Precambrian: Arizona.

E. D. Wilson, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 112; 1939, Geol. Soc. America Bull., v. 50, no. 7, p. 1118, 1120-1121.

Red Rose formation

Upper Jurassic and Lower Cretaceous: British Columbia, Canada.

R. E. Sommers, 1955, British Columbia Bur. Mines Ann. Rept. 1954, p. A89-A90.

Red Shale Butte complex

Pleistocene: California.

C. A. Anderson, 1941, Calif. Univ. Dept. Geol. Sci. Bull., v. 25, no. 7, p. 364-365.

Red Tanks member (of Madera limestone)

Pennsylvanian: New Mexico.

V. C. Kelley and G. H. Wood, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 47.

Red Wash formation

Lower Triassic: Utah.

J. S. Williams, 1945, Am. Jour. Sci., v. 243, no. 9, p. 477, 478.

Redwater shale member (of Sundance formation)

Upper Jurassic: South Dakota and Wyoming.

R. W. Imlay, 1947, Am. Assoc. Petroleum Geologists Bull., v. 31, no. 2, p. 259-264.

Red Wine anorthosite

Precambrian: Newfoundland (Labrador), Canada.

D. M. Baird, 1953, Newfoundland Geol. Survey Inf. Circ. 4 (revised), p. 137.

Reed granite

Precambrian: Manitoba, Canada.

J. M. Harrison, 1949, Canada Geol. Survey Mem. 250, p. 19.

Reed Canyon silt member (of Tejon formation)

Eocene: California.

J. G. Marks, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1922.

Reeding sandstone

Permian : Oklahoma.

Henry Schweer in O. E. Brown, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1553 (fig. 9).

Reeds Creek andesite

Eocene, middle, to Oligocene, lower : California.

B. L. Clark and C. A. Anderson, 1938, *Geol. Soc. America Bull.*, v. 49, no. 6, p. 935 (fig. 2), 940-941.

Reel limestone

Pennsylvanian : Illinois.

G. H. Cady and others, 1955, *Ill. Geol. Survey Rept. Inv.* 183, p. 8.

Reeves limestone member (of Reeves McDonald formation)

Precambrian and Cambrian : British Columbia, Canada.

W. H. White, 1950, *British Columbia Bur. Mines Ann. Rept.* 1949, p. A-172.

Reeves McDonald formation

Precambrian and Cambrian : British Columbia, Canada.

W. H. White, 1950, *British Columbia Bur. Mines Ann. Rept.* 1949, p. A-171—A-172.

Reforma hypersthene andesite

Cretaceous (?) : Honduras.

R. H. Carpenter, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 29, pl. 1 (geol. map).

Remedios limestone

Paleocene (Midwayan) : Cuba.

J. A. Cushman and P. J. Bermudez, 1948, *Cushman Lab. Foram. Research Contrib.*, v. 24, pt. 3, p. 68.

P. J. Bermudez, 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 224.

Rencontre formation

Devonian or Mississippian : Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 91-93.

Reno member (of Franconia formation)

Upper Cambrian : Minnesota and Wisconsin.

R. R. Berg, 1951, *Minn. Geologist*, v. 8, no. 4, p. 2.

Rensselaer sandstone

Precambrian or Cambrian (Eo-Cambrian) : North Greenland, and Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, *Meddel. om Grønland*, bind 149, nr. 7, p. 35.

Repettian stage

Pliocene : California.

Manley Natland, 1953, *Pacific Petroleum Geologist*, v. 7, no. 2, p. 2.

Represo beds

Mississippian (Osagean-Meramecian) : Sonora, Mexico.

J. M. Weller and others, 1948, *Geol. Soc. America Bull.*, v. 59, no. 2, p. 136-137. Chart 5, column 36.

Resendez shale member (of Fayette formation)

Eocene (Jackson) : Texas.

J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259 (fig. 2), 267-268.

Resolution dolomite member (of Minturn formation)

Pennsylvanian : Colorado.

Ogden Tweto, 1949, *Colo. Sci. Soc. Proc.*, v. 15, no. 4, p. 152, 199-201.

Reston formation

Middle Jurassic : Manitoba, Canada and North Dakota.

D. F. Stott, 1955, *Manitoba Dept. Mines and Nat. Res. Pub.* 54-2, p. 18-20, 35-37, 44-45.

Rest Spring shale

Pennsylvanian (?) : California.

J. F. McAllister, 1952, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 25, p. 25-26.

Retrench marls

Oligocene : Trinidad, British West Indies.

V. C. Illing, 1928, *Geol. Soc. London Quart. Jour.*, v. 84, p. 20-21.

R. M. Stainforth, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 7, p. 1293 (footnote).

Revuelto shales

Mesozoic (Early Cretacic) : New Mexico.

Charles Keyes, 1940, *Pan-Am. Geologist*, v. 74, no. 4, p. 306-307.

Rexroad formation

Pliocene, upper : Kansas and Oklahoma.

H. T. U. Smith, 1940, *Kans. State Geol. Survey Bull.* 34, p. 95-99.

Rhyolite Canyon formation

Cenozoic : Arizona.

H. E. Enlows, 1951, *Tulsa Geol. Soc. Digest*, v. 19, p. 105-107; 1955, *Geol. Soc. America Bull.*, v. 66, no. 10, p. 1217-1242.

Rib Hill formation

Pennsylvanian : Nevada.

E. N. Pennebaker, 1932, *Mining and Metallurgy*, v. 13, no. 304, p. 164.

Richfield member (of Lucas formation)

Middle Devonian : Michigan (subsurface).

K. K. Landes, 1951, *U. S. Geol. Survey Circ.* 133, p. 7.

Richfield Quarry shale member (of Drum formation)

Pennsylvanian (Missouri series) : Nebraska.

G. E. Condra, 1949, *Nebr. Geol. Survey Bull.* 16, p. 37.

Rich Fountain formation

Lower Ordovician : Missouri and Arkansas.

J. S. Cullison, 1944, *Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser.*, v. 15, no. 2, p. 17-24.

Richibucto formation

Pennsylvanian : New Brunswick, Nova Scotia, and Prince Edward Island, Canada.

J. F. Caley and others, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 2, p. 478.

W. C. Gussow, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 7, p. 1757-1758.

Richmond Gulf group

Precambrian : Quebec, Canada.

M. E. Wilson, 1939, *Geologie der Erde, North America*, v. 1, p. 276.

Ricker limestone member (of Grindstone Creek formation)

See Ricker Station limestone member (of Grindstone Creek formation).

Ricker Station limestone member (of Grindstone Creek formation)

Pennsylvanian: Texas.

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66 (fig. 1).
Gayle Scott and others, 1941, *in* W. Tex. Geol. Soc. [Guidebook] Spring Field Trip,
p. 24.

Ridge formation

See Ridge Route formation.

Ridge Basin group

Miocene, upper, to Pliocene: California.

D. I. Axelrod, 1950, *Carnegie Inst. Washington Pub.* 590, p. 161, 168.

Ridge Route formation

Pliocene(?) : California.

Thomas Clements, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, p. 217 (fig. 1),
218.

Ridley Park granodiorite

Age unknown: Pennsylvania.

A. W. Postel, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 2004-2005;
1941, *Acad. Nat. Sci. Philadelphia Proc.*, v. 92, p. 134.

Rierdon formation

Upper Jurassic: Montana.

W. A. Cobban, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 9, p. 1277-1281.

Rigaud passage beds

Cambrian and Ordovician: Quebec, Canada.

A. W. Grabau, 1936, *Paleozoic formations in the light of the pulsation theory*, v. 2,
Cambrovisian pulsation, pt. 1, Caledonian and St. Lawrence geosynclines: Peiping,
China, University Press, Natl. Univ. Peking, p. 416, 424, 425, 550, 551.

Rigi series

Upper Jurassic (Portlandian): Northeast Greenland.

Wolf Maync, 1947, *Meddel. om Grønland*, bind 132, nr. 2, p. 73-77, 119, 133-137, pl. 6.

Riley formation

Upper Cambrian: Texas.

P. E. Cloud, Jr., V. E. Barnes, and Josiah Bridge, 1946, *Tex. Univ. Bur. Econ. Geology*
Pub. 4301, p. 154-155 [1945].

Riley Creek glaciation

Pleistocene (Wisconsin): Alaska.

Clyde Wahrhaftig *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 8, 13
(table 1).

Rillito andesite

Tertiary: Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 736.

Rim Rock sandstone

Upper Cretaceous: Utah.

P. T. Walton, 1944, *Geol. Soc. America Bull.*, v. 55, no. 1, p. 99, 111-114.

Rincon formation

Upper Cretaceous or Tertiary, lower: Bonaire, Netherlands West Indies.

P. J. Pijpers, 1931, *Leidsche Geol. Meded.*, Deel 5, p. 705.

Rinconada schist member (of Ortega formation)

Precambrian: New Mexico.

Evan Just, 1937, N. Mex. School Mines Bull. 13, p. 22.

Arthur Montgomery, 1953, N. Mex. State Bur. Mines Min. Res. Bull. 30, p. 12-19.

Ringbone shale

Lower Cretaceous (Bisbee group): New Mexico.

S. G. Lasky, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 5, p. 531-532, fig. 2.

Rio Claro boulder bed

Miocene, lower: Trinidad, British West Indies.

H. G. Kugler and others [1939], Geological conference in Trinidad; notes on the excursions: Petroleum Assoc. Trinidad, p. 8.

H. H. Suter, 1951, Colonial Geology and Min. Res., v. 2, no. 3, p. 208 [1952].

Rio Dell formation

Pliocene, middle to upper: California.

B. A. Ogle, 1953, Calif. Dept. Nat. Res., Div. Mines Bull. 164, p. 13 (fig. 3), 31-33, pl. 1.

Rio Duque shales

Oligocene, upper, or Miocene, lower: Panama.

T. F. Thompson, 1944, Geological explorations in the vicinity of Rio Quebrancha for the Panama Cement Company: Panama Canal, Special Eng. Div., p. 21-23.

Rio Guatemala group

Oligocene: Puerto Rico.

A. D. Zapp, H. R. Bergquist, and C. R. Thomas, 1948, U. S. Geol. Survey Oil and Gas Inv., Prelim. Map 85, sheets 1, 2.

Rio Santa Maria granite

Age not stated: Panama.

Karl Sapper, 1937, Mittelamerika, Handbuch der regionalen Geologie: Heidelberg, Band 8, Abt. 4a, Heft 29, p. 134.

Rio Seco diabase

Age not stated: Costa Rica.

B. N. Webber, 1942, Am. Inst. Mining and Metall. Engineers Tech. Pub. 1445, p. 2, 3.

Rio Seco formation

Jurassic: Trinidad, British West Indies.

H. G. Kugler, 1953, Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull., v. 20, no. 59, p. 31.

Rio Torola limestone

Pliocene (?): El Salvador.

S. K. Roy and R. K. Wyant, 1953, Fieldiana Geology, v. 10, no. 16, p. 176-191.

Rison clay member (of White Bluff formation)

Eocene (Jacksonian): Arkansas.

L. J. Wilbert, Jr., 1953, Ark. Div. Geology Bull. 19, p. 70-80.

Rita Blanca deposits

Pleistocene: Texas.

G. L. Evans and G. E. Meade, 1945, Texas Univ. Bur. Econ. Geology Pub. 4401, p. 493.

Ritchie limestone

Upper Cambrian or Lower Ordovician: New York.

D. W. Fisher and G. F. Hanson, 1951, Am. Jour. Sci., v. 249, no. 11, p. 804-806.

River glacial stage

Pleistocene (Iowan) : Colorado.

R. L. Ives, 1937, (abs.) *Colo. Univ. Studies*, v. 25, no. 1, p. 75; 1938, *Geol. Soc. America Bull.*, v. 49, no. 7, p. 1057-1058.

River Lake granite

Precambrian : Northwest Territories (Mackenzie), Canada.

A. W. Joliffe, 1938, *Canada Geol. Survey Paper* 38-21, p. 10.

Riverside series

Pennsylvanian : Nova Scotia, Canada.

F. W. Gray and R. H. Gray, 1941, *Canadian Inst. Mining and Metallurgy Trans.*, v. 44, p. 296.

River Styx conglomerate facies (of Cuyahoga formation)

Mississippian : Ohio.

F. T. Holden, 1941, *Ill. Acad. Sci. Trans.*, v. 34, no. 2, p. 172.

Riverton cyclothem or formation

Pennsylvanian (Des Moines) : Kansas.

G. E. Abernathy, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 18, 20, 22; 1938 *Kans. Acad. Sci. Trans.*, v. 41, p. 193, 196.

Rivieradal sandstones

Precambrian (Greenlandian) : North Greenland.

Erdhard Frankl, 1954, *Meddel. om Grønland*, bind 116, nr. 2, p. 40-41, 56, 78, pl. 1.

Rivière Gauche formation

Pliocene : Haiti.

Jacques Butterlin, [1952], *Résumé de thèse présentée à la Sorbonne, La géologie de la République d'Haiti et ses rapports avec celle des régions voisines (mimeo.)*, p. 4; 1954, *Inst. Français d'Haiti Mem.* 1, p. 67.

Rivière Grise formation

Oligocene to Miocene : Haiti.

Jacques Butterlin, 1950, *Rev. Soc. Haïtienne Histoire, Géographie et Géologie*, v. 21, no. 76, p. 56; 1954, *Inst. Français d'Haiti Mém.* 1, p. 63.

Rivoli member (of Dunleith formation)

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 24, figs. 3, 12.

Robbers Roost gravel

Quaternary : Arizona.

Donaldson Koons, 1948, *Plateau*, v. 20, no. 4, p. 54 (fig. 1), 58.

Rob Camp limestone

Middle Ordovician : Virginia.

B. L. Miller and W. P. Brosgé, 1950, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 104.

Roberts Arm volcanics

Middle Ordovician (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 10-14.

Roberts Mountains formation

Silurian : Nevada.

C. W. Merriam, 1940, *Geol. Soc. America Special Paper* 25, p. 11-12.

Robertson formation

Lower Jurassic (Lias) : Oregon.

R. L. Lupton, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 227, 238-239.**Roberts Ranch member (of Dagger Flat formation)**

Upper Cambrian : Texas.

J. L. Wilson, 1954, *Jour. Paleontology*, v. 28, no. 3, p. 251, 252.**Robeson conglomerate**

Triassic : Pennsylvania.

D. B. McLaughlin, 1939, *Mich. Acad. Sci. Arts and Letters Papers*, v. 24, pt. 4, p. 60, 73.**Robin Hood formation**

Precambrian (Archean) : New Brunswick, Canada.

G. S. Mackenzie, 1951, *Canada Geol. Survey Paper (Prelim. Map)* 51-15.**Robinson Branch formation or coal cycle**

Pennsylvanian (Desmoinesian) : Kansas, Missouri, Oklahoma, Nebraska, and Iowa.

W. V. Searight and others, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 12, p. 2747-2749.C. C. Branson, 1954, *Okla. Geol. Survey Guidebook* 2, p. 5.**Roblar leucogranite**

Cretaceous : California.

E. S. Larsen, Jr., 1948, *Geol. Soc. America Mem.* 29, p. 97-98.**Robson limestone**

Ordovician : British Columbia and Alberta, Canada.

C. D. Walcott, 1913, *Smithsonian Misc. Coll.*, v. 57, no. 12, p. 334, 336.**Rockaway conglomerate bed (in Lutie member of Theodosia formation)**

Lower Ordovician : Missouri.

J. S. Cullison, 1944, *Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser.*, v. 15, no. 2, p. 27.**Rock Bench Quarry beds (of Polecat Bench formation)**

Paleocene : Wyoming.

G. L. Jepsen *in* W. B. Scott, 1937, *A history of land mammals in the Western Hemisphere* : New York, Macmillan Co., p. 99 ; 1940, *Am. Philos. Soc. Proc.*, v. 83, no. 2, p. 234-236.**Rockcliffe formation**

Middle Ordovician (Chazy) : Ontario, Canada.

A. E. Wilson, 1937, *Royal Soc. Canada Trans.*, ser. 3, v. 31, sec. 4, p. 46, 48.**Rock Creek conglomerate member (of Maroon formation)**

Permian (?) : Colorado.

C. F. Bassett, 1939, *Geol. Soc. America Bull.*, v. 50, no. 12, pt. 1, p. 1864.**Rock Creek member (of Fernie formation)**

Jurassic : British Columbia and Alberta, Canada.

P. S. Warren, 1934, *Am. Jour. Sci.*, ser. 5, v. 27, p. 59.**Rockdale dolomite**

Silurian (Niagaran) : Illinois.

T. E. Savage *in* C. K. Swartz and others, 1942, *Geol. Soc. America Bull.*, v. 53, no. 4, p. 536, Chart 3.

Rockdell limestone

Middle Ordovician: Virginia.

B. N. Cooper, 1945, Va. Geol. Survey Bull. 66, p. 17, 137, 208.

Rockledge limestone breccia

Upper Cambrian: Vermont.

Charles Schuchert, 1937, Geol. Soc. America Bull., v. 48, no. 7, p. 1049-1052.

Rock Levee formation

Ordovician: Missouri.

J. G. Grohskopf, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 3, p. 360-362.

Rockly Bay formation

Miocene, upper, and Pliocene: Tobago, British West Indies.

J. C. Maxwell, 1948, Geol. Soc. America Bull., v. 59, no. 8, p. 842-844.

Rockport Quarry limestone

Middle Devonian: Michigan.

G. A. Cooper and A. S. Warthin, 1941, Washington Acad. Sci. Jour., v. 31, no. 6, p. 260.

Rocky Prairie sandstone

Eocene (Jackson): Texas.

A. A. L. Mathews, 1950, Tex. Eng. Expt. Sta. Research Rept. 14, p. 5, geol. man.

Rock Stream flagstone member (of Cashaqua shale)

Upper Devonian: New York.

W. H. Bradley and J. F. Pepper, 1941, U. S. Geol. Survey Bull. 899, p. 12-13.

Rockwood Park granodiorite

Pre-Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 35-36.

Rocky Branch bone bed (in Jeffersonville limestone)

Middle Devonian: Indiana.

J. W. Wells, 1944, Geol. Soc. America Bull., v. 55, no. 3, p. 282.

Rocky Brook formation

Lower Carboniferous: Newfoundland, Canada.

A. O. Hayes, 1949, Newfoundland Geol. Survey Inf. Circ. 6, Map 2.

Rocky Butte volcanics

Pleistocene: Oregon.

R. C. Treasher, 1940, (abs.) Geol. Soc. America Bull., v. 51, no. 12, pt. 2, p. 2034.

Rocky Point beds

Oligocene, upper: Oregon.

F. W. Libbey, W. D. Lowry, and R. S. Mason, 1945, Ore. Dept. Geology and Mineral Industries Bull. 29, p. 8-9.

Rocky Point conglomerate (in Deese formation)

Pennsylvanian (Des Moines): Oklahoma.

C. W. Tomlinson, 1937, Ardmore Geol. Soc. [Guidebook] Field Trip, March 13, Road log, p. 1, 2, geol. map.

R. C. Moore and others, 1944, Geol. Soc. America Bull., v. 55, no. 6, p. 697, Chart 6 (column 37).

Røde Ø conglomerate

Age unknown: East Greenland.

Edvard Bay, 1895, Meddel. om Grønland, hefte 19, pt. 6, p. 160-162; pt. 9, p. 263-264.

Rodessa formation

Lower Cretaceous (Comanche series) : Subsurface in Louisiana, Texas, and Arkansas.

W. B. Weeks, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 8, p. 970, fig. 4.
G. E. Murray, 1948, *La. Dept. Conserv. Geol. Bull.* 25, p. 65-66.

Rodetal conglomerate (in Margrethetal series)

Middle Devonian : Northeast Greenland.

Heinrich Butler, 1954, *Meddel. om Grønland*, bind 116, nr. 7, p. 46, 48, 113.

Rødryggen beds

Lower Cretaceous (upper Valanginian) : Northeast Greenland.

Wolf Maync, 1949, *Meddel. om Grønland*, bind 133, nr. 3, p. 70-72, 192-195, 281.

Roger Park basaltic breccia

Tertiary : Utah.

Eugene Callaghan, 1939, *Am. Geophys. Union Trans.* 20th Ann. Meeting, pt. 3, p. 446-447.

Rogers City limestone or formation

Middle Devonian : Michigan.

G. M. Ehlers and R. E. Radabaugh, 1937, *Mich. Acad. Sci. Arts and Letters Sec. Geology and Mineralogy [Guidebook] 7th Ann. Field Excursion*, [p. 8-9] ; 1938, *Mich. Acad. Sci. Arts and Letters Papers*, v. 23, p. 441-445.

Rogue formation

Upper Jurassic : Oregon.

F. G. Wells and G. W. Walker, 1953, *Geology of the Galice quadrangle, Oregon : U. S. Geol. Survey Geol. Quadrangle Map [GQ 25]*.

Rohnerville formation

Pleistocene, upper : California.

B. A. Ogle, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 164, p. 13 (fig. 3), 63, pl. 1.

Rolling Fork limestone member (of Brodhead formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 152-153.

Romeo member (of Joliet formation)

Silurian (Niagaran) : Illinois.

D. L. Graf, 1952, *Ill. Geol. Survey Rept. Inv.* 161, p. 3.

Romero conglomerate (in Debris Dam sandstone)

Upper Cretaceous : California.

B. M. Page, J. G. Marks, and G. W. Walker, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 8, p. 1733, 1741, 1743.

Ronde Klip conglomerate

Pleistocene : Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, *Geologie en geohydrologie van het Eiland Curaçao : Delft*, J. Waltman, Jr., p. 29, strat. table.

Ronning group

Silurian : Northwest Territories (Mackenzie) and Yukon, Canada.

J. S. Stewart, 1944, *Canadian Inst. Mining and Metallurgy Trans.*, v. 47, p. 163.

G. S. Hume and T. A. Link, 1945, *Canada Geol. Survey Paper* 45-16, p. 11-15.

Roop sandstone member (of Alhambra formation)

Eocene, upper : California.

C. E. Weaver, 1953, *Wash. [State] Univ. Pubs. in Geology*, v. 7, p. 19 (chart), 54-55.

Roosevelt member (of Apache group)

Precambrian (Algonkian) : Arizona.

N. A. E. Hinds, 1936, *Carnegie Inst. Washington Pub.* 463, p. 32.**Root Valley sandstone**

Lower Ordovician (Beekmantownian) : Minnesota and Iowa.

C. R. Stauffer and G. A. Thiel, 1941, *Minn. Geol. Survey Bull.* 29, p. 59-63.**Rosaire group**

Cambrian (?) : Quebec, Canada.

Jacques Béland, 1952, *Quebec Dept. Mines Prelim. Rept.* 279, p. 4.**Roseau tuffs**

Age not stated : Dominica, British West Indies.

J. W. W. Spencer, 1902, *Geol. Soc. London Quart. Jour.*, v. 58, pt. 3, p. 348.**Roseland anorthosite**

Precambrian : Virginia.

C. S. Ross, 1941, *U. S. Geol. Survey Prof. Paper* 198, p. 2-6.**Rosemount member (of Montreal formation)**

Middle Ordovician (Trenton) : Quebec, Canada.

T. H. Clark, 1941, *Quebec Dept. Mines Prelim. Rept.* 158, p. 4 ; 1952, *Geol. Rept.* 46, p. 67-71.**Rosenburg series**

Age not stated : Quebec, Canada.

J. A. Dresser and T. C. Denis, 1944, *Quebec Dept. Mines Geol. Rept.* 20, v. 2, p. 398.**Rosette bed (of Midway formation)**

Tertiary, lower : Texas.

R. H. Cuyler and A. W. Weeks, 1940, *in Geol. Soc. America [Guidebook] 53d Ann. Meeting*, p. 24.**Ross Mine formation**

Permian (Guadalupe) : Texas.

C. C. Rix, 1953, *in W. Tex. Geol. Soc. [Guidebook] Spring Field Trip, May 28-30*, p. 5, 14, 20.**Rota limestone**

Pleistocene : Mariana Islands (Rota).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands : Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey] ; 1952, *Coral reefs in the South Seas : Japan Hydrog. Office Bull.*, v. 11, p. 57, table 4 [English translation in library of U. S. Geol. Survey, p. 68].**Rothwell shale member (of Muldraugh formation)**

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 219-220.**Roti granite**

Devonian : Newfoundland, Canada.

J. R. Cooper, 1954, *Canada Geol. Survey Mem.* 276, p. 24.**Roubaix group**

Precambrian : South Dakota.

B. J. Berg, 1946, *S. Dak. State Geol. Survey Rept. Inv.* 52, p. 7.

Rouge River formation

Ordovician : Ontario, Canada.

B. A. Liberty, 1955, *Geol. Assoc. Canada Proc.*, v. 7, pt. 1, p. 145.

Roughlock siltstone

Middle Ordovician (Mohawkian) : South Dakota.

M. R. McCoy, 1952, *Billings Geol. Soc. Guidebook 3d Ann. Field Conf.*, p. 44, 46.

Rough Mountain conglomerate lentil (in Brownwood shale)

Mississippian : Texas.

F. B. Plummer, 1950, *Tex. Univ. Bur. Econ. Geology Pub.* 4329, p. 95.

Round Head breccia

Ordovician : Newfoundland, Canada.

Philip Oxley, 1953, *Newfoundland Geol. Survey Rept.* 5, p. 33.

Round Hill series

Miocene, upper : Jamaica, British West Indies.

C. A. Matley, 1940, *Geol. Soc. London Abs. Proc.* 1373, p. 102.

Round Prairie formation

Pennsylvanian (Morrow) : Oklahoma.

B. H. Harlton, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 7, p. 895-900.

Roundtop group

Pennsylvanian : Wyoming and South Dakota.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, *Nebr. Geol. Survey Bull.* 13, p. 2, 3, 32, 44.

Roundtop member (of Richfield formation)

Precambrian or Lower Cambrian : British Columbia, Canada.

A. H. Lang, 1938, *Canada Geol. Survey Paper* 38-16, p. 8.

Round Valley limestone

Pennsylvanian (Morrowan) : Utah and Colorado.

Walter Sadlick, 1955, *Wyo. Geol. Assoc. Guidebook 10th Ann. Field Conf.*, p. 50, 56-57.

Rouyn Lake sediments

Precambrian : Quebec, Canada.

H. J. Conolly and R. C. Hart, 1936, *Canadian Inst. Mining and Metallurgy Trans.*, v. 39, p. 10.

Rowe formation or coal cycle

Pennsylvanian (Desmoinesian) : Kansas, Iowa, Missouri, Nebraska, and Oklahoma.

W. V. Searight and others, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 12, p. 2747-2749.

C. C. Branson, 1954, *Okla. Geol. Survey Guidebook* 2, p. 6.

Row Park limestone

Middle Ordovician : West Virginia, Maryland, and Pennsylvania.

R. B. Neuman, 1951, *Geol. Soc. America Bull.*, v. 62, no. 3, p. 278-284.

Rubio Peak formation

Tertiary, upper : New Mexico.

R. M. Hernon, W. R. Jones, and S. L. Moore, 1953, *N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 120.

H. L. Jicha, Jr., 1954, *N. Mex. State Bur. Mines Min. Res. Bull.* 37, p. 39-42.

Ruby diorite

Age not stated: Arizona.

G. M. Fowler, 1938, *Ariz. Bur. Mines Bull.* 145, *Geol. Ser.* 12, p. 121, 122, pl. 32.

Ruby group

Precambrian (Proterozoic): British Columbia, Canada.

E. F. Roots, 1948, *Canada Geol. Survey Paper* 48-5, p. 6.

Ruby Road formation

Age not stated: Arizona.

B. P. Webb and K. C. Coryell, 1954, *U. S. Atomic Energy Comm. RME-2009*, p. 7, pl. 1.

Ruddell shale

Upper Mississippian: Arkansas.

MacKenzie Gordon, Jr., 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 11, p. 1631-1634.

Rudist limestones

See *Barrettia* and/or *Titanosarcollites* limestones.

Rumsy Ridge sandstone member (of Fish Creek formation)

Lower Silurian: New York, and Ontario, Canada.

D. W. Fisher, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 9, p. 1988.

Runa Lake granodiorite

Precambrian: Northwest Territories (Mackenzie), Canada.

B. D. Prusti, 1955, (abs.) *Canadian Mining Jour.*, v. 76, no. 3, p. 76.

Runnymede sandstone member (of Ninnescah formation)

Permian: Kansas.

G. H. Norton, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 12, p. 1773-1774.

Russell feldspathic gabbro

Precambrian: New York.

A. F. Buddington, 1939, *Geol. Soc. America Mem.* 7, p. 53-54, 260-267.

Russell formation

Ordovician (Richmond): Ontario, Canada.

A. E. Wilson, 1940, *Canada Geol. Survey Map* 587A.

Russell slate

Upper Cambrian: Vermont.

Rudolf Ruedemann, 1947, *Geol. Soc. America Mem.* 19, p. 165.

Russell Creek limestone member (of Senora formation)

Pennsylvanian (lower Desmoinesian): Oklahoma, Kansas, and Missouri.

C. C. Branson, 1954, *Okla. Acad. Sci. Proc.*, v. 33, p. 191, 193.

Russia limestone member (of Denmark formation)

Middle Ordovician (Mohawkian): New York.

G. M. Kay, 1943, *Am. Jour. Sci.*, v. 241, no. 10, p. 598-601.

Rust limestone member (of Cobourg formation)

Middle Ordovician (Mohawkian): New York.

G. M. Kay, 1943, *Am. Jour. Sci.*, v. 241, no. 10, p. 598, 601-602.

Ruth formation

See *Ruth Lake formation*.

Ruth Lake formation

Precambrian (Proterozoic) : Quebec and Newfoundland (Labrador), Canada.

H. B. Rice, 1949, *Canadian Mining Jour.*, v. 70, no. 9, p. 71-72.

J. M. Harrison, 1952, *Canada Geol. Survey Paper* 52-20, p. 10.

Rye formation

Probably Ordovician and Silurian : New Hampshire.

M. P. Billings *in* M. P. Billings, John Rodgers, and J. B. Thompson, Jr., 1952, *Guide-book for field trips in New England* : Geol. Soc. America, p. 23, 24, 29, 44.

Saavedra member (of Lowell formation)

Lower Cretaceous : Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 11, 15-16.

Sabana Grande siliceous limestone

Age not stated : Costa Rica.

D. F. MacDonald and others, 1919, [Costa Rica] *La Gaceta, Diario Oficial*, año 41, no. 138, p. 352.

B. N. Webber, 1942, *Am. Inst. Mining and Metall. Engineers Tech. Pub.* 1445, p. 3.

Sabanita formation

See Sabanitas formation.

Sabanitas formation

(?) Miocene, middle : Panama.

[T. F. Thompson], 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap. 5, p. 7.

S. M. Jones, 1950, *Geol. Soc. America Bull.*, v. 61, no. 9, p. 906, 920.

Sabattus garnet schist

Cambro-Ordovician (?) : Maine.

L. W. Fisher, 1936, *Am. Mineralogist*, v. 21, no. 5, p. 323.

Sabine Island formation

Eocene : Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, aff. 2, nr. 2, p. 263.

Sacatar quartz diorite

Paleozoic (?) or Mesozoic (?) : California.

W. J. Miller and R. W. Webb, 1940, *Calif. Jour. Mines and Geology*, v. 36, no. 4, p. 354-355, 378 (fig. 31), pl. 2.

Sacate formation

Eocene, middle : California.

F. R. Kelly, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 27, no. 1, p. 10-11.

Sacramento tuff and sand member (of Tuscan formation)

[Pliocene] : California.

R. C. Treasher, 1947, (abs.) *Geol. Soc. America Bull.*, v. 58, no. 12, pt. 2, p. 1257.

Sacramento Hill porphyry

Lower Cretaceous : Arizona.

W. G. Hogue and E. D. Wilson, 1950, *Ariz. Bur. Mines Bull.* 156, *Geol. Ser.* 18, p. 21.

G. W. Bain, 1952, *Econ. Geology*, v. 47, no. 3, p. 306.

Saddleback basalt

Pliocene : California.

H. S. Gale, 1946, *Calif. Jour. Mines and Geology*, v. 42, no. 4, p. 326, 346-350.

Saddlebag Lake conglomerate

Precambrian (Knife Lake) : Minnesota.

V. G. Sleight *in* J. T. Stark and V. G. Sleight, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1033-1034.**Saddle Bayou lentil (of Verda member of Yazoo clay)**

Eocene, upper : Louisiana.

H. N. Fisk, 1938, *La. Dept. Conserv. Geol. Bull.* 10, p. 78, 102-103.**Safford dacite**

Tertiary : Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 739-740.**Safford tuff**

Tertiary : Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 731-733.**Sagavanirktok formation**

Tertiary, lower : Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 167.**Sagavanirktok glaciation**

Pleistocene (pre-Wisconsin) : Alaska.

R. L. Detterman *in* T. L. Péwé and others, 1953, *U. S. Geol. Survey Cir.* 289, p. 11, 13 (table 1).**Sage pebble-conglomerate member (of Snowy Range formation)**

Upper Cambrian : Montana.

Christina Lochman, 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 11, p. 2212.**Sage Creek basalts**

Eocene, upper : Montana.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, *Geol. Soc. America Bull.*, v. 66, no. 4, p. 373, pl. 1.**Sage Valley limestone member (of Goldens Ranch formation)**

Eocene, middle or upper : Utah.

Siegfried Muessig, 1951, *Science*, v. 114, no. 2957, p. 234.**Sail Harbor group**

Permian or older : Northwest Territories (Ellesmere Island), Canada.

R. G. Blackadar, 1954, *Canada Geol. Survey Paper* 53-10, p. 12.**St. Andrew gabbroic anorthosite**

Precambrian : Ontario, Canada.

J. M. Harrison, 1944, *Geol. Soc. America Bull.*, v. 55, no. 12, p. 1409.**St. Andrews beds**

Eocene, lower : Barbados, British West Indies.

A. B. Thompson, 1925, *Oil field exploration and development*, v. 1, *Oil field principles* : New York, N. Y., D. Van Nostrand Co., p. 395.Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1552-1553, 1581.**St. Ann formation**

Pennsylvanian : Nova Scotia, Canada.

W. A. Bell and E. A. Goranson, 1938, *Canada Geol. Survey Map* 359A.**St. Anne formation***See* St. Ann formation.

- St. Clair facies (of Murfreesboro formation)
Middle Ordovician (Chazyan) : Virginia.
Charles Butts, 1940, Va. Geol. Survey Bull. 52, pt. 1, p. 126, 132-134.
- St. Cloud gray granodiorite
Precambrian (Algoman) : Minnesota.
W. S. Woyski, 1949, Geol. Soc. America Bull., v. 60, no. 6, p. 1002, 1012, pl. 1.
- St. Cloud red granite
Precambrian (middle Keweenawan) : Minnesota.
M. S. Woyski, 1949, Geol. Soc. America Bull., v. 60, no. 6, p. 1002, 1005-1006.
- St. Dominique formation
Ordovician (Chazy) : Quebec, Canada.
H. R. Belyea, 1952, Canada Geol. Survey Bull. 22, p. 12-15.
- St. Edouard member (of Grand Rapids formation)
Lower Cretaceous : Alberta, Canada (subsurface).
P. C. Badgley, 1952, Canada Geol. Survey Paper 52-11, p. 5.
- St. Edwards tuff
Upper Cretaceous : Texas.
C. O. Durham, Jr., 1955, Corpus Christi Geol. Soc. [Guidebook] Ann. Field Trip, March 11-12, [p. 59], pl. 16.
- St. Flavien basic eruptives
Cambrian and Ordovician : Quebec, Canada.
T. H. Clark, 1948, Quebec Dept. Mines Prelim. Rept. 225, p. 3, geol. map (Map 694).
- St. Francis series
Ordovician : Quebec, Canada.
T. H. Clark *in* H. C. Cooke and T. H. Clark, 1937, Canada Geol. Survey Mem. 211, p. 37-42.
- Saint George granite or plutonics
Devonian : New Brunswick, Canada.
A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 25.
- St. Georges soil
Pleistocene : Bermuda Islands.
R. W. Sayles, 1931, Am. Acad. Arts and Sci. Proc., v. 66, no. 11, p. 395.
- St. Gerrard member (of Lake Aylmer formation)
Devonian : Quebec, Canada.
T. H. Clark, 1942, Royal Soc. Canada Trans., ser. 3, v. 36, sec. 4, p. 17-18.
- St. Helens breccia
See St. Helens Island breccia.
- St. Helens Island breccia
Devonian (?) : Quebec, Canada.
A. W. Nolan and J. D. Dixon, 1908, Canadian Record Sci., v. 9, no. 1, p. 53-66.
J. A. Dresser and T. C. Denis, 1944, Quebec Dept. Mines and Geol. Rept. 20, v. 2, p. 276-277.
- St. Hilaire member (of Nicolet River formation)
Ordovician : Quebec, Canada.
T. H. Clark, 1947, Quebec Dept. Mines Prelim. Rept. 204, p. 9, 10.

St. Ignace formation

Upper Silurian (Cayugan) : Michigan.

G. M. Ehlers *in* K. K. Landes, G. M. Ehlers, and G. M. Stanley, 1945, Mich. Dept. Conserv. Geol. Survey Div. Pub. 44, Geol. Ser. 37, p. 34, 35, 53-73.

St. Jacques drift

Quaternary : New Brunswick and Quebec, Canada.

H. A. Lee, 1955, Canada Geol. Survey Paper 55-15, p. 6-8.

St. James member (of Dunleith formation)

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., figs. 3, 9.

Saint Jean River series

Silurian and Devonian : Quebec, Canada.

H. W. McGerrigle, 1950, Quebec Dept. Mines Geol. Rept. 35, p. 24.

J. F. Caley and others *in* M. W. Ball, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 2, p. 471.

Saint John volcanics

Precambrian : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, Geol. Soc. America Special Paper 5, p. 48-54.

Saint John River formation

See Saint Jean River series.

St. Joseph boulder bed

Paleocene : Trinidad, British West Indies.

Hans Boll, 1952, Jour. Paleontology, v. 26, no. 4, p. 670, 671.

Saint Jude igneous breccia

Precambrian : Quebec, Canada.

W. G. Robinson, 1943, Quebec Dept. Mines Prelim. Rept. 279, p. 6-7.

St. Juste group

Silurian (?) or Devonian (?) : Quebec, Canada.

Jacques Béland, 1952, Quebec Dept. Mines Prelim. Rept. 279, p. 6-7.

St. Lawrence granite

Precambrian : Newfoundland, Canada.

B. E. Van Alstine, 1944, Econ. Geology, v. 39, no. 2, p. 111-113.

St. Lawrence shale

Devonian : Quebec, Canada.

E. M. Kindle, 1938, Bull. Am. Paleontology, v. 24, no. 82, p. 46(12).

St. Luke limestone member (of Edinburg formation)

Middle Ordovician : Virginia.

B. N. Cooper and G. A. Cooper, 1946, Geol. Soc. America Bull., v. 57, no. 1, p. 81.

St. Marks facies (of Tampa stage)

Miocene, lower : Florida.

H. S. Puri, 1953, Fla. Geol. Survey Geol. Bull. 36, p. 20-21.

St. Martin formation

Middle Ordovician (Chazy) : Quebec and Ontario, Canada.

A. E. Wilson, 1937, Royal Soc. Canada Trans., ser. 3, v. 31, sec. 4, p. 46, 54.

St. Martins intrusives and extrusives

Precambrian: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper 5*, pl. 9.
F. J. Alcock, [1938], *Canada Geol. Survey Mem. 216*, p. 13.**St. Marysan substage**

Miocene, middle: Central Atlantic Coastal Plain.

D. S. Malkin, 1953, *Jour. Paleontology*, v. 27, no. 6, p. 767-768.**Saint Michel member (of Montreal formation)**

Middle Ordovician (Trenton): Quebec, Canada.

T. H. Clark, 1941, *Quebec Dept. Mines Prelim. Rept. 158*, p. 4; 1952, *Geol. Rept. 46*, p. 65-67.**St. Paul group**

Middle Ordovician: West Virginia, Maryland, and Pennsylvania.

R. B. Neuman, 1951, *Geol. Soc. America Bull.*, v. 62, no. 3, p. 278.**St. Paul member (of Grand Rapids formation)**

Lower Cretaceous: Alberta, Canada (subsurface).

P. C. Badgley, 1952, *Canada Geol. Survey Paper 52-11*, fig. 2.**St. Pauls group**

Ordovician: Newfoundland, Canada.

Helgi Johnson, 1941, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 3, no. 6, p. 143.**St. Regis granite**

Precambrian: New York.

A. F. Buddington, 1937, *N. Y. State Mus. Bull. 309*, p. 34-35, 38, 45-46.**Sainte Thérèse member (of Laval formation)**

Middle Ordovician (Chazy): Quebec, Canada.

T. H. Clark, 1944, *Royal Soc. Canada Trans.*, sec. 4, v. 38, p. 29; 1952, *Quebec Dept. Mines Geol. Rept. 46*, p. 43, 44.**St. Thomas-in-the-Vale marls**

Miocene, lower: Jamaica, British West Indies.

C. A. Matley, 1946, *Outline of the geology of the Kingston district of Jamaica: Inst. of Jamaica*, [p. 3], *geol. map*; 1951, *Geology and physiography of the Kingston district, Jamaica: Inst. of Jamaica*, p. 54-60, *geol. map*.**St. Wendells limestone (in McLeansboro formation)**

Pennsylvanian: Indiana.

J. A. Culbertson, 1932, *The paleontology and stratigraphy of the Pennsylvanian strata between Caseyville, Ky. and Vincennes, Ind.*; *Abs. Thesis, Ill. Univ.: Urbana*, III, p. 3, 7.**Sais quartzite**

Precambrian: New Mexico.

J. T. Stark and E. C. Dapples, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1936; 1946, v. 57, no. 12, pt. 1, p. 1127-1129.**Saladito formation**

Oligocene: Tamaulipas, Mexico.

Manuel Alvarez, Jr., 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 2, p. 365.**Salisbury formation**

Pennsylvanian: New Brunswick, Nova Scotia, and Prince Edward Island, Canada.

J. F. Caley and others, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 2, p. 478.
W. C. Gussow, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 7, p. 1755-1758.

Salish group

Recent: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, Canada Geol. Survey Water Supply Paper 322, p. 11, 48, map.

Salitral shale tongue (of Chinle formation)

Upper Triassic: New Mexico.

G. H. Wood and S. A. Northrop, 1946, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 57.

Salmon Lake glaciation

Pleistocene (Wisconsin): Alaska.

D. M. Hopkins *in* T. L. Péwé and others, 1953, U. S. Geol. Survey Circ. 289, p. 10, 13 (table 1).

Saltash formation

Precambrian: Vermont.

W. F. Brace, 1953, Vt. Geol. Survey Bull. 6, p. 44-45, tables 2, 3.

Salt Creek conglomerate

Upper Cretaceous: California.

N. L. Talliaferro, 1954, *in* Northern Calif. Geol. Soc. [Guidebook] Spring Field Trip, [p. 6, 7, 8], correlation chart.

Salter member (of Mount Head formation)

Carboniferous: Alberta, Canada.

R. J. W. Douglas, 1953, Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium, p. 68.

Samelias formation

Precambrian: South Dakota.

J. R. Berg, 1946, S. Dak. State Geol. Survey Rept. Inv. 52, p. 7.

Sams Creek metabasalt

Precambrian (?): Maryland.

A. J. Stose and G. W. Stose, 1946, Md. Dept. Geology, Mines and Water Res., Carroll and Frederick Counties Rept., p. 58, 63-65.

San Andres formation

Upper Jurassic and Lower Cretaceous: Cuba.

L. W. J. Vermunt, 1937, Geog. Geol. Meded. (Utrecht Univ.) Physiol.-Geol. Reeks, no. 13, p. 5, 7-15.

San Antonio formation

Precambrian: Manitoba, Canada.

C. H. Stockwell, 1938, Canada Geol. Survey Mem. 210, p. 19-20.

San Antonio Canyon group

Age unknown: California.

K. J. Hsu, 1955, Calif. Univ. Dept. Geol. Sci. Bull., v. 30, no. 4, p. 295, map 1.

San Ardo group

Pliocene: California.

T. A. Baldwin, 1950, Am. Assoc. Petroleum Geologists Bull., v. 34, no. 10, p. 1987-1988.

Sanastee sandstone member (of Mancos shale)

Cretaceous: New Mexico.

C. T. Smith, 1951, *in* N. Mex. Geol. Soc. Guidebook 2d Field Conf., p. 13, 79.
Dan Bozanic, 1955, Four Corners Geol. Soc. Guidebook [1st] Field Conf., p. 91.

Sanatorium limestone lentil (in Gueda Springs shale member of Wellington formation)

Permian: Kansas.

W. A. Ver Wiebe, 1937, Wichita Municipal Univ. Bull., v. 12, no. 5, p. 14.

San Bartolo formation

Jurassic: Vera Cruz, Mexico.

Ramiro Robles Ramos, 1942, Irrigación en Mexico, v. 23, no. 3, p. 45 (correlation chart).

R. W. Inlay and others, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 9, p. 1751.

Sand Bay volcanics

Tertiary: Alaska (Aleutian Islands).

F. S. Simons and D. E. Mathewson, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 4, p. 61-63.

Sand Canyon formation

Pleistocene, upper: New Mexico.

Sheldon Judson, 1950, Geol. Soc. America Bull., v. 61, no. 3, p. 263; 1953, Smithsonian Misc. Coll., v. 121, no. 1, p. 21-22, 30.

Sand Canyon member (of Sheep Creek formation)

Miocene (Hemingford): Nebraska.

M. K. Elias, 1942, Geol. Soc. America Special Paper 41, p. 129-131, pl. 17.

Sand Draw sandstone lentil (of White River formation)

Eocene or Oligocene: Wyoming.

F. B. Van Houten, 1954, U. S. Geol. Survey Oil and Gas Inv. Map OM 140, sheet 2.

Sanderson formation

Lower Mississippian: Indiana, Kentucky, and Ohio.

Guy Campbell, 1946, Geol. Soc. America Bull., v. 57, no. 9, p. 847-849, 857-858, 875-878, 879.

Sandersville limestone member (of Barnwell formation)

Eocene: Georgia.

C. W. Cooke, 1943, U. S. Geol. Survey Bull. 941, p. 62-63.

Sandgirt Lake formation

Precambrian: Newfoundland (Labrador), Canada.

E. H. Kranck, 1953, Canada Geol. Survey Bull. 26, p. 4, 37.

Sandholdt shale

Miocene, lower and middle: California.

R. R. Thorup, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1958; 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 464, 466.

Sandpile group

Upper Ordovician and Lower Silurian: British Columbia, Canada.

H. Gabrielse, 1955, Canada Geol. Survey Paper (Prelim. Map) 54-10.

Sandtrap conglomerate

Pliocene, upper (?): Arizona.

S. G. Lasky and B. N. Webber, 1949, U. S. Geol. Survey Bull. 961, p. 35-38.

San Fernando argilline

Upper Cretaceous: Trinidad, British West Indies.

G. A. Waring, 1926, Johns Hopkins Univ. Studies in Geology, no. 7, p. 29, 41.

R. A. Liddle, [1928], The geology of Venezuela and Trinidad: Fort Worth, Tex., J. P. MacGowan, p. 440.

San Fernando formation

Cretaceous: Baja California, Mexico.

[C. H. Beal], 1924, *Bol. del Petroleo*, v. 17, no. 6, p. 421; v. 18, no. 1, p. 49, geol. map.C. H. Beal, 1948, *Geol. Soc. America Mem.* 31, p. 38-40.**Sanford quartzite**

Triassic(?) : California.

G. A. Schroter, 1938, *Eng. and Mining Jour.*, v. 139, no. 4, p. 44.**San Gregorio formation**

Oligocene(?) to Miocene, lower(?) : Baja California, Mexico.

[C. H. Beal], 1924, *Bol. del Petroleo*, v. 17, no. 6, p. 422.C. H. Beal, 1948, *Geol. Soc. America Mem.* 31, p. 54-56.**San Jacinto granodiorite**

Jurassic or Cretaceous : California.

W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, no. 1, p. 60-61, pl. 1.**San Joaquin facies (of El Doctor limestone)**

Lower Cretaceous : Queretaro, Mexico.

B. W. Wilson, J. P. Hernández M., and E. Meave T., 1955, *Soc. Geol. Mexicana Bol.*, tomo 18, no. 1, p. 4, fig. 2.**San Jon formation**

Pleistocene, upper : New Mexico.

Sheldon Judson, 1950, *Geol. Soc. America Bull.*, v. 61, no. 3, p. 263; 1953, *Smithsonian Misc. Coll.*, v. 121, no. 1, p. 18-21, 30.**San Jose formation**

Eocene, lower : New Mexico.

G. G. Simpson, 1948, *Am. Jour. Sci.*, v. 246, no. 5, p. 280-282; no. 6, p. 363-383.**San José formation**

Upper(?) Jurassic : San Luis Potosí, Mexico.

D. E. White and Jenaro González Reyna, 1946, *U. S. Geol. Survey Bull.* 946-E, p. 184.**San José quartz diorite**

Cretaceous: Baja California, Mexico.

A. O. Woodford and T. F. Harriss, 1938, *Geol. Soc. America Bull.*, v. 49, no. 9, p. 1314-1316.**Sankakuyama formation**

Eocene(?) : Mariana Islands (Saipan).

Risaburo Tayama, 1938, *Geomorphology, geology, and coral reefs of Saipan Island: Tropical Industry Inst., Palau, South Sea Islands, Bull.* 1 [English translation in library of U. S. Geol. Survey, p. 50, 51].Josiah Bridge in W. S. Cole and Josiah Bridge, 1953, *U. S. Geol. Survey Prof. Paper* 253, p. 7.**Sankoty sand**

Pleistocene (Nebraskan) : Illinois.

Leland Horberg, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1204; 1950, *Ill. State Geol. Survey Bull.* 73, p. 51-52.**San Marcos arkose**

Lower Cretaceous : Coahuila, Mexico.

R. W. Imlay, 1940, *Geol. Soc. America Bull.*, v. 51, no. 1, p. 121, 123.**San Marcos formation**

Pliocene, lower : Baja California, Mexico.

I. F. Wilson, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 9, p. 1768.

San Marcos gabbro

Cretaceous: California.

F. S. Miller in C. S. Hurlbut, Jr., 1935, *Am. Mineralogist*, v. 20, no. 9, p. 609-611.
 F. S. Miller, 1937, *Geol. Soc. America Bull.*, v. 48, no. 10, p. 1399-1401.

San Marcos Mountain gabbro*See San Marcos gabbro.***San Pablo phase (of Barbacoas formation)**

Pre-Eocene: Panama Canal Zone.

R. T. Hill, 1898, *Harvard Coll. Mus. Comp. Zoology Bull.*, v. 28, no. 5, p. 184-185.

San Pedro group

Pliocene: Arizona.

A. A. Stoyanow, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 297 (table).

San Pedro Valley formation

Pliocene (Blancan) to Pleistocene: Arizona and New Mexico.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 31, pl. 1.

Sanpete formation

Upper Cretaceous: Utah.

E. M. Spieker, 1946, U. S. Geol. Survey Prof. Paper 205-D, p. 122, 127.

San Ricardo [formation]

Lower Cretaceous: Tabasco, Mexico.

E. J. Guzman, Rodolfo Suarez, and Ernesto Lopez Ramos, 1953, 19^o Cong. géol. internat. *Comptes rendus*, fasc. 16, pl. 1 (geol. map) [1954].

Sansom graywacke and quartzite

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1936, *Newfoundland Geol. Survey Bull.* 3, p. 6-7.

San Souci volcanic formation

Lower Cretaceous: Trinidad, British West Indies.

A. G. Hutchison, 1938, *Bol. Geología y Minería (Venezuela)*, v. 2, nos. 2-4 (English ed.), p. 229, 235 (table).

H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 33, 35 (table).

Sans Sault group

Lower Cretaceous: Northwest Territories (Mackenzie), Canada.

J. S. Stewart, 1945, *Canada Geol. Survey Paper* 45-29, p. 7.

Sansum formation

Triassic and Jurassic: British Columbia, Canada.

J. A. Allan, 1910, *Canada Geol. Survey Summ. Rept.* 1909, p. 99.

Santa Barbara series

Mesozoic: Chihuahua, Mexico.

P. B. King, 1947, *Mexico Univ. Nac. Autónoma, Inst. Geología, Geofísica, y Geodesia, Cartas Geología y Mineras* 3.

Santa Cecilia limestone

Cretaceous: Oaxaca, Mexico.

Thomás Barrera, 1946, *Guía geológica de Oaxaca: Mexico Univ. Nac., Inst. Geología*, p. 66.

Santa Clara basalt

Quaternary: New Mexico.

H. T. U. Smith, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 103.

Santa Clara complex

Precambrian: New York.

A. F. Buddington, 1937, N. Y. State Mus. Bull. 309, p. 8, 9, 29-34, 37-38, 42-45.

Santa Cruz group

Upper Cretaceous: Arizona.

A. A. Stoyanow, 1937, (abs.) Geol. Soc. America Proc. 1936, p. 297 (table).

Santa Emilia formation

Upper (?) Jurassic: San Luis Potosí, Mexico.

D. E. White and Jenaro González Reyna, 1946, U. S. Geol. Survey Bull. 946-E, p. 134.

Santa Eulalia formation

Cretaceous: Baja California, Mexico.

A. O. Woodford and T. F. Harriss, 1938, Geol. Soc. America Bull., v. 49, no. 9, p. 1310-1313.

Santa Lucia clay

Miocene, middle: Trinidad, British West Indies.

G. A. Waring, 1926, Johns Hopkins Univ. Studies in Geology, no. 7, p. 57.

Santa Rita granodiorite porphyry

Cretaceous or younger: New Mexico.

P. F. Kerr and others, 1950, Geol. Soc. America Bull., v. 61, no. 4, p. 288-289, 302.

Santa Rosa beds

Eocene: Mariana Islands (Guam).

Hisaburo Tayama, 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 47, table 4 [English translation in library of U. S. Geol. Survey, p. 57].

Santa Rosalía formation

Pleistocene: Baja California, Mexico.

I. F. Wilson, 1948, Am. Assoc. Petroleum Geologists Bull., v. 32, no. 9, p. 1782-1784.

Santa Toriba beds

See Santo Toribio beds.

San Telmo formation

Cretaceous: Baja California, Mexico.

A. O. Woodford and T. F. Harriss, 1938, Geol. Soc. America Bull., v. 49, no. 9, p. 1306-1310.

Santiago formation

Eocene: California.

W. P. Woodring and W. P. Popenoe, 1945, U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 12.

Santiago Peak volcanics

Jurassic (?): California.

E. S. Larsen, Jr., 1948, Geol. Soc. America Mem. 29, p. 22-25.

Santiam basalts

Pleistocene: Oregon.

T. P. Thayer, 1936, Jour. Geology, v. 44, no. 6, p. 706, 709 (fig. 2), 713 (fig. 3).

Santo Madero formation

Pliocene (?): Coahuila, Mexico.

A. R. V. Arellano, 1952, Am. Jour. Sci., v. 249, no. 8, p. 609-610.

Santo Toribio beds

Miocene(?) : Guatemala.

L. H. Ower, 1922, *Geology of British Honduras : Belize Independent*, v. 8, no. 440; [1923], *The Geology of British Honduras : Belize, British Honduras, Clarion Ltd.*, p. [15].

Sanup Plateau member (of Muav formation)

Lower and/or Middle Cambrian : Arizona.

E. D. McKee, 1945, *Carnegie Inst. Washington Pub.* 563, p. 14, 29, 90-92.

San Ysidro member (of Yeso formation)

Permian : New Mexico.

G. H. Wood and S. A. Northrop, 1946, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 57.

Sappa formation

Pleistocene : Nebraska.

J. C. Frye, Ada Swineford, and A. B. Leonard, 1948, *Jour. Geology*, v. 56, no. 6, p. 504-505, 520 (fig. 3), 522.

G. E. Condra, E. C. Reed, and E. D. Gordon, 1950, *Nebr. Geol. Survey Bull.* 15-A, p. 22.

Sapperton sediments

Pleistocene : British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 11, 48, table.

Sappington sandstone member (of Three Forks shale)

Upper Devonian and Mississippian : Montana.

G. W. Berry, 1943, *Geol. Soc. America Bull.*, v. 54, no. 1, p. 14-16.

Sardine series

Miocene : Oregon.

T. P. Thayer, 1936, *Jour. Geology*, v. 44, no. 6, p. 703-704, 709 (fig. 2), 713 (fig. 3).

Sargent Bay limestone

Silurian : Quebec, Canada.

T. H. Clark, 1936, *Canadian Field Naturalist*, v. 50, no. 3, p. 33.

Saroc Ridge group

Age unknown : California.

K. J. Hsu, 1955, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 30, no. 4, p. 283, map 1.

Sarpy formation

Pennsylvanian (Missouri series) : Nebraska.

G. E. Condra, 1949, *Nebr. Geol. Survey Bull.* 16, p. 37.

Saskatchewan group

Devonian : Subsurface in Saskatchewan and Manitoba, Canada ; Montana, North Dakota, and South Dakota.

A. D. Baillie, 1953, *Manitoba Dept. Mines and Nat. Res. Mines Br. Pub.* 52-5, p. 30-32.

Saugerties limy shale

Lower(?) Devonian : New York.

G. H. Chadwick, 1940, *N. Y. State Geol. Assoc. 16th Ann. Meeting Field Guide Leaflets*, p. 2, 3; 1944, *N. Y. State Mus. Bull.* 336, p. 233 [1946].

Sauk sequence

Precambrian (upper Proterozoic) to Upper Cambrian : Central and western United States.

L. L. Sloss, W. C. Krumbein, and E. C. Dapples *in* C. R. Longwell, chm., 1949, *Geol. Soc. America Mem.* 39, p. 110-115.

Saunders group

Cretaceous: Alberta, Canada.

J. A. Allan and R. L. Rutherford, 1923, Alberta Research Council Rept. 6, p. 51.

Saw Mill conglomerate division (of Almy conglomerate)

Paleocene: Utah.

A. J. Bardley, 1944, Geol. Soc. America Bull., v. 55, no. 7, p. 842.

Sawtooth formation

Middle Jurassic: Montana and Idaho.

W. A. Cobban, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 9, p. 1270-1277.

Saxe Brook formation

Upper Cambrian (early Dresbachian?): Vermont.

B. F. Howell, 1939, (abs.) Geol. Soc. America Bull., v. 50, no. 12, pt. 2, p. 1964.

Sayreville sand member (of Raritan formation)

Upper Cretaceous: New Jersey.

H. C. Barksdale and others, 1943, The ground-water supplies of Middlesex County, New Jersey: N. J. State Water Policy Comm. [Special Rept. 8], p. 101.

Scales Creek flow (in Portage Lake lava series)

Precambrian (middle Keweenawan series): Michigan.

W. S. White, H. R. Cornwall, and R. W. Swanson, 1953, U. S. Geol. Survey Geol. Quadrangle Map GQ 27 [1954].

Scammon cyclothem or formation

Pennsylvanian (Des Moines): Kansas.

G. E. Abernathy, 1937, Kans. Geol. Soc. Guidebook 11th Ann. Field Conf., p. 18, 20, 22; 1938, Kans. Geol. Soc. Trans., v. 41, p. 193, 195.

Scandian sub-age

Pleistocene: Kansas, Nebraska, and Iowa.

J. C. Frye and A. B. Leonard, 1955, Am. Jour. Sci., v. 253, no. 6, p. 362.

Scappoose formation

Oligocene, upper, or Miocene, lower: Oregon.

W. C. Warren and Hans Norbistrath, 1946, Am. Assoc. Petroleum Geologists Bull., v. 30, no. 2, p. 231-233.

Scatter formation

Lower Cretaceous: British Columbia and Yukon, Canada.

E. D. Kindle, 1944, Canada Geol. Survey Paper 44-16, p. 11-12.

Scauminac formation

Devonian: New Brunswick, Canada.

H. M. Ami, 1900, Royal Soc. Canada Trans., 2d ser., v. 6, sec. 4, p. 208.

Scenic Point member (of Appekunny formation)

Precambrian (Belt): Montana, and Alberta, Canada.

C. L. Fenton and M. A. Fenton, 1937, Geol. Soc. America Bull., v. 48, no. 12, p. 1886-1887.

Scherrer formation

Permian: Arizona.

James Gilluly, J. R. Cooper, and J. S. Williams, 1954, U. S. Geol. Survey Prof. Paper 266, p. 27-29.

Schieffelin granodiorite

Upper Cretaceous or Tertiary: Arizona.

B. S. Butler, E. D. Wilson, and C. A. Rasor, 1938, Ariz. Bur. Mines Bull. 143, Geol. Ser. 10, p. 25-26, pl. 3.

School Canyon granite

Jurassic (?) : California.

J. C. Crowell, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 24, p. 8.

Schoolhouse sand

Middle Permian : Colorado.

W. O. Thompson, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 1, p. 72.

School Mine ledge beds (in Rich Fountain formation)

Lower Ordovician : Missouri.

J. S. Cullison, 1944, Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser., v. 15, no. 2, p. 18-19.

Schrader Bluff formation

Upper Cretaceous : Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, Washington Acad. Sci. Jour., v. 41, no. 5, p. 164-166.

Schuler formation (of Cotton Valley group)

Upper Jurassic : Subsurface in Arkansas, Louisiana, and Texas.

H. K. Shearer, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 6, p. 724.

Schulz member (of Williams formation)

See Schulz Ranch sandstone member (of Williams formation).

Schulz Ranch sandstone member (of Williams formation)

Upper Cretaceous : California.

W. P. Popenoe, 1937, Jour. Paleontology, v. 11, no. 5, p. 380.

W. P. Woodring and W. P. Popenoe, 1945, U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 12.

Scio beds

Oligocene, upper, to Miocene, lower : Oregon.

E. I. Sanborn, 1947, Oreg. State Coll. Studies in Geology Mon. 4, p. 1-2, 11-12.

Scituate granite gneiss

Devonian (?) or older : Rhode Island.

A. W. Quinn, 1951, Bedrock geology of the North Scituate quadrangle, Rhode Island : U. S. Geol. Survey Geol. Quadrangle Map [GQ 13].

Scotch Village formation

Mississippian or Pennsylvanian : Nova Scotia, Canada.

D. G. Crosby, 1952, Canada Geol. Survey Paper (Prelim. Map) 52-18

Scotia Bluffs sandstone

Pliocene, upper : California.

B. A. Ogle, 1953, Calif. Dept. Nat. Res., Div. Mines Bull. 164, p. 13 (fig. 3), 33-35, pl. 1.

Scotstown granite

Devonian : Quebec, Canada.

J. A. Dresser and T. C. Denis, 1944, Quebec Dept. Mines Geol. Rept. 20, v. 2, p. 452, 462.

Scott Canyon formation

Mississippian (?) : Nevada.

R. J. Roberts, 1951, Geology of the Antler Peak quadrangle, Nevada : U. S. Geol. Survey Geol. Quadrangle Map [GQ 10].

Scottville cyclothem (including Scottville limestone)

Pennsylvanian: Illinois.

J. N. Payne, 1942, Ill. State Geol. Survey Circ. 88, p. 4.

J. R. Ball, 1952, Ill. State Geol. Survey Bull. 77, p. 31-32.

Scoudouc formation

Pennsylvanian: New Brunswick, Nova Scotia, and Prince Edward Island, Canada.

J. F. Caley and others, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 2, p. 478.

W. C. Gussow, 1953, Am. Assoc. Petroleum Geologists Bull., v. 37, no. 7, p. 1756-1757.

Seabee formation

Upper Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, Washington Acad. Sci. Jour., v. 41, no. 5, p. 166.

Seacliffs sandstone

Mississippian: Newfoundland, Canada.

D. M. Baird, 1951, Canadian Inst. Mining and Metallurgy Trans., v. 54, p. 86.

Seaforth porphyry

Precambrian (Archean): Quebec, Canada.

W. W. Weber, 1951, Quebec Dept. Mines Prelim. Rept. 255, map.

Seal Lake series

Precambrian: Quebec and Newfoundland (Labrador), Canada.

C. L. Evans, 1952, Geol. Assoc. Canada Proc., v. 5, p. 112, 113, 116.

Searston beds

Mississippian: Newfoundland, Canada.

W. A. Bell, 1948, Canada Geol. Survey Bull. 10, p. 20.

Seawall metafelsite

Age not stated: Maine.

G. H. Chadwick, 1944, N. Y. Acad. Sci. Trans., ser. 2, v. 6, no. 6, p. 176.

Sebrina complex

Triassic (?): California.

G. A. Schroter, 1938, Eng. and Min. Jour., v. 139, no. 4, p. 43-44.

Second Mountain member (of Pocono formation)

Lower Mississippian: Pennsylvania.

Bradford Willard and A. B. Cleaves, 1938, Pa. Geol. Survey, ser. 4, Bull. G 8, p. 18.

Second Value member (of Montoya dolomite)

Upper Ordovician: New Mexico.

L. P. Entwistle, 1944, N. Mex. State Bur. Mines Min. Res. Bull. 19, p. 17, 18.

Seeman group

Ordovician (?) and younger: British Columbia, Canada.

H. W. Little, 1950, Canada Geol. Survey Paper 50-19, p. 23-24.

Seigas sandstone

Upper Silurian: Maine, and New Brunswick, Canada.

O. O. Nylander, 1940, Geological formations of the St. John River valley, northern Maine and New Brunswick: Caribou, Maine, p. 7-8.

Selah tuff member (of Ellensburg formation)

[Miocene]: Washington.

J. H. Mackin, 1947, (abs.) Northwest Science, v. 21, no. 1, p. 33.

Selah Butte flow

Miocene and Pliocene: Washington.

A. C. Waters, 1955, *Geol. Soc. America Bull.*, v. 66, no. 6, p. 673, pl. 1.

Selatna glaciation

Pleistocene (Wisconsin): Alaska.

A. T. Fernald in T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 289, p. 6, 13 (table 1).

Selby member (of Rockland formation)

Middle Ordovician (Mohawkian): Ontario, Canada, and New York.

G. M. Kay, 1937, *Geol. Soc. America Bull.*, v. 48, no. 2, p. 252-253.

Selden basalt tongue

Tertiary: New Mexico.

F. E. Kottlowski, 1953, *N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 32 (map), 33, 146.

Sellers limestone (in Caseyville formation)

Pennsylvanian: Illinois.

H. R. Wanless, 1939, *Geol. Soc. America Special Paper* 17, p. 36, 101.

Semiamu group

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 48, table.

Semiamu till

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 10, table.

Sentinel Hill member (of Schrader Bluff formation)

Upper Cretaceous: Alaska (subsurface and surface).

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 166.

Sentinell limestone

Cambrian(?): Utah.

V. E. Peterson, 1942, *Econ. Geology*, v. 37, no. 6, p. 471 (table 1).

Sentinell quartzite

Cambrian(?): Utah.

V. E. Peterson, 1942, *Econ. Geology*, v. 37, no. 6, p. 471 (table 1).

Sepultura formation

Eocene, lower: Baja California, Mexico.

Manuel Santillán and Tomás Barrera, 1930, *Inst. Geología Mexico Anales*, tomo 5, p. 14-20.

Sepur beds

Tertiary: Guatemala and British Honduras.

Karl Sapper, 1899, *Petermanns geog. Mitt. Ergänzungsbd.* 27, Heft. 127, p. 43, 55, 67.

Serbin sand lentil (in Mount Tabor member of Yegua formation)

Eocene (Claiborne): Texas.

H. B. Stenzel, 1939, *Tex. Univ. Bur. Econ. Geology Pub.* 3945, pt. 2, p. 859 [1940].

Sermilik group

Precambrian : Southwest Greenland.

R. D. Crommelin, 1937, *Meddel. om Grønland*, bind 113, nr. 1, p. 5-6.

C. E. Wegmann, 1938, *Meddel. om Grønland*, bind 113, nr. 2, p. 16-23.

Seroe di Cueba series

Eocene, upper : Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, *Geologie en geohydrologie van het Eiland Curaçao* : Delft, J. Waltman, Jr., p. 25-28, 60.

Seroe Domi beds

Pleistocene : Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, *Geologie en geohydrologie van het Eiland Curaçao* : Delft, J. Waltman, Jr., p. 29, strat. table.

Seroe Largo limestone

Pleistocene : Bonaire, Netherlands West Indies.

P. J. Pijpers, 1931, *K. Akad. Wetensch. Amsterdam, Sec. Sci. Proc.*, v. 34, no. 1, p. 169-170.

Seroe Montagne limestone

Eocene, upper : Bonaire, Netherlands West Indies.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1571, 1581, 1590.

Seroe Teintje limestone

Upper Cretaceous (lower Senonian) : Curaçao, Netherlands West Indies.

G. J. H. Molengraaff, 1929, *Geologie en geohydrologie van het Eiland Curaçao* : Delft, J. Waltman, Jr., p. 23, 55.

Serpent formation

Eocene, lower : Trinidad, British West Indies.

H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 38.

Serrano clay bed (in Silverado formation)

Paleocene : California.

W. P. Woodring and W. P. Popenoe, 1945, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 12*.

Servilleta formation

Pliocene, upper, or Pleistocene, lower : New Mexico.

Arthur Montgomery, 1953, *N. Mex. State Bur. Mines Min. Res. Bull.* 30, p. 53.

Seven-Mile tuff and sand member (of Tuscan formation)

[Pliocene] : California.

R. C. Treasher, 1947, (abs.) *Geol. Soc. America Bull.*, v. 58, no. 12, pt. 2, p. 1257.

Seven Springs formation

Tertiary : Texas.

G. K. Eifler, Jr., 1951, *Geol. Soc. America Bull.*, v. 62, no. 4, p. 345-346, pl. 1.

Seventeen-Mile Brook beds

Devonian : Quebec, Canada.

H. W. McGerrigle, 1954, *Quebec Dept. Mines Geol. Rept.* 62, p. 38-40.

Sevier River formation

Pliocene, upper, or Pleistocene, lower : Utah.

Eugene Callaghan, 1937, (abs.) *Washington Acad. Sci. Jour.*, v. 27, no. 8, p. 359; 1938, *U. S. Geol. Survey Bull.* 886-D, p. 100-101.

Sevilleta rhyolite

Precambrian: New Mexico.

J. T. Stark and E. C. Dapples, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1936; 1946, v. 57, no. 12, pt. 1, p. 1134-1135.**Seward formation**

Pliocene: Nebraska.

G. E. Condra, E. C. Reed, and E. D. Gordon, 1947, *Nebr. Geol. Survey Bull.* 15, p. 15-16.**Seward grits**

Precambrian: Quebec and Newfoundland (Labrador), Canada.

H. R. Rice, 1949, *Canadian Mining Jour.*, v. 70, no. 9, p. 71-72.J. K. Gustafson and A. E. Moss, 1953, *Mining Eng.*, v. 5, no. 6, p. 595.**Seymour group**

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 48, table.**Seymour till**

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, p. 10, 48, table.**Shadow Lake formation**

Middle Ordovician (Black River): Ontario, Canada.

V. J. Okulitch, 1939, *Royal Canadian Inst. Trans.*, v. 22, pt. 2, p. 321.**Shaftesbury formation**

Lower Cretaceous: British Columbia, Canada.

F. H. McLearn and J. F. Henderson, 1944, *Canada Geol. Survey Paper* 44-2, p. 3.**Shale Brook submember (of Thorburn member of Stellarton series)**

Pennsylvanian: Nova Scotia, Canada.

W. A. Bell, 1940, *Canada Geol. Survey Mem.* 225, p. 45 [1941].**Shannondale limestone member (of Benbolt limestone)**

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, *Geol. Soc. America Bull.*, v. 54, no. 6, p. 868-871.**Sharon Springs formation**

Middle Devonian(?): New York.

Winifred Goldring and R. H. Flower, 1942, *Am. Jour. Sci.*, v. 240, no. 10, p. 677-678, 679, 689-690, 694.**Shasta lavas**

Pliocene: California.

O. P. Jenkins, 1938, *Geologic map of California (1:500,000)*: Calif. Dept. Nat. Res., Div. Mines, sheet 4.**Shattuck member (of Queen formation)**

Permian (Guadalupian): New Mexico and Texas.

N. D. Newell and others, 1953, *The Permian reef complex of the Guadalupe Mountains region, Texas and New Mexico*: San Francisco, W. H. Freeman and Co., p. 15, 44, 45.**Shaunavon formation**

Jurassic: Saskatchewan, Canada (subsurface).

J. R. Ower, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 397-398.R. L. Milner and G. E. Thomas, 1954, *Western Canada sedimentary basin*: Tulsa, Okla., *Am. Assoc. Petroleum Geologists*, p. 260-262.

Shaw Mountain formation

Silurian(?) : Vermont.

L. W. Currier and R. H. Jahns, 1941, *Geol. Soc. America Bull.*, v. 52, no. 9, p. 1496-1501.

Shaw Point cyclothem

Pennsylvanian : Illinois.

C. L. Cooper, 1946, *Ill. State Geol. Survey Bull.*, 70, p. 12 (footnote), 13.

Shea diabase

Precambrian : Arizona.

L. E. Reber, Jr., 1938, *Ariz. Bur. Mines Bull.* 145, *Geol. Ser.* 12, p. 58, 61.

Sheba group

Upper Cretaceous or Tertiary : British Columbia, Canada.

C. E. Cairnes, 1943, *Canada Geol. Survey Paper* 43-15, p. 8.

Shedroof conglomerate

Precambrian : Washington.

C. F. Park, Jr., and R. S. Cannon, Jr., 1943, *U. S. Geol. Survey Prof. Paper* 202, p. 6, 7, pl. 1.

Sheep Canyon basalt

Tertiary : Texas.

S. S. Goldich and M. A. Elms, 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1197; 1949, v. 60, no. 7, p. 1153-1155.

Sheepeters basalt

Tertiary : Wyoming.

R. E. Wilcox, 1944, *Geol. Soc. America Bull.*, v. 55, no. 9, p. 1053-1054.

Sheffield shale (in McLeansboro formation)

Pennsylvanian : Illinois.

H. R. Wantless, 1939, *Geol. Soc. America Special Paper* 17, p. 102.

Shelby cyclothem

Pennsylvanian : Illinois.

C. L. Cooper, 1946, *Ill. State Geol. Survey Bull.* 70, p. 13.

Shellhammer Hollow formation

Mississippian : Pennsylvania.

Wallace de Witt, Jr., 1951, *Geol. Soc. America Bull.*, v. 62, no. 11, p. 1362.

Shepody formation

Pennsylvanian : New Brunswick, Canada.

G. W. H. Norman, 1941, *Canada Geol. Survey Map* 647A.

Sherbrooke group

Silurian : Quebec, Canada.

H. C. Cooke, 1948, *Canada Geol. Survey Map* 911A; 1951, *Mem.* 257, p. 49-52, 78.

Sherbrooke series

Ordovician : Quebec, Canada.

R. C. Rowe, 1944, *Canadian Mining Jour.*, v. 65, no. 1, p. 4 (map).

Sherridon group

Precambrian : Manitoba, Canada.

J. D. Bateman, 1944, *Canada Geol. Survey Paper (Prelim. Map)* 44-4.

Sherwood member (of Dunleith formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 24, figs. 3, 12.**Shingle Hills formation**

Lower Cretaceous: Texas.

V. E. Barnes, 1948, *Tex. Univ. Bur. Econ. Geology Rept. Inv. 2*, p. 5, 7, 8.**Ship Cove limestone**

Mississippian: Newfoundland, Canada.

W. A. Bell, 1948, *Canada Geol. Survey Bull. 10*, p. 18.**Ship Mountain granite**

Jurassic: California.

O. P. Jenkins, 1938, *Geologic map of California (1:500,000)*: Calif. Dept. Nat. Res., Div. Mines, sheet 4.**Shippensburg formation**

Middle Ordovician: Pennsylvania.

L. C. Craig, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1963-1964.**Shippo Creek shale member (of Wautubbee formation)**

Eocene (Claiborne): Mississippi.

E. P. Thomas, 1942, *Miss. State Geol. Survey Bull. 48*, p. 62-65.**Shipsshaw beds**

Middle Ordovician: Quebec, Canada.

G. W. Sinclair, 1953, *Am. Jour. Sci.*, v. 251, no. 12, p. 847, 849.**Shoal Arm formation**

Middle Ordovician (?): Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull. 6*, p. 9.**Shoalrocks gneiss**

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull. 15*, p. 14.**Shocharry sandstone member (of Martinsburg formation)**

Ordovician (lower Maysville): Pennsylvania.

Bradford Willard and A. B. Cleaves, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1183-1184, 1196 (table 5).**Shoemaker formation**

Triassic or older: British Columbia, Canada.

H. S. Bostock, 1940, *Canada Geol. Survey Map 341A*.**Shoemaker gravel**

Pleistocene: California.

L. F. Noble, 1954, *U. S. Geol. Survey Geol. Quadrangle Map GQ 50*.**Shonektaw formation**

Lower Mesozoic: British Columbia, Canada.

K. D. Watson and W. H. Matthews, 1944, *British Columbia Dept. Mines Bull. 19*, p. 19-20.**Shongaloo member (of Schuler formation)**

Upper Jurassic: Subsurface in Louisiana, Arkansas, and Texas.

F. M. Swain, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 5, p. 600-602.

Shoreham member (of Sherman Fall formation)

Middle Ordovician (Mohawkian) : Vermont and New York, and Ontario, Canada.

G. M. Kay, 1937, *Geol. Soc. America Bull.*, v. 48, no. 2, p. 264-267.

Shore Hill soil

Pleistocene : Bermuda Islands.

R. W. Sayles, 1931, *Am. Acad. Arts and Sci. Proc.*, v. 66, no. 11, p. 393.

Short Mountain facies (of Fort Payne formation)

Lower Mississippian : Tennessee.

H. J. Klepser, 1937, *Ohio State Univ. Abs. Doctors' Dissert.* 24, p. 182.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper* 22, p. 54.

Shorts Ranch andesite

Tertiary : Arizona.

W. H. Brown, 1939, *Geol. Soc. America Bull.*, v. 50, no. 5, p. 734-735.

Shubuta member (of Yazoo clay)

Eocene, upper (Jackson group) : Alabama.

G. E. Murray, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 10, p. 1838, 1839 (footnote).

I. D. Toulmin, P. E. LaMoreaux, and C. R. Lanphere, 1951, *Ala. Geol. Survey Special Rept.* 21, p. 120-122, pl. 3.

Shubuta Hill clay

Eocene (Jackson) : Alabama.

R. H. Smith and others, 1944, *in* *Southeastern Geol. Soc. [Guidebook] 1st Field Trip*, [Geol. section of] Little Stave Creek, Clarke Co., Alabama.

Shuksan formation

Upper Jurassic : Washington.

C. E. Weaver, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 10, p. 1391, 1392 (table 3).

Shuksan formation

See Shuksan formation.

Shullsburg member (of Quimbys Mill formation)

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, figs. 3, 9.

Shumway cyclothem (including Shumway limestone)

Pennsylvanian : Illinois.

J. M. Weller and W. A. Newton, 1938, *Geol. Soc. America Proc.*, 1937, p. 329.

J. M. Weller and A. H. Bell *in* W. A. Newton, 1941, *Ill. State Geol. Survey Rept. Inv.* 76, p. 7.

Shunda member (of Rundle formation)

Mississippian : Alberta, Canada.

L. M. Clark, 1949, *Am. Assoc. Petroleum Geologists Bull.*, v. 33, no. 4, p. 629.

F. W. Beales, 1950, *Canada Geol. Survey Paper* 50-27, p. 4, table 1.

Shurtz sandstone tongue (of Navajo sandstone)

Jurassic and Jurassic (?) : Utah.

Paul Averitt and others, 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 12, p. 2520.

Sidewinder volcanic series

Triassic(?) : California.

O. E. Bowen, Jr., *in* L. A. Wright and others, 1953, *Calif. Jour. Mines and Geology*, v. 49, nos. 1-2, pl. 2.O. E. Bowen, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 165, p. 42-53.**Sidewinder Valley metavolcanics**

Upper Paleozoic : California.

W. J. Miller, 1944, *Calif. Jour. Mines and Geology*, v. 40, no. 1, p. 100-102.**Sidney gravel**

Pliocene : Nebraska, Colorado, and Kansas.

A. L. Lugin, 1938, *Am. Jour. Sci.*, 5th ser., v. 36, no. 213, p. 224, 227; 1939, *Geol. Soc. America Bull.*, v. 50, no. 8, p. 1261-1263.**Sidney shale member (of Markley formation)**

Eocene, upper : California.

B. L. Clark and A. S. Campbell, 1942, *Geol. Soc. America Special Paper* 39, p. 9-10.**Sidney Flat shale member (of Markley formation)***See* Sidney shale member (of Markley formation).**Sierra Madre limestone**

Middle Cretaceous : Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, p. 276, correlation chart.**Sierra Nevada formation**

Oligocene(?) : México and Distrito Federal, Mexico.

R. M. Berbey, 1953, *Congreso Cient. Mexicano Mem.*, tomo 4, table 6.**Sierrita limestone**

Tertiary : Yucatán, Mexico.

Karl Sapper, 1937, *Mittelamerika*, Handbuch der regionalen Geologie : Heidelberg, Band 8, Abt. 4a, Heft 29, p. 77, pl. 3.**Sierrite limestone**

Lower Ordovician (Canadian) : New Mexico.

V. C. Kelley, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 10, p. 2201-2202.V. C. Kelley and Caswell Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 42-45, fig. 4.**Sifton formation**

Upper Cretaceous(?) : British Columbia, Canada.

M. S. Hedley and S. S. Holland, 1941, *British Columbia Dept. Mines Bull.* 12, p. 42-43.**Signal Hill beds**

Pleistocene, lower : California.

J. E. Eaton, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 2, p. 204, 205 [preprint 1941].**Signal Hill soil**

Pleistocene : Bermuda Islands.

R. W. Sayles, 1931, *Am. Acad. Arts and Sci. Proc.*, v. 66, no. 11, p. 395-396.**Sikanni formation**

Lower Cretaceous : British Columbia, Canada.

C. O. Hage, 1944, *Canada Geol. Survey Paper* 44-30, p. 11-12.**Siletz River volcanic series**

Eocene, lower : Oregon.

P. D. Snively, Jr., and E. M. Baldwin, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 5, p. 805-812.

Silliman Mount formation

Upper Ordovician: Northwest Territories (Baffin Island), Canada.

W. H. Twenhofel and others, 1954, *Geol. Soc. America Bull.*, v. 65, no. 3, Chart 2, column 5d.

Silverado formation

Paleocene: California.

W. P. Woodring and W. P. Popenoe, 1945, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart 12*.

Silver Coulee beds (of Polecat Bench formation)

Paleocene: Wyoming.

G. L. Jepsen in W. B. Scott, 1937, *A history of land mammals in the Western Hemisphere*: New York, Macmillan Co., p. 99; 1940, *Am. Philos. Soc. Proc.*, v. 83, no. 2, p. 236-237.

Silver Creek glacial substage

Pleistocene (Wisconsin): Colorado.

D. F. Eschman, 1952, (abs.) *Geol. Soc. America Bull.*, v. 63, no. 12, pt. 2, p. 1380; 1955, *Jour. Geology*, v. 63, no. 3, p. 205-206.

Silver King porphyry

Cretaceous(?): British Columbia, Canada.

R. Mulligan, 1952, *Canada Geol. Survey Paper 52-13*, p. 13.

Silver King quartz monzonite porphyry

Age not stated: Arizona.

M. N. Short and others, 1943, *Ariz. Bur. Mines Bull. 151*, *Geol. Ser. 16*, p. 42-43.

Silver Lake granite

Precambrian: Ontario, Canada.

W. D. Harding, 1951, *Ontario Dept. Mines Ann. Rept.*, v. 56, pt. 6, p. 30.

Silver Mine granite

Precambrian: Missouri.

H. B. Graves, 1938, *Acad. Sci. St. Louis Trans.*, v. 29, no. 5, p. 119.

Silver Run limestone

Precambrian(?): Maryland.

A. I. Jonas and G. W. Stose, 1938, *Washington Acad. Sci. Jour.*, v. 28, no. 8, p. 346.

Silver Star granodiorite

Miocene: Washington.

W. M. Felts, 1939, *Ohio Jour. Sci.*, v. 39, no. 6, p. 297, 302-303, 306-307, 315 (fig. 4).

Silverwood cyclothem (including Silverwood limestone)

Pennsylvanian: Indiana and Illinois.

J. W. Alexander, 1943, *Ill. State Acad. Sci. Trans.*, v. 36, no. 2, p. 142, 143.

Simard beds

Middle Ordovician: Quebec, Canada.

G. W. Sinclair, 1953, *Am. Jour. Sci.*, v. 251, no. 12, p. 843.

Simcoe group

Ordovician: Ontario, Canada (subsurface).

B. A. Liberty, 1955, *Geol. Assoc. Canada Proc.*, v. 7, pt. 1, p. 144.

Simmler formation

Oligocene: California.

T. W. Dibblee, Jr., 1952, in *AAPG, SEPM, SEG, Joint Ann. Meeting Guidebook*, p. 82.

Simms Ridge shale

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1937, Newfoundland Geol. Survey Bull. 8, p. 11-12.

Simpsonian series

Ordovician: Mississippi Valley region.

A. W. Grabau, 1937, Paleozoic formations in the light of the pulsation theory, v. 3, Cambrovisian pulsation, pt. 2, Appalachian, Palaeocordilleran, Pre-Andean, Himalayan, and Cathaysian geosynclines: Peiping, China, University Press, Natl. Univ. Peking, p. 20, 282.

Sims group

Precambrian: Newfoundland (Labrador) and Quebec, Canada.

J. K. Gustafson and A. E. Moss, 1953, Mining Eng., v. 5, no. 6, p. 595 (table 1).

Simson Bay formation

Tertiary, lower: St. Martin, Netherlands and French West Indies.

G. A. F. Molengraaf, 1931, Leidsche Geol. Meded., Deel 5, p. 736.

Sinnifik strata

Miocene: West Greenland.

A. E. Nordenskiöld, 1872, Geol., Mag., v. 9, p. 459-460.

Sinsinawa member (of Wise Lake formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., figs. 3, 12.

Sinwa group

Jurassic(?): British Columbia, Canada.

F. A. Kerr, 1945, Canada Geol. Survey Paper (Prelim. Map) 45-30; 1948, Mem. 248, p. 20 (table), 34-35, geol. map.

Siparia beds

Pleistocene: Trinidad, British West Indies.

E. H. Cunningham-Craig, 1907, Trinidad Legislative Council Paper no. 60 of 1907, p. 7, 9.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 563.

Sipe Springs formation

Pennsylvanian (Lampasas): Texas (subsurface).

M. G. Cheney, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 1, p. 84-85.

Sisar black shale

Eocene, middle: California.

T. L. Bailey, 1947, Am. Assoc. Petroleum Geologists Bull., v. 31, no. 11, p. 1920 (fig. 3).

Siscoe granodiorite

Precambrian: Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, Canada Geol. Survey Mem. 166, p. 133.

Sisters varved clay

Pleistocene: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, Canada Geol. Survey Water Supply Paper 322, p. 48, table.

Sites formation

Upper Cretaceous (Chico): California.

J. M. Kirby, 1942, (abs.) Am. Assoc. Petroleum Geologists Bull., v. 26, no. 5, p. 899; 1943, v. 27, no. 3, p. 284-285.

Sivier formation

Ordovician: Newfoundland, Canada.

G. R. Heyl, 1936, Newfoundland Geol. Survey Bull. 3, p. 7.

Sixmile Canyon formation

Upper Cretaceous: Utah.

E. M. Spieker, 1946, U. S. Geol. Survey Prof. Paper 205-D, p. 122, 128.

Skaergaard complex

Tertiary: Greenland.

L. R. Wager and W. A. Deer *in* L. R. Wager, 1937, Geog. Jour., v. 90, no. 5, p. 416.

L. R. Wager and W. A. Deer, 1939, Meddel. om Grønland, bind 105, nr. 4, p. 5-355.

Skamania andesite series

Miocene to Pliocene: Washington.

W. M. Felts, 1939, Ohio Jour. Sci., v. 39, no. 6, p. 301-302, 304-306, 315 (fig. 4).

Skeels Corners formation

Middle or Upper Cambrian (late Menevian or early Dresbachian): Vermont.

B. F. Howell, 1939, (abs.) Geol. Soc. America Bull., v. 50, no. 12, pt. 2, p. 1964.

Skeene member (of Whitehall formation)

See Skene dolomite member (of Whitehall formation).

Skeldal conglomerate

Late Tertiary to early Quaternary: Northeast Greenland.

Erdhart Frankl, 1953, Meddel. om Grønland, bind 113, nr. 6, p. 35-37, pl. 1.

Skene dolomite member (of Whitehall formation)

Upper Cambrian: New York.

R. R. Wheeler, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1938

1939; 1942, Am. Jour. Sci., v. 240, no. 7, p. 522, 523.

Skinner Brook member (of Stellarton series)

Pennsylvanian: Nova Scotia, Canada.

W. A. Bell, 1940, Canada Geol. Survey Mem. 225, p. 22-25 [1941].

Skookum formation

Precambrian: Washington.

M. C. Schroeder, 1952, Wash. Dept. Conserv. Devel., Div. Mines and Geology Bull. 40, p. 7, 9, 13-17.

Skookumchuck formation

Eocene, upper: Washington.

P. D. Snavely, Jr., and others, 1951, U. S. Geol. Survey Coal Inv. Map C 8, sheet 1.

Skooner Gulch basalt

Tertiary: California.

C. E. Weaver, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 3, p. 629-630.

Skukum volcanic rocks

Tertiary: Yukon, Canada.

J. O. Wheeler, 1952, Canada Geol. Survey Paper 52-30, p. 8.

Skunk Ranch conglomerate

Lower Cretaceous (Bisbee group): New Mexico.

S. G. Lasky, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 5, p. 534, fig. 2.

Slagle trachytes

Quaternary: New Mexico.

Helen Stobbe, 1948, (abs.) Geol. Soc. America Bull., v. 59, no. 12, pt. 2, p. 1354-1355.

R. F. Collins, 1949, Geol. Soc. America Bull., v. 60, no. 6, p. 1033-1034, pl. 1.

Slate Creek limestone member (of Wellington formation)

Permian : Kansas.

W. A. Ver Wiebe, 1937, *Wichita Municipal Univ. Bull.*, v. 12, no. 5, p. 8-10.**Slate Lake series**

Precambrian : Ontario, Canada.

J. D. Bateman, 1940, *Jour. Geology*, v. 48, no. 6, p. 630.**Slater River formation**

Upper Cretaceous : Northwest Territories (Mackenzie), Canada.

J. S. Stewart, 1944, *Canadian Inst. Mining and Metallurgy Trans.*, v. 47, p. 163 ; 1945, *Canada Geol. Survey Paper* 45-29, p. 7.**Slaughter Creek member (of Pendleton formation)**

Eocene, lower (Wilcox) : Louisiana and Texas.

Richard Wasem and L. J. Wilbert, Jr., 1943, *Jour. Paleontology*, v. 17, no. 2, p. 186-187, fig. 4.**Slaven chert**

Middle Devonian : Nevada.

James Gilluly, 1955, *in Pacific Petroleum Geologist*, v. 9, no. 8, p. 1.**Sligo formation**

Lower Cretaceous : Subsurface in Louisiana, Arkansas, and Texas.

R. W. Imlay, 1940, *Ark. Geol. Survey Inf. Circ.* 12, p. 30-32.**Silms Valley silt**

Recent : Yukon, Canada.

C. S. Denny, 1952, *Geol. Soc. America Bull.*, v. 63, no. 9, p. 920, table 4.**Slippery Creek greenstone**

Paleozoic(?) : Virginia.

W. R. Brown, 1951, (abs.) *Geol. Soc. America Bull.*, v. 62, no. 12, pt. 2, p. 1547 ; 1953, *Ky. Geol. Survey, ser. 9, Special Pub. 1*, [p. 9] (fig. 1).**Sliverville sand**

Upper Devonian : Pennsylvania.

C. E. Fettke, 1941, *Pa. Topog. and Geol. Survey Progress Rept.* 125, p. 23-28.**Sloan member (of Marble Falls formation)**

Pennsylvanian (Morrow) : Texas.

F. B. Plummer, 1944, *Tex. Univ. Bur. Econ. Geology Min. Res. Circ.* 33, p. 8 ; 1945, *Tex. Univ. Pub.* 4401, p. 66-67.**Sloko group**

Cretaceous or Tertiary : British Columbia, Canada.

J. D. Aitken, 1955, *Canada Geol. Survey Paper (Prelim. Map)* 54-9.**Sly Gap formation**

Devonian : New Mexico.

F. V. Stevenson, 1941, (abs.) *Oil and Gas Jour.*, v. 39, no. 47, p. 65.**Smackover formation**

Upper Jurassic : Subsurface in Arkansas, Louisiana, Mississippi, and Texas.

D. H. Bingham, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 8, p. 1068-1072.W. B. Weeks, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 8, p. 964-965.

Smarts Mountain granite

Upper Devonian : New Hampshire.

Katherine Fowler-Lunn and Louise Kingsley, 1937, *Geol. Soc. America Bull.*, v. 48, no. 10, p. 1382.

C. A. Chapman, 1939, *Geol. Soc. America Bull.*, v. 50, no. 1, p. 143.

Smetana sandstone

Eocene (Claiborne) : Texas.

A. A. L. Mathews, 1950, *Tex. Eng. Expt. Sta. Research Rept.* 14, p. 1-3, geol. map.

Smith Corner member (of Lockatong formation)

Triassic (Newark) : Pennsylvania.

D. B. McLaughlin, 1948, *Mich. Acad. Sci. Arts and Letters Papers*, v. 32, p. 298, 299.

Smiths Hole conglomerate

Devonian (?) or Carboniferous (?) : Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 92.

Smoky group

Upper Cretaceous : British Columbia, Canada.

F. H. McLearn and J. F. Henderson, 1944, *Canada Geol. Survey Paper* 44-2, p. 3.

Snakes Bight shale

Mississippian : Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1938, *Newfoundland Geol. Survey Bull.* 12, p. 11.

Snare group

Precambrian (Proterozoic) : Northwest Territories (Mackenzie), Canada.

C. S. Lord, 1939, *Canada Geol. Survey Paper* 39-5, p. 10-12.

Sneech Pond schist

Precambrian (?) : Rhode Island and Massachusetts.

Alonzo Quinn, R. G. Ray, and W. L. Seymour *in* Alonzo Quinn and others, 1948, R. I. Port and Indus. Devel. Comm. *Geol. Bull.* 3, p. 12, geol. map.

Sneed andesite

Tertiary, middle (?) : Arizona.

James Gilluly, 1937, *Ariz. Univ. Bull.*, v. 8, no. 1, p. 45-46.

Snelson granite

Precambrian : Georgia.

D. F. Hewett and G. W. Crickmay, 1937, *U. S. Geol. Survey Water-Supply Paper* 819, p. 26-27.

Snider series

Precambrian (Keewatin) : Ontario, Canada.

Anonymous, 1937, *Canadian Mining Jour.*, v. 58, no. 11, p. 592.

Snipes conglomerates

Miocene, upper, or Pliocene : Oregon.

R. C. Treasher, 1937, *Geol. Soc. Oreg. Country News Letter*, v. 3, no. 20, p. 218-219.

Snooks Arm series

Ordovician : Newfoundland, Canada.

A. K. Snelgrove, 1931, *Canadian Mining and Metall. Bull.* 228, p. 485, 486.

Snow group

Precambrian : Manitoba, Canada.

J. M. Harrison, 1949, *Canada Geol. Survey Mem.* 250, p. 9-14.

Snowblind Bay formation

Devonian: Northwest Territories (Cornwallis Island), Canada.

R. Thorsteinsson and Y. O. Fortier, 1954, Canada Geol. Survey Paper 53-24, p. 12-13.

Snowcrest granite

Eocene: Montana.

Robert Scholten, K. A. Keenmon, and W. O. Kupsch, 1955, Geol. Soc. America Bull., v. 66, no. 4, p. 372, pl. 1.

Snowden member (of Harpers formation)

Lower Cambrian: Virginia.

R. O. Bloomer and H. J. Werner, 1955, Geol. Soc. America Bull., v. 66, no. 5, p. 596.

Snowshoe formation

Middle Jurassic: Oregon.

R. L. Lupper, 1941, Geol. Soc. America Bull., v. 52, no. 2, p. 227, 259-263.

Snowshoe formation

Precambrian and/or Cambrian: British Columbia, Canada.

S. S. Holland, 1954, British Columbia Dept. Mines Bull. 34, p. 22-23.

Snows Pond formation

Precambrian (Upper Proterozoic): Newfoundland, Canada.

R. D. Hutchinson, 1954, Canada Geol. Survey Mem. 275, p. 18-20.

Snowy Range formation

Upper Cambrian: Montana.

Erling Dorf and Christina Lochman, 1938, (abs.) Geol. Soc. America Proc. 1937, p. 275-276.

Snyder member (of Benner limestone)

Middle Ordovician (Mohawkian): Pennsylvania.

G. M. Kay, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1969.

Soap Creek bentonite bed (in Frontier formation)

Upper Cretaceous: Montana and Wyoming.

P. W. Richards and C. P. Rogers, Jr., 1951, U. S. Geol. Survey Oil and Gas Inv. Map OM 111, sheet 2.

Soda Lake formation

Miocene, lower: California.

T. W. Dibblee, Jr., 1952, in AAPG, SEPM, SEG, Joint Ann. Meeting Guidebook, p. 82.

Soebi Blanco conglomerate

[Cretaceous and/or Tertiary]: Bonaire, Netherlands West Indies.

P. J. Pijpers, 1931, Leidsche Geol. Meded., Deel 5, p. 707.

Sokoman formation

Precambrian (Proterozoic): Quebec and Newfoundland (Labrador), Canada.

H. R. Rice, 1949, Canadian Mining Jour., v. 70, no. 9, p. 71-72.

J. M. Harrison, 1952, Canada Geol. Survey Paper 52-20, p. 10-11.

Soldado formation

Eocene, upper: Trinidad, British West Indies.

R. A. Liddle, [1928], The geology of Venezuela and Trinidad: Fort Worth, Tex., J. P. MacGowan, p. 225-233.

Soldado formation

[Paleocene] (Midway): Trinidad, British West Indies.

C. J. Maury, 1925, Science, new ser., v. 61, no. 1567, p. 43.

Soldiers limestone member (of Big Saline formation)

See Soldiers Hole member (of Big Saline formation).

Soldiers Hole member (of Big Saline formation)

Lower Pennsylvanian: Texas.

F. B. Plummer, 1947, *Jour. Geology*, v. 55, no. 3, pt. 2, p. 197, 198.

Solis limestone

Upper Cretaceous: Tamaulipas, Mexico.

Emil Böse, 1927, *Tex. Univ. Bull.* 2748, p. 70-71.

Solitude limestone

Precambrian (Kwaguntan): Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 113.

Solomon formation

Upper Cretaceous: Kansas.

R. C. Moore and K. K. Landes, 1937, *Geologic map of Kansas [1:500,000]: Kans. State Geol. Survey.*

Solomon sandstone member (of Brazeau formation)

Upper Cretaceous: Alberta, Canada.

A. H. Lang, 1944, *Canada Geol. Survey Paper* 44-1, p. 6-7.

Soma gabbro

Precambrian (Archean): Quebec, Canada.

W. W. Weber, 1951, *Quebec Dept. Mines Prelim. Rept.* 255, p. 12.

Sombrerito formation

Oligocene, lower to middle: Dominican Republic.

W. M. Small, 1948, *Seismol. Soc. America Bull.*, v. 38, no. 1, p. 26.

P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Special Pub.* 25, p. 21.

Somerset eolianite

Pleistocene: Bermuda Islands.

R. W. Sayles, 1931, *Am. Acad. Arts and Sci. Proc.*, v. 66, no. 11, p. 396.

Somerset limestone member (of White Limestone formation)

Eocene, upper: Jamaica, British West Indies.

V. A. Zans, H. R. Versey, and J. B. E. Williams *in* V. A. Zans, 1935, *Jamaica Geol. Survey Dept. Ann. Rept.* 1953-54, p. 4.

Sonneau Brook member (of Gaspé sandstone)

Devonian: Quebec, Canada.

E. M. Kindle, 1938, *Bull. Am. Paleontology*, v. 24, no. 82, p. 66 (32).

Sonoita group

Upper Cretaceous: Arizona.

A. A. Stoyanow, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 297 (table); 1949, *Geol. Soc. America Mem.* 38, p. 59.

Sonoma Range formation

Ordovician (?): Nevada.

H. G. Ferguson, S. W. Muller, and R. J. Roberts, 1951, *Geology of the Winnemucca quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 11].*

Sonson limestone

Pleistocene: Mariana Islands (Tinian).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in *Library of U. S. Geol. Survey*]; 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 57, table 4 [English translation in *Library of U. S. Geol. Survey*, p. 68].

Sops Island member (of Natlins Cove formation)

Silurian: Newfoundland, Canada.

G. R. Heyl, 1937, Newfoundland Geol. Survey Bull. 8, p. 12.

Soquel member (of Puente formation)

Miocene, upper: California.

J. E. Schoellhamer and others, 1954, U. S. Geol. Survey Oil and Gas Inv. Map OM 154.

Sorento cyclothem

Pennsylvanian: Illinois.

H. R. Wanless, 1955, Am. Assoc. Petroleum Geologists Bull., v. 39, no. 9, p. 1764 (table 2).

Sosa Hill basalt

Miocene, lower: Panama Canal Zone.

S. M. Jones, 1950, Geol. Soc. America Bull., v. 61, no. 9, p. 898 (correlation table).

Sosan formation

Precambrian (Proterozoic): Northwest Territories (Mackenzie), Canada.

C. H. Stockwell, 1936, Canada Geol. Survey Map 377A.

Sound Island formation

Middle(?) Cambrian: Newfoundland, Canada.

E. R. Rose, 1948, Newfoundland Geol. Survey Bull. 32, pt. 2, p. 41, 44.

Souris River formation

Devonian: Subsurface in North Dakota, and Saskatchewan and Manitoba, Canada.

W. M. Laird, 1953, Interstate Oil Compact Quart. Bull., v. 12, no. 2, p. 74.

Southampton eolianite

Pleistocene: Bermuda Islands.

R. W. Sayles, 1931, Am. Acad. Arts and Sci. Proc., v. 66, no. 11, p. 396.

South Brook biotite-quartz-monzonite

Devonian(?): Newfoundland, Canada.

H. J. MacLean, 1947, Newfoundland Geol. Survey Bull. 22, p. 8.

South Canyon Creek dolomite member (of Maroon formation)

Permian: Colorado.

N. W. Bass and S. A. Northrop, 1950, Am. Assoc. Petroleum Geologists Bull., v. 34, no. 7, p. 1540-1551.

Southern Arm limestone

Lower Ordovician (Canadian): Newfoundland, Canada.

J. R. Cooper, 1937, Newfoundland Geol. Survey Bull. 9, p. 6-7.

Southesk formation

Devonian: Alberta, Canada.

D. J. McLaren, 1955, Canada Geol. Survey Bull. 35, p. 19-21.

South Flat formation

Upper Cretaceous (Montanan): Utah.

R. E. Hunt, 1954, Am. Assoc. Petroleum Geologists Bull., v. 38, no. 1, p. 118-128.

South Mountain granite

Age not stated: Nova Scotia, Canada.

R. F. Flint, 1951, Geol. Soc. America Bull., v. 62, no. 1, p. 30.

South Platte formation

Lower Cretaceous : Colorado.

K. M. Waagé, 1955, U. S. Geol. Survey Prof. Paper 274-B, p. 27-28, 42.

South Range member (of Virginia formation)

Precambrian (Animikie) : Minnesota.

F. F. Grout and J. F. Wolff, 1955, Minn. Geol. Survey Bull. 36, p. 3, 4, 7, 56, pl. 6.

South Tyler formation

Cretaceous (Comanche) : Texas (subsurface).

R. T. Hazzard, B. W. Blanpied, and W. C. Spooner, [1947], Shreveport Geol. Soc. 1945 Ref. Rept., v. 2, p. 475, 476, 477.

South Wales member (of Perrysburg formation)

Upper Devonian : New York.

J. F. Pepper and Wallace de Witt, Jr., 1951, U. S. Geol. Survey Oil and Gas Inv. Chart OC 45.

South Wells limestone member (of Cherry Canyon formation)

Permian : Texas and New Mexico.

P. B. King in A. K. Miller and W. M. Furnish, 1940, Geol. Soc. America Special Paper 26, p. 9.

P. B. King, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 4, p. 580, pl. 2.

Soyatal formation

Upper Cretaceous : Queretaro, Mexico.

B. W. Wilson, J. P. Hernández M., and E. Meave T., 1955, Soc. Geol. Mexicana Bol., tomo 18, no. 1, p. 3, fig. 2.

Spadra felsophyre

Miocene, middle, or older : California.

J. S. Shelton, 1955, Geol. Soc. America Bull., v. 66, no. 1, p. 55-56, pl. 1.

Sparks schist

Precambrian : Georgia.

D. F. Hewett and G. W. Crickmay, 1937, U. S. Geol. Survey Water-Supply Paper 819, p. 27.

Spar Mountain sandstone (in Fredonia member of Ste. Genevieve formation)

Mississippian : Illinois.

F. E. Tippie, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 11, p. 1658-1659.

Spaulding quartz diorite

Upper Devonian(?) (New Hampshire plutonic series) : New Hampshire.

Katherine Fowler-Billings, 1949, Geol. Soc. America Bull., v. 60, no. 8, p. 1250, 1266-1268.

Spearing group

Jurassic or Cretaceous : British Columbia, Canada.

H. M. A. Rice, 1945, Canada Geol. Survey Paper (Prelim. Map) 45-5.

Spear Point formation

Mississippian : Newfoundland, Canada.

G. R. Heyl, 1937, Newfoundland Geol. Survey Bull. 8, p. 13-14.

Spears member (of Datil formation)

(?) Miocene, upper : New Mexico.

W. H. Tonking, 1954, Dissert. Abs., v. 14, no. 2, p. 340; [1954?], Geologic map and sections of the Puertecito quadrangle, New Mexico (1 : 48,000) : N. Mex. Bur. Mines Min. Res. [preprint?] Bull. 41, pl. 1.

Specimen Mountain volcanics

Age not stated: Colorado.

E. E. Wahlstrom, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, p. 1951.**Speeds limestone member (of Sellersburg limestone)**

Middle Devonian: Indiana.

D. G. Sutton and A. H. Sutton, 1937, *Jour. Geology*, v. 45, no. 3, p. 331.**Speedwell member (of Eramosa formation)**

Middle Silurian (Niagaran): Ontario, Canada.

E. W. Shaw, 1937, *Royal Canadian Inst. Trans.*, v. 21, pt. 2, p. 339.**Speers Ferry formation**

Middle Ordovician (Chazyan): Tennessee.

E. O. Ulrich, 1939, *Kans. Geol. Soc. Guidebook 13th Ann. Field Conf.*, p. 106.B. N. Cooper, 1945, *Jour. Geology*, v. 53, no. 4, p. 265.**Spencer formation**

Eocene, upper: Oregon.

C. W. Merriam and F. E. Turner, 1937, *Calif. Univ. Pubs., Dept. Geol. Sci. Bull.*, v. 24, p. 98 (table 1).F. E. Turner, 1938, *Geol. Soc. America Special Paper 10*, p. 23-24.**Spencer Canyon member (of Muav formation)**

Lower and/or Middle Cambrian: Arizona.

E. D. McKee, 1945, *Carnegie Inst. Washington Pub. 563*, p. 14, 29, 94-95.**Spencer Hill volcanics**

Mississippian (?): Rhode Island.

A. W. Quinn, 1952, *Bedrock geology of the East Greenwich quadrangle, Rhode Island*: U. S. Geol. Survey Geol. Quadrangle Map [GQ 17].**Spence River shale**

Upper Devonian: Subsurface in Northwest Territories (Mackenzie), Alberta, and British Columbia, Canada.

C. W. Hunt, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 11, p. 2300-2301.**Spiller sand member (of Crockett formation)**

Eocene, middle (Claiborne): Texas.

H. B. Stenzel, 1938, *Tex. Univ. Bur. Econ. Geol. Pub. 3818*, p. 20, 125, 149-150 [1939].**Spiral Creek formation**

Lower Cambrian (?): Northeast Greenland.

Christian Poulsen, 1930, *Meddel. om Grønland*, bind 74, nr. 12, p. 307.**Spirit River formation**

Lower Cretaceous: Alberta, Canada (subsurface).

P. C. Badgley, 1952, *Canada Geol. Survey Paper 52-11*, p. 8-9.**Split Mountain formation**

Miocene, lower and middle: California.

L. A. Tarbet and W. H. Holman, 1944, (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 12, p. 1781, 1782.**Spoon Cove formation**

Precambrian (Proterozoic) or Lower Cambrian: Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 92.**Spotted Ridge formation**

Pennsylvanian: Oregon.

C. W. Merriam, 1942, *Jour. Paleontology*, v. 16, no. 3, p. 372.

Spottedtail member (of Sheep Creek formation)

Miocene (Hemingford) : Nebraska.

M. K. Elias, 1942, *Geol. Soc. America Special Paper* 41, p. 128-129, pl. 17.

Spout Spring oolite (in Bangor limestone)

Mississippian : Alabama.

W. B. Jones, 1939, *Econ. Geology*, v. 34, no. 5, p. 575, 578.

Spraberry sandstone

Permian (Leonard) : Texas (subsurface).

T. S. Jones and others, 1949, *W. Tex. Geol. Soc. Strat. Problems Comm.*, Sept. 1949.

Lamar McLennan, Jr., and H. W. Bradley, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 4, p. 899-903, 904-908.

Sprague glacial substage

Pleistocene (Wisconsin) : Colorado, Wyoming, and New Mexico.

L. L. Ray, 1939, (abs.) *Geol. Soc. America Bull.*, v. 50, no. 12, pt. 2, p. 2007; 1940, v. 51, no. 12, pt. 1, p. 1862-1863.

Spray formation

Upper Cretaceous : British Columbia, Canada.

J. L. Usher, 1952, *Canada Geol. Survey Bull.* 21, p. 29.

Springbrook formation

Eocene : British Columbia, Canada.

H. S. Bostock, 1940, *Canada Geol. Survey Map* 341A.

Spring Brook shale member (of Ludlowville formation)

Middle Devonian : New York.

R. G. Sutton, 1951, *Rochester Acad. Sci. Proc.*, v. 9, no. 5-6, p. 365, 366.

Spring Creek deposits

Pleistocene : Texas.

G. L. Evans and G. E. Meade, 1945, *Texas Univ. Bur. Econ. Geology Pub.* 4401, p. 495.

Springdale formation

Silurian (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 11-12.

Springdale sandstone member (of Chinle formation in Utah; of Moenave formation in Arizona)

Upper Triassic (?) : Utah and Arizona.

H. E. Gregory and N. C. Williams, 1947, *Geol. Soc. America Bull.*, v. 58, no. 3, p. 228.

Springfield granodiorite

Age unknown : Pennsylvania.

A. W. Postel, 1940, (abs.) *Geol. Soc. America Bull.*, v. 51, no. 12, pt. 2, 2004-2005; 1941, *Acad. Nat. Sci. Philadelphia Proc.*, v. 92, p. 125-133.

Springfield Center member (of Onondaga formation)

Middle Devonian ; New York.

R. E. Stevenson, 1949, *N. Y. State Sci. Service Rept. Inv.* 3, p. 6-7.

Springvale formation

Miocene, upper : Trinidad, British West Indies.

R. J. L. Guppy, 1912, *Agr. Soc. Trinidad and Tobago Proc.*, v. 12, pts. 1-2, p. 29-32, cross section facing p. 30; Reprint, 1921, *Bull. Am. Paleontology*, v. 8, no. 35, p. 321 (173)-324 (176), pl. 14 (10).

H. G. Kugler, 1936, *Am. Assoc. Petroleum Geologists Bull.*, v. 20, no. 4, p. 1447, 1451 (chart).

Springvalean stage

Miocene, upper : Trinidad, British West Indies.

C. J. Maury, 1931, *Science*, v. 73, no. 1880, p. 43.

Spruce Pine alaskite

Age not stated : North Carolina.

C. E. Hunter and P. W. Mattocks, 1936, *TVA Div. Geology Bull.* 4, p. 10-11.

Spyglass Cove formation

Precambrian (Proterozoic) or Lower Cambrian : Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 92.

Squall Lake granite

Precambrian : Manitoba, Canada.

J. M. Harrison, 1949, *Canada Geol. Survey Mem.* 250, p. 19.

Square Peak volcanic series

Tertiary : Texas.

R. M. Huffington, 1943, *Geol. Soc. America Bull.*, v. 54, no. 7, p. 992, 1027, 1038.

Squaw Creek diatomite member (of Yakima basalt)

[Miocene] : Washington.

J. H. Mackin, 1947 (abs.) *Northwest Science*, v. 21, no. 1, p. 33.

Stack Rock limestone

Cretaceous (Cenomanian) : Trinidad, British West Indies.

H. H. Renz, 1942, *8th Am. Sci. Cong. Proc.*, v. 4, p. 524, chart facing p. 572.

Stadacoma tuffs

Precambrian : Quebec, Canada.

W. N. Ingham and S. H. Ross, 1947, *Quebec Dept. Mines Prelim. Rept.* 205, pt. 1, p. 15.

Staendebach member (of Tanyard formation)

Lower Ordovician : Texas.

V. E. Barnes and P. E. Cloud, Jr., 1945, *Tex. Univ. Bur. Econ. Geology Min. Res. Circ.* 34, p. 19-27.

Staff House flow (in Yellowknife group)

Precambrian : Northwest Territories (Mackenzie), Canada.

C. E. G. Brown and A. S. Dadson, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 84.

Stanaker formation

Upper Triassic : Utah.

H. D. Thomas and M. L. Krueger, 1946, *Am. Assoc. Petroleum Geologists Bull.*, v. 30, no. 8, pt. 1, p. 1271-1274.

Standing Pond volcanics

Middle Ordovician (?) : Vermont and New Hampshire.

C. G. Doll [1945?], *Vt. State Geologist 24th Rept.*, p. 17.

Stanton facies (of New Providence formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, *Geol. Soc. America Special Paper*, p. 121-125.

Stapp conglomerate member (of Union Valley formation)

Pennsylvanian (Morrow) : Oklahoma.

B. H. Harlton, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 7, p. 893-895.

Starboard gneiss

Precambrian : Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull.* 15, p. 12-13.

Stark formation

Precambrian (Proterozoic) : Northwest Territories (Mackenzie), Canada.
C. H. Stockwell, 1936, Canada Geol. Survey Map 377A.

Stark quartz syenitic complex

Precambrian : New York.

A. F. Buddington, 1948, Geol. Soc. America Mem. 28, p. 24, 25-28.

Starkey tongue (of Sherburne formation)

Upper Devonian : New York.

W. L. Grossman, 1944, Geol. Soc. America Bull., v. 55, no. 1, p. 66-67.

Star Mountain rhyolite

Tertiary : Texas.

G. K. Eifler, Jr., 1951, Geol. Soc. America Bull., v. 62, no. 4, p. 345, pl. 1.

State Bridge siltstone member (of Maroon formation)

Permian (?) : Colorado.

C. F. Bassett, 1939, Geol. Soc. American Bull., v. 50, no. 12, pt. 1, p. 1864.

H. F. Donner, 1949, Geol. Soc. America Bull., v. 60, no. 8, p. 1228-1229.

State Farm gneiss

Precambrian : Virginia.

C. B. Brown, 1937, Va. Geol. Survey Bull. 48, p. 13-14.

Stearns magma series

Precambrian (middle Keweenawan) : Minnesota.

M. S. Woyski, 1949, Geol. Soc. America Bull., v. 60, no. 6, p. 1002, 1005, pl. 1.

Steels Knob chert facies (of Muldraugh formation)

Lower Mississippian : Kentucky.

P. B. Stockdale, 1939, Geol. Soc. America Special Paper 22, p. 210-211.

Steen River formation

Middle Devonian : Subsurface in Alberta, British Columbia, and Northwest Territories (Mackenzie), Canada.

C. W. Hunt, 1954, Am. Assoc. Petroleum Geologists Bull., v. 38, no. 11, p. 2293-2297.

Steep Gully member (of Foley formation)

Pliocene : Louisiana (subsurface).

P. H. Jones *in* P. H. Jones, A. N. Turcan, Jr., and H. E. Skibitzke, 1954, La. Dept. Conserv. Geol. Bull. 30, p. 59-60.

Stenørkenen phyllites

Precambrian (Greenlandian) : North Greenland.

Erdhart Frankl, 1955, Meddel. om Grønland, bind 103, nr. 7, p. 13, 16, 32.

Stetson Brook limestone

Cambro-Ordovician (?) : Maine.

L. W. Fisher, 1936, Am. Mineralogist, v. 21, no. 5, p. 323.

Stettler member (of Wabamun formation)

Upper Devonian : Alberta, Canada (subsurface).

J. S. Wonfor and J. M. Andrichuck, 1953, Alberta Soc. Petroleum Geologists News Bull., v. 1, no. 9, p. 3, 5.

Steuben limestone member (of Cobourg formation)

Middle Ordovician (Mohawkian) : New York.

G. M. Kay, 1943, Am. Jour. Sci., v. 241, no. 10, p. 598, 601-602.

Stewart Brook formation

Ordovician: Nova Scotia, Canada.

W. A. Bell, 1940, Canada Geol. Survey Mem. 225, p. 6-7 [1941].

Stewart Valley limestone

Mississippian: California.

J. C. Hazzard, 1937, Calif. Jour. Mines and Geology, v. 33, no. 4, p. 275 (fig. 3a), 332-334.

Stice cyclothem

Pennsylvanian (lower Desmoinesian): Kansas.

R. C. Moore, 1949, Kans. State Geol. Survey Bull. 83, p. 43, 45.

Stikine lavas

Quaternary: British Columbia, Canada.

F. A. Kerr, 1948, Canada Geol. Survey Mem. 246, p. 39.

Stillaquamish sand member (of Vashon drift)

Pleistocene: Washington.

R. C. Newcomb, 1952, U. S. Geol. Survey Water-Supply Paper 1135, p. 27, pl. 1.

Stillman member (of Grand Detour formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., fig. 3.

Stillwater glacial stage

Pleistocene (Illinoian): Colorado.

R. L. Ives, 1937, (abs.) Colo. Univ. Studies, v. 25, no. 1, p. 75; 1938, Geol. Soc. America Bull., v. 49, no. 7, p. 1056.

Stillwater Creek member (of Cowlitz formation)

Eocene, upper: Washington.

D. A. Henriksen, 1954, Dissert. Abs., v. 14, no. 12, p. 2316.

Stobie series

Precambrian (pre-Huronian): Ontario, Canada.

H. C. Cooke, 1940, Royal Soc. Canada Trans., sec. 4, v. 35, p. 8.

Stock flow

Precambrian: Northwest Territories (Mackenzie), Canada.

J. F. Henderson and I. C. Brown, 1950, Canadian Inst. Mining and Metallurgy Trans., v. 53, p. 418.

Stockade Beaver shale member (of Sundance formation)

Upper Jurassic: Wyoming and South Dakota.

R. W. Imlay, 1947, Am. Assoc. Petroleum Geologists Bull., v. 31, no. 2, p. 251-255.

Stoddard member (of Oneota formation)

Lower Ordovician: Wisconsin.

G. O. Raasch, 1952, Ill. Acad. Sci. Trans., v. 45, p. 90-91, 94.

Stoddard Canyon quartz monzonite

Age unknown: California.

K. J. Hsu, 1955, Calif. Univ. Dept. Geol. Sci. Bull., v. 30, no. 4, p. 301-302, map 1.

Stoddart formation

Upper Paleozoic: British Columbia, Canada (subsurface).

A. T. C. Rutgers, 1955, (abs.) Am. Assoc. Petroleum Geologists and Alberta Soc. Petroleum Geologists, Program Western Canada Regional Meeting and 5th Ann. Field Trip, p. 21.

Stoke granite

Pre-Ordovician (?) : Quebec, Canada.

G. V. Douglas, 1941, Quebec Dept. Mines Geol. Rept. 8, p. 17-18.

Stone Coal Bluff lignite (in Slaughter Creek member of Pendleton formation)

Eocene, lower (Wilcox) : Louisiana and Texas.

Richard Wasem and L. J. Wilbert, Jr., 1943, Jour. Paleontology, v. 17, no. 2, p. 187, fig. 4.

Stonehengian division

Lower Ordovician (Ozarkian) : Eastern United States.

A. W. Grabau, 1937, Paleozoic formations in the light of the pulsation theory, v. 3, Cambrovisian pulsation, pt. 2, Appalachian, Palaeocordilleran, Pre-Andean, Himalayan and Cathaysian geosynclines : Peiping, China, University Press, Natl. Univ. Peking, p. 10, 13, 15, 282.

Stone Mill member (of Ludlowville formation)

Middle Devonian : New York.

G. A. Cooper and A. S. Warthin, 1941, Washington Acad. Sci. Jour., v. 31, no. 6, p. 259.

Stone Mountain granite

Permian (?) : Georgia.

T. L. Watson, 1902, Ga. Geol. Survey Bull. 9-A, p. 114-119.

L. A. Herrmann, 1954, Ga. Geol. Survey Bull. 61, p. 29-32, 55-61, 75, 79.

Stoneville member (of Fox Hills sandstone)

Cretaceous : South Dakota.

W. V. Searight, 1934, S. Dak. State Geol. Survey Rept. Inv. 22, p. 8-11.

Stoneville Flats limestone (in Belle Fourche shale)

Upper Cretaceous : Montana and Wyoming.

M. N. Bramlette and W. W. Rubey in R. C. Moore, 1949, Geol. Soc. America Mem. 39, p. 27 (fig. 18).

Stony Clove sandstone member (of Katsberg red beds)

Upper Devonian : New York.

G. H. Chadwick, 1940, N. Y. State Geol. Assoc. 16th Ann. Meeting Field Guide Leaflets, p. 2; 1944, N. Y. State Mus. Bull. 336, p. 130-135 [1946].

Stony Creek basalt

Pliocene : California.

O. P. Jenkins, 1938, Geologic map of California (1 : 500,000) : Calif. Dept. Nat. Res., Div. Mines, sheet 4.

Stony Creek formation

Middle Ordovician (Mohawkian) : Quebec, Canada.

J. A. Dresser and T. C. Denis, 1944, Quebec Dept. Mines Geol. Rept. 20, v. 2, p. 267.

Stony Hollow member (of Marcellus formation)

Devonian : New York.

G. A. Cooper, 1941, Washington Acad. Sci. Jour., v. 31, no. 5, p. 179-180.

Stony Mountain diorite

Miocene, upper : Colorado.

McClelland Dings, 1941, Geol. Soc. America Bull., v. 52, no. 5, p. 698, 712-714.

Stony Mountain shale member (of Stony Mountain formation)

Upper Ordovician (Richmond) : Manitoba, Canada.

V. J. Okulitch, 1943, Royal Soc. Canada Trans., sec. 4, v. 37, p. 60.

Store Fjord gneisses

Lower Paleozoic (Caledonian?): Northeast Greenland.

E. H. Kranck, 1935, *Meddel. om Grønland*, bind 95, nr. 7, p. 57-58.

Store Fjord granite

Lower Paleozoic (Caledonian): Northeast Greenland.

E. H. Kranck, 1935, *Meddel. om Grønland*, bind 95, nr. 7, p. 13, pl. 3.

Storm Creek formation

Pennsylvanian to Permian: Alberta, Canada.

G. O. Raasch, 1954, Carboniferous section at Highwood Pass with correlations to Banff and Mount Head: Calgary, Alberta, Canadian Strat. Service Ltd., [Strat. log].

Stormont limestone member (of Pierson Point shale)

Pennsylvanian (Virgilian): Kansas.

H. G. O'Connor, 1953, *Kans. State Geol. Survey [Repts.]*, v. 12, pt. 1, p. 18-19, pl. 1.

Story formation

Pennsylvanian (Missouri series): New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 65-66.

Stover member (of Benner limestone)

Middle Ordovician (Mohawkian): Pennsylvania.

G. M. Kay, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1969.

Stowe formation

Ordovician: Vermont.

P. H. Osberg, 1952, *Vt. Geol. Survey Bull.* 5, p. 65-66, 116.

Strain shale member (of Lykins formation)

Triassic: Colorado.

L. W. LeRoy, 1946, *Colo. School Mines Quart.*, v. 41, no. 2, p. 31, 42-44.

Strange formation

Lower Ordovician (Arbuckle): Oklahoma.

C. E. Decker, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1319, table 1.

Strangway granite

Precambrian (post-Keewatin): Quebec, Canada.

W. W. Longley, 1946, *Quebec Dept. Mines Geol. Rept.* 24, p. 11.

Strasburg cyclothem (including Strasburg shale and/or sandstone)

Pennsylvanian (Allegheny): Ohio.

R. E. Lamborn, C. R. Austin, and Downs Schaaf, 1938, *Ohio Geol. Survey*, ser. 4, Bull. 39, p. 145-160.

N. K. Flint, 1951, *Ohio Geol. Survey*, ser. 4, Bull. 48, p. 47-48.

Strasburg limestone

Middle Ordovician (Chazyan): Tennessee.

E. O. Ulrich, 1939, *Kans. Geol. Soc. Guidebook 13th Ann. Field Conf.*, p. 106.

B. N. Cooper and G. A. Cooper, 1946, *Geol. Soc. America Bull.*, v. 57, no. 1, p. 75.

Strathcona sand and silt

Pleistocene: Alberta, Canada.

P. S. Warren, 1954, *Royal Soc. Canada Trans.*, v. 48, sec. 4, p. 180.

Strathearn formation

Upper Pennsylvanian and Permian (Missourian-Wolfcampian): Nevada.

R. H. Dott, Jr., 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 11, p. 2248-2255, fig. 2.

Strawberry granite

Precambrian: Newfoundland (Labrador), Canada.

E. H. Kranck, 1939, Newfoundland Geol. Survey Bull. 19, p. 17.

Strawbridge member (of Quimbys Mill formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., figs. 3, 9.

Stribling formation

Lower or Middle Devonian: Texas.

V. E. Barnes and P. E. Cloud, Jr., 1945, Tex. Univ. Bur. Econ. Geology Min. Res. Circ. 34, p. 31.

V. E. Barnes, P. E. Cloud, Jr., and L. E. Warren, 1946, Tex. Univ. Bur. Econ. Geology Pub. 4301, p. 169-174 [1945].

Striped Rock granite

Precambrian: Virginia.

A. J. Stose, 1942, (abs.) Am. Geophys. Union Trans. 23d Ann Meeting, pt. 2, p. 342.

Stronghold granite

Eocene (?) to lower Pliocene (?): Arizona.

D. J. Cederstrom, 1946, Am. Jour. Sci., v. 244, no. 9, p. 610-611.

Stroudsburgian stage

Middle Devonian: Pennsylvania.

Bradford Willard *in* Bradford Willard, F. M. Swartz, and A. B. Cleaves, 1939, Pa. Geol. Survey, ser. 4, Bull. G 19, p. 131 (footnote).

Stuart glacial stage

Pleistocene: Washington.

B. M. Page, 1939, Jour. Geology, v. 47, no. 8, p. 805-814.

Stuhini group

Upper Triassic: British Columbia, Canada.

F. A. Kerr, 1945, Canada Geol. Survey Paper (Prelim. Map) 45-30; 1948, Mem. 248, p. 20 (table), 25-27, geol. map.

Stump Arroyo member (of Crooked Creek formation)

Pleistocene: Kansas.

C. W. Hibbard, 1949, Mich. Univ. Mus. Paleontology Contr., v. 7, no. 4, p. 71-73.

Sudbury-Bruce series

Precambrian: Ontario, Canada.

H. W. Fairbairn, 1940 (abs.) Royal Soc. Canada Proc. 3d ser., v. 34, p. 162.

Sugarloaf andesite

Miocene or Pliocene: Washington.

B. M. Page, 1940, Stanford Univ. Abs. Dissert., v. 15, p. 119.

Sugarloaf quartz latite

Cretaceous or Tertiary: Arizona.

H. E. Enlows, 1951, Tulsa Geol. Soc. Digest, v. 19, p. 105-107.

Sugarloaf Mountain quartzite

Cambrian (?): Maryland.

A. I. Jonas and G. W. Stose, 1938, Washington Acad. Sci. Jour., v. 28, no. 8, p. 347

Sugarlump tuffs

Tertiary, upper: New Mexico.

F. J. Kuellmer and others, 1953, *in* N. Mex. Geol. Soc. Guidebook 4th Field Conf., p. 42 (map), 47, 50 (map).

H. L. Jicha, Jr., 1954, N. Mex. State Bur. Mines Min. Res. Bull. 37, p. 39, 42-44.

Suicide grit

Upper Triassic: Utah.

J. S. Williams, 1945, *Am. Jour. Sci.*, v. 243, no. 9, p. 474.**Sukkertoppen gneiss or granite**

Precambrian: Southwest Greenland.

Hans Ramberg, 1948, *Meddel. om Grønland*, bind 142, nr. 5, p. 6-12.**Sully member (of Pierre formation)**

Cretaceous: South Dakota and Nebraska.

W. V. Searight, 1937, *S. Dak. State Geol. Survey Rept. Inv.* 27, p. 21-34, pl. 3.**Sulphur Mountain member (of Spray River formation)**

Lower Triassic: Alberta, Canada.

P. S. Warren, 1945, *Am. Jour. Sci.*, v. 243, no. 9, p. 482-483.**Sulphur Springs Mountain andesite**

Tertiary (?): California.

C. E. Weaver, 1949, *Geol. Soc. America Mem.* 35, p. 110 (table 24), 116-117.**Sulphur Well member (of Cynthiana formation)**

Ordovician: Kentucky.

A. C. McFarlan, 1943, *Geology of Kentucky: Lexington, Ky., Ky. Univ.*, p. 11 (foot-note), 20-22.**Sumas shales (in Chuckanut formation)**

[Eocene]: Washington.

S. L. Glover, 1941, *Wash. Dept. Conserv. Devel., Div. Geology Bull.* 24, p. 308-311.**Sumay limestone**

Pliocene: Mariana Islands (Guam).

Risaburo Tayama, 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 55, table 4 [English translation in library of U. S. Geol. Survey, p. 66].**Summers series**

Pennsylvanian (post-Chester, pre-Morrow): West Virginia.

C. L. Cooper, 1946, *Ill. State Geol. Survey Bull.* 70, p. 19.**Summit conglomerate**

Miocene or Pliocene: Washington.

B. M. Page, 1940, *Stanford Univ. Abs. Dissert.*, v. 15, p. 119.**Summit gabbro**

Paleozoic (?) or Mesozoic (?): California.

W. J. Miller and R. W. Webb, 1940, *Calif. Jour. Mines and Geology*, v. 36, no. 4, p. 353-354, 378 (fig. 31), pl. 2.**Sumner gabbro**

Jurassic (?): British Columbia, Canada.

C. E. Cairnes, 1937, *Canada Geol. Survey Mem.* 213, p. 28.**Sunblood formation**

Ordovician (Black River): Northwest Territories (Mackenzie), Canada.

D. R. Kingston, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 11, p. 2413.

Sunbury formation

See Sunbury Creek formation.

Sunbury Creek formation

Pennsylvanian: New Brunswick, Canada.

J. E. Muller, 1949, Canada Geol. Survey Paper 49-13 (Prelim. Map 49-13A); 1950, Mem. 260, p. 8 (table), 20-22, geol. map.

Sunday Mountain volcanic member (of Orfordville formation)

Middle Ordovician (?): New Hampshire and Vermont.

J. B. Hadley and others, 1938, Geologic map and structure sections of the New Hampshire portion of the Mt. Cube quadrangle (1:62,500): N. H. Highway Dept.

J. B. Hadley, 1950, Vt. Geol. Survey Bull. 1, p. 15-16.

Sunnybrook volcanics

Jurassic: California.

G. R. Heyl and J. H. Eric, 1948, Calif. Dept. Nat. Res., Div. Mines Bull. 144, pt. 1, p. 53, pl. 7.

Sunnyside member (of Blackhawk formation)

Upper Cretaceous: Utah.

R. G. Young, 1955, Geol. Soc. America Bull., v. 66, no. 2, p. 183, 185-186.

Sunnyside sand

Pleistocene to Recent: British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, Canada Geol. Survey Water Supply Paper 322, table, map.

Sunol series

Upper Cretaceous: California.

O. P. Jenkins, 1938, Geologic map of California (1:500,000): Calif. Dept. Nat. Res. Div. Mines, sheet 4.

Sun River dolomite

Upper Mississippian: Montana.

V. R. Chamberlain, 1955, Billings Geol. Soc. Guidebook 6th Ann. Field Conf., p. 78, 79.

Sunset Point formation

Upper Cambrian (Croixan): Wisconsin.

G. O. Raasch, 1952, Ill. Acad. Sci. Trans., v. 44, p. 150.

Sunshine Ranch member (of Saugus formation)

Pliocene: California.

J. C. Hazzard *in* G. B. Oakeshott, 1950, Calif. Jour. Mines and Geology, v. 46, no. 1, p. 59-61.

Sunwapta Peak formation

Middle Cambrian: Alberta, Canada.

R. D. Hughes, 1955, Alberta Soc. Petroleum Geologists Guidebook 5th Ann. Field Conf., p. 86-90.

Supan tuff and sand member (of Tuscan formation)

[Pliocene]: California.

R. C. Treasher, 1947, (abs.) Geol. Soc. America Bull., v. 58, no. 12, pt. 2, p. 1257.

Superian era

Precambrian: Canada.

R. W. Brock, 1936, Geol. Mag., v. 73, no. 861, p. 133-134, 140.

Suplee formation

Lower Jurassic (Lias) : Oregon.

R. L. Lupper, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 227, 239.**Surgidero formation**

Recent : Cuba.

Jorge Brodermann, 1940, *Soc. Cubana Ingenieros Rev.*, v. 34, no. 2, geol. map and cross sections.**Surrey till**

Pleistocene : British Columbia, Canada.

J. E. Armstrong and W. C. Brown, 1953, *Canada Geol. Survey Water Supply Paper* 322, map, table.**Suspension Bridge formation**

Lower Ordovician (Arenigian) : New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 83.**Suspension Bridge member (of Lockport dolomite)**

Silurian (Niagaran) : Ontario, Canada.

E. R. Cumings, 1939, *Geologie der Erde, North America*, v. 1, p. 596 (fig. 7), 597.**Sussex sandstone member (of Cody shale)**

Upper Cretaceous : Wyoming.

J. B. Wilson, 1951, *Wyo. Geol. Survey Rept. Inv.* 3, p. 3-11.**Sustut group**

Upper Cretaceous : British Columbia, Canada.

J. E. Armstrong, 1945, *Canada Geol. Survey Paper (Prelim. Map)* 45-6.**Suto member (of Alta formation)**

Oligocene (?) : Nevada.

V. P. Gianella, 1934, *Mining and Metallurgy*, v. 15, no. 331, p. 299; 1936, *Nev. Univ. Bull.*, v. 30, no. 9, p. 55-58.**Svejstrups injection complex**

Lower Paleozoic (Caledonian) : Northeast Greenland.

G. P. Leedal, 1952, *Meddel. om Grønland*, bind 142, nr. 6, p. 30-37, pl. 2.**Swan Lake glaciation**

Pleistocene (Wisconsin) : Alaska.

T. N. V. Karlstrom in T. L. Péwé and others, 1953, *U. S. Geol. Survey Circ.* 239, p. 4, 13 (table 1).**Swannanoa formation**

Age not stated : Virginia.

W. A. Nelson, 1949, (abs.) *Va. Acad. Sci. Proc.* 1948-1949, p. 139.**Swanville formation**

Middle Devonian : Indiana.

Guy Campbell, 1942, *Geol. Soc. America Bull.*, v. 53, no. 7, p. 1063-1064.**Swauger quartzite**

Precambrian (Belt series) : Idaho.

C. P. Ross, 1947, *Geol. Soc. America Bull.*, v. 58, no. 12, pt. 1, p. 1096, 1097-1099, pl. 1.**Swayze series**

Precambrian : Ontario, Canada.

H. C. Rickaby, 1933, *Canadian Inst. Mining and Metallurgy Trans.*, v. 36, p. 208-209.

Sweitzer formation

Pliocene (?) : California.

L. G. Hertlein, 1929, Stanford Univ. Abs. Dissert., v. 4, p. 82.

Swift formation

Upper Jurassic : Montana and Idaho.

W. A. Cobban, 1945, Am. Assoc. Petroleum Geologists Bull., v. 29, no. 9, p. 1281-1286.

Swift Current Creek formation

Eocene, upper : Saskatchewan, Canada.

H. E. Wood, 2d, and others, 1941, Geol. Soc. America Bull., v. 52, no. 1, p. 32.

L. S. Russell, 1950, Roy. Soc. Canada Trans., 3d ser., v. 44, sec. 4, p. 52-54.

Swift Run formation

Precambrian : Virginia.

G. W. Stose and A. J. Stose, 1944, Am. Jour. Sci., v. 242, no. 8, p. 410.

Swissvale gypsum member (of Minturn formation)

Pennsylvanian (Desmoinesian) : Colorado.

K. G. Brill, Jr., 1952, Geol. Soc. America Bull., v. 63, no. 8, p. 821, 833, pl. 1.

Sycamore conglomerate

Miocene and Pliocene : California.

G. J. Bellemin, 1940, Am. Assoc. Petroleum Geologists Bull., v. 24, no. 4, p. 652 (fig. 2), 653, 656-657.

Sycamore Canyon member (of Puente formation)

Miocene, upper : California.

M. L. Krueger, 1936, (abs.) Am. Assoc. Petroleum Geologists Bull., v. 20, no. 11, p. 1520.

Sydprøven granite

Precambrian : Southwest Greenland.

C. E. Wegmann, 1938, Meddel. om Grønland, bind 113, nr. 2, p. 105-112.

Sydvejdal marbles

Upper Precambrian (Greenlandian) : North Greenland.

Erdhart Frankl, 1955, Meddel. om Grønland, bind 103, nr. 7, p. 13, 16, 32.

Sylva-Maria group

Lower Paleozoic (Caledonian) : Northeast Greenland.

C. E. Wegmann, 1935, Meddel. om Grønland, bind 103, nr. 3, p. 31, pl. 1.

Sylvester group

Post-Middle Devonian, pre-Upper Missippian : British Columbia, Canada.

H. Gabrielse, 1955, Canada Geol. Survey Paper (Prelim. Map) 54-10.

Taaqefjeldene graywackes

Precambrian (Greenlandian) : North Greenland.

Erdhart Frankl, 1954, Meddel. om Grønland, bind 116, nr. 2, p. 37-40, 56, 78, pl. 1.

Tabaquite series

Oligocene : Trinidad, British West Indies.

A. B. Thompson, 1925, Oil field exploration and development, v. 1, Oil field principles : New York, D. VanNostrand Co., p. 389.

Tabernacle flow

Pleistocene, upper : Utah.

G. B. Maxey, 1946, Am. Jour. Sci., v. 244, no. 5, p. 328.

Table Mountain formation

Tertiary : Colorado.

R. L. Ives, 1938, *Geol. Soc. America Bull.*, v. 49, no. 7, p. 1049.**Tabor member (of Crockett formation)**

Eocene (Claiborne) : Texas.

G. D. Harris, 1941, *Tex. Univ. Bur. Econ. Geology Min. Res. Survey Circ.* 33, p. 13, 14.**Tachek group**

Jurassic or Cretaceous (?) : British Columbia, Canada.

H. M. A. Rice, 1949, *Canada Geol. Survey Map* 971A.**Tacoma series**

Cambro-Ordovician (?) : Maine.

L. W. Fisher, 1936, *Am. Mineralogist*, v. 21, no. 5, p. 323.**Tacubaya formation**

Pleistocene : Cuenca de Mexico, Mexico.

Kirk Bryan, 1948, *Soc. Geol. Mexicana Bol.*, tomo 13, pl. 1.**Taghanic stage**

Middle Devonian (Erian) : New York.

G. A. Cooper and others, 1942, *Geol. Soc. America Bull.*, v. 53, no. 12, pt. 1, p. 1733, Chart 4.**Tagpochau limestone**

Miocene, lower : Mariana Islands (Saipan).

Risaburo Tayama, 1938, *Geomorphology, geology, and coral reefs of Saipan Island : Tropical Industry Inst., Palau, South Sea Islands, Bull.* 1 [English translation in library of U. S. Geol. Survey, p. 63-68].Josiah Bridge *in* W. S. Cole and Josiah Bridge, 1953, *U. S. Geol. Survey Prof. Paper* 253, p. 11-12.**Tahoka clay**

Pleistocene (Wisconsin) : Texas and New Mexico.

G. L. Evans and G. E. Meade, 1945, *Texas Univ. Bur. Econ. Geology Pub.* 4401, p. 495-498.**Taholah formation**

Pleistocene, lower : Washington.

S. L. Glover, 1940, *Northwest Science*, v. 14, no. 3, p. 69-71.**Taihamu (Taihanom) limestone**

Oligocene [Aquitanian] : Mariana Islands (Rota).

Risaburo Tayama, 1939, *Correlation of the strata of the South Sea Islands : Geol. Soc. Japan Jour.*, v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, *Coral reefs in the South Seas : Japan Hydrog. Office Bull.*, v. 11, p. 52, table 4 [English translation in library of U. S. Geol. Survey, p. 62].**Taihanom limestone****Taihanomu limestone***See* Taihamu limestone.**Tait volcanics**

Precambrian (Keewatin) : Ontario, Canada.

G. L. Fletcher and T. N. Irvine, 1954, *Ontario Dept. Mines Ann. Rept.*, v. 63, pt. 5, p. 15.**Takla group**

Upper Triassic to Upper Jurassic : British Columbia, Canada.

J. E. Armstrong, 1945, *Canada Geol. Survey Paper (Prelim. Map)* 45-6.

Takwahoni group

Lower Jurassic: British Columbia, Canada.

F. A. Kerr, 1945, *Canada Geol. Survey Paper (Prelim. Map) 45-30*; 1948, *Mem. 248*, p. 20 (table), 32-34, geol. map.

Talamantes volcanic series

Tertiary: Chihuahua, Mexico.

I. F. Wilson and V. S. Rocha, 1948, *U. S. Geol. Survey Bull. 954-E*, p. 189.

Tallahassee limestone

Eocene, middle: Florida (subsurface).

P. L. Applin and E. R. Applin, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 12, p. 1688-1693.

Tallant formation (of Ochelata group)

Pennsylvanian: Oklahoma.

M. C. Oakes, 1951, *Tulsa Geol. Soc. Digest*, v. 19, p. 119, 121.

Tallman fanglomerate

Permian: Nevada.

H. G. Ferguson, S. W. Muller, and R. J. Roberts, 1951, *Geology of the Winnemucca quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 11]*.

Talofofu peat-bearing beds

Pliocene: Mariana Islands (Guam).

Risaburo Tayama, 1952, *Coral reefs in the South Seas: Japan Hydrog. Office Bull.*, v. 11, p. 55-56, table 4 [English translation in library of U. S. Geol. Survey, p. 66].

Talparo formation

Miocene and Pliocene: Trinidad, British West Indies.

Ernst Lehner, 1935 [France] *Office national des combustibles liquides Annales*, 10^e Année, no. 4, p. 716 (table).

H. H. Renz, 1942, 8th *Am. Sci. Cong. Proc.*, v. 4, p. 558-559, chart facing p. 572.

Tamiahua facies

Middle Cretaceous: Vera Cruz, Mexico.

J. O. Nigra, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 3-4, p. 140.

Tamiami formation

Miocene, upper: Florida.

W. C. Mansfield, 1939, *Fla. Dept. Conserv. Geol. Bull. 18*, p. 8, 15.

Tampico shale member (of Piper formation)

Middle Jurassic: Montana (subsurface and surface), and Saskatchewan, Canada (subsurface).

J. W. Nordquist, 1955, *Billings Geol. Soc. Guidebook 6th Ann. Field Conf.*, p. 97, 101.

Tamworth granite

Upper Devonian (?) (New Hampshire magma series): New Hampshire.

A. P. Smith and others, 1938, *Geologic map and structure sections of the Mt. Chocorua quadrangle, New Hampshire (1:62,500): N. H. Highway Dept.*

Tanaka volcanics

Quaternary: Alaska (Aleutian Islands).

F. M. Byers, Jr., and others, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2*, pt. 3, p. 28-31.

Tanapag limestone

Pleistocene or Recent: Mariana Islands (Saipan).

Risaburo Tayama, 1939, Correlation of the strata of the South Sea Islands: Geol. Soc. Japan Jour., v. 46, no. 549, p. 346 (correlation table) [English translation in library of U. S. Geol. Survey]; 1952, Coral reefs in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 58, table 4 [English translation in library of U. S. Geol. Survey, p. 69].

Tangle Ridge formation

Upper Cambrian: Alberta, Canada.

R. D. Hughes, 1955, Alberta Soc. Petroleum Geologists Guidebook 5th Ann. Field Conf., p. 90-92.

Tansill anhydrite or formation (of Whitehorse group or Carlsbad group)

Permian: New Mexico.

R. K. DeFord *in* Addison Young, Max David, and E. A. Wahlström, 1939, Am. Assoc. Petroleum Geologists Bull., v. 23, no. 10, p. 1550-1551.

R. K. DeFord and G. D. Riggs, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 9, p. 1713-1728.

Tanyard formation (of Ellenburger group).

Lower Ordovician: Texas.

V. E. Barnes and P. E. Cloud, Jr., 1945, Tex. Univ. Bur. Econ. Geology Min. Res. Circ. 34, p. 1, 19-29.

Tapaliza shales

Oligocene, upper, and Miocene, lower: Panama.

Charles Schuchert, 1935, Historical geology of the Antillean-Caribbean region: New York, John Wiley and Sons, p. 563, 660.

A. A. Olsson, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 241.

Tapotchau limestone

See **Tagpochau limestone**.

Tappan lava flow

Age not stated: Arizona.

H. S. Colton, 1937, Mus. Northern Ariz. Bull. 10, p. 21-22.

Tappocho limestone

See **Tagpochau limestone**.

Tapukok granodiorite

Precambrian: Manitoba, Canada.

Jorma Kalliokoski, 1952, Canada Geol. Survey Mem. 270, p. 20-22.

Taputapu volcanics

Pliocene (?): Samoa Islands (Tutuila).

H. T. Stearns, 1944, Geol. Soc. America Bull., v. 55, no. 11, p. 1285, 1305-1306.

Tarahumara formation

Cretaceous (?): Sonora, Mexico.

I. F. Wilson and V. S. Rocha, 1946, Mexico Com. Dir. Inv. Rec. Mineros Bol. 9, p. 30-34.

Taraises formation

Lower Cretaceous: Coahuila, Mexico.

R. W. Imlay, 1936, Geol. Soc. America Bull., v. 47, no. 7, p. 1111-1115.

Tarango formation

Pleistocene (?): Cuenca de Mexico, Mexico.

Kirk Bryan, 1948, Soc. Geol. Mexicana Bol., tomo 13, p. 11-12.

Tarantula formation

Cretaceous: Texas.

R. M. Huffington, 1947, *Harvard Univ. Summaries of Theses, 1943-45*, p. 196.**Tarará formation**

Oligocene, upper: Cuba.

Jorge Brodermann, 1945, *Soc. Cubana Ingerieros Rev.*, v. 42, no. 1, chart facing p. 144.**Target limestone member (of Springer formation)**

Pennsylvanian (Springeran): Oklahoma.

A. P. Bennison, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 5, p. 913-914.**Tartar cyclothem**

Pennsylvanian: Illinois.

J. R. Ball, 1952, *Ill. State Geol. Survey Bull.* 77, p. 21.**Tascotal formation**

Oligocene or younger: Texas.

S. S. Goldich and C. L. Seward, 1948, *W. Tex. Geol. Soc. [Guidebook] Fall Field Trip*, p. 21-22.**Tasek porphyrite**

Devonian (?): Southwest Greenland.

N. V. Ussing, 1911, *Meddel. om Grønland, hefte 38*, p. 213-217.**Tassai Wash group**

Tertiary (?) (pre-Pliocene): Nevada.

C. R. Longwell, 1936, *Geol. Soc. America Bull.*, v. 47, no. 9, p. 1414-1415.**Tatow limestone**

Lower Cambrian (Waucobian): Utah.

Charles Deiss, 1938, *Geol. Soc. America Bull.*, v. 49, no. 7, p. 1143-1144.**Tau trachyte**

Pliocene and lower Pleistocene (?): Samoa Islands (Tutuila).

H. T. Stearns, 1944, *Geol. Soc. America Bull.*, v. 55, no. 11, p. 1285.**Taughannock stage***See* Taghanic stage.**Taylor group**

Jurassic: British Columbia, Canada.

C. E. Cairnes, 1943, *Canada Geol. Survey Paper 43-15*, p. 6-7.**Taylor Brook injection gneiss**

Middle Silurian: Maine.

L. W. Fisher, 1938 (abs.) *Geol. Soc. America Proc.* 1937, p. 81; 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 115-117.**Taylor Falls member (of Franconia formation)**

Upper Cambrian (St. Croixian): Minnesota.

C. R. Stauffer, G. M. Schwartz, and G. A. Thiel, 1938 (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1902; 1939, v. 50, no. 8, p. 1239.**Taylor Pond shale member (of Giles Cove formation)**

Ordovician: Newfoundland.

G. R. Heyl, 1937, *Newfoundland Geol. Survey Bull.* 8, p. 10.**Teapa [formation]**

Miocene: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.

Tebo formation

Pennsylvanian (Des Moines) : Missouri.

H. S. McQueen, 1943, Mo. Geol. Survey and Water Res., 2d ser., v. 28, p. 78-83.

Tecocoyunca beds

Middle Jurassic : Guerrero, Mexico.

E. J. Guzman, 1950, Asociación Mexicana Geólogos Petroleros Bol., v. 2, no. 2, p. 116.

Tecopa shale

Lower and Middle Cambrian : California and Nevada.

H. E. Wheeler, 1948, Nev. Univ. Bull., Geology and Mining Ser., no. 47, p. 27-28.

Tecumseh sandstone (in Silver Reef sandstone member of Chinle formation)

Upper Triassic : Utah.

P. D. Proctor, 1953, Utah Geol. Mineralog. Survey Bull. 44, p. 10-11, 28-29.

Tejon Lookout granite

Jurassic (?) : California.

J. C. Crowell, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 24, p. 10.

Telesaque sand (of Springvale formation)

Miocene, upper : Trinidad, British West Indies.

H. H. Suter, 1951, Colonial Geology and Min. Res., v. 2, no. 3, p. 205 (table 13) [1952].

Temecula arkose

Pleistocene : California.

J. F. Mann, Jr., 1955, Calif. Dept. Nat. Res., Div. Mines Special Rept. 43, p. 9, 10-13.

Temescal Wash quartz latite porphyry

Jurassic (?) : California.

A. O. Woodford, T. G. Moran, and J. S. Shelton, 1946, Am. Assoc. Petroleum Geologists Bull., v. 30, no. 4, p. 528.

E. S. Larsen, Jr., 1948, Geol. Soc. America Mem. 29, p. 36-38.

Temiscamie group

Precambrian : Quebec, Canada.

W. G. Wahl, 1947, Quebec Dept. Mines Prelim. Rept. 211, p. 5, 8.

Temosachic formation

Pliocene, upper, Chihuahua, Mexico.

L. C. Pray, 1953, in Geological sciences at the California Institute of Technology : Calif. Inst. Technology, p. 32.

Tempa schist

Age not stated : North Carolina.

C. E. Hunter and P. W. Mattocks, 1936, TVA Div. Geology Bull. 4, p. 13.

Temple Cap member (of Navajo sandstone)

Jurassic and Jurassic (?) : Utah.

R. K. Grater, 1948, Am. Jour. Sci., v. 246, no. 5, p. 312, 313.

Temple Lake glacial stage

Pleistocene (Cochrane) : Wyoming.

J. H. Moss, 1951, Early Man in the Eden Valley : Philadelphia, Univ. Pa., Univ. Mus., p. 56-62.

Templeton member (of Woodbine formation)

Upper Cretaceous : Texas.

H. R. Bergquist, 1949, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 98.

Tenakihi group

Precambrian (Proterozoic) : British Columbia, Canada.

E. F. Roots, 1954, *Canada Geol. Survey Mem.* 274, p. 33-47.

Tenmile Creek dolomite

Middle Devonian : Ohio.

G. A. Stewart, 1938, *Geol. Soc. America Special Paper* 8, p. 6, 7.

Tenmile Creek formation

Pennsylvanian (Bendian) : Oklahoma.

B. H. Harlton, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 7, p. 854, 864-870.

Tenney Canyon tongue (of Kayenta formation)

Jurassic (?) : Utah.

Paul Averitt and others, 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 12, p. 2522.

Tennycapc formation

Mississippian : Nova Scotia, Canada.

L. J. Weeks, 1945, *Canada Geol. Survey Paper (Prelim. Map)* 45-28.

Tepee Creek formation

Precambrian : Oklahoma.

C. A. Merritt and W. E. Ham, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 2, p. 287, 290-299.

Tepee Trail formation

Eocene, upper : Wyoming.

J. D. Love, 1939, *Geol. Soc. America Special Paper* 20, p. 73-79.

Teposcolula limestone

Upper Jurassic : Oaxaca, Mexico.

G. P. Salas, 1949, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 1, no. 2, p. 105-108.

Terra Cotta clay member (of Dakota formation)

Cretaceous : Kansas.

R. C. Moore and others, 1940, *Kans. State Geol. Survey Bull.* 27, p. 40 (fig. 14).

Norman Plummer and J. F. Romary, 1942, *Kans. State Geol. Survey Bull.* 41, pt. 9, p. 319, 329, 332-336.

Terrebonne formation

Middle Ordovician (Trenton) : Quebec, Canada.

T. H. Clark, 1944, *Royal Soc. Canada Trans.*, sec. 4, v. 38, p. 29; 1952, *Quebec Dept. Mines Geol. Rept.* 46, p. 74.

Territories formation

Upper Devonian : Subsurface in Alberta, British Columbia, and Northwest Territories (Mackenzie), Canada.

C. W. Hunt, 1954, *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 11, p. 2297-2300.

Teshierpi granite

Precambrian : Northwest Territories (Mackenzie), Canada.

C. P. Jenney, 1954, *Geol. Assoc. Canada Proc.*, v. 6, pt. 2, p. 14, 15.

Tesla formation

Eocene, middle : California.

A. S. Huey, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 335.

Ralph Stewart, 1949, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Chart* 34, sheet 2.

Teslin formation

Permian: British Columbia, Canada.

K. D. Watson and W. H. Matthews, 1944, *British Columbia Dept. Mines Bull.* 19, p. 16-17.

Tesuque formation

Miocene, middle (?), to Pliocene, lower: New Mexico.

F. E. Kottlowski, 1953, *N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 148 (chart).

Brewster Baldwin and F. E. Kottlowski, 1955, *N. Mex. State Bur. Mines Min. Res. Scenic Trips to the Geol. Past*, no. 1, p. 20, 21, 24.

Tête Jaune horizon (of McBride group)

Precambrian: Alberta, Canada.

M. K. Sorensen, 1955, *Alberta Soc. Petroleum Geologists Guidebook 5th Ann. Field Conf.*, p. 57.

Tetreauville formation

Middle Ordovician (Trenton): Quebec, Canada.

T. H. Clark, 1941, *Quebec Dept. Mines Prelim. Rept.* 158, p. 4; 1952, *Geol. Rept.* 46, p. 71-74.

Texistepec [formation]

Oligocene: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.

Thacher limestone member (of Manlius formation)

Lower Devonian (Helderbergian): New York.

L. V. Rickard, 1955, *N. Y. Geol. Assoc. Guidebook 27th Ann. Meeting*, p. 7.

Thatcher limestone member (of Graneros shale)

Upper Cretaceous: Colorado.

N. W. Bass, C. E. Straub, and H. O. Woodbury, 1947, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 68.

Thelma member (of Bearpaw formation)

Upper Cretaceous: Saskatchewan, Canada.

G. M. Furnival, 1946, *Canada Geol. Survey Mem.* 242, p. 42-43.

Theodosia formation

Lower Ordovician: Missouri and Arkansas.

J. S. Cullison, 1944, *Mo. Univ. School Mines and Metallurgy Bull., Tech. Ser.*, v. 15, no. 2, p. 25-32.

The Rocks sandstone

Eocene: California.

R. E. Thorup, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1958; 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.* 118, pt. 3, p. 464, 465.

Therrill clay member (of Weches formation)

Eocene, middle (Claiborne): Texas.

H. B. Stenzel, 1938, *Tex. Univ. Bur. Econ. Geol. Pub.* 3818, p. 20, 97, 107-108 [1939].

Thirty-nine Mile volcanic series

Oligocene, lower: Colorado.

J. T. Stark and others, 1949, *Geol. Soc. America Mem.* 33, p. 81, 101-103.

Thomasville glacial substage

Pleistocene (Iowan): Colorado.

R. L. Nelson, 1954, *Jour. Geology*, v. 62, no. 4, p. 328-329.

Thompson group

Carboniferous and younger: British Columbia, Canada.

1948, Canada Geol. Survey Map 932A.

Thompson series

Jurassic: British Columbia, Canada.

C. H. Crickmay, 1930, Calif. Univ. Pub. Dept. Geol. Sci. Bull., v. 19, no. 2, p. 34, 36.

Thompson Valley limestone

Middle Ordovician: Virginia and Tennessee.

C. E. Prouty, 1946, Am. Assoc. Petroleum Geologists Bull., v. 30, no. 7, p. 1152-1156

Thorburn member (of Stellarton series)

Pennsylvanian: Nova Scotia, Canada.

W. A. Bell, 1940, Canada Geol. Survey Mem. 225, p. 43 [1941].

Thoreau formation or sandstone

Jurassic: New Mexico.

C. T. Smith, 1951, in N. Mex. Geol. Soc. Guidebook 2d Field Conf., p. 13, 38; 1954, N. Mex. Bur. Mines Min. Res. Bull. 31, p. 14-15.

Thorn group

Middle Silurian (Niagaran): Illinois, Wisconsin, and Indiana.

H. A. Lowenstam, 1949, Ill. State Geol. Survey Rept. Inv. 145, p. 18.

Thorncrag limy gneiss

Cambro-Ordovician (?): Maine.

L. W. Fisher, 1936, Am. Mineralogist, v. 21, no. 5, p. 323.

Thorup Fjord limestone

Ordovician: Northwest Territories (Ellesmere Island), Canada.

J. C. Troelsen, 1950, Meddel. om Grønland, bind 149, nr. 7, p. 59-60.

Threadgill member (of Tanyard formation)

Lower Ordovician: Texas.

V. E. Barnes, 1942, Tex. Univ. Bur. Econ. Geology Min. Res. Survey Circ. 54, p. 1, 2.

P. E. Cloud, Jr., V. E. Barnes, and Josiah Bridge, 1946, Tex. Univ. Bur. Econ. Geology Pub. 4301, p. 148, 151 [1945].

Three Rivers schist

Triassic (?): California.

Cordell Durrell, 1940, Calif. Univ. Dept. Geol. Sci. Bull., v. 25, no. 1, p. 15, 116.

Thule formation

Precambrian (upper Algonkian): North Greenland.

Lauge Koch, 1929, Meddel. om Grønland, bind 73, afd. 2, nr. 2, p. 220-222.

Thumb formation

Upper Cretaceous (?): Nevada.

C. R. Longwell, 1952, Utah Geol. Mineralog. Survey [Utah Geol. Soc.] Guidebook 7, p. 35.

Thunder Lake sediments

Precambrian (Keewatin): Ontario, Canada.

F. J. Pettijohn, 1939, Geol. Soc. America Bull., v. 50, no. 5, p. 766.

Jack Satterly, 1943, Ontario Dept. Mines Ann. Rept., v. 50, pt. 2, p. 29-30.

Thunder River volcanics

Precambrian (Keewatin): Ontario, Canada.

F. J. Pettijohn, 1939, Geol. Soc. America Bull., v. 50, no. 5, p. 764.

Jack Satterly, 1943, Ontario Dept. Mines Ann. Rept., v. 50, pt. 2, p. 30.

Thurman formation

Oligocene and Miocene: New Mexico.

V. C. Kelley and Caswell Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 114, 121-123.**Thursday dolomite**

Middle Silurian: Utah.

F. W. Osterwald, 1953, *U. S. Geol. Survey Trace Elements Inv. Rept. TEI-330*, p. 105.**Tichborne gabbroic anorthosite**

Precambrian: Ontario, Canada.

J. M. Harrison, 1944, *Geol. Soc. America Bull.*, v. 55, no. 12, p. 1409.**Tichborne-Buck Bay granite and alaskite**

Precambrian: Ontario, Canada.

W. D. Harding, 1951, *Ontario Dept. Mines Ann. Rept.*, v. 56, pt. 6, p. 30.**Tick Canyon formation**

Miocene, lower: California.

R. H. Jahns, 1939, *Am. Jour. Sci.*, v. 237, no. 11, p. 819-821.**Tie Gulch dolomite member (of Manitou formation)**

Lower Ordovician: Colorado.

N. W. Bass and S. A. Northrop, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 5, p. 906-907.**Tierra Blanca member (of Lake Valley formation)**

Mississippian (Osage): New Mexico.

L. R. Laudon and A. L. Bowsher, 1949, *Geol. Soc. America Bull.*, v. 60, no. 1, p. 13-14, fig. 4.**Tierra Colorada formation**

Pleistocene: Tabasco, Mexico.

Javier Alvarez A., 1950, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 2, no. 8, p. 525, 526.**Tierra Loma shale member (of Moreno formation)**

Upper Cretaceous: California.

M. B. Payne, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1954.**Tiffanian age**

Paleocene: North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 9, pl. 1.**Tifis member (of Wahluke formation)**

Pleistocene, upper: Washington.

G. F. Beck, 1936, *Mineralogist*, v. 4, no. 11, p. 12, 14.**Tiger formation**

Tertiary: Washington.

C. F. Park, Jr., and R. S. Cannon, Jr., 1943, *U. S. Geol. Survey Prof. Paper* 202, p. 23, pl. 1.**Tiglukpuk formation**

Upper Jurassic: Alaska.

R. W. Imlay, 1955, *U. S. Geol. Survey Prof. Paper* 274-D, p. 70-71.**Tigre formation**

Permian (Leonard): Sonora, Mexico.

Manuel Alvarez, Jr., 1949, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 1, no. 1, p. 53.

Tihvipah limestone

Pennsylvanian: California.

J. F. McAllister, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 25, p. 26-27.

Tilantongo marls

Upper Cretaceous: Oaxaca, Mexico.

G. P. Salas, 1949, Asociación Mexicana Geólogos Petroleros Bol., v. 1, no. 2, p. 118-120.

Tilford lens (in Newcastle formation)

Upper Cretaceous: South Dakota.

R. M. Grace, 1952, Wyo. Geol. Survey Bull. 44, p. 14, 16.

Tillamook volcanic series

Eocene, middle(?): Oregon.

W. C. Warren, Hans Norbistath, and R. M. Grivetti, 1945, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 42.

Tillite Canyon formation

Precambrian or Lower Cambrian: Northeast Greenland.

Christian Poulsen, 1930, Meddel. om Grønland, bind 74, nr. 12, p. 306-307.

Tilt Point formation

Precambrian (Proterozoic) or Lower Cambrian: Newfoundland, Canada.

W. H. Twenhofel, 1947, Am. Jour. Sci., v. 245, no. 2, p. 92.

Timber Lake member (of Fox Hills formation)

Upper Cretaceous: South Dakota.

R. E. Morgan and B. C. Petsch, 1945, S. Dak. State Geol. Survey Rept. Inv. 49, p. 15-17, pl. 3.

Timpoweap member (of Moenkopi formation)

Lower Triassic: Utah.

H. E. Gregory, 1948, Geol. Soc. America Bull., v. 59, no. 3, p. 227.

Tina cyclothem (including Tina limestone)

Pennsylvanian (Des Moines): Missouri, Iowa, Kansas, and Nebraska.

L. M. Cline, 1941, Am. Assoc. Petroleum Geologists Bull., v. 25, no. 1, p. 29.

J. M. Jewett, 1945, Kans. State Geol. Survey Bull. 58, p. 39-40, 66-67.

Tinajita formation

Upper Cretaceous: Cuba.

P. Bronnimann, 1955, Cushman Found. Foram. Research Contrib., v. 6, pt. 3, p. 99.

Tinaquaic sandstone member (of Sisquoc formation)

Pliocene, lower and middle: California.

W. P. Woodring, M. N. Bramlette, and K. E. Lohman, 1943, Am. Assoc. Petroleum Geologists Bull., v. 27, no. 10, p. 1347-1352.

Tincanebite tongue

Lower and/or Middle Cambrian: Arizona.

E. D. McKee, 1945, Carnegie Inst. Washington Pub. 563, p. 14, 29, 80-82.

Tinguaro marl

Oligocene, lower: Cuba.

R. H. Palmer, 1938, Field guide to geological excursion in Cuba: Habana, Cuba, Carasa y Cia., p. 91; 1945, Jour. Geology, v. 53, no. 1, p. 5 (table 1), 17.

Tinian beds

Oligocene [Aquitanian] : Mariana Islands (Tinian).

Eisaburo Tayama, 1936, Geomorphology, geology, and coral reefs of Tinian Island together with Aguijan and Naftan Islands: Tohoku Univ., Inst. Geology and Paleontology Contr. in Japanese Language, no. 21, p. 20-21 [English translation in library of U. S. Geol. Survey, p. 19-20]; 1952, Coral reef in the South Seas: Japan Hydrog. Office Bull., v. 11, p. 53, table 4 [English translation in library of U. S. Geol. Survey, p. 63].

Tinkers Creek shale facies (of Cuyahoga formation)

Mississippian : Ohio.

F. T. Holden, 1941, Ill. Acad. Sci. Trans., v. 34, no. 2, p. 172.

Tin Mountain limestone

Mississippian : California.

J. F. McAllister, 1952, Calif. Dept. Nat. Res., Div. Mines Special Rept. 25, p. 20-22.

Tintamarre formation

Oligocene, upper : St. Martin (Tintamarre Island), French West Indies.

C. W. Drooger, 1951, K. Nederlandse Wetensch. Sec. Sci. Proc., ser. B, v. 54, no. 1, p. 54-55.

Tioughnioga stage

Middle Devonian (Erian) : New York.

G. A. Cooper and others, 1942, Geol. Soc. America Bull., v. 53, no. 12, pt. 1, p. 1733, Chart 4.

Tipecanoe sequence

Ordovician (Chazyan to Mohawkian) : Central and western United States.

L. L. Sloss, W. C. Krumbein, and E. C. Dapples *in* C. R. Longwell, chm., 1949, Geol. Soc. America Mem. 39, p. 110-111, 115.

Tisdale group

Precambrian (Keewatin) : Ontario, Canada.

W. R. Dunbar, 1948, *in* Structural geology of Canadian ore deposits: Canadian Inst. Mining and Metallurgy, p. 443-444.

Titanosarcolithes limestone

Upper Cretaceous (Maestrichtian) : Jamaica, British West Indies.

H. R. Hose, 1950, Colonial Geology and Min. Res., v. 1, no. 1, p. 17, 22.

L. J. Chubb, 1955, Geol. Mag., v. 92, no. 3, p. 183-185.

Ti Valley series

Pennsylvanian : Oklahoma, Missouri, Kansas, Iowa, and Texas.

C. L. Cooper, 1946, Ill. State Geol. Survey Bull. 70, p. 16, 18-19.

Tlaltepexi gypsum series

Upper Jurassic : Oaxaca, Mexico.

G. P. Salas, 1949, Asociación Mexicana Geólogos Petroleros Bol., v. 1, no. 2, p. 97-105.

Tlaxiaco beds

Lower Cretaceous : Oaxaca, Mexico.

G. P. Salas, 1949, Asociación Mexicana Geólogos Petroleros Bol., v. 1, no. 2, p. 108-109.

Toad formation

Triassic : British Columbia and Yukon, Canada.

E. D. Kindle, 1944, Canada Geol. Survey Paper 44-16, p. 7.

Tobago volcanic group

Cretaceous (?) : Tobago, British West Indies.

J. C. Maxwell, 1948, Geol. Soc. America Bull., v. 59, no. 8, p. 816.

Tobas series

See Tuff series.

Tobin formation

Lower Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, *Geology of the Mount Tobin quadrangle, Nevada*: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].

Toco formation

Lower Cretaceous: Trinidad, British West Indies.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, table facing p. 572.

H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 32-33, 35 (table).

Toco Bay beds

Upper Cretaceous: Trinidad, British West Indies.

R. A. Liddle, 1946, *The geology of Venezuela and Trinidad*, 2d ed.: Ithaca, N. Y., Paleont. Research Inst., p. 713-715.

Todos Santos claystone member (of Sisquoc formation)

Miocene and Pliocene: California.

W. P. Woodring, M. N. Bramlette, and K. E. Lohman, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 27, no. 10, p. 1347-1352.

Tofield sand

Pleistocene: Alberta, Canada.

P. S. Warren, 1954, *Royal Soc. Canada Trans.*, v. 48, sec. 4, p. 78.

Togo formation

Precambrian (Beltian): Washington.

Ian Campbell and J. S. Loofbourow, Jr., 1946, (abs.) *Geol. Soc. America Bull.*, v. 57, no. 12, pt. 2, p. 1250.

Tolchaco gravels

Quaternary: Arizona.

Parry Reiche, 1937, *Am. Jour. Sci.*, 5th ser., v. 34, no. 200, p. 130-134.

Toledo member (of Universidad formation)

Eocene, lower: Cuba.

J. F. de Albear, 1941, *Soc. Cubana Ingenieros Rev.*, v. 36, p. 566, chart facing p. 564.

P. J. Bermudez, 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 236.

Toledo series

Miocene: British Honduras and Guatemala.

L. H. Ower, 1922, *Geology of British Honduras*: Belize Independent, v. 8, no. 440; 1928, *Jour. Geology*, v. 36, no. 6, p. 501-502.

Toluca quartz monzonite

Ordovician: North Carolina and South Carolina.

W. R. Griffiths and W. C. Overstreet, 1952, *Am. Jour. Sci.*, v. 250, no. 11, p. 779-783.

Tomah member (of Franconia formation)

Upper Cambrian: Wisconsin and Minnesota.

R. R. Berg, 1951, *Minn. Geologist*, v. 8, no. 4, p. 2.

Tombstonian series

Paleozoic (Devonic): Arizona.

[C. R.] Keyes, 1942, *Pan-Am. Geologist*, v. 77, no. 3, p. 228.

Tomera formation

Middle Pennsylvanian (Atokan-Desmoinesian) : Nevada.

R. H. Dott, Jr., 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 11, p. 2243-2248, fig. 2.

Tomil agglomerate

Oligocene : Caroline Islands (Yap and Map).

Risaburo Tayama, 1935, *Topography, geology, and coral reefs of the Yap Islands* : Tohoku Univ., *Inst. Geology and Paleontology Contr. in Japanese Language*, no. 19, p. 29-30 [English translation in library of U. S. Geol. Survey, p. 25-26]; 1952, *Coral reefs in the South Seas* : Japan Hydrog. Office Bull., v. 11, p. 62-63, table 4, [English translation in library of U. S. Geol. Survey, p. 73-74].

Tømmer Bay group

Precambrian to Cambrian : Northeast Greenland.

H. P. Schaub, 1950, *Meddel. om Grønland*, bind 114, nr. 10, p. 14-16.

Tom Sauk limestone member (of Bonnetterre formation)

Cambrian : Missouri.

G. F. Brightman, 1937, *Mo. Acad. Sci. Proc.*, v. 3, no. 4, p. 120; 1938, *Jour. Geology*, v. 46, no. 3, p. 248-267.

Tonka formation

Mississippian and Pennsylvanian (Meramecian-Springeran) : Nevada.

R. H. Dott, Jr., 1955, *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 11, p. 2222-2233, fig. 2.

Tomnancourt quartz monzonite

Precambrian (post-Keewatin) : Quebec, Canada.

W. W. Longley, 1946, *Quebec Dept. Mines Geol. Rept.* 24, p. 14.

Tonnie siltstone member (of Chinitna formation)

Upper Jurassic : Alaska.

L. B. Kellum, 1945, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 7, no. 8, p. 203.

Topagoruk formation

Lower Cretaceous : Alaska (subsurface and surface).

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 162-163.

Topley granite

Triassic (?) : British Columbia, Canada.

1948, *Canada Geol. Survey Map* 932A.

Tormentine formation

Pennsylvanian : New Brunswick, Nova Scotia, and Prince Edward Island, Canada.

J. F. Caley and others, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 2, p. 478.

W. C. Gussow, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 7, p. 1758.

Torok formation

Lower Cretaceous : Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 160-162.

Toroweap formation

Permian : Arizona.

E. D. McKee, 1937, *Carnegie Inst. Washington Year Book* 36, p. 341-343; 1938, *Pub.* 492, p. 12-28.

Torrejonian age

Paleocene : North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 9, pl. 1.

Torres member (of Yeso formation)

Permian (Leonard series) : New Mexico.

R. H. Wilpolt and others, 1946, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 61.

Tot-Gullwing Lakes granite

Precambrian : Ontario, Canada.

W. D. Harding, 1951, *Ontario Dept. Mines Ann. Rept.*, v. 59, pt. 4, p. 12.

Totolapa facies

Lower Jurassic (Lias) : Puebla, Mexico.

H. K. Erben, 1954, *Soc. Geol. Mexicana Bol.*, tomo 17, no. 2, p. 35-36.

Totalzingo formation

Pleistocene, upper : Cuenca de Mexico, Mexico.

Helmut de Terra, 1947, *Ciencia*, v. 8, nos. 6-9, p. 155.

Touchet beds

Pleistocene : Washington.

R. F. Flint, 1938, *Geol. Soc. America Bull.*, v. 49, no. 3, p. 493-499.

Tough Mountain quartzite

See Tough Nut quartzite.

Tough Nut quartzite

Lower Cambrian : California.

J. C. Hazzard, 1938 (abs.) *Geol. Soc. America Proc.* 1937, p. 241.

Tourelle sandstone

Lower Ordovician : Quebec, Canada.

H. W. McGerrigle, 1954, *Canadian Mining Jour.*, v. 75, no. 8, p. 60.

Tovell member (of Mannville formation)

Lower Cretaceous : Alberta, Canada (subsurface).

A. W. Nauss, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 11, p. 1614-1615.

Townline Lake granodiorite

Precambrian (Laurentian) : Minnesota.

J. T. Stark and V. G. Sleight, 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1032 (table 2), 1033.

Townsend shale

Oligocene, lower : Washington.

J. W. Durham, 1942, *Jour. Paleontology*, v. 16, no. 1, p. 86.

Townsite flows

Precambrian : Northwest Territories (Mackenzie), Canada.

J. F. Henderson and I. C. Brown, 1950, *Canadian Inst. Mining and Metallurgy Trans.*, v. 53, p. 420.

Towsley formation

Miocene, upper, and Pliocene, lower : California.

E. L. Winterer and D. L. Durham, 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, map sheet 5.

Toyabe quartz latite

Pliocene (?) : Nevada.

H. G. Ferguson and S. H. Cathcart, 1954, *U. S. Geol. Survey Geol. Quadrangle Map* GQ 40.

Tracian stage

Late Cretaceous: California.

P. P. Goukoff, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 7, p. 987-990.

Traekpas formation

Upper Jurassic (Callovian): Northeast Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 253-254.

Trail granodiorite

Jurassic: British Columbia, Canada.

Geoffrey Gilbert, 1948, *Structural geology of Canadian ore deposits: Montreal, Quebec*, Canadian Inst. Mining and Metallurgy, p. 189.

Trail City member (of Fox Hills formation)

Upper Cretaceous: South Dakota.

R. E. Morgan and B. C. Petsch, 1945, *S. Dak. State Geol. Survey Rept. Inv.* 49, p. 13-14.

Trail Hill sandstone (in Chinle formation)

Upper Triassic: Utah.

P. D. Proctor, 1953, *Utah Geol. Mineralog. Survey Bull.* 44, p. 10-11, 22-23.

Tranquilla shale

Eocene, upper: Panama Canal Zone and Panama.

H. N. Coryell and J. R. Embich, 1937, *Jour. Paleontology*, v. 11, no. 4, p. 289-291.

Tranquillon volcanics

Miocene, lower (Saucesian): California.

T. W. Dibblee, Jr., 1950, *Calif. Dept. Nat. Res., Div. Mines Bull.* 150, p. 33-34, pl. 1, 2.

Tremblay beds

Middle Ordovician: Quebec, Canada.

G. W. Sinclair, 1953, *Am. Jour. Sci.*, v. 251, no. 12, p. 843, 844.

Trembling Mountain gneiss

Precambrian: Quebec, Canada.

F. D. Adams, 1895, *Canada Geol. Survey Ann. Rept.* 8, p. 42J.

F. F. Osborne, 1936, *Am. Jour. Sci.*, ser. 5, v. 32, no. 192, p. 416-417.

Tren formation

Middle Cambrian: Sonora, Mexico.

G. A. Cooper and A. R. V. Arellano, 1952, *Smithsonian Misc. Coll.*, v. 119, no. 1, p. 9.

Tresner limestone

Pennsylvanian: Illinois.

E. F. Taylor and G. H. Cady, 1944, *Ill. State Geol. Survey Rept. Inv.* 93, p. 22.

Tres Puentes formation

Miocene, upper: Tabasco and Chiapas, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.

G. P. Salas and Ernesto Lopez Ramos, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 1-2, p. 40.

Tres Vírgenes volcanics

Quaternary: Baja California, Mexico.

I. F. Wilson, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 9, p. 1769.

Treytown Pond formation

Middle Cambrian: Newfoundland, Canada.

Frederick Betz, Jr., 1939, *Newfoundland Geol. Survey Bull.* 16, p. 16-17.

Tribune formation

Upper Cretaceous: British Columbia, Canada.

J. L. Usher, 1952, *Canada Geol. Survey Bull.* 21, p. 21.

Trinchera formation

Oligocene, upper: Dominican Republic.

W. M. Small, 1948, *Seismol. Soc. America Bull.*, v. 38, no. 1, p. 26.

P. J. Bermudez, 1949, *Cushman Lab. Foram. Research Special Pub.* 25, p. 23.

Trinidad schists

Age unknown: Cuba.

R. H. Palmer, 1945, *Jour. Geology*, v. 53, no. 1, p. 5 (table 1), 6.

Trinidad Point calcareous clay

Oligocene, upper: Trinidad, British West Indies.

J. A. Cushman and H. H. Renz, 1947, *Cushman Lab. Foram. Research Special Pub.* 22, p. 2-3.

Troedsson Cliff formation

Middle Ordovician: North Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 235.

Trois-Rivières formation

Upper Cretaceous: Haiti.

Jacques Butterlin, 1954, *Inst. Français d'Haïti Mém.* 1, p. 52.

Troublesome formation

Oligocene: Colorado.

T. S. Lovering and E. N. Goddard, 1950, *U. S. Geol. Survey Prof. Paper* 223, p. 41.

J. D. Schlottmann and L. E. Smith, 1954, *U. S. Atomic Energy Comm. [Pub.] RME-1042*, p. 8.

Trout Brook formation

Middle Cambrian: Nova Scotia, Canada.

R. D. Hutchinson, 1952, *Canada Geol. Survey Mem.* 263, p. 40-42.

Trout River formation

Upper Devonian: Northwest Territories (Mackenzie), Canada.

C. H. Crickmay, 1953, *New Spiriferidae from the Devonian of western Canada: Calgary, Canada, Imperial Oil Limited*, p. 1, 11.

Trowbridge shale

Upper Jurassic: Oregon.

R. L. Lupper, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 227, 263-265.

Troy limestone member (of White Limestone formation)

Eocene, middle: Jamaica, British West Indies.

V. A. Zans, H. R. Versey, and J. B. E. Williams *in* V. A. Zans, 1955, *Jamaica Geol. Survey Dept. Ann. Rept.* 1953-54, p. 4.

Truckhaven rhyolite

Pliocene: California.

T. W. Dibblee, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 170, chap. 2, p. 24.

Trump conglomerate

Pliocene: Colorado.

J. H. Johnson, 1937, (abs.) *Colorado Univ. Studies*, v. 25, no. 1, p. 77.

J. T. Stark and others, 1949, *Geol. Soc. America Mem.* 33, p. 70-72.

Tsegi formation

Quaternary: Arizona.

J. T. Hack, 1941, *Geog. Review*, v. 31, no. 2, p. 262-263; 1942, *Harvard Univ. Peabody Mus. Am. Archaeology and Ethnology Papers*, v. 35, no. 1, p. 51-53.**Tualatin terrace gravels**

Pleistocene: Oregon.

R. C. Treasher, 1942, *Geologic map of the Portland area, Oregon (1:96,000)*: Oreg. State Dept. Geology and Mineral Res.**Tucumcarian series**

Mesozoic (Early Cretacic): New Mexico.

Charles Keyes, 1940, *Pan-Am. Geologist*, v. 74, no. 2, p. 105, 153-154.**Tuerto gravel**

Quaternary: New Mexico.

C. E. Stearns, 1953, *Geol. Soc. America Bull.*, v. 64, no. 4, p. 476, 477, pl. 1.**Tuff series**

Cretaceous: Cuba.

M. G. Rutton, 1936, *Geog. Geol. Meded. (Utrecht Univ.) Physiog.-Geol. Reeks*, no. 11, p. 7-10.**Tuirá formation**

Miocene, middle: Panama.

Karl Sapper, 1937, *Mittelamerika, Handbuch der regionalen Geologie: Heidelberg*, Band 8, Abt. 4a, Heft 29, p. 132, 134 (correlation chart).**Tuktu formation**

Lower Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 162.**Tularosa Malpais lava**

Recent: New Mexico.

L. R. Dice, 1940, *Scientific Monthly*, v. 50, p. 419-420.**Tulik basalt**

Tertiary and Quaternary: Alaska (Aleutian Islands).

F. M. Byers, Jr., and others, 1947, *U. S. Geol. Survey Alaskan Volcano Inv. Rept.* 2, pt. 3, p. 28.**Tullos clay member (of Yazoo clay)**

Eocene, upper: Louisiana.

H. N. Fisk, 1938, *La. Dept. Conserv. Geol. Bull.* 10, p. 78, 98-99.† **Tuluga member (of Schrader Bluff formation)**

Upper Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 166.**Tuluvak tongue (of Prince Creek formation)**

Upper Cretaceous: Alaska.

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 166.**Tumbez limestone**

Middle Ordovician: Virginia.

B. N. Cooper, 1945, *Va. Geol. Survey Bull.* 66, p. 17, 133-134, 204.

Tumbledown gneiss

Age not stated: Maine.

Kern Jackson, 1953, *Maine State Geologist Rept.* 1951-1952, p. 66.

Tumco formation

Paleozoic or older: California.

P. C. Henshaw, 1942, *Calif. Jour. Mines and Geology*, v. 38, no. 2, p. 155-157, pl. 2.

Tunnel Creek glacial stage

Pleistocene (Wisconsin): Oregon.

T. P. Thayer, 1939, *Oreg. State Dept. Geology and Mineral Res. Bull.* 15, p. 20, 24-26.

Tunnel Hill member (of Brasso formation)

Miocene, lower or middle: Trinidad, British West Indies.

H. H. Renz, 1942, 8th Am. Sci. Cong. Proc., v. 4, p. 554.

Tunnel Mountain member (of Rocky Mountain formation)

Permian and Pennsylvanian(?): Alberta, Canada.

F. W. Beales, 1950, *Canada Geol. Survey Paper* 50-27, p. 6.

Tunnel Mountain member (of Rundle formation)

Mississippian and Pennsylvanian(?): Alberta, Canada.

F. W. Beales, 1950, *Canada Geol. Survey Paper* 50-27, p. 4.

Turkey Mountain andesite

Quaternary: New Mexico.

R. F. Collins, 1949, *Geol. Soc. America Bull.*, v. 60, no. 6, p. 1033.

Turnbull conglomerate

Miocene and Pliocene: California.

G. J. Bellemin, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 4, p. 652 (fig. 2), 653, 655-656.

Turner cyclothem (including Turner limestone)

Pennsylvanian: Illinois.

R. C. Moore and others, 1944, *Geol. Soc. America Bull.*, v. 55, no. 6, Chart 6, column 29.
C. L. Cooper, 1946, *Ill. State Geol. Survey Bull.* 70, p. 12, 16.

Turners Falls sandstone

Triassic: Massachusetts.

M. E. Willard, 1951, *Bedrock geology of the Mount Toby quadrangle, Massachusetts*:
U. S. Geol. Survey Geol. Quadrangle Map [GQ 8].

Turner Valley member (of Tunnel Mountain formation)

Mississippian: Alberta, Canada (subsurface).

W. B. Gallup, 1951, *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 4, p. 809.

Turtle Mountain formation

Paleocene: Manitoba and Saskatchewan, Canada.

W. A. Johnston, 1934, *Canada Geol. Survey Mem.* 174, p. 11 (table).

R. T. D. Wickenden, 1945, *Canada Geol. Survey Mem.* 239, p. 50-51, geol. map.

Turure formation

Upper Cretaceous: Trinidad, British West Indies.

R. A. Liddle, [1928], *The geology of Venezuela and Trinidad: Fort Worth, Tex.*, J. P. MacGowan, p. 439-441.

Tusas granite

Precambrian: New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 44-46.

Tuskahoma siliceous shale member (of Stanley formation)

Mississippian: Oklahoma.

August Goldstein, Jr., and T. A. Hendricks, 1953, *Geol. Soc. America Bull.*, v. 64, no. 4, p. 431.**Tusonimo limestone (in Pacheta member of Lowell formation)**

Lower Cretaceous: Arizona.

A. A. Stoyanow, 1949, *Geol. Soc. America Mem.* 38, p. 12.**Tvege banded psammitic/pelitic group**

Precambrian: Northeast Greenland.

G. P. Leedal, 1952, *Meddel. om Grønland*, bind 142, nr. 6, p. 11-12, pl. 2.**Twelvemile Canyon member (of Arapien shale)**

Upper Jurassic: Utah.

E. M. Spieker, 1946, *U. S. Geol. Survey Prof. Paper* 205-D, p. 122, 125.**Twilight Park conglomerate**

Upper Devonian: New York.

C. S. Prosser, 1899, *N. Y. State Geologist* 17th Ann. Rept., p. 283-284.G. H. Chadwick, 1940, *N. Y. State Geol. Assoc. 16th Ann. Meeting Field Guide Leaflets*, p. 2.**Twillingate granite**

Post-Ordovician: Newfoundland, Canada.

D. M. Baird, 1953, *Newfoundland Geol. Survey Rept.* 1, p. 13, 14.**Twin Lakes glacial substage**

Pleistocene (Wisconsin): Colorado, Wyoming, and New Mexico.

L. L. Ray, 1939, (abs.) *Geol. Soc. America Bull.*, v. 50, no. 12, pt. 2, p. 2007; 1940, v. 51, no. 12, pt. 1, p. 1857-1858.**Twisselmann sandstone member (of Monterey formation)**

Miocene, middle and upper: California.

H. H. Heikkila and G. M. MacLeod, 1951, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 6, p. 12, pl. 1.**Twist Gulch member (of Arapien shale)**

Upper Jurassic: Utah.

E. M. Spieker, 1946, *U. S. Geol. Survey Prof. Paper* 205-D, p. 122, 124, 125.**Two Creeks forest bed**

Pleistocene (Wisconsin): Wisconsin.

J. W. Goldthwait, 1907, *Wis. Geol. Nat. History Survey Bull.* 17, p. 61-62.L. R. Wilson, 1932, *Wis. Acad. Sci., Arts and Letters Trans.*, v. 27, p. 31-46.**Two Mile member (of Crockett formation)**

Eocene (Claiborne): Texas.

G. D. Harris, 1941, *Tex. Univ. Bur. Econ. Geology Min. Res. Survey Circ.* 33, p. 13-14.**Twowells sandstone lentil (of Mancos shale)**

Upper Cretaceous: New Mexico.

W. S. Pike, Jr., 1947, *Geol. Soc. America Mem.* 24, p. 22, 35-36.**Tyughton group**

Upper Triassic: British Columbia, Canada.

C. E. Cairnes, 1943, *Canada Geol. Survey Paper* 43-15, p. 4-5.**Tynemouth Creek formation**

Upper Carboniferous: New Brunswick, Canada.

A. O. Hayes and B. F. Howell, 1937, *Geol. Soc. America Special Paper* 5, p. 118-119.

Tyroler series

Precambrian : Northeast Greenland.

G. P. Leedal, 1952, *Meddel. om Grønland*, bind 142, nr. 6, p. 11-21, pl. 2.

Tyrolerdal banded psammitic/pelitic group

Precambrian : Northeast Greenland.

G. P. Leedal, 1952, *Meddel. om Grønland*, bind 142, nr. 6, p. 11, 16-18, pl. 2.

Tyrolerdal group

Precambrian : Northeast Greenland.

G. P. Leedal, 1952, *Meddel. om Grønland*, bind 142 nr. 6, p. 11, 12-16, pl. 2.

Tyson member (of Monastery formation)

Lower Cambrian : Vermont.

P. H. Osberg, 1952, *Vt. Geol. Survey Bull.* 5, p. 42, 43, 44.

Tyus member (of Weches formation)

Eocene, middle (Claiborne) : Texas.

H. B. Stenzel, 1938, *Tex. Univ. Bur. Econ. Geol. Pub.* 3818, p. 20, 97, 100-104 [1939].

Uchi series

Precambrian : Ontario, Canada.

J. D. Bateman, 1940, *Ontario Dept. Mines Ann. Rept.*, v. 48, pt. 8, p. 12-14.

Ucross formation

Recent (?) : Wyoming.

L. B. Leopold and J. P. Miller, 1954, *U. S. Geol. Survey Water-Supply Paper* 1261, p. 10.

Udall limestone lentil (in Gueda Springs shale member of Wellington formation)

Permian : Kansas.

W. A. Ver Wiebe, 1937, *Wichita Municipal Univ. Bull.*, v. 12, no. 5, p. 13-14.

Uintan age

Eocene : North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 10, pl. 1.

Ulatisian stage

Eocene, middle : California.

V. S. Mallory, 1953, (abs.) *Jour. Paleontology*, v. 27, no. 6, p. 903.

Ulen Quarry beds

Eocene, upper : Trinidad, British West Indies.

R. A. Liddle, [1928], *The geology of Venezuela and Trinidad : Fort Worth, Tex.*, J. P. MacGowan, p. 456-457.

Ulvebjerg sandstones and tillites

Precambrian (Greenlandian) : North Greenland.

Erdhart Frankl, 1954, *Meddel. om Grønland*, bind 116, nr. 2, p. 41-45, 56, 79, pl. 1.

Umatac andesite

Eocene : Mariana Islands (Guam).

Risaburo Tayama, 1952, *Coral reefs in the South seas : Japan Hydrog. Office Bull.*, v. 11, p. 48, table 4 [English translation in library of U. S. Geol. Survey, p. 57, 58].

†Umiat formation

Lower and Lower (?) Cretaceous : Alaska (subsurface and surface).

George Gryc, W. W. Patton, Jr., and T. G. Payne, 1951, *Washington Acad. Sci. Jour.*, v. 41, no. 5, p. 162-163.

Uncle Israels granite

Age not stated : Maine.

G. H. Chadwick, 1944, *N. Y. Acad. Sci. Trans.*, ser. 2, v. 6, no. 6, p. 172.

Uncle Sam porphyry

Upper Cretaceous or Tertiary, lower : Arizona.

B. S. Butler, E. D. Wilson, and C. A. Rasor, 1938, *Ariz. Bur. Mines Bull.* 143, *Geol. Ser.* 10, p. 24-25.

Uncompahgran system

Precambrian : Western North America.

N. A. E. Hinds, 1936, *Carnegie Inst. Washington Pub.* 463, p. 58, 134.

Underwood formation

Lower Mississippian : Indiana and Kentucky.

Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, no. 9, p. 849-851, 858.

Underwood Mountain lava

Pliocene : Oregon.

W. D. Lowry and E. M. Baldwin, 1952, *Geol. Soc. America Bull.*, v. 63, no. 1, pl. 2.

Union Church transition phase (of Tullos member of Yazoo clay)

Eocene, upper : Louisiana.

H. N. Fisk, 1938, *La. Dept. Conserv. Geol. Bull.* 10, p. 78, 99-100.

Union Island group

Precambrian (Proterozoic) : Northwest Territories (Mackenzie), Canada.

C. H. Stockwell, 1936, *Canada Geol. Survey Map* 377A.

Union Station shale member (of Chanute formation)

Pennsylvanian (Missouri series) : Missouri.

J. R. Clair, 1943, *Mo. Geol. Survey and Water Res.*, 2d ser., v. 27, pl. 1.

Union granodiorite

Precambrian : Quebec, Canada.

H. C. Cooke, W. F. James, and J. B. Mawdsley, 1931, *Canada Geol. Survey Mem.* 166, p. 133.

Unity group

Upper Devonian (?) (Oliverian magma series) : New Hampshire.

C. A. Chapman, 1942, *Geol. Soc. America Bull.*, v. 53, no. 6, p. 898.

Universal limestone member (of Dugger formation)

Pennsylvanian : Indiana.

C. E. Wier, 1951, *U. S. Geol. Survey Coal Inv. Map* C 9.

Universidad formation

Eocene, lower : Cuba.

P. J. Bermudez, 1937, *Soc. Cubana Historia Nat. Mem.*, v. 11, no. 3, p. 163-169; 1950, *Soc. Cubana Historia Nat. Mem.*, v. 19, no. 3, p. 231-233.

Upham dolomite

Upper Ordovician (Cincinnatian) : New Mexico.

V. C. Kelley and Caswell Silver, 1952, *N. Mex. Univ. Pubs. in Geology* 4, p. 59-60, fig. 4.

Upham formation

Mississippian : New Brunswick, Canada.

F. J. Alcock, [1938], *Canada Geol. Survey Mem.* 216, p. 30-31.

Upper Amate formation

See Amate (Lower and Upper) formation.

Upper Medinilla limestone

See Medinilla (Lower and Upper) limestone.

Urbana phyllite

Precambrian (?): Maryland.

A. I. Jonas and G. W. Stose, 1938, *Washington Acad. Sci. Jour.*, v. 28, no. 8, p. 346.

Uslika formation

Lower Cretaceous: British Columbia, Canada.

E. F. Roots, 1948, *Canada Geol. Survey Paper* 48-5, p. 14.

Usine limestone

Pleistocene: Guadeloupe (Grande Terre), French West Indies.

J. W. W. Spencer, 1901, *Geol. Soc. London, Quart. Jour.*, v. 57, p. 510, 512; 1902, v. 58, p. 350.

Ute Canyon tongue (of Cliff House sandstone)

Upper Cretaceous: New Mexico.

P. T. Hays and A. D. Zapp, 1955, *U. S. Geol. Survey Oil and Gas Inv. Map* OM 144.

Ute Pass dolomite

Upper Cambrian (?): Colorado.

J. C. Maher, 1950, *U. S. Geol. Survey Oil and Gas. Inv. Prelim. Chart* 39.

Utica clay

Pennsylvanian: Illinois.

H. R. Wanless, 1939, *Geol. Soc. America Special Paper* 17, p. 25-26, 106.

Uvas basalt

Miocene: New Mexico.

F. E. Kottowski, 1953, *N. Mex. Geol. Soc. Guidebook 4th Field Conf.*, p. 32 (map), 144, 148 (chart).

Uvas conglomerate member (of Tejon formation)

Eocene: California.

J. G. Marks, 1941, (abs.) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1922.

Uwekahuna ash

Pleistocene or Recent: Hawaiian Islands (Hawaii).

J. B. Stone, 1926, *Bernice P. Bishop Mus. Bull.* 33, p. 27-28.

Uzpanapa conglomerate

Eocene, lower: Vera Cruz, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.
Luis Benavides G., 1953, *Congreso Cient. Mexicano Mem.*, v. 3, p. 199.

Vaca Triste sandstone member (of Salado formation)

Permian (Ochoa): New Mexico (subsurface).

J. E. Adams, 1944, *Am. Assoc. Petroleum Geologists Bull.*, v. 28, no. 11, p. 1610.

Vacaville shale

Eocene, middle: California.

C. W. Merriam and F. E. Turner, 1937, *Calif. Univ. Pubs., Dept. Geol. Sci. Bull.*, v. 24, no. 6, p. 96.

Vadito formation

Precambrian: New Mexico.

Arthur Montgomery, 1953, *N. Mex. State Bur. Mines Min. Res. Bull.* 30, p. 21.

Valders glacial substage

Pleistocene (Wisconsin): Wisconsin.

F. T. Thwaites, 1943, *Geol. Soc. America Bull.*, v. 54, no. 1, p. 121, 136-141.

Vallecito basalt

Quaternary : New Mexico.

H. T. U. Smith, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 103.**Vallecitos rhyolites**

Precambrian : New Mexico.

Evan Just, 1937, *N. Mex. School Mines Bull.* 13, p. 44.**Valle de Angeles formation**

Upper Cretaceous or Tertiary, lower : Honduras.

R. H. Carpenter, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 28-29.**Vallejo formation**

Eocene or Oligocene : Colorado.

J. E. Upson, 1941, *Am. Jour. Sci.*, v. 239, no. 8, p. 577-588.**Valley Mountain facies (of Flagstaff formation)**

Paleocene, upper : Utah.

W. N. Gilliland, 1951, *Nebr. Univ. Studies, new ser.*, no. 8, p. 26-28.**Valley View member (of Curtin limestone)**

Middle Ordovician (Mohawkian) : Pennsylvania.

G. M. Kay, 1943, *Econ. Geology*, v. 38, no. 3, p. 194, 197.**Valmont dolomite**

Upper Ordovician : New Mexico.

L. C. Pray, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 8, p. 1906-1911.**Valmy formation**

Middle (?) Ordovician : Nevada.

R. J. Roberts, 1951, *Geology of the Antler Peak quadrangle, Nevada : U. S. Geol. Survey Geol. Quadrangle Map [GQ 10].***Val Verde tonalite**

Jurassic (?) : California.

R. W. Wilson, 1937, *Am. Mineralogist*, v. 22, no. 2, p. 122-130.**Vamp Creek granodiorite**

Precambrian : Manitoba, Canada.

Jorma Kalliokoski, 1952, *Canada Geol. Survey Mem.* 270, p. 26.**Van Bibber shale member (of South Platte formation)**

Lower Cretaceous : Colorado.

K. M. Waagé, 1955, *U. S. Geol. Survey Prof. Paper* 274-B, p. 31-33.**Vandusen cyclothem (including Vandusen clay, shale, and sandstone)**

Pennsylvanian (Pottsville) : Ohio.

R. E. Lamborn, C. R. Austin, and Downs Schaaf, 1938, *Ohio Geol. Survey, ser. 4, Bull.* 39, p. 88-89.N. K. Flint, 1951, *Ohio Geol. Survey, ser. 4, Bull.* 48, p. 29.**Vanesti tongue**

Upper Cretaceous : Alberta, Canada.

A. W. Nauss, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 11, p. 1620-1621.**Vanguard formation**

Jurassic : Saskatchewan, Canada (subsurface).

J. R. Ower, 1953, *Canadian Inst. Mining and Metallurgy Trans.*, v. 56, p. 397-398.R. L. Milner and G. E. Thomas, 1954, *Western Canada sedimentary basin : Tulsa, Okla., Am. Assoc. Petroleum Geologists*, p. 263-267.

Vanhem formation

Pleistocene : Kansas.

C. W. Hibbard, 1949, *Mich. Univ. Mus. Paleontology Contr.*, v. 7, no. 4, p. 84-86.**Vann quartzite**

Lower Cambrian : North Carolina.

G. W. Stose and A. J. Stose, 1947, *Am. Jour. Sci.*, v. 245, no. 10, p. 626, 627.**Van Oser member (of Jordan sandstone)**

Upper Cambrian (St. Croixian) : Minnesota.

C. R. Stauffer, G. M. Schwartz, and G. A. Thiel, 1938, (*abs.*) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1902; 1939, v. 50, no. 8, p. 1240.**Van Valkenburg beds**

[Recent?] : Florida.

E. H. Sellards, 1940, *Geol. Soc. Am. Bull.*, v. 51, no. 3, p. 381-385.**Van Vleck sands**

Oligocene : Texas (subsurface).

Alexander Deussen and K. D. Owen, 1939, *Am. Assoc. Petroleum Geologists Bull.*, v. 23, no. 11, p. 1634.**Vardekløft formation**

Upper Jurassic (Callovia) : Northeast Greenland.

Alfred Rosenkrantz in Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 1, p. 145-146.**Vaseaux formation**

Carboniferous (?) : British Columbia, Canada.

H. S. Bostock, 1940, *Canada Geol. Survey Map 341A*.**Vatia trachyte**

Pliocene or Pleistocene, lower : Samoa Islands (Tutuila).

R. A. Daly, 1924, *Carnegie Inst. Washington Pub.* 340, p. 108-110, 129-130.**Vauclin tuffs**

Miocene : Martinique, French West Indies.

Jean Giraud, 1918, *Esquisse géologique de la Martinique avec carte géologique : Hanoi-Haiphong*, Imprimerie d'Extrême-Orient, p. 12.Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1581, 1596.**Vecol limestone**

Paleozoic (Devonic) : Arizona.

[C. R.] Keyes, 1942, *Pan-Am. Geologist*, v. 77, no. 3, p. 228.**Veleno member (of Cook Mountain formation)**

Eocene (Claiborne) : Texas, and Tamaulipas, Mexico.

J. M. Patterson, 1942, *Am. Assoc. Petroleum Geologists Bull.*, v. 26, no. 2, p. 259, 262-263.**Velpen limestone**

Pennsylvanian : Indiana.

J. M. Weller, L. G. Henbest, and C. O. Dunbar in C. O. Dunbar and L. G. Henbest, 1942, *Ill. State Geol. Survey Bull.* 67, p. 32 [1943].C. L. Cooper, 1946, *Ill. State Geol. Survey Bull.* 70, p. 16.**Venada beds**

Mississippian (Meramecian) : Sonora, Mexico.

J. M. Weller and others, 1948, *Geol. Soc. America Bull.*, v. 59, no. 2, p. 136, Chart 5, column 36.

Venado formation

Upper Cretaceous (Chico) : California.

J. M. Kirby, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 27, no. 3, p. 287-289.**Veniella shale**

Upper Cretaceous : Jamaica, British West Indies.

L. J. Chubb, 1955, *Geol. Mag.*, v. 92, no. 3, p. 185-186.**Venteran substage**

Pennsylvanian (Desmoinesian) : Iowa, Kansas, Missouri, Nebraska, and Oklahoma.

W. V. Searight and others, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 12, p. 2748-2749.**Venturian stage**

Pliocene : California.

Manley Natland, 1953, *Pacific Petroleum Geologist*, v. 7, no. 2, p. 2.**Venus formation**

Precambrian (Chuaran) : Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 112.**Verda member (of Yazoo clay)**

Eocene, upper : Louisiana.

H. N. Fisk, 1938, *La. Dept. Conserv. Geol. Bull.* 10, p. 78, 100-102.**Veredas group**

Pennsylvanian (Missouri series) : New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 57-60.**Vendrye member (of Pierre shale)**

Upper Cretaceous : South Dakota.

W. V. Searight, 1937, *S. Dak. State Geol. Survey Rept. Inv.* 27, p. 25-26, pl. 3.**Vermillion-Bluett Lakes conglomerate**

Precambrian : Ontario, Canada.

W. D. Harding, 1951, *Ontario Dept. Mines Ann. Rept.*, v. 59, pt. 4, p. 19-22.**Vermillion-Centrefire Lakes volcanics**

Precambrian : Ontario, Canada.

W. D. Harding, 1951, *Ontario Dept. Mines Ann. Rept.*, v. 59, pt. 4, p. 16-17.**Vermont quartz diorite**

Pre-Cretaceous (?) : California.

G. J. Neuerburg, 1953, *Calif. Dept. Nat. Res., Div. Mines Special Rept.* 33, p. 7 (table 1), 10-11, pl. 1.**Vermont sequence**

Middle Ordovician to Upper Devonian : Vermont.

W. S. White and R. H. Jahns, 1950, *Jour. Geology*, v. 58, no. 3, p. 182, 191-192, fig. 2.**Verne cyclical formation (including Verne limestone or shale member)**

Lower Pennsylvanian : Michigan.

W. A. Kelly, 1936, *Mich. Dept. Conserv. Geol. Survey Div. Pub.* 40, *Geol. Ser.* 34, pt. 2, p. 159, 166, 177, 190.**Verneuil granite**

Precambrian : Quebec, Canada.

P. E. Imbault, 1951, *Quebec Dept. Mines Prelim. Rept.* 250, p. 7.S. W. Holmes, 1952, *Quebec Dept. Mines Prelim. Rept.* 271, p. 2, 6.

Verónica [formation]

Miocene: Istmo de Tehuantepec, Mexico.

J. B. Gibson, 1936, Soc. Geol. Mexicana Bol., tomo 9, no. 5, correlation chart.

Verulam formation

Ordovician: Ontario, Canada.

B. A. Liberty, 1955, Geol. Assoc. Canada Proc., v. 7, pt. 1, p. 144.

Via formation

Miocene, upper: Dominican Republic.

W. M. Small, 1948, Seismol. Soc. America Bull., v. 38, no. 1, p. 26.

P. J. Bermudez, 1949, Cushman Lab. Foram. Research Special Pub. 25, p. 31.

Vick formation

Lower Cretaceous: Alabama.

L. C. Conant, 1946, Am. Assoc. Petroleum Geologists Bull., v. 30, no. 5, p. 711.

Victoria gabbroic anorthosite

Precambrian: Ontario, Canada.

J. M. Harrison, 1944, Geol. Soc. America Bull., v. 55, no. 12, p. 1409.

Victoria River series

Pre-Devonian: Newfoundland, Canada.

N. E. Brown, 1953 (abs.) Canadian Mining Jour., v. 74, no. 6, p. 98.

Victorville quartz monzonite

Upper Jurassic: California.

W. J. Miller, 1944, Calif. Jour. Mines and Geology, v. 40, no. 1, p. 105-106.

Victory member (of Grand Detour formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., fig. 3.

Viesca member (of Weches formation)

Eocene, middle (Claiborne): Texas.

H. B. Stenzel, 1938, Tex. Univ. Bur. Econ. Geol. Pub. 3818, p. 20, 97, 104-107 [1939].

View Creek group

Permian or older: Northwest Territories (Ellesmere Island), Canada.

R. G. Blackadar, 1954, Canada Geol. Survey Paper 53-10, p. 12-13.

Vigo limestone member (of Shelburn formation)

Pennsylvanian: Indiana.

C. E. Wier, 1952, Ind. Geol. Survey Prelim. Coal Map 1.

Courtney Waddell, 1954, U. S. Geol. Survey Coal Inv. Map C 17.

Viking sand or sandstone

Cretaceous: Alberta, Canada (subsurface).

S. E. Slipper in D. B. Dowling, S. E. Slipper, and F. H. McLearn, 1919, Canada Geol. Survey Mem. 116, p. 24.

D. B. Layer, 1949, Am. Assoc. Petroleum Geologists Bull., v. 33, no. 4, p. 575, 578-579.

Vildtal series

Middle Devonian: Northeast Greenland.

Heinrich Butler, 1954, Meddel. om Grønland, bind 116, nr. 7, p. 28-29, 31-33, 57-58, 65-69, 83-84, 108, 110-111.

Ville Guay conglomerate

Lower Ordovician: Quebec, Canada.

Franco Rasetti, 1946, Geol. Soc. America Bull., v. 57, no. 7, p. 700.

Vine Hill sandstone

Paleocene: California.

C. E. Weaver, 1953, Wash. [State] Univ. Pubs. in Geology, v. 7, p. 19 (chart), 21-30.

Vinini formation

Lower and Middle Ordovician: Nevada.

C. W. Merriam and C. A. Anderson, 1941 (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 1953; 1942, v. 53, no. 12, pt. 1, p. 1693-1698.

Violin breccia

Miocene to Pliocene: California.

J. C. Crowell, 1954, Calif. Dept. Nat. Res., Div. Mines Bull. 170, map sheet 7.

Vipont limestone

Carboniferous (?): Utah.

V. E. Peterson, 1942, Econ. Geology, v. 37, no. 6, p. 471 (table 1).

Virgin Creek member (of Pierre shale)

Upper Cretaceous: South Dakota.

W. V. Searight, 1937, S. Dak. State Geol. Survey Rept. Inv. 27, p. 35-43, pl. 3.

Virginian Ridge formation

Lower and Middle Cretaceous: Washington.

J. D. Barksdale, 1948, Northwest Science, v. 22, no. 4, p. 165, 169-171.

Virgin Spring phase (of Amargosa choas)

Post-Miocene (?): California.

L. F. Noble, 1940, (abs.) Geol. Soc. America Bull., v. 51, no. 12, pt. 2, p. 1936; 1941, v. 52, no. 7, p. 965-968.

Vista member (of White River formation)

Oligocene (Whitneyan): Colorado.

E. C. Galbreath, 1953, Kans. Univ. Paleont. Contr. 13, Vertebrata, art. 4, p. 15-18.

Vista Bella member (of Mount Moriah group)

Eocene (Jackson): Trinidad, British West Indies.

H. G. Kugler and others [1939], Geological conference in Trinidad; notes on the excursions: Petroleum Assoc. Trinidad, p. 9.

Vitrefrac formation

Paleozoic or older: California.

P. C. Henshaw, 1942, Calif. Jour. Mines and Geology, v. 38, no. 2, p. 153-155, pl. 2.

Volcano Bay basalt flow

Quaternary: Alaska.

G. C. Kennedy and H. H. Waldron, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 2, p. 15, pl. 2 (geol. map).

Volta formation

Upper Cretaceous: California.

R. D. Reed, 1943, Calif. Dept. Nat. Res., Div. Mines Bull. 118, pt. 2, p. 109, table 6 [preprint 1941].

Voss shale member (of Belle Plains formation)

Permian (Leonard? age): Texas.

R. C. Moore in M. G. Cheney, 1948 Abilene Geol. Soc. [Guidebook] Spring Field Trip, June 11-12, sheets 3, 4.

R. C. Moore, 1949, U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 80, sheets 1, 2.

Waawaa volcanics

Pleistocene (?) : Hawaiian Islands (Hawaii).

C. K. Wentworth, 1938, Hawaiian Volcano Observatory 3d Special Rept., p. 86-87, 145-146.

H. T. Stearns and G. A. Macdonald, 1946, Hawaii Div. Hydrography Bull. 9, 143-146.

Wabamun formation

Devonian : Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, Am. Assoc. Petroleum Geologists Bull., v. 34, no. 9, p. 1810-1813.

Wabigoon volcanics

Precambrian (Keewatin) : Ontario, Canada.

F. J. Pettijohn, 1939, Geol. Soc. America Bull., v. 50, no. 5, p. 764.

Jack Satterly, 1943, Ontario Dept. Mines Ann. Rept., v. 50, pt. 2, p. 26, 31.

Wabiskaw member (of Clearwater formation)

Lower Cretaceous : Alberta, Canada (subsurface).

P. C. Badgley, 1952, Canada Geol. Survey Paper 52-11, p. 6.

Waddell sandstone

Middle Ordovician : Texas (subsurface).

Taylor Cole, C. D. Cordry, and H. A. Hemphill, 1942, Am. Assoc. Petroleum Geologists Bull., v. 26, no. 2, p. 280, 281-282.

Waddy-Contact Lakes granite

Precambrian : Saskatchewan, Canada.

A. R. Byers, 1949, Saskatchewan Geol. Survey (Precambrian Geology Ser.) Rept. 1, p. 14-15.

Wadin group

Devonian (?), Mississippian, and Pennsylvanian (?) : British Columbia, Canada.

H. Gabrielse, 1955, Canada Geol. Survey Paper (Prelim. Map) 54-10.

Wagonroad stage

Paleocene : Utah.

C. L. Gazin, 1941, U. S. Natl. Mus. Proc., v. 91, no. 3121, p. 3-4.

Wagontongue formation

Miocene, upper : Colorado.

J. H. Johnson, 1937, (abs.) Colorado Univ. Studies, v. 25, no. 1, p. 77.

J. T. Stark and others, 1949, Geol. Soc. America Mem. 33, p. 68-69.

Wagwater group

Eocene, lower : Jamaica, British West Indies.

C. A. Matley, 1940, Geol. Soc. London Abs. Proc. 1373, p. 100 ; 1951, Geology and physiography of the Kingston district, Jamaica : Inst. of Jamaica, p. 31, 56, geol. map.

Wahluke formation

Pleistocene : Washington.

G. F. Beck, 1936, Mineralogist, v. 4, no. 11, p. 12, 14.

Wahwah limestone

Lower Ordovician (Canadian) : Utah and Nevada.

L. F. Hintze, 1951, Utah Geol. Mineralog. Survey Bull. 39, p. 16-17.

Waiaka basaltic andesite

Pleistocene (?) : Hawaiian Islands (Maui).

G. A. Macdonald in H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 231, 243-244.

Waiiau formation

[Quaternary]: Hawaiian Islands (Hawaii).

C. K. Wentworth, 1938, Hawaiian Volcano Observatory 3d Special Rept., p. 36, 57-86.

Waihu fanglomerate

Pleistocene: Hawaiian Islands (Hawaii).

C. K. Wentworth, 1939, (abs.) Geol. Soc. America Bull., v. 50, no. 12, pt. 2, p. 1942.

H. T. Stearns, 1945, Geol. Soc. America Bull., v. 56, no. 3, p. 270-273.

Wailuanui basalt

Pleistocene (?): Hawaiian Islands (Maui).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 94, 95.

Wailuku volcanic series

Pliocene (?): Hawaiian Islands (Maui).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 159, 160-172.

Waimea conglomerate

Age unknown: Hawaiian Islands (Kauai).

N. E. A. Hinds, 1930, Bernice P. Bishop Mus. Bull. 71, p. 56, 65.

Waimea formation

[Quaternary]: Hawaiian Islands (Hawaii).

C. K. Wentworth, 1938, Hawaiian Volcano Observatory 3d Special Rept., p. 38-40.

Waimea volcanic series*See Waimea Canyon volcanic series.***Waimea Canyon volcanic series**

Pliocene (?): Hawaiian Islands (Kauai).

H. T. Stearns, 1946, Hawaii Div. Hydrography Bull. 8, p. 85-89.

G. A. Macdonald, 1949, Geol. Soc. America Bull., v. 60, no. 10, p. 1555, 1557.

Waiokamilo basalt

Pleistocene (?): Hawaiian Islands (Maui).

H. T. Stearns in H. T. Stearns and G. A. Macdonald, 1942, Hawaii Div. Hydrography Bull. 7, p. 95, 96.

Wakefield marble

Precambrian (?): Maryland and Pennsylvania.

A. I. Jonas and G. W. Stose, 1938, Washington Acad. Sci. Jour., v. 28, no. 8, p. 346.

Walden Hollow glacial stage

Pleistocene: Colorado.

R. L. Ives, 1942, Geog. Review, v. 32, no. 3, p. 450.

Walderston limestone member (of White Limestone formation)

Oligocene, upper: Jamaica, British West Indies.

V. A. Zans, H. R. Versey, and J. B. E. Williams in V. A. Zans, 1955, Jamaica Geol. Survey Dept. Ann. Rept. 1953-54, p. 4.

Waldo granite

Devonian or Carboniferous: Maine.

J. M. Trefethen, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 2020.

Walgreen member (of Grand Detour formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf., fig. 3.

Walhalla formation

Precambrian (Kwaguntan) : Arizona.

Charles Keyes, 1938, *Pan-Am. Geologist*, v. 70, no. 2, p. 107, 114.

Walker group

Lower and Middle Ordovician : British Columbia, Canada.

H. Gabrielse, 1955, *Canada Geol. Survey Paper (Prelim. Map) 54-10*.

Walker Plain basalt

Miocene : California.

Anna Hietanen, 1951, *Geol. Soc. America Bull.*, v. 62, no. 6, p. 586-587, pl. 1.

Walkers beds (in Scotland formation)

Eocene, lower : Barbados, British West Indies.

Alfred Senn, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 9, p. 1552-1553.

Wall member (of Dunleith formation)

Middle Ordovician : Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 24, figs. 3, 12.

Wallace group

Mesozoic and Carboniferous(?) : British Columbia, Canada.

Leopold Reinecke, 1915, *Canada Geol. Survey Mem.* 79, p. 33-34.

Wallace shale

Cretaceous (Cretacic) : Kansas.

[C. R.] Keyes, 1941, *Pan-Am. Geologist*, v. 76, no. 5, p. 374-376.

Wallace Lake granite

Precambrian : Manitoba, Canada.

G. A. Russell, 1948, *Manitoba Dept. Mines and Nat. Res. Prelim. Rept.* 47-1, p. 5-6.

Wallace Ledge formation

Lower Cambrian : Vermont.

E. P. Kaiser, 1945, *Geol. Soc. America Bull.*, v. 56, no. 12, pt. 1, p. 1089.

Walston silt

Pleistocene (Yarmouth) : Maryland.

W. C. Rasmussen and T. H. Slaughter, 1955, *Md. Dept. Geology, Mines and Water Res. Bull.* 16, p. 114-117.

Walter Johnson sandstone member (of Nowata shale)

Pennsylvanian (Des Moines) : Kansas, Missouri, and Oklahoma.

J. M. Jewett, 1941, *Kans. State Geol. Survey Bull.* 38, pt. 11, p. 292, 335.

Wamego shale

Pennsylvanian : Kansas.

G. E. Condra and E. C. Reed, 1943, *Nebr. Geol. Survey Bull.* 14, p. 42, 43, 44.

Wandel Valley limestone

Lower Ordovician (Canadian) : North Greenland.

J. C. Troelsen, 1949, *Meddel. om Grønland*, bind 149, nr. 2, p. 15-18, pl. 1.

Wanette division

Permian : Oklahoma and Kansas.

D. A. Green, 1937, *Am. Assoc. Petroleum Geologists Bull.*, v. 21, no. 12, p. 1518-1521.

Wanipigow diorite

Precambrian : Manitoba, Canada.

G. A. Russell, 1948, *Manitoba Dept. Mines and Nat. Res. Prelim. Rept.* 47-1, p. 8.

Wanship formation

Upper Cretaceous: Utah.

A. J. Eardley, 1952, Utah Geol. Soc. Guidebook 8, p. 53-54.

Waramaug formation

Precambrian (?): Connecticut.

R. M. Gates in R. M. Gates and W. C. Bradley, 1952, Conn. Geol. Nat. History Survey Misc. Ser. 5, p. 8-14.

Ward Cove limestone member (of Clifffield formation)

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, Geol. Soc. America Bull., v. 54, no. 6, p. 863.

Wardell formation

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, Geol. Soc. America Bull., v. 54, no. 6, p. 873-875.

Warden-Munroe complex

Precambrian: Ontario, Canada.

Jack Satterly, 1952, Ontario Dept. Mines Ann. Rept., v. 60, pt. 8, p. 17.

Wardlaw shale

Carboniferous (?): Utah.

V. E. Peterson, 1942, Econ. Geology, v. 37, no. 6, p. 471 (table 1).

Wareham Lake series

Precambrian: Quebec, Canada.

Jacques Claveau, 1949, Quebec Dept. Mines Geol. Rept. 37, p. 24, 25.

Warman quartz monzonite

Precambrian (Algonian): Minnesota.

M. S. Woyski, 1949, Geol. Soc. America Bull., v. 60, no. 6, p. 1002, 1011, pl. 1.

Warmington limestone member (of Elephant Butte formation)

Pennsylvanian (Des Moines): New Mexico.

M. L. Thompson, 1942, N. Mex. State Bur. Mines Min. Res. Bull. 17, p. 27, 49.

Warm Springs formation

Middle Jurassic: Oregon.

R. L. Luper, 1941, Geol. Soc. America Bull., v. 52, no. 2, p. 227, 249.

Warrens Ranch latite

Tertiary: Arizona.

W. H. Brown, 1939, Geol. Soc. America Bull., v. 50, no. 5, p. 742.

Warrenton agglomerate member (of Catoctin series)

Precambrian: Virginia.

A. S. Furcron, 1939, Va. Geol. Survey Bull. 54, p. 20-22.

Warwick eolianite

Pleistocene: Bermuda Islands.

R. W. Sayles, 1931, Am. Acad. Arts and Sci. Proc., v. 66, no. 11, p. 395.

Wasatchian age

Eocene: North America.

H. E. Wood, 2d, and others, 1941, Geol. Soc. America Bull., v. 52, no. 1, p. 9, 10, pl. 1.

Wasekwan series

Precambrian: Manitoba, Canada.

J. D. Bateman, 1942, Am. Jour. Sci., v. 240, no. 11, p. 789-808.

Washikemba formation

Cretaceous: Bonaire, Netherlands West Indies.

P. J. Pijpers, 1931, *Leidsche Geol. Meded.*, Deel 5, p. 704-705.

Waskada formation

Upper Jurassic: Manitoba, Canada; and North Dakota.

D. F. Stott, 1955, *Manitoba Dept. Mines and Nat. Res. Pub.* 54-2, p. 26-27, 38, 47-48.

Waswanipi granite

Precambrian: Quebec, Canada.

J. E. Gilbert, 1947, *Quebec Dept. Mines Prelim. Rept.* 210, p. 6.

Watchorn formation

Mississippian (Meramec group): Kansas (subsurface).

Wallace Lee, 1940, *Kans. State Geol. Survey Bull.* 33, p. 84-89.

Waterboot basalt

Tertiary: Alaska.

W. M. Cady and others, 1955, *U. S. Geol. Survey Prof. Paper* 268, p. 55-56.

Water Canyon formation

Lower Devonian: Utah and Idaho.

J. S. Williams, 1948, *Geol. Soc. America Bull.*, v. 59, no. 11, p. 1138-1139.

Watering Trough shale

Upper Devonian (Conewango): Pennsylvania.

W. M. Laird, 1941, *Pa. Topog. and Geol. Survey Progress Rept.* 126, p. 11 (footnote).

Waterloo lava

Devonian or younger: Quebec, Canada.

H. C. Cooke, 1950, *Canada Geol. Survey Mem.* 257, p. 93.

Waterman gneiss

Upper Paleozoic(?): California.

O. E. Bowen, Jr., 1954, *Calif. Dept. Nat. Res., Div. Mines Bull.* 165, p. 16 (fig. 2), 17-23.

Waterways formation

Upper Devonian: Alberta, Canada.

P. S. Warren, 1933, *Canadian Field Naturalist*, v. 47, no. 8, p. 149.

Watrous formation

Jurassic: Saskatchewan, Canada (subsurface).

R. L. Milner and G. E. Thomas, 1954, *Western Canada sedimentary basin: Tulsa, Okla., Am. Assoc. Petroleum Geologists*, p. 255-257.

Watson Ledge quartz syenite

Carboniferous(?) (White Mountain magma series): New Hampshire.

Alonzo Quinn, 1937, *Geol. Soc. America Bull.*, v. 48, no. 3, p. 388.

Watt Mountain formation

Devonian: Alberta, Canada (subsurface).

J. Law, 1955, *Alberta Soc. Petroleum Geologists Jour.*, v. 3, no. 6, p. 82-83.

Wauwatosa formation

Silurian: Wisconsin.

F. B. Phleger, Jr., 1937, *Harvard Coll. Mus. Comp. Zool. Bull.*, v. 80, no. 11, p. 420.

Wearyman dolomite member (of Minturn formation)

Pennsylvanian: Colorado.

Ogden Tweto, 1949, *Colo. Sci. Soc. Proc.*, v. 15, no. 4, p. 152, 198-199.

Weberg formation

Middle Jurassic: Oregon.

R. L. Luper, 1941, *Geol. Soc. America Bull.*, v. 52, no. 2, p. 227, 248.

Weedon granite and aplite

Devonian (?): Quebec, Canada.

J. E. Hawley and others, 1945, *Canadian Inst. Mining and Metallurgy Trans.*, v. 48, p. 372 (geol. map), 373 (table).

Weedon porphyry

Pre-Ordovician (?): Quebec, Canada.

G. V. Douglas, 1941, *Quebec Dept. Mines Geol. Rept.* 8, p. 17, 18.

Weir cyclothem or formation

Pennsylvanian (Des Moines): Kansas.

G. E. Abernathy, 1937, *Kans. Geol. Soc. Guidebook 11th Ann. Field Conf.*, p. 18, 20, 22; 1938, *Kans. Acad. Sci. Trans.*, v. 41, p. 193, 195.

Weissport member (of Tully formation)

Upper Devonian: Pennsylvania.

R. E. Stevenson and W. S. Skinner, 1949, *Pa. Acad. Sci. Proc.*, v. 23, p. 30.

Wekuskoan group

Precambrian: Manitoba, Canada.

J. F. Wright, 1931, *Canada Geol. Survey Summ. Rept. 1930*, pt. C, p. 8.

Welcome formation

Eocene, upper: California.

Martin Van Couvering and H. B. Allen, 1943, *Calif. Dept. Nat. Res., Div. Mines Bull.*, 118, pt. 3, p. 496-500.

Weldonian stage

Late Cretaceous: California.

P. P. Goudkoff, 1945, *Am. Assoc. Petroleum Geologists Bull.*, v. 29, no. 7, p. 990-991.

Welge sandstone member (of Wilberns formation)

Upper Cambrian: Texas.

Frederick Romberg and V. E. Barnes, 1944, *Geophysics*, v. 9, no. 1, p. 88.

P. E. Cloud, Jr., V. E. Barnes, and Josiah Bridge 1946, *Tex. Univ. Bur. Econ. Geology* Pub. 4301, p. 155 [1945].

Wellmans Cove diorite

Ordovician (?): Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 25.

Wellsville formation

Upper Devonian: New York.

J. G. Woodruff, 1942, *N. Y. State Mus. Bull.* 326, p. 31-33.

Wemir agglomerate

Age not stated: Panama Canal Zone.

[T. F. Thompson], 1943, *Panama Canal, Special Eng. Div., 3d Locks Proj.*, pt. 2, chap. 5, p. 37.

Wendover group

Pennsylvanian: Wyoming and Colorado.

G. E. Condra, E. C. Reed, and O. J. Scherer, 1940, *Nebr. Geol. Survey Bull.* 13, p. 2, 3-4, 22, 45.

Werner formation

Permian: Subsurface in Arkansas and Louisiana.

R. T. Hazzard, B. W. Blanpied, and W. C. Spooner, [1947], Shreveport Geol. Soc. 1945 Ref. Rept., v. 2, p. 484, 486, 487.

Wesley formation

Pennsylvanian (Bendian): Oklahoma.

B. H. Harlton, 1938, Am. Assoc. Petroleum Geologists Bull., v. 22, no. 7, p. 854, 886-893.

Wesson tongue (of Dorcheat member of Schuler formation)

Upper Jurassic: Subsurface in Arkansas, Louisiana, and Texas.

F. M. Swain, 1944, Am. Assoc. Petroleum Geologists Bull., v. 28, no. 5, p. 608-609.

West Bay formation

Pennsylvanian: Nova Scotia, Canada.

G. W. H. Norman, 1935, Canada Geol. Survey Mem. 177, p. 45.

West Beach formation

Mississippian and/or Pennsylvanian: New Brunswick, Canada.

F. J. Alcock [1938], Canada Geol. Survey Mem. 216, p. 33-35.

Westendspids pelitic group

Precambrian: Northeast Greenland.

G. P. Leedal, 1952, Meddel. om Grønland, bind 142, nr. 6, p. 11, 18, pl. 2.

Western Arm basalts or group

Lower Ordovician: Newfoundland, Canada.

H. J. MacLean in G. V. Douglas and others, 1940, Newfoundland Geol. Survey Bull. 20, p. 69.

H. J. MacLean, 1947, Newfoundland Geol. Survey Bull. 22, p. 17.

Western Brook Pond group

Lower Ordovician: Newfoundland, Canada.

Frederick Betz, Jr., 1939, Newfoundland Geol. Survey Bull. 16, p. 24 (table 3).

Helgi Johnson, 1941, N. Y. Acad. Sci. Trans., ser. 2, v. 3, no. 6, p. 143.

Western Cascade volcanic series

Eocene, upper, to Miocene, upper: Oregon.

Howel Williams, 1942, Carnegie Inst. Washington Pub. 540, p. 13-15.

West Fairview member (of Martinsburg shale)

Ordovician: Pennsylvania.

Bradford Willard and A. B. Cleaves, 1938, Pa. Geol. Survey, ser. 4, Bull. G 8, p. 5, 6.

Westford schist

Precambrian: Vermont.

E. C. Jacobs, [1939], Vt. State Geologist 21st Rept., p. 33-35.

West Gull jasper facies (of Ogishke conglomerate)

Precambrian (Knife Lake): Minnesota.

J. T. Stark and V. G. Sleight, 1939, Geol. Soc. America Bull., v. 50, no. 7, p. 1032 (table 2), 1034-1035.

West Molokai volcanic series

Pliocene: Hawaiian Islands (Molokai).

H. T. Stearns, 1946, Hawaii Div. Hydrography Bull. 8, p. 69, 71.

Westmore formation

Silurian or Lower Devonian: Vermont and Quebec, Canada.

C. G. Doll, 1951, Vt. Geol. Survey Bull. 3, p. 15, 33-37.

Westmoreland member (of Clinton formation)**Middle Silurian (Niagaran) : New York.**Tracy Gillette, 1947, *N. Y. State Mus. Bull.* 341, p. 90, 93-94.Philip Donnerstag, 1950, *N. Y. State Mus. Circ.* 28, p. 7.**Westmoreland shale****Lower Mississippian : Tennessee.**Guy Campbell, 1946, *Geol. Soc. America Bull.*, v. 57, no. 9, p. 885.**Westphalia schists****Pre-Mesozoic : Jamaica, British West Indies.**C. A. Matley, 1929, *Geol. Soc. London Quart. Jour.*, v. 85, pt. 4, p. 455.**Westpuntbaai conglomerate****Recent (Holocene) : Curaçao, Netherlands West Indies.**G. J. H. Molengraaff, 1929, *Geologie en geohydrologie van het Eiland Curaçao : Delft*, J. Waltman, Jr., p. 30, 92, strat. table.**West Ridge group****Age unknown : California.**K. J. Hsu, 1955, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 30, no. 4, p. 275, map 1.**West Spring formation****Pliocene, lower to middle : Utah.**Neal Smith, 1953, *Intermountain Assoc. Petroleum Geologists 4th Ann. Field Conf.*, p. 73, 75.**West Union gravel****Pleistocene : Minnesota.**Kirk Bryan, Henry Retzke, and F. T. McCann, 1938, *Tex. Archeol. Paleont. Soc. Bull.* 10, p. 125.**Weybridge member (of Beldens formation)****Middle Ordovician (Chazyan) : Vermont.**W. M. Cady, 1945, *Geol. Soc. America Bull.*, v. 56, no. 5, p. 524, 550-552.**Wheatland formation****Pleistocene, upper : New Mexico.**Sheldon Judson, 1950, *Geol. Soc. America Bull.*, v. 61, no. 3, p. 263; 1953, *Smithsonian Misc. Coll.*, v. 121, no. 1, p. 22-23, 30.**Wheatland formation****Eocene, upper : California.**B. L. Clark and C. A. Anderson, 1937, (abs.) *Geol. Soc. America Proc.* 1936, p. 326-327.**Wheeler sandstone member (of Juncal formation)****Eocene, middle : California.**T. L. Bailey, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 11, p. 1920 (fig. 3).W. R. Merrill, 1952, in *AAPG, SEPM, SEG, Joint Ann. Meeting Guidebook*, p. 77.**Wheelerian stage****Pliocene : California.**Manley Natland, 1953, *Pacific Petroleum Geologist*, v. 7, no. 2, p. 2.**Wheelock marl member (of Crockett formation)****Eocene, middle (Claihorne) : Texas.**H. B. Stenzel, 1938, *Tex. Univ. Bur. Econ. Geol. Pub.* 3818, p. 20, 125-134 [1939].

Whetstone Creek shale member (of Breathitt formation)

Pennsylvanian: Kentucky.

H. R. Wanless, 1946, *Geol. Soc. America Mem.* 13, p. 64, 65, 76, 153.

Whetstone Hill member (of Moretown formation)

Cambro-Ordovician: Vermont.

W. F. Brace, 1953, *Vt. Geol. Survey Bull.* 6, p. 51.

Whetstonian series

Paleozoic (Mid-Cambrian): Arizona and New Mexico.

Charles Keyes, 1940, *Pan-Am. Geologist*, v. 74, no. 2, p. 107, 120.

Whim Hill breccia

Cretaceous: New Mexico.

P. F. Kerr and others, 1950, *Geol. Soc. America Bull.*, v. 61, no. 4, p. 289-291, fig. 3, pl. 1.

Whipple member (of Berkshire schist)

Middle Ordovician: Vermont and Massachusetts.

Phillip Fowler, 1950, *Vt. Geol. Survey Bull.* 2, p. 13, 32-34.

Whiskey Canyon limestone

Pennsylvanian (Des Moines): New Mexico.

M. L. Thompson, 1942, *N. Mex. State Bur. Mines Min. Res. Bull.* 17, p. 27, 50.

Whiskey Creek Pass limestone member (of Madera formation)

Pennsylvanian (Desmoinesian): Colorado and New Mexico.

K. G. Brill, Jr., 1952, *Geol. Soc. America Bull.*, v. 63, no. 8, p. 819, 828, pl. 1.

Whiskey Mountain granodiorite

Mesozoic: Washington.

A. C. Waters and Konrad Krauskopf, 1941, *Geol. Soc. America Bull.*, v. 52, no. 9, pl. 1.

Whistle Creek limestone

Middle Ordovician: Virginia.

B. N. Cooper and G. A. Cooper, 1946, *Geol. Soc. America Bull.*, v. 57, no. 1, p. 74.

Whistler Mountain alaskite

Post-Mississippian: Nevada.

C. W. Merriam, 1940, *Geol. Soc. America Special Paper* 25, p. 29, 44, fig. 2.

Whitby group

Ordovician: Ontario, Canada (subsurface).

B. A. Liberty, 1955, *Geol. Assoc. Canada Proc.*, v. 7, pt. 1, p. 145.

White Bay group

Age unknown: Newfoundland, Canada.

Frederick Betz, Jr., 1948, *Newfoundland Geol. Survey Bull.* 24, p. 7-8.

Whitefield gneiss

Middle or Upper Devonian (?) (Oliverian plutonic series): New Hampshire.

M. P. Billings, 1955, *Geologic map of New Hampshire (1:250,000)*: U. S. Geol. Survey.

Whitefish Bay member (of Alpena limestone stage)

Middle Devonian: Michigan.

W. A. Kelly, 1940, *Mich. Acad. Sci. Arts and Letters Sec. Geology and Mineralogy [Guide Book] 10th Ann. Field Excursion*, [p. 13, columnar sec.]

Charles Schuchert, [1943], *Stratigraphy of the eastern and central United States*: New York, John Wiley & Sons, p. 606 (chart 48), 613.

Whitehall formation

Lower Ordovician : New York and Vermont.

John Rodgers, 1937, *Geol. Soc. America Bull.*, v. 48, no. 11, p. 1576-1577, 1578.**Whitehorse member (of Spray River formation)**

Middle Triassic : British Columbia.

P. S. Warren, 1945, *Am. Jour. Sci.*, v. 243, no. 9, p. 482-483.**White Lake formation**

Tertiary : British Columbia, Canada.

H. S. Bostock, 1941, *Canada Geol. Survey Map* 627A.**White Lake granite**

Precambrian : Saskatchewan, Canada.

W. E. Hale, 1953, *Canadian Mining Jour.*, v. 74, no. 10, p. 106; 1954, *Canada Geol. Survey Paper* 53-15, p. 3 (table), 8-9, *geol. map*.**White Lake syenite**

Precambrian : Ontario, Canada.

W. D. Harding, 1951, *Ontario Dept. Mines Ann. Rept.*, v. 56, pt. 6, p. 29-30.**White Limestone basement**

Eocene, middle or upper : Jamaica, British West Indies.

C. A. Matley, 1940, *Geol. Soc. London Abs. Proc.* 1373, p. 101; 1951, *Geology and physiography of the Kingston district, Jamaica* : *Inst. of Jamaica*, p. 35-36, *geol. map*.**White Limestone formation**

Eocene, middle, to Miocene, lower : Jamaica, British West Indies.

H. T. De la Beche, 1827, *Geol. Soc. London Trans.*, 2d ser., v. 2, pt. 2, p. 169.C. A. Matley, 1951, *Geology and Physiography of the Kingston district, Jamaica* : *Inst. of Jamaica*, p. 36-39, 57-59, *geol. map*.**Whitemans Creek granite**

Cretaceous or Tertiary : British Columbia, Canada.

1948, *Canada Geol. Survey Map* 932A.**White Quail limestone member (of Minturn formation)**

Pennsylvanian and Permian (?) : Colorado.

S. F. Emmons, 1898, *U. S. Geol. Survey Geol. Atlas*, Folio 48, p. 4.
Ogden Tweto, 1949, *Colo. Sci. Soc. Proc.*, v. 15, no. 4, p. 203-204.**White Ridge quartzite**

Precambrian : New Mexico.

J. T. Stark and E. C. Dapples, 1941, (abs) *Geol. Soc. America Bull.*, v. 52, no. 12, pt. 2, p. 1936; 1946, v. 57, no. 12, pt. 1, p. 1133-1134.**Whites Creek beds member (of Shoal River formation)**

Miocene, middle : Florida.

R. H. Smith, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 2, p. 275.**Whites Crossing coquina member (of Chappel formation)**

Mississippian : Texas.

F. B. Plummer, 1950, *Tex. Univ. Bur. Econ. Geology Pub.* 4329, p. 28.**Whitesville formation**

Upper Devonian : New York.

J. G. Woodruff, 1942, *N. Y. State Mus. Bull.* 326, p. 37-42.

White Tank monzonite

Jurassic (?) : California.

W. J. Miller, 1938, *Geol. Soc. America Bull.*, v. 49, no. 3, p. 419, 438-443.

White Wall formation

Pleistocene, upper (?) : St. Eustatius, Netherlands West Indies.

G. A. F. Molengraaf, 1931, *Leidsche Geol. Meded.*, Deel 5, p. 719 (fig. 3), 726, 728.

Whitewater limestone

Triassic : British Columbia, Canada.

M. S. Hedley, 1947, *British Columbia Dept. Mines Bull.* 22, p. 9.

Whiteway formation

Precambrian (Upper Proterozoic) : Newfoundland, Canada.

R. D. Hutchinson, 1954, *Canada Geol. Survey Mem.* 275, p. 17-18.

Whitney member (of Brule formation)

Oligocene : Nebraska.

C. B. Schultz and T. M. Stout, 1938 (abs.) *Geol. Soc. America Bull.*, v. 49, no. 12, pt. 2, p. 1921 ; 1955, *Nebr. Univ. State Mus. Bull.*, v. 4, no. 2, p. 44-46.

Whitneyan age

Oligocene : North America.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 11, 12, pl. 1.

Whitt group

Pennsylvanian (Canyon) : Texas.

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66, 88.

Wlarton member (of Gasport formation)

Middle Silurian (Niagaran) : Ontario, Canada.

E. W. Shaw, 1937, *Royal Canadian Inst. Trans.*, v. 21, pt. 2, p. 320.

Wiggins formation

Oligocene : Wyoming.

J. D. Love, 1939, *Geol. Soc. America Special Paper* 20, p. 79-85.

Wilcox formation

Precambrian : Vermont.

W. F. Brace, 1953, *Vt. Geol. Survey Bull.* 6, p. 21-22, 29.

Wild Bight volcanics

Middle Ordovician (?) : Newfoundland, Canada.

G. H. Espenshade, 1937, *Newfoundland Geol. Survey Bull.* 6, p. 7.

Wildcat Creek shale member (of Admiral formation)

Permian (Wolfcamp age) : Texas.

R. C. Moore in A. K. Miller and Walter Youngquist, 1947, *Kans. Univ. Paleont. Contr.* 2, Mollusca, art. 1, p. 1 (footnote).

A. K. Miller and Walter Youngquist, 1949, *Geol. Soc. America Mem.* 41, p. 4, 5, 6, 22.

Wildhorse Mountain formation

Pennsylvanian (Bendian) : Oklahoma.

H. H. Hariton, 1938, *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 7, p. 854, 878-880.

Willeman member (of Mount Head formation)

Carboniferous : Alberta, Canada.

R. J. W. Douglas, 1953, *Alberta Soc. Petroleum Geologists 3d Ann. Field Conf. and Symposium*, p. 68.

Wilkinson anorthosite

Precambrian: Ontario, Canada.

J. M. Harrison, 1944, *Geol. Soc. America Bull.*, v. 55, no. 12, p. 1409.**Willamette silt**

Pleistocene: Oregon.

R. C. Treasher, 1942, *Geologic map of the Portland area, Oregon (1:96,000)*: Oreg. State Dept. Geology and Mineral Res.I. S. Allison, 1953, *Oreg. Dept. Geology and Mineral Industries Bull.* 37, p. 12-13.**Willapa clays**

Pleistocene: Washington.

S. L. Glover, 1941, *Wash. Dept. Conserv. Devel., Div. Geology Bull.* 24, p. 52-53.**William Henry Bay marble**

Lower Paleozoic: Alaska.

E. C. Robertson, 1955, *Geol. Soc. America Bull.*, v. 66, no. 10, p. 1309.**William Island formation**

Upper Devonian: Ontario, Canada.

D. C. McLaren, 1946, *Canadian Mining Jour.*, v. 67, p. 1017.**Williams formation**

Upper Cretaceous: California.

W. P. Popenoe, 1937, *Jour. Paleontology*, v. 11, no. 5, p. 380.**Williams member (of Deese formation)**

Pennsylvanian (Des Moines): Oklahoma.

C. W. Tomlinson, 1937, *Ardmore Geol. Soc. [Guidebook] Field Trip, March 13*, p. 1.**Williamson Creek member (of Fleming formation)**

Miocene: Louisiana.

H. N. Fisk, 1940, *La. Dept. Conserv. Geol. Bull.* 18, p. 118, 161-164.**Williana formation**

Pleistocene: Louisiana.

H. N. Fisk, 1938, *La. Dept. Conserv. Geol. Bull.* 10, p. 78, 155-157.**Williston member (of Moodys Branch formation)**

Eocene (Jackson): Florida.

R. O. Vernon, 1951, *Fla. Geol. Survey Bull.* 33, p. 141-152.**Willow Creek facies (of Flagstaff formation)**

Paleocene, upper: Utah.

W. N. Gilliland, 1951, *Nebr. Univ. Studies, new ser.*, no. 8, p. 29-30.**Willow Tank formation**

Upper Cretaceous: Nevada.

C. R. Longwell, 1949, *Geol. Soc. America Bull.*, v. 60, no. 5, p. 929, 931-932.**Willowvale shale**

Middle Silurian (Niagaran): New York.

Tracy Gillette, 1940, *N. Y. State Mus. Bull.* 320, p. 22 (fig. 6); 1947, *Bull.* 341, p. 94-96, 99.**Willwood formation**

Eocene: Wyoming.

H. E. Wood, 2d, and others, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 15, 37.F. B. Van Houten, 1944, *Geol. Soc. America Bull.*, v. 55, no. 2, p. 178-191.

Wilrich member (of Spirit River formation)

Lower Cretaceous: Alberta, Canada (subsurface).

P. C. Badgley, 1952, Canada Geol. Survey Paper 52-11, p. 9.

Wilson granite

Precambrian (post-Keewatin): Quebec, Canada.

W. W. Longley, 1946, Quebec Dept. Mines Geol. Rept. 24, p. 11.

Wilson Island phase (of Point Lake-Wilson Island group)

Precambrian (Archean?): Northwest Territories (MacKenzie), Canada.

C. H. Stockwell, 1936, Canada Geol. Survey Map 377A.

Wimer School limestone member (of Labette shale)

Pennsylvanian (Desmoinesian): Oklahoma.

C. M. Cade, 3d, 1953, Tulsa Geol. Soc. Digest, v. 21, p. 138-139, fig. 2.

Wimsattville formation

Tertiary, lower: New Mexico.

R. M. Hernon, W. R. Jones, and S. L. Moore, 1953, N. Mex. Geol. Soc. Guidebook 4th Field Conf., p. 118 (map), 120.

Windermere series

Precambrian: British Columbia, Canada.

J. F. Walker, 1926, Canada Geol. Survey Mem. 148, p. 13-20.

Wineglass welded tuff

Quaternary: Oregon.

Howel Williams, 1942, Carnegie Inst. Washington Pub. 540, p. 60-63.

Wingfield formation

Silurian: Ontario, Canada.

M. Y. Williams, 1936, Canada Geol. Survey Paper (Prelim. Map) 36-21; 1937, Paper 37-25, p. 16-17.

Winnemucca formation

Upper Triassic: Nevada.

S. W. Muller, H. G. Ferguson, and R. J. Roberts, 1951, Geology of the Mount Tobin quadrangle, Nevada: U. S. Geol. Survey Geol. Quadrangle Map [GQ 7].

Winslow granite

Devonian or younger: Quebec, Canada.

T. H. Clark *in* H. C. Cooke and T. H. Clark, 1937, Canada Geol. Survey Mem. 211, p. 75.

Winslow member (of Moenkopi formation)

Lower Triassic: Arizona.

E. D. McKee, 1951, N. Mex. Geol. Soc. Guidebook 2d Field Conf., p. 86, 87 (fig. 1).

Winsor formation

Upper Jurassic: Utah.

H. E. Gregory, 1948, Geol. Soc. America Bull., v. 59, no. 3, p. 235; 1950, U. S. Geol. Survey Prof. Paper 220, p. 96-98.

Winterburn formation

Devonian: Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, Am. Assoc. Petroleum Geologists Bull., v. 34, no. 9, p. 1814-1816.

Winterport granite type

Age unknown: Maine.

J. M. Trefethen, 1941, (abs.) Geol. Soc. America Bull., v. 52, no. 12, pt. 2, p. 2020.

Winthrop phyllite

Silurian: Maine.

L. W. Fisher, 1941, *Geol. Soc. America Bull.*, v. 52, no. 1, p. 130, table 1.**Wiota gravels**

Pleistocene(?) : Montana.

R. B. Colton, 1955, *U. S. Geol. Survey Geol. Quadrangle Map GQ 67*.**Wise Lake formation**

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 6, fig. 3.**Wisenor formation**

Lower Cretaceous: California.

L. I. Briggs, Jr., 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 167, p. 12 (fig. 2), 20-22, pl. 1.**Wishart quartzite**

Precambrian (Proterozoic) : Quebec and Newfoundland (Labrador), Canada.

H. R. Rice, 1949, *Canadian Mining Jour.*, v. 70, no. 9, p. 71-72.J. M. Harrison, 1952, *Canada Geol. Survey Paper* 52-20, p. 9-10.**Wishbone formation**

Paleocene(?) or lower Eocene(?) : Alaska.

T. G. Payne, 1955, *U. S. Geol. Survey Misc. Geol. Inv. Map* I-84.**Wiskanian series**

Cretaceous (Cretacic) : Colorado and Kansas.

[C. R.] Keyes, 1941, *Pan-Am. Geologist*, v. 75, no. 5, p. 369-371.**Witten limestone**

Middle Ordovician: Virginia.

B. N. Cooper and C. E. Prouty, 1943, *Geol. Soc. America Bull.*, v. 54, no. 6, p. 877-879.**Wolf Creek formation**

Triassic(?) : British Columbia, Canada.

Victor Dolmage, 1934, *Canada Geol. Survey Mem.* 171, p. 10-11.**Wolf Hollow limestone member (of Tribes Hill formation)**

Lower Ordovician (lower Canadian) : New York.

D. W. Fisher, 1954, *Geol. Soc. America Bull.*, v. 65, no. 1, p. 76 (fig. 2), 87-88.**Wolfskill formation**

Pliocene: California.

C. E. Weaver, 1949, *Geol. Soc. America Mem.* 35, p. 16 (table 3), 94-97.**Wolstenholme quartzite**

Precambrian (upper Algonkian) : North Greenland.

V. E. Kurtz and D. B. Wales, 1950, *Okla. Acad. Sci. Proc.*, v. 31, p. 83, 85.**Wolverine complex**

Precambrian(?) and younger: British Columbia, Canada.

J. E. Armstrong and J. B. Thurber, 1945, *Canada Geol. Survey Paper* 45-9, p. 5-6.**Wolverine Canyon limestone member (of Preuss sandstone)**

Upper Jurassic: Idaho.

R. W. Imlay, 1952, *Am. Assoc. Petroleum Geologists Bull.*, v. 36, no. 9, p. 1741-1743.

Woodbend formation

Devonian: Alberta, Canada (subsurface).

D. B. Layer, chm., 1950, *Am. Assoc. Petroleum Geologists Bull.*, v. 34, no. 9, p. 1816-1823.

Woodbury cyclothem (including Woodbury limestone)

Pennsylvanian: Illinois.

W. A. Newton and J. M. Weller, 1937, *Ill. State Geol. Survey Rept. Inv.* 45, p. 28-30.

Woodford limestone member (of Wagwater group)

Eocene, lower: Jamaica, British West Indies.

L. J. Chubb, 1953, *Colonial Geology and Min. Res.*, v. 3, no. 2, p. 128, 129.

Woodglen limestone

Permian: Pennsylvania.

W. O. Hickok, IV, and F. T. Moyer, 1940, *Pa. Geol. Survey, ser. 4, Bull. C* 26, p. 147-148.

Woodhill member (of Franconia formation)

Upper Cambrian: Wisconsin and Minnesota.

R. R. Berg, 1951, *Minn. Geologist*, v. 8, no. 4, p. [1].

Woodland gneiss

Precambrian: Georgia.

D. F. Hewett and G. W. Crickmay, 1937, *U. S. Geol. Survey Water-Supply Paper* 819, p. 29-30.

Wood Siding formation

Pennsylvanian (Virgil series): Nebraska and Kansas.

G. E. Condra and E. C. Reed, 1943, *Nebr. Geol. Survey Bull.* 14, p. 41, 42, 43, 44.

Woodson granodiorite

See Woodson Mountain granodiorite.

Woodson Mountain granodiorite

Cretaceous: California.

F. S. Miller, 1937, *Geol. Soc. America Bull.*, v. 48, no. 10, p. 1399.

E. S. Larsen, Jr., 1948, *Geol. Soc. America Mem.* 29, p. 76-82.

Woodway limestone

Middle Ordovician: Virginia.

R. L. Miller and W. P. Brosgé, 1950, *U. S. Geol. Survey Oil and Gas Inv. Prelim. Map* 104.

Woody Cove member (of Logy formation)

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull.* 15, p. 13.

Woody Cove shale

Mississippian: Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1938, *Newfoundland Geol. Survey Bull.* 12, p. 14.

Woody Head beds

Mississippian: Newfoundland, Canada.

W. A. Bell, 1948, *Canada Geol. Survey Bull.* 10, p. 19-20.

Woody Point sandstone

Mississippian: Newfoundland, Canada.

A. O. Hayes and Helgi Johnson, 1938, *Newfoundland Geol. Survey Bull.* 12, p. 15.

Woolsey member (of Bloyd shale)

Pennsylvanian: Arkansas.

L. G. Henbest, 1953, *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 8, p. 1943-1944.

Woonasquatucket formation

Precambrian (?): Rhode Island.

G. M. Richmond *in* G. M. Richmond and W. B. Allen, 1951, *R. I. Port and Indus. Devel. Comm. Geol. Bull.* 4, p. 10, 12.

Wordie Creek formation

Eotriassic: North Greenland.

Lauge Koch, 1929, *Meddel. om Grønland*, bind 73, afd. 2, nr. 2, p. 249.

Workman Hill conglomerate

Miocene and Pliocene: California.

G. J. Bellemin, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 4, p. 652 (fig. 2), 653-655.

Wray channel beds (in Ash Hollow formation)

Pliocene (Ogallala): Colorado.

M. K. Elias, 1942, *Geol. Soc. America Special Paper* 41, p. 143.

Wright Bay formation

Middle Ordovician (Trenton): North Greenland.

Curt Teichert, 1937, *Meddel. om Grønland*, bind 119, nr. 1, p. 11-26.

Wulff River formation

Lower Cambrian: North Greenland.

Christian Poulsen, 1927, *Meddel. om Grønland*, bind 70, nr. 2, p. 239-240, 338.

Wupatki member (of Moenkopi formation)

Lower Triassic: Arizona.

E. D. McKee, 1951, *N. Mex. Geol. Soc. Guidebook 2d Field Conf.*, p. 86, 87 (fig. 1).

Wynn limestone member (of Palo Pinto formation)

Pennsylvanian (Canyon): Texas.

M. G. Cheney, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 66, 88.

Wyopo formation

Triassic: Wyoming.

E. B. Branson and C. C. Branson, 1941, *Am. Assoc. Petroleum Geologists Bull.*, v. 25, no. 1, p. 136.

Wyota member (of Dunleith formation)

Middle Ordovician: Illinois.

J. S. Templeton and H. B. Willman, 1952, *Tri-State Geol. Soc. Guidebook 16th Ann. Field Conf.*, p. 24, figs. 3, 12.

XI member (of Rexroad formation)

Pliocene: Kansas.

C. W. Hibbard, 1949, *Mich. Univ. Mus. Paleontology Contr.*, v. 7, no. 5, p. 91, 93, 96.

Xilitla beds

Cretaceous (Turonian): San Luis Potosi, Mexico.

Arnold Heim, 1926, *Eclogae Geologicae Helvetiae*, v. 20, no. 1, p. 87; 1940, v. 33, no. 2, p. 322.

Yager formation

Upper Jurassic to Cretaceous: California.

B. A. Ogle, 1953, *Calif. Dept. Nat. Res., Div. Mines Bull.* 164, p. 13 (fig. 3), 16-22, pl. 1.

Yamhill formation

Eocene: Oregon.

E. M. Baldwin and others, 1955, U. S. Geol. Survey Oil and Gas Inv. Map OM 155.

Yanhuitlan beds

Tertiary (?) : Oaxaca, Mexico.

G. P. Salas, 1949, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 1, no. 2, p. 122-124.

Yankee Belle formation

Precambrian and/or Cambrian: British Columbia, Canada.

S. S. Holland, 1954, *British Columbia Dept. Mines Bull.* 34, p. 17-18.

Yanks Peak quartzite

Precambrian and/or Cambrian: British Columbia, Canada.

S. S. Holland, 1954, *British Columbia Dept. Mines Bull.* 34, p. 18-19.

Yanktonian series

Cretaceous (Cretacic) : Iowa.

[C. R.] Keyes, 1936, *Pan-Am. Geologist*, v. 66, no. 2, p. 154-166.

Yap formation

Pre-Tertiary (?) : Caroline Islands (Yap).

Risaburo Tayama, 1935, *Topography, geology, and coral reefs of the Yap Islands*: Tohoku Univ., Inst. Geology and Paleontology Contr. in Japanese Language, no. 19, p. 36-38 [English translation in library of U. S. Geol. Survey, p. 32-33]; 1952, *Coral reefs in the South Seas*: Japan Hydrog. Office Bull., v. 11, p. 60-61, table 4 [English translation in library of U. S. Geol. Survey, p. 71-72].

Yaquan series

Cambrian (Mid-Cambric) : Arizona.

[C. R.] Keyes, 1940, *Pan-Am. Geologist*, v. 74, no. 2, p. 154-156.

Yates formation (in Carlsbad group, subsurface and surface of New Mexico)**Yates sandstone (in Whitehorse group, subsurface of Texas)**

Permian: Texas and New Mexico.

G. C. Gester and H. J. Hawley, 1929, *Structure of typical American oil fields*: Tulsa, Okla., Am. Assoc. Petroleum Geologists, v. 2, p. 487-488.

R. K. DeFord, G. D. Riggs, and N. H. Wills, 1938 (abs.) *Am. Assoc. Petroleum Geologists Bull.*, v. 22, no. 12, p. 1706.

Yeager greenstone

Precambrian: Arizona.

E. D. Wilson, 1937 (abs.) *Geol. Soc. America Proc.* 1936, p. 112; 1939, *Geol. Soc. America Bull.*, v. 50, no. 7, p. 1120.

Yellorex flow

Precambrian: Northwest Territories (Mackenzie), Canada.

J. F. Henderson and I. C. Brown, 1950, *Canadian Inst. Mining and Metallurgy Trans.*, v. 53, p. 418.

Yellowknife group

Precambrian: Northwest Territories (Mackenzie), Canada.

J. F. Henderson, 1938, *Canada Geol. Survey Paper* 38-1, p. 3-8.

Yellow Limestone formation

Eocene, middle (Lutetian) : Jamaica, British West Indies.

J. G. Sawkins, 1869, *Reports on the geology of Jamaica*: [Great Britain] *Geol. Survey Mem.*, p. 24.

C. T. Trechmann, 1923, *Geol. Mag.*, v. 60, no. 8, p. 337-347.

Yepomera formation

Pliocene, upper: Chihuahua, Mexico.

L. C. Pray, 1953, in *Geological sciences at the California Institute of Technology*: Calif. Inst. Technology, p. 32.

Ygol member (of Logy formation)

Precambrian: Newfoundland, Canada.

J. O. Fuller, 1941, *Newfoundland Geol. Survey Bull.* 15, p. 13.

Ymer formation

Middle Cambrian: Northeast Greenland.

A. B. Cleaves and E. F. Fox, 1935, *Geol. Soc. America Bull.*, v. 46, no. 3, p. 474, pl. 43.

Ymir group

Triassic and older (?): British Columbia, Canada.

H. W. Little, 1950, *Canada Geol. Survey Paper* 50-19, p. 24-25.

Ynezian stage

Paleocene: California.

V. S. Mallory, 1953 (abs.) *Jour. Paleontology*, v. 27, no. 6, p. 903.

Yoakum dolomite member (of Queen formation)

Permian: Texas (subsurface).

W. C. Fritz and James Fitzgerald, Jr., 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 1, p. 24-25.

Yogana series

Pre-Cretaceous: Oaxaca, Mexico.

Tomás Barrera, 1946, *Güfa geológica de Oaxaca*: Mexico Univ. Nac., Inst. Geología, p. 82.

Yoho shale lentil (of Mount Whyte formation)

Middle Cambrian: British Columbia, Canada.

Franco Rasetti, 1951, *Smithsonian Misc. Coll.*, v. 116, no. 5, p. 63-64.

Yokohl amphibolite

Triassic (?): California.

Cordell Durrell, 1940, *Calif. Univ. Dept. Geol. Sci. Bull.*, v. 25, no. 1, p. 13-14, 116.

Yokut sandstone

Eocene: California.

R. T. White, 1940, *Am. Assoc. Petroleum Geologists Bull.*, v. 24, no. 10, p. 1722, 1745-1747.

Yolo formation

Upper Cretaceous: California.

J. M. Kirby, 1943, *Am. Assoc. Petroleum Geologists Bull.*, v. 27, no. 3, p. 282, 285-287.

Yonakina group

Jurassic (?): British Columbia, Canada.

F. A. Kerr, 1945, *Canada Geol. Survey Paper (Prelim. Map)* 45-30; 1948, *Mem.* 248, p. 20 (table), 35-36, geol. map.

Yorba member (of Puente formation)

Miocene, upper: California.

J. E. Schoellhamer and others, 1954, *U. S. Geol. Survey Oil and Gas Inv. Map* OM 154.

York Lake series

Lower (?) Devonian: Quebec, Canada.

I. W. Jones, 1936, *Quebec Dept. Mines Ann. Rept.* 1935, pt. D, p. 15-19.

Yorktownian substage

Miocene, upper : Central Atlantic Coastal Plain.

D. S. Malkin, 1953, *Jour. Paleontology*, v. 27, no. 6, p. 767-768.

Youghall formation

Pennsylvanian : Colorado and Utah.

M. L. Thompson, 1945, *Kans. State Geol. Survey Bull.* 60, pt. 2, p. 34-39.

Youghiogheny sandstone

Upper Devonian (Conewango) : Pennsylvania.

W. M. Laird, 1941, *Pa. Topog. and Geol. Survey Progress Rept.* 126, p. 9 (footnote).

Younger Angaur limestone

See Angaur (Older and Younger) limestone.

Younghall formation

See Youghall formation.

Youngman formation

Middle Ordovician (Chazyan) : Vermont and Quebec, Canada.

Marshall Kay, 1945, (abs.) *Geol. Soc. America Bull.*, v. 56, no. 12, pt. 2, p. 1172.

Youngs Cove group

Cambrian : Newfoundland, Canada.

W. H. Twenhofel, 1947, *Am. Jour. Sci.*, v. 245, no. 2, p. 92.

R. E. Van Alstine, 1948, *Newfoundland Geol. Survey Bull.* 23, p. 12.

Young Sound facies

Lower Cretaceous (middle Valanginian) : Northeast Greenland.

Wolf Maync, 1949, *Meddel. om Grønland*, bind 133, nr. 3, p. 86, 185-192, 281.

Yucatán limestones

Upper Cretaceous (Campanian) : Cuba.

J. F. de Albear, 1947, *Am. Assoc. Petroleum Geologists Bull.*, v. 31, no. 1, p. 78.

Zabriskie quartzite member (of Wood Canyon formation)

Lower Cambrian : California.

J. C. Hazzard, 1937, *Calif. Jour. Mines and Geology*, v. 33, no. 4, p. 278 (fig. 3d), 309-310.

Zadoc member (of McNairy formation)

Cretaceous (Gulf series) : Missouri.

M. M. Leighton, J. M. Weller, and H. S. McQueen, 1939, *in Kansas Geol. Soc. Guide-book* 13th Ann. Field Conf. p. 70 (fig. 25).

Zagaya limestone member (of Toco formation)

Lower Cretaceous : Trinidad, British West Indies.

H. G. Kugler, 1953, *Vereinigung Schweizer Petroleum Geologen u. Ingenieure Bull.*, v. 20, no. 59, p. 33.

Zarah subgroup

Pennsylvanian (Missourian) : Kansas, Iowa, Missouri, Nebraska, and Oklahoma.

R. C. Moore, 1948, *Am. Assoc. Petroleum Geologists Bull.*, v. 32, no. 11, p. 2033, 2035.

Zargazal formation

Miocene, middle : Tabasco and Chiapas, Mexico.

J. B. Gibson, 1936, *Soc. Geol. Mexicana Bol.*, tomo 9, no. 5, correlation chart.

G. P. Salas and Ernesto Lopez Ramos, 1951, *Asociación Mexicana Geólogos Petroleros Bol.*, v. 3, nos. 1-2, p. 38-39.

Zealand sediments

Precambrian (Keewatin) : Ontario, Canada.

Jack Satterly, 1943, Ontario Dept. Mines Ann. Rept., v. 50, pt. 2, p. 30-31.

Zebra slate

Precambrian : Newfoundland (Labrador), Canada.

G. V. Douglas, 1953, Canada Geol. Survey Paper 53-1, p. 56.

Zell limestone member (of Macy formation)

Middle Ordovician : Missouri.

E. R. Larson, 1951, Am. Assoc. Petroleum Geologists Bull., v. 35, no. 9, p. 2061-2064.

Zenoria lentil (of Verda member of Yazoo clay)

Eocene, upper : Louisiana.

H. N. Fisk, 1938, La. Dept. Conserv. Geol. Bull. 10, p. 78, 104-105.

†Zesch formation

Upper (?) Devonian : Texas.

V. E. Barnes, P. E. Cloud, Jr., and L. E. Warren, 1947, Geol. Soc. America Bull., v. 58, no. 2, p. 138-139.

Zeta Lake granite porphyry facies (of Ogishke conglomerate)

Precambrian (Knife Lake) : Minnesota.

J. T. Stark and V. G. Sleight, 1939, Geol. Soc. America Bull., v. 50, no. 7, p. 1032 (table 2), 1034-1035.

Zeto Point basalt porphyry

Tertiary : Alaska (Aleutian Islands).

R. R. Coats, 1947, U. S. Geol. Survey Alaskan Volcano Inv. Rept. 2, pt. 5, p. 77.

Zilpha clay

Eocene, middle (Claiborne group) : Mississippi.

1940, Miss. Geol. Soc. [Guidebook 2] Field Trip, March 9-10, p. 3, 11-12.

E. P. Thomas, 1942, Miss. State Geol. Survey Bull. 48, p. 33-40.

Zinton member (of Slocan series)

Triassic : British Columbia, Canada.

M. S. Hedley, 1947, British Columbia Dept. Mines Bull. 22, p. 7.

Zoroaster granite

Precambrian (Archean) : Arizona.

Ian Campbell and J. H. Maxson, 1936, Carnegie Inst. Washington Year Book 35, p. 329-331.

Zuloaga limestone

Upper Jurassic : Zacatecas and Coahuila, Mexico.

R. W. Imlay, 1938, Geol. Soc. America Bull., v. 49, no. 11, p. 1657-1659.

Zumpimito formation

Tertiary : Michoacan, Mexico.

Howel Williams, 1945, Am. Geophys. Union Trans., v. 26, no. 2, p. 255.