Index to the Geologic Names of North America

GEOLOGICAL SURVEY BULLETIN 1056-B

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By DRUID WILSON, GRACE C. KEROHER, *and* BLANCHE E. HANSEN

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Geologic names arranged by age and by area containing type locality. Includes names in Greenland, the West Indies, the Pacific Island possessions of the United States, and the Trust Territory of the Pacific Islands

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CONTENTS

Major stratigraphic and time divisions in use by the U.S. Geological Survey

Era	System or Period		Series or Epoch	Estimated ages of time boundaries in millions of years [1]
Cenozoic	Quaternary		Recent	
			Pleistocene	1
	Tertiary		Pliocene	10
			Miocene	25
			Oligocene	40
			Eocene	60
			Paleocene	
Mesozoic	Cretaceous [2]		Upper (Late) Lower (Early)	125
	Jurassic		Upper (Late) Middle (Middle) Lower (Early)	150
	Triassic		Upper (Late) Middle (Middle) Lower (Early)	180
Paleozoic	Permian [2]			205
	Carboniferous systems	Pennsylvanian [2]	Upper (Late) Middle (Middle) Lower (Early)	
		Mississippian [2]	Upper (Late) Lower (Early)	255
	Devonian		Upper (Late) Middle (Middle) Lower (Early)	315
	Silurian [2]		Upper (Late) Middle (Middle) Lower (Early)	350
	Ordovician [2]		Upper (Late) Middle (Middle) Lower (Early)	430
	Cambrian [2]		Upper (Late) Middle (Middle) Lower (Early)	510
Precambrian [2]			Informal subdivisions such as upper, middle, and lower, or upper and lower, or younger and older may be used locally.	3,000

Terms designating time are in parentheses. Informal time terms early, middle, and late may be used for eras, periods, and epochs where there is no formal subdivision into Early, Middle, and Late. Informal rock terms lower, middle, and upper may be used where there is no formal subdivision of a system or of a series.

[1] Age values given are the Holmes "B" time scale points (Holmes, 1947, p. 145). Dates are rounded to the nearest 5 million years. The errors are unknown, but more recent age determinations by various physical methods are in partial agreement with these values. For a recent compilation of radiogenic dates see selection of Adolph Knopf in Longwell's "Geologic column and scale of time" (1958, AGI 5).

[2] Provincial series accepted for use in U.S. Geological Survey reports are listed under both the time and the rock units.

INDEX TO THE GEOLOGIC NAMES OF NORTH AMERICA

By Druid Wilson, Grace C. Keroher, and Blanche E. Hansen

INTRODUCTION

Beginning in 1902, the U.S. Geological Survey has published five compilations treating the names of geologic formations and stratigraphic classification and nomenclature:

"North American Geologic Formation Names," by F. B. Weeks (Bull. 191, 1902).

"The Geologic Time Classification of the United States Geological Survey Compared with Other Classifications, Accompanied by the Original Definitions of Era, Period, and Epoch Terms," by M. Grace Wilmarth (Bull. 769, 1925).

"Names and Definitions of the Geologic Units of California," by M. Grace Wilmarth (Bull. 826, 1931).

"Lexicon of Geologic Names of the United States (including Alaska)," by M. Grace Wilmarth (Bull. 896, 1938; reprinted 1951, 1957).

"Geologic Names of North America Introduced in 1936–1955," by Druid Wilson, W. J. Sando, R. W. Kopf, and others (Bull. 1056–A, 1957).

The demand for compilations of geologic names is well attested by the circumstance surrounding the completion of the first Survey compilation by F. B. Weeks. In 1899, after it became apparent that the task was too great for one compiler, Survey geologists were asked to help, and were apportioned parts of the geologic literature to review. In this way the compilation was completed and published in 1902. The following geologists participated: M. R. Campbell, N. H. Darton, J. S. Diller, G. H. Girty, C. W. Hayes, F. H. Knowlton, F. L. Ransome, G. O. Smith, A. C. Spencer, T. W. Stanton, J. A. Taff, T. W. Vaughan, and David White.

Wilmarth's compilation of terms used in geologic-time classification was published in 1925 and is still invaluable for quotations of the original definitions and descriptions of the standard and other strati-

graphic and time divisions from widely scattered and sometimes unavailable sources. The California names and their annotations published in 1931 were repeated without change in Wilmarth's lexicon of the United States names in 1938. The reprinting of Wilmarth's lexicon in 1951 and 1957 confirms its place in the field of geologic publications. Brevity of format in "Geologic Names of North America Introduced in 1936–1955" made it possible to bring out quickly a compilation intended to be superseded by the first supplement to Wilmarth's lexicon, now in preparation.

In the present report the 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, that were published before 1956 are arranged to form a nonalphabetic index to Wilmarth's lexicon and to the "Geologic Names of North America Introduced in 1936–1955." This grouping of the names on the basis of the age and politico-geographic divisions containing the type locality is an easily used key not available elsewhere. The age of each formation (that is, rock unit) named from an area is shown, but not its complete geographic extent. The geologic-time and time-stratigraphic units are grouped together under the major time divisions.

Some names entered in Wilmarth's lexicon have been omitted. They include (a) all paleontologic and descriptive terms, (b) all names of economic units, such as miner's terms, trade names, and subsurface names identical with the names of formal rock units, (c) the names of moraines and other units of which physiography is an essential part of the definition, and (d) the names of orogenies. The American Commission on Stratigraphic Nomenclature (1955, p. 2008) has recommended that the names of moraines and other physiographic units be considered informal and not subject to the rules that apply to stratigraphic names.

The names of the rock units are listed once only—in the geographic area that contains or is assumed to contain the type area or locality. Thus, the Grenville series, a geologic name commonly used in the State of New York, is listed under the Canadian province of Ontario, where its type locality occurs; and the Colorado group or shale, used widely in Canada, is under the State of Colorado. Not all geologic formations end at political boundaries.

In the period of more than 20 years since the compilation if Wilmarth's lexicon, many names have been revised and many names not then accepted for use by the U.S. Geological Survey have been adopted. Adoption of names for use by the U.S. Geological Survey is based on the published and unpublished reports of Federal Survey geologists on areas of the United States and its possessions or trust

territories. The U.S. Geological Survey has had occasion to consider for acceptance or rejection considerably less than one-half of the names of geologic units occurring in the United States. The names of units adopted through 1958 appear in boldface type under their currently designated ages. Changes in the designated rank and age of the named units accepted for use in U.S. Geological Survey reports are shown here as authorized by the Chief Geologist, upon the recommendation of the Geologic Names Committee of the Federal Survey. They embody all changes, published or unpublished, made before July 1, 1959.

Numerous inconsistencies in listed age assignments are apparent in this compilation. These result in part from differences of opinion of the original authors and in part from Survey-accepted revisions and investigations that have been made since the publication of Wilmarth's lexicon. Thus, the inconsistencies illustrate the essential subjectivity of all age assignments and reflect the objectivity that a compiler seeks to attain.

The compilers are responsible for listing changes in the age designations of certain non-Survey names. These are (a) age assignments of a few units whose ages had been listed in general terms; (b) placing under Paleocene some units formerly listed as Eocene; and (c) assignment of some units of Pennsylvanian age to provincial series in conformance to the nomenclature adopted by agreement of the State geological surveys of Iowa, Kansas, Missouri, Nebraska, and Oklahoma and for the most part accepted by the U.S. Geological Survey.

Age changes and future revisions of all units will be considered in supplements to Wilmarth's lexicon, where they can be adequately documented. The first supplement is now in preparation.

The names are grouped under two main categories: (a) geologic-time and time-stratigraphic units, and (b) rock units. Only the time units require explanation. There is general agreement among American geologists as to the major practical stratigraphic and time divisions, if not as to their boundaries. Those in use by most geologists and the U.S. Geological Survey are shown in the table (p. IV). Less agreement exists in the use of the term "series." "Series" has been used as a rock (rock-stratigraphic) term of higher rank than "group," but more commonly as a time-stratigraphic (time-rock) term for a subdivision of a system. In the following reports concerned with stratigraphic classification and nomenclature, "series" has been considered as a part of the time-stratigraphic classification: Schenck and Muller (1941, p. 1421), the American Commission on Stratigraphic Nomenclature (1947, p. 523), Hedberg (1948, p. 452; 1958, p. 1892), Woodring (1953, p. 1082), and Dunbar and Rodgers (1957, p. 297–298). The use of "series" as a time-stratigraphic term has been recom-

mended by the American Commission on Stratigraphic Nomenclature (1956, p. 2006), and the U.S. Geological Survey will consider this usage for acceptance when the Commission adopts the revised Stratigraphic Code.

Because of this variance in usage, the names of most series are listed with both the time and the rock units, but a few names of series that are undefined and have had little or no usage—for example, the Nutrian series of Jurassic age in Arizona—are listed only under the rock units. The names of some series and stages which have been derived from units listed in Wilmarth's lexicon as rock units, and which are currently in wide usage, appear under the time units as a part of the standard sequences of certain periods. These are cited from the various sources from which the standard sequences were taken, and the designation under which they are entered in Wilmarth's lexicon appears in brackets; the **Osage series** [*see* Osage group [1]] of Early Mississippian age is an example. Precambrian series that have been used to indicate correlative time are listed with the time units, but the majority of the Precambrian series names are listed only under the rock units.

ACKNOWLEDGMENTS

We are grateful for the cooperation and assistance of George V. Cohee, chairman, and the staff of the Geologic Names Committee during the compilation of this index. Thanks are extended to Ellen James Trumbull for advice on the problems of arrangement and to Allison R. Palmer for advice concerning Cambrian time-stratigraphic terms. Other colleagues to whom we are indebted for helpful suggestions are: Jean M. Berdan, W. A. Cobban, P. E. Cloud, Jr., Helen Duncan, D. L. Durham, J. T. Dutro, James Gilluly, C. B. Hunt, G. E. Lewis, F. S. MacNeil, C. W. Merriam, G. N. Pipiringos, C. A. Repenning, R. J. Ross, Jr., W. J. Sando, G. R. Scott, J. E. Smedley, P. D. Snavely, Jr., Sandra Whalen Stock, Martha Toulmin, J. A. Vedder, and W. P. Woodring.

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Inasmuch as the correlation charts prepared by the Committee on Stratigraphy of the National Research Council, usually referred to as the GSA (Geological Society of America) correlation charts, are the major source of the arrangements of the standard time sequences given under the time units, they are listed here by number as a convenient source of reference. Other references follow, listed alphabetically.

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2. Twenhofel, W. H., and others, 1954, Correlation of the Ordovician formations of North America: ibid., v. 65, no. 3, p. 247–298.

Chart 3. Swartz, C. K., and others, 1942, Correlation of the Silurian formations of North America: ibid., v. 53, no. 4, p. 533–538.
4. Cooper, G. A., and others, 1942, Correlation of the Devonian sedimentary formations of North America: ibid., v. 53, no. 12, pt. 1, p. 1729–1794.
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SYMBOLS

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

†Names preceded by a dagger have been either abandoned by their authors or rejected for use by the U.S. Geological Survey.

[1] Names followed by this superscript are in Wilmarth's "Lexicon of Geologic Names of the United States (Including Alaska)" (U.S. Geol. Survey Bull. 896).

[2] Names followed by this superscript are in "Geologic Names of North America Introduced in 1936–1955" (U.S. Geol. Survey Bull. 1056–A).

Names in use by the U.S. Geological Survey for which the rank or lithic designation has been changed are followed by the former designation in parenthesis, except when the original combination is a part of the currently accepted usage. Examples (both from the Pleistocene names of Kansas):

Pearlette ash [1] **member** (of Sappa formation)
Missler member (of Ballard formation);(as member of Meade formation [2])

GEOLOGIC TIME AND TIME-STRATIGRAPHIC (TIME-ROCK) UNITS

Sequences of units commonly used as standards for North America are given under each major time division. They have been assembled from several sources, but mainly from the correlation charts prepared by the Committee on Stratigraphy of the National Research Council.

Certain of the sequences coincide in part or completely with current usage of the U.S. Geological Survey; thus the units adopted are shown in boldface type. A single unit in boldface within a sequence does not indicate that all or other parts of the sequence have been adopted; only those units appearing in boldface type are currently in use by the Survey. In all instances the precise rank and terminology, and certain restrictions in Survey usage, are noted.

TIME TERMS OF NONGEOGRAPHIC ORIGIN

The terms listed below have been proposed for various units of geologic time. The nongeographic origin probably indicates that all were intended for world-wide application. A few have had considerable usage, but most of the terms are currently replaced by standard divisions of geologic time (see table, p. IV). The nongeographic term Phanerozoic has come into usage as a convenient expression covering Cambrian plus all later time. It was proposed as the Phanerozoic or Phanerobiotic eon by Chadwick (1930, p. 48) together with the Cryptozoic or Cryptobiotic eon for all Precambrian time. Harris (1932, p. 489) independently proposed the Phenozoic and Cryptozoic eons for the same spans of time.

Recent
- Autocene [1]
- Holocene [1]
- †Psychozoic era [1]

Quaternary
- Antropoceno periodo [2]
- Cenocene series [1]
- Epicene series [1]
- Hectozoic [1]

Tertiary
- Neozoic [1]
- Pentozoic [1]

Miocene-Pliocene
- Neogene [1]; Neocene [1]

Eocene-Oligocene
- Eogene [1]

Paleocene-Oligocene
- Paleogene [1]

Mesozoic
- Deutozoic [1]
- Tetrazoic [1]
- Trizoic [1]

Precambrian
- † Agnotozoic era [1]
- †Archean period or system [1]
- †Archeozoic era [1]
- †Azoic era [1]
- †Collozoic age [1]
- †Eobiotic era [1]
- †Eomorphic era [1]
- †Eozoic era [1]
- †Eparchean [1]
- †Hypozoic era [1]
- †Progonic [1]
- †Proterozoic era [1]
- †Protozoic era [1]
- †Prozoic era [1]

CENOZOIC

Pleistocene (glacial)

The following glacial and interglacial stages typically developed in central North America are commonly used as the North American standard sequence (see Cooke and Gardner *in* Cooke, Gardner, and Woodring, 1943, Chart 12):

- **Wisconsin** [glacial] **stage** [1] (Wisconsin)*
- **Sangamon** [interglacial] **stage** [1] (Illinois)
- **Illinoian** [glacial] **stage** [1] (Illinois)
- **Yarmouth** [interglacial] **stage** [1] (Iowa)
- **Kansan** [glacial] **stage** [1] (Kansas; standard sections in Iowa)
- **Aftonian** [interglacial] **stage** [1] (Iowa)
- **Nebraskan** [glacial] **stage** [1] (Nebraska)

* The U.S. Geological Survey currently has under consideration the usage of time-stratigraphic nomenclature in the Pleistocene epoch.

Pleistocene (glacial)—Continued

The glacial Pleistocene time and time-stratigraphic units listed below have been used or are currently in use:

Central North America

Pleistocene (Wisconsin)

Almenan subage [2] (Kansas)
Ashawan [1] (Iowa)
Bradyan interglacial substage [2] (Nebraska)
Cary substage [1] (Illinois)
Cochrane glacial substage [2] (Ontario)
Eldoran epoch and series [1] (Iowa)
Farmdale substage [2] (Illinois)
†Hudsonian substage [1] (Great Lakes region)
Iowan substage (as stage [1]) (Iowa)
†Manitoban substage [1] (Great Lakes region)
Mankato substage [1] (Minnesota)
†Peorian stage [1] (Illinois)
†Quebecan substage [1] (Great Lakes region)
Scandian subage [2] (Kansas)
Tazewell substage [1] (Illinois)
Valders glacial substage [2] (Wisconsin)
†Wabash stage [1] (Indiana)

Pleistocene (Illinoian and Sangamon)

Centralian epoch and series [1] (Illinois)

Pleistocene (Kansan and Yarmouth)

Ottumwan epoch and series [1] (Iowa)

Pleistocene (Kansan)

Mahaskan glacial epoch [1] (Iowa)

Pleistocene (Nebraskan and Aftonian)

Grandian epoch and series [1] (Iowa)

Pleistocene (Nebraskan)

Adelphian [1] (Iowa)

Pleistocene ("pre-Nebraskan")

Gravoisan glacial epoch [1] (Missouri)
Moingonan glacial epoch [1] (Iowa)

Northeastern United States and eastern Canada

Pleistocene

†Champlain period [1] (Vermont-New York-Quebec)
Iroquois stage [1] (Great Lakes region)
St. Lawrence stage [1] (St. Lawrence Valley)
Toronto stage [1] (Ontario)
Warren stage [1] (Great Lakes region)

Northeastern United States (Atlantic coastal region)

Pleistocene

Boston glacial substage [2] (Massachusetts)
College Point stage [1] (Long Island, N.Y.)
Gardiners stage [1] (Gardiners Island, N.Y.)
Heampstead substage [1] (Long Island, N.Y.)
Herod substage [1] (Long Island, N.Y.)
Jacob stage [1] (Long Island, N.Y.)
Jameco stage [1] (Long Island, N.Y.)
Jerseyan stage [1] (New Jersey)
Lexington glacial substage [2] (Massachusetts)
Manhasset stage [1] (Long Island, N.Y.)
Mannetto stage [1] (Long Island, N.Y.)
Montauk substage [1] (Long Island, N.Y.)
Port Washington stage [1] (Long Island, N.Y.)
Vineyard interglacial stage [1] (Massachusetts)

Cordilleran North America (Rocky Mountains region)

Pleistocene

Albertan [1] (Alberta)
Albion glacial stage [1] (Colorado)
Alma glacial substage [2] (Colorado)

Pleistocene (glacial)—Continued
- Cordilleran North America (Cascade Range region)
  - *Pleistocene*
    - Admiralty glacial epoch [1] (Washington)
    - Cascadian stage [1] (Oregon)
    - Detroit glacial stage [2] (Oregon)
    - Jeffersonian stage [1] (Oregon)
    - Leavenworth glacial stage [2] (Washington)
    - Mill City glacial stage [2] (Oregon)
    - Peshastin glacial stage [2] (Washington)
    - Puyallup interglacial epoch [1] (Washington)
    - Stuart glacial stage [2] (Washington)
    - Tunnel Creek glacial stage [2] (Oregon)
    - Vashon glacial epoch [1] (Washington)
    - Willamettian stage [1] (Oregon)
- Cordilleran North America (Alaska)
  - *Pleistocene*
    - Anaktuvuk glaciation [2]
    - Brooks Lake glaciation [2]
    - Browne glaciation [2]
    - Caribou Hills glaciation [2]
    - Darling Creek glaciation [2]
    - Delta glaciation [2]
    - Donnelly glaciation [2]
    - Dry Creek glaciation [2]
    - Echooka glaciation [2]
    - Farewell glaciation [2]
    - Healy glaciation [2]
    - Iron Creek glaciation [2]
    - Itkillik glaciation [2]
    - Johnston Hill glaciation [2]
    - Mak Hill glaciation [2]
    - Mount Osborn glaciation [2]
    - Mount Susitna glaciation [2]
    - Naptowne glaciation [2]
    - Nikolai Creek glaciation [2]
    - Nome River glaciation [2]
    - Riley Creek glaciation [2]
    - Sagavanirktok glaciation [2]
    - Salmon Lake glaciation [2]
    - Selatna glaciation [2]
    - Swan Lake glaciation [2]
- Mexico
  - *Quaternary*
    - Mexicana stage [2]
- Hawaii (Island of Hawaii)
  - *Pleistocene*
    - **Makanaka drift** and **stage** [2]
    - Pohakuloa drift and stage [2]

Cenozoic (marine)
- Eastern North America
  - The subdivisions listed below make up the only part of the standard Tertiary section of the Atlantic and Gulf Coastal Plain for which geographically derived names are given by Cooke and Gardner (*in* Cooke, Gardner, and Woodring, 1943, Chart 12):

Eocene	Jackson [*see* **Jackson formation** [1] or **group**; Jacksonian [1] (Mississippi)] Clairborne [*see* **Claiborne group** [1]; Claibornian [1] (Alabama)] Wilcox [*see* **Wilcox group** [1] (Alabama)]
Paleocene	Midway [see **Midway group** [1]; Midwayan [1] (Alabama)]

Cenozoic (marine)—Continued

Eastern North America—Continued

Other time units that have been used for parts of the Tertiary of eastern North America:

Atlantic and Gulf Coastal Plain

Tertiary

†Alabama period [1] (Alabama)

†Atlantic group [1] (New Jersey-Florida)

†Gulf group [1] (Alabama-Texas)

Pliocene

†Floridian epoch [1] (Florida)

Miocene and Pliocene

†Sumter epoch [1] (South Carolina)

Miocene

†Carolinian [1] (North and South Carolina)

†Marylandian [1] (Maryland)

†Virginian [1] (Virginia)

†Yorktown epoch [1] (Virginia)

Oligocene

Vicksburgian [1] (Mississippi)

Eocene

†Chickasawan stage [1] (Mississippi)

Caribbean region

Miocene, late

Caimitoan stage [2] (Dominican Republic)

Springvalean stage [2] (Trinidad)

Oligocene

Stainforth (1953, p. 251) has recognized the use of the Antigua stage (middle Oligocene) and the Anguilla stage (late Oligocene). These stages are based on the Antigua and the Anguilla formations, from the islands of the same names, which are considered by other geologists to be of late Oligocene and early Miocene age, respectively.

Sequence of microfaunal substages proposed for the middle and late Miocene of the central Atlantic Coastal Plain by Malkin (1953, p. 767–768):

Miocene	*late*	Yorktownian substage (Virginia) St. Marysan substage (Maryland)
	middle	Choptankian substage (Maryland) Calvertian substage (Maryland)

Western North America

Two sequences of stages are in use for the marine Cenozoic of western North America. The microfaunal stages are based on the chronologic occurrence of species or assemblages of species of foraminifera, believed to be independent of the lithic units in which they are found. The more or less informal megafaunal "stages" are based, according to Durham (1954, p. 23), on the distribution of species of megafossils, mainly mollusks and echinoids, within formations and sequences of formations from which the names of the "stages" are derived. The present arrangement is adapted from the marine Cenozoic correlation chart (Weaver and others, 1944, Chart 11), from later additions to the microfaunal sequence by Natland (1953) and by Mallory (1953; 1954; 1959), and from the charts of Durham, Kleinpell, and Savage (*in* Durham, 1954, p. 25) and Durham, Jahns, and Savage (1954, p. 60). The microfaunal stages proposed for the Pliocene nad Pleistocene by Natland have not been fully defined and have not yet been used as widely in publication as the microfaunal stages proposed for the Oligocene by Schenck and Kleinpell (1936) and for the Miocene by Kleinpell (1934; 1935; 1938). The Paleocene and Eocene stages earlier proposed by Mallory were fully defined in 1959. The equivalence of the stages of the microfaunal and megafaunal sequences is fairly well established, but the adherents of the two time scales are not in complete agreement on correlation with the standard major Tertiary divisions. The disparity of the two correlations with the Tertiary divisions is graphically shown below. The spacing of the rules shows only the equivalence of the stages of the two scales; no indication of relative time span is intended. A partly dashed rule indicates doubt concerning precise correlation with the apposed stage. All type areas except those indicated are in California.

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Cenozoic (marine)—Continued

Western North America—Continued

Microfaunal stages			*Megafaunal "stages"*
Hallian stage	*Pleistocene*		*Pleistocene*
Wheelerian stage	*Pliocene*		San Joaquin [*see* **San Joaquin fm.** [1]]
Venturian stage			Etchegoin [*see* **Etchegoin fm.** [1]]
Repettian stage			Jacalitos [*see* **Jacalitos fm.** [1]]
Delmontian stage	*Miocene*		Neroly [*see* **Neroly fm.** [1]]
			Cierbo [*see* **Cierbo ss.** [1]]
Mohnian stage			Briones [*see* **Briones ss.** [1]]
Luisian stage			Tembler [*see* **Temblor fm.** [1]]
Relizian stage			
Saucesian stage			
Zemorrian stage			Vaqueros [*see* **Vaqueros ss.** [1]]
	Oligocene		Blakeley [*see* Blakeley fm. [1] (Wash.)]
Refugian stage			Lincoln [*see* Lincoln fm. [1] (Wash.)]
			Keasey [*see* **Keasey sh.** [1] (Oreg.)]
Narizian stage	*late*	*Eocene*	Tejon [*see* **Tejon fm.** [1]]
Ulatisian stage	*middle*		"Transition beds"
			Domengine [*see* **Domengine fm.** [1]]
Penutian stage	*early*		Capay [*see* Capay fm. [1]]
Bulitian stage	*Paleocene*		Meganos [*see* **Meganos fm.** [1]; lower Eocene according to U.S. Geol. Survey usage]
Ynezian stage			Martinez [*see* **Martinez fm.** [1]]

Other Cenozoic time units that are in use or have been used in California:

Pleistocene
- Pedroian [1]
- Red Bluff epoch [1]
- San Pedran epoch [1]

Pliocene and Quaternary
- Sierran [1]

Eocene, late
- Fresnian stage [2]

Eocene, early
- Juniperan stage [2]

Cenozoic (continental)

Provincial time scale for the North American continental Tertiary based on mammal-bearing units, according to Wood* and others (1941, pl. 1):

Tertiary	*Pliocene*	Blancan age (Texas)
		Hemphillian age (Texas)
		Clarendonian age (Texas)
	Miocene	Barstovian age (California)
		Hemingfordian age (Nebraska)
		Arikareean age (Nebraska)
	Oligocene	Whitneyan age (Nebraska)
		Orellan age (Nebraska)
		Chadronian age (South Dakota)
	Eocene	Duchesnean age (Utah)
		Uintan age (Utah)
		Bridgerian age (Wyoming)
		Wasatchian age (Wyoming-Utah)
	Paleocene	Clarkforkian age (Wyoming)
		Tiffanian age (Colorado)
		Torrejonian age (New Mexico)
		Dragonian age (Utah)
		Puercan age (New Mexico)

Other continental Cenozoic ages and stages:

North America
- *Pleistocene*
  - Rancholabrean age [2] (California)
  - Irvingtonian age [2] (California)

California
- *Pliocene* (*Clarendonian*)
  - Montediablan stage [2]
  - Cerrotejonian stage [2]

MESOZOIC

The European stages listed below are commonly used for North America, and according to Longwell (1958, AGI 5) there is no other generally accepted classification. No standard American time classification is given for any of the periods or systems of the Mesozoic on the correlation charts prepared by the Committee on Stratigraphy of the National Research Council.

Cretaceous	*Late*	Maestrichtian	Senonian
		Campanian	
		Santonian	
		Coniacian	
		Turonian	
		Cenomanian	
	Early	Albian	
		Aptian	
		Barremian	Neocomian
		Hauterivian	
		Valanginian	
		Berriasian (Infra-Valanginian)	
Jurassic	*Late*	Purbeckian	
		Portlandian	
		Kimeridgian	
		Oxfordian	
	Middle	Callovian	
		Bathonian	
		Bajocian	
	Early	Toarcian	
		Pliensbachian	
		Sinemurian	
		Hettangian	

*We acknowledge advice on localty data from H. E. Wood, 2d chairman of the committee currently revising the continental time scale.

Mesozoic—Continued

Triassic	*Late*	Rhaetian Norian Carnian (Karnian)
	Middle	Ladinian Anisian (Virglorian)
	Early	Scythian (Werfenian)

Cretaceous

The units listed below have been used or are currently in use for parts of the Cretaceous in the areas indicated.

North America
Late Cretaceous
Cordilleran system [1]
Early Cretaceous
†Comanchean system [1] (Texas)
†Shastan system [1] (California)

Gulf Coastal Plain
Late Cretaceous
Gulf series [1] (Texas)
Early and Late Cretaceous
Comanche series [1] (Texas)
Early Cretaceous
Coahuila series (as Coahuila group[2]) (Mexico)

California and Oregon
Early Cretaceous
Shasta series [1] (California)

Sequence of microfaunal stages proposed for the Late Cretaceous of California by Goudkoff (1945, p. 956–1007):

Late Cretaceous	Cheneyan stage ("pre-Martinez Paleocene or post-Moreno Cretaceous"; author favored Paleocene; placed here for convenient listing) Ciervian stage Ingramian stage Tracian stage Weldonian stage Cachenian stage Delevanian stage

Jurassic

Triassic

No geographically derived names of time units based on faunal or physical criteria occurring in the Triassic and Jurassic rocks of North America have been recorded in the Lexicon files.

PALEOZOIC

A number of names have been proposed for units of great magnitude based on physical and faunal criteria occurring in the rocks of North America. Some of them were thought to be more appropriate for North America than the now standard major stratigraphic and time divisions, which are mainly of European derivation. With the exception of the Mississippian and Pennsylvanian systems, few of these units ever gained very wide acceptance, and none is in current use as a period or system. Some encompass parts or all of more than one of the Paleozoic periods or systems and are so listed below; the others are entered under the appropriate age.

Paleozoic
Appalachian system [1] (Pennsylvania)
†New York system [1] (New York)

Devonian—Mississippian
†Bradfordian [1] (Pennsylvania-New York)
Chattanoogan series [1] (Tennessee)
Erian period [1] (New York)
†Waverlyan system [1] (Ohio)

Paleozoic—Continued
Silurian-Devonian
Monroan [1] (Michigan)
Yorkian period [1] (New York)
Ordovician—Silurian
†Oswegan period [1] (New York)
†Hudson period [1] (New York)
Cambrian—Silurian
†Mohawk system [1] (New York)
Cambrian—Ordovician
Ozarkian system [1] (Missouri)
†Potsdam period [1] (New York)
†Taconic system [1] (New York-New England)
Cambrian(?)
Hudson system [1] (New York)
†Taconian [1] (New York-New England)

Permian

The Permian series commonly in use as the standard sequence in central and southwestern United States (*see* Longwell, 1958, AGI 5) are typically developed in Texas and New Mexico to which they are restricted in use by the U.S. Geological Survey:

Ochoa series [2] (New Mexico)
Guadalupe series [*see* Guadalupe group [1] (Texas)]
Leonard series [*see* **Leonard formation** [1] (Texas)]
Wolfcamp series [*see* **Wolfcamp formation** [1] (Texas)]

Other units:

Central United States
Permian
Big Blue series [1] (Kansas)
Cimmaron series [*see* under Cimmaron group [1] (Kansas)]
Minco division [2] (Oklahoma)
Wanette division [2] (Oklahoma)

Pennsylvanian

The type area of the Pennsylvanian system is in the northern Appalachian region in Pennsylvania, but a better standard section is in West Virginia (Moore and others, 1944, p. 665). The standard sequence for eastern North America, according to the Pennsylvanian correlation chart (Moore and others, 1944, Chart 6), given below, repeats the major stratigraphic divisions commonly used in the eastern United States, except that the Lee and the Kanawha series take the place of the division usually called Pottsville (p. 666).

Monongahela series [*see under* **Monongahela formation** [1] (Pennsylvania)]
Conemaugh series [*see under* **Conemaugh formation** [1] (Pennsylvania)]
Allegheny series [*see under* **Allegheny formation** [1] (Pennsylvania)]
Kanawha series [*see under* **Kanawha formation** [1] (West Virginia)]
Lee series [*see* **Lee formation** [1] or **group** (Virginia)]

The sequence given for central North America by Longwell (1958, AGI 5) is, with the exception of the Atoka series in place of the Lampasas series, the same sequence given by Moore and others (1944, Chart 6). They state (p. 666) that these series are used also in western North America and are thought to be applicable to the eastern United States and Canada as well. Their use as provincial series by the U.S. Geological Survey is restricted to the mid-Continent region:

	Age according to U.S. Geol. Survey usage
Virgil series [1] (Kansas) **Missouri series** [*see* Missouri group [1] (Missouri)]	*Late*
Des Moines series [*see* Des Moines group [1] (Iowa)] **Atoka series** [*see* Atoka formation [1] (Oklahoma)]	*Middle*
Morrow series [*see* Morrow group [1] (Arkansas)]	*Early*

Pennsylvanian—Continued

Other Pennsylvanian time units:

Eastern United States

Pennsylvanian

†Pittsburg series [1] (Pennsylvania)

Central United States

Pennsylvanian

Kansas period [1] (Kansas)

Late Pennsylvanian

Kawvian series (epoch) [2] (Kansas)

Middle Pennsylvanian

Cygian substage [2] (Missouri)

Oklan series (epoch) [2] (Oklahoma)

Venteran substage [2] (Missouri)

Early and Middle Pennsylvanian

†Bend series [1] (Texas)

Ti Valley series [2] (Oklahoma)

Early Pennsylvanian

Ardian series (epoch) [2] (Oklahoma)

Lampasas series [2] (Texas)

Pushmataha series [2] (Oklahoma)

Southwestern United States

Middle Pennsylvanian

Derry series [2] (New Mexico)

Mississippian

The type area of the Mississippian system is in the upper Mississippi and the lower Ohio valleys (Weller and others, 1948, Chart 6). The series listed below are given by Longwell (1958, AGI 5) for central North America and, except for the form of the names (i.e., Chesterian, etc.), the same series are given by Weller and others as the standard sequence for North America. Their use as provincial series by the U.S. Geological Survey is restricted to the type Mississippian area.

	Age according to U.S. Geol. Survey usage
Chester series [*see* Chester group [1] (Illinois)]	*Late*
Meramec series [*see* Meramec group [1] (Missouri)]	
Osage series [*see* Osage group [1] (Missouri)]	*Early*
Kinderhook series [*see* Kinderhook group [1] (Illinois)]	

Other Mississippian time units:

Eastern United States

Late Mississippian

†Tennesseean system [1] (Tennessee)

Central United States

Mississippian

Leeic period [2] (Iowa)

Louisian [1] (Missouri)

Valmeyer series [2] (Illinois)

Early Mississippian

Iowa series [1] (Iowa)

Devonian

"Standard section" for North America according to the Devonian correlation chart (Cooper and others, 1942, Chart 4). Type areas, except those noted, are in the State of New York:

- Bradfordian series (part) [*see* †Bradfordian [1] (Pennsylvania-New York)]
  - Conewango stage [*see* Conewango series [1] (Pennsylvania)]
- Chautauquan series [*see* Chautauquan group [1]]
  - Cassadaga stage [2]
- Senecan series [*see* under Seneca limestone [1]]
  - Chemung stage [*see under* **Chemung formation** [1]]
  - Finger Lakes stage [2]
- Erian series [*see* Erie series [1]]
  - Taghanic (Taughannock) stage [2]
  - Tioughnioga stage [2]
  - Cazenovia stage [*see* Cazenovia group [1]]
- Ulsterian series [*see* Ulster group [1]]
  - Onesquethaw stage [2]
  - Deerpark stage [2]
  - Helderberg stage [*see* **Helderberg group** [1]; Helderbergian [1]]

Other Devonian time units:

Eastern North America

Middle Devonian

†Hamilton period [1] (New York)

Stroudsburgian stage [2] (Pennsylvania)

Early Devonian

Oriskanian [1] (New York)

Silurian

Sequence of series for North America according to the Silurian correlation chart (Swartz and others, 1942, Chart 3):

	Age according to U.S. Geol. Survey usage
Cayugan series [*see* Cayugan,[1] Cayuga group [1] (New York); **Cayuga series** of the U.S. Geol. Survey]	*Late*
Niagaran series [*see* Niagaran[1], **Niagara series**[1], **Niagara group** [1] (New York)]	*Middle*
Albion series [*see under* Albion sandstone [1] (New York); use of Albion by the U.S. Geol. Survey is currently restricted to **Albion group**; in the upper Mississippi Valley, the Survey uses **Alexandrian series** [1] (Illinois)]	*Early*

Other Silurian time units:

Eastern North America

Silurian

†Ontarian [1] (New York)

Late Silurian

Salinan [1] (New York)

Middle Silurian

Anticostian [1] (Quebec)

†Lockport group [1] (New York)

Early and Middle Silurian

†Niagara period [1] (New York)

Early Silurian

Medinan [1] (New York)

Central North America

Middle Silurian

†Chicago group [1] (Illinois)

Ordovician

"Generalized standard section" according to the Ordovician correlation chart (Twenhofel and others, 1954, Chart 2):

- **Cincinnatian series** [1] [*see also* Cincinnatic system [1] (Ohio); restricted in use by the U.S. Geol. Survey to Ohio, Indiana, Kentucky and Tennessee]
  - Gamachian stage [*see* Gamachian series [1] (Quebec)]
  - Richmondian stage [*see* **Richmond group** [1]; Richmondian [1] (Indiana)]
  - Maysvillian stage [*see* **Maysville group** [1] (Kentucky)]
  - Edenian stage [*see* **Eden group** [1]; Edenian [1] (Ohio)]
- Champlainian series [*see* †Champlainian system [1] (New York)]
  - Mohawkian stage [*see* **Mohawkian series** [1] (New York); restricted in use by the U.S. Geol. Survey to New York]
    - Trentonian stage [*see under* **Trenton limestone** or **group** [1] (New York)]
    - Black River stage [*see* **Black River group** [1] (New York)]
  - Chazyan stage [*see* **Chazy group** [1] (New York)]
- Canadian series [*see under* †Canadian series [1]; †Canadian system [1] (Quebec)]

Other Ordovician time units:

Eastern North America

Ordovician

- †Champlainic system [1] (New York)
- †Nashvillean [1] (Tennessee)
- †Trenton period [1]; Trentonian [1] (New York)

Middle Ordovician

- Bolarian series [2] (Virginia)
  - Hunterian subseries [2] (Pennsylvania)
  - Hatterian subseries [2] (Pennsylvania)
- Chazyan [1] (New York)
- Lincolnshirian stage [2] (Virginia)

Early Ordovician

- Beekmantownian [1] (New York)
- Shenandoan [1] (Appalachian region)
- Stonehengian division [2] (Pennsylvanian)

Central and eastern North America

Ordovician

- Simpsonian series [2] (Oklahoma)

Cambrian

According to the Cambrian correlation chart for North America (Howell and others, 1944, Chart 1) no stages of the Early Cambrian were established and no stages in the Middle Cambrian satisfactorily defined. Dresbachian (Minnesota), Franconian (Minnesota) and Trempealeauan (Wisconsin) (ascending order), defined by the listed sequence of contained faunal zones, were given as stages covering the Late Cambrian. These are discussed and defined as stages of the Late Cambrian Croixan series by Bell, Berg, and Nelson (1956, p. 415–442).

Units listed below have been used or are currently in use:

Eastern North America

Late Cambrian

- Bretonian [1] (Nova Scotia)
- Johannian series [1]; Johannian [1] (New Brunswick)
- †Potsdamian [1] (New York)
- †Saratogan epoch or series [1] (New York)

Middle Cambrian

- Acadian series or epoch [1] (New Brunswick)
- Coldbrookian series [2] (Nova Scotia)
- Conasaugan series [2] (Georgia)
- Dugaldian series [2] (Nova Scotia)

Cambrian—Continued
Eastern North America—Continued
Early Cambrian
Etcheminian series [1] (New Brunswick)
†Georgian epoch or series [1] (Vermont)
Labrador series [2] (Labrador)
Hanfordian series [1] (New Brunswick)
Placentia [1] (Newfoundland)
Terra Nova [1] (Newfoundland)
Upper Mississippi Valley
Late Cambrian
St. Croixan series [1]; Croixan [1] (Minnesota)
Western North America
Middle Cambrian
Albertan system [2] (Alberta)
Bonnetian age and stage [2] (Nevada)
Early Cambrian
Waucoban series [1] (California)

PRECAMBRIAN

(*See also under* Time terms of nongeographic origin)

Properly, Precambrian divisions should not be listed under time units. The perennial use of terms such as era, period, and system, reflects the desire of geologists to suggest by terminology the impressive magnitude of the Precambrian sequence and the long time-span necessary for the deposition of the sediments, the emplacement of the igneous rocks, subsequent metamorphism, and the development of notable unconformities. Criteria for consistent worldwide division of this vast expanse of time are inadequate. Stratigraphically significant paleontologic criteria, used for the rest of geologic time, have thus far not been discovered in Precambrian rocks. Radiogenic methods may eventually provide means for inter-regional correlation when there are enough of them, and with reduction of the margin of error in present techniques. Numeric dating, sometimes called the absolute age as opposed to relative age based on fossils, has been determined by radiogenic methods for numerous Precambrian rocks. Whereas this has upheld some lithologic correlations, the results have more commonly shown the unreliability of physical unity as a basis for time-stratigraphic correlation. As a result, in the current period of intensified radiogenic investigations, the use of time and time-stratigraphic (time-rock) divisions in the Precambrian of North America has declined. Among the authors who have discussed the problems of correlation and time divisions within the Precambrian are Leith (1934, p. 169), Grout and others (1951, p. 1020, 1063–1064), Wilson (1952, p. 201–202), Gill (1952, p. 57–67; 1955, p. 25–29; 1955a, p. 117–124), Woodring (1953, p. 1083), Rodgers (1954, p. 658), Knopf (1955, p. 698–699), and Dunbar and Rodgers (1957, p. 298).

Units more commonly used as standard (i.e., time-stratigraphic) divisions as well as those suggesting great rank are listed below.

Greenland
Greenlandian [2]
Ketilidian [2]
Northeastern United States
Atlantic period [1] or system [1] (New Hampshire)
Great Lakes and Canadian Shield regions
Algomic period [1] (Ontario)
†Algonkian period [1] or system [1] (Lake Superior region)
Anianic period [1] (Cloud-Cuckoo-Land)
Animikie series [1]; Animikean [1] (Ontario)
Coutchiching series [1] (Ontario or Minnesota)
Grenville series [1]; Grenvillian [1] (Ontario)
Haileyburian [*see* Haileyburnian [1] (Ontario)]
Huronian series [1]; Huronic period [1] (Ontario)
Keewatin series [1] (Minnesota)
Keweenawan series [1] (Michigan)
Knife Lake series [1] (Minnesota); **Knife Lake group** of U.S. Geological Survey
Labradorian [1] (Labrador)

Precambrian—Continued
- Great Lakes and Canadian Shield regions—Continued
  - Laurencic period [1] (Quebec)
  - Laurentian epoch or series [1] (Quebec)
  - Loganian [1] (Ontario)
  - †Michigan period [1] (Michigan)
  - Ontarian [1] (Ontario)
  - Sudbury series [1]; Sudburian [1] (Ontario)
  - Superian era [2] (Lake Superior region)
  - Superioric period [1] (Lake Superior region)
  - Timiskamian series [1] (Ontario)
  - Varennesic period [1] (Ontario)
- Cordilleran North America
  - **Belt series** [1]; Beltian system [1] (Montana)
  - Bitterroot period [1] (Montana)
  - Cherric period [1] (Montana)
  - Connaughtic [1]
  - **Grand Canyon series** [1] (Arizona)
  - **Llano series** [1] (Texas)
  - Madisonic period [1] (Montana)
  - Selkirkian period [1] (British Columbia)
  - †Texian system [1] (Texas)
  - Uncompahgran system [1] (Colorado)

ROCK UNITS

The names of the rock units are listed once only—in the geographic area that contains, or is assumed to contain the type area or locality. The symbols used are explained on page 413.

United States
- Alabama
  - *Quaternary(?)*
    - Buttahatchie gravel [1]
  - *Pleistocene*
    - Conecuh sands [1]
    - †Geneva sands [1]
    - †Mobile Bay formation [1]
    - Mon Louis formation [1]
    - †Ozark sands [1]
  - *Tertiary*
    - †Alabama white limestone [1]
  - *Pliocene*
    - **Citronelle formation** [1]
  - *Miocene(?)*
    - Roberts sand [1]
  - *Miocene, lower*
    - **Paynes Hammock sand** [2]
  - *Oligocene, middle*
    - **Glendon limestone** [1] **member** (of Byram formation)
  - *Eocene*
    - †Tombigbee [1] (formation)
  - *Eocene, upper, and Oligocene*
    - †St. Stephens division [1], formation,[1] group,[1] or limestone [1]
  - *Eocene, upper*
    - **Cocoa sand member** (of Yazoo clay); (as member of Jackson formation [1])
    - Dellet sand member (of Moodys Branch marl)[2]
    - **North Creek member** (of Yazoo clay)[2]
    - **Pachuta marl member** (of Yazoo clay)[2]
    - **Shubuta member** (of Yazoo clay)[2]
    - Shubuta Hill clay [2]
  - *Eocene, middle*
    - †Choctaw buhrstone [1]
    - **Claiborne group** [1]
    - †Claiborne sand [1]
    - **Gosport sand** [1]
    - **Lisbon formation** [1]
    - **Tallahatta formation** [1]
  - *Eocene, lower*
    - **Bashi marl member** (of Hatchetigbee formation); (as formation [1])
    - †Bashi marl [1]
    - **Bells Landing marl member** (of Tuscahoma sand)[1]
    - †Bells Landing series [1]
    - †Fort Gaines [1] (formation)
    - **Grampian Hills member** (of Nanafalia formation)[2]

United States—Continued
- Alabama—Continued
  - *Eocene, lower*—Continued
    - **Greggs Landing marl member** (of Tuscahoma sand)[1]
    - †Greggs Landing series [1]
    - Gullette Bluff beds [1]
    - **Hatchetigbee formation** [1]
    - **Nanafalia formation** [1]
    - †Nanafalia marl [1]
    - **Salt Mountain limestone** [1]
    - †Tuscahoma marl [1]
    - **Tuscahoma sand** [1] or **formation**
    - **Wilcox group** [1] or **formation**
    - †Woods Bluff group or series [1]
    - Woods Bluff marl (in Bashi formation)[1]
  - *Paleocene*
    - †Black Bluff group, clay or series [1]
    - Chattahoochee [1] (formation)
    - **Clayton formation** [1]
    - **Coal Bluff member** (of Naheola formation); (as beds or series [1])
    - **McBryde limestone member** (of Clayton formation)[2]
    - †Matthews Landing group or series [1]
    - Matthews Landing marl [1]
    - **Midway formation or group** [1]
    - †Midway series or limestone [1]
    - **Naheola formation** [1]
    - †Naheola marl [1]
    - †Oak Hill-Pine Barren group [1]
    - **Oak Hill member** (of Naheola formation)[2]
    - **Pine Barren member** (of Clayton formation); (as beds [1])
    - †Rutledge limestone [1]
    - †Sucarnoochee clay [1]
  - *Upper Cretaceous*
    - **Arcola limestone member** (of Mooreville chalk) [2]
    - **Coker formation** [2]
    - †Cottondale formation [2]
    - **Demopolis chalk** (*as* division [1])
    - **Eoline member** (of Coker formation) [2]
    - †Eufaula sands [1]
    - **Eutaw formation** [1]
    - **Gordo formation** [2]
    - **McShan formation** [2]
    - **Perote member** (of Providence sand)[2]
    - †Portland division (of Selma chalk)[2]

United States—Continued
Alabama—Continued
Upper Cretaceous—Continued
Prairie Bluff chalk [2]
Selma chalk [1] or **group**
†Selma division (of Selma chalk)[1]
†Tombigbee chalk [1]
Tuscaloosa formation,[1] **gravel,** or **group**
Lower Cretaceous
Vick formation [1]
Paleozoic (see also *Precambrian or Paleozoic*)
Dempsey marble [1] (in Talladega slate)
Probably Paleozoic
Jumbo dolomite member (of Talladega slate)[1]
Probably Paleozoic (pre-Devonian)
Butting Ram sandstone member (of Talladega slate)[1]
Cheaha sandstone member (of Talladega slate)[1]
Post-Carboniferous
†Bluff Springs granite [1]
Millerville green schist [1]
Pinckneyville granite [1]
Post-Carboniferous(?)
Hillabee chlorite schist [1]
Iwana green schist [1]
Carboniferous (see *Precambrian to Carboniferous;* and *Cambrian to Carboniferous*)
Carboniferous (probably Lower Pennsylvanian)
Erin shale [1]
Pennsylvanian
Black Creek coal group [1]
Brookwood coal group [1]
Cobb coal group [1]
Dogwood coal group [1]
Fayette gas sand [1] (subsurface)
Gould coal group [1]
Gwin coal group [1]
Horse Creek coal group (in Pottsville formation)[1]
Mary Lee coal group [1]
†Montevallo conglomerate [1]
Nunnally coal group [1]
Pratt coal group [1]
†Sand Mountain conglomerate [1]
Straven coal group [1]
Lower Pennsylvanian
Boyles sandstone member (of Pottsville formation)[1]
Bremen sandstone member (of Pottsville formation)[1]
Camp Branch sandstone member (of Pottsville formation)[1]
Chestnut sandstone member (of Pottsville formation)[1]
Lick Creek sandstone member (of Pottsville formation)[1]
Lookout sandstone [1]
Pine sandstone member (of Pottsville formation)[1]

United States—Continued
Alabama—Continued
Lower Pennsylvanian—Continued
Razburg sandstone member (of Pottsville formation)[1]
Rocky Ridge sandstone member (of Pottsville formation)[1]
Shades sandstone member (of Pottsville formation)[1]
Straight Ridge sandstone member (of Pottsville formation)[1]
Straven conglomerate member (of Pottsville formation)[1]
Wolf Ridge sandstone member (of Pottsville formation)[1]
Mississippian
Burgess oolite (in Bangor limestone)[1]
Dorans Cove sandstone [1]
†Huntsville[1] (formation)
†La Grange sandstone [1]
†Lauderdale chert [1]
†Monte Sano limestone; also group [1]
†Oxmoor sandstone and shales [1]
Rockwood oolite [1]
Spout Spring oolite (in Bangor limestone)[2]
Upper Mississippian
Allsboro sandstone [1]
Alsobrook member (of Pride Mountain formation); (as formation [1])
Bangor limestone [1]
Floyd shale [1] (*see* p. 622)
Hartselle sandstone [1]
Little Shades sandstone member (of Parkwood formation)[2]
Parkwood formation [1]
Pride Mountain formation (S.W. Welch, 1958, U.S. Geol. Survey Oil and Gas Inv. Chart OC-58)
Southward Bridge formation [1]
Southward Pond formation [1]
Tuscumbia limestone [1]
Lower Mississippian
Fort Payne chert [1]
Devonian (see also *Cambrian—Devonian*)
Yellow Leaf quartz schist [1]
Middle Devonian
Ragland sandstone [1]
Lower or Middle Devonian
Frog Mountain sandstone [1]
Lower Devonian
Clear Branch sandstone [1]
Jemison chert [1]
Silurian (see also *Cambrian—Devonian*)
Red Mountain formation [1]
Ordovician (see also *Cambrian—Devonian*)
†Pelham limestone [1]
Middle Ordovician
Little Oak limestone [1]

United States—Continued
Alaska—Continued
Oligocene—Continued
Burls Creek shale member [1] (of Katalla formation)
Katalla formation [1]
Puffy member (of Katalla formation); (as member of Redwood formation [1])
Redwood formation [1]
Oligocene, Upper
Point Hey member (of Katalla formation); (as member of Redwood formation [1])
Oligocene, lower and middle
Split Creek sandstone member [1] (of Katalla formation)
Eocene
Getmuna rhyolite group [2]
Kushataka formation [1]
Stepovak series [1]
Stillwater formation [1]
Tokun formation [1]
Tyonek formation [1]
Eocene, upper
Gakona formation [1]
Kenai formation [1]
Eocene or Paleocene(?)
Chickaloon formation [1]
Paleocene(?) or Eocene, lower(?)
Wishbone formation [2]
Mesozoic, Tertiary, and Carboniferous(?)
†Oklune series [1]
Mesozoic (see *Paleozoic and Mesozoic*)
Mesozoic(?)
Cedar Bay granite [1]
Eshamy granite [1]
Nellie Juan granite [1]
Upper Mesozoic(?)
Orca group [1]
Valdez group [1]
Cretaceous or Tertiary
Agattu beds [2]
Cretaceous (see also *Jurassic or Cretaceous*)
†Cape Beaufort coal measures [1]
Upper Cretaceous and Paleocene(?)
Iditarod basalt [2]
Upper Cretaceous
Cantwell formation [1]
Chignik formation [1]
Colville group (as series [1])
†Holiknuk series [1]
Kaltag formation [1]
Kogosukruk tongue (of Prince Creek formation) [2]
Matanuska formation [1]
Melozi formation [1]
Niakagon tongue (of Chandler formation) [2]
Nulato formation [1]
Prince Creek formation [2]
Schrader Bluff formation [2]
Seabee formation [2]

United States—Continued
Alaska—Continued
Upper Cretaceous—Continued
Sentinel Hill member (of Schrader Bluff formation) [2]
Shaktolik group [1]
Thetis group [1]
†Tuluga member (of Schrader Bluff formation) [2]
Tuluvak tongue (of Prince Creek formation) [2]
Ungalik conglomerate [1]
Upper(?) Cretaceous
Bergman group [1]
Yakutat group [1]
Lower and Upper Cretaceous
Chandler formation [2]
Corwin formation [1]
Ignek formation [1]
Kuskokwim group [2]
Nanushuk group (as formation [1])
Lower Cretaceous
Anaktuvuk group [1]
†Hatbox tongue (of Chandler formation) [2]
Herendeen limestone [1]
Kandik formation [1]
Kennicott formation [1]
Koyukuk group [1]
Nelchina limestone [1]
Okpikruak formation [2]
Staniukovich shale [1]
Topagoruk formation [2]
Torok formation [2]
Tuktu formation [2]
Lower and Lower(?) Cretaceous
†Umiat formation [2]
Lower Cretaceous(?)
Jualin diorite [1]
Lower Cretaceous to Carboniferous(?)
Gemuk group [2]
Cretaceous and Jurassic(?)
Susitna slate [1]
Jurassic, Cretaceous, and Tertiary
†Matanuska series [1]
Jurassic or Cretaceous
Boundary granodiorite [1]
Coast Range intrusives [1]
Hyder quartz monzonite [1]
Kotsina conglomerate [1]
Texas Creek granodiorite [1]
Jurassic(?) to Lower Cretaceous(?)
Douglas Island volcanic group [1]
Treadwell slate [1] or **formation**
Jurassic(?)
Skwentna group [1]
Upper Jurassic
Chinitna shale [1], **siltstone, or formation**
Chisik conglomerate member (of Naknek formation) [1]
†Katmai series [1]
Naknek formation [1]
Pomeroy member (of Naknek formation) [2]
Sheilikof formation [1]

United States—Continued
Alaska—Continued
Devonian(?)
†Kasaan greenstone [1]
Kuzitrin formation [1]
Upper Devonian or Mississippian
West Fork formation [1]
Upper Devonian
Kanayut conglomerate (A. L. Bowsher and J. T. Dutro, Jr., 1957, U.S. Geol. Survey Prof. Paper 303-A, pt. 3, p. 3, 5, 7-12, figs. 2, 3, 4.)
Stuver member (of Kanayut conglomerate); (as series [1])
Upper Devonian or older
Neurokpuk formation (as schist [1])
Middle Devonian
Salmontrout limestone [1]
Takotna formation [1]
Vallenar formation [1]
Woodchopper volcanics [1]
Pre-Devonian
Mentasta schist [1]
Silurian, Devonian, and Carboniferous
Tonzona group [1]
Silurian
†Bettles group [1] or series [1]
Skajit limestone [1]
Tolovana limestone [1]
Middle or Upper Silurian
Holitna group [2]
Post-Ordovician(?)
Hurrah slate [1]
Puckmummie schist [1]
Ordovician, Silurian, and Devonian(?)
†Kugruk group [1]
Terra Cotta series [1]
Ordovician and Silurian
Porcupine group [1]
Ordovician and Silurian(?)
Tatina group [1]
Ordovician(?)
Sowik limestone [1]
Middle Ordovician
Fossil Creek volcanics [1]
Lower and Upper Ordovician, Silurian, and Devonian
Port Clarence limestone [1]
Pre-Ordovician to Devonian
Wales group [1]
Pre-Ordovician(?)
Solomon schist [1]
Precambrian or Paleozoic
Casadepaga schist [1]
Precambrian and Paleozoic
†Fortymile group or series [1]
†Kotlo series [1]
†Nasina group [1] or series [1]
Precambrian and Lower Cambrian (?)
Tindir group [1]

United States—Continued
Alaska—Continued
Precambrian, Cambrian(?), and Lower Ordovician
†Tatalina group [1]
Precambrian
Birch Creek schist [1]
Fortymile granite [1]
Nilkoka group [1]
†Tanana schist [1]
Yukon group [1]
Age(?)
Coast Range diorite [1]
Copper Mountain greenstone or amphibolite schist [1]
St. Elias schist [1]
Arizona
Cenozoic
Bonita Park formation [2]
Cave Creek formation [2]
Faraway Ranch formation [2]
Rhyolite Canyon formation [2]
Sugarloaf series (see p. 622)
Cenozoic(?)
Atascosa formation [2]
Blacktail formation [2]
Montana Peak formation [2]
Quaternary
Blue Mountain gravel [2]
Cameron beds (of Tolchaco gravels) [2]
Jeddito formation [2]
Naha formation [2]
Robbers Roost gravel [2]
Tolchaco gravels [2]
Tsegi formation [2]
Pleistocene
Chemehuevi formation (as gravel [1])
Pleistocene, lower
Temple Bar conglomerate [1]
Pre-Pleistocene
Frazier Well gravel [2]
Tertiary or Pleistocene
Cornfield series [1]
Ganado series [1]
Sunrise Springs series [1]
White Cone series [1]
Tertiary (see also *Cretaceous or Tertiary*)
Beehive rhyolite [2]
Big Wash andesite [2]
Bull Mountain andesitic series [2]
Camelback formation [2]
Cat Mountain rhyolite [2]
Galiuro rhyolite [1]
Kingman series [2]
Murdock breccia [1]
Rillito andesite [2]
Safford dacite [2]
Safford tuff [2]
Shorts Ranch andesite [2]
Warrens Ranch latite [2]
Tertiary(?)
Antelope rhyolite [1]
Whitetail conglomerate [1]

United States—Continued
Arizona—Continued
Tertiary(?) (pre-Pliocene)
Tassai Wash group [2]
Probably Tertiary
Schultze granite [1]
Tertiary, upper
Greggs breccia [1]
Nogales division [1]
Tertiary, middle or upper
Alcyone trachyte [1]
Cottonwood rhyolite [1]
Esperanza trachyte [1]
Flag Spring trachyte [1]
Gold Road latite [1]
Meadow Creek trachyte [1]
Moss porphyry [1]
Oatman andesite [1]
Sitgreaves tuff [1]
Times porphyry [1]
Tertiary, middle(?)
Ajo volcanics [2]
Daniels conglomerate [2]
Locomotive fanglomerate [2]
Sneed andesite [2]
Tertiary, lower(?)
Cornelia quartz monzonite [2]
Granite Mountain porphyry [1]
Teapot Mountain porphyry [1]
Pliocene(?) or Pleistocene
Verde formation [1]
Pliocene and Pleistocene
Gila conglomerate [1]
San Pedro Valley formation [2]
Pliocene
Bidahochi formation [1]
San Pedro group [2]
(?)Pliocene
Batamote andesite [2]
Childs latite [2]
Hualpai limestone [2]
Pliocene, upper(?)
Sandtrap conglomerate [2]
Pliocene, lower or middle
Milk Creek beds [2]
(?)Pliocene, lower
Chapin Wash formation [2]
Cobwebb basalt [2]
Miocene, upper
Duncan group [2]
Eocene(?) to lower Pliocene(?)
Stronghold granite [2]
Eocene, lower(?)
Artillery formation [2]
Laramide
Amole granite [2]
Amole latite [2]
Amole quartz monzonite [2]
Mesozoic
Oro Blanco conglomerate [2]
Mesozoic(?)
Chico Shunie quartz monzonite [2]
Ithaca Peak granite [2]
Pajarito lavas [2]
Mesozoic, lower(?)
Lost Gulch monzonite [1]

United States—Continued
Arizona—Continued
Cretaceous or Tertiary
Sugarloaf quartz latite (see p. 622)
Cretaceous or lower Tertiary
Bronco volcanics [2]
Cretaceous
Recreation red beds [2]
Cretaceous(?)
Canelo redbeds [2]
Upper Cretaceous or Tertiary
Schieffelin granodiorite [2]
Upper Cretaceous or lower Tertiary
Solitude granite [1]
Uncle Sam porphyry [2]
Willow Spring granodiorite (as granite [1])
Upper Cretaceous
Amole arkose [2]
Fort Buchanan formation [2]
Fort Crittenden formation [2]
Orabai sandstone [1]
Pinkard formation [1]
Santa Cruz group [2]
Sonoita group [2]
Zilhlejini formation [1]
Upper Cretaceous(?)
Concentrator volcanics [2]
Lower Cretaceous
Arkill limestone (in Saavedra member of Lowell formation) [2]
Baga shale and limestone (in Joserita member of Lowell formation) [2]
Barata limestone (in Saavedra member of Lowell formation) [2]
Barberian series [2]
Bisbee group [1]
Black Knob dolomite (in Pacheta member of Lowell formation) [2]
Black Knob quartzite (in Pacheta member of Lowell formation) [2]
Chapparal sandstone (in Saavedra member of Lowell formation) [2]
Cholla member (of Lowell formation) [2]
Cienda limestone (in Pacheta member of Lowell formation) [2]
Cintura formation [1]
Cinturan series [1]
Cochise limestones [1]
Corta sandstone (in Joserita member of Lowell formation) [2]
Dixie shale [1]
Espinal grit (in Joserita member of Lowell formation) [2]
Forrest shale [1]
Glance conglomerate [1]
Hay Flat limestone [2]
Joserita member (of Lowell formation) [2]
Lancha limestone (in Pacheta member of Lowell formation) [2]
Lowell formation [2]
Mexican sandstone [1]

United States—Continued
Arizona—Continued
Lower Cretaceous—Continued
Molly Gibson formation [2]
Mule sandstone [1]
Mural limestone [1]
Muralian series [1]
Outlaw formation [2]
Pacheta member (of Lowell formation) [2]
Patagonia group [2]
Pedregosa member (of Lowell formation) [2]
Perilla member (of Lowell formation) [2]
Quajote member (of Lowell formation) [2]
Quimbo dolomite (in Joserita member of Lowell formation) [2]
Saavedra member (of Lowell formation) [2]
Sacramento Hill porphyry [2]
Tusonimo limestone (in Pacheta member of Lowell formation) [2]
Lower Cretaceous(?)
Contention series [1]
Herschel quartzite [1]
Randolph limestone [1]
Toughnut series [1]
Jurassic
Arido sandstone [1]
Lohali sandstones [1]
Nutrian series [1]
Tyende sandstone [1]
Jurassic and Jurassic(?)
Navajo sandstone [1]
Jurassic and older(?)
†Painted Desert formation [1]
Jurassic(?)
†White Mesa sandstone [1]
Upper Jurassic
Cow Spring sandstone [2]
Lower Jurassic(?)
Kayenta formation [1]
Upper Triassic
Chinle formation [1]
†Leroux formation [1]
Nazlini shales [1]
Newspaper Rock sandstone [2]
Ventana sandstones [1]
Upper Triassic(?)
Dinosaur Canyon sandstone member (of Moenave formation) [2]
Moenave formation [2]
Lower and Middle(?) Triassic
Moenkopi formation [1]
†Moenkopian series [1]
Lower Triassic
Adamana shales [1]
Agathla sandstone [1]
Agathla shale [1]
Holbrook sandstone [1]
Moqui member (of Moenkopi formation) [2]

United States—Continued
Arizona—Continued
Lower Triassic—Continued
Rock Canyon conglomerate member (of Moenkopi formation) [1]
Salt Creek member (of Moenkopi formation) [1]
Tanner shale [1]
Tolchico shale [1]
Winslow member (of Moenkopi formation) [2]
Winslow shale [1]
Wupatki member (of Moenkopi formation) [2]
Permian (see also *Pennsylvania and Permian*)
†Aubrey limestone [1]
†Aubrey sandstone [1]
Chiquito sandstones [1]
Chiricahua limestone [1]
Coconino sandstone [1]
Colina limestone [2]
Concha limestone [2]
De Chelly sandstone member (of Cutler formation) [1]; locally **sandstone** in Arizona
Epitaph dolomite [2]
Esplanade sandstone member (of Supai formation) [1]
Fort Apache limestone (in Supai formation) [1]
Havasupai sandstones [1]
Hermit shale [1]
Kaibab limestone [1]
Kinishba beds (in Supai formation) [1]
†Monument Valley shale [1]
Rainvalley formation [2]
Scherrer formation [2]
Seligman limestone [1]
Shiwits shale [1]
Snyder Hill formation [1]
Toroweap formation [2]
Wompats limestone [1]
Yampai sandstone [1]
Lower Permian
Pakoon limestone [2]
Queantoweap sandstone [2]
Carboniferous
Aubreyan series [1]
Kanab limestone [1]
Malagan series [2]
Mescaleran series [2]
Supaian series [1]
Tusayan series [1]
Verdan series [1]
Pennsylvanian and(or) Permian
Amos Wash member (of Supai formation) [2]
Corduroy member (of Supai formation) [2]
Pennsylvanian and Permian
Andrada formation [2]
Aubrey group [1]
Naco limestone,[1] **formation, or group**

United States—Continued
Arizona—Continued
Pennsylvanian and Permian—Con.
Supai formation [1]
Pennsylvanian (see also *Mississippian and Pennsylvanian*)
†Galiuro limestone [1]
Horquilla limestone [2]
Oak Creek member (of Supai formation) [2]
Packard Ranch member (of Supai formation) [2]
Pennsylvanian(?)
Huethawali limestone [1]
Pierce shales [1]
Upper Pennsylvanian
Earp formation [2]
Mississippian and Pennsylvanian
Tule Spring limestone [1]
Mississippian
Elden limestones [1]
†Gray Cliff limestone [1]
Simon limestone [1]
Truxton limestone [1]
Upper Mississippian or Lower Pennsylvanian(?)
Black Prince limestone [2]
Upper Mississippian
Paradise formation [1]
Lower Mississippian and Lower Pennsylvanian
†Tornado limestone [1]
Lower and Upper(?) Mississippian
Escabrosa limestone [1]
Lower Mississippian
Modoc limestone [1]
Redwall limestone [1]
Devonian and Carboniferous
†Globe limestone [1]
Devonian
East Verde limestone [2]
Escacado limestone [2]
Espinal formation [2]
O'Carroll member (of Martin limestone) [2]
Patagonia limestone [2]
Picacho de Calera formation [1]
Tombstonian series [2]
Vecol limestone [2]
Upper Devonian
Crook formation [2]
Island Mesa beds [1]
Jerome formation [1]
Martin limestone [1] in southeast Arizona; as **formation** in northeast Arizona; and as Middle(?) and Upper Devonian **formation** in central Arizona.
Morenci shale [1]
Mount Elden formation [2]
Sycamore Creek sandstone [1]
Upper(?) Devonian
Temple Butte limestone [1]
Middle(?) Devonian
Santa Rita limestone [1]
Santa Ritan series [1]

United States—Continued
Arizona—Continued
Ordovician(?)
Lucky Cuss limestone [1]
Upper Cambrian and Lower Ordovician
Longfellow limestone [1]
Upper Cambrian
†Apache sandstone [1]
Copper Queen limestone [1]
Coronado quartzite [1]
Peppersauce Canyon sandstone [1]
Rincon limestone [1]
Middle or Upper Cambrian
†Emerald limestone [1]
†Emerald series [1]
Middle and Upper Cambrian
Abrigo limestone [1] or **formation**
Middle Cambrian
†Ajax quartzite [1]
Bright Angel shale [1]
Bolsa quartzite [1]
Chediski white sandstone member (of Troy quartzite) [1]
Cochise formation [1]
†Dragoon quartzite [1]
Havasu member (of Muav formation) [2]
Mead limestone [2]
Muav limestone [1]
Pima sandstone [1]
Santa Catalina formation [1]
Southern Belle quartzite [1]
Tonto group [1]
†Tonto limestone [1]
†Tonto sandstone [1]
†Tonto shale [1]
Tontoan series [1]
Troy quartzite [1]
Yaquian series [2]
Whetstonian series [2]
Lower and(or)–Middle Cambrian
Boucher tongue [2]
Elves Chasm tongue [2]
Flour Sack member (of Bright Angel shale) [2]
Garnet Canyon tongue [2]
Gateway Canyon member (of Muav formation) [2]
Kanab Canyon member (of Muav formation) [2]
Lava Falls tongue [2]
Meriwitica tongue [2]
Parashant tongue [2]
Peach Springs member (of Muav formation) [2]
Rampart Cave member (of Muav formation) [2]
Sanup Plateau member (of Muav formation) [2]
Spencer Canyon member (of Muav formation) [2]
Tincanebite tongue [2]
Lower Cambrian
Tapeats sandstone [1]

United States—Continued
Arizona—Continued
Precambrian
Aguja sandstone [2]
Alder group [2]
Apache group [1]
†Arizona slates [1]
Barnes conglomerate [1]
Bass limestone [1]
Bradshaw granite [1]
Carbon Butte shales [2]
Cardenas lava series [2]
Cerbat complex [2]
Chuar group [1]
Chuarian series [1]
City Creek series [2]
Cleopatra quartz porphyry [1]
Chiquito sandstone [2]
Crooks complex [1]
Deadman quartzite [2]
Deception porphyry [1]
Diana granite [2]
Dox sandstone [1]
Dripping Spring quartzite [1]
Echo limestone or formation [2]
Final shales [2]
†Grand Canyon group [1]
†Grand Canyon schist [1]
Grand Canyon series [1]
Gunther dolomite [2]
Hakatai shale [1]
Hotauta conglomerate [1]
Katherine granite [1]
Jupiter shales [2]
Kwaguntan series [2]
Madera diorite [1]
Marble limestone [2]
Maverick shale [2]
Mazatzal quartzite [1]
Mescal limestone [1]
Mount Ord pyroxenite [2]
Nankoweap group [2]
Newberry formation [2]
Nunkoweap sandstone [2]
Oracle granite [2]
Oso beds [2]
Oveja formation [2]
Phantom migmatite [2]
Pinal schist [1]
Pine Mountain porphyry [2]
Pioneer shale [1]
Red Rock rhyolite [2]
Roosevelt member [2]
Ruin granite [1]
Santa Catalina gneiss [1]
Scanlan conglomerate [1]
Shea diabase [2]
Shinumo quartzite [1]
Solitude limestone [2]
United Verde diorite [1]
Unkar group [1]
Venus formation [2]
Vishnu schist [1]
Vishnuan series [1]
Walhalla formation [2]
Yavapai schist [1] or **series**

United States—Continued
Arizona—Continued
Precambrian—Continued
Yeager greenstone [2]
Zoroaster granite [2]
Precambrian(?)
Cardigan gneiss [2]
Chloride granite[2]
Age(?)
Luck-Sure series [1]
Mesa formation [1]
Ruby diorite [2]
Ruby Road formation [2]
Silver King quartz monzonite porphyry [2]
Tappan lava flow [2]
Arkansas
Quaternary
Plateau gravel phase [1]
Pleistocene
Carrigan black sands [1]
Center Point division [1]
Prairie d'Ane clay [1]
Prairie de Roan division [1]
Red River loess [1]
White Prairie d'Ane clay [1]
Eocene
Cleveland County red lands [1]
L'Eau Frais shale [1]
Little Missouri lignites or ligneous shales [1]
Manchester shale [1]
Eocene, upper
Caney Point marl member (of White Bluff formation)[2]
Marks-Mills red beds [1]
Pastoria sand member (of White Bluff formation)[2]
Redfield formation [2]
Rison clay member (of White Bluff formation)[2]
White Bluff marl [1]
Cretaceous
Brazil Branch breccia [1]
Centerpoint volcanic facies (of Eagleford formation) [2]
Upper Cretaceous and Eocene
†Camden series [1]
Upper Cretaceous
Arkadelphia clay [1]
Arkadelphia marl [1]
†Big Decipher calcareous sands [1]
†Big De Gray horizon [1]
†Bingen formation or sand [1]
Brownstown marl [1] or **formation**
Buckrange sand lentil (of Ozan formation) [1]
†Clark County littorals [1]
†Columbus marl [1]
Crain sand [1] (subsurface)
Graves sand [1] (subsurface)
Gregory sand [1] (subsurface)
†High Bluff blue sands [1]
†High Bluff greensand [1]
Koster joint clays [1]

United States—Continued
Arkansas—Continued
Mississippian—Continued
†Wyman sandstone [1]
Upper Mississippian
Batesville sandstone [1]
Fayetteville shale [1]
Hindsville limestone member (of Batesville sandstone)[1]
Moorefield formation (as shale[1])
Pitkin limestone [1]
Ruddell shale [2]
Wedington sandstone member (of Fayetteville shale)[1]
Lower and Upper Mississippian
Boone formation,[1] limestone [1]
Devonian and Pennsylvanian
†Missouri Mountain formation [1]
Devonian and Mississippian
Arkansas novaculite [1]
Devonian(?)
Caddo Gap novaculite [1]
†Eureka shale [1]
†Noel shale [1]
Sylamore sandstone member (of Chattanooga shale)[1]
Middle Devonian
Clifty limestone [1]
Lower or Middle Devonian
Penters chert [1]
Silurian
†Cason limestone [1]
Lafferty limestone [1]
St. Clair limestone [1]
†Slatington shale [1]
Upper Silurian
Missouri Mountain slate or shale [1]
Lower Silurian
Blaylock sandstone [1]
Ordovician
Buffalo group [1]
†Key sandstone [1]
Ordovician(?)
Crystal Mountain sandstone [1]
Upper Ordovician
†Batesville ash bed [1]
Cason shale [1]
Polk Creek shale [1]
Middle and Upper Ordovician
†Polk Bayou limestone [1]
Middle Ordovician
Bigfork chert [1]
Calico Rock sandstone member (of Everton formation)[1]
Everton formation (as limestone[1])
Jasper limestone[1] **member** (of Everton formation)
Kings River sandstone member (of Everton formation)[1]
Newton sandstone member (of Everton formation)[1]
Sneeds limestone lentil (of Everton formation)[1]

United States—Continued
Arkansas—Continued
Lower and Middle Ordovician
†Caddo shale [1]
†Izard limestone [1]
†Ouachita shale [1]
Womble shale [1] or **formation; schistose sandstone** in Oklahoma
Lower Ordovician
Big Buffalo series [1]
Black Rock formation [1]
Blakely sandstone [1]
Bull Shoals Mountain chert beds (in Powell dolomite)[2]
Cotter dolomite [1]
Jenkins Branch chert bed (in Cotter formation)[2]
Mazarn shale [1]
Powell limestone or **dolomite** [1]
Smithville formation [1]
†Yellville limestone [1]
Cambrian
Collier shale [1]
California
Quaternary (see also *Tertiary or Quaternary;* and *Pliocene, upper, and Quaternary*)
Bay mud [2]
Bodega Bay deposits [1]
Boggs Mountain flows [2]
Burnt Canyon breccia [2]
Cabezon fanglomerate [1]
China Ranch beds [2]
Clear Lake volcanic series (J. C. Brice, 1953, Calif. Div. Mines Bull. 166, p. 12, 34–35)
Cobb Mountain volcanics [2]
Deep Canyon fanglomerate [1]
Heights fanglomerate [1]
Kagel fanglomerate [1]
Konocti volcanics [2]
Lindavista terrace material [1]
Lopez fanglomerate [1]
Perini Hill flows [2]
Posey formation [2]
Quaternary(?)
Atlas formation [1]
Cable formation or lake beds [1]
Tank volcanics [1]
Tehachapi formation [1]
Recent
Big Glass Mountain complex [1]
Burnt Lava flow [2]
Callahan flow [2]
Cucamonga fan deposits [2]
Glass Mountain lava [2]
Hat Creek basalt [2]
Hoffman flow [2]
Medicine flow [2]
Modoc basalt [1]
Paint Pot Crater flow [2]
Plutos Cave basalt [2]
Recent(?)
Chalk Mountain dacite [1]

United States—Continued
California—Continued
Pliocene and later(?)
Kern River group, formation, or series [1]
Pliocene and Pleistocene(?)
McKittrick group (as formation[1])
Merced formation [1]
Tulare formation [2]
Pliocene and Pleistocene, lower
Alamitos zone [1] (subsurface)
Ashton zone [1] (subsurface)
Bixby zone [1] (subsurface)
Booth zone [1] (subsurface)
Brown zone [1] (subsurface)
Fernando formation (as group[1])
Wilbur zone [1] (subsurface)
Pliocene and Pleistocene, lower(?)
Paso Robles formation [1]
Pliocene (see also *Miocene and Pliocene;* and *Miocene or Pliocene*)
Alamo formation [2]
Asphalto lake bed [1]
Bald Hill agglomerate member (of Tuscan formation)[2]
Bald Peak basalt [1]
Berkeley group [1]
Buckbee oil zone [1] (subsurface)
Canebrake conglomerate [2]
Chanac formation [1]
Clarke oil zone [1] (subsurface)
†Contra Costa lake bed [1]
Etchegoin formation [1]
Falor formation [2]
†Grizzly Peak andesite [1]
Horsethief formation [2]
Iron Canyon agglomerate member (of Tuscan formation)[2]
King City formation [2]
Mark West andesite [1]
Moraga formation [1] or **tuff**
Mount Eden formation [1]
Nordstrom oil zone [1] (subsurface)
Northbrae rhyolite [1]
O'Connell oil zone [1] (subsurface)
Orinda formation [1]
Paicines formation [1]
Painted Hill formation [2]
Petaluma formation [1]
Pico formation [1]
Pinole tuff [1]
Piutean series [1]
Purisima formation [1]
Putnam Peak basalt [2]
Sacramento tuff and sand member (of Tuscan formation)[2]
St. George formation [1]
St. Helena rhyolite [1] **member** (of Sonoma volcanics)
San Ardo group [2]
San Diego formation [1]
Santa Ana sandstone [1]
Seven-Mile tuff and sand member (of Tuscan formation)[2]
Shasta lavas [2]

United States—Continued
California—Continued
Pliocene—Continued
Siesta formation [1]
Sonoma tuff [1]
Sonoma volcanics [1]
Stony Creek basalt [2]
Sunshine Ranch member (of Saugus formation)[2]
Supan tuff and sand member (of Tuscan formation)[2]
Tehama formation [1]
Truckhaven rhyolite [2]
Tuscan formation (as tuff [1])
Wildcat series [1]
Wilson Ranch beds [1]
Wolfskill formation [2]
Pliocene(?)
Cuyama formation [1]
Duarte conglomerate [2]
Funeral fanglomerate (as conglomerate [1])
Kettleman lake bed [1]
Laguna formation [1]
Lake basalt [2]
Ridge Route formation [2]
Saddleback basalt [2]
San Mateo formation [1]
Sweitzer formation [2]
†Tassajara lake(?) bed [1]
Pliocene, upper, or Pleistocene, lower
Cache formation [1]
Coso formation [2]
Hathaway formation [1]
Ocotillo conglomerate [2]
Pipes fanglomerate [1]
Pliocene, upper, and Quaternary
Bitterwater formation [2]
Pliocene, upper
Alturas formation [1]
Borrego formation [2]
Careaga sand or **sandstone** [2]
Cascajo conglomerate member (of San Joaquin formation)[2]
Cebada fine-grained member (of Careaga sandstone)[2]
Corcoran clay member (of Tulare formation) (subsurface) (J. W. Frink and H. A. Kues, 1954, Am. Assoc. Petroleum Geologists Bull., v. 38, no. 11, p. 2357–2371)
Ferndale sandstone [2]
Graciosa coarse-grained member (of Careaga sandstone)[2]
Hungry Valley formation [2]
Livermore gravel [1]
Nomlaki tuff member (of Tehama and Tuscan formations)[1]
San Joaquin formation [1]
Santa Barbara formation (as beds [1])
San Timoteo beds [1]
Scotia Bluffs sandstone [2]
Pliocene, middle or upper
Camulos formation [1]

United States—Continued
California—Continued
Miocene(?)—Continued
†Rosamond series [1]
Valley Springs formation [1]
Miocene, upper, and Pliocene, lower
Capistrano formation [1]
French Flat sandstone [2]
Ridge Basin group [2]
Towsley formation [2]
Miocene, upper, to Pliocene, middle
Contra Costa group [2]
Sisquoc formation [1]
Miocene, upper, to Pliocene, lower(?)
Pullen formation [2]
Miocene, upper
Antelope shale member (of Monterey formation)[2]
Apache formation [2]
Belridge diatomite [2]
Blanco sandstone (in Puente formation)[2]
Bopesta formation [1]
Briones sandstone [1]
Central Fee unit (in Sycamore Canyon member of Puente formation)[2]
Cierbo sandstone [1]
Cubierto shale (in Puente formation)[2]
Hercules shale member (of Briones sandstone)[1]; (*see also* †Herculean shale member [1])
Hoover conglomerate unit (in Sycamore Canyon member of Puente formation)[2]
Hunter sandstone and conglomerate (in Puente formation)[2]
Kramer Lake beds (in Ricardo formation)[2]
La Vida member (of Puente formation)[2]
McDonald shale member (of Monterey formation)[2]
McLure shale member (of Monterey formation)[1]
Mahala sandstone and conglomerate [2]
Malaga mudstone member (of Monterey formation)[1]
†Mellenia series [1]
Mint Canyon formation [1]
Modelo formation [1]
Mohawk lake beds [1]
Morales member (of Santa Margarita formation)[1]
Neroly formation [1] or **sandstone**
Papel Blanco shale [2]
Peculiar shale (in Puente formamation)[2]
Point Arena beds [2]
Puente formation [1]
Punchbowl formation [2]
Quatal red clay member (of Santa Margarita formation)[1]
Red Mountain andesite [1]

United States—Continued
California—Continued
Miocene, upper—Continued
Red Rock Canyon sandstone member (of Santa Margarita formation)[1]
Reef Ridge shale [1]
St. Paul sand [1] (subsurface)
San Pablo group [1] or **formation** [1]
Santa Margarita formation (as sandstone [1])
†Soledad divisions [1]
Soquel member (of Puente formation)[2]
Sycamore Canyon member (of Puente formation)[2]
Tice shale [1]
†Trampan formation [1]
Valmonte diatomite member (of Monterey shale)[1]
Yorba member (of Puente formation)[2]
Whiterock Bluff shale member (of Santa Margarita formation)[1]
(?) *Miocene, upper*
Nova formation [2]
Miocene, middle or upper
Coachella fanglomerate [1]
†Indio formation [1]
Palm Spring formation [1]
Miocene, middle and upper
Altamira shale member (of Monterey shale)[1]
Alverson Canyon formation [2]
Barstow formation [1]
†Maricopa shale [1]
Monterey group,[1] **formation,** or **shale**
Twisselmann sandstone member (of Monterey formation)[2]
Miocene, middle
Alferitz formation [2]
Big Blue serpentinous member (of Temblor formation)[1]
Buzzard Peak conglomerate member (of Topanga formation)[2]
Caliente formation [2]
Claremont shale [1]
Escudo sandstone [2]
Felix siltstone [1] (subsurface)
Gould shale member (of Monterey shale)[1]
Hambre sandstone [1]
Hollycrest formation [2]
Kinnick formation [1]
Miraleste tuff bed [1] (in Altamira shale member of Monterey shale)
†Ocoya Creek beds [1]
Oursan sandstone [1]
Point Sal formation [2]
Portugese tuff bed [1] (in Altamira shale member of Monterey shale)
Rench sand [1] (subsurface)

United States—Continued
California—Continued
Miocene, middle—Continued
Rodeo shale [1]
†Salinas shale [1]
San Onofre breccia [1]
Topanga formation [1]
Whepley shale [1] (subsurface)
Miocene, middle(?)
Quien Sabe volcanics [2]
Miocene, middle or older
Elephant Hill breccia [2]
[Johnstone] Johnson Peak tuff breccia [2]
Spadra felsophyre [2]
Pre-middle Miocene
Witnet formation [1]
Miocene, lower and middle
Sandholdt shale [2]
Split Mountain formation [2]
Temblor formation [1]
Miocene, lower (see also *Eocene to Miocene, lower*)
Agua sandstone member (of Santos shale) [1]
†Coyote Mountain clays (in Imperial formation) [1]
Hannah formation [2]
Imperial formation [1]
†Latrania sands [1]
Lion sandstone [1]
Obispo tuff member (of Monterey formation) [2]
Painted Rock formation [2]
Pato red member (of Vaqueros formation) [1]
Pulaski sand [1] (subsurface)
Rincon shale [1] or **mudstone**
Santos shale [1]
Sauer Dough sand [1] (subsurface)
Sobrante sandstone [1]
Soda Lake formation [2]
Tecuya beds [1]
Tick Canyon formation [2]
Tranquillon volcanics [2]
Vaqueros sandstone [1] or **formation**
Vedder sand [1] (subsurface)
Yuha reefs [1]
(?) Miocene, lower
Catalina schist breccia [1]
Ilmon basalt [2]
Lospe formation [2]
Oligocene and Miocene(?)
Artist Drive formation [2]
Oligocene or Miocene, lower
Soledad group [1]
Oligocene and Miocene, lower(?)
Vasquez formation (as series [1])
Oligocene (see also *Eocene, upper, and Oligocene;* and *Eocene to Oligocene*)
Alegria formation [2]
Bealville fanglomerate [2]
Concord formation [1]
Kirker tuff [1]

United States—Continued
California—Continued
Oligocene—Continued
Pinecate formation [1]
†Pleito formation [1]
†San Emigdio formation [1]
San Juan Bautista formation [1]
San Lorenzo formation [1]
†San Lorenzo series [1]
San Ramon sandstone [1]
Simmler formation [2]
Tumey formation [1]
Oligocene(?)
Lillis formation [1]
Wagonwheel formation [1]
Oligocene, lower
Titus Canyon formation [1]
Eocene to Miocene, lower
Berry formation [2]
Goler formation [2]
Eocene or Oligocene
Butano sandstone [1]
†Cantua shale [1]
Eocene to Oligocene
Church Creek beds [2]
Eocene and Oligocene(?)
Gaviota formation [1]
Kreyenhagen formation (as shale [1])
Eocene
Alberhill clay [1]
Arroyo Hondo formation [2]
Arroyo Hondo shale member (of Lodo formation) [2]
Avenal sandstone [1]
Ballena gravel [1]
Canoas siltstone member (of Kreyenhagen formation) [2]
Cantua member [1] (of Lodo formation)
Capita shale member (of Domengine formation) [2]
†Carquinez series [1]
Chaney Ranch sandstone formation [2]
Coldwater sandstone member (of Tejon formation) [1]
Cozy Dell shale [2] member (of Tejon formation)
Creston (formation) [2]
Delmar sand [1]
Dry Creek formation [1]
Dunns Peak sandstone [2]
Edwin clay [1]
Indart sandstone [2]
Ione formation [1]
Irvine shale (in Santiago formation) [2]
Jameson shale member (of Markley sandstone) [2]
Junipero sandstone [2]
La Jolla formation [1]
Liveoak member (of Tejon formation) [2]
Lucia shale [2]

United States—Continued
California—Continued
Eocene—Continued
Matilija sandstone member [1] (of Tejon formation)
Metralla sandstone member (of Tejon formation)[2]
Montgomery Creek formation [1]
Nonada sand member (of Domengine formation)[2]
Piru formation [2]
Ragged Valley shale member (of Arroyo Hondo formation)[2]
Reed Canyon silt member (of Tejon formation)[2]
Rose Canyon shale [1]
Santiago formation [2]
†Stewartsville group [1]
The Rocks sandstone [2]
†Topatopa formation [1]
Torrey sand [1]
Tres Pinos sandstone [1]
Uvas conglomerate member (of Tejon formation)[2]
Walkup clay [1]
Weaverville formation [1]
Yokut sandstone [2]
Eocene(?)
Carmelo series [1]
Indian conglomerate [1]
†Mohave formation [2]
Mono shale [1]
†San Pedro shales [1]
Eocene, upper, and Oligocene
Sespe formation [1]
Eocene, upper
Alhambra formation [2]
Bear Canyon sandstone member (of Kreyenhagen formation)[2]
Castro shale member (of Alhambra formation)[2]
Echo Falls shale [2]
Escobar sandstone [2]
Gredal formation [2]
Kellogg shale [2]
Markley sandstone [1] **member** (of Kreyenhagen formation)
Nortonville shale member (of Kreyenhagen formation)[2]
Pereira shale member (of Alhambra formation)[2]
Point of Rocks sandstone [2]
Poway conglomerate [1]
Roop sandstone member (of Alhambra formation)[2]
Sidney shale member (of Markley formation)[2]
Sierra Blanca limestone [1]
Tejon formation [1]
Welcome formation [2]
Wheatland formation [2]
Eocene, middle
Anita shale [2]
Camino Cielo sandstone member (of Juncal formation)[2]

United States—Continued
California—Continued
Eocene, middle—Continued
Capay formation [1]
Domengine formation [1] **or sandstone**
Hawkhill formation [2]
Juncal formation [2]
Llajas formation [1]
Los Muertos Creek formation [2]
Mabury formation [2]
Muir sandstone [2]
Sacate formation [2]
Santa Susana formation [1]
Sisar black shale [2]
Tesla formation [2]
Vacaville shale [2]
Wheeler sandstone member (of Juncal formation)[2]
Eocene, middle, to Oligocene, lower
Reeds Creek andesite [2]
Eocene, lower
Las Juntas shale [2]
Marysville claystone member (of Meganos formation); (as formation [1])
Meganos formation [1]
Paleocene and Eocene
Cerros shale member (of Lodo formation)[2]
Laguna Seca formation [2]
Lodo formation [2]
Paleocene
Claymont clay bed (in Silverado formation)[2]
Dip Creek formation [2]
Las Virgenes sandstone [1]
Martinez formation [1]
Serrano clay bed (in Silverado formation)[2]
Silverado formation [2]
Simi conglomerate [1]
Vine Hill sandstone [2]
Mesozoic and Tertiary
†Chico-Tejon series [1]
†Pescadero series [1]
†San Francisco group [1]
†San Francisco sandstone [1]
Mesozoic (see also *Paleozoic and Mesozoic*)
Courtney granite [1]
Indian Gulch [1] (formation)
Mariposa group [1]
Mount Ord series [2]
Mesozoic(?)
Little Chief porphyry [1]
Mountain Meadows dacite porphyry [2]
Ravenna plutonic series [1]
Upper Mesozoic
Darwin quartz diorite [2]
Coso granodiorite [2]
Upper Mesozoic(?)
Perris quartz diorite [1]

United States—Continued
California—Continued
Probably lower Mesozoic
Agua Fria [1] (formation)
Hunter Valley [1] (cherts)
Penyon Blanco agglomerate [1]
Mesozoic or older
Catalina schist (as facies of Franciscan series[1])
Post-Cretaceaous
Alum Rock rhyolite [2]
Probably post-Cretaceous
Rattlesnake granite [1]
"Between late Cretaceous and Oligocene"
Iversen basalt [2]
Cretaceous or Eocene
Osila sand [2]
Cretaceous and Paleocene(?)
Cima sandstone lentil (in Dos Palos shale member of Moreno formation)[2]
Dos Palos shale member (of Moreno formation)[2]
Cretaceous (see also *Jurassic and Cretaceous;* and *Jurassic or Cretaceous*)
Berryessa formation [2]
Domenigoni Valley granodiorite [2]
Escondido Creek leucogranodiorite [2]
Indian Mountain leucogranodiorite [2]
Lakeview Mountain tonalite [2]
Lake Wolford leucogranodiorite [2]
La Sierra tonalite [2]
Mount Hole granodiorite [2]
Roblar leucogranite [2]
San Marcos gabbro [2]
†Shasta-Chico series [1]
Trabuco formation [1]
Woodson Mountain granodiorite [2]
Cretaceous(?)
Cahuenga beds [2]
Griffith beds [2]
Holcomb quartz monzonite [2]
Novato conglomerate [2]
Patrick greenstone [1]
Probably Cretaceous
Bridalveil granite [1]
Cathedral Peak granite [1]
El Capitan granite [1]
Half Dome quartz monzonite [1]
Johnson granite porphyry [1]
Leaning Tower quartz monzonite [1]
Mount Clark granite [1]
Pohono granodiorite [1]
Sentinel granodiorite [1]
Taft granite [1]
Tuolumne intrusive series [1]
Upper Cretaceous or Tertiary, lower
Kingston Range monzonite porphyry [2]
Upper Cretaceous and Paleocene
Moreno formation or **shale** [1]

United States—Continued
California—Continued
Upper Cretaceous
Antelope shale [2]
Asuncion group [2]
†Atascadero formation [1]
Baker Canyon conglomerate member (of Ladd formation) [2]
Big Oak Flat shale and sandstone member (of Panoche group)[2]
Bonsall tonalite [2]
Butts Ranch shale member (of Panoche group)[2]
Call sandstone member (of Panoche group)[2]
Cantinas sandstone [2]
Chico formation or **group** [1]
Chico Creek beds [2]
Debris Dam sandstone [2]
Dosados sand and shale member (of Moreno formation) [2]
Forbes formation [2]
Funks formation [2]
Gaines group [2]
Garzas beds [2]
Godfrey shales [2]
Golden Gate formation [2]
Green Valley tonalite [2]
Gualala series (see †Wallala beds [1] below)
Guinda formation [2]
Holz shale member (of Ladd formation) [2]
Jack Creek formation [2]
Jalama formation [2]
Joaquin Ridge sandstone member (of Panoche formation) [2]
Ladd formation [2]
Los Banos Creek member (of "Quinto B" reef beds) [2]
Los Gatos beds [2]
Marca shale member (of Moreno formation) [2]
Mercy sandstone lentil (in Tierra Loma shale member of Moreno formation) [2]
Mills formation [2]
Moreno Grande formation (N. L. Taliaferro, 1944, Am. Assoc. Petroleum Geologists Bull., v. 28, no. 4, p. 472)
Mustang Creek formation [2]
Oakland conglomerate member (of Chico formation) [1]
Orestimba group [2]
Pacheco group [2]
Panoche formation [1]
Paynes shale and sandstone member (of Panoche group) [2]
Pendola shale [2]
Piedras Altas formation [2]
Pioneer group [2]
Pleasants sandstone member (of Williams formation) [2]
Quinto member (of Moreno group) [2]

United States—Continued
California—Continued
Upper Cretaceous—Continued
Romero conglomerate (in Debris Dam sandstone) [2]
Salt Creek conglomerate [2]
Schulz Ranch sandstone member (of Williams formation) [2]
Sites formation [2]
Sunol series [2]
Tierra Loma shale member (of Moreno formation) [2]
Venado formation [2]
Volta formation [2]
†Wallala beds [1] or group [1] [Gualala correct spelling]
Williams formation [2]
Yolo formation [2]
Upper Cretaceous(?)
Cuyamaca gabbro (as basic intrusive [1])
Pre-Upper Cretaceous
Cucamonga complex [2]
Deer diorite [2]
Lower Cretaceous (see also *Upper Jurassic or Lower Cretaceous*)
Cottonwood beds [2]
Cuesta diabase [1]
†Headlight porphyry [1]
Horsetown formation [1]
Hulen beds [2]
Marmolejo formation [2]
Paskenta formation [1]
Shasta series [1]
†Toro formation [1]
Wisenor formation [2]
Pre-Cretaceous
Placerita formation [1]
Rubio diorite and metadiorite [1]
San Gabriel formation [1]
Santa Lucia granite or quartz diorite [2]
Tamarack formation [1]
†Trinity formation [1]
Pre-Cretaceous(?)
Feliz granodiorite [2]
Lar quartz diorite [2]
Vermont quartz diorite [2]
Post-Franciscan
Rainbow series [1]
Walker Ridge sandstones [1]
Walker Ridge shales [1]
Jurassic or Cretaceous
San Jacinto granodiorite [2]
Jurassic and Cretaceous
Bonita sandstone [1] **member** (of Franciscan formation)
Cahil sandstone [1] **member** (of Franciscan formation)
Calera limestone member (of Franciscan formation); (as member of Cahil sandstone [1])
Espada formation [2]
Franciscan formation [1]; †group [1]
Ingleside chert [1] **member** (of Franciscan formation)

United States—Continued
California—Continued
Jurassic and Cretaceous—Continued
Marin sandstone [1] **member** (of Franciscan formation)
Sausalito chert [1] **member** (of Franciscan formation)
Yager formation [2]
Jurassic
Amargo formation [2]
Cove quartz monzonite [2]
Elder Creek group [2]
Grindstone group [2]
Newville group [2]
Plumas series [1]
Ship Mountain granite [2]
Siskiyou granodiorite [1]
Jurassic(?)
Atolia quartz monzonite [1]
Bolinas sandstone [1]
†Bully Hill rhyolite [1]
Corral Hollow shales [1]
Gavilan Peak gabbro [2]
†Golden Gate series [1]
Lebec quartz monzonite [2]
Liebre quartz monzonite [2]
Oakridge sandstone [1]
Osos basalt [1]
Pilarcitos sandstone [1]
Pinyon Ridge granodiorite [2]
San Bruno sandstone [1]
†San Luis formation [1]
†San Miguel cherts [1]
Santiago Peak volcanics [2]
School Canyon granite [2]
†Silver Terrace sandstone [1]
Stonewall quartz diorite [1] or **formation**
Tejon Lookout granite [2]
†Telegraph Hill sandstone [1]
Temescal Wash quartz latite porphyry [2]
Val Verde tonalite [2]
White Tank monzonite [2]
Pre-Franciscan
Bodega diorite [1]
Coast complex [1]
Gabilan limestone [1]
Santa Lucia series [1]
Upper Jurassic or Lower Cretaceous
Alpine quartz diorite [1]
Descanso granodiorite [1]
Harbison quartz diorite [1]
La Posta quartz diorite [1]
Mount Lowe granodiorite [1]
Mount Wilson quartz diorite [1]
Viejas gabbro-diorite [1]
Upper Jurassic or Lower Cretaceous(?)
Bishop Creek granite [2]
Upper Jurassic
Bicknell sandstone [1]
Bradley granodiorite [2]
Colfax formation [1]

United States—Continued
California—Continued
Upper Jurassic
Combe sandstone [1]
Cooks Canyon agglomerate [1]
Fargo Canyon diorite [2]
Foreman argillite [1]
Foreman formation [1]
Hinchman sandstone [1]
Honda formation [2]
Hull meta-andesite [1]
Inyo granite [1]
Knoxville formation [1]
Lucky S argillite [1]
Mariposa slate [1] or **formation**
Monte de Oro formation [1]
North Ridge agglomerate [1]
Oroville beds [1]
Victorville quartz monzonite [2]
Upper Jurassic(?)
Bald Rock granite [2]
Bucks granodiorite [2]
Cactus granite [1]
Cajalco quartz monzonite [1]
Coxcomb granodiorite [2]
Estelle quartz diorite [1]
Isabella granodiorite [1]
Lakeview quartz-hornblende diorite [1]
Merrimac granodiorite [2]
†Montara granite [1]
Parker quartz diorite [1]
Steele Valley granodiorite [1]
Temescal porphyry [1]
Virginia quartz hypersthene
Virginia quartz hypersthene norite [1]
Middle or Upper Jurassic
Cosumnes formation [2]
Dufresne slate [2]
Logtown Ridge formation [2]
Mountain Spring volcanics [2]
Newton Mine volcanics [2]
Sunnybrook volcanics [2]
Middle and Upper Jurassic
Amador group [2]
Middle Jurassic
Hardgrave tuff [1]
Hull agglomerate [1]
Moonshine conglomerate [1]
Mormon sandstone [1]
†Morrison sandstone [1]
Thompson limestone [1]
Thompson red shale [1]
Lower and Middle Jurassic
†Bend formation [1]
Potem formation [1]
Lower Jurassic
Arvison formation [2]
Fant meta-andesite [1]
Hardgrave sandstone [1]
Lilac argillite [1]
Lower (?) Jurassic
Bagley andesite [1]
Jurassic or older
Kernville series [1]
Pampa schist [2]

United States—Continued
California—Continued
Triassic and Jurassic
Milton formation [1]
Probably Triassic and Jurassic
Bean Canyon formation or series [1]
Tuolumne group [1]
Triassic
Bedford Canyon formation [2]
Elsinore metamorphic series [1]
Genesee Valley limestone and shales [1]
Santa Ana limestone [1]
Triassic(?)
Clear Creek volcanic series [1]
Homer quartzite [2]
Kaweah series [2]
Lemon Cove schist [2]
Mineral King beds [1]
Ord Mountain group [2]
Sanford quartzite [2]
Santa Monica slate [1]
Sebrina complex [2]
Sidewinder volcanic series [2]
Three Rivers schist [2]
Yokohl amphibolite [2]
Triassic(?) or older
Julian schist [1]
Upper Triassic and Lower Jurassic
Sailor Canyon formation [1]
Probably Upper Triassic or Jurassic
Black Mountain volcanics [1]
Upper Triassic
Brock shale [1]
Cedar formation [1]
Devils Canyon member (of Modin formation) [2]
Hawkins Creek member (of Modin formation) [2]
Hosselkus limestone [1]
Hosselkus series [1]
Kosk member (of Modin formation) [1]
Modin formation [1]
Swearinger slate [1]
Trail formation [1]
Middle and Upper Triassic
Pit shale [1] or **formation**
Middle Triassic
Pitt series [1]
Lower and Middle Triassic
Inyo series [1]
Lower Triassic
Inyoan series [1]
Paleozoic and Mesozoic
Diamond Valley complex [2]
Maria plutonic complex [2]
Pleasant View complex [2]
Paleozoic(?) or Mesozoic(?)
Sacatar quartz diorite [2]
Summit gabbro [2]
Paleozoic
Furnace limestone [1]
Laurel Canyon formation [2]
Paleozoic or older
Palm Canyon complex [2]

United States—Continued
California—Continued
Paleozoic or older—Continued
Tumco formation [2]
Vitrefrax formation [2]
Paleozoic(?)
Anzar phase (of Santa Lucia series) [1]
Chino Quarry limestone [1]
Chino Quarry quartzite [1]
Jurupa series [1]
Preston hornblende diorite [1]
Sky Blue Quarry limestone [1]
Sur series [1]
Upper Paleozoic or Triassic
McCoy Mountains formation [2]
Upper Paleozoic
Calaveras formation [1]
Sidewinder Valley metavolcanics [2]
Upper Paleozoic(?)
Hodge volcanic series [2]
Waterman gneiss [2]
Lower Paleozoic(?)
Death Valley formation [1]
Hanaupah formation [1]
Marvel limestone [1]
Middle Park formation [1]
Mountain Girl conglomerate-quartzite [1]
Radcliff formation [1]
Redlands limestone [1]
Sentinel dolomite [1]
Sour Dough limestone [1]
Surprise formation [1]
Telescope group [1]
Wildrose formation [1]
Permian
Dekkas andesite [1]
Fairview Valley formation [2]
Garlock series [2]
McCloud limestone [1]
†McCloud shales [1]
Mokelumne formation [2]
Nosoni formation [1]
Owens Valley formation (see p. 621)
Owenyo limestone [1] **member** (of Owens Valley formation)
Reward conglomerate [1] **member** (of Owens Valley formation)
Wildwood limestone [1]
Lower Permian
Mount Edgar limestone [2]
Carboniferous
Hall City limestone [1]
Nix porphyrite [2]
Carboniferous(?)
Nordheimer formation [1]
Saragossa quartzite [1]
Pre-Carboniferous(?)
Chicopee formation [2]
Pennsylvanian
†Keddie formation [1]
Kettle meta-andesite [1]
†Little Grizzly Creek beds [1]
Providence Mountains limestone [2]
Reeve meta-andesite [1]

United States—Continued
California—Continued
Pennsylvanian—Continued
Robinson formation [1]
Tihvipah limestone [2]
Pennsylvanian(?)
Rest Spring shale [2]
Mississippian and Permian(?)
†McCloud formation [1]
Mississippian
Arlington formation [1]
Baird shale [1]
Bass Mountain diabase [1]
Blue Canyon formation [1]
Bragdon formation [1]
Cape Horn slate [1]
†Caribou formation [1]
Delhi formation [1]
Duncan chert [1]
Kanaka formation [1]
Mass Mountain [1] (basalt flows)
Peale formation [1]
Perdido formation [2]
Relief quartzite [1]
Shoofly formation [1]
†Spanish formation [1]
Stewart Valley limestone [2]
Taylor meta-andesite [1]
Tightner formation [1]
Tin Mountain limestone [2]
Probably Mississippian
Clear Creek greenstone [1]
Clear Creek series [1]
Clipper Gap formation [1]
Devonian
Grayback formation [1]
Taylorsville formation [1]
Devonian(?)
Chanchelulla formation [1]
Copley greenstone (as meta-andesite [1])
Middle(?) and Upper Devonian
Lippincott member (of Lost Burro formation) [2]
Lost Burro formation [2]
Middle Devonian
Balaklala rhyolite [1]
Kennett formation [1]
†Sacramento formation [2]
Pre-Devonian
Kerr Ranch schist [2]
Silurian and Lower Devonian
Hidden Valley dolomite [2]
Silurian
Montgomery limestone [1]
Silurian(?)
Grizzly formation [1]
Pre-Silurian
Abrams mica schist [1]
Middle Ordovician
Barrel Spring formation [1]
Lower Ordovician
Mazourka formation [1]
Post-Cambrian
Maria formation [2]

United States—Continued
California—Continued
Cambrian
Barrelian series [1]
Panamintan series [1]
Pintoan series [1]
Upper Cambrian
Nopah formation [2]
Middle and Upper Cambrian
Racetrack dolomite [2]
Middle Cambrian and later(?)
Cornfield Springs formation [1]
Middle Cambrian
Bonanza King formation [1]
Cadiz formation [1]
Silver king dolomite member [1] (of Bonanza King formation)
Lower and Middle Cambrian
Tecopa shale [2]
Lower Cambrian
Campito sandstone [1]
Chambless limestone [2]
Inyo marble [1]
Kelso shale [2]
Latham shale [2]
Mono series [1]
Noonday dolomite [2]
Oro Grande series [1]
Pandermitan series [1]
Tough Nut quartzite [2]
Zabriskie quartzite member (of Wood Canyon formation) [2]
Probably Lower Cambrian
Arrastre quartzite [1]
Precambrian and Lower Paleozoic(?)
Panamint metamorphic complex [1]
Precambrian
Beck Spring dolomite [2]
Berdoo granite [2]
Chubbuck marble member (of Essex series) [2]
Chuckwalla complex [2]
Crystal Spring formation [2]
Deep Spring formation [1]
Essex series [2]
Fenner granite gneiss [2]
Gold Park gabbro-diorite [2]
Halloran complex [2]
Hinkley Valley complex [2]
Hodge complex [2]
Johannesburg gneiss [1]
Kilbeck granite gneiss [2]
Kingston Peak formation [2]
Needles complex [2]
Orocopia schist [2]
Pahrump series [2]
Palms granite [2]
Pinto gneiss [2]
Rand schist [1]
Reed dolomite [1]
Roberts formation [1]
Wyman formation [1]
Precambrian(?)
Baldwin gneiss [2]
Box Springs complex [2]
Echo granite [1]

United States—Continued
California—Continued
Precambrian(?)—Continued
†Klamath schists [1]
Mesquite schist [2]
Pelona schist [1]
Salmon hornblende schist [1]
San Emedio series [1]
Siskiyou terrane [1]
World Beater porphyry [1]
Age(?)
Aurela Ridge group [2]
Boundary Peak granite [1]
Brokeoff andesite [1]
Carson Creek formation [1]
Crescent Crater dacites [1]
Cucamonga Canyon group [2]
Divide Peak andesite [1]
Eastern basalts [1]
East Ridge group [2]
El Dorado Ridge gneissose quartz diorite [2]
El Luis Ridge group [2]
Flatiron andesites [1]
Huckleberry andesites [1]
Juniper andesites [1]
Lassen dacites [1]
Loomis Peak dacites [1]
Manzanita dacites [1]
Marjo Canyon diorite [2]
Pellisier granite [1]
Rainbow Flat group [2]
Raker Peak pyroxene andesites [1]
Red Mountain pyroxene basalts [1]
San Antonio Canyon group [2]
Saroc Ridge group [2]
Stoddard Canyon quartz monzonite [2]
†Suisun marble [2]
Table Mountain andesite [1]
Tehachapi marble [1]
Temecula Canyon granite [1]
Twin Lakes andesites [1]
Weitchpec schists [1]
West Prospect basalt [1]
West Ridge group [2]
Willow Lake basalts [1]
Colorado
Cenozoic (probably Quaternary)
Brush Hollow limestone [2]
Quaternary
Grayback wash [1]
Recent
Piney Creek alluvium [2]
Pleistocene
Florida gravel [1]
Oxford gravel [1]
Pleistocene (pre-Wisconsin)
Cerro till [1]
Durango till [1]
Pleistocene(?)
Porphyry Peaks conglomerate [2]
Tertiary
Baker Lake porphyry [2]
Bald Mountain dacite [1]
Basin rhyolite [2]

504835—59——4

United States—Continued
Colorado—Continued
Tertiary—Continued
Basin Ridge group [2]
Bassick agglomerate [1]
Black Hill rhyolite [1]
Bonanza latite [1]
Brewer Creek latite [1]
Buffalo Peaks andesite [1]
Calico Peak porphyry [1]
Chalmers quartz monzonite [2]
Climax porphyry [2]
†Cripple Creek breccia [1]
Eagle Gulch latite [1]
Empire Gulch rhyolite [1]
Eshe porphyry [2]
Fairview diorite [1]
Golden member (of Arapahoe-Denver formation) [2]
Grizzly Mountain rhyolite [1]
Grizzly Peak rhyolite [1]
Hayden Peak latite [1]
Lake Agnes quartz monzonite [2]
Pleasant View member (of Arapahoe-Denver formation) [2]
Porphyry Peak rhyolite [1]
Porphyry Peaks rhyolite [1]
Pringle andesite [1]
Red Mountain rhyolite [1]
Squirrel Gulch latite [1]
Table Mountain formation [2]
Twin Lakes quartz monzonite porphyry [1]
Utica quartz monzonite porphyry [1]
Tertiary, upper, or lower Pleistocene(?)
Little Union quartz latite [2]
Tertiary, middle or upper
Alboroto rhyolite (as quartz latite [1])
Conejos formation (as andesite [1])
Creede formation [1]
Fisher quartz latite (as latite-andesite [1])
Potosi volcanic series [1]
Treasure Mountain rhyolite (as quartz latite [1])
Tertiary, lower (see also *Upper Cretaceous or Tertiary, lower*)
Eagle River porphyry [1]
Pando porphyry [2]
Sacramento porphyry [1]
Tertiary, lower, or Upper Cretaceous(?)
Elk Mountain porphyry [1]
Evans Gulch porphyry [1]
Gray porphyry group [1]
Iowa Gulch porphyry [2]
Johnson Gulch porphyry [1]
Lincoln porphyry [1]
White porphyry [1]
Pliocene
Trump conglomerate [2]
Wray channel beds (in Ash Hollow formation) [2]

United States—Continued
Colorado—Continued
Pliocene(?)
Bayfield gravel [1]
Bridgetimber gravel [1]
Hinsdale formation [1]
North Park formation [1]
Nussbaum formation [1]
Pliocene, upper, or Pleistocene, lower
Alamosa formation [1]
Miocene or Pliocene
Cimarron Creek latite [1]
Difficulty Creek latite [1]
High Park lake beds [1]
Miocene
American Flat latite [1]
Burns quartz latite or **latite tuff** [1]
Campbell Mountain rhyolite [1]
Equity quartz latite [1]
Eureka rhyolite [1] **formation**
†Gap latite [1]
Henson tuff [1]
Huerto quartz latite (as andesite [1])
Mammoth Mountain rhyolite [1]
Nelson Mountain quartz latite [1]
Niagara Gulch latite [1]
Outlet Tunnel quartz latite [1]
†Palisade andesite [1]
Phoenix Park quartz latite [1]
Picayune quartz latite (as volcanic group [1])
Piedra rhyolite or **group** [1]
Rat Creek quartz latite [1]
Sheep Mountain quartz latite (as andesite [1])
Silverton volcanic series [1]
†Summitville andesite [1]
Sunshine Peak rhyolite [1]
Willow Creek rhyolite [1]
Windy Gulch rhyolite breccia [1]
Miocene(?)
Beidell latite-andesite [1] or **quartz latite**
Browns Park formation [1]
Canyon Creek member (of San Juan tuff) [1]
†Cropsy Peak type [1] (latite)
Lake Fork quartz latite (as andesite [1])
Rawley andesite [1]
San Juan tuff [1] or **breccia**
Sneffels member (of San Juan tuff) [1]
†South Mountain type [1] (latite)
Tracy Creek quartz latite (as andesite [1])
Weller horizon or sandstone [1]
West Elk breccia [1]
Miocene, upper or Pliocene
Alnwick lake beds [1]
Miocene, upper and Pliocene
†Arkansas marls [1]
Miocene, upper
Governor diorite [2]
Stony Mountain diorite [2]

United States—Continued
Colorado—Continued
Miocene, upper—Continued
Wagontongue formation [2]
Miocene, middle, and Pliocene, lower
†Pawnee Creek beds [1]
Oligocene
Antero formation [1]
†Castle conglomerate [1]
Chumway rhyolite [2]
Guffey volcanics [2]
Troublesome formation [2]
Vista member (of White River formation) [2]
Oligocene(?)
Blanco Basin formation [1]
Telluride conglomerate [1] or **formation**
Oligocene(?) or Miocene(?)
Canby latite [1]
Oligocene, upper, and Miocene, lower
†Martin Canyon beds [1]
Oligocene, upper
Florissant lake beds [1]
Oligocene, middle
†Cedar Creek beds [1]
Oligocene, lower
Balfour formation [2]
Castle Rock conglomerate [1]
†Horsetail Creek beds [1]
Thirty-nine Mile volcanic series [2]
Eocene or Oligocene
Vallejo formation [2]
Eocene and Oligocene
†Monument Creek group [1]
Post-Eocene, pre-Miocene
Green Mountain conglomerate [2]
Eocene
†Bazoo porphhry [1]
Brainerd quartz monzonite [1]
Bunker andesite [1]
Chalk Mountain nevadite [1]
†Copper Mountain porphyry [1]
Cuchara formation [1]
†Gold Hill porphyry [1]
†Green Mountain beds [1]
†Huerfano series [1]
McNulty Gulch rhyolite [1]
Modoc quartz monzonite [1]
Montezuma quartz monzonite [1]
Mosquito porphyry [1]
Mount Alto quartz monzonite [1]
Mount Zion porphyry [1]
Rosita andesite [1]
†Ruby formation [1]
†San Miguel conglomerate [1]
†Silverheels porphyry [1]
White Raven quartz monzonite [1]
Eocene(?)
†Animas River beds [1]
Silver Mountain monzonite porphyry [1]
Eocene, middle
Anvil Points member (of Green River formation)[2]

United States—Continued
Colorado—Continued
Eocene, middle—Continued
Douglas Creek member (of Green River formation)[1]
Garden Gulch member (of Green River formation)[1]
Gunnison tillite (W. W. Atwood and W. R. Atwood, 1926, Jour. Geology, v. 34, no. 7, pt. 1, p. 612–622)
Parachute Creek member (of Green River formation)[1]
Eocene, lower and middle
Huerfano formation [1]
Eocene, lower
Calumet granodiorite [2]
Hiawatha member (of Wasatch formation)[1]
Plateau Valley beds [1]
Paleocene and Eocene, lower
DeBeque formation [2]
Paleocene
Coalmont formation [1]
Poison Canyon formation [1]
Ridgway till [1]
†Tiffany beds [1]
Paleocene(?) to Oligocene(?)
Mount Aetna quartz monzonite porphyry (as Etna quartz monzonite porphyry [1])
Mount Pomeroy quartz monzonite (as Pomeroy quartz monzonite [1])
Mount Princeton quartz monzonite [1]; *see also* Princeton quartz monzonite [1]
Paleocene(?)
Ohio Creek conglomerate [1]
Cretaceous
Coloradan series [1]
Trinidad lignitic group [1]
Cretaceous(?)
Albion monzonite [2]
Greenwich shale [1]
Upper Cretaceous or Tertiary, lower
Quail porphyry [1]
Upper Cretaceous and Paleocene
Animas formation [1]
Dawson arkose [1]
Denver formation [1]
Middle Park formation [1]
Morley coal group [1]
†Raton Hills group [1]
Raton Pass coal group [1]
Wooton coal group [1]
Upper Cretaceous
American Nettie quartzite [1]
Anchor Mine tongue (of Mancos shale)[1]
Apache sandstone [1]
Apishapa shale [1]
Arapahoe formation [1]
Baldwin sandstone member (of Mesaverde formation)[2]

United States—Continued
Colorado—Continued
Upper Cretaceous—Continued
Beecher Island shale member (of Pierre shale)[1]
Black Diamond coal group [1]
Bowie shale member (of Mesaverde formation)[2]
Cameo member (of Price River formation)[2]
Canyon City group [1]
Carlile shale [1]
Cliff House sandstone [1]
†Colorado series [1]
Corcoran member (of Price River formation)[2]
Cozzette member (of Price River formation)[2]
Engle coal group (in Vermejo formation)[1]
†Fairfield coal group [1]
†Goff coal group (in Williams Fork formation)[1]
†Golden formation or group [1]
Greenhorn limestone [1]
Haybro formation [1]
Hayden Gulch sandstone member (of Haybro formation)[1]
Holderness formation [1]
Hunter Canyon formation [1]
Hygiene sandstone member (of Pierre shale)[1]
Iles formation [1]
Laramian series [1]
Laramie formation [1]
Larimer sandstone member (of Pierre shale)[1]
Lead King lime [1]
Lewis shale [1]
Lion Canyon coal group (in Williams Fork formation)[1]
†Lion Canyon sandstone member (of Williams Fork formation)[1]
McDermott member (of Animas formation); (as formation [1])
Mancos sandstone [1]
Mancos shale[1]; where **Mowry member** is recognized **Mancos shale** is Lower and Upper Cretaceous
Mancosian series [1]
Menefee formation [1]
Mesaverde group or **formation** [1]
Milliken sandstone member (of Fox Hills sandstone)[1]
Milner formation [1]
Morapos sandstone member (of Mancos shale)[1]
Mount Garfield formation [1]
Mount Harris formation [1]
Paonia shale member (of Mesaverde formation)[1]
Patterson sand [1] (subsurface)
†Piedra formation [1]
†Platte series [1]
Point Lookout sandstone [1]

United States—Continued
Colorado—Continued
Upper Cretaceous—Continued
Richard sandstone member (of Pierre shale)[1]
Rockvale sandstone member (of Vermejo formation)[1]
Rocky Ridge sandstone member (of Pierre shale)[1]
Rollins sandstone member (of Mesaverde formation [1] or of Mount Garfield formation)
Sopris coal group (in Vermejo formation)[1]
Terry sandstone member (of Pierre shale)[1]
Thatcher limestone member (of Graneros shale)[2]
Timpas limestone [1]
Tow Creek sandstone [1] **member** (of Iles formation)
Trinidad sandstone [1]
Trout Creek sandstone or **sandstone member** (of Iles formation)[1]
Twentymile coal group [1]
Twentymile sandstone member (of Williams Fork formation)[1]
Williams Fork formation [1]
†Willow Creek beds [1]
Lower and Upper Cretaceous
Colorado group[1], **formation,** or **shale**
Graneros shale [1]
Lower Cretaceous
Burro Canyon formation [2]
Dry Creek Canyon member (of Dakota sandstone)[2]
Glencairn shale member (of Purgatoire formation)[1]
Kassler sandstone member (of South Platte formation)[2]
Lytle sandstone member (of Purgatoire formation)[1]
Plainview sandstone member (of South Platte formation)[2]
Purgatoire formation [1]
South Platte formation [2]
Van Bibber shale member (of South Platte formation)[2]
Jurassic
†Gunnison formation [1]
Montezuma shales [1]
Ralston formation [2]
Jurassic(?)
Garo sandstone [2]
Upper Jurassic
Bilk Creek sandstone member (of Wanakah formation)[2]
Black Girl limestone [1]
Bright Diamond limestone (in Morrison formation)[1]
Bright Diamond quartzite (in Morrison formation)[1]
Doctor Bond sandstone [1]
Junction Creek sandstone [2]

United States—Continued
Colorado—Continued
Upper Jurassic—Continued
†La Plata sandstone [1]
†McElmo formation [1]
Morrison formation [1]
Morrisonian series [1]
Pony Express limestone member (of Wanakah formation); (as beds in Morrison formation [1])
Wanakah formation (as member of Morrison formation [1])
Triassic
†Doloresian series [1]
Strain shale member (of Lykins formation) [2]
Triassic(?)
Chaquaqua member [1] (of Lykins formation)
Gold Hill conglomerate [1]
Red Canyon member [1] (of Lykins formation)
Upper Triassic
Dolores formation [1]
Permian and Pennsylvanian(?)
Kangaroo formation [1]
Permian
Bath sandstone sub-member (of Pony Spring siltstone member [1] [of Maroon formation])
Bergen shale member (of Lykins formation) [2]
Chubb siltstone member (of Maroon formation) [1]
Creston conglomerate phase [1]
Cutler formation [1]
Falcon limestone member (of Lykins formation) [2]
Glennon limestone member (of Lykins formation) [2]
Harriman shale member (of Lykins formation) [2]
Lyons sandstone [1]
Owl Canyon formation [2]
Pony Spring siltstone member (of Maroon formation) [1]
South Canyon Creek dolomite member (of Maroon formation) [2]
Permian(?)
Rock Creek conglomerate member (of Maroon formation) [2]
State Bridge siltstone member (of Maroon formation) [2]
Permian(?) and Triassic(?)
Lykins formation [1]
Middle Permian
Schoolhouse sand [2]
Carboniferous and Triassic(?)
Tarryall formation [1]
Carboniferous
Rican series [1]
Pennsylvanian, Permian, and Triassic(?)
†Wyoming formation or group [1]

United States—Continued
Colorado—Continued
Pennsylvanian and Permian
†Arkansas sandstone [1]
Glenwood tongue (of Weber sandstone) [2]
Maroon formation (as conglomerate or formation [1])
Sangre de Cristo formation [1]
Pennsylvanian and Permian(?)
Badito formation [1]
Jacque Mountain limestone member (of Minturn formation); (as member of Maroon formation [1])
Minturn formation [2]
Rico formation [1]
White Quail limestone member (of Minturn formation) [2]
Pennsylvanian
Battle Mountain formation [2]
Belden shale or **formation** [2]
Elk Ridge limestone member (of Minturn formation) [2]
Fountain formation [1]
Garfield formation [1]
Glen Eyrie shale member (of Fountain formation) [1]
Gothic formation [2]
Hells Canyon formation [2]
Hermosa formation [2]
Hornsilver dolomite member (of Minturn formation) [2]
Ingleside formation [1]
Kerber formation [1]
McCoy formation [1]
Molas formation [1]
Newett limestone member (of Weber? formation) [1]
Paradox member (of Hermosa formation); (as formation [1])
Pinkerton Trail limestone [2]
Robinson limestone member (of Minturn formation); (as member of Maroon formation [1])
Resolution dolomite member (of Minturn formation) [2]
Swissvale gypsum member (of Minturn formation) [2]
Veta Pass limestone member [1] (of Lower Sangre de Cristo conglomerate)
Wearyman dolomite member (of Minturn formation) [2]
†Weber grits [1]
†Weber shales [1]
Whiskey Creek Pass limestone member (of Madera formation) [2]
Youghall formation [2]
Pennsylvanian(?)
Coffman conglomerate member (of Maroon formation) [1]
Mississippian
Beulah limestone [1]
Hardscrabble limestone [2]

United States—Continued
Colorado—Continued
Mississippian—Continued
Williams Canyon limestone [1]
Lower Mississippian
Gilman sandstone member (of Leadville dolomite) [2]
Leadville limestone [1] **or dolomite**
†Millsap limestone [1]
Devonian or Mississippian(?)
Flat-top limestone [1]
Upper Devonian
†Cement shale [1]
Chaffee formation [1]
Dyer dolomite member (of Chaffee formation) [2]
Elbert formation [1]
†Fairview shale [1]
Ouray limestone [1]
Parting quartzite member (of Chaffee formation) [1]
Ordovician
†Tomichi limestone [1]
†Yule limestone [1]
Upper Ordovician
Fremont limestone [1]
Priest Canyon member (of Fremont formation) [2]
Middle Ordovician
Harding sandstone [1] **or quartzite**
Lower Ordovician
Dead Horse conglomerate member (of Manitou formation) [2]
Manitou limestone,[1] **dolomite,** or **formation**
Tie Gulch dolomite member (of Manitou formation) [2]
†Ute Pass dolomite [1]
Cambrian to Upper Devonian
†Yulean series [1]
Cambrian
Lodore formation or **shale** [1]
Upper Cambrian
Clinetop algal limestone member (of Dotsero formation) [2]
Dotsero formation [2]
Glenwood Canyon member (of Dotsero formation) [2]
Ignacio quartzite [1]
Peerless formation (as shale member of Sawatch quartzite [1])
Sawatch quartzite [1]
†Sawatchian series [1]
Precambrian
Big Thompson schist [1]
Black Canyon schist [1]
Boulder Creek granite (as granite gneiss [1])
Broncho Mountain granite [1]
Clear Creek gneiss [1]
Coal Creek quartzite [1]
Cripple Creek granite [1]
Curecanti granite [1]
Dubois greenstone [1]
Emmons Peak quartzite [1]
Eolus granite [1]

United States—Continued
Colorado—Continued
Precambrian—Continued
Estes Park beds [2]
Falcon granite gneiss [2]
Front Range granite group [1]
Gunnison River series [1]
Hell Gate porphyry [1]
Holy Cross schist [1]
Idaho Springs formation [1]
Indian Creek granite [2]
Irving greenstone [1]
Longs Peak granite [1]
Longs Peak-St. Vrain granite [2]
Mazatzal granite [2]
Mount Evans quartz monzonite [2]
Mount Morrison formation [2]
Mount Olympus granite [1]
Mount Rosa granite [1]
Needle Mountains group [1]
Overland Mountain granite [2]
Pikes Peak granite [1]
Pikian series [1]
Powderhorn granite [1]
Ralston formation [1]
Raspberry Mountain granite [1]
River Portal mica schist [1]
†Rosalie granite [1]
Salida schists [1]
Sangre de Cristo granite [1]
Sawatch schist [1]
Silver Plume granite [1]
Spring Creek granite [1]
Summit type (of granite) [1]
Swandyke hornblende gneiss [1]
Tenmile granite [1]
Trimble granite [1]
Twilight granite [1]
†Uinta sandstone or quartzite [1]
Uncompahgre formation [1]
Vallecito conglomerate [1]
Vernal Mesa granite [1]
Westwater gneisses and schists [1]
Whitehead granite [1]
Windy Point granite [1]
Womack gneiss [1]
Precambrian(?)
Bear Mountain granite [1]
Central City granite [1]
Evans granite [1]
Glendale granite [1]
Santa Fe granite [1]
Troutdale granite [1]
Probably Precambrian
Mount Champion quartz monzonite [1]
Age(?)
Bull-Domingo agglomerate [2]
Specimen Mountain volcanics [2]
Connecticut
Pleistocene
Berlin clay [1]
Clayton clay [1]
Hartford clay [1]
Middletown clay [1]

United States—Continued
Florida—Continued
Pliocene, lower—Continued
†Floridian group or series [1]
†Peace Creek beds [1]
Miocene, upper
†Buckingham marl [2]
†Jacksonville formation [1]
Tamiami formation [2]
Miocene, probably upper
†Euchee phase [1]
Miocene, middle and upper
†Alum Bluff series [1]
†Choctawhatchee formation [1]
Miocene, middle
†Alaqua phase [1]
Oak Grove sand [1] **member** (of Shoal River formation)
Permenters Farm beds [2]
Shoal River formation [1]
Whites Creek bed member (of Shoal River formation) [2]
Miocene, lower and middle
Alum Bluff group [1]
†Apalachicola group [1]
Hawthorn formation [1]
†Tampa group [1]
Miocene, lower
†Aspalaga clay or marl [1]
†Ballast Point silex bed [1]
†Chattahoochee formation [1]
Chipola formation [1]
†Ocheesee beds [1]
St. Marks facies (of Tampa stage) [2]
†Sopchoppy limestone [1]
Tampa limestone [1]
†Tampa silex bed [1]
†Wakulla formation [1]
†Waldo formation [1]
White Beach sandrock [1]
Miocene, lower or later
†Manatee River marl [1]
Oligocene, upper
Suwannee limestone [1]
Oligocene, middle
Marianna limestone [1]
Eocene, upper
Bumpnose limestone member (of Crystal River limestone) [2]
Crystal River formation [2]
Gadsden limestone [2]
Inglis member (of Moodys Branch formation) [2]
†Levyville formation [1]
Ocala limestone [1]
†Peninsular limestone [1]
Williston member (of Moodys Branch formation) [2]
Eocene, middle or upper
Gulf Hammock limestone [2]
Eocene, middle
Avon Park limestone [2] (subsurface and surface)
Lake City limestone [2] (subsurface)

United States—Continued
Florida—Continued
Eocene, middle—Continued
Tallahassee limestone [2] (subsurface)
Eocene. lower
Oldsmar limestone [2] (subsurface)
Paleocene
Cedar Keys limestone [2] (subsurface)
Upper Cretaceous
Lawson limestone [2] (subsurface)
Georgia
Pleistocene
†Okefenokee formation [1]
Penholoway formation [1]
†Satilla formation [1]
Pliocene
Charlton formation [1]
Miocene, lower
†Altamaha formation or grit [1]
Griffin bed [1]
Jacksonboro limestone [1]
†Marks Head marl [1]
†Parachucla marl or shale [1]
Wileys Landing bed [1]
Oligocene and Miocene
†Bainbridge residual beds [1]
†Brier Creek marl [1]
Oligocene, upper
Flint River formation [1]
Oligocene, middle
†Flint River lower and upper zones [1]
Eocene, upper
†Bainbridge marl [1]
Irvinton sand member (of Barnwell formation) [2]
†Key Creek sand [1]
Sandersville limestone member (of Barnwell formation) [2]
†Shell Bluff marl (in Barnwell formation) [1]
Tivola tongue (of Ocala limestone) [1]
Twiggs clay member (of Barnwell formation) [1]
Eocene, middle
McBean formation [1]
Upper Cretaceous
Atkinson formation [2] (subsurface)
Blufftown marl [1]
Cusseta sand member (of Ripley formation) [1] or **Cusseta sand**
Providence sand (as member of Ripley formation [1])
†Renfroes marl [1]
Paleozoic
Palmetto type granite [2]
Paleozoic(?)
Little River series [2]
Permian(?)
Stone Mountain granite [2]

United States—Continued
Idaho—Continued
Lower and Upper(?) Cretaceous
Wayan formation [1]
Lower Cretaceous
Bechler conglomerate [1] or **shale**
Draney limestone [1]
Ephraim conglomerate [1]
Gannett group [1]
Peterson limestone [1]
Lower(?) Cretaceous
Homer limestone member (of Wayan formation)[1]
Jurassic or Cretaceous
Boise granite [1]
Probably Jurassic or Cretaceous
Bayview granodiorite [1]
Granite Creek granodiorite [1]
Packsaddle Mountain granodiorite [1]
Upper Jurassic
Preuss sandstone [1] or **redbeds**
Wolverine Canyon limestone member (of Preuss sandstone)[2]
Triassic
Lanes tongue (of Ankareh formation)[2]
Wood shale [1] **tongue** (of Ankareh formation)
Triassic(?)
Higham grit [1]
Upper Triassic
Deadman limestone [1]
Lucile series [2]
Stump sandstone [1]
Lower Triassic
Fort Hall formation [1]
Portneuf limestone [1] **member** (of Thaynes formation)
Ross Fork limestone [1]
Timothy sandstone [1] or **sandstone member** (of Thaynes formation)
Permian and Upper Triassic
Seven Devils volcanics [1]
Permian
Phosphoria formation [1]
Rex chert member or **tongue** (of Phosphoria formation)[1]
Permian(?)
Casto volcanics [1]
Snake River series [1]
Pre-Permian
Blacklead limestone [1]
Carboniferous
Pittsburg formation [2]
Upper Carboniferous(?)
Sandpoint conglomerate [1]
Pennsylvanian
Wells formation [1]
Wood River formation [1]
Mississippian and Devonian(?)
Milligan formation [1]
Upper Devonian
Grand View dolomite [1]

United States—Continued
Idaho—Continued
Silurian
Trail Creek formation [1]
Ordovician
Phi Kappa formation [1]
Upper Ordovician
Fish Haven dolomite [1]
Kinnikinic quartzite [1]
Saturday Mountain formation [1]
Lower Ordovician
Ramshorn slate [1]
Cambrian(?)
Bannock volcanic formation [1]
Bayhorse dolomite [1]
Garden Creek phyllite [1]
Upper Cambrian
Ovid formation [2]
St. Charles limestone [1]
Worm Creek quartzite member (of St. Charles limestone)[1]
Middle and Upper Cambrian
Nounan limestone [1]
Middle Cambrian
Bloomington formation [1]
Lakeview limestone [1]
Langston limestone [1]
Rennie shale [1]
Spence shale member (of Ute limestone)[1]
Middle(?) Cambrian
Gold Creek quartzite [1]
Lower Cambrian(?)
Black Rock limestone [1]
Precambrian
Blacktail formation [1]
Burke formation [1]
Cataldo quartzite [1]
†Coeur d'Alene series [1]
†Harrison series [1]
Hoodoo quartzite [1]
Lemhi quartzite [2]
Orofino series [1]
Pocatello formation [2]
Prichard slate or **formation** [1]
Revett quartzite [1]
St. Regis formation [1]
Striped Peak formation [1]
Swauger quartzite [2]
Wallace formation [1]
Yellowjacket formation [1]
Precambrian(?)
Albion Range group [1]
East Fork formation [1]
Hyndman formation [1]
Age(?)
Silver City granite [1]
Illinois
Pleistocene
Cairo till [1]
Florence gravel [1]
Florencia formation [1]
Freeport gravel [1]
Joliet conglomerate [1]
Kankakee torrential deposits [1]

United States—Continued
Illinois—Continued
Pennsylvanian—Continued
Ipava shale and sandstone (in Carbondale formation)[1]
Isabel sandstone [1]
Jamestown limestone member (of McLeansboro formation)[1]
Kickapoo sand [1] (subsurface)
†La Salle formation [1]
Lawrenceville shale (in McLeansboro formation)[2]
Lick Creek sandstone member (of Pottsville formation)[1]
Litchfield sand [1] (subsurface)
Little Chain limestone (in McLeansboro formation)[2]
Little Vermilion cyclothem (including Little Vermilion limestone)[2]
Little Wabash sandstone (in McLeansboro formation)[2]
Liverpool cyclical formation [1]
Livingston limestone (in McLeansboro formation)[1]
Lusk formation or cyclothem [2]
Macedonia formation or cyclothem [2]
Macoupin cyclical formation [1]
Macoupin limestone (in McLeansboro formation)[1]
McWain sandstone [2]
Makanda sandstone member (of Pottsville formation)[1]
Marietta limestone and shale (in Carbondale formation)[1]
Marshall limestone (in McLeansboro formation)[1]
Martinsville limestone [1]
Maxwell limestone (in McLeansboro formation)[1]
Millersville cyclothem (including Millersville limestone)[2]
Murray Bluff sandstone (in Macedonia formation)[2]
Newton cyclothem (including Newton limestone)[2]
Oak Grove member [1] (of Carbondale formation)
Omega limestone (in McLeansboro formation)[1]
Palzo sandstone [2]
Parks Creek limestone (in Pottsville formation)[1]
Petro oil sand [1] (subsurface)
Piasa limestone (in McLeansboro formation)[2]
Pleasantview sandstone (in Carbondale formation)[1]
Pokeberry limestone (in McLeansboro formation)[2]
Pontiac limestone (in McLeansboro formation)[1]
Pope Creek cyclical formation [1]
Pounds formation, sandstone, or cyclothem [2]

United States—Continued
Illinois—Continued
Pennsylvanian—Continued
Purington shale [1]
Quarry Creek limestone [1]
Reel limestone [2]
Ridgely sand [1] (subsurface)
Robinson sands [1] (subsurface)
Rolls Ford shale member (of McLeansboro formation)[1]
Ryans Ford limestone (in McLeansboro formation)[1]
St. David cyclical formation [1]
St. David shale and limestone (in Carbondale formation)[1]
Scottville cyclothem (including Scottville limestone)[2]
Seahorne cyclical formation [1]
Seahorne limestone [1]
Sellers limestone (in Caseyville formation)[2]
Seville cyclical formation [1]
Seville limestone (in Pottsville formation)[1]
Shaw Point cyclothem [2]
Sheffield shale (in McLeansboro formation)[2]
Shelby cyclothem [2]
Shoal Creek cyclical formation [1]
Shumway cyclothem (including Shumway limestone)[2]
Siggins sand [1] (subsurface)
Somerset member (of Pottsville formation)[1]
Sorento cyclothem [2]
Sparland cyclical formation [1]
Spoon River sandstone and shale (in Pottsville formation)[1]
Spring Valley limestone (in McLeansboro formation)[1]
Summum cyclical formation [1]
Summum sandstone (in Carbondale formation)[1]
Tartar cyclothem [2]
Tresner limestone [2]
Trivoli cyclical formation [1]
Turner cyclothem (including Turner limestone)[2]
Unionville sandstone [1]
Utica clay [2]
Waupecan sandstone [1]
Wiley cyclical formation [1]
Wilson sand [1] (subsurface)
Woodbury cyclothem (including Woodbury limestone)[2]
Upper Pennsylvanian
Murphys Bluff sandstone [2]
Middle and Upper Pennsylvanian
Carlinville limestone (as member of McLeansboro formation[1])
La Salle limestone (as member of McLeansboro formation[1])
Lonsdale limestone (as member of McLeansboro formation[1])
McLeansboro group (as formation[1])

United States—Continued
Illinois—Continued
Middle and Upper Pennsylvanian—Continued
New Haven limestone (as member of McLeansboro formation[1])
Rock Creek limestone (as member of McLeansboro formation[1])
Shoal Creek limestone (as member of McLeansboro formation [1])
Middle Pennsylvanian
Carbondale group; formation [1] in Kentucky
Grindstaff sandstone; member (of Tradewater formation [1] in Kentucky)
Stonefort limestone; member (of Tradewater formation [1] in Kentucky)
Vergennes sandstone (as member of Carbondale formation[1])
Vermilionville sandstone (as lentil in Carbondale formation[1])
Mississippian (see also *Devonian and Mississippian*)
†Brewerville sandstone [1]
Chartresan series [1]
Elko gravel [1]
Hartline chert [2]
Hoffner member (of Ste. Genevieve limestone)[2]
Jonesboro limestone [1]
†Kaskaskia limestone, formation, or group [1]
Kaskaskian series [1]
McClosky sand [1] (subsurface)
McKerney limestone member (of Hannibal shale)[1]
Marigold oolite [1]
Martinsville sand [1] (subsurface)
†Plum Creek beds [1]
Rockwood sandstone [1]
†Ruma formation [1]
Shetlerville formation [1]
Sonora sandstone [1]
Spar Mountain sandstone (in Fredonia member of Ste. Genevieve formation)[2]
Springville shale [1]
Swan Creek sandstone [1]
Valmeyer series [1]
Westfield lime [1] (subsurface)
Upper Mississippian or Pennsylvanian
Bellair sands [1] (subsurface)
Buchanan sands [1] (subsurface)
Upper Mississippian
Allendale sand [1] (subsurface)
Baldwin formation [2]
Benoist sand [1] (subsurface)
Bielh sand [1] (subsurface)
Carlyle sand [1] (subsurface)

United States—Continued
Illinois—Continued
Upper Mississippian—Continued
†Chester sandstone [1]
Chester series (as group[1])
Clore limestone [1]
Cypress sandstone [1]
Degonia sandstone [1]
Denny sand [1] (subsurface)
Downeys Bluff member (of Renault formation)[2]
Elvira group [2]
Fraileys shale [2]
Golconda formation [1]
Haney limestone [2]
Homberg group [2]
Kinkaid limestone [1]
Klein sand [1] (subsurface)
Lindley sand [1] (subsurface)
Lusk [1] [limestone]
Menard limestone [1]
New Design group [2]
Okaw formation [1]
Paint Creek formation [1] or **shale**
Palestine sandstone [1]
Renault formation [1]
Ridenhower shale [1]
Rosiclare sandstone member (of Ste. Genevieve limestone)[1]
St. Francisville sand [1] (subsurface)
Sparta sand [1] (subsurface)
Stein sand [1] (subsurface)
Tracey sand [1] (subsurface)
Vienna limestone [1]
Waltersburg sandstone [1]
Warsaw shale, limestone [1] or **formation**
Yankeetown chert [1]
Lower Mississippian
Darty limestone [2]
†Hamburg oolite [1]
Kinderhook series (as group [1])
McCraney limestone [2]
Oshawanan series [1]
Devonian and Mississippian
Carper sand [1] (subsurface)
Kaskaskia sequence [2]
Devonian
Backbone limestone [1]
Hoing sand [1] (subsurface)
Upper Devonian
Alto formation [1]
Mountain Glen shale [1]
Middle Devonian
Dutch Creek sandstone [1]
Grand Tower limestone [1]
Lingle limestone [1]
Misenheimer shale [1]
Lower or Middle Devonian
Clear Creek limestone [1] or **chert**
Lower Devonian
Grassy Knob chert [1]
Silurian
Athens marble [1]
Essex limestone [1]
Winston dolomite [1]

United States—Continued
Illinois—Continued
Middle Silurian
Bellwood dolomite [2]
Chicago formation [1]
Coe group [2]
Cordova dolomite [2]
Joliet limestone [1]
Markgraf member (of Joliet formation) [2]
Port Byron limestone [1]
Rockdale dolomite [2]
Romeo member (of Joliet formation) [2]
Thorn group [2]
Lower Silurian
Alexandrian series [2]
Channahon limestone [1]
Cyrene member (of Edgewood limestone) [1]
Kankakee limestone [1]
Orchard Creek shale [1]
Sexton Creek limestone [1]
Upper Ordovician
Aux Sable limestone [1]
Cape limestone [2]
Divine limestone [1]
Du Page limestone [1]
Millsdale limestone [1]
Rock Run limestone [1]
Thebes sandstone [1]
Treat limestone [1]
Wilmington limestone [1]
Middle Ordovician
Ancell group [2]
Beecher member (of Dunleith formation) [2]
Boarman member (of Mifflin formation) [2]
Brickeys member (of Mifflin formation) [2]
Briton member (of Mifflin formation) [2]
Buckhorn member (of Dunleith formation) [2]
Chana member (of Pecatonica formation) [2]
Clement member (of Grand Detour formation) [2]
Dane member (of Pecatonica formation) [2]
Daysville formation [2]
Dement member (of Grand Detour formation) [2]
Dunleith formation [2]
Eagle Point member (of Dunleith formation) [2]
Eldena member (of Nachusa formation) [2]
Elm member (of Nachusa formation) [2]
Establishment member (of Mifflin formation) [2]
Everett member (of Nachusa formation) [2]

United States—Continued
Illinois—Continued
Middle Ordovician—Continued
Fairplay member (of Dunleith formation) [2]
Foreston member (of Grand Detour formation) [2]
Galena dolomite [1]
†Galena series [1]
Garnavillo member (of Guttenberg formation) [2]
Glenhaven member (of Guttenberg formation) [2]
Grand Detour formation [2]
Harmony Hill formation [2]
Hazel Green member (of Quimbys Mill formation) [2]
Hazelwood member (of Mifflin formation) [2]
Hely member (of Grand Detour formation) [2]
Hennepin member (of Pecatonica formation) [2]
Kingdom formation [2]
Loughridge formation [2]
Lowell Park member (of Platteville limestone) [1]
Medusa member (of Pecatonica formation) [2]
Mortimer member (of Dunleith formation) [2]
Nachusa formation [2]
New Glarus member (of Pecatonica formation) [2]
Oglesby member (of Pecatonica formation) [2]
Pecatonica dolomite member [1] (of Platteville formation)
Rivoli member (of Dunleith formation) [2]
St. James member (of Dunleith formation) [2]
Sherwood member (of Dunleith formation) [2]
Shullsburg member (of Quimbys Mill formation) [2]
Sinsinawa member (of Wise Lake formation) [2]
Stillman member (of Grand Detour formation) [2]
Strawbridge member (of Quimbys Mill formation) [2]
Victory member (of Grand Detour formation) [2]
Walgreen member (of Grand Detour formation) [2]
Wall member (of Dunleith formation) [2]
Wise Lake formation [2]
Wyota member (of Dunleith formation) [2]
Lower Ordovician
†Cap au Gres sandstone [1]
Upper Cambrian
Charter member (of Mt. Simon formation) [2] (subsurface)

United States—Continued
Indiana—Continued
Mississippian—Continued
Indian Springs shale [1]
Lampkins sandstone member [1] (of Carwood formation)
Leesville limestone member (of Harrodsburg limestone) [1]
Lost River chert [1]
Mitchell limestone [1]
Mooretown sandstone [2]
Mount Ebel sandstone member [1] (of Edwardsville formation)
Mount Pleasant shales and sandstones [1]
Negli Creek limestone [1]
Nixon sand [1] (subsurface)
Oakland City sand [1] (subsurface)
Orange-Martin limestone [1]
Paoli limestone [1]
Petersburg sand [1] (subsurface)
Ramp Creek member (of Harrodsburg limestone) [1]
†St. Joseph formation [1]
Siberia limestone [1]
Solsberry formation [1]
Stevens Creek limestone [1]
Stobo limestone lens (in Borden group) [1]
Weed Patch member [1] (of Edwardsville formation)
Wickliff sandstone [1]
†Williamsport sandstone [1]
Upper Mississippian
Barker sand [1] (subsurface)
Brandy Run sandstone [1]
Colvin sand [1] (subsurface)
Cunningham sand [1] (subsurface)
Gibson sand [1] (subsurface)
Hightower sands [1] (subsurface)
Hoover gas sand [1] (subsurface)
Hunt sand [1] (subsurface)
Hyneman sand [1] (subsurface)
Kirkwood sand [1] (subsurface)
Loveless sand [1] (subsurface)
Mount Olympus sand [1] (subsurface)
Reelsville limestone [1]
Salem limestone [1]
Snyder sands [1] (subsurface)
†Spergen limestone [1]
Tracy sand [1] (subsurface)
Vierling sand [1] (subsurface)
West Baden (in Chester group) [1]
Willis sand [1] (subsurface)
Zimmerman sand [1] (subsurface)
Lower Mississippian
Allens Creek facies [1] (of Edwardsville formation)
Bearwallow facies [1] (of Edwardsville formation)
Belmont facies [1] (of Locust Point formation)
Bennettsville facies [1] (of Carwood formation)
Borden group [1]

United States—Continued
Indiana—Continued
Lower Mississippian—Continued
Broomhill facies [1] (of New Providence formation)
Carwood formation [1]
Cisco Branch facies [1] (of Floyds Knob formation)
Delaneys Creek facies [1] (of Carwood formation)
Dowell Hill facies [1] (of New Providence formation)
Edwardsville formation [1]
Evans Landing facies [1] (of Carwood formation)
Falling Run member (of Sanderson formation) [2]
Fleener facies [1] (of Carwood formation)
Floyds Knob formation [1]
Fordyce Knob sandstone facies [1] (of Floyds Knob formation)
Gent facies [1] (of Carwood formation)
Goss Mill limestone facies [1] (of Floyds Knob formation)
Henryville formation [2]
Jacobs Chapel shale [2]
Kelly Hill facies [1] (of Carwood formation)
Knob Creek facies [1] (of Carwood formation)
Locust Point formation [1]
Medora Knob facies [1] (of Edwardsville formation)
Nelson Hill facies [1] (of Locust Point formation)
New Providence shale [1]
Riverside sandstone [1]
Rockford limestone [1]
Rosewood shale [1]
Sanderson formation [2]
Schooner Hill facies [1] (of Locust Point formation)
Silver Hill facies [1] (of New Providence formation)
Sparksville facies [1] (of Carwood formation)
Spickert Knob facies [1] (of Locust Point formation)
Springler Knob facies [1] (of Edwardsville formation)
Stewarts Landing facies [1] (of, Edwardsville formation)
Underwood formation [2]
Devonian
Little Rock Creek limestone [2]
Upper Devonian
Blackiston formation [2]
†Delphi black shale [1]
New Albany shale [1]
Middle Devonian
Blocher formation [2]
Deputy formation [2]
Geneva limestone [1] or **dolomite**
Jeffersonville limestone [1]

United States—Continued
Iowa—Continued
Pennsylvanian (Missouri)—Con.
DeKalb limestone member (of Kansas City formation) [1]
†Earlham limestone (in Kansas City formation) [1]
Westerville limestone member (of Kansas City formation) [1]
Winterset limestone member (of Kansas City formation) [1]; **limestone** [1] in Kansas
Pennsylvanian (Des Moines)
Coal City limestone [2]
Cooper Creek limestone [2]
Des Moines series (as group [1])
Exline cyclothem (including Exline limestone) [2]
Mississippian
Alden limestone [1]
†Augusta limestone, group, or stage [1]
†Belfast beds [1]
Bonaparte marble [1]
Chapin beds [1]
Croton limestone (in St. Louis limestone) [1]
Eagle City beds [1]
English River sandstone member (of Hannibal shale) [1]
Hampton formation [1]
Humboldt oolite [1]
Iowa marble [1]
Iowa series [1]
Iowa Falls dolomite [1]
Keosauqua sandstone [1]
Le Grand beds [1]
Maple Mill shale [1]
†Marshalltown shale [1]
Mayne Creek formation [1]
†Montrose chert [1]
North Hill member [1] (of Hampton formation)
Pella beds [1]
Prospect Hill sandstone member (of Hannibal shale) [1]
†St. Louis marls [1]
†Springvale beds [1]
Verdi beds (in St. Louis limestone) [1]
Wassonville limestone [1]
Lower Mississippian
Aplington formation [2]
Burlington limestone [1]
Gilmore City limestone [1]
Keokuk limestone [1]
Devonian
Amana beds [2]
Hutchinson limestone [1]
Linnian series [2]
Raymond Quarry beds [1]
Upper Devonian or Mississippian
Sweetland Creek shale [1]
Upper Devonian
Bloody Run zone [1]
Cedarian series [1]

United States—Continued
Iowa—Continued
Upper Devonian—Continued
Coralville limestone [1]
Floyd limestone [1]
Hackberry shale [1]
Juniper Hill formation [1]
Lime Creek shale [1]
Linwood member (of Cedar Valley limestone) [1]
Littleton member (of Cedar Valley limestone) [1]
Mason City limestone or dolomite [1]
Nora limestone [1]
Owen substage or beds [1]
Rockfordian series [1]
†Rockford shale [1]
Rock Grove substage [1]
Sheffield formation [1]
Shell Rock limestone [1]
State Quarry limestone [1]
Middle and Upper Devonian
†Cedar limestone [1]
Davenport beds [1]
Middle Devonian
Cedar Rapids phase (of Otis limestone) [1]
Cedar Valley limestone [1]
Coggon limestone [1]
Fayette breccia [1]
Independence shale (as member of Wapsipinicon limestone [1])
Kenwood beds [1]
Lucas limestone [1]
Otis limestone [1]
Rapid limestone [1]
Spring Grove member (of Wapsipinicon limestone) [1]
Vinton phase (of Otis limestone) [1]
Wapsipinicon limestone [1]
Westfield phase (of Otis limestone) [1]
Middle(?) Devonian
Montpelier sandstone [1]
Solon limestone [1]
Silurian
Hoing sandstone [1] (subsurface)
Silurian(?)
Bertram dolomite [1]
Upper Silurian
Goweran series [1]
Middle Silurian
Anamosa dolomite [1]
Colesburg dolomite [1]
†Delaware limestone [1]
Gower dolomite [1]
Hartwick dolomite [1]
Hopkinton dolomite [1]
Leclaire dolomite [1]
Monticello dolomite [1]
†Mount Vernon beds [1]
Sabula dolomite [1]
Waucoma limestone [1]

United States—Continued
Iowa—Continued
Ordovician
†Maquoketa series [1]
Murray Iron Works member (of Platteville formation) [2] (subsurface)
†Platteville stage [1]
Upper Ordovician
Brainard member (of the Maquoketa shale) (as shale [1])
Clermont shale [1]
Colmar shales [1]
†Elgin limestone [1]
Fort Atkinson limestone [1]
Maquoketa shale [1]
Maquoketan series [1]
Volga shales [1]
Middle or Upper Ordovician
Dubuque shaley member (of Galena dolomite); (as formation [1])
Middle Ordovician
Decorah shale [1] or **formation**
Glenwood shale member (of Platteville formation) [1]; **shale** or **formation** in Michigan
Guttenberg limestone member [1] (of Decorah formation)
Ion dolomite member [1] (of Decorah formation)
†Julian limestone [1]
†Julian series [1]
McGregor limestone member(of Platteville formation) [1]
Spechts Ferry shale member [1] (of Decorah formation)
Lower Ordovician
Oneota dolomite [1]
Winneshiek limestone [1]
Cambrian
Hanoverian series [1]
Upper Cambrian
Albin shale [1]
Allamakee dolomite [1]
Hull porphyry [1]
Waukon sandstone [1]
Precambrian
Ragg quartzite [2]
Siouan series [1]
Split-Rock slate [1]
Precambrian(?)
Tipton sandstone [1]
Kansas
Quaternary
Gerlane formation [1]
Pleistocene and Recent
Sanborn group (as formation [1])
Pleistocene
Atchison formation [1]
Baliard formation (C. W. Hibbard, 1958, Am. Jour. Sci., v. 256, no. 1, p. 55, 56)
Belleville formation [1]
Chase Channel formation [2]
Crooked Creek formation [2]

United States—Continued
Kansas—Continued
Pleistocene—Continued
†Emma Creek formation [2]
Jones Ranch beds [2]
Kansan drift [1]
Kingsdown silt (as marl [1])
McPherson formation [1]
Meade formation (as gravel [1])
Missler member (of Ballard formation); (as member of Meade formation [2])
Odee formation [2]
Pearlette ash [1] **member** (of Sappa formation)
Peoria silt member (of Sanborn formation) [2]
†Salt Creek gravel beds [1]
Stump Arroyo member (of Crooked Creek formation) [2]
Vanhem formation [2]
Tertiary
Abilene conglomerate [1]
Pliocene (see also *Miocene, Pliocene and Pleistocene;* and *Miocene or Pliocene*)
Calvert ash bed (in Ash Hollow member of Ogallala formation) [2]
Dellvale ash bed (in Ash Hollow member of Ogallala formation) [2]
Fort Wallace ash bed (in Ash Hollow member of Ogallala formation) [2]
Rawlins ash bed (in Ash Hollow member of Ogallala formation) [2]
Reager ash bed (in Ash Hollow member of Ogallala formation) [2]
Reamsville ash bed (in Ash Hollow member of Ogallala formation) [2]
XI member (of Rexroad formation) [2]
Pliocene, upper
Rexroad formation [2]
Pliocene, middle
Delmore formation [2]
Pliocene, lower
Edson beds (in Ogallala formation) [1]
Rhinoceros Hill beds (in Ogallala formation) [1]
Miocene, Pliocene, and Pleistocene
†Plains marl [1]
Miocene or Pliocene
Woodhouse clay (in Ogallala formation) [1]
Cretaceous
Brookville terrane [1]
Buckskinian series [2]
Cawker terrane [1]
Gove chalk [2]
†Medicine beds [1]
Pete terrane [1]
Rawlinsian series [2]
Terra Cotta clay member (of Dakota formation) [2]

United States—Continued
Kansas—Continued
Cretaceous—Continued
Wallace shale [2]
Wiskanian series [2]
Cretaceous(?)
Hills Pond peridotite [2]
Upper Cretaceous
†Arickaree shale [1]
Blue Hill shale member (of Carlile shale [1])
Bridge Creek limestone member (of Greenhorn limestone) [1]
Cockrum sandstone [2]
Codell sandstone member (of Carlile shale) [1]; **member** (of Benton shale in NE Colorado)
†Downs limestone (in Greenhorn limestone) [1]
Ellsworth formation [2]
Fairport chalky shale member (of Carlile shale) [1]
†Fence-post limestone [1]
†Fort Hays division or group [1]
Fort Hays limestone member (of Niobrara formation) [1]
†Graham jasper (in Niobrara formation) [1]
Hartland shale member (of Greenhorn limestone)[1]
Janssen clay member (of Dakota formation) [2]
Jetmore chalky member (of Greenhorn limestone) [1]
Lake Creek shale member (of Pierre shale) [1]
Lincoln limestone member (of Greenhorn limestone) [1]
†Lisbon shale [1]
Norton zone (in Niobrara formation) [1]
†Osborne limestone [1]
Pfeifer shale member (of Greenhorn limestone) [1]
†Reeder sandstone [1]
Rocktown channel sandstone member (of Dakota sandstone) [1]
†Russell formation [1]
Salt Grass shale member (of Pierre shale) [1]
Sharon Springs member (of Pierre shale) [1]
Smoky Hill chalk or marl member (of Niobrara formation) [1]
Solomon formation [2]
†Trego zone (in Niobrara formation) [1]
†Victoria formation, clays, or shale [1]
Weskan shale member (of Pierre shale) [1]

United States—Continued
Kansas—Continued
Lower Cretaceous
†Belvidere shale [1]
Black Hill shale [1]
Blue Cut shale [1]
Champion shell bed (in Kiowa shale) [1]
Cheyenne sandstone [1]; **member** (of Purgatoire formation in Oklahoma)
†Corral sandstone (in Cheyenne sandstone) [1]
†Elk Creek beds (in Cheyenne sandstone) [1]
Fullington shale [1]
†Greenleaf sandstone [1]
Kent bed [1]
Kiowa shale [1]
†Kirby clay [1]
†Lanphier beds (in Cheyenne sandstone) [1]
Marquette member [1] (of Belvidere formation)
Mentor formation [1]
Natural Corral member [1] (of Belvidere formation)
†Spring Creek clays [1]
†Stokes sandstone (in Cheyenne sandstone) [1]
†Walker beds [1]
Windom member [1] (of Belvidere formation)
Permian
Admire group (as shale [1])
Afton limestone member (of Wellington formation) [2]
†Alma limestone [1]
Americus limestone member (of Foraker limestone) [1]
Annelly gypsum member (of Wellington formation) [2]
Bader limestone (as formation [1])
Beattie limestone (as formation [1])
Big Basin sandstone [1]
Big Blue group or series [1]
Bigelow formation [1]
Blue Rapids shale [1]
Blue Springs shale [1] **member** (of Matfield shale)
Bruno limestone [1]
Buckeye shale [1]
Carlton limestone [1]
Cave Creek formation [1]
Cedar Hills anhydrite [1]
Cedar Hills sandstone [1]
†Cedar Point shales and shaly limestones [1]
Chase group [1]
Chicago Mound formation [2]
Chikaskia member (of Harper sandstone) [2]
Chisholm Creek shale member (of Wellington formation) [2]
Cimarron group [1]
†Cottonwood formation [1]

United States—Continued
Kansas—Continued
Permian—Continued
Stovall limestone [1] **member** (of Winfield limestone)
Strickler limestone [1]
†Strong flint [1]
†Strong City beds [1]
Sumner group [1]
†Sun City marble [1]
†Thrall limestone member (of Foraker limestone)[1]
Threemile limestone [1] **member** (of Wreford limestone)
Towanda limestone member (of Doyle shale) [1]
Towle shale [1] **member** (of Onaga shale)
Udall limestone lentil (in Geuda Springs shale member of Wellington formation) [2]
Wellington formation [1]
†Wellington marble [1]
West Point shale (in Admire shale) [1]
Winfield limestone [1]
Wreford limestone [1]
Pennsylvanian
†Allen limestone member [1]
Altoona limestone [1]
†Americus beds [1]
†Barclay limestone [1]
Bourbon formation [1] or group [1]
Boyer sand [1] (subsurface)
†Burlingame shale [1]
†Burlington limestone [1]
†Buxton formation [1]
†Calhoun limestone [1]
Caneyville shale [1]
†Carlyle limestone [1]
Cave Springs sandstone [1]
†Chautauqua sandstone [1]
†Coffeyville limestone [1]
Columbia Ford limestone [1]
Concreto shale [1]
Dashner limestone [1]
Dodge limestone [1] (subsurface)
Dun limestone [1]
†Dunlap limestone [1]
†Earlton limestone [1]
Einstine sandstone [1]
Elk Falls limestone [1]
Elm Branch shale [1]
†Emporia blue limestone [1]
†Emporia reservoir shales [1]
†Erie limestone [1]
Eudora limestone [1]
†Eureka beds [1]
†Eureka limestone [1]
Fall River sandstone [1]
Frenck shale [1]
†Garnett limestone [1]
Gorham sand [1] (subsurface)
Hancock sand [1] (subsurface)
Humboldt limestone [1]
Humphrey shale [1]

United States—Continued
Kansas—Continued
Pennsylvanian—Continued
Humphrey Creek shale [1]
†Independence limestone [1]
Institute limestone [1]
†Iola shale [1]
Kickapoo limestone [1]
†Laneville shale [1]
La Cygne shale member [1] (of Marmaton formation)
†Lecompton shale [1]
Le Roy shale [1]
Linwood shale [1]
Linwood shales [2]
†Marais des Cygnes coal series [1]
†Marais des Cygnes shales [1]
Mission Creek shale (in Deer Creek limestone) [1]
†Mound Valley limestone [1]
†Mound Valley shale [1]
Naish limestone [1]
Neodesha sandstone [1]
Neosho limestone [1]
Olpe shale [1]
Oswald lime [1] (subsurface)
†Oswego limestone [1]
Ottawa limestone [1]
†Painterhood limestone [1]
†Parsons formation [1]
†Pawnee limestone series [1]
Peacock sand [1] (subsurface)
†Piqua limestone member [1]
†Pottawatomie formation [1]
†Pottawatomie series [1]
Rainbow Bend sand [1] (subsurface)
Redd sand [1] (subsurface)
Reserve shale member [1] (of Falls City formation)
Robinett flags [1]
Rossville shales and sandstones [1]
Schubert Creek limestone [1]
†Shawnee sandstone [1]
Shunganunga shale [1]
Sni Mills limestone [1]
Sooy conglomerate [1] (subsurface)
†Spring Rock limestone [1]
Stalnaker sand [1] (subsurface)
†Stanton limestone series [1]
Stokes sand [1] (subsurface)
†Strawn limestone [1]
Tennison Creek shale [1]
Uniontown limestone [1]
†Walnut shale [1]
†Waverly flags [1]
†Wilson formation [1]
Wolf River limestone [1]
Wyandotte group [1]
†Wyckoff limestone [1]
Upper Pennsylvanian
Kawvian series [2]
Pennsylvanian (*Virgil*)
Aarde shale [1] **member** (of Howard limestone)

United States—Continued
Kansas—Continued
Pennsylvanian (Virgil)—Con.
Tonganoxie sandstone [1] **member** (of Stranger formation)
Toronto limestone [1] **member** (of Oread limestone)
Utopia limestone [1] **member** (of Howard limestone)
Vinland shale [1] **member** (of Stranger formation)
Virgil series [1]
Wabaunsee group (as formation [1])
Wakarusa limestone [1] **member** (of Bern limestone)
Wamego shale member (of Zeandale formation); (as shale [2])
Westphalia limestone [1] **member** (of Stranger formation)
White Cloud shale [1] **member** (of Scranton shale)
Willard shale [1]
Winzeler shale [1] **member** (of Howard limestone)
Zeandale formation (R. C. Moore and M. R. Mudge, 1956, Am Assoc. Petroleum Geologists Bull, v. 40, no. 9, p. 2276)
Pennsylvanian (Missouri)
Argentine limestone [1]
Block limestone [1]
Bonner Springs shale [1]
Bronson formation [1] or group [1]
Canville limestone [1]
Captain Creek limestone member (of Stanton limestone)[1]
Chanute shale [1]**; shale member** (of Kansas City formation in Missouri)[1]
Cherryvale shale [1]**; shale member** (of Kansas City formation in Missouri)[1]
Coffeyville formation [1]
Corbin City limestone [1]
Cottage Grove sandstone [1]
Critzer limestone [1]
†Dennis limestone [1]
Dodds Creek sandstone [1]
Drum limestone [1]**; limestone member** (of Kansas City formation in Missouri)[1]
†Dudley shale [1] or shale member (of Pleasanton formation) [1]
Eudora shale [1] **member** (of Stanton limestone)
Fontana shale [1]
Frisbie limestone [1]
Galesburg shale [1]
Hepler sandstone formation [2]
Hertha limestone [1]**; limestone member** (of Kansas City formation in Missouri)[1]
Hickory Creek shale [1]
Hushpuckney shale [1]

United States—Continued
Kansas—Continued
Pennsylvanian (Missouri)—Con.
Iola limestone[1]**; limestone member** (of Kansas City formation in Missouri)[1]
Island Creek shale [1]
Ladore shale[1]**; shale member** (of Kansas City formation in Missouri)[1]
Lane shale[1]**; shale member** (of Lansing formation in Missouri)[1]
Lansing group[1]**; formation** in Missouri [1]
Linn subgroup [2]
Little Kaw limestone member [1] (of Stanton limestone)
Merriam limestone [1]
Middle Creek limestone [1]
Mound City shale [1]
Muncie Creek shale [1]
Noxie sandstone lentil or member (of Chanute formation)[2]
Olathe limestone member [1] (of Stanton limestone)
Paoli limestone [1]
Pedee group [1]
Pleasanton formation [1]
Quindaro shale [1]
Quivira shale (in Kansas City formation)[1]
Spring Hill limestone [1]
Stanton limestone[1]**; limestone member** (of Lansing formation in Missouri)[1]
Stark shale [1]
†Thayer shale (in Kansas City formation)[1]
Vilas shale[1]**; shale member** (of Lansing formation in Missouri)[1]
Victory Junction shale member [1] (of Stanton limestone)
Wea shale [1]
Wyandotte limestone [1]
Zarah subgroup [2]
Middle Pennsylvanian
Blankenship sand [1] (subsurface)
Cattleman sand [1] (subsurface)
Chetopa shales [1]
Colony sand [1] (subsurface)
Fox Bush sand [1] (subsurface)
Sallyards sand [1] (subsurface)
Welch chert [1] (subsurface)
Pennsylvanian (Des Moines)
Altamont limestone[1]**; limestone member** (of Oologah limestone in Oklahoma)
Anna cyclothem (including Anna shale)[2]
Bandera shale[1]**; member** (of Oologah limestone in Oklahoma)

United States—Continued
Kansas—Continued
Pennsylvanian (Des Moines)—Con.
Bandera Quarry sandstone membera (of Bandera shale)[2]
Breezy Hill limestone member (of Cherokee shale) of Senora formation in Oklahoma)[2]
Cherokee shale [1]
Coalvale cyclothem or formation [2]
†Columbus sandstone (in Cherokee shale)[1]
Croweburg cyclothem or formation [2]
Englevale channel sandstone [1]
Fleming cyclothem or formation [2]
†Fort Scott coal series [1]
Fort Scott limestone[1]; †limestone member (of Henrietta formation)[1]
†Fort Scott marble series (in Cherokee shale)[1]
Idenbro cyclothem (including Idenbro limestone)[2]
Knifeton cyclothem or formation [2]
Laberdie cyclothem (including Laberdie limestone)[2]
Labette shale;[1] †shale member (of Henrietta formation)[1]
Lake Neosho shale member (of Altamont limestone)[2]
Little Osage shale member (of Fort Scott limestone)[2]
Marmaton group[1]; †Marmaton formation [1]
Memorial shale [1]
Mineral cyclothem or formation [2]
Mine Creek cyclothem (including Mine Creek shale)[2]
Mulky cyclothem or formation [2]
Neutral cyclothem or formation [2]
Norfleet cyclothem (including Norfleet llmestone)[2]
Pawnee limestone[1]; **member** (of Oologah limestone in Oklahoma)
Perry Farm cyclothem (including Perry Farm shale)[2]
Pilot cyclothem or formation [2]
Riverton cyclothem or formation [2]
Rowe formation or coal cycle [2]
Scammon cyclothem or formation [2]
Stice cyclothem [2]
Walter Johnson sandstone member (of Nowata shale)[2]
Weir cyclothem or formation [2]
Pennsylvanian (Morrow)
Kearney formation [2] (subsurface)
Mississippian(?)
Stanhope sand [1] (subsurface)
Lower Mississippian
†Cherokee limestone [1]
Cowley formation [2] (subsurface)

United States—Continued
Kansas—Continued
Lower Mississippian—Continued
Short Creek oolite member (of Boone limestone)[1] or (of Keokuk limestone)
Skelton shale [1] (subsurface)
Watchorn formation [2] (subsurface)
Devonian or Silurian(?)
Younkin formation [1] (subsurface)
Middle Devonian
Ediger limestone [1] (subsurface)
Silurian
Hollow dolomite [1] (subsurface)
Ordovician
Smock sand [1] (subsurface)
Sluss sand [1] (subsurface)
Stapleton zone [1] (subsurface)
Urschel lime [1] (subsurface)
Ordovician(?)
Engle shale [1] (subsurface)
Kentucky
Pleistocene
Fulton loam [1]
Graves Creek formation [1]
Hickman group [1]
Paducah formation [1]
Tennessee River gravels [1]
Union formation [1]
Tertiary or older
Tip Top sand [1]
Pliocene or Pleistocene
Irvine formation [1]
Pennsylvanian
Aberdeen sandstone (in Pottsville formation)[1]
Baker sand [1] (subsurface)
Battery Rock cyclothem (including Battery Rock sandstone or conglomerate)[2]
Beattyville shale [1]
†Beaver sandstone [1]
Bee Spring sandstone [1]
Bee Tree shale [2]
Bald Hill shale (in Henshaw formation)[1]
Carthage limestone (in McLeansboro formation)[1]
Corbin conglomerate lentil [1] (in Lee formation)
†Curlew sandstone (in Tradewater formation)[1]
Deanefield shale (in Pottsville formation)[1]
DeKoven formation [1]
Dingus limestone (in Pottsville formation)[1]
†Dixon formation [1]
†Dixon sandstone (in Henshaw formation)[1]
Dwale shale [1]
Elkins Fork shale [1]
Epperson sand [1] (subsurface)
Finnie sandstone (in Tradewater formation)[1]

United States—Continued
Kentucky—Continued
Pennsylvanian—Continued
Finnie Bluff sandstone [1]
Flat Lick sandstone [1]
Flat Top Mountain sandstone [1]
Flint Ridge flint [1]
Grundy Knob limestone [2]
Hartford limestone [1]
High Rock sandstone [1]
Horton sand [1] (subsurface)
Jolly limestone (in McLeansboro formation)[1]
Kendrick shale [1]
Kinchloe limestone [1]
Lead Creek limestone [1]
Lewisport limestone [1]
Livingstone conglomerate [1]
Lost Creek limestone [1]
Magoffin beds [1]
Mount Gilead sandstone (in Henshaw formation) [1]
Mount Gilead shale (in Henshaw formation) [1]
Mulford formation [1]
Newburg limestone [1]
Olive Hill fire clay (in Pottsville formation) [1]
Peach Orchard sandstone [1]
Pike sand [1] (subsurface)
†Pine Mountain group [1]
Puncheon Creek sandstone [1]
†Rockcastle group [1]
Saltlick beds [1]
Sebree sandstone (in Carbondale formation) [1]
†Seven Sisters sandstone [1]
South Carrollton limestone [1]
Top Hill sandstone [1]
Vanderburg sandstone (in Henshaw formation) [1]
Wages sand [1] (subsurface)
Williamsburg sand [1] (subsurface)
Wild Cat Mountain conglomerate [1]
Upper Pennsylvanian
Anvil Rock sandstone member (of Lisman formation); (as member of McLeansboro formation [1])
Henshaw formation [1]
Lisman formation [1]
Madisonville limestone [1] **member** (of Lisman formation)
Providence limestone [1] **member** (of Lisman formation)
Middle Pennsylvanian
Blacksnake sandstone (of Hance formation) [1]
Catron formation [1]
Cawood sandstone member (of Hance formation) [1]
Curlew limestone member (of Tradewater formation) [1]

United States—Continued
Kentucky—Continued
Middle Pennsylvanian—Continued
Fork Ridge sandstone member (of Mingo formation) [1]
Hance formation [1]
Harlan sandstone [1]
Hignite formation [1]
Jesse sandstone member (of Catron formation) [1]
Naese sandstone member (of Lee formation) [1]
Puckett sandstone member (of Mingo formation) [1]
Red Spring sandstone member (of Hignite formation) [1]
Reynolds sandstone member (of Hignite formation) [1]
Slater sandstone member (of Mingo formation) [1]
Tradewater formation [1]; **group** in Illinois
Whetstone Creek shale member (of Breathitt formation) [1]
Yellow Creek sandstone member (of Hance formation) [1]
Lower and Middle Pennsylvanian
Breathitt formation [1]
Lower Pennsylvanian
Caseyville sandstone [1]; **group** in Illinois
Rockcastle sandstone or **conglomerate member** (of Lee formation) [1]
Mississippian
Atherton clay [1]
Barlow lime [1] (subsurface)
Barlow sand [1] (subsurface)
Beaver Creek "sand" [1]
†Birdsville formation or group [1]
Brooks bed [1]
Cloverport "sand" [1] (subsurface)
Corder "sand" [1] (subsurface)
Eggners Ferry chert [2]
Kentucky shale [1]
Linietta clay [1]
Major sand [1] (subsurface)
Mammoth Cave series [1]
Morris Mountain shaly member (of Logan formation) [1]
Mount Pisgah sand [1] (subsurface)
†Ohara limestone member [1] (of Ste. Genevieve limestone)
Otter sand [1] (subsurface)
Pellville sand [1] (subsurface)
Petersville shale [1]
†Princeton limestone [1]
Rock House sandstone [1]
†Shot Pouch sandstone [1]
Slickford sand [1] (subsurface)
Vanceburg black shale [1]
Vanceburg sandstone member [1] (of Cuyahoga formation)
Weir sand [1] (subsurface)

United States—Continued
Kentucky—Continued
Upper Devonian
Duffin limestone [1]
Ragland sand [1] (subsurface)
Middle Devonian
Beechwood limestone member (of Sellersburg limestone) [1]
Boyle limestone [1]
Casey limestone [1]
Gainesville sand [1] (subsurface)
Harg shale facies (of Portwood formation) [2]
Kiddville limestone [1]
Moulder sand [1] (subsurface)
Portwood formation [2]
Ravenna shale facies (of Portwood formation) [2]
Silurian and Devonian
Panola formation [1]
Silurian
Holy Cross sandstone [2]
Oldham limestone [1]
Olympia sand [1] (subsurface)
Plum Creek clay [1]
Rodemar sand [1] (subsurface)
Scottsville sand [1] (subsurface)
Stanton sand [1] (subsurface)
Middle Silurian
Alger formation [1]
Boyds Creek sand [1] (subsurface)
Crab Orchard shale [1]
Estill clay [1]
Flades clay [1]
Indian Fields formation [1]
Louisville limestone [1]
Lulbegrud clay [1]
Ribolt clay shale [1]
Waco limestone [1]
Lower Silurian
Brassfield limestone [1]
Ordovician (see also *Cambrian and Ordovician*)
Devils Hollow division (of Lexington limestone) [2]
†Kentucky marble [1]
Sulphur Well member (of Cynthiana formation) [2]
Sunnybrook sand [1] (subsurface)
Upper Ordovician
Bardstown coral reef (in Liberty formation) [1]
Caney sand [1] (subsurface)
Cumberland sandstone [1]
Economy member (of Latonia shale) [1]
Fisherville coral reef (in Waynesville limestone) [1]
Fowler limestone [1]
Garrard sandstone [1]
Gilbert limestone (in McMillan formation) [1]
Gratz shale [1]
Haggard limestone (in Cumberland sandstone) [2]
Latonia shale [1]

United States—Continued
Kehtucky—Continued
Upper Ordovician—Continued
Maysville group [1]
Million shale [1]
Oregonia division (in Arnheim formation) [1]
Paint Lick limestone [1]
Rennix limestone [1]
Southgate member (of Latonia shale) [1]
Sunset division (in Arnheim formation) [1]
Tate member (of McMillan formation) [1]
Middle and Upper Ordovician
Winchester limestone [1]
Middle Ordovician
Benson limestone [1]
Blue Grass group [1]
Bourbon series [1]
Brannon limestone member (of Cynthiana formation); (as cherty member of Flanagan limestone [1])
Bromley shale (See p. 622)
Camp Nelson limestone [1]
Cornishville limestone member (of Perryville formation) [1]
Curdsville limestone [1]
Cynthiana formation [1]
Faulconer limestone member (of Perryville formation) [1]
Flanagan limestone [1]
Greendale limestone (in Cynthiana formation) [1]
Highbridge limestone or **group** [1]
Jessamine limestone [1]
Jessamine series [1]
Lexington limestone,[1] **formation** or **group**
Logana formation (as bed [1])
Millersburg limestone member (of Cynthiana formation) [1]
Nicholas limestone member (of Cynthiana formation) [1]
Oregon limestone [1]
Paris formation [1]
Perryville formation [1]
Rogers Gap division (in Cynthiana formation) [1]
Salvisa limestone member (of Perryville formation) [1]
Tyrone limestone [1]
†Wilmore limestone [1]
Woodburn limestone member (of Cynthiana formation); (as phosphatic member of Flanagan limestone [1])
Lower Ordovician
White Oak sand [1] (subsurface)
Cambrian and Ordovician
Beech Bottom sand [1] (subsurface)
Middle Cambrian
Lincoln sandstone [2] (subsurface)

United States—Continued
Louisiana—Continued
Cretaceous(?)
St. Landry marble [1]
Upper Cretaceous
Haynesville sand [1] (subsurface)
Monroe gas rock [1] (subsurface)
Oakes sand [1] (subsurface)
Shreveport gas sand [1] (subsurface)
Vivien sand [1] (subsurface)
Zwolle marl [1] (subsurface)
Upper Cretaceous(?)
Bayou Chicot limestone [1]
†Winnfield limestone [1]
Lower Cretaceous
Bodcaw sand lens [1] (subsurface)
Davis oil and gas horizon [1] (subsurface)
Dillon gas horizon [1] (subsurface)
Dixie oil horizon [1] (subsurface)
Eubanks sand [1] (subsurface)
Herndon oil sand [1] (subsurface)
Hosston formation [2] (subsurface)
Rodessa formation [2] (subsurface)
Sligo formation [2] (subsurface)
Tillman sand lens [1] (subsurface)
Wickett oolitic zone [1] (subsurface)
Upper Jurassic
Bossier formation [2] (subsurface)
Cotton Valley group [2] (subsurface)
Haynesville formation [2] (subsurface)
Shongaloo member (of Schuler formation) [2] (subsurface)
Pennsylvanian(?)
Morehouse formation [2] (subsurface)
Maine
Paleozoic
South Mapleton andesite [1]
Upper Paleozoic
Cadillac granite [2]
Post-Carboniferous
Biddeford granite [1]
Burnt Meadow syenite [1]
Carboniferous(?)
Brave Boat Harbor biotite granite [1]
Cushing granodiorite [1]
Drews Lake granite [1]
Katahdin granite [1]
Pre-Carboniferous(?)
Falmouth pegmatite [1]
Westbrook granite [1]
Pennsylvanian(?)
Cape Elizabeth formation [1]
Casco Bay group [1]
Diamond Island slate [1]
Jewell phyllite [1]
Mackworth slate [1]
Scarboro phyllite [1]
Spring Point greenstone [1]
Spurwink limestone [1]
Towow formation [1]
Devonian or Carboniferous
Waldo granite [2]

United States—Continued
Maine—Continued
Devonian
Kineo rhyolite [1]
†Mapleton granite [1]
Moose River group (as sandstone [1])
Prettymarsh diorite [2]
Seboomook formation (as slate [1])
Devonian(?)
Agamenticus complex [1]
Berwick quartz diorite [1]
Cape Neddick gabbro [1]
Castle Hill andesite [1]
Castle Hill tuff [1]
†Chapman trachyte [1]
Edmunds Hill andesite [1]
Haystack rhyolite [1]
Hedgehog trachyte [1]
Hobart Hill andesite [1]
Rangeley conglomerate [1]
York Harbor biotite granite [1]
Upper Devonian
Mapleton sandstone [1]
Perry formation [1]
Pre-late Devonian
Ore Mountain diorite [2]
Lower Devonian
Chapman sandstone [1]
Fort Kent shale [2]
Square Lake limestone [1]
Silurian and Devonian
†Cobscook series [1]
Cobscook Bay series [1]
Silurian
Aroostook limestone [1]
Ashland limestone [1]
Ashland shale [1]
†Campobello group [1]
Chesuncook limestone [1]
Dennys formation [1]
Frenchmans Bay series [2]
†Leightons Cove series [1]
Lobster Lake formation (as series [1])
Mars Hill conglomerate [1]
†Moose Island shale [2]
Pembroke formation [1]
Ripogenous series [1]
Sheridan sandstone [1]
Vassalboro sandstone [1]
Vinalhaven rhyolite [1]
Waterville shale (also slate) [1]
Winthrop phyllite [2]
Silurian(?)
Hope limestone [1]
Upper Silurian and Lower Devonian
Ireson felsite [2]
Penobscot Bay granite [1]
Upper Silurian
Eastport formation [1]
Hersey red shale member (of Pembroke formation) [1]
Leighton gray shale member (of Pembroke formation) [1]
Seigas sandstone [2]
Thorofare andesite [1]

United States—Continued
Maine—Continued
Middle and Upper Silurian
Edmunds formation [1]
Middle Silurian
Ames Knob formation [1]
Danville injection gneiss [2]
Deer Rips lime-silicate gneiss [2]
Jay granite [1]
Quoddy shale [1]
Taylor Brook injection gneiss [2]
Probably Ordovician and Silurian
Berwick formation (as gneiss [1])
Eliot formation (as slate [1])
Kittery quartzite [1]
Cambrian or Ordovician
Rockland formation [1]
Rockport limestone member (of Rockland formation)[1]
Weskeag quartzite member (of Rockland formation)[1]
Cambrian and Ordovician
Taconic limestone [1]
Cambro-Ordovician(?)
Androscoggin gneiss and schist [2]
Bates limestone [2]
Hill Ridge biotite schist [2]
Minwah limy gneiss [2]
Sabattus garnet schist [2]
Stetson Brook limestone [2]
Tacoma series [2]
Thorncrag limy gneiss [2]
Cambrian(?)
Battie quartzite [1]
Calderwood formation [1]
Castine volcanics [1]
Coombs limestone member (of Islesboro formation)[1]
Islesboro formation [1]
North Haven greenstone [1]
Pejepscot gneiss [2]
Penobscot formation [1]
Lower Cambrian
Grand Falls formation (Rudolph Ruedemann and E. S. C. Smith, 1935, Am. Jour. Sci., 5th ser., v. 30, no. 178, p. 354)
Cambrian or Precambrian(?)
Cranberry Island series [1]
Schooner Head series [1]
Sutton Island series [1]
Precambrian and Silurian
Bar Harbor series [1]
Precambrian or Cambrian
Ellsworth schists [1]
Precambrian and later
Bartlett Island series [1]
Precambrian
Branch Pond gneiss [1]
Hogback schist [1]
Knox gneiss [1]
Age(?)
Aroostook Falls diabase [1]
Brownville slate [1]
Byron schist [2]
Mars Hill diabase [1]

United States—Continued
Maine—Continued
Age(?)—Continued
Noisy Brook gneiss [2]
Phipsburg limestone [1]
Portland clays [1]
Quoggy Joe quartz trachyte [1]
Seawall metafelsite [2]
Traveller rhyolite [1]
Tumbledown gneiss [2]
Uncle Israels granite [2]
Winterport granite type [2]
Woodland trachyte [1]
Maryland
Pleistocene and Recent
McHenry formation [1]
Pleistocene
Beaverdam sand [2]
Cornfield Harbor clays [1]
Parsonsburg sand [2]
Sunderland formation [1]
Talbot formation [1]
Walston silt [2]
Wicomico formation [1]
Pliocene(?)
Brandywine formation [1] or **gravel**
Miocene(?)
North Keys sand [2]
Miocene, middle and upper
Chesapeake group [1]
St. Marys formation [1]
Miocene, middle
Calvert formation [1]
Choptank formation [1]
Fairhaven diatomaceous member (of Calvert formation)[1]
Plum Point marl member (of Calvert formation)[1]
Eocene (see also *Upper Cretaceous and Eocene*)
†Piscataway sands [1]
Eocene, upper
Piney Point formation [2] (subsurface)
Eocene, lower and middle
Marlboro clay member (of Nanjemoy formation)[1]
Nanjemoy formation [1]
Potapaco clay member (of Nanjemoy formation)[1]
Eocene, lower
Piscataway indurated marl member (of Aquia formation)[1]
Paleocene
Brightseat formation [2]
Upper Cretaceous and Eocene
†Severn formation [1]
Upper Cretaceous
Albirupean black marl [1]
†Albirupean formation [1]
Magothy formation [1]
Patapsco formation [1]
†Sassafras River greensand [1]
Lower Cretaceous
Arundel formation [1] or **clay**
†Baltimorean formation [1]

United States—Continued
Maryland—Continued
Lower Cretaceous—Continued
Federal Hill beds (in Patapsco formation)[1]
Hawkins Point clays [1]
Patuxent formation [1]
Upper Triassic
Buck Lodge diabase [1]
Emmitsburg facies [1]
†Potomac marble [1]
Taneytown facies [1]
Upper Paleozoic(?)
Ellicott City granite [1]
"Post-Glenarm"
Guilford granite [2]
Gunpowder granite [1]
Laurel migmatite [2]
Port Deposit gneiss [1] or **granite**
Sykesville granite [1]
Lower Paleozoic(?)
Cockeysville marble [1]
Glenarm series [1]
Ijamsville phyllite [2]
Setters formation [1]
Silver Run limestone [2]
Urbana phyllite [2]
Wakefield marble [2]
Permian
†Frostburg formation [1]
Carboniferous(?)
Woodstock granite [1]
Pennsylvanian
Barton limestone (in Conemaugh formation)[1]
Barton red shale (in Conemaugh formation)[1]
Barton sandstone (in Conemaugh formation)[1]
Bluelick limestone (in Conemaugh formation)[1]
Borden sandstone (in Monongahela formation)[1]
Clarysville sandstone (in Conemaugh formation)[1]
Ellerslie fire clay (in Allegheny formation)[1]
Ellerslie sandstone (in Allegheny formation)[1]
Friendsville black shale (in Conemaugh formation)[1]
Hoffman limestone (in Conemaugh formation)[1]
Hoffman sandstone (in Conemaugh formation)[1]
Lonaconing sandstone (in Conemaugh formation)[1]
Luke clay (in Allegheny formation)[1]
Meyersdale limestone (in Conemaugh formation)[1]
Montell sandstone (in Allegheny formation)[1]
Mount Savage fire clay (in Pottsville formation)[1]

United States—Continued
Maryland—Continued
Pennsylvanian—Continued
Mount Savage sandstone (in Allegheny formation)[1]
Redstone sandstone (in Monongahela formation)[1]
Sampson Rock sandstone (in Pottsville formation)[1]
Savage formation [1]
Thomas limestone (in Conemaugh formation)[1]
Thomas sandstone (in Conemaugh formation)[1]
Wellersburg limestone (in Conemaugh formation)[1]
Westernport sandstone (in Allegheny formation)[1]
Woods Run shale (in Conemaugh formation)[1]
Upper Devonian
Avilton conglomerate [1]
Parkhead sandstone member (of Jennings formation)[1]
Lower Devonian
†Corrigan formation [1]
Shriver chert [1]
Silurian
Cedar Cliff limestone lens (in Wills Creek shale)[1]
Cresaptown iron sandstone [1]
Indian Spring red shales or sandstone (in Tonoloway limestone)[1]
Rabble Run sandstone member (of McKenzie formation)[1]
Tonoloway limestone [1]
Wills Creek shale [1]
Middle Silurian
Cumberland facies (of Clinton formation)[2]
McKenzie formation or **limestone** [1]
Rose Hill formation [1]
Ordovician(?)
Cardiff conglomerate [1]
Post-Lower Ordovician
Baltimore gabbro [2]
Middle Ordovician
Row Park limestone [2]
St. Paul group [2]
Lower Ordovician
Grove limestone [1]
†Le Gore limestone [1]
Cambrian(?)
Sugarloaf Mountain quartzite [2]
Upper Cambrian
Big Spring Station member (of Conococheague limestone)[2]
Frederick limestone [1]
Lower Cambrian
Sugarloaf sandstone [1]
Weverton quartzite or formation (as sandstone [1])
Precambrian
Baltimore gneiss [1]

United States—Continued
Maryland—Continued
Precambrian—Continued
Cockeysville volcanics [1]
Deer Creek quartzite [1]
Hartley augen gneiss [1]
Relay quartz diorite [1]
†State line serpentine [1]
†Susquehanna mica schist [1]
Precambrian(?)
Catoctin metabasalt, greenstone, or **formation** (as schist [1])
Ilchester granite [1]
Libertytown metarhyolite [2]
Sams Creek metabasalt [2]
Age(?)
Bear Island granodiorite [2]
Frenchtown diorite [1]
Kensington granite-gneiss [2]
Rowlandville granite [1]
Massachusetts
Pleistocene
Aquinnah conglomerate [1]
†Barnstable series [1]
Dukes boulder bed [1]
Middleboro clay [1]
†Nashaquitsa series [1]
Moshup till member (of Jameco formation) [1]
†Naushon series [1]
Sankaty sand [1]
†Sankaty Head beds [1]
Taunton clays [1]
†Tisbury beds or gravel [1]
†Truro series [1]
Weyquosque formation [1]
Tertiary and Quaternary
Cape Cod series [1]
Upper Cretaceous
Indian Hill series [1]
Triassic
Turners Falls sandstone [2]
Upper Triassic
†Black Rock diabase [1]
Chicopee shale [1]
Deerfield diabase [1]
Granby tuff [1]
Greenfield bed [1]
Hampden diabase [1]
Holyoke diabase [1]
Leverett breccia [1]
Longmeadow sandstone [1]
Medford diabase [1]
Mount Toby conglomerate [1]
Sugarloaf formation (as arkose [1])
Pre-Triassic
Amherst schist [1]
Erving hornblende schist [1]
Joshua schist [2]
Whately bed [1]
Whitmores Ferry amphibolite [1]
Upper Paleozoic(?)
Straw Hollow diorite [1]
Middle Paleozoic
Dry Hill granite gneiss [2]
Poplar Mountain gneiss [2]

United States—Continued
Massachusetts—Continued
Lower Paleozoic
†Nahant gabbro [1]
†New Bedford gneiss [1]
†Saugus granodiorite or quartz diorite [1]
Lower Paleozoic(?)
Dedham granodiorite [1]
Natick granite [1]
Salem gabbro-diorite [1]
Carboniferous or Post-Carboniferous
†Bolton gneiss [1]
Coys Hill granite [1]
Dana diorite [1]
Dracut diorite [1]
Fitchburg granite [1]
Hardwick granite [1]
Hubbardston granite [1]
Middlefield granite [1]
Millbury limestone [1]
New Salem aplite [1]
†New Salem serpentine [1]
†North Amherst granite [1]
†Pelham granite [1]
†Pelham quartzite [1]
Prescott diorite [1]
†Swan Pond granite [1]
†Vernon gneiss [1]
†Wachusett gneiss [1]
†Wilbraham gneiss [1]
Carboniferous (see also *Devonian or Carboniferous*)
Andover granite [1]
Attleboro sandstone [1]
Beverly syenite [1]
Boylston schist [1]
Brimfield schist [1]
Harvard conglomerate lentil (in Worcester formation) [1]
†Harvard granite [1]
Nashoba formation [2]
†Norfolk Basin series [1]
Oakdale quartzite [1]
Oxford schist [1]
Paxton quartz schist [1]
Quabin quartzite [1]
Rocky Woods conglomerate [1]
†Salem syenite [1]
Squam granite [1]
†Wamsutta volcanics [1]
Ware schist [1]
Worcester formation (as phyllite [1])
†Worcester quartzite [1]
Carboniferous(?)
Belchertown tonalite [1]
Williamsburg granodiorite [1]
Pre-upper Carboniferous(?)
Dracut norite [1]
Pennsylvanian
Bellingham conglomerate [1]
Dighton conglomerate [1]
Mansfield beds [1]
Pondville conglomerate [1]
Seekonk beds [1]

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United States—Continued
Massachusetts—Continued
Pennsylvanian—Continued
Seekonk conglomerate [1]
Tenmile River beds [1]
Wamsutta formation [1]
Westville shale [1]
Mississippian(?)
Quincy granite [1]
Mississippian(?) or older
Monson gneiss (as granodiorite [1])
Devonian or Carboniferous
Blue Hill granite porphyry [1]
Boston Bay group [1]
Brighton melaphyre [1]
Brookline conglomerate member (of Roxbury conglomerate) [1]
Cambridge slate [1]
†Cape Ann granite [1]
Dorchester slate member (of Roxbury conglomerate) [1]
Lynn volcanic complex [1]
Mattapan volcanic complex [1]
†Neponset conglomerate [1]
†Peabody granite [1]
Roxbury conglomerate [1]
Shawmut group [1]
†Somerville slate [1]
†Squantum slates [1]
Squantum tillite member (of Roxbury conglomerate) [1]
Tufts quartzite member (of Cambridge slate) [1]
†West Roxbury slate [1]
Devonian(?)
Ironstone quartz diorite [1]
†Joes Rock granite [1]
Milford granite [1]
Sharon syenite [1]
Wolfpen tonalite [1]
Upper Devonian(?)
Ayer granodiorite (as granite [1])
Probably Lower Devonian
Newbury volcanic complex [1]
Silurian and Devonian(?)
Bernardston formation [1]
Silurian
Granville enstatite serpentine [1]
†Greylock limestone [1]
Silurian(?)
Goshen schist [1]
Leyden argillite [1]
Lower Silurian
Russell serpentine [1]
Ordovician and Silurian
Merrimack quartzite [1]
Ordovician and Silurian(?)
Conway formation (as schist [1])
Ordovician
Bellowspipe limestone [1]
†Bellowspipe quartzite [1]
Chester amphibolite [1]
†Everett schist [1]
Greylock schist [1]
Hawley schist [1]
†Plainsfield schist [1]

United States—Continued
Massachusetts—Continued
Ordovician—Continued
Savoy schist [1]
Westfield serpentine [1]
Middle Ordovician
Berkshire schist [1]
†Cheshire schist [1]
Cambrian and Ordovician
Egremont limestone [1]
†Mount Washington series [1]
Stockbridge limestone [1] or **group**
Cambrian and younger and older(?)
†Blue Hills complex [1]
Cambrian(?)
Milton quartzite [1]
Upper Cambrian
Green Lodge formation [1]
Middle Cambrian
Braintree slate [1]
Lower Cambrian to Lower Ordovician
†Berkshire limestone [1]
Lower Cambrian
Cheshire quartzite [1]
Dalton formation [1]
Hoppin slate [1]
†Nahant limestone [1]
†Nahant schist [1]
†Shutesbury serpentine [1]
Weymouth formation [1]
Lower Cambrian(?)
Hoosac schist [1]
Rowe schist [1]
Precambrian or Upper Ordovician
Newburyport quartz diorite [1]
Precambrian or Cambrian
Lynnfield serpentine [1]
Precambrian
Becket granite gneiss [1]
Berkshire County series [1]
†Blan[d]ford limestone [1]
Coles Brook limestone [1]
†East Lee gneiss [1]
†East Lee limestone [1]
†Goose Pond limestone [1]
†Grafton quartzite [1]
†Greylock series [1]
Hinsdale gneiss [1]
†Hinsdale limestone [1]
†Hop Brook limestone [1]
Kendall Green slate [1]
Lee quartz diorite [1]
Lincoln slate [1]
Marlboro formation [1]
Northbridge granite gneiss [1]
†Otis limestone [1]
Quincy syenite [1]
Stonybrook quartzite [1]
†Sutton gneiss [1]
†Tyringham gneiss [1]
Waltham gneiss [1]
Washington gneiss [1]
Woburn formation [1]
Precambrian(?)
Westboro quartzite [1]

United States—Continued
Massachusetts—Continued
Age(?)
Blandford serpentine and pyroxenite [1]
†Naugus Head series [1]
†Pelham serpentine [1]
†Shelburne gneiss [1]
†Worcester County gneiss [1]
Michigan
Pennsylvanian
Eaton sandstone member (of Saginaw formation) [2]
Grand Ledge cyclothem (in Saginaw formation) [2]
Grand River formation [2]
Ionia sandstone [1] **member** (of Saginaw formation)
†Jackson formation [1]
Parma sandstone [1]
Saginaw formation [1]
Woodville member (of Saginaw formation); (as sandstone [1])
Lower Pennsylvanian
Verne cyclical formation (including Verne limestone or shale member) [2]
Mississippian (see also *Upper Devonian and Mississippian;* and *Upper Devonian and Lower Mississippian*)
Bayport limestone [1]
Coldwater shale [2]
Forestville shale [1]
Grand Rapids group [1]
†Grand Rapids limestone [1]
Huron gritstone [1]
Manistee limestone [1]
Marshall sandstone [1] or **formation**
Michigan formation [1]
Napoleon member (of Marshall sandstone); (as sandstone [1])
Point aux Barques sandstone [1]
Point aux Barques lighthouse [1] (sandstone)
Point aux Gres limestone [1]
Port Austin sandstone [1]
Richmondville sandstone [1]
Rock Falls series [1]
Lower Mississippian
Hardwood Point shales and flags [2]
Huron City sandstones and shales [2]
Lighthouse conglomerate [2]
Upper Devonian and Lower Mississippian
Antrim shale [1]
Ellsworth shale [1]
†Huron group [1]
Upper Devonian
†St. Clair shale [1]
Squaw Bay limestone [1]
Middle and Upper Devonian
Traverse formation [1] or **group**

United States—Continued
Michigan—Continued
Middle and Upper(?) Devonian
Potter Farm formation [1]
Thunder Bay limestone [1]
Middle Devonian
Afton bed [2]
Alpena limestone [1]
Amherstburg formation (as member of Detroit River dolomite[1])
Beebe School formation [2]
Bell shale [1]
Black Lake lagunal facies [2]
Bois Blanc formation [2]
Charlevoix stage [1]
Detroit River group (as dolomite [1])
Dock Street clays [1]
Dundee limestone [1] or **formation**
Flat Rock dolomite member (of Lucas formation); (as member of Detroit River dolomite [1])
Four Mile Dam formation [2]
Ferron Point formation [1]
Filer sandstone lentil (in Amherstburg formation) [2] (subsurface)
Genshaw formation [1]
Grand Lake member [1] (of Presque Isle series)
Gravel Point stage [1]
Gorbut member (of Gravel Point formation) [2]
Killians member (of Genshaw formation); (as limestone [1])
Koehler limestone [2]
Little Traverse Bay limestone [1]
Long Lake series [1]
Mackinac breccia (as limestone [1]); contains discrete blocks of rocks of Silurian to Middle Devonian ages
Mackinaw limestone [1]
Marvin Quarry bed [2]
Newton Creek limestone [2]
Norway Point formation [1]
Norwood shale [2]
Partridge Point formation [1]
Petoskey limestone [1]
Presque Isle series [1]
Richfield member (of Lucas formation) [2] (subsurface)
Rockport limestone [1]
Rockport Quarry limestone [2]
Rogers City limestone or **formation** [2]
Saginaw sand [1] (subsurface)
Thunder Bay series [1]
Whitefish Bay member (of Alpena limestone stage) [2]
Lower Devonian
Garden Island formation [2]
Silurian and Lower Devonian
†Monroe beds, formation, or group [1]

United States—Continued
Michigan—Continued
Silurian
Manitoulin limestone [1]
Raber bed [2]
Toll Pit beds [1]
Upper Silurian
Point aux Chenes formation [2]
Raisin River dolomite member (of Bass Islands dolomite) [1]
St. Ignace formation [2]
Middle Silurian
Burnt Bluff formation [1]
Cordell member [1] (of Manistique formation)
Engadine dolomite [1]
Fiborn limestone [1]
Hendricks series [1]
Manistique series [1]
Schoolcraft member [1] (of Manistique formation)
Upper Ordovician
Bay de Noc member (of Stonington beds) [1]
Big Hill beds [1]
Bills Creek beds [1]
Ogontz member (of Stonington beds) [1]
Stonington beds [1]
Middle Ordovician
Bony Falls member (of Black River formation) [2]
Chandler Falls member (of Trenton formation) [2]
Escanaba limestone [1]
Escanaba River group [2]
Haymeadow Creek member (of Trenton formation) [2]
Groos Quarry member (of Trenton formation) [2]
Sheridan formation [1]
Upper Cambrian and Lower Ordovician
Hermansville limestone [1]
Upper Cambrian
†Eastern sandstone [1]
Lake Superior sandstone [1]
Munising sandstone [1]
Ste. Marie sandstone [1]
St. Marys sandstone [1]
Precambrian or Cambrian
Jacobsville sandstone [1]
Precambrian
Ajibik quartzite [1]
Albany conglomerate [1]
Albany and Boston amygdaloid [1]
†Albany and Boston conglomerate [1]
Albany and Boston flow [1]
Algomah amygdaloid [1]
Algomah flow [1]
Allouez conglomerate [1]
Amasa formation [2]
†Antoine dolomite [1]
Anvil ferruginous chert member (of Ironwood iron-formation) [1]

United States—Continued
Michigan—Continued
Precambrian—Continued
Arcadian amygdaloid [1]
Arcadian flow [1]
Arnold amygdaloid [1]
Arnold flow [1]
Ashbed amygdaloid [1]
Ashbed flow [1]
Ashbed group [1]
Atlantic amygdaloid [1]
Atlantic flow [1]
Baltic amygdaloid [1]
Baltic conglomerate [1]
Baltic flow [1]
Baltic sandstone [1]
Baltic West amygdaloid [1]
Baltic West flow [1]
Bessemer sandstone or quartzite [2]
Bijiki iron-formation member (of Michigamme slate) [1]
Bohemia conglomerate [1]
Bohemia porphyrite [1]
Bohemian Range group [1]
†Bone Lake crystalline schist [1]
†Boston conglomerate [1]
Brier slate member (of Vulcan iron-formation) [1]
Brule schists and volcanics [1]
Butler amygdaloid [1]
Butler flow [1]
Caledonia conglomerate [1]
Calico amygdaloid [1]
Calico flow [1]
Calumet amygdaloid [1]
†Calumet conglomerate [1]
Calumet flow [1]
Calumet and Hecla conglomerate [1]
†Cascade formation [1]
†Central group [1]
†Central Mine conglomerate [1]
Central Mine group [1]
Central Valley beds [1]
†Chippewa felsite [1]
†Chippewa porphyry [1]
Clarksburg volcanics [1] **member** (of Michigamme slate)
Copper City flow (in Portage Lake lava series) [2]
Copper Harbor conglomerate (as group [1])
Copps group [1]
Corning Creek zone (in Negaunee formation) [1]
Crystal Falls formation [1]
†Crystal Falls series [1]
Curry iron-bearing member (of Vulcan iron-formation) [1]
†Deer Lake conglomerates [1]
Douglas amygdaloid [1]
Douglas flow [1]
Eagle River group [1]
Evergreen amygdaloid [1]
Evergreen flow [1]
Felch formation (as schist [1])

United States—Continued
Michigan—Continued
Precambrian—Continued
North Star conglomerate [1]
Norway limestone [1]
Norwich conglomerate [1]
Norwich trap [1]
Ogima amygdaloid [1]
Ogima flow [1]
Ohio Trap Rock traps [1]
Old Colony amygdaloid [1]
Old Colony flow [1]
Old Colony sandstone [1]
Old Pewabic amygdaloid [1]
Old Pewabic flow [1]
Oneco amygdaloid [1]
Oneco flow [1]
†Oneida conglomerate [1]
Osceola amygdaloid [1]
Osceola flow [1]
Outer conglomerate [1]
Pabst member (of Tyler slate)[1]
Paint slate [1]
Paint River greenstones [2]
Palmer gneiss [1]
Palms quartzite [1]
Pentoga greenstones [2]
Pewabic amygdaloid [1]
Pewabic flow [1]
Pewabic West conglomerate [1]
†Phoenix Mine group [1]
Portage Lake lava series [2]
Praysville porphyry [1]
Presque Isle granite [1]
Princeton series [1]
Quincy amygdaloid [1]
Quincy flow [1]
Quincy Pewabic amygdaloid [1]
Quincy Pewabic flow [1]
Quinnesec formation (as greenstone [1])
Quinnesec ore-formation [1]
Randville dolomite [1]
†Republic formation [1]
Republic granite [1]
Republic quartzite [1]
†Rockland sandstone [1]
†St. Louis amygdaloid [1]
St. Louis conglomerate [1]
†St. Louis flow [1]
†St. Marys epidote [1]
Saunders formation [1]
Scales Creek flow (in Portage Lake lava series) [2]
Shawmut amygdaloid [1]
Shawmut conglomerate [1]
Shawmut flow [1]
Siamo slate [1]
South Butler amygdaloid [1]
South Butler flow [1]
South Pewabic amygdaloid [1]
South Pewabic flow [1]
†State Road conglomerate [1]
Sturgeon quartzite [1]
Superior amygdaloid [1]

United States—Continued
Michigan—Continued
Precambrian—Continued
Superior flow [1]
Superior West amygdaloid [1]
Superior West flow [1]
Toltec trap [1]
Tomahawk amygdaloid [1]
Torch Lake amygdaloid [1]
Torch Lake flow [1]
Traders iron-bearing member (of Vulcan iron-formation)[1]
Tyler slate [1]
†Victoria amygdaloid [1]
†Victoria flow [1]
Vulcan iron-formation [1]
West Minesota conglomerate [1]
West Minesota trap [1]
Wewe slate [1]
Winona amygdaloid [1]
Winona conglomerate [1]
Winona flow [1]
Wolf Lake granite [1]
Wolf Lake schist [1]
Wolverine amygdaloid [1]
Wolverine sandstone [1]
Wyandot amygdaloid [1]
Wyandot flow [1]
Wyandot No. 8 amygdaloid [1]
Wyandot No. 8 flow [1]
Yale member (of Ironwood iron-formation) [1]
Age(?)
Commonwealth ore formation [1]
Huron Bay slates [1]
L'Anse series [1]
Minnesota
Pleistocene
Itascan till [1]
Lake Agassiz clay [1]
Lake Agassiz silt [1]
Mankato drift (*see* **Mankato substage** [1])
Paulian till [1]
West Union gravel [2]
Upper Cretaceous
Big Cottonwood formation [1]
Coleraine shale or formation [2]
Lower Cretaceous
Ostrander member (of Dakota formation)[2]
Ordovician
Minnesotan series [1]
†Shakopee group [1]
Upper Ordovician
Wykoff beds [1]
Middle Ordovician
Carimona member (of Platteville formation)[2]
Cummingsville member (of Galena formation)[2]
Minneapolis limestone [1]
Prosser member (of Galena dolomite); (as limestone [1])
St. Peter sandstone [1]

United States—Continued
Minnesota—Continued
Precambrian—Continued
Ogishke conglomerate (as member of Knife Lake slate [1])
†Palisade porphyry [1]
Peebles granite facies (of Ogishke conglomerate) [2]
Pewabic quartzite [1]
†Pipestone quartzite [1]
Pokegama quartzite [1]
Prairie River granite [1]
Puckwunge conglomerate [1]
†Puckwunge slate [1]
Red Rock member [1] (of Keweenawan series)
†Redstone quartzite [1]
Saddlebag Lake conglomerate [2]
Saganaga granite [1]
Saganaga syenite [1]
St. Cloud gray granodiorite [2]
St. Cloud red granite [2]
†St. Louis River gabbro [1]
†St. Louis River slate [1]
Snowbank granite [1]
Soudan iron-formation [1]
South Range member (of Virginia formation) [2]
Stearns magma series [2]
Stuntz conglomerate (as member of Knife Lake slate [1])
†Stuntz Island agglomerate [1]
Temperance River group [1]
Temperance River member [1] (of Keweenawan series)
†Thomson slate [1]
†Tower group [1]
Townline Lake granodiorite [2]
Vermilion granite [1]
†Vermilion group, schists, series [1]
†Vermilion Lake iron-bearing series [1]
Virginia slate [1]
Warman quartz monzonite [2]
Wauswaugoning quartzite [1]
West Gull jasper facies (of Ogishke conglomerate)[2]
†White Iron granite [1]
Zeta Lake granite porphyry facies (of Ogishke conglomerate)[2]
Mississippi
Recent(?)
Vicksburg fossiliferous loam [1]
Pleistocene
Biloxi sand [1]
Natchez formation [1]
Pliocene
Graham Ferry formation [2]
Miocene
†Davion rock [1]
Fort Adams member (of Pascagoula clay); (as Fort Adams or Ellisville phase [1]; *see also* G. F. Brown, 1943, Mississippi Geol. Survey Bull. 56, p. 47–48)

United States—Continued
Mississippi—Continued
Miocene—Continued
†Grand Gulf sandstone [1]
Homochitto member (of Pascagoula formation)[2]
Knoxville member (of Pascagoula formation)[2]
†Mississippi clays [1]
Pascagoula clay [1]
Miocene(?)
†Bayou Pierre phase [1]
Catahoula sandstone [1] **formation** or **tuff**
Miocene, lower and middle
Hattiesburg clay [1]
Miocene and Oligocene(?)
†Grand Gulf group [1]
Oligocene and Miocene(?)
Catahoula group [1]
Oligocene
Limestone Creek beds [1]
Limestone Creek group [1]
Oligocene, upper
Chickasaway limestone (as marl member of Byram marl [1])
Oligocene, middle
Bucatunna clay member (of Byram formation)[1]
Byram formation (as marl [1])
Hennessey Bayou member (of Bucatunna marl and clay)[2]
Mint Spring marl member (of Marianna limestone)[2]
Vicksburg group [1] or **formation**
Oligocene, lower
Forest Hill sand [1]
†Madison sand [1]
Red Bluff clay [1]
Eocene
†Chickasaw formation or group [1]
Eocene, upper
Jackson formation [1] or **group**
Moodys Branch marl [1] or **formation**
Yazoo clay (as member of Jackson formation [1])
Eocene, middle
Archusa shale member (of Cook Mountain formation)[2]
†Basic claystone [1]
Basic City shale member (of Tallahatta formation) [2]
†Decatur sand [1]
†Enterprise green marl [1]
Gordon Creek shale member (of Cook Mountain formation)[2]
†Grenada formation [1]
Holly Springs sand [1] **member** (of Tallahatta formation)
†Kosciusko sandstone member (of Lisbon formation)[1]
†Meridian formation [1]
Meridian sand member (of Tallahatta formation)[2]

United States—Continued
Mississippi—Continued
Eocene, middle—Continued
Neshoba sand member (of Tallahatta formation)[2]
Potterchitto sand member (of Cook Mountain formation)[2]
Shipps Creek shale member (of Wautubbee formation)[2]
Shongalo greensand [1]
†Wautubbee marl [1]
Winona sand (as member of Lisbon formation [1])
Zilpha clay [2]
Eocene, lower
†Ackerman formation [1]
Fearn Springs sand member (of Wilcox formation)[2]
†Flatwoods clay [1]
Noxubee sand [2]
Paleocene or Eocene
†Betheden formation [2]
Paleocene
†Chalybeate limestone member (of Porters Creek formation)[2]
Tippah sand lentil (of Porters Creek clay)[1]
Cretaceous, Tertiary, and Pleistocene
†Lafayette formation [1]
Upper Cretaceous
†Coulters Ferry sands [1]
Houston marl [1]
Mooreville chalk (as tongue of Selma chalk [1])
†Oktibbeha tongue (of Selma chalk)[1]
Owl Creek formation [1]
Prairie Rock limestone [1]
Ripley formation [1]
Ripleyan series [1]
Tombigbee sand member (of Eutaw formation)[1]
Tupelo tongue (of Coffee sand)[1]
Lower Cretaceous
Dantzler formation [2] (subsurface)
Little Bear formation or residuum [2]
Upper Mississippian
Cripple Deer sandstone member (of Alsobrook formation)[1]
Forest Grove formation [1]
Hargett sandstone [1]
Highland Church sandstone member (of Forest Grove formation)[1]
Pond limestone [1]
Southward Spring sandstone [1] **member** (of Pride Mountain formation)
Lower Mississippian
Carmack limestone [1]
Iuka formation [1]
Devonian and Lower Mississippian
†Yellow Creek beds [1]

United States—Continued
Mississippi—Continued
Upper Devonian
Whetstone Branch shale [1]
Lower Devonian
Island Hill formation [1]
Missouri
Pleistocene
Bagnell till [1]
Pleistocene(?)
Asherville alluvium [2]
Tertiary
Benton sand [1]
Commerce sandstone [1]
Crowleyan series [1]
Idalia clay [1]
Piketon gravel [1]
Poinsettan series [1]
Pliocene
Winoka gravel [1]
Miocene(?)
Grover gravel [2]
Eocene
Bloomfield sand [1]
Upper Cretaceous
Egypt sand [1]
Zadoc member (of McNairy formation)[2]
Pennsylvanian
†Atchinson shale [1]
Baden sandstone [1]
†Bull ledge [1]
Graydon channel sandstone [1]
Graydon shales [1]
Hardesty shale [1]
†Holden group [1]
†Knob Noster group [1]
Moberly channel sandstone [1]
†Mound group [1]
Rockport shales [1]
Saline Creek cave conglomerate [1]
Sonora shale [1]
Spring River sandstone [1]
Walker conglomerate and sandstone [1]
Warrensburg channel sandstone [1]
Pennsylvanian(?)
Eureka fire clay [1]
Granby conglomerate [1]
Pennsylvanian (Virgil)
Amazonia limestone member (of Lawrence shale)[1]
†Andrew shale (in Douglas formation)[1]
City Bluffs shale (in Shawnee formation)[1]
Curzon limestone (in Shawnee formation)[1]
†Forbes limestone (in Shawnee formation)[1]
Forest City limestone (in Shawnee formation)[1]
Forest City sand rock (in Shawnee formation)[1]

United States—Continued
Missouri—Continued
Pennsylvanian (Virgil)—Continued
Heumader shale member (of Oread limestone)[1]
Holt shale member (of Topeka limestone)[1]
Langdon shale [2]
Nodaway limestone (in Shawnee formation)[1]
†Quitman limestone [1]
†St. Joe limestone (in Shawnee formation)[1]
†Waldron sandstone (in Douglas formation)[1]
Pennsylvanian (Missouri)
Belton sandstone member (of Chanute formation)[2]
Bethany Falls limestone [1]
Cement City limestone bed (in Chanute shale member of Kansas City formation)[1]
Farley limestone bed (in Lansing ? formation)[1]
Iatan limestone[1]; †member (of Douglas formation)[1]
Kansas City formation[1]; **group** in Kansas
†Kansas City limestone [1]
†Kansas City oolite [1]
Knobtown sand [1]
Liberty Memorial shale member (of Chanute formation)[2]
Missouri series (as group [1])
†Parkville limestone (in Kansas City formation)[1]
†Parkville shale [1]
Plattsburg limestone[1]; †member (of Lansing formation)[1]
Raytown limestone bed (in Kansas City formation)[1]; **limestone** in Kansas
Sniabar limestone [1]
Sugar Creek shale (in Bethany Falls limestone)[1]
Swope limestone [1] or formation [1]
Union Station shale member (of Chanute formation)[2]
Weston limestone [1]
Weston shale[1]; †member (of Douglas formation)[1]
Pennsylvanian (Des Moines)
Amoret limestone member (of Altamont formation)[2]
Ardmore limestone member (of Cherokee shale)[1]
Bevier cyclothem or formation (including Bevier clay)[2]
Bevier fire clay [1]
Blackjack Creek cyclothem (including Blackjack Creek limestone)[2]
Blackwater Creek shale member (of Fort Scott formation)[2]
†Cheltenham fire clay [1] (formation)

United States—Continued
Missouri—Continued
Pennsylvanian (Des Moines)—Con.
†Clear Creek sandstone (in Cherokee shale)[1]
†Clear Fork group [1]
Dederick shale member [1] (of Cherokee formation)
Drywood Formation or coal cycle [2]
Excello formation [2]
Flint Hill sandstone member (of Fort Scott formation)[2]
†Henrietta formation or group [1]
Higginsville cyclothem (including Higginsville limestone)[2]
Houx cyclothem (including Houx limestone)[2]
Lagonda sandstone member (of Cherokee shale)[1]
†Lexington group [1]
Loutre formation [2]
Macon City shale [1]
Miller fire clay [1]
Myrick Station cyclothem (including Myrick Station limestone)[2]
Republic chert [1]
Rich Hill limestone member (of Cherokee shale)[1]
Robinson Branch formation or coal cycle [2]
Summit limestone (in Cherokee shale)[1]
Tebo formation [2]
Thomas Hill fire clay [1]
Thomas Hill shale [1]
Tina cyclothem (including Tina limestone)[2]
†Warrensburg group [1]
Worland limestone [1]
Mississippian
†Ste. Genevieve group [1]
†Seneca chert [1]
Upper Mississippian
Aux Vases sandstone [1]
Carterville formation [1]
Carthage limestone [1]
†Gabouri limestone [1]
†Genevieve group [1]
Meramec series (as group [1])
Ste. Genevieve limestone [1]
†Ste. Genevieve marble [1]
†Ste. Genevieve sandstone [1]
†St. Louis group [1]
St. Louis limestone [1]
Lower Mississippian
Bushberg sandstone member (of Sulphur Springs formation)[1]
†Chouteau group [1]
Chouteau limestone [1]
Compton limestone [1]
Easley group [2]
Fern Glen limestone [1]
Glen Park limestone member (of Sulphur Springs formation); **formation** [1] in Illinois

United States—Continued
Missouri—Continued
Lower Mississippian—Continued
Grand Falls chert member (of Boone limestone)[1]
Hannibal shale [1]
Louisiana limestone [1]
Northview shale [1]
Osage series (as group [1])
†Ozark group [1]
Pierson limestone [1]
Reeds Spring limestone [1] **member** (of Boone formation)
Saverton shale [1]
Sedalia limestone [1]
Sulphur Springs formation [1]
Devonian or Mississippian
Fabius group [2]
Devonian
Ashland limestone [2]
Auxvasse Creek sandstone member (of Callaway limestone)[1]
Fortune formation [2]
Kings limestone [1]
Webster group [1]
Devonian(?)
James River shale [1]
†Phelps sandstone [1]
Upper Devonian or Mississippian
Grassy Creek shale [1]
Upper Devonian
†Craghead Creek shale [1]
Snyder Creek shale [1]
Middle Devonian
Beauvais sandstone [1]
Callaway limestone [1]
Cooper limestone [1]
Mineola limestone [1]
St. Laurent limestone [1]
Wittenberg shale [1]
Lower Devonian
Bailey limestone [1]
Little Saline limestone [1]
Silurian and Devonian
†Perry limestone [1]
Middle Silurian
Bainbridge limestone [1]
Moccasin Springs formation [2]
Lower Silurian
Bowling Green limestone member (of Edgewood limestone)[1]
Edgewood limestone [1]
Girardeau limestone [1]
Hopkintonian series [2]
Noix oolite member (of Edgewood limestone)[1]
Watson limestone [1]
Ordovician
Rock Levee formation [2]
Upper Ordovician and Silurian
Buffalo shale [1]
Upper Ordovician
†Cape Girardeau sandstone [1]
Decaturville chert [1]
Spencer chert [1]

United States—Continued
Missouri—Continued
Middle Ordovician
Auburn chert [1]
Beckett limestone or formation [2]
Bloomsdale formation [2]
†Bryant limestone [1]
Charrette limestone [1]
†Cape Girardeau marble [1]
Hager limestone or formation [2]
Hook limestone member (of Macy formation)[2]
Joachim dolomite [1]
Kimmswick limestone [1]
Macy limestone or formation [2]
McCune limestone [1]
McPherson marble [1]
Plattin limestone [1]
Zell limestone member (of Macy formation)[2]
Lower Ordovician
Blackjack Knob member (of Theodosia formation) [2]
Bolin sandstone member (of Roubidoux formation)[1]
Bolivar sandstone [1]
†Cole Camp sandstone (in Van Buren formation)[1]
Crystal City sandstone [1]
Dutchtown formation [2]
†Finley limestone [1]
†Folley limestone [1]
Gainesville sandstone (in Blackjack Knob member of Theodosia formation)[2]
Gasconade dolomite [1]
Geiser Quarry member (of Dutchtown formation)[2]
Gunter sandstone member (of Van Buren formation)[1]
Hercules Tower sandstone (in Lutie member of Theodosia formation)[2]
Jefferson City dolomite [1]
†Jefferson City group [1]
King limestone [1]
Lutie member (of Theodosia formation)[2]
Marshfield sandstone [1]
Minnith zone (in Powell limestone)[1]
†Moreau sandstone [1]
†Osage limestone [1]
†Pacific sandstone [1]
Rich Fountain formation [2]
Rockaway conglomerate bed (in Lutie member of Theodosia formation)[2]
†Rock Fort sandstone [1]
Roubidoux formation [1] or **dolomite**
Sac limestone [1]
†St. Elizabeth formation [1]
†St. Peter group [1]
†St. Thomas sandstone [1]

United States—Continued
Missouri—Continued
Lower Ordivician—Continued
School Mine ledge beds (in Rich Fountain formation) [2]
Theodosia formation [2]
†White River limestone [1]
†Winfield dolomite [1]
Van Buren formation [1]
Cambrian
Delassus formation [2]
Tom Sauk limestone member (of Bonneterre formation) [2]
Upper Cambrian and Lower Ordovician
†Lesueur dolomite [1]
†Ozark series [1]
†Potosi group [1]
Upper Cambrian and Lower Ordovician(?)
†Eangua limestone [1]
Upper Cambrian
Bonneterre dolomite [1]
Davis formation [1]
†Decaturville limestone [1]
Derby dolomite [1]
Doe Run dolomite [1]
Elvins group [1]
Eminence dolomite [1]
†Fredericktown dolomite [1]
Iron Mountain conglomerate [1]
Laclede sandstone [1]
Lamotte sandstone [1]
†Ozark marble [1]
Pilot Knob conglomerate [1]
Potosi dolomite [1]
†Potosi slates and conglomerate [1]
Proctor dolomite [1]
†St. Francois limestone [1]
†St. Joseph limestone [1]
Precambrian
Francoisian series [1]
Graniteville granite [2]
Iron Mountain porphyry [1]
Ironton granite [2]
Ironton slate [1]
Knob Lick granite [1]
Pilot Knob formation [1]
Pilot Knob iron formation [1]
Skrainka diabase [1]
Silver Mine granite [2]
Age(?)
Kings Branch limestone [1]
Montana
Recent
Galata ash [2]
Pleistocene
Great Falls lake sands [2]
†Kennedy gravels [1]
Lake Missoula beds [1]
Pleistocene(?)
Wiota gravels [2]
Tertiary
Bozeman group (as lake beds) [1]

United States—Continued
Montana—Continued
Tertiary—Continued
Carpenter Creek granite porphyry [1]
Drummond [1] (clays)
Silver Dyke breccia [1]
Tertiary, upper, or Pleistocene
Clark Canyon lavas [2]
Tertiary, upper(?)
Belmont porphyry [1]
Drumlummon porphyry [1]
Probably upper Tertiary
Stanford conglomerate [1]
(?) Tertiary, lower
Snow Creek quartz porphyry [1]
Tertiary (Post-Eocene?)
Linley conglomerate [1]
Pliocene(?)
Fort Ellis beds [1]
Miocene or Pliocene
Castle granite [1]
†Modoc porphyry [1]
Robinson diorite [1]
Miocene, upper, or Pliocene
Flaxville formation (as gravel) [1]
Madison Valley beds [1]
Miocene, middle
Deep River beds [1]
†Smith River lake beds [1]
(?) Miocene, middle
†Flint Creek beds [1]
Miocene, lower
Blacktail Deer Creek basalts [2]
Fort Logan beds [1]
Oligocene
Pipestone beds [1]
Oligocene(?)
Muddy Creek beds [2]
Oligocene, upper, to Miocene, lower
Medicine Lodge volcanics [2]
(?) Oligocene, upper
†Blacktail Deer Creek beds [1]
Oligocene, middle
Cook Ranch formation [1]
Cook Ranch rhyolites [2]
Cook Ranch volcanics [2]
Muddy Creek volcanics [2]
†Toston beds [1]
Oligocene, lower
†Pipestone Creek beds [1]
†Thompson Creek beds [1]
Eocene
Beaverhead granite [2]
Black Butte till [2]
†Bluebird aplite [1]
†Bull Mountain series [1]
Crazy Mountain granite [1]
Loco diorite [1]
Sagean series [1]
Snowcrest granite [2]
Sphinx conglomerate [1]
Eocene(?)
Butte quartz monzonite [1]
Highwood syenite [1]
Reese formation [1]

United States—Continued
Montana—Continued
Carboniferous
Melrose [1] (quartzite)
Missoula [1] (limestone)
Pennsylvanian(?)
Tyler sandstone member (of Quadrant formation) [1]
Mississippian or Pennsylvanian
Alaska Bench limestone [1]
Mississippian to Pennsylvanian
Absaroka sequence [2]
Mississippian and (or) Pennsylvanian
Big Snowy group [1] or **formation**
Mississippian
Charles formation [2] (subsurface)
Dean Lake Chert member [1] (of Madison limestone)
Hannan limestone [2]
Monitor Mountain limestone member [1] (of Madison limestone)
Rooney chert member [1] (of Madison limestone)
Saypo limestone member [1] (of Madison limestone)
Silvertip conglomerate member [1] (of Madison limestone)
Van Duzen sand [1] (subsurface)
Upper Mississippian
Heath formation [1]
Kibbey sandstone (as member of Quadrant formation [1]
Otter formation or **shale** (as member of Quadrant formation [1])
Sun River dolomite [2]
Yakinikak limestone [1]
Lower Mississippian
†Castle limestone member (of Madison limestone)[1]
Little Chief Canyon member (of Lodgepole limestone)[2]
Lodgepole limestone [1]
Madison limestone,[1] **formation,** or **group**
Mission Canyon limestone [1]
Paine shale member (of Madison limestone)[1]
Trident [1] (formation)
Woodhurst limestone member (of Madison limestone)[1]
Devonian
Ermont formation [1]
Upper Devonian and Mississippian
Sappington sandstone member (of Three Forks shale)[2]
Threeforks shale[1], **limestone**[1], or **formation**
Upper Devonian
Jefferson limestone[1], **dolomite**[1], or **formation; group** in subsurface
Maywood formation [1]

United States—Continued
Montana—Continued
Upper Devonian—Continued
Potlatch anhydrite[1] or **member** (of Three forks formation) (subsurface)
Union shale [1]
Middle and Upper Devonian
†Monarch formation [1]
Middle Devonian
Coopers Lake limestone member [1] (of Jefferson limestone)
Glenn Creek shale member (of Jefferson limestone)[1]
Lone Butte limestone member [1] (of Jefferson limestone)
Spotted Bear limestone member [1] (of Jefferson limestone)
White Ridge limestone member [1] (of Jefferson limestone)
Post-Cambrian
Bandbox Mountain type [1] (analcite basalt)
Barker syenite [1]
Big Baldy Mountain type [1] (analcite basalt)
Eureka Divide type [1] (analcite basalt)
Steamboat Mountain type (of diorite porphyry) [1]
Wolf Butte type (of granite porphyry) [1]
Yogo Peak type (of granite porphyry) [1]
Cambrian
Barkerian series [1]
Tilden formation [1]
Upper Cambrian and Middle Devonian
Keene limestone [1]
Upper Cambrian
Cemetery limestone [1]
Devils Glen dolomite [1]
Dry Creek shale [1]
Elkhorn shale or hornstone [1]
Gallatin limestone [1] or **formation**
Grove Creek formation [2]
Hasmark formation [1]
Maurice formation [2]
Pilgrim limestone [1] or **dolomite**
Red Lion formation [1]
†Republic reef
Sage pebble-conglomerate member (of Snowy Range formation) [2]
Snowy Range formation [2]
Yogo limestone [1]
Middle and Upper Cambrian
†Barker formation [1]
Gordon Mountain limestone [1]
Middle or Upper Cambrian
Switchback shale (as limestone [1])
Middle Cambrian
Alpreston quartzite [1]
Dearborn limestone [1]
Flathead quartzite [1] or **sandstone**

United States—Continued
Montana—Continued
Middle Cambrian—Continued
†Flathead formation or shales [1]
Gordon shale [1]
Hobo Gulch formation [1]
Meagher limestone [1]
Pagoda oolite [1]
Park shale [1]
Pentagon shale [1]
Silver Hill formation [1]
Starmount limestone [1]
Steamboat limestone [1]
Wolsey shale [1]
Middle(?) Cambrian
Damnation limestone [1]
Nannie Basin limestone [1]
Precambrian
Altyn limestone [1]
Appekunny argillite [1] or **formation**
Appistoki member (of Appekunny argillite) [1]
Ahorn quartzite [2]
Axes Creek phase (of Cherry Creek series) [2]
Belt series [1]
Bitterroot period [1]
Blackfoot formation [1]
Blackfootian series [1]
Black Point dolomite member (of Cherry Creek series) [2]
Blacktail granite gneiss [2]
Boulder Pass formation [1]
Camp Creek group [1]
Cayuse limestone [2]
Chamberlain shale [1]
Cherric period [1]
Cherry Creek group [1]
Cooke granite [1]
Dillon granite gneiss [2]
Donaher sandstones [1]
Donald quartzites [1]
†East Gallatin group [1]
Empire shale [1]
Gallatinian series [1]
Garnet Range formation [1] or **quartzite**
Gateway formation [1]
Goathaunt member (of Siyeh limestone) [1]
Goose Creek granite [1]
Granite Park member (of Siyeh limestone) [1]
Greenhorn Mountain quartzite [2]
Greyson shale [1]
Grinnel argillite [1]
Hefty formation [1]
Helena limestone [1]
Helenan series [1]
Hellgate quartzite member (of Miller Peak argillite); (as formation) [1]
Hoadley formation [2]
Hole-in-the-Wall member [1] (of Boulder Pass formation)

United States—Continued
Montana—Continued
Precambrian—Continued
Kintla argillite [1]
Libby formation [2]
†Lolo series [1]
McNamara formation [1] or **argillite**
Madisonic period [1]
Marsh shale [1]
Miller Peak formation [1] or **argillite**
Missoula group [1]
Neihart quartzite [1]
Newland limestone [1] or **formation**
North Boulder group [2] **or formation**
Piegan group [2]
Pony series [1]
Prickly Pear member (of Spokane formation) [2]
Ravalli group [1] or **argillite**
Ravallian series [1]
Red Gap member (of Grinnell argillite) [1]
Rising Bull member (of Grinnell argillite) [1]
Rising Wolf member (of Appekunny argillite) [1]
Rogersian series [1]
Ruby limestone and gneiss [1]
Scenic Point member (of Appekunny formation) [2]
Sheep Mountain quartzite [1]
Shepard formation [1]
Singleshot member (of Appekunny argillite) [1]
Siyeh limestone [1]
Spokane shale [1] or **formation** [1]
Stillwater complex [1]
Turnley hornstone or shale [1]
Nebraska
Pleistocene and Recent
Bignell loess [2]
†Plains series [1]
Sand Hills formation [1]
Pleistocene
†Platte series [1]
†Sheridan beds [1]
Pleistocene (Wisconsin)
Brady soil [2]
Todd Valley sand (as formation [1])
Pleistocene (Illinoian)
Crete formation [2]
Pleistocene (Yarmouth)
Sappa formation [2]
†Upland formation [1]
Pleistocene (Kansan)
Grand Island formation [1]
Red Cloud sand and **gravel** [2]
Pleistocene (Aftonian)
Fullerton formation [1]
Pleistocene (Nebraskan)
David City formation [1]
Holdrege formation [1]
Nebraskan drift [1]

United States—Continued
Nebraska—Continued
Pleistocene, lower
Broadwater formation [2]
Lisco member (of Broadwater formation) [2]
Tertiary, middle
Loupian [1] (series)
Whitian series [1]
Pliocene
Ash Hollow formation [2]
Feldt Ranch beds (in Ash Hollow formation) [2]
Kimball formation [2]
Minnechaduza beds (in Ash Hollow formation) [2]
Ogallala formation [1]
Seward formation [2]
Sidney gravel [2]
Snake River stage [1]
Pliocene(?)
Devils Gulch beds [1]
Valentine beds [1]
Pliocene, lower
†Republican River formation [1]
Miocene, Pliocene, and Pleistocene(?)
†Loup Fork beds or group [1]
Miocene, Pliocene, and later(?)
†Niobrara group [1]
Miocene to Pliocene
Niobrara River channel sands (in Valentine formation) [2]
Miocene
Arikaree group (as sandstone [1]); **formation** in Colorado and Wyoming; **formation** or **sandstone** in South Dakota
Box Butte member (of Sheep Creek formation) [2]
Gering sandstone (as formation[1])
Hemingford group [2]
Marsland formation [2]
†Nebraska beds [1]
Sand Canyon member (of Sheep Creek formation) [2]
†Scotts Bluff formation [1]
Sheep Creek formation (as beds [1])
Spottedtail member (of Sheep Creek formation) [2]
Miocene, upper, or Pliocene, lower
Burge sands member (of Ogallala formation) [1]
†Fort Niobrara formation [1]
Snake Creek beds [1]
Miocene, lower
Harrison sandstone (as beds [1])
Monroe Creek beds [1]
Oligocene
Orella member (of Brule formation) [2]
Whitney member (of Brule formation) [2]
Oligocene, upper, to Miocene
Bayard paleosol complex [2]
Oligocene, lower
Chadron formation [1]

United States—Continued
Nebraska—Continued
Cretaceous
†Omadi sandstone [2]
Upper Cretaceous or Eocene
Platte River formation [1]
Upper Cretaceous
Ainsworth formation [1]
Dakota sandstone [1], **formation, group** or **quartzite**
Dakotan series [1]
†Dixons group [1]
Niobrara formation [1], **chalk,** or **shale; member** (of Mancos shale in New Mexico; of Cody shale in Montana)
Ponca sandstone [1]
Permian
Aspinwall limestone member (of Onaga shale); (as limestone or shale in Admire shale [1])
Barneston limestone (as formation [1])
Bennett shale [1] **member** (of Red Eagle limestone)
Burr limestone member [1] (of Grenola limestone)
Eiss limestone [1] **member** (of Bader limestone)
Falls City limestone [1]
Five Point limestone member (of Janesville shale); (as limestone in Admire shale [1])
Fourmile limestone (in Wreford limestone) [1]
Glenrock limestone [1] **member** (of Red Eagle limestone)
Hamlin shale [1] **member** (of Janesville shale)
Hawxby shale [1] **member** (of Onaga shale)
Holmesville shale [1] **member** (of Doyle shale)
Houchen Creek limestone [1] **bed** (in Hamlin member of Janesville shale)
Howe limestone [1] **member** (of Red Eagle limestone)
Hughes Creek shale [1] **member** (of Foraker limestone)
Indian Cave channel sandstone bed (in Towle member of Onaga shale); (as sandstone [1])
Johnson shale [1]
Kinney limestone [1] **member** (of Matfield shale)
Krider limestone [1] **member** (of Nolans limestone)
Long Creek limestone [1] **member** (of Foraker limestone)
Middleburg limestone [1] **member** (of Bader limestone)
Oaks shale [1] **bed** (in Hamlin member of Janesville shale)
Odell shale [1]

United States—Continued
Nevada—Continued
Tertiary (see also *Precambrian or Tertiary*)
Chipsa andesite [1]
Elko Prince rhyolite [1]
Extension breccia [1]
Grapevine conglomerates [1]
June Bell rhyolite [1]
Kendall tuffs [1]
Kyle sandstone [1]
Mammoth andesite [1]
Meda rhyolite [1]
†Midway andesite [1]
Milltown andesite [1]
Mizpah trachyte [1]
†Montana breccia [1]
Morena rhyolite [1]
Sandgrass andesite [1]
Sandstorm rhyolite [1]
Tonopah formation [1]
Victor andesite [1]
Vindicator rhyolite [1]
West End rhyolite [1]
Wonder rhyolite [1]
Tertiary(?)
Modoc lavas [1]
Overton fanglomerate [1]
Tertiary(?) (pre-Pliocene)
Black Canyon group [2]
Tertiary, upper
Mesa basalt [1]
Pueblo Mountain series [1]
Tertiary, lower
Amargosan series [1]
Pliocene
Gilbert andesite [2]
Mount Kate volcanics [2]
Railroad Ridge basalt [1]
Thousand Creek beds [1]
Truckee formation [1]
Pliocene(?)
Hospital porphyry [2]
Malpais basalt [1]
Muddy Creek formation [1]
†Muddy Valley beds [1]
Pozo formation [2]
Rabbit Spring formation [1]
Spearhead rhyolite [1]
Toyabe quartz latite [2]
Probably Pliocene
Panaca formation [1]
Pliocene or Pleistocene
Knickerbocker andesite [2]
Pliocene, upper, and Pliocene, lower
Lousetown formation [2]
Pliocene, lower(?)
Oddie rhyolite [1]
Miocene and Pliocene(?)
Humboldt formation [1]
Miocene
Davis Creek beds [1]
Forman volcanics [2]
Virgin Valley beds [1]

United States—Continued
Nevada—Continued
Miocene(?)
American Ravine andesite porphyry [2]
Davidson granodiorite [2]
Miocene, upper, or later
Maris rhyolite [1]
Miocene or Pliocene, lower
Kate Peak formation [2]
Miocene, upper, or Pliocene, lower
Currant tuff [2]
Miocene, upper, and Pliocene, lower
Bald Mountain lake beds member (of Esmeralda formation)[1]
Diamond King member (of Esmeralda formation)[1]
Esmeralda formation [1]
Hedwig breccia member (of Esmeralda formation)[1]
Round Rock member (of Esmeralda formation)[1]
Miocene, upper
†Cedar Mountain beds [1]
Fraction breccia [1]
Mira basalt [1]
†Siebert formation [1]
Siebert tuff [1]
Miocene, upper(?)
Brougher dacite [1]
Divide andesite [1]
Espina breccia [1]
Heller dacite [1]
Probably pre-upper Miocene
Gilmore Gulch formation [1]
Miocene, lower
Pueblo Range series [1]
Oligocene(?)
Alta formation [2]
Hartford Hill rhyolite tuff [2]
Sutro member (of Alta formation) [2]
Eocene
Elko shale or group [1]
Eocene(?)
Horse Spring formation [1]
Upper Cretaceous
Baseline sandstone [2]
Willow Tank formation [2]
Upper Cretaceous(?)
Thumb formation [2]
Jurassic or Cretaceous
Rocky Canyon granite [1]
Jurassic
Oreana shale [1]
Scossa slates [1]
Jurassic(?)
Aztec sandstone [1]
Lower Jurassic
Dunlap formation [1]
Lovelockian series [1]
Muttleberry limestone [1]
Sunrise formation [1]
Triassic
Red Rock limestone [2]
Rochester rhyolite [1]

United States—Continued
Nevada—Continued
Middle and Upper Devonian—Con.
Devils Gate limestone [2]
Ironside dolomite member (of Sultan limestone) [1]
†Nevadan series [1]
Sultan limestone [1]
Valentine limestone or dolomite member (of Sultan limestone) [1]
Middle Devonian
Silverhorn dolomite [1]
Slaven chert [2]
Middle Devonian and possibly older
Muddy Peak limestone [1]
Lower and Middle Devonian
Nevada limestone [1] or **formation**
Lower Devonian
Cooper Peak dolomite [2]
Silurian
Lone Mountain dolomite (as limestone [1])
Roberts Mountains formation [2]
Upper Silurian
†Lone limestone [1]
Middle Silurian
Timpahutean series [1]
Ordovician
Pahranagat limestone [1]
Pinyon series [1]
Ordovician(?)
Coaldale chert [2]
Mayflower schist [1]
Sonoma Range formation [2]
Zanzibar limestone [1]
Upper Ordovician
Ely Springs dolomite [1]
Hanson Creek formation [2]
Middle Ordovician
Eureka quartzite [1]
Lower—Upper Ordovician
Valmy formation [2]
Lower, Middle, and Upper(?) Ordovician
Toquima formation [1]
Lower and Middle Ordovician
Pogonip group (as limestone [1])
Vinini formation [2]
Lower and Middle(?) Ordovician
Palmetto formation [1]
Lower Ordovician
Cherry shale [1]
Comus formation [2]
Egan limestone [1]
Goodwin limestone (as formation [1])
Goodwinian series [1]
Lehman formation [2]
†Pogonipan series [1]
Schell shale [1]
Steptoean series [1]
Tank Hill limestone [1]
Willow limestone [1]
Yellow Hill limestone [1]

United States—Continued
Nevada—Continued
Cambrian
Gold Hill formation [1]
Morning Glory limestone member (of Gold Hill formation) [1]
Pine Nut limestone member (of Gold Hill formation) [1]
†Prospectan series [1]
Swarbrick formation [1]
Tybo shale [1]
White Caps limestone member (of Gold Hill formation) [1]
Upper Cambrian to Devonian(?)
Goodsprings dolomite [1]
Probably Upper Cambrian
Hales limestone [1]
Upper Cambrian
Dunderberg shale [1]
Dunderbergian series [1]
†Hambergian series [1]
Hamburg limestone [1] or **dolomite**
†Hamburg shale [1]
Harmony formation [2]
Mendha limestone [1]
Middle or Upper Cambrian
Preble formation [2]
Middle and Upper Cambrian
Highland Peak limestone [1]
Middle(?) and Upper Cambrian
Emigrant formation [1]
Middle Cambrian
Burnt Canyon limestone [2]
Burrows dolomite [2]
Burrows shale [2]
Chisholm shale [1]
Comet shale [2]
Condor member (of Swasey limestone) [2]
Eldoradan series [1]
Eldorado dolomite (as limestone [1])
Geddes limestone [2]
Lyndon limestone [1]
Peasley limestone [2]
†Prospect Mountain limestone [1]
Rubyan series [1]
†Secretan series [1]
Secret Canyon shale [1]
Middle(?) Cambrian
Scott Canyon formation [2]
Lower and Middle Cambrian
Combined Metals member (of Pioche shale); (as bed [1])
Pioche shale [1]
Lower Cambrian
Forlorn Hope shale [2]
Johnnie formation [1]
Miller Mountain formation [2]
Prospect Mountain quartzite [1]
Silver Peak group [1]
Stirling quartzite [1]
Wood Canyon formation [1]
Lower Cambrian(?)
Osgood Mountain quartzite [2]

United States—Continued
New Hampshire—Continued
Lower Devonian(?)
Blueberry Mountain argillite [1]
Talford schist [1]
Pre-Devonian(?)
Parker Hill schist [1]
Silurian and Devonian
Blueberry Mountain series [1]
Silurian(?)
Fitch Hill granite gneiss [1]
Intervale clay slate [1]
Lyman formation [1]
Middle Silurain
Fitch formation [1]
Fitch Hill arkose [1]
Lower and Middle Silurian
Clough quartzite or **formation** (as conglomerate [1])
Pre-Silurian
West Bath slate [1]
Ordovician to Lower Devonian
New Hampshire sequence [2]
Probably Ordovician and Silurian
Calef member (of Eliot formation)[2]
Gove member (of Berwick formation)[2]
Rye formation [2]
Ordovician
Albee formation [1]
Piermont member (of Albee formation)[2]
Ordovician(?)
Ammonoosuc volcanics [1]
Partridge formation (as slate [1])
Upper Ordovician
Highlandcroft granodiorite [1]
Highlandcroft plutonic series (as magma series [1])
†Lisbon quartzite [1]
Lost Nation quartz diorite [2]
Middle Ordovician(?)
Hardy Hill quartzite member (of Orfordville formation)[2]
Orfordville formation [2]
Post Pond volcanic member (of Orfordville formation)[2]
Sunday Mountain volcanic member (of Orfordville formation)[2]
Cambrian and Ordovician
Lisbon formation [1]
Probably Cambrian
Swift Water formation [1]
Precambrian and Pennsylvanian(?)
†Rockingham schist [1]
Precambrian(?)
†Montalban [1] (formation)
Mount Deception granite [1]
Rye gneiss [1]
Winnipesaukee quartz diorite (as gneiss [1])
Precambrian(?) and later
White Mountain series [1]

United States—Continued
New Hampshire—Continued
Age(?)
Gunstock gneiss [1]
South Hampton granite [1]
New Jersey
Quaternary (probably Recent)
Lalor sands [1]
Pleistocene
Bridgeton formation [1]
Cape May formation [1]
†Fish House beds [1]
Fish House clay [1]
Glassboro gravel [1]
†Jamesburg formation [1]
Jerseyan drift [1]
Pensauken formation [2]
†Trenton gravel [1]
Woodmansie phase (of Bridgeton formation)[1]
Pliocene(?)
Beacon Hill gravel [1]
Mount Holly conglomerate [1]
Miocene(?)
Cohansey sand [1]
Miocene, upper
Alloway clay [1]
Asbury clay [1]
Miocene,middle
Kirkwood formation [1]
Shiloh marl member (of Kirkwood formation)[1]
Eocene
†Long Branch sand [1]
†Squankum marl [1]
†Timber Creek beds [1]
Eocene, middle
Shark River marl [1]
Eocene, lower
Manasquan marl [1]
Rancocas group or **formation** [1]
†Sewell formation [1]
Paleocene
Hornerstown marl [1]
Vincentown sand [1]
Cretaceous
Sand Hill [1] (series)
Upper Cretaceous
†Amboy clays [1]
Bay View Avenue sand [1]
†Cliffwood clays [1]
†Columbus sand [1]
Crosswicks clay [1]
Englishtown sand [1]
Farrington sand member (of Raritan formation)[2]
†Hazlet sands [1]
Marshalltown formation [1]
Matawan group or **formation** [1]
Merchantville clay [1]
Monmouth group or **formation** [1]
Mount Laurel sand [1]
Navesink marl [2]
Old Bridge sand member (of Raritan formation)[2]

United States—Continued
New Mexico—Continued
Tertiary—Continued
Dog Gulch formation [1]
Espinaso volcanics [2]
Fanney rhyolite [1]
Houston andesite [1]
Jamez marl [1]
Last Chance andesite [1]
Latir Peak latite [2]
Llano Estacadan series [1]
Lufkin rhyolite [1]
Maya conglomerate [1]
Mineral Creek andesite [1]
Mogollon andesite [1]
Monument andesite [1]
Ortega formation [2]
Pacific quartz latite [1]
Picuris tuff [2]
Rio Grande gravels [1]
Rio Grande loess [1]
Selden basalt tongue [2]
Whitewater Creek rhyolite [1]
Tertiary(?)
Cueva rhyolite [1]
Orejon andesite [1]
Otero formation [1]
Soledad rhyolite [1]
Tertiary, upper
Albuquerque marl [1]
Bear Springs basalt [2]
Kneeling Nun rhyolite tuff [2]
Mimbres Peak formation [2]
Pecosan series [1]
Pollack quartz latite [2]
Razorback formation [2]
Rio Grande series [1]
Rubio Peak formation [2]
Sugarlump tuffs [2]
Tertiary, middle or upper
Amalia formation [2]
Tertiary, middle
Chicoma volcanic formation [2]
Tertiary, lower
Aztecan series [1]
Carson conglomerate [1]
Wimsattville formation [2]
Tertiary, lower(?)
Macho pyroxene andesites [2]
Pliocene(?)
Chuska sandstone [1]
Eagle Nest formation [2]
Pliocene, upper, or Pleistocene
Ancha formation [2]
Servilleta formation [2]
Miocene and Pliocene(?)
Los Pinos gravel (as member of Hinsdale formation [1])
Probably Miocene and Pliocene
Placita marl [1]
Miocene
Abiquiu tuff [2]
Bell Top formation [2]
Uvbs basalr [2]

United States—Continued
New Mexico—Continued
Miocene(?) to Pliocene
Mimbres conglomerate [2]
Miocene(?)
Chama clays [1]
Datil formation [1]
Lucky Bill formation [2]
Pedernal chert member (of Abiquiu tuff) [2]
Miocene, upper
Popotosa formation [2]
Miocene, pre-upper
El Rito formation [2]
(?)Miocene, upper
Hells Mesa member (of Datil formation) [2]
La Jara Peak member (of Datil formation) [2]
Spears member (of Datil formation) [2]
Miocene, middle(?) to Pleistocene(?)
Santa Fe group (as formation [1])
Miocene, middle(?) to Pliocene, lower
Tesuque formation [2]
Miocene, middle(?)
Bishops Lodge member (of Tesuque formation) [2]
Oligocene and Miocene
Thurman formation [2]
Oligocene
Palm Park formation [2]
Eocene and Oligocene(?)
Galisteo formation (as sandstone [1])
Eocene
Canyon Largo sandstone [1]
Chaco marl [1]
Chaman series [1]
Houten sandstone [1]
Ratonan series [1]
Eocene(?)
Baca formation [2]
Zia marl [1]
Eocene, lower
†Almagre beds [1]
†Largo beds [1]
Maxwell terrane [1]
San Jose formation [2]
Eocene and older(?)
†Canyon Largo group [1]
†Pinyon Mesa group [1]
Paleocene
Nacimiento group [1] or **formation**
Puerco formation [1]
Torrejon formation [1]
Cretaceous or younger
Hanover granodiorite porphyry [2]
Santa Rita granodiorite porphyry [2]
Cretaceous and Paleocene
Raton formation [1]
Cretaceous
Chacra [1] (terrane)
Gallinas shale [1]
Mora sandstone [2]
Pueblan series [2]

United States—Continued
New Mexico—Continued
Cretaceous—Continued
Sanastee sandstone member (of Mancos shale)[2]
Whim Hill breccia [2]
Cretaceous(?)
Pyramid shale [1]
Upper Cretaceous and Tertiary(?)
McRae formation [2]
Upper Cretaceous and Tertiary, lower
Hall Lake member (of McRae formation)[2]
Jose Creek member (of McRae formation)[2]
Upper Cretaceous
Allison member (of Menefee formation); (as barren member of Mesaverde formation [1])
Archuleta shale [1]
Atarque member (of Mesaverde formation)[2]
Barker Dome tongue (of Cliff House sandstone)[2]
Bartlett barren member (of Crevasse Canyon formation); (as barren member of Mesaverde formation [1])
Beechatuda tongue (of Cliff House sandstone)[2]
†Bell Mountain sandstone member (of Miguel formation)[1]
Cano member (of Mesaverde formation)[2]
†Chacra sandstone member (of Mesaverde formation)[1]
†Chamiso formation [1]
Cholla Canyon tongue (of Cliff House sandstone)[2]
Crevasse Canyon formation [2]
Dalton sandstone member (of Crevasse Canyon formation); (as member of Mesaverde formation [1])
Dilco coal member (of Crevasse Canyon formation); (as member of Mesaverde formation [1])
Farmington sandstone member (of Kirtland shale)[1]
Fort Stanton shale [1]
Fruitland formation [1]
Gallego sandstone member (of Gallup sandstone); (as member of Miguel formation [1])
Gallup sandstone (as member of Mesaverde formation [1])
Gibson coal member (of Crevasse Canyon formation); (as member of Mesaverde formation [1])
Horsehead tongue (of Mancos shale) [2]
Hosta tongue (of Point Lookout sandstone); (as sandstone member of Mesaverde formation [1])

United States—Continued
New Mexico—Continued
Upper Cretaceous—Continued
Juana Lopez sandstone member (of Carlile shale) [2]
Kirtland shale [1]
La Cruz Peak formation [2]
La Jara shale [1]
La Ventana tongue (of Cliff House sandstone); (as sandstone member of Mesaverde formation [1])
†Madrid formation [1]
†Miguel formation [1]
Mulatto tongue (of Mancos shale) [1]
†Navajo shales [1]
North Hogback tongue (of Point Lookout sandstone) [2]
Ojo Alamo sandstone [2]
Pescado tongue (of Mancos shale) [2]
Pictured Cliffs sandstone [1]
Pina Vititos sandstone [1]
†Placer Mountain group [1]
†Prieta sandstone [1]
Puercan series [1]
†Punta de la Mesa sandstone member (of Mesaverde formation) [1]
Pyramid conglomerate [1]
Rail Canyon sandstone member (of Vermejo formation) [1]
Satan tongue (of Mancos shale) [1]
Sierra Blanca series or coal measures [1]
†Tocito sandstone lentil (of Mancos shale) [1]
Tohachi formation (as shale [1])
Tres Hermanos sandstone member (of Mancos shale) [1]
Tuscon sandstone [1]
Twowells sandstone lentil (of Mancos shale) [2]
Ute Canyon tongue (of Cliff House sandstone) [2]
Vermejo formation [1]
Upper(?) Cretaceous
Beartooth quartzite [1]
Lower Cretaceous
Broken Jug limestone [2]
Corbett sandstone [2]
Garrett conglomerate [1]
Hidalgo volcanics [2]
Howells Ridge formation [2]
Mesa Rica sandstone (as member of Purgatoire formation [2])
Pajarito shale (as member of Purgatoire formation [2])
Playas Peak formation [2]
Redondo sandstone [2]
Revuelto shales [2]
Ringbone shale [2]
Sarten sandstone [1]
Skunk Ranch conglomerate [2]

United States—Continued
New Mexico—Continued
Lower Cretaceous—Continued
Tucumcari shale (as beds [1])
Tucumcarian series [2]
Jurassic
Chavez member (of Morrison formation) [2]
†Ocate sandstone [2]
Prewitt sandstone member (of Morrison formation) [2]
Thoreau formation or sandstone [2]
Jurassic and Triassic(?)
†Zunian series [1]
Jurassic(?)
Amarillo sandstone [1]
Upper Jurassic
Chaquaqua shale [1]
Todilto limestone (as member of Morrison formation [1])
Zuni sandstone [1]
†Zuni shale [1]
Middle Jurassic
Travester shale [1]
Triassic to Lower Cretaceous(?)
Puertocito formation [1]
Triassic
Naranjo formation [2]
Triassic(?)
Endee shale [1]
Lobo formation [2]
Lukachukai sandstone [1]
Sheep Pen Canyon formation [1]
Sloan Canyon formation [1]
Upper Triassic
Agua Zarca sandstone member (of Chinle formation) [2]
Correo sandstone member (of Chinle formation) [2]
Pierce Canyon redbeds [1]
Poleo sandstone [1] **lentil** (of Chinle formation)
Redonda formation (as member of Chinle formation [2])
Salitral shale tongue (of Chinle formation) [2]
Santa Rosa sandstone [1]
†Senorito sandstone lentil (in Chinle formation) [1]
Wingate sandstone [1]
Permian and Triassic
†Pecos Valley red beds [1]
Permian
Aqua Torres formation [2]
Artesia sands [1] (subsurface)
Bernal formation [2]
†Bernalilan series [1]
Bernalilo shale [1]
Bluewater formation [2]
Bower sand [1] (subsurface)
Ceja Glorieta sandstone [1]
Chaves shale [1]
†Cimarron formation [1]
†Dog Canyon limestone [1]
Eddy sandstone [1]
†Gym limestone [1]

United States—Continued
New Mexico—Continued
Permian—Continued
†Manzano group [1]
†Nogal formation [1]
†Pecos formation [1]
Pecos Canyon sandstone [1]
†Picacho limestone [1]
Permian(?)
Pecos shale [1]
Torrance shale [1]
Permian (Ochoa)
Culebra dolomite member (of Rustler formation) [2]
Fletcher anhydrite member (of Salado formation) [2] (subsurface)
La Huerta siltstone member (of Salado formation)[2] (subsurface)
Magenta member (of Rustler formation) [2]
Ochoa series [2] (subsurface and surface)
Vaca Triste sandstone member (of Salado formation) [2] (subsurface)
Permian (Guadalupe)
Azotea tongue (of Seven Rivers formation); (as tongue of Carlsbad limestone [1])
Carlsbad group (as limestone [1])
Chalk Bluff formation [1]
Grayburg formation [2] (subsurface)
Ocotillo silt member (of Tansill formation) [2]
Queen formation (as sandstone member of Chalk Bluff formation [1])
Seven Rivers formation or **gypsiferous member** (of Chalk Bluff formation) [1]
Shattuck member (of Queen formation) [2]
Tansill anhydrite or **formation** [2]
Three Twins member (of Chalk Bluff formation) [1]
Permian (Leonard and Guadalupe)
†Chupadera formation [1]
Hondo sandstone member (of San Andres formation); (as member of Chupadera formation [1])
San Andres limestone (as member of Chupadera formation*)
Permian (Leonard)
Cañas gypsum member (of Yeso formation) [2]
Drinkard sandy member (of Yeso formation) [2] (subsurface)
Glorieta sandstone [1]
Joyita sandstone member (of Yeso formation) [2]
Los Vallos member (of Yeso formation) [2]

United States—Continued
New Mexico—Continued
Lower Mississippian—Con.
Nunn member (of Lake Valley formation)[2]
Tierra Blanca member (of Lake Valley formation)[2]
Devonian or Mississippian(?)
Chloride formation [1]
Devonian
Martinian series [1]
Sly Gap formation [2]
Upper Devonian
Bella shale [1]
Box member (of Percha shale formation)[2]
Contadero formation [2]
Percha shale [1]
Ready Pay member (of Percha shale)[2]
Silver shales [1]
Volusia shale [1]
Middle Devonian
Onate formation [2]
Perchan series [1]
Silurian
Santa Rita limestone [1]
Silurian(?)
Cibola limestone [1]
Naiad limestone [1]
Middle Silurian
Mesillan series [2]
Ordovician and Silurian
†Mimbres limestone [1]
Ordovician
Armendaris limestone [1]
Cristobal limestone [1]
Frondosa limestone [1]
Mimbresian series [1]
†Pinos Altos limestones [1]
Upper Ordovician
Aleman formation [2]
Cable Canyon sandstone [2]
Cutter formation [2]
Jornada limestone [2]
Par value member (of Montoya dolomite)[2]
Raven member (of Montoya dolomite)[2]
Second Value member (of Montoya dolomite)[2]
Upham dolomite [2]
Valmont dolomite [2]
Lower Ordovician
Bat Cave limestone [2]
Sierrite limestone [2]
Cambrian
Chiricahuan series [1]
Hawkins limestone [1]
Cambrian(?)
Burro quartzite [1]
Upper Cambrian
Chloridian series [1]
Long quartzite [1]
Mangas quartzite [1]
†Shandon quartzite [1]

United States—Continued
New Mexico—Continued
Upper Cambrian(?)
Carrasco limestone [1]
Middle Cambrian
Dragoonan series [1]
Precambrian
Agua Caliente gabbro [2]
Albuquerquan series [1]
Antonio slate [1]
Badito quartzite member (of Hopewell series)[2]
Blue Springs muscovite schist [2]
Cabresto metaquartzite [2]
Cleveland Gulch quartzite member (of Hopewell series)[2]
Dixon granite [2]
Embudo granite [2]
Garnuan series [1]
Graphic lavas [1]
Hondo slate [2]
Hopewell series [2]
Lacorocah meta-andesite tuff member (of greenstone complex)[2]
Los Pinos granite [2]
Ninos schist [1]
Ortega quartzite [2]
Penasco quartzite [1]
Picursian series [1]
Petaca schist phase (of Ortega quartzite)[2]
Picuris basalts [2]
Pilar phyllite member (of Ortega formation)[2]
Priest granite [2]
†Pueblo quartzite [1]
Rinconada schist member (of Ortega formation)[2]
Rociada limestone [1]
Sais quartzite [2]
Sandoval granite [1]
Sapello quartzite [1]
Serna schist [1]
Sevilleta rhyolite [2]
Solitario slate [1]
Taosan series [1]
Tijeras quartzite [1]
Truchas slate [2]
Tusas granite [2]
Vadito formation [2]
Valencian series [1]
Vallecitos rhyolites [2]
White Ridge quartzite [2]
Ysidro shale [1]
Age(?)
Incarnacion granite [1]
New York
Pleistocene
Albany clay [1]
Cowaselon clay [1]
Gardiners clay [1]
Hempstead gravel member (of Manhasset formation)[1]

United States—Continued
New York—Continued
Upper Devonian—Continued
Gardeau shale member (of West Falls formation); (as member of Portage formation [1])
Genesee formation (as group) [1] (see p. 621)
Geneseo shale [1] (see p. 621)
Genundewa limestone lentil (of Geneseo shale) [1] (see p. 621)
Gilboa formation [1]
Gorham shales [1]
Gowanda shale [1] **member** (of Perrysburg formation)
Grimes siltstone member (of West Falls formation); (as sandstone [1])
Hanover shale [1]
Haymaker beds [1]
Hatch shale [1] **member** (of West Falls formation)
†High Point firestone [1]
†High Point sandstone [1]
Hinsdale sandstone [1]
Hume shale member (of Perrysburg formation) [2]
†Ischua sandstone [1]
Ithaca facies sub-group [1]
Ithaca shale member (of Portage formation) [1] (see p. 621)
Jamestown conglomerate [1]
Juliand member [1] (of Enfield formation)
Kaaterskill formation [1]
Kaaterskillian series [2]
Katsberg red beds [1]
Kattel shale [1]
Keuka flagstone [1]
Laona sandstone [1]
Laurens member [1] (of Tully limestone)
Letchworth shale [1]
Lillibridge sandstone member [1] (of Chadakoin stage)
Little Genesee conglomerate [1]
Long Beards Riffs sandstone [1]
Machias shale [1]
Marathon sandstone member [1] (in Ithaca facies subgroup)
Middlesex shale [1] **member** (of Sonyea formation)
Milo tongue (of West River shale) [2]
†Naples shale or group
New Lisbon member [1] (of Tully formation)
Northeast shale [1]
†Nunda group [1]
Nunda sandstone [1] **member** (of West Falls formation)
Oneonta sandstone [1]
Onteora formation (as red beds [1])
Otselic shale and sandstone [1]
Parrish limestone bed (as lentil [1]) (in Cashaqua shale member of Sonyea formation)

United States—Continued
New York—Continued
Upper Devonian—Continued
Penn Yan tongue (of West River shale) [2] (see p. 621)
Perrysburg formation [2]
Pipe Creek shale member (of Hanover shale); (as member of Wiscoy sandstone [1])
Portage group, formation, or **shale** [1]
†Portage sandstone [1]
†Portland shale [1]
Prattsburg sandstone and shale [1]
Renwick shale member [1] (of Middlesex shale) (see p. 621)
Rhinestreet shale [1] **member** (of West Falls formation)
Rock Stream siltstone member (of Sonyea formation); (as member of Cashaqua shale [2])
†Rockville sandstone [1]
Rushford sandstone [1]
Senecan group [1]
Sherburne flagstone member (of Portage formation) [1] (see p. 621)
Shumia sandstone [1]
†Silver Creek shale [1]
Six Mile shale member [1] (of Middlesex shale)
Skunnemunk conglomerate [1]
Slide Mountain conglomerate [1]
Sonyea [1] **formation**
South Wales member (of Perrysburg formation) [2]
Standish flagstone [1]
Starkey tongue (of Sherburne formation) [2]
Stony Clove sandstone member (of Katsberg red beds) [2]
Table Rock sandstone [1]
Tinkers Falls member [1] (of Tully formation)
Triphammer shale member [1] (of Ithaca facies subgroup)
Twilight Park conglomerate [2]
Unadilla formation [1]
Van Etten [1] (zone)
Wellsburg sandstone member (of Chemung formation) [1]
Wellsville formation [2]
West Brook member [1] (of Tully formation)
Westfield shale [1]
West Hill member (of West Falls formation); (as formation [1])
West River shale [1] (see p. 621)
White Church zone [1]
Whitesville formation [2]
Williams Brook coquinite member [1] (of Ithaca facies subgroup)
Wiscoy shale or **sandstone** [1]
Wittenberg conglomerate [1]

United States—Continued
New York—Continued
Middle and Upper Devonian
Catskill formation [1] or **red beds**
Erie group [1] or series [1]
Middle Devonian
Avery shale [1]
Ashokan beds [1]
Athol shale [1]
Babcock Hill member (of Onondaga formation) [2]
Bakoven shale [1]
Bellvale flags or sandstone [1]
Berne member (of Marcellus shale) [1]
Berwyn member (of Skaneateles shale) [1]
Bridgewater member (of Marcellus shale) [1]
†Canadaigua shale [1]
Cazenovia group [1]
Centerfield limestone member (of Ludlowville shale) [1]
Cherry Valley limestone (in Marcellus shale) [1]
Chittenango member (of Marcellus shale) [1]
Colgate member (of Skaneateles shale) [1]
Cornwall shale [1]
Deep Run member (of Ludlowville shale) [1]
Delphi member (of Skaneateles shale) [1]
Edgecliff member (of Onondaga limestone) [2]
Eighteenmile Creek member (of Ludlowville formation) [2]
Hamilton group [1]; **formation** in Pennsylvania
Ivy Point member [1] (of Ludlowville shale)
Joshua submember (of Otisco member of Ludlowville formation) [2]
Kashong member (of Moscow shale) [1]
King Ferry shale member (of Ludlowville shale) [1]
Kiskatom formation [1]
Ledyard member (of Ludlowville shale) [1]
Leeds facies (of Schoharie formation) [2]
Leicester marcasite member (of Moscow formation) [2]
Levanna shale (in Hamilton formation) [1]
†Ludlowville group [1]
Ludlowville shale [1]
Marcellus shale [1]; **shale member** (of Romney shale) in Maryland
Menteth limestone member (of Moscow shale) [1]

United States—Continued
New York—Continued
Middle Devonian—Continued
Moheganter shales and sandstones [1]
†Monroe shales [1]
Moorehouse member (of Onondaga limestone) [2]
Morse Creek limestone [1]
Moscow shale [1]
Mottville member (of Skaneateles shale) [1]
Mount Marion formation (as beds [1])
Nedrow member (of Onondaga limestone) [2]
†Newfoundland grit [1] or quartzite [1]
Oatka Creek shale (in Marcellus shale) [1]
Otisco member [1] (of Ludlowville formation)
Otsego member (of Marcellus shale) [1]
Owasco member [1] (of Ludlowville formation)
Panther Mountain shale and sandstone [1]
Pecksport member [1] (of Marcellus formation)
Pompey member (of Skaneateles shale) [1]
Portland Point member (of Moscow shale) [1]
Seneca limestone [1]
Shaffer shale [1]
†Sherburne shale [1]
Skaneateles shale [1]
Solsville member [1] (of Marcellus formation)
Spafford member [1] (of Ludlowville formation)
Spring Brook shale member (of Ludlowville formation) [2]
Springfield Center member (of Onondaga formation) [2]
Stafford limestone member (of Skaneateles shale) [1]
Staghorn Point submember [1]
Stone Mill member (of Ludlowville formation) [2]
Tichenor limestone member (of Ludlowville shale) [1]
Tully limestone [1]
†Ulsterian group [1]
Union Springs member (of Marcellus shale) [1]
Wanakah shale [1]
Windom member (of Moscow shale); (as shale [1])
Lower or Middle Devonian
Carlisle Center formation [2]
Esopus grit, shale [1] or **siltstone**
Onondaga limestone [1] or **formation**

United States—Continued
New York—Continued
Lower or Middle Devonian—Con.
Schoharie grit [1]
Sharon Springs formation [2]
Lower Devonian
Alsen (cherty) **limestone** [1]
Becraft limestone [1]
Bishop Brook limestone [1]
†Catskill or Delthyris shaly limestone [1]
Coeymans limestone [1]
Connelly conglomerate [2]
Deansboro member (of Coeymans limestone) [2]
Glenerie limestone [1]
Helderberg group or limestone [1]
Kalkberg limestone [1]
†Kingston beds [1]
New Scotland limestone [1]
Oriskany formation, group [1], or **sandstone** [1]
Oriskany Falls member (of Oriskany sandstone) [2]
Port Ewen limestone [1]
Port Jervis limestone [1]
†Schoharie stage [1]
Thacher limestone member (of Manlius formation) [2]
Lower(?) Devonian
Saugerties limy shale [1]
Silurian and Devonian
†Cornwall limestones [1]
†Onondaga saliferous group [1]
Silurian
Bear Creek shale (in Clinton formation) [1]
Binnewater sandstone (in Salina formation) [1]
Brewerton shale [1]
Bridgeburg horizon [1]
†Buffalo cement bed [1]
Chrysler waterlime [1]
†Clinton quartzites [1]
Donnelly iron ore [1]
Elmwood beds [1]
†Esopus millstone [1]
†Fiddlers Green limestone [1]
Furnaceville iron ore [1]
Furnaceville shale [1]
Gasport shaly channel [1]
Gates limestone [1]
†Green Pond Mountain formation [1]
Guymard quartzite (W. L. Bryant, 1926, Am. Philos. Soc. Proc., v. 65, no. 4, p. 259)
Herkimer sandstone [1]
High Falls shale [1]; **formation** [1] in New Jersey
Jamesville limestone [1]
Kirkland formation [1]
Kirkland limestone and iron ore [1]
Kodak white sandstone [1]
Lakeport limestone [1]
†Lockport group [1]

United States—Continued
New York—Continued
Silurian—Continued
†Lockport marble [1]
Maplewood shale [1]
Martville sandstone [1]
†Niagara limestone [1]
†Niagara sandstone [1]
†Niagara shale [1]
O-atka beds [1]
Olney limestone [1]
Oneida conglomerate [1]
†Onondaga group [1]
†Ontario group [1]
Ontario series [1]
Otisville shale member (of Shawangunk formation) [1]
Otsquago sandstone [1]
Phoenix or Schroeppel shale [1]
Pine Hill quartzite [1]
Reynales limestone (as member of Clinton formation [1])
Sauquoit beds [1]
Scajaquada limy shale [1]
Shawangunk conglomerate [1]
Sterling Station iron ore [1]
Verona iron ore [1]
Wolcott Furnace iron ore [1]
Silurian(?)
Clark Reservation limestone [1]
Pools Brook limestone [1]
Upper Silurian
Akron dolomite [1]
Bertie limestone (as member of Salina formation [1])
Camillus shale (as member of Salina formation [1])
Cayuga group [1], **dolomite,** or **series**
Cobleskill limestone or **dolomite** [1]
Falkirk dolomite [1]
Forge Hollow member (of Bertie formation) [2]
Fuyk sandstone member (of Rondout waterlime) [2]
Glasco limestone lentil (of Rondout waterlime) [2]
Le Fever limestone [2]
Lyndon gypsum bed [1]
Manlius limestone [1]
†Onondaga salt group [1]
Pittsford shale (as member of Salina formation [1])
Rondout limestone [1]
Rosendale limestone member (of Salina formation) [1]
Salina formation [1] or **group**
Syracuse salt (as member of Salina formation [1]) (subsurface)
Vernon shale (as member of Salina formation [1])
Wilbur limestone member (of Salina formation) [1]

United States—Continued
New York—Continued
Upper Silurian—Continued
Williamsville waterlime and shale [1]
Middle Silurian
Brewer Dock member [1] (of Clinton formation)
Clinton formation [1] or group
Dawes sandstone [2]
Gasport limestone member (of Lockport dolomite) [1]
Goat Island member (of Lockport formation) [2]
Irondequoit limestone (as member of Clinton formation [1])
Lockport dolomite [1]
Neahga shale [1]
Niagara group [1], limestone, dolomite, or series
Oak Orchard member (of Lockport formation) [2]
Rochester shale (as member of Clinton formation [1])
†Shelby dolomite [1]
Sodus shale (as member of Clinton formation [1])
Vanhornsville sandstone [1]
Westmoreland member (of Clinton formation) [2]
Williamson shale member (of Clinton formation) [1]
Willowvale shale [2]
Wolcott limestone (as member of Clinton formation [1])
Lower Silurian
Albion group (as sandstone [1])
Fish Creek shale [2]
Rumsy Ridge sandstone member (of Fish Creek formation) [2]
Whirlpool sandstone (as member of Albion sandstone [1])
Ordovician
Burden conglomerate [1]
†Dudley limestone [1] or series [1]
†Hudson schist [1]
Marlboro member (of Hudson River formation) [2]
Peekskill phyllite [1]
Poestenkill fault breccia [1]
†Taconic slate [1]
†Trenton conglomerate [1]
Trenton Falls series [1]
Ordovician and Cambrian(?)
†Champlain division [1]
Upper Ordovician and Silurian
Brayman shale [1]
†Medina group [1]
†Oswegan period or group [1]
Upper Ordovician
Atwater Creek shale [1]
Bennett Bridge beds [1]
Deer River shale [1]
Fairfield slate [1]
Frankfort shale [1]

United States—Continued
New York—Continued
Upper Ordovician—Continued
Harter member (of Frankfort formation) [2]
Hasenclever member (of Frankfort formation) [2]
Holland Patent [1] (zone)
Indian Ladder formation (as beds [1])
†Lewiston shale [1]
Lorraine group [1]
Loyal Creek [1] (zone)
†Mohawk slate group [1]
Moose Creek beds [1]
Moyer member (of Frankfort formation) [2]
Nowadaga [1] (zone)
Oswego sandstone [1]
Pulaski shale [1]
†Salmon River sandstone [1]
Sandy Creek beds [1]
Tremaines Bridge beds [1]
Utica shale [1]
Whetstone Gulf formation [1]
Wood Creek beds [1]
Worthville beds [1]
Upper Ordovician(?)
Amawalk granite [2]
Middle Ordovician
Amsterdam limestone [1]
Austins Glen member (of Normanskill formation) [2]
Balmville limestone member (of Wappinger limestone) [1]
Black River group [1]
Camp member (of Denmark formation) [2]
Canajoharie shale [1]
Chaumont formation [1]
Chazy group [1] or limestone
Cumberland Head shale [1]
Chuctenunda [1] (zone)
Crown Point limestone [1]
Denmark member (of Sherman Fall formation) [2]
Dolgeville shale [1]
Fort Plain [1] (zone)
Gansevoort [1] (zone)
Glendale member of (Denmark formation) [2]
Glens Falls limestone [1]
Hounsfield bentonite [1]
Indian River slate [1]
Leray limestone member (of Lowville limestone) [1]
Lorette formation [1]
Lowville limestone [1]
Minaville member (of Canajoharie formation) [2]
†Mohawk limestone [1]
Mohawkian series [1]
Morphy [1] (zone)
Mount Merino chert and shale member (of Normanskill formation) [2]

United States—Continued
New York—Continued
Middle Ordovician—Continued
Normanskill shale [1]
Pamelia limestone [1]
Poland limestone member (of Denmark formation)[2]
Rathbun limestone member (of Denmark formation)[2]
Rust limestone member (of Cobourg formation)[2]
Russia limestone member (of Denmark formation)[2]
Rysedorph conglomerate [1]
Schenectady formation [1]
Sherman Fall formation [1]
Snake Hill formation [1]
Sprakers [1] (zone)
Steuben limestone member (of Cobourg formation)[2]
Tackawasick limestone [1]
Trenton limestone or **group** [1]
Van Schaick [1] (zone)
Watertown limestone [1]
Middle(?) Ordovician
Stony Point shale [1]
Lower and Middle Ordovician
†Mohawk group [1]
Lower Ordovician
Bald Mountain limestone [1]
Baldwin Corner formation (R. H. Flower, 1952, *in* Geol. Soc. America Guidebook for field trips in New England, p. 35)
Beekmantown group or **limestone**[1]
Benson dolomite member (of Tribes Hill formation)[2]
Bucks Bridge mixed beds [1]
Chuctununda Creek dolomite [2]
Copake limestone [1]
Cranesville dolomite [2]
Day Point limestone [1]
Deepkill shale [1]
†Depauville waterlime [1]
Fonda limestone member (of Tribes Hill formation)[2]
Fort Ann limestone member (of Tribes Hill formation)[2]
Fort Johnson member (of Tribes Hill formation)[2]
Gailor dolomite [2]
Great Meadows formation (R. H. Flower, *ibid.*)
Halycon Lake calc-dolomite [2]
Hewittsville calcilutites or beds [1]
Mosherville sandstone member (of Gailor dolomite)[2]
Norton limestone member (of Tribes Hill formation)[2]
Ogdensburg formation [1]
Palatine Bridge limestone member (of Tribes Hill formation)[2]
Rochdale limestone [1]
Schaghticoke shale [1]
Smith Basin formation (R. H. Flower, *ibid.*)

United States—Continued
New York—Continued
Lower Ordovician—Continued
Tribes Hill limestone [1]
Valcour limestone [1]
Warwick limestone [1]
Whitehall formation [2]
Wolf Hollow limestone member (of Tribes Hill formation) [2]
Cambrian, Ordovician and probably Silurian
†Champlain group [1]
Cambrian and Ordovician
Fishkill limestone [1]
†Poughquag limestone [1]
Cambrian
Ashley Hill limestone [1]
Claverack conglomerate (in Schodack formation) [2]
†Saratoga formation, group, or series [1]
Cambrian(?)
†Stissing quartzite [1]
Upper Cambrian or Ordovician
Broadalbin passage beds [2]
†Hudson formation [1]
Hudson River group [1]
Ritchie limestone [2]
Upper Cambrian to Lower Ordovician
Moses Hill beds [2]
Upper Cambrian
Adirondack-Border series [2]
Ausable sandstone [1]
Briarcliff dolomite [2]
Dewey Bridge dolomite (R. H. Flower, *ibid.*)
Galway formation [1]
†Greenfield limestone [1]
Heuvelton sandstone [1]
Hoyt limestone member (of Theresa dolomite) [1] or **dolomite** [1]
Little Falls dolomite [1]
Neelytown limestone [1]
Pine Plains formation [2]
†Potsdam limestone [1]
Potsdam sandstone [1]
Skene dolomite member (of Whitehall formation) [2]
Theresa dolomite [1]
Upper Cambrian(?)
Keeseville sandstone [1]
Lower Cambrian to Middle Ordovician
Barnegat limestone [1]
Newburgh limestone [1]
Peekskill Creek limestone [1]
†Wappinger limestone [1]
Lower and Middle Cambrian
Stissing dolomite [1]
Lower Cambrian
Diamond Rock quartzite [1]
Eagle Bridge quartzite [1]
Eddy Hill grit [1]
Greenwich formation [1]

United States—Continued
New York—Continued
Precambrian(?)
Harrison diorite [1]
Hoboken serpentine [1]
Staten Island serpentine [1]
Age(?)
Bedford "augen" gneiss [1]
Bethel pyroxene diorite [1]
Bull Pond limestone [1]
Cortland series [1]
Croton Falls hornblendite [1]
Hortontown basic eruptives [1]
Macombs Dam gneiss [1]
Natural Bridge limestone [1]
Peach Lake diorite [1]
Peekskill norite [1]
Poundridge granite [1]
Randels Island gneiss [1]
Syracuse serpentine [1]
North Carolina
Pleistocene
Cape Fear coquina [2]
Castalia sand [2]
†Chowan formation [1]
Coharie formation [1]
Kure sandstone [2]
Pamlico formation [1] or **sand**
Pine sand [2]
Pliocene, lower
Croatan sand [1]
Miocene, upper
Duplin marl [1]
Miocene, middle(?) and upper
†Murfreesboro stage [1]
Miocene, lower
Trent marl [1]
Eocene, upper, and Miocene, lower
†Wilmington beds [1]
Eocene, middle and upper
Castle Hayne limestone (as marl [1])
Upper Cretaceous
†Bladen formation [1]
†Cape Fear formation [1]
Snow Hill marl member (of Black Creek formation) [1]
Triassic
Lowes Grove beds [2]
Nelson beds [2]
Triassic(?)
Bakersville gabbro [1]
Upper Triassic
†Chatham series [1]
Cumnock formation [1]
†Dan River series [1]
†Deep River formation [1] or series [1]
Pekin formation [1]
Sanford formation [1]
Carboniferous(?)
Whiteside granite [1]
Devonian(?)
Cherryville quartz monzonite [2]
Ordovician
Toluca quartz monzonite [2]

United States—Continued
North Carolina—Continued
Cambrian
Draytonville conglomerate member (of Kings Mountain quartzite) [1]
Kings Mountain quartzite [1]
Lower Cambrian
Andrews schist [1]
Brasstown schist [1]
Brevard schist [1]
†Cherokee slates [1]
Clingman conglomerate [1]
Hazel slate [1]
Murphy marble [1]
Nottely quartzite [1]
Tusquitee quartzite [1]
Valleytown formation [1]
Vann quartzite [2]
Precambrian and Cambrian
†Kings Mountain group,[1] series,[1] or slates [1]
†Linville slates [1]
†Piedmont group [1]
Precambrian and Cambrian(?)
†Buncombe group [1]
Precambrian
Aaron slate [1]
Beech granite [1]
Bessemer granite [1]
Big Butt quartzite [2]
Blowing Rock gneiss [1]
Carolina gneiss [1]
Cranberry granite [1]
Flattop schist [1]
Great Smoky group (as conglomerate [1])
Henderson granite [1]
Humpback gneiss [2]
Hurricane graywacke [2]
Max Patch granite [1]
Montezuma schist [1]
Raleigh graphite [2]
Snowbird group (as formation [1])
Thunderhead sandstone (as conglomerate [1])
Precambrian(?)
†Monroe beds or slates [1]
Nantahala slate [1]
Age(?)
Bearwallow schist [2]
Buck Ridge schist [2]
Purefoys Mill series [1]
Spruce Pine alaskite [2]
Tempa schist [2]
North Dakota
Pleistocene
Lake Agassiz clays [1]
Lake Agassiz silt [1]
Tertiary(?)
Mandanan series [1]
Eocene
Beaver Creek coal group [1]
Golden Valley formation [2]
Yule coal group [1]

United States—Continued
Ohio—Continued
Pennsylvanian—Continued
†Meigs Creek white limestone (in Monongahela formation) [1]
Mitchell sand [1] (subsurface)
Moxahala clay (in Allegheny formation) [1]
Nagle sand [1] (subsurface)
Norris limestone (in Allegheny formation) [1]
Oak Hill clay (in Allegheny formation) [1]
Ogan clay (in Allegheny formation) [1]
†Ohio conglomerate [1]
Patriot limestone (in Conemaugh formation) [1]
Peeker sand [1] (subsurface)
Pomeroy sandstone (in Monongahela formation) [1]
Porterville fossiliferous horizon or limestone (in Conemaugh formation) [1]
Poverty Run limestone (in Pottsville formation) [1]
Redstone clay (in Monongahela formation) [1]
Round Knob horizon or shale member (in Conemaugh formation) [1]
Salem limestone (in Allegheny formation) [1]
Schramm sand [1] (subsurface)
Scioto freestone (in Allegheny formation) [1]
†Sciotoville fire clay (in Pottsville formation) [1]
Sharon clay [1]
†Shawnee limestone (in Allegheny formation) [1]
Skelley limestone (in Conemaugh formation) [1]
Snow Fork limestone (in Allegheny formation) [1]
†Stillwater sandstone (in Conemaugh formation) [1]
Strasburg cyclothem (including Strasburg shale and/or sandstone) [2]
†Summerfield limestone (in Conemaugh formation) [1]
Tionesta clay (in Pottsville formation) [1]
Vandusen cyclothem (including Vandusen clay, shale, and sandstone) [2]
Vincent sand [1] (subsurface)
Washingtonville member (of Allegheny formation) [1]
Wilgus clay (in Conemaugh formation) [1]
Winters clay (in Allegheny formation) [1]
Wolf Creek sand [1] (subsurface)

United States—Continued
Ohio—Continued
Pennsylvanian—Continued
Zaleski flint (in Allegheny formation) [1]
Zoar limestone (in Pottsville formation) [1]
Upper Pennsylvanian
Ames limestone member (of Conemaugh formation) [1]
Cambridge limestone member (of Conemaugh formation) [1]
Ewing limestone member (of Conemaugh formation) [1]
Middle Pennsylvanian
Putnam Hill limestone member (of Allegheny formation) [1]
Mississippian
Allensville member (of Logan formation) [1]
Armstrong member (of Cuyahoga formation) [1]
Aurora siltstone member (of Orangeville shale) [1]
Bedford shale [1] or **formation**
Berea sandstone [1] or **formation**
†Berea shale [1]
Berne member (of Cuyahoga formation) [1]
Black Hand formation [1] or **sandstone**
†Brecksville shale member (of Orangeville shale) [1]
Buena Vista sandstone member (of Cuyahoga formation) [1]
Burbank member (of Cuyahoga formation) [1]
Byer member (of Logan formation) [1]
Canter limestone [1]
Chardon siltstone member (of Orangeville shale); (as sandstone[1])
Churn Creek member (of Cuyahoga formation) [1]
†City Ledge sandstone (in Cuyahoga formation) [1]
Cuyahoga formation, group [1] or **shale**
Euclid sandstone member (of Bedford shale); (as lentil [1])
Fairfield member (in Cuyahoga formation) [1]
Granville beds [1]
Granville shale facies [1] (of Cuyahoga formation)
Hamden sand [1] (subsurface)
Hanover pebble bed (in Cuyahoga formation) [2]
Henley shale member (in Cuyahoga formation) [1]
Hocking Valley conglomerate facies [1] (of Cuyahoga formation)
Killbuck shale facies (of Cuyahoga formation) [2]

United States—Continued
Ohio—Continued
Mississippian—Continued
Licking shale [1]
Lithopolis member (in Cuyahoga formation)[1]
Logan formation [1]
†Logan group [1]
†Logan limestone or flint (in Logan formation)[1]
Maxville limestone [1]
†Newtonville limestone [1]
Pleasant Valley member (of Cuyahoga formation)[2]
Portsmouth member (in Black Hand formation)[2]
Pretty Run sandstone facies (of Logan formation)[2]
Racoon shale [1]
Rarden shale member [1] (of Cuyahoga formation)
Richland limestone and flint [1]
Rittman conglomerate lentil (of Cuyahoga formation)[1]
River Styx conglomerate facies (of Cuyahoga formation)[2]
†Royalton formation [1]
Rushville group [1]
Sagamore sandstone member (of Bedford shale); (as lentil [1])
Scioto Valley shale facies [1] (of Cuyahoga formation)
Scotts Creek flint [1]
Sunbury shale [1]
Tinkers Creek shale facies (of Cuyahoga formation)[2]
Toboso conglomerate facies [1] (of Cuyahoga formation)
Vinton member [1] (of Logan formation)
Warren sandstone [1]
†Waverly conglomerate [1]
Welsh stray sand [1] (subsurface)
Mississippian and Devonian(?)
†Sunbury calciferous sandrock [1]
†Waverly group [1]
Devonian(?)
Grand Rapids sandstone [1]
Upper Devonian
Chagrin shale [1]
Cleveland member (of Ohio shale); (as shale [1])
†Erie shale [1]
Huron member (of Ohio shale); (as shale [1])
Ohio shale [1]
Olentangy shale [1]
†Olmsted shale member (of Cleveland shale)[1]
Scioto slates and shales [1]
Middle Devonian
Bellepoint member (of Columbus limestone)[1]
Columbus limestone [1]
Delaware limestone [1]
Delhi limestone [1]

United States—Continued
Ohio—Continued
Middle Devonian—Continued
Dublin blue shale [1]
East Liberty bone bed (in Columbus formation)[2]
Eversole chert [1]
Klondike member (of Columbus limestone)[1]
Marble Cliff limestone (in Columbus limestone)[1]
Marblehead limestone (in Columbus limestone)[1]
Plum Brook shale [2]
Plum Creek shale [1]
Prout limestone [1]
Prout series [1]
Sandusky limestone [1]
Silica shale (in Traverse formation)[1]
Sylvania sandstone [1] **or formation**
Tenmile Creek dolomite [2]
Venice member (of Columbus limestone)[1]
West Jefferson sandstone [1]
Lower Devonian
Austinburg sand [1] (subsurface)
Cambridge sand [1] (subsurface)
Holland sandstone [1]
Lucas formation (as dolomite [1])
Monclova sandstone [1]
Silurian
Beavertown marl (in Brassfield limestone)[1]
Harriett formation [2]
†Montgomery formation [1]
Stadler sand [1] (subsurface)
Silurian(?)
Hillsboro sandstone [1]
Upper Silurian
Bass Islands dolomite [1]
Greenfield dolomite [1] **member** (of Bass Island dolomite)
Put-in-Bay dolomite member (of Bass Island dolomite)[1]
Tymochtee formation (as shale [1])
Middle Silurian
Bisher formation [1]
Cedarville dolomite (as limestone [1])
Dayton limestone [1]
Durbin formation [1]
Eaton beds [1]
Euphemia dolomite [1]
Lilley formation [1]
Massie clay [1]
Newburg sand [1] (subsurface)
Peebles dolomite [1]
Piqua stone [1]
Springfield limestone [1] **or dolomite**
West Union limestone [1]
Lower Silurian
Centerville formation [1]

United States—Continued
Ohio—Continued
Upper Ordovician
Arnheim shale [1]; **formation** in Kentucky; **limestone** in Tennessee
Bellevue limestone member (of McMillan formation)[1]
Blanchester division (in Richmond group)[1]
Cincinnatian series [1]
Clarksville division (in Richmond group)[1]
Corryville shale member (of McMillan formation)[1]
†Covington group [1]
Eden group [1] or **formation**
Fairmont limestone member (of Fairview formation)[1]
Fairview formation [1]
Fort Ancient division (in Richmond group)[1]
Fulton shale [1]
†Hill Quarry beds [1]
†Lebanon beds [1]
McMicken member (in Latonia shale)[1]
McMillan formation [1]
Mount Auburn shale member (of McMillan formation)[1]
Mount Hope shale member (of Fairview formation)[1]
Point Pleasant limestone [1]
Turkey Track limestone layer (in Richmond group)[1]
Waynesville shale [1]; **limestone** in Kentucky
†Warren beds [1]
Upper Ordovician(?)
Belfast bed [1]
Middle Ordovician
Bromley shale (in Cynthiana formation)[1] (see p. 622)
†River Quarry beds [1]
Oklahoma
Quaternary(?)
†Peaceable sand [1]
Pleistocene
Gerty sand [1]
Tertiary
Black Mesa basalt [1]
Tertiary(?)
†Fort Sill series [1]
Pliocene or Pleistocene
Grandfield conglomerate [1]
Pliocene, lower
Laverne formation [1]
Upper Cretaceous
†Silo sandstone [1]
Lower and Upper Cretaceous
Washita group [1]
Lower Cretaceous
†Antlers sand [1]
Baum limestone member (of Paluxy sand)[2]
Bennington limestone [2]

United States—Continued
Oklahoma—Continued
Lower Cretaceous—Continued
Bokchito formation [1]
Caddo limestone [1]
Camp Supply beds [1]
Comet Creek bed [1]
Goodland limestone [1]
†Indian Territory division [1]
Kiamichi formation [1]
Upper Jurassic
Exeter sandstone [1]
Triassic(?)
Custer formation [1]
Permian
Addington formation [1]
Altona dolomite member (of Blaine gypsum)[1]
†Amphitheater dolomite [1]
Antelope Flats member (of Wellington formation)[2]
Anthony sandstone [2]
Antioch sandstone [1]
Asher formation [1]
Auger conglomerate lentil (of Wichita formation)[1]
Beaver gypsum [1]
Bessie member (of Quartermaster formation)[1]
Billings member (of Wellington formation)[2]
Bison banded member [1] (of Hennessey shale)
Blackwell sand [1] (subsurface)
Blaine gypsum or **formation** [1]
Bu-Vi-Bar bed [1]
Caddo sand [1] (subsurface)
Cedartop gypsum member (of Blaine gypsum) [1]
Chaney gypsum member (of Blaine gypsum) [1]
Chapman dolomite [1]
Chickasha formation [1]
Cimarron anhydrite [2]
Cloud Chief formation (as gypsum [1])
Cornish sandstone member [1]
Creta dolomite (in Blaine formation) [1]
Crouse limestone or **formation** (as member of Garrison shale [1])
†Cushing limestone member (of Elmdale formation) [1]
†Cyril gypsum member [1] (of Greer formation)
†Delphi dolomite [1]
Doe Creek sandstone member (of Marlow formation) [2]
Doxey member (of Quartermaster formation) [1]
Duncan sandstone [1]
Elk City member (of Quartermaster formation) [1]
El Reno group (as formation [1])
Enid formation [1]

United States—Continued
Oklahoma—Continued
Pennsylvanian—Continued
Buckhorn asphalt [2]
Bull Creek limestone [1]
Burgess sand [1] (subsurface)
Campbell sand [1] (subsurface)
Cantrell sand [1] (subsurface)
Carmichael sand [1] (subsurface)
†Chandler formation [1]
Claypool formation [1]
Cleveland sand [1] (subsurface)
Colbert sand [1] (subsurface)
Cosden sand [1] (subsurface)
Covington sand [1] (subsurface)
Crews sand [1] (subsurface)
Dillard sand [1] (subsurface)
Dixie sand [1] (subsurface)
Earlsboro sand [1] (subsurface)
Endicott sand series [1] (subsurface)
Flat-top sandstone [1]
Gilcrease sand [1] (subsurface)
†Glenn formation [1]
Graham oil sand [1] (subsurface)
Grayhorse sand [1] (subsurface)
Hallett sand [1] (subsurface)
Hamilton Switch sand [1] (subsurface)
Harjo sand [1] (subsurface)
Healdton sand zone[1] (subsurface)
Hewitt sand [1] (subsurface)
Hickman sand [1] (subsurface)
Holland sand [1] (subsurface)
Hominy lime [1] (subsurface)
Hoover sand series [1] (subsurface)
Hotson sand [1] (subsurface)
Jackson sand [1] (subsurface)
Johnson oil and gas sand [1] (subsurface)
Kelso sand [1] (subsurface)
Ketchum Bluff conglomerate [1]
Keys sand [1] (subsurface)
Kirk gas sand [1] (subsurface)
Layton sand [1] (subsurface)
McEwin sand [1] (subsurface)
Markham sand [1] (subsurface)
Mervine sand [1] (subsurface)
Morris sand [1] (subsurface)
Moyer gas sands [1] (subsurface)
Muskogee lime [1] (subsurface)
†Musselman sand [1] (subsurface)
†Nelagoney sandstone [1]
Nellie gas sand [1] (subsurface)
Nemire sand [1] (subsurface)
Newkirk sand [1] (subsurface)
†Ochelata member [1] (of Ramona formation)
†Oil City lime [1] (subsurface)
Oscar sandstone [1]
Papoose sand [1] (subsurface)
Pawhuska series [1] (subsurface)
Peoples sand [1] (subsurface)
Perryman sand [1] (subsurface)
Peru sand [1] (subsurface)
Ponca sand [1] (subsurface)

United States—Continued
Oklahoma—Continued
Pennsylvanian—Continued
Priddy sand [1] (subsurface)
Prune sand [1] (subsurface)
Quinn sand [1] (subsurface)
Ragan sand [1] (subsurface)
†Ramona formation [1]
Ramsey sand [1] (subsurface)
Red Fork sand [1] (subsurface)
Richter sand [1] (subsurface)
Ricketts oil sand [1] (subsurface)
Ryan sandstone [1]
†Sapulpa group [1]
Shelton sand [1] (subsurface)
Sholem Alechem limestone [1] (subsurface)
Skinner sand [1] (subsurface)
Smith sand [1] (subsurface)
Squirrel sand [1] (subsurface)
Standpipe sandstone (in Elmdale formation)[1]
Suitcase sand [1] (subsurface)
Surber sand [1] (subsurface)
Sutherland oil sand [1] (subsurface)
Swaggart sand [1] (subsurface)
Swenson sand [1] (subsurface)
Tatums sand [1] (subsurface)
†Tiger Creek sandstone member (of Bristow formation)[1]
Timber Ridge sand [1] (subsurface)
Ti Valley series [2]
Tonkawa sand [1] (subsurface)
†Tulsa group [1]
Turk sand [1] (subsurface)
†Vinita formation [1]
Walker sand [1] (subsurface)
Wayside sand [1] (subsurface)
Wheeler lime [1] (subsurface)
Wheeler sand [1] (subsurface)
Whiting sand [1] (subsurface)
Wigdon sand [1] (subsurface)
Wiser sand [1] (subsurface)
Zypsie sand [1] (subsurface)
Pennsylvanian(?)
Blaydes sand [1] (subsurface)
Brown sand [1] (subsurface)
†Geronimo series [1]
Hogshooter sand [1] (subsurface)
Kagey sand [1] (subsurface)
Lyons limestone [1] (subsurface)
Maloney sand [1] (subsurface)
Meadows sand [1] (subsurface)
Pawnee limestone [1]
Thomas sand [1] (subsurface)
Vann sand [1] (subsurface)
Pennsylvanian (Virgil)
Ada formation [1]
Bird Creek limestone (as member of Buck Creek formation [1])
Boley conglomerate member (of Vamoosa formation)[2]
Bowhan sandstone member (of Vamoosa formation); (as member of Nelagoney formation [1])
†Buck Creek formation [1]

United States—Continued
Oklahoma—Continued
Middle Pennsylvanian
Bad Hole sand [1] (subsurface)
Barnett sand [1] (subsurface)
Bartlesville sand [1] (subsurface)
Bixier sand [1] (subsurface)
Booch sand [1] (subsurface)
Boynton sand [1] (subsurface)
Burbank sand [1] (subsurface)
Daggett sand [1] (subsurface)
Dutcher sand series [1] (subsurface)
Fields sand [1] (subsurface)
Glenn sand [1] (subsurface)
Independence gas sand [1] (subsurface)
Leidecker sand [1] (subsurface)
Mounds sand [1] (subsurface)
Oklan series [2]
Preston sand [1] (subsurface)
Rhodes sand [1] (subsurface)
Sapulpa sand [1] (subsurface)
Scott sand [1] (subsurface)
Squaw sand [1] (subsurface)
Taneha sand [1] (subsurface)
Tucker sand [1] (subsurface)
Youngstown sand [1] (subsurface)
Pennsylvanian (Des Moines)
Arnold member (of Deese formation)[1]
Bluejacket sandstone member (of Cherokee shale and of Boggy shale)[1]
Boggy shale [1]
†Broken Arrow formation [1]
Cabaniss group [2]
Calvin sandstone [1]
Cameron sandstone member (of McAlester shale)[1]
†Cavanal group [1]
Chelsea sandstone member (of Senora formation); (as lentil of Cherokee formation [1])
†Claremore formation [1]
Craig shale [1]
Crekola sandstone member (of Boggy shale)[1]
†Curl formation [1]
Deese formation [1]
Devils Kitchen member (of Deese formation)[1]
Doneley limestone member (of Savanna formation)[2]
Drywood formation or coal cycle [2] (see p. 622)
Eleventh Street limestone [2]
Elm Creek limestone (in Cherokee shale)[1]
†Enterprise sandstone (in Boggy shale)[1]
†Franks conglomerate [1]
Hartshorne sandstone [1]
Holdenville shale [1]
Hollis limestone member (of Deese formation)[2]

United States—Continued
Oklahoma—Continued
Pennsylvanian (Des Moines)—Con.
Homer limestone member (of Holdenville shale)[1]
Inola limestone member (of Boggy shale)[1]
Jolly limestone member (of Savanna sandstone)[1]
Keota sandstone member (of McAlester formation); (as member of Savanna sandstone [1])
Kennison shale member (of Cherokee formation)[1]
Krebs group [2]
Lenapah limestone [1]
Lequire sandstone member (of McAlester formation)[1]
Little Cabin sandstone member (of Cherokee formation)[1]
McAlester formation or shale [1]
McCurtain shale member (of McAlester formation)[1]
McNabb limestone (in Senora formation)[2]
†Narcissa sandstone (in Cherokee shale)[1]
Natsy member (of Deese formation)[2]
Nowata shale [1]
Okmulgee group [1]
Olympic sand member (of Senora formation)[2] (subsurface)
Oologah limestone [1]
†Poteau stage [1]
Pryor Creek shale (in Cherokee shale)[1]
Rocky Point conglomerate (in Deese formation)[2]
Russell Creek limestone member (of Senora formation)[2]
Sam Creek limestone member (of Savanna sandstone)[1]
Sasakwa limestone member (of Holdenville shale)[1]
Savanna sandstone [1] or **formation**
Senora formation [1]
Spaniard limestone member (of Savanna sandstone)[1]
†Spiro sandstone member (of Savanna formation)[1]
Stuart shale [1]
Taft sandstone member (of Boggy shale)[1]
Tamaha sandstone member (of McAlester formation); (as member of Savanna sandstone)[1]
Thurman sandstone [1]
Tiawah lime [1]
†Tobucksy sandstone [1]
Verdigris limestone [1] (member of Senora formation); (as limestone in Cherokee formation)[1]

United States—Continued
Oklahoma—Continued
Pennsylvanian (Des Moines)—Con.
Warner sandstone member (of McAlester formation)[1]
Wetumka shale [1]
Wewoka formation [1]
Wilburton group [1]
Williams member (of Deese formation)[2]
Wimer School limestone member (of Labette shale)[2]
Pennsylvanian (Atoka)
Atoka formation [1] or **series**
Blackjack School sandstone member (of Atoka formation)[1]
Chickachoc chert (as lentil of Atoka formation) [1]
†Coata sandstone member (of Atoka formation) [1]
Coody sandstone member (of Atoka formation)[1]
Dirty Creek sandstone member (of Atoka formation)[1]
Dornick Hills formation [1] (may be *Morrow* in part)
Georges Fork sandstone member (of Atoka formation)[1]
Moore formation [2] (subsurface)
Muskogee sand [1] (subsurface)
Pope Chapel sandstone member (of Atoka formation)[1]
Webbers Falls sandstone member (of Atoka formation)[1]
Lower Pennsylvanian
Ardian series [2]
Big Branch formation [1]
Bostwick member (of Dornick Hills formation)[1]
Chickasaw Creek formation [2]
Cromwell sand [1] (subsurface)
Frensley limestone [2]
Jolliff limestone member (of Dornick Hills formation)[1]
Lester limestone member (of Dornick Hills formation)[1]
Markham Mill formation [2]
Moyers formation [2]
†Muskogee group [1]
Otterville limestone member (of Dornick Hills formation)[1]
Prairie Mountain formation [2]
Pumpkin Creek limestone member (of Dornick Hills formation)[1]
Pushmataha series [2]
Sykes sand [1] (subsurface)
Tenmile Creek formation [2]
Union Valley sandstone member (of Wapanucka formation)[1]
Wesley formation [2]
Wildhorse Mountain formation [2]
Pennsylvanian (Morrow)
Barnett Hill formation [2]
Castle Rock sandstone (in Springer formation)[1]

United States—Continued
Oklahoma—Continued
Pennsylvanian (Morrow)—Con.
City Lake sandstone member (of Springer formation)[1]
Goddard shale member (of Springer formation)[2]
Jackfork sandstone [1]
Johns Valley shale [1]
Lake Ardmore sandstone member (of Springer formation)[1]
Limestone Gap shale [2]
Overbrook sandstone member (of Springer formation)[1]
Primrose sandstone member (of Springer formation)[1]
Rod Club sandstone member (of Springer formation)[1]
Round Prairie formation [2]
Springer formation [1] or **shale**
Stapp conglomerate member (of Union Valley formation)[2]
Target limestone member (of Springer formation)[2]
Wapanucka limestone [1]
Mississippian and Pennsylvanian
Stanley shale [1]
Mississippian
Ingraham gas sand [1] (subsurface)
Jefferson gas sand [1] (subsurface)
Lincolnville chert (in Boone limestone)[1]
Mayes formation [1]
Prairie Hollow member (of Prairie Mountain formation)[2]
Quapaw chert [1]
†Smithville chert lentil (in Stanley shale)[1]
Tuskahoma siliceous shale member (of Stanley formation)[2]
Welden limestone [1]
Upper Mississippian or Lower Pennsylvanian
Deaner sand [1] (subsurface)
Kingwood sand [1] (subsurface)
Lyons sand [1] (subsurface)
Upper Mississippian
Albion formation [2]
Caney shale [1]
Grand River limestone [2]
Lower Mississippian
Misener sand [1] (subsurface)
Sycamore limestone [1]
Devonian and Mississippian
Woodford chert [1] or **shale**
Devonian(?)
Marland sand [1] (subsurface)
Mollie Miller sand [1] (subsurface)
Middle Devonian
†Brushy Creek chert [1]
Lower or Middle Devonian
Pinetop chert [1]
Sallisaw formation (as sandstone [1])

United States—Continued
Oklahoma—Continued
Lower Devonian
Bois d'Arc limestone [1]
Cravatt formation [2]
Frisco limestone [1]
Haragan shale [1] **or limestone**
Kite group [2]
Silurian and Devonian
Hunton limestone [1] or **group**
Silurian
Chimneyhill limestone [1]
Henryhouse shale [1] **or limestone**
Sallisaw marble [1]
Lower Silurian
Cochrane limestone member (of Chimneyhill formation) [2]
Dillard limestone member (of Chimneyhill formation) [2]
Hawkins limestone member (of Chimneyhill formation) [2]
Keel limestone member (of Chimneyhill formation) [2]
Ordovician, Silurian, and Devonian
†Talihina chert [1]
Ordovician
Ada limestone [2]
Alden limestone [1]
Cool Creek formation [1]
Detrick sand [1] (subsurface)
Dunlap sand [1] (subsurface)
Fite limestone [1]
Hammar-Haindl limestone [1] (subsurface)
Hoopes sand [1] (subsurface)
Irish sand [1] (subsurface)
Johnson sand [1] (subsurface)
Kinter sand [1] (subsurface)
Lowery sand [1] (subsurface)
Marshall green-shale zone [1] (subsurface)
Mollman sand [1] (subsurface)
Mose Carr sand [1] (subsurface)
Olds sand [1] (subsurface)
Patterson Ranch group [2]
Pugh sand [1] (subsurface)
School Land sandstone [1] (subsurface)
Seminole sand member (of Simpson formation) [1]
Simons sand [1] (subsurface)
Stamper zone [1] (subsurface)
Webster formation [1]
Wilcox sand [1] (subsurface)
Wolf Creek dolomite [1]
Upper Ordovician
Sylvan shale [1]
Middle and Upper Ordovician
Tyner formation [1]
Viola limestone [1]
Middle Ordovician
Bromide formation [1]
Criner formation [1]
Joins formation [1]
McLish formation [1]
Oil Creek formation [1]

United States—Continued
Oklahoma—Continued
Middle Ordovician—Continued
Simpson group [1]
Tulip Creek formation [1]
West Spring Creek formation [1]
Lower or Middle Ordovician
Burgen sandstone [1]
Lower and Middle(?) Ordovician
†Stringtown shale [1]
Lower Ordovician
Burgen limestone [1]
Chapman Ranch formation [1]
Falls formation [1]
†Falls Creek formation [1]
Joins Ranch formation [1]
Kindblade formation [2]
McKenzie Hill limestone [1] or **formation**
McMichel member (of McKenzie Hill formation) [2]
†Nebo [1] (formation)
Rainy Mountain limestone [1]
Strange formation [2]
Lower(?) Ordovician
Hominy sand [1] (subsurface)
Cambrian
Blue Creek series [1]
Blue Creek Canyon group [2]
Cambrian(?)
Lukfata sandstone formation [2]
Upper Cambrian and Lower Ordovician
Arbuckle limestone [1] or **group** [1]
Turkey Mountain lime [1] (subsurface)
Upper Cambrian
Butterly dolomite [2]
Fort Sill limestone (as formation [1])
Honey Creek formation (as limestone [1])
Reagan sandstone [1]
Royer marble [1]
Signal Mountain formation [1]
Timbered Hills group [1]
Precambrian
Carlton granophyre [1]
Carlton porphyry [1]
Colbert porphyry [1]
Cold Springs granite [1]
Davidson granophyre [1]
Headquarters granite [1]
Lugert granite [1]
Meers quartzite [1]
Quanah granite [1]
Raggedy Mountain gabbro [1]
Reformatory granite [1]
Saddle Mountain porphyry [1]
Tepee Creek formation [2]
Tishomingo granite [1]
Troy granite [1]
Precambrian(?)
Spavinaw granite [1]

United States—Continued
Oregon
Quaternary
Wineglass welded tuff [2]
Recent
Alkali formation [1]
Malheur formation [1]
Summer formation [1]
Recent(?)
Crooked River formation [1]
Pleistocene
Cascades formation [1]
Cascan formation [2]
Chewaucan formation [1]
Clackamas gravels [2]
Coquille formation [2]
Fossil Lake formation [1]
Herman Creek lava [1]
Lacomb gravels [2]
Leffler gravels [2]
Linn gravels [2]
Llano de Oro formation [1]
Newport formation [1]
Olallie lavas [2]
Portland delta gravels [1]
Rocky Butte volcanics [2]
Santiam basalts [2]
Tualatin terrace gravels [2]
Wildhorse formation [1]
Willamette silt [2]
Pleistocene, upper, or Recent
Diamond formation [1]
Pleistocene, upper
Elk River beds [1]
Tertiary
Dorena welded tuff [2]
Tertiary, upper, and Pleistocene
Arlington lake beds [1]
Shutler formation [1]
Tertiary, upper
Black Crater formation [1]
Little Alvord Creek rhyolite [1]
Tertiary, upper(?)
Fern Ridge tuffs [1]
Pliocene and Pleistocene
Battle Ax basalts [2]
Minto basalts [2]
Mount Hood lavas [2]
Rattlesnake formation [1]
Pliocene
Coos conglomerate [1]
Dalles formation [1]
Danforth formation [1]
†Deschutes formation [1]
Ironside beds [1]
Madras formation [1]
Molalla formation [2]
Mount Jefferson formation [1]
Outerson basalts [2]
†Pelton basalt member (of Deschutes formation) [1]
Silver Lake group [1]
Steens Mountain formation [1]
Troutdale formation [1]
Underwood Mountain lava [2]
Yakima group [1]

United States—Continued
Oregon—Continued
Pliocene(?)
Empire formation [1]
Harney formation [1]
Pliocene, upper, or Pleistocene, lower
Boring agglomerate [2]
Boring lava [2]
Portland Hills silt member (of Troutdale formation) [2]
Pliocene, middle
Port Orford formation [2]
Steens basalt [1]
Pliocene, lower
Alvord Creek formation (as beds [1])
Pike Creek volcanic series [1]
Steens Mountain volcanic series (as andesitic series [1])
Miocene and Pliocene(?)
Grassy Mountain basalt [1]
Miocene and Oligocene(?)
†Oregon beds [1]
Miocene
†Astoria group [1]
†Astoria sandstone [1]
Blackjack basalt [1]
†Cape Blanco beds [1]
Columbia River basalt [1]
Coriba formation [1]
Cottonwood beds [1]
Glass Buttes series [1]
Owyhee basalt [1]
Sardine series [2]
Stayton lavas [1]
Willamette group [1]
Miocene(?)
Dooley rhyolite breccia [1]
Miocene, upper, or Pliocene
Hood River conglomerate [1]
Miocene, upper
Mascall formation [1]
Miocene, middle or upper
Halls diorite porphyry [2]
Rhododendron formation [1]
Miocene, middle
Astoria formation (as shale [1])
Trout Creek formation [1]
Miocene, lower
Alvord formation [1]
Nye mudstone (as shale [1])
Oligocene and Miocene(?)
Cascadia formation [1]
Oligocene
Eugene formation [1]
Illaho formation [1]
Mehama volcanics [1]
†Oakland limestone [1]
Pittsburg Bluff formation (as sandstone [1])
Oligocene to Eocene(?)
Breitenbush series [2]
Oligocene, upper, or Miocene, lower
Bridge Creek shale [1]
Butte Creek beds [2]
†Warrendale formation [1]

United States—Continued
Oregon—Continued
Oligocene, upper, to Miocene, lower
Scio beds [2]
Oligocene, upper
Rocky Point beds [2]
Scappoose formation [2]
Yaquina sandstone (as formation [1])
Oligocene, middle and upper, and Miocene
John Day formation [1]
Oligocene, middle
Tunnel Point sandstone (as beds [1])
Eocene
Arago group [1]
Clarno formation [1]
Comstock formation [2]
Helmick formation [2]
Lorane shale member (of Spencer formation) [2]
†Pulaski formation [1]
Spencer formation [1]
Tillamook volcanic series [2]
Tyee sandstone [1] or **formation**
Wilbur tuff lentils [1]
Yamhill formation [2]
Eocene(?)
Coyote formation [1]
Trail Crossing basalt [1]
Wagontire formation [1]
Eocene, upper, to Miocene, lower
Western Cascade volcanic series [2]
Eocene, upper, and Oligocene, lower
Bastendorff shale (as Bassendorf shale [1])
Calapooya formation [1]
Fisher formation [1]
Keasey shale [1] or **formation**
Nehalem formation [2]
Toledo formation [1]
Eocene, upper
Coaledo formation [1]
Goble volcanic series [2]
Moody shale member (of Toledo formation) [1]
Nestucca formation [2]
Eocene, middle
Burpee formation [1]
Coffin Butte volcanics [2]
Eocene, lower
Kings Valley siltstone member (of Siletz River volcanic series) [2]
Siletz River volcanic series [2]
Umpqua formation [1]
Mesozoic or older
Pueblo formation [1]
Cretaceous
Henley beds [1]
Phoenix beds [1]
Rogue River group [1]
Upper Cretaceous
Hornbrook formation [2]

United States—Continued
Oregon—Continued
Lower Cretaceous
†Dillard series [1]
Whitsett limestone lentils (in Myrtle formation) [1]
Pre-Cretaceous
Colebrooke schist [1]
Upper Jurassic and Lower Cretaceous
Myrtle group (as formation [1])
Jurassic(?)
Craggy gneiss [1]
Upper Jurassic
Dothan formation [1]
Galice formation [1]
Rogue formation [2]
Trowbridge shale [2]
Upper Jurassic(?)
Lonesome formation [2]
Middle Jurassic
Colpitts group [2]
Hyde formation [2]
Izee group [2]
Snowshoe formation [2]
Warm Springs formation [2]
Weberg formation [2]
Lower Jurassic
Donovan formation [2]
Mowich group [2]
Nicely shale [2]
Robertson formation [2]
Silvies River beds [1]
Suplee formation [2]
Post-Triassic (pre-Tertiary)
Haines granite [1]
Triassic(?)
Applegate group [2]
Huntington series [1]
Upper Triassic
†Eagle Creek formation [1]
Hurwal formation [2]
Martin Bridge formation [1]
Permian
Clover Creek greenstone [1]
Coyote Butte formation [2]
Pre-Carboniferous(?)
Burnt River schist [1]
Pennsylvanian
Spotted Ridge formation [2]
Pennsylvanian(?)
Elkhorn Ridge argillite [2]
Mississippian
Coffee Creek formation [1]
Devonian(?)
May Creek formation [1] or **schist**
Precambrian
Bald Mountain gneiss [1]
Pennsylvania
Pleistocene
Allegany drift [1]
Big Bend gravel [1]
Clarendon gravel [1]
Conewango clay [1]
Indian Hollow sands [1]

United States—Continued
Pennsylvania—Continued
Pleistocene—Continued
Lake Monongahela deposits [1]
Philadelphia brick clay [1]
Philadelphia red gravel [1]
University gravel [1]
Pleistocene (Illinoian)
Carmichaels formation [1]
†Packer clay [1]
Tertiary(?)
Mont Alto lignite [1]
Pliocene(?)
Branchtown clay [1]
Bryn Mawr gravel [1]
Triassic
Robeson conglomerate [2]
South Valley limestone [1]
Triassic(?)
Spitzenberg conglomerate [1]
Upper Triassic
Arendtsville fanglomerate lentil (in Gettysburg shale)[1]
Brunswick conglomerate [1]
Conewago conglomerate member (of Gettysburg shale) (G. W. Stose and A. I. Jonas, 1939, Penn. Geol. Survey Bull. C-67, p. 107, 115, 118)
Conewago group [1]
Elizabeth Furnace conglomerate member (of Gettysburg shale)[1]
Gettysburg shale [1]
Graters member (of Brunswick formation)[1]
†Gwynedd shale [1]
Heidlersburg sandstone member (of Gettysburg shale)[1]
Lansdale shale [1]
†Lewisburg group [1]
†Lisbon group [1]
Manchester group [1]
New Oxford formation [1]
Norristown sandstone [1]
†Norristown shale [1]
Perkasie shale [1] **member** (of Brunswick formation)
†Phoenixville shale [1]
Pottstown shale [1]
Santatoga member (of Brunswick formation)[1]
Smith Corner member (of Lockatong formation)[2]
Paleozoic
†Appalachian group or series [1]
Lower Paleozoic(?)
Marburg schist [2]
Peters Creek quartzite (as schist [1])
Wissahickon schist [1] or **formation** [1]
Permian (see also *Pennsylvanian and Permian*)
Blacksville limestone (in Washington formation) [1]
Brier Hill sandstone [2]

United States—Continued
Pennsylvania—Continued
Permian—Continued
Claysville limestone member (of Greene formation) [1]
Colvin limestone member (of Washington formation) [1]
Davistown sandstone [2]
Donley limstone member (of Greene formation) [1]
Dunkard group [1]
Dunlap sandstone [2]
Fish Creek sandstone member (of Greene formation) [1]
Franklin limestone (in Washington formation) [1]
Gilmore sandstone member (of Greene formation) [1]
Greene formation [1]
Jackson limestone (in Greene formation) [1]
Jollytown limestone member (of Washington formation) [1]
Jollytown sandstone (in Washington formation) [1]
Lower Washington limestone member (of Washington formation) [1]
Martinsburg limestone (in Washington formation) [1]
Middle Washington limestone member (of Washington formation) [1]
Mount Morris limestone member (of Washington formation) [1]
Nineveh limestone member (of Greene formation) [1]
Nineveh sandstone member (of Greene formation) [1]
Prosperity limestone member (of Greene formation) [1]
Rogersville limestone (in Greene formation) [1]
Taylor sandstone)in Greene formation) [1]
Taylortown limestone (in Washington formation) [1]
Tenmile limestone (in Greene formation) [1]
Upper Washington limestone member (of Washington formation) [1]
Washington formation [1]
Washington sandstone member (of Washington formation) [1]
Waynesburg sandstone member (of Washington formation) [1]
Windy Gap limestone member (of Greene formation) [1]
Woodglen limestone [2]
Carboniferous (see also *Devonian or Carboniferous*)
Broad Top series [1]
Pennsylvanian and Permian
†Greene County group [1]
†Monongahela River coal series [1]

United States—Continued
Pennsylvania—Continued
Pennsylvanian
Alto coal group (in Pottsville formation) [1]
Bakerstown sandstone (in Conemaugh formation) [1]
Barton group (in Conemaugh formation) [1]
Beaver River formation [1]
Berlin group (in Conemaugh formation) [1]
†Berlin limestone (in Conemaugh formation) [1]
Big Dunkard sand [1] (subsurface)
Blue Ball fire clay (in Allegheny formation) [1]
Bolivar sandstone (in Allegheny formation) [1]
Brookville clay (in Allegheny formation) [1]
†Browntown sandstone (in Monongahela formation) [1]
Brush Creek clay or fire clay (in Conemaugh formation) [1]
Brush Creek red bed (in Conemaugh formation) [1]
Brush Creek sandstone (in Conemaugh formation) [1]
Buffalo formation (in Conemaugh formation) [1]
Buffalo shale (in Conemaugh formation) [1]
Campbells Ledge black slate (in Pottsville formation) [1]
Canal limestone [1]
Church Run conglomerate [1]
Clarion clay (in Allegheny formation) [1]
†Clarion coal group (in Allegheny formation) [1]
Clermont group (in Allegheny formation) [1]
Clermont limestone (in Allegheny formation) [1]
Coleman limestone (in Conemaugh formation) [1]
†Colorado conglomerate [1]
Connellsville member (of Conemaugh formation) [1]
Connellsville red bed (in Conemaugh formation) [1]
Darlington underclay (in Allegheny formation) [1]
Dunkard sand [1] (subsurface)
Duquesne limestone (in Conemaugh formation) [1]
†Ebensburg sandstone member (of Conemaugh formation) [1]
Elk Lick clay [1]
Fagundas conglomerate [1]
Fishpot limestone member (of Monongahela formation) [1]
Foys limestone (in Allegheny formation) [1]
Freeport clay [1]

United States—Continued
Pennsylvania—Continued
Pennsylvanian—Continued
†Freeport coal group (in Allegheny formation) [1]
†Freeport limestone member (of Allegheny formation) [1]
Freeport sandstone member (of Allegheny formation) [1]
Gallitzin limestone (in Conemaugh formation) [1]
†Garland conglomerate (in Pottsville formation) [1]
Gourd Head Run clay (in Conemaugh formation) [1]
Gourdhead Run limestone (in Conemaugh formation) [1]
Grafton formation [1]
Grafton member (of Conemaugh formation) [1]
†Great Bend conglomerate [1]
Gurnee formation (in Pottsville formation) [1]
Harshberger limestone (in Conemaugh formation) [1]
Hillman limestone [1]
Hurry-up sand [1] (subsurface)
Indian sand [1] (subsurface)
†Johnson Run sandstone (in Pottsville formation)[1]
Johnstown iron ore (in Conemaugh formation) [1]
Kane limestone (in Allegheny formation) [1]
†Kinzua Creek sandstone (in Pottsville formation) [1]
Kittanning coal group (in Allegheny formation) [1]
Kittanning fire clay (in Allegheny formation) [1]
Kittanning shale (in Allegheny formation) [1]
†Ligonier sandstone [1]
Little Dunkard sand [1] (subsurface)
†Little Pittsburg limestone (in Conemaugh formation) [1]
Little Pittsburg member (in Conemaugh formation) [1]
†Lower Freeport clay (in Allegheny formation) [1]
†Lower Freeport limestone member (of Allegheny formation) [1]
†Lower Freeport sandstone (in Allegheny formation) [1]
†Lower Kittanning limestone (in Allegheny formation) [1]
Lower Mercer fire clay (in Pottsville formation) [1]
Lower Mercer iron shales (in Pottsville formation) [1]
†Lower Mercer limestone (in Pottsville formation) [1]
†Lykens series [1]
Mahoning fire clay (in Conemaugh formation) [1]

United States—Continued
Pennsylvania—Continued
Upper Pennsylvanian—Continued
Elk Lick limestone member (of Conemaugh formation) [1]
Lower Pittsburgh limestone member (of Conemaugh formation) [1]
Mahoning sandstone member (of Conemaugh formation) [1]
Monongahela formation [1]
Pittsburgh sandstone member (of Monongahela formation) [1]
Redstone limestone member (of Monongahela formation) [1]
Saltsburg sandstone member (of Conemaugh formation) [1]
Sewickley sandstone member (of Monongahela formation) [1]
Summerhill sandstone member (of Conemaugh formation) [1]
Uniontown limestone member (of Monongahela formation) [1]
Uniontown sandstone member (of Monongahela formation) [1]
Upper Pittsburgh limestone member (of Conemaugh formation) [1]
Waynesburg limestone member (of Monongahela formation) [1]
Wilmore sandstone member (of Conemaugh formation) [1]
Middle Pennsylvanian
Allegheny formation [1]
Bolivar fire clay (in Allegheny formation) [1]
Butler sandstone member (of Allegheny formation) [1]
Clarion sandstone member (of Allegheny formation) [1]
Homewood sandstone member (of Pottsville formation) [1]
Johnstown limestone member (of Allegheny formation) [1]
Kittanning sandstone member (of Allegheny formation) [1]
Llanfair sandstone member (of Allegheny formation) [1]
Lower Clarion clay (in Allegheny formation) [1]
Lower Kittanning clay (in Allegheny formation) [1]
Mercer shale member (of Pottsville formation) [1]
Upper Clarion clay (in Allegheny formation) [1]
Upper Kittanning clay [1]
Vanport limestone member (of Allegheny formation) [1]
Worthington sandstone member (of Allegheny formation) [1]
Lower and Middle Pennsylvanian
Pottsville formation or group [1]
Lower Pennsylvanian
Connoquenessing sandstone member (of Pottsville formation) [1]

United States—Continued
Pennsylvania—Continued
Lower Pennsylvanian—Continued
Sharon conglomerate member (of Pottsville formation) [1]
Sharon shale member (of Pottsville formation) [1]
Mississippian and Pennsylvanian
†Allegheny River coal series [1]
†Shenango series [1]
Mississippian (see also *Devonian or Mississippian; Upper Devonian and Mississippian;* and *Upper Devonian or Mississippian*)
†Allegheny group [1]
Bartholomew siltstone member (of Orangeville shale) [1]
Benezette limestone member (of Pocono formation) [1]
Big Injun group [1] (subsurface)
Bitter Rock sand [1] (subsurface)
Burgoon group [1]
Burgoon sandstone member (of Pocono formation) [1]
Byham limestone member [1]
Cameron red shale member [1]
Carl sandstone member (of Shenango formation) [2]
†Conneaut limestone member [1]
Corry sandstone [1]
Crawford series or subseries [1]
Cussewago sandstone [1]
Cussewago stage or monothem [1]
Custards shale member (of Meadville stage) [1]
French Creek limestone member (of Meadville stage) [1]
Griswold conglomerate (in Pocono formation) [1]
Harvest Home shale member [1] (of Meadville stage)
Hempfield shale member [1] (of Shenango monothem)
Hosmer sand [1] (subsurface)
Hungry Run sandstone member (of Orangeville shale) [2]
Johnsonburg sandstone [1]
Loyalhanna limestone [1]; **limestone member** (of Greenbrier limestone) in Maryland and West Virginia
Mauch Chunk shale [1] or **formation**
†Meadville group [1]
Meadville shale member (of Cuyahoga formation) [1]
Mount Morris sand [1] (subsurface)
Murdockville sand [1] (subsurface)
Murrysville sand [1] (subsurface)
Orangeville shale member (of Cuyahoga formation) [1]; **shale** in Ohio
Papoose sand [1] (subsurface)

United States—Continued
Pennsylvania—Continued
Mississippian—Continued
Patton shale member (of Pocono formation) [1]
Peters Mountain sandstone (in Pocono formation) [1]
†Pithole grit [1]
Pocono formation, group [1] or **sandstone**
Riddlesburg shale member (of Pocono formation) [1]
Roaring Branch sandstone (in Pocono formation) [1]
Roaring Branch shales (in Pocono formation) [1]
Salvation sand [1] (subsurface)
Schreyfogels limestone [1]
Sharpsville formational suite [1]
Sharpsville sandstone member (of Cuyahoga formation)[1]; **sandstone** in Ohio
Shaws sandstone member [1]
Shellhammer Hollow formation [2]
†Shenango group [1]
Shenango sandstone [1]
Shenango shale [1]
Slippery Rock sand [1] (subsurface)
Smiths Ferry sand [1] (subsurface)
Squaw sand [1] (subsurface)
Thorn Creek gas sand [1] (subsurface)
Trough Creek limestone member (of Mauch Chunk formation) [1]
West Mead limestone member [1]
Lower Mississippian
Chestnut Ridge sandstone [2]
Cove Mountain member (of Pocono formation) [2]
Hopwood conglomerate [2]
Lick Run conglomerate [2]
Linderman sandstone [2]
Pine Knob sandstone [2]
Second Mountain member (of Pocono formation) [2]
Mississippian and Devonian(?)
†Crawford shale [1]
Oil Lake group [1]
Devonian or Carboniferous
Amity shale [1]
Armenia limestone lentil (of Oswayo formation) [1]
Bimber Run conglomerate member [1]
Blue Monday sand [1] (subsurface)
Boulder sand [1] (subsurface)
Buchanan Hill conglomerate [1]
Clintonville oil sand [1] (subsurface)
Cobham conglomerate member [1]
Columbia Hill oil rock [1] (subsurface)
Conewango formation [1]
Cussewago shales [1]
Dutchmans conglomerate lens [1]

United States—Continued
Pennsylvania—Continued
Devonian or Carboniferous—Con.
East Kane shale member [1]
Elkland parvafacies [1]
†Glade sandstone [1]
Gordon sand [1] (subsurface)
Hayfield limestone [1]
Hayfield shale [1]
Hickory sand [1] (subsurface)
Hosmer conglomerate [1]
Kushequa shale member [1]
Littles Corner limestone member [1] (of Hayfield shale)
†Ludlow conglomerate member [1] (of Knapp formation)
Millers sandstone [1]
Millers Cliff conglomerate [1]
Potter parvafacies [1]
†Ridgway shale member [1] (of Knapp formation)
Roystone coquinite member [1]
Saegerstown shale [1]
Shannopin sand [1] (subsurface)
Smethport magnafacies [1]
†Smethport shale member (of Knapp formation) [1]
Snee sand [1] (subsurface)
Stony Lonesome bed [1]
Tanners Hill quarry rock (in Conewango formation) [1]
†Tanners Hill red (in Conewango formation) [1]
Tidioute shale member [1]
Tioga magnafacies [1]
†Tunangwant conglomerate [1]
Venango group,[1] stage,[1] or monothem [1]
†Watson sandstone member [1] (of Cattaraugus formation)
Wetmore conglomerate member [1]
Woodcock sandstone [1]
Wrightsville conglomerate [1]
Devonian or Mississippian
Gantz sand [1] (subsurface)
Marvin Creek limestone [1]
Pine Run sand [1] (subsurface)
Devonian (see also *Silurian and Devonian*)
Brodhead member (of Marcellus formation)[2]
Buttermilk Falls limestone [2]
Campbell Run sand [1] (subsurface)
Elk sand group [1] (subsurface)
Hanley sandstone (in Cattaraugus formation)[2]
Juniata coal measures [1]
Juniata River series [1]
Lytle sand [2]
Queen sand [1] (subsurface)
Red Valley sand [1] (subsurface)
Tiona sand [1] (subsurface)
Devonian(?)
Edensburg oil sandstone [1] (subsurface)

United States—Continued
Pennsylvania—Continued
Upper Devonian and Mississippian
Oil Creek Lake group [1]
Upper Devonian or Mississippian
Cherry Ridge conglomerate [1]
Cherry Ridge group [1]
Cherry Ridge limestone [1]
Cherry Ridge red shale [1]
Cherry Ridge sandstone [1]
Cherry Ridge shales [1]
Cleveland magnafacies [1]
Coudersport member (of Cattaraugus formation) [1]
†Devils Den sandstone [1]
Dyberry glomerate [1]
Elk Mountain sandstone [1]
Elk Mountain transition group [1]
LeBoeuf conglomerate [1]
North Warren shale member [1]
Pimple Hill conglomerate [1]
†Wild Cat coquinite [1]
Upper Devonian
Allegheny sand [1] (subsurface)
Allegrippis sandstone member (of Chemung formation) [1]
Analomink red shale [1]
Atwell sand [1] (subsurface)
Balltown oil sand [1] (subsurface)
Barrett sand [1] (subsurface)
Bayard sand [1] (subsurface)
Beatty sand [1] (subsurface)
Big Bend facies and magnafacies [1]
Blossburg formation [1]
Blue Jay oil sand [1] (subsurface)
Bradford oil sand group [1] (subsurface)
Brallier shale [1]
Brandt sandstone (in Kingsley member of Wellsburg monothem) [2]
Brodhead Creek member (of Tully formation) [2]
Burket black shale member (of Harrell shale) [1]
†Burlington limestone (in Chemung formation) [1]
†Cascade sandstone (in Chemung sandstone) [1]
Cascade Creek sandstone (in Chemung formation) [1]
Catawissa reds [1]
Chagrin magnafacies [1]
Cherry Grove sand [1] (subsurface)
Clarendon sand [1] (subsurface)
Conneaut group [1]
Cooper sand [1] (subsurface)
Cotton formation [2]
Crandall Hill sand [1] (subsurface)
Damascus red shale [1]
Darling oil sand [1] (subsurface)
Deer Lick sand [1] (subsurface)
Delaware flags [1]
Delaware River flags [1]
Dellville sandstone [1]

United States—Continued
Pennsylvania—Continued
Upper Devonian—Continued
Drinker Creek sandstone member (of Lanesboro formational suite) [2]
Elizabeth sand [1] (subsurface)
Fall Creek conglomerate lentil (of Chemung formation) [1]
Flatiron coquinite member (of Riceville formation) [2]
Flat Run sand [1] (subsurface)
Fort Littleton formation [1]
Franklindale limestone lentil (of Chemung formation) [1]
Garfield sand [1] (subsurface)
Garland sand [1] (subsurface)
Gartland oil sand [1] (subsurface)
Germania formation [2]
Girard shale member (of Chemung formation) [1]
Glade sand [1] (subsurface)
Great Bend limestone (in Chemung formation) [1]
Hague gas sand [1] (subsurface)
Harrell shale [1]
Harrisburg Run sand [1] (subsurface)
Haskell sand [1] (subsurface)
Hauns Bridge group [1]
Honesdale sandstone group (in Catskill formation) [1]
Howard Quarry sandstone [2]
Irvineton parvafacies [1]
Jumonville sandstone [2]
Kane sand [1] (subsurface)
Kingsley red shale member (of New Milford formation) [1]
Kings Mill sandstone [1]
Kings Mill shales [1]
Lackawaxen conglomerate [1]
Lanesboro member (of New Milford formation) [1]
Lehighton member (of Tully formation) [2]
Lewis Run sand [1] (subsurface)
Losh Run shale [1]
Luthers Mills coquinite [1]
McDonald sand [1] (subsurface)
McKean group [1] (subsurface)
Mansfield red beds (in Chemung formation) [1]
Maple Summit sandstone [2]
Montrose red shale (in Catskill formation) [1]
Montrose sandstone [1]
Moosic [1] (formation)
Mount Pleasant conglomerate [1]
Mount Pleasant red shale (in Catskill formation) [1]
New Milford group (in Catskill formation) [1]
Newport limestone [1]
Newport shales and sandstones [1]
Nineveh [1] (sand) (subsurface)

United States—Continued
Pennsylvania—Continued
Upper Devonian—Continued
Owego shale member (of Cayuta monothem) [2]
Paupack sandstone (in Catskill formation) [1]
Paupack shales (in Catskill formation) [1]
Piney Ridge sandstone member (of Chemung formation) [1]
Porter sand [1] (subsurface)
Riceville shale (as member of Chemung formation[1])
Rocky Run conglomerate [1]
Roulet conglomerate [1]
Rush formation [1]
Rush member (of Tully limestone) [1]
Saxton conglomerate member (of Chemung formation) [1]
Saxton shale (in Catskill formation) [1]
Sheffield gas or oil sand [1] (subsurface)
Shohola formation [1]
Skinners Eddy limestone (in Catskill formation) [1]
Sliverville sand [2] (subsurface)
Smethport oil sand [1] (subsurface)
Speechley sand [1] (subsurface)
Starrucca sandstone [1]
Starrucca shale (in Catskill or Chemung formation) [1]
Stoneham oil sand [1] (subsurface)
Stony Brook beds (in Chemung formation) [1]
†sub-Blairsville red shale member (of Chemung formation) [1]
Sugar Run sand [1] (subsurface)
Susquehanna series [1]
†Towanda sandstone (in Chemung formation) [1]
Trimmers Rock sandstone [1]
Venago formation [1]
Warren oil sand group [1]
Watering Trough shale [2]
Weissport member (of Tully formation) [2]
Windfall sand [1] (subsurface)
Youghioheny sandstone [2]
Middle Devonian
Beaver Dam black shale member (of Needmore shale) [2]
Bowmanstown chert [2]
Chaneysville sandstone member [1] (of Manhantango formation)
Fort Hunter sandstone member (of Manhantango formation) [2]
Frame shale member (in Hamilton group) [1]
Gander Run shale member (in Hamilton group) [1]
Knobsville continental beds [1]
Ludlow sandstone [1]

United States—Continued
Pennsylvania—Continued
Middle Devonian—Continued
Mahanoy black shale member [1] (of Marcellus formation)
Mahantango formation [1]
Mexico sandstone member [1] (of Marcellus formation)
Montebello sandstone (in Hamilton formation) [1]
Needmore shale [2]
Palmerton sandstone [2]
Perry formation [1]
Peru limestone [1]
Rockville member (of Skaneateles formation) [1]
†Selingsgrove lower limestone [1]
†Selingsgrove lower sandstone [1]
†Selingsgrove upper limestone [1]
†Selingsgrove upper sandstone [1]
Shamokin black shale member [1] (of Marcellus formation)
Turkey Ridge sandstone member [1] (of Marcellus formation)
Lower or Middle Devonian
Peru sandstone [1]
Lower Devonian
Clarks Mill beds [1]
Fallings Springs sandstone member (of New Scotland formation) [2]
Licking Creek limestone [2]
Mandata formation [2]
Milesburg formation [1]
†Selingsgrove shale [1]
Stormville conglomerate [1]
Stormville hydraulic cement bed or water lime [1]
Stormville limestone [1]
Stormville sandstone [1]
Stormville shale [1]
Silurian and Devonian
Lewistown limestone [1]
Silurian
Aquashicola formation [1]
Barree limestone [1]
Barree shales [1]
Bridgeport sandstone (in Wills Creek shale)[1]
Croasdale quartzite [1]
†Howard sandstone member (of Tuscarora sandstone)[1]
Landisburg sandstone [1]
Logan limestone [1]
Logan shale [1]
Lost Creek limestone [1]
McCoytown sandstone [1]
Mifflintown limestone [1]
Poxino Island limestone (in Wills Creek shale)[1]
Redstone Ridge group [1]
Silurian(?)
Inwood sandstone [1]
Upper Silurian
Bloomfield sandstone [1]
Bloomsburg red beds [1]

United States—Continued
Pennsylvania—Continued
Upper Silurian—Continued
Bossardsville limestone (as Bossardville limestone [1])
†Poxino Island shale [1]
Middle Silurian
Center iron sandstone (in Clinton formation)[1]
Keefer sandstone member (of Clinton formation)[1]
Lakemont formation [1]
Swatara iron sandstone (in Clinton formation)[1]
Lower Silurian
Castanea sandstone [1]
Tuscarora sandstone [1] or **quartzite** [1]
Ordovician (see also *Cambrian and Ordovician*)
Cattasauqua limestone [1]
Cocalico shale [1]
†Cove limestone [1]
†Cove slate [1]
Dauphin shale [2]
Jonestown beds or formation [2]
Lost Run conglomerate [2]
†Nittany Valley limestone [1]
Paxton Creek conglomerate (in Martinsburg shale [2]
West Fairview member (of Martinsburg shale)[2]
Ordovician(?) or Cretaceous(?)
Conshohocken clay [1]
Ordovician(?)
Peach Bottom slate [1]
Upper Ordovician
†Bald Eagle conglomerate [1]
Bangor beds (in Martinsburg shale)[1]
Juniata formation [1]
Pen Argyl beds (in Martinsburg shale)[1]
Reedsville shale [1]
Shochary sandstone member (of Martinsburg formation)[2]
†Tyrone conglomerate [1]
Middle Ordovician
Antes shale [2]
Benner limestone [2]
Chambersburg limestone [1]
Clover member (of Loysburg formation)[2]
Coburn formation [1]
Curtin limestone [2]
Doylesburg member (of Shippensburg formation)[2]
Eyer member (of Hatter formation)[2]
Fannettsburg member (of Shippensburg formation)[2]
Grazier member (of Hatter formation)[2]
Greencastle bed [1]
Hatter limestone [2]

United States—Continued
Pennsylvania—Continued
Middle Ordovician—Continued
Hershey limestone [2]
Hostler member (of Hatter formation)[2]
Housum member (of Mercersburg formation)[2]
Kauffman member (of Mercersburg formation)[2]
Leesport limestone [1]
Lehigh limestone [1]
Mercersburg formation [2]
Myerstown limestone [2]
Nagany limestone [2]
Nazareth cement rock [1]
Nealmont limestone [2]
Nisky limestone [1]
Oak Hall member (of Nealmont limestone)[2]
Pinesburg member (of Shippensburg formation)[2]
Rodman limestone [1]
Salona formation [1]
Shippensburg formation [2]
Snyder member (of Benner limestone)[2]
Stover member (of Benner limestone)[2]
Valley View member (of Curtin limestone)[2]
Lower Ordovician
Axemann limestone [1]
Bellefonte dolomite [1]
Carlim limestone [1]
Center Hall formation [1]
Coplay limestone [1]
Larke dolomite [1]
Lemont argillaceous limestone member (of Carlim limestone)[1]
Loysburg formation [1]
Mines dolomite [1]
Nittany dolomite [1]
Stonehenge limestone (as member of Beekmantown limestone [1])
Valentine formation [1]
Lower Ordovician and Cambrian(?)
Conestoga limestone [1]
Cambrian and Ordovician
Annville limestone [1]
Codorus limestone [1]
†Lancaster limestone [1]
†Valley limestone [1]
†York limestone [1]
Cambrian
Blue Ridge conglomerates [1]
Mountain Creek rock [1]
South Mountain slates [1]
Street Road limestone [1]
Upper Cambrian
Allentown limestone [1]
†Buffalo Run limestone [1]
Conococheague limestone [1]
†Cornwall slates [1]

United States—Continued
Pennsylvania—Continued
Upper Cambrian—Continued
Gatesburg formation [1]
Limeport limestone [2]
Ore Hill limestone member (of Gatesburg formation) [1]
Stacy dolomite member (of Gatesburg formation) [1]
Warrior limestone [1]
Middle and Upper Cambrian
Elbrook limestone[1], **dolomite,** or **formation**
Middle Cambrian
Pleasant Hill limestone [1]
Lower and Middle (?) Cambrian
Leithsville formation [1]
Lower Cambrian
Chickies quartzite [1] and **slate**
†Edgehill quartzite [1]
Hellam conglomerate member (of Chickies quartzite) [1]
†Hellam quartzite [1]
Kinzers formation [1]
Ledger dolomite [1]
Montalto quartzite member (of Harpers schist) [1]
†North Valley Hill sandstone [1]
†Reading sandstone [1]
South Mountain quartzite [1]
Tomstown dolomite [1]
†Valley Forge quartzite [1]
Vintage dolomite [1]
Waynesboro formation [1]
White Spot sandstone [1]
†York schist [1]
†York shale [1]
†York County hydromica slates [1]
Precambrian and Lower Cambrian
†Carmargo schist [1]
Precambrian
†Arrowmink arkosic gneiss [1]
†Avondale limestone [1]
†Avondale series [1]
†Buck Ridge gneiss [1]
†Chestnut Hill schists and gneisses [1]
Doe Run limestone [1]
†Fairmount gneiss [1]
Frankford gneiss [1]
Furnace Creek quartz diorite gneiss [2]
Kennett limestone [1]
Kennett rock [1]
Lafayette serpentine [1]
Manayunk mica schists and gneisses [1]
Moravian Heights formation [2]
†Octoraro schist [1]
Oley Valley slates [1]
†Overbrook granite gneiss [1]
†Philadelphia mica schists and gneisses [1]
Pickering gneiss [1]
†South Valley Hill slates and mica schists [1]

United States—Continued
Pennsylvania—Continued
Precambrian—Continued
†State line serpentine [1]
†Toughkenamon rock [1]
Tucquan gneiss [1]
†Vera Cruz graphite schist [1]
Precambrian(?)
Chester County gneiss [1]
Age(?)
Lima granite [2]
Ridley Park granodiorite [2]
Springfield granodiorite [2]
Wiltons Run [1] (limestone belt)
Rhode Island
Pleistocene
Barrington clays [1]
†Mohegan Bluff beds or series [1]
Carboniferous or Post-Carboniferous
Boston Neck granite [1]
Westerly granite [1]
Carboniferous
†Aquidneck series or shales [1]
Coasters Harbor Island arkose [1]
Conanicut arkose [1]
Diamond Hill felsite [1]
Kingstown series [1]
†Millers River conglomerate [1]
Natick arkose [1]
†Newport conglomerate [1]
Paradise conglomerate [1]
Portsmouth conglomerate [1]
Rose Island arkose [1]
Sachuest arkose [1]
Slate Hill shale [1]
Tiverton arkose [1]
Woonsocket conglomerate [1]
†Woonsocket Basin series [1]
Pre-Carboniferous
Metacom granite-gneiss [2]
Pennsylvanian and Permian(?)
†Narragansett Basin series [1]
Pennsylvanian
Cranston beds [1]
†Pawtucket formation [1]
Pawtucket shale [1]
Purgatory conglomerate [1]
Rhode Island formation [1]
†Sakonnet sandstone [1]
Sockanosset sandstone [1]
Mississippian(?)
Cowesett granite [2]
East Greenwich group (as granite group [1])
Maskerchugg granite [2]
Spencer Hill volcanics [2]
Devonian or older
Grant Mills granodiorite (as granite [1])
Devonian(?) or older
Esmond granite [2]
Scituate granite gneiss [2]
Precambrian
†Ashton schists [1]
Blackstone series [1]
Cumberland quartzite [1]

United States—Continued
Rhode Island—Continued
Precambrian—Continued
Little Compton shales [1]
Newport Neck shale [1]
†Smithfield limestone member (of Marlboro formation) [1]
Precambrian(?)
Absalona formation [2]
Albion schist member (of Westboro quartzite) [1]
Hunting Hill greenstone [2]
Mussey Brook schist [2]
Nepsachuck gneiss [2]
Sneech Pond schist [2]
Woonasquatucket formation [2]
South Carolina
Pleistocene
†Accabee gravels [1]
†Bohicket marl sands [1]
†Hampton clays [1]
Horry clay [2]
Myrtle Beach peat [2]
†Sea Island sands or loams [1]
†Simmons Bluff beds [1]
†Tenmile sands [1]
†Wadmalaw shell marl or phase [1]
†Wando clays and sands [1]
Pleistocene and Pliocene(?)
†Cheraw cobbles [1]
Pliocene
†Goose Creek marl or phase [1]
Pliocene, lower
Waccamaw formation [1]
Miocene
†Combahee shale [1]
†Salkehatchie marl or phase [1]
Miocene, upper
†Peedee marl [1]
†Raysor marl [1]
Miocene, lower
†Edisto marl [1]
Eocene
†Carolinian bed [1]
Eocene, upper, or Oligocene
Cooper marl [1]
†Kings Creek silex or phase [1]
Eocene, upper
†Ashley marl [1]
Barnwell sand [1]; **formation** in Georgia
†Congaree clay member [1] (of McBean formation)
†Cooper-Ashley beds [1]
†Mount Hope marl or phase [1]
Eocene, middle and upper
†Santee beds [1]
Eocene, middle
†Caw Caw formation or sands [1]
Congaree formation (as shale [1])
†Orangeburg formation [1]
Santee limestone [1]
Warley Hill marl [1]; †phase [1]

United States—Continued
South Carolina—Continued
Eocene, lower
Black Mingo formation [1]
†Lang Syne beds [1]
†Rhems shale [1]
†Williamsburg marl [1]
Upper Cretaceous and Pliocene(?)
†Aiken beds [1]
Upper Cretaceous
Black Creek formation [1]
†Burches Ferry marl [1]
†Hamburg beds or clays [1]
†Middendorf formation [1]
Peedee formation [1]
Upper Triassic
Hornsboro sandstone or zone [1]
Carboniferous(?)
Table Rock granite [1]
Lower Mississippian
Yorkville quartz monzonite (as granite [1])
Cambrian(?)
Chauga zone [1]
Cherokee zone [1]
Poor Mountain limestone series [1]
Probably Lower Cambrian
Blacksburg schist [1]
†Cherokee limestone [1]
Gaffney marble [1]
Precambrian
Abbeville-York zone [1]
Anderson-Spartanburg zone [1]
Battleground schist [1]
Carolina gneiss [1]
Chatooga zone [1]
Chesterfield zone [1]
Edgefield-Chesterfield zone [1]
Keowee zone [1]
Oconee Creek zone [1]
Saluda zone [1]
Spartanburg zone [1]
Stevens Creek slates [1]
Tunnel Hill zone [1]
Tyger zone [1]
Vaucluse zone [1]
York zone [1]
South Dakota
Pleistocene
Herrick gravels [2]
Orton gravels [2]
Pleistocene (pre-Wisconsin)
Moreau gravels [2]
Tertiary, middle
Whitean series [1]
Pliocene
Little White River beds [1]
Miocene to Pliocene
Bijou formation [2]
Miocene, upper, or Pliocene, lower
Oak Creek formation [1]
Miocene, lower and middle
Rosebud beds [1]
Oligocene, middle and upper
Brule formation or clay [1]

United States—Continued
South Dakota—Continued
Oligocene, lower, middle, and upper
White River formation or group [1]
Oligocene, lower
Ahearn member (of Chadron formation) [2]
Crazy Johnson member (of Chadron formation) [2]
Peanut Peak member (of Chadron formation) [2]
Eocene or Oligocene
Ree beds [1]
Paleocene
Ludlow member (of Fort Union formation); (as member of Lance formation [1])
Cretaceous
Ardmore bentonite bed (in Pierre formation) [2]
Bull Creek sand (in Hell Creek member of Lance formation) [2]
Middle Creek limestone ledge (in Graneros formation) [2]
Oacoma zone (in Sully member of Pierre formation) [2]
Stoneville member (of Fox Hills sandstone) [2]
Sully member (of Pierre formation) [2]
†Pierran series [1]
Upper Cretaceous
Agency shale member (of Pierre formation) [2]
Blackhorse shales [1]
Crow Creek member (of Pierre shale) [2]
DeGrey member (of Pierre shale) [2]
Elk Butte member (of Pierre shale) [2]
†Ft. Pierre group [1]
Fox Hills sandstone [1]
Gregory member (of Pierre shale) [2]
Hermosa lens (in Newcastle formation) [2]
Interior formation [1]
Mobridge member (of Pierre shale) [2]
Orman Lake limestone member (of Greenhorn formation) [2]
Pierre shale [1]
Rapid City lens (in Newcastle formation) [2]
Tilford lens (in Newcastle formation) [2]
Timber Lake member (of Fox Hills sandstone) [2]
Trail City member (of Fox Hills sandstone) [2]
Verendrye member (of Pierre shale) [2]
Virgin Creek member (of Pierre shale) [2]

United States—Continued
South Dakota—Continued
Lower Cretaceous
Fall River formation (as sandstone [1])
Fuson member (of Lakota formation); (as shale [1])
Lakota formation (as sandstone [1])
Minnewaste limestone [1] **member** (of Lakota formation)
Upper Jurassic
Redwater shale member (of Sundance formation) [2]
Unkpapa sandstone [1]
Permian and Triassic
Spearfish formation [1]
Permian
Minnekahta limestone [1]
Opeche formation [1] **or shale**
Pennsylvanian
Minnelusa sandstone [1]
Lower Mississippian
Englewood limestone [1]
Pahasapa limestone [1]
Upper Ordovician
Whitewood limestone [1] **or dolomite**
Middle Ordovician
Ice Box shale [2]
Roughlock siltstone [2]
Upper Cambrian
Deadwood formation [1]
Precambrian
Corson diabase [1]
De Smet formation [1]
Ellison formation [1]
Estes system [1]
Flag rock formation [2]
Game Lodge granite [2]
Garfield formation [1]
Grizzly formation [2]
†Harney granite [1]
Harney Peak granite [1]
Homestake formation [1]
Lead system [1]
Little Elk gneissoid granite [2]
Nemo series [1]
Northwestern formation [1]
Pluma formation [1]
Poorman formation [1]
Roubaix group [2]
Samelias formation [2]
Sioux quartzite [1]
West Ledge formation [1]
Tennessee
Pleistocene
Memphis loess [1]
Milan loam [1]
Eocene
†Lagrange formation [1]
Paleocene
†Crainesville horizon [1]
†Flatwoods group [1]
†Middleton formation [1]
Porters Creek clay [1] **or formation**

United States—Continued
Tennessee—Continued
Cretaceous
Western Valley gravel [1]
Upper Cretaceous
Coffee sand [1] or **formation**
Coon Creek tongue (of Ripley formation)[1]
McNairy sand or **sand member** (of Ripley formation) [1]
†McNairy shell bed [1]
Pennsylvanian
†Bon Air Measures [1]
†Brushy Mountain Measures [1]
†Clifty shale [1]
Crossville sandstone (in Duskin Creek formation) [2]
Duskin Creek formation [1]
†Emory sandstone [1]
Etna sandstone [1]
Fentress shale division (in Lee formation) [1]
Frozenhead grit (in Anderson sandstone) [1]
Herbert conglomerate [1]
Jellico formation [1]
†Monterey conglomerate [1]
Newton sandstone [1]
Pilot Knob sandstone [1]
Pioneer sandstone [1]
†Tracy City Measures [1]
Walden sandstone [1]
Windrock sandstone [1]
Middle Pennsylvanian
Anderson sandstone [1]
Bryson formation [1]
Mingo formation [1]
Scott shale [1]
Wartburg sandstone [1]
Lower and Middle Pennsylvanian
Briceville shale [1]
Lower Pennsylvanian
Bonair sandstone [1]
Eastland shale lentil (in Bonair sandstone) [1]
Gizzard formation [1]; **member** (of Lookout sandstone in Georgia)
Sewanee conglomerate [1] or **member** (of Lookout sandstone)
Vandever shale [1]
Warren Point sandstone member (of Gizzard formation) [1]
Whitwell shale [1]
Mississippian
†Glendale shale [1]
†Harpeth shale [1]
Newman limestone [1]
†Newman sandstone lentil (in Newman limestone) [1]
†Tullahoma formation [1]
Upper Mississippian
Garrett Mill sandstone member (of Warsaw formation) [1]

United States—Continued
Tennessee—Continued
Lower Mississippian
Eulie shale [2]
Maury formation (as member of Ridgetop shale [1])
Ridgetop shale [1]
Short Mountain facies (of Fort Payne formation) [2]
Westmoreland shale [2]
Devonian or Carboniferous
Cumberland Gap shale member (of Chattanooga shale) [1]
Olinger gray shale member (of Chattanooga shale) [1]
Devonian and Mississippian
Chattanooga shale [1]
Grainger shale [1] or **formation**
Upper Devonian or Mississippian
Swan Creek phosphate [1]
Upper Devonian
Bransford sandstone bed (in Gassaway member of Chattanooga shale) [2]
Dowelltown member (of Chattanooga shale) [2]
Gassaway member (of Chattanooga shale) [2]
Hardin sandstone member (of Chattanooga shale) [1]
Trousdale shale [1]
Lower or Middle Devonian
Camden chert [1]
Pegram limestone [1]
Lower Devonian
Bear Branch limestone member (of Olive Hill formation) [1]
Birdsong shale [1]
Cypress Creek chert [1]
Decaturville chert [1]
Flat Gap limestone member (of Olive Hill formation) [1]
Harriman chert [1]
Linden group [1]
Olive Hill formation [1]
Pyburn limestone member (of Olive Hill formation) [1]
Quall limestone [1]
Rockhouse shale [1]
Ross limestone member (of Olive Hill formation) [1]
Silurian and Devonian
†Harpeth and Tennessee River group [1]
Upper Silurian and Devonian
Hancock limestone [1] or **dolomite**
Upper Silurian
Decatur limestone [1]
†Sneedville limestone [1]
Middle Silurian
Beech River shaly limestone member (of Brownsport formation) [1]

United States—Continued
Tennessee—Continued
Middle Silurian—Continued
Bledsoe limestone [1]
Bob crystalline limestone member (of Brownsport formation) [1]
Brownsport formation [1]
Centerville limestone [1]
Clifton formation [1]
Dixon earthy limestone member (of Wayne formation) [1]
†Gant bed [1]
Glenkirk limestone [1]
Lego limestone member (of Wayne formation) [1]
Lobelville shaly limestone member (of Brownsport formation) [1]
Maddox limestone [1]
Newsom shaly clay [1]
South Tunnel bed [1]
Wayne formation [1]
White Oak Mountain sandstone [1]
Whites Bend limestone [1]
Lower and Middle Silurian
Clinch sandstone [1] or **quartzite**
Rockwood formation [1]
Lower Silurian
†Baker limestone [1]
Ordovician
Bays formation (as sandstone [1])
Inman formation [2]
Upper Ordovician and Silurian
†Clinch Mountain sandstone [1]
Upper Ordovician
Camargo formation [2]
College Hill limestone [1]
Fernvale limestone [1] or **formation** [1]
Leipers limestone [1]
†Leipers Creek limestone [1]
Mannie shale (as clay [1])
Sequatchie formation [1]
Swan Creek limestone [1]
Middle and Upper Ordovician
†Nashville group [1]
Normandy limestone [1]
Middle Ordovician
Athens shale [1]
Bigby limestone [1]
Cannon limestone [1]
†Capitol limestone [1]
Blount group [1]
Carters limestone (as member of Lowville limestone [1])
Catheys limestone [1]
Chapman Ridge sandstone [2]
Douglas Lake member (of Lenoir limestone) [2]
Farragut limestone [2]
Hermitage formation [1] or **limestone**

United States—Continued
Tennessee—Continued
Middle Ordovician—Continued
Holston marble, limestone [1] or **formation**
Lebanon limestone [1]
Lenoir limestone [1]
Meadow marble member (of Sevier shale) [1]
Mosheim member (of Lenoir limestone); (as limestone [1])
Mount Pleasant phosphate [1]
Murfreesboro limestone [1]
Ottosee shale or **limestone** [1]
Pierce limestone [1]
Ridley limestone [1]
†Saltillo limestone [1]
Sevier shale [1] or **formation**
Speers Ferry formation [2]
Stones River group or **limestone** [1]
Strasburg limestone [2]
Tellico formation or **sandstone member** (of Sevier shale); (as sandstone [1])
Ward limestone [1]
†Wells limestone [1]
Wells Creek dolomite (as limestone [1])
Whitesburg limestone [1] **member** (of Blockhouse shale)
Lower, Middle, and Upper Ordovician
†Central limestone and shale group [1]
Chickamauga limestone [1]
Lower Ordovician
Forked Deer limestone [1]
†Glade limestone [1]
Grasselli dolomite (in Kingsport formation) [2]
Heiskell shale [1]
Jonesboro limestone [1]
Kingsport formation or **dolomite** [2]
†Knoxville marble [1]
†Lebanon group [1]
Mascot dolomite [2]
Thorn Hill formation [1]
Vestal limestone [1]
†Wells chert [1]
Cambrian and Lower Ordovician
†Knoxville group [1]
Upper Cambrian and Lower Ordovician
Knox dolomite [1] or **group**
Upper Cambrian
Bloomingdale limestone member [1] (of Conocheague-Copper Ridge formation)
Copper Ridge dolomite [1]
Greenville dolomite [1]
Maynardville limestone [1] **member** (of Nolichucky shale); **formation** in Virginia

United States—Continued
Tennessee—Continued
Upper Cambrian—Continued
Morristown dolomite member [1] (of Conococheague-Copper Ridge formation)
Nolichucky shale [1]
Middle and Upper Cambrian
†Knox shale [1]
Middle Cambrian
Craig limestone member (of Rogersville shale) [2]
Maryville limestone [1]
Pumpkin Valley shale [2]
Rogersville shale [1]
Rutledge limestone [1] or **dolomite**
Lower Cambrian
Apison shale [1]
†Beaver limestone [1]
†Chilhowee conglomerate [1]
Chilhowee group [1]
†Citico conglomerate [1]
Cochran conglomerate [1]
Erwin quartzite [1] or **formation**
Hampton shale [1] or **formation**
Helenmode member (of Erwin formation) [2]
Hesse quartzite [1] **member** (of Erwin formation) or **sandstone**
†Knox sandstone [1]
Moccasin Gap member (of Unicoi formation) [2]
Murray shale or **shale member** (of Erwin formation); (as slate or shale [1])
Nebo quartzite [1] **member** (of Erwin formation) or **sandstone**
Nichols shale (as slate [1])
Shady dolomite [1] or **formation**
†Starr conglomerate [1]
Unicoi formation [1]
†Watauga shale [1]
Precambrian
Cades sandstone (as conglomerate [1])
Copperhill formation [2]
Linville metadiabase [1]
Ocoee series (as group [1])
Pigeon slate [1] or **siltstone**
Roan gneiss [1]
Sandsuck formation (as shale [1])
Thunderhead sandstone (as conglomerate [1])
Wilhite formation (as slate [1])
Precambrian(?)
†Hiwassee slate [1]
Mount Rogers volcanic group [2]
Texas
Quaternary
Calamity formation [2]
Delaney gravel [2]
Judkins formation [2]
Kokernot formation [2]
Monahans formation [2]
Neville formation [2]
Terra Blanca formation [1]

United States—Continued
Texas—Continued
Recent
Ingleside formation [2]
Lake Charles formation [2]
Pleistocene
Alta Loma sand [2] (subsurface)
Beaumont clay [1]
Durst silts [2]
Elm Creek silts [2]
Houston group [1]
Leona formation [1]
Lissie formation [1]
Onion Creek marl [1]
Rio drift [1]
Rita Blanca deposits [2]
†Rock Creek beds [1]
Seymour formation [1]
Spring Creek deposits [2]
Tahoka clay [2]
Tule formation [1]
Tertiary
†Angelina series [1]
Cottonwood Spring basalt [2]
Crossen trachyte [2]
Duff formation [2]
Eagle Peak syenite [2]
Goodnight formation [1]
Green Valley volcanic series [2]
Huelster formation [2]
Jeff conglomerate member (of Huelster formation) [2]
McCutcheon volcanic series [2]
Mitchell Mesa rhyolite [2]
Potato Hill andesite [2]
Pruett formation [2]
Seven Springs formation [2]
Sheep Canyon basalt [2]
Square Peak volcanic series [2]
Star Mountain rhyolite [2]
Texhoma series [1]
Tertiary(?)
Burro gravel and tuff [1]
Tertiary, lower
Ben Day porphyry [2]
Mitre Peak complex [2]
Tertiary or younger
Butcherknife basalt [2]
Pliocene
†Blanco Canyon beds [1]
Clarendon beds [1]
Coetas formation [1]
Goliad sand [1]
Labahia member (of Goliad formation) [1]
Lagarto Creek beds (in Goliad sand) [1]
Lapara sand member (of Goliad sand) [1]
†Llano Estacado formation [1]
†Palo Duro beds [1]
†Panhandle beds [1]
Potter formation [1]
†Staked Plains formation [1]

United States—Continued
Texas—Continued
Pliocene(?)
Hockley Mound sand member (of Willis sand)[1]
Uvalde gravel [1]
†Willis feruginous sand member [1] (of Willis sand)
Willis sand [1]
Pliocene, middle
Blanco formation [1]
Bridwell formation [2]
Pliocene, lower
Couch formation [2]
Hemphill beds [1]
Miocene and Pliocene
Dewitt formation [1]
Dugout clay and gravel [1]
†Navasota beds [1]
Miocene
Moulton sandstone member (of Oakville formation)[2]
Oakville sandstone [1]
Onalaska clay [1]
Miocene(?)
Lagarto clay [1]
Rawls basalt [2]
†Rockland sandstone [1]
Miocene, upper, and Pliocene(?)
Burkeville beds [1]
†Fleming clay or group [1]
Miocene, upper
Cuero formation [2]
Miocene(?), lower(?)
Chita sand member (of Catahoula formation)[1]
Corrigan formation [1]
Dunlap Quarry sandstone member [1] (of Catahoula formation)
Oligocene or younger
Tascotal formation [2]
Oligocene and younger(?)
Decie member (of Duff formation)[2]
Oligocene and Miocene(?)
Gueydan group [1]
Oligocene or Miocene, lower
Chusa tuff member (of Catahoula tuff) [1]
Fant tuff member (of Catahoula tuff)[1]
†Gueydan formation [1]
Soledad volcanic conglomerate member (of Catahoula tuff)[1]
Oligocene
Anahuac formation [2] (subsurface)
Driscoll-Sevier sand [2] (subsurface)
Flour Bluff sand [2] (subsurface)
Old Ocean shale [2] (subsurface)
Pierce Estate sands [2] (subsurface)
Van Vleck sands [2] (subsurface)

United States—Continued
Texas—Continued
Oligocene(?)
Frio clay [1]
Quitman quartz monzonite [2]
Refugio sand [1] (subsurface)
Saxet sand [1] (subsurface)
†Yeager clay [1]
Oligocene, middle
Greta sand [1] (subsurface)
Eocene to Miocene(?)
Buck Hill volcanic series [2]
Eocene
†Angellna County beds [1]
Buttsgin formation [1]
Cartright sand [1] (subsurface)
Christine member (of Yegua formation)[2]
Cistern member (of Yegua formation)[2]
Cole sand [1] (subsurface)
Crockett member [1] (of Claiborne formation)
Diboll member [1] (of Jackson formation)
Dime Box member (of Yegua formation)[2]
†Elstone formation [1]
Gazley Creek sands and clays [1]
Holzmark sand [1] (subsurface)
†Lipan beds [1]
Low Creek beds [1]
†Lufkin beds [1]
Lufkin member (of Cook Mountain formation)[1]
†Lytton formation [1]
Manning beds [1] (see p. 621)
†Myrick formation [1]
Northrip member (of Yegua formation)[2]
†Sabine River beds [1]
Seco formation [1]
†Squirrel Creek formation [1]
†Timber Belt beds [1]
Turkey Creek beds (in Yegua formation)[1]
†Webb Bluff [1] (greensand marls)
Yegua River conglomerate (in Yegua formation) [1]
Eocene(?)
Uvalde phonolite [1]
Eocene, upper
Agua Verde shale member (of Fayette formation)[2]
Bedias sandstone member [1] (of Wellborn formation)
Cadell formation (as clay [1])
Calliham sand [1] (see p. 621)
Carlos sandstone member [1] (of Wellborn formation)
Conroe sand [1] (subsurface)
Dilworth sand [1] (see p. 621)
Driscoll sand [1] (subsurface)

United States—Continued
Texas—Continued
Eocene, upper—Continued
Dubose sands and clays [1] (see p. 621)
Falls City shale [1]
Fashing clays [1] (see p. 621)
Fayette sandstone [1]
Glendale beds [1]
Gorgora shale member (of Fayette formation) [2]
Government Wells sand [1] (subsurface)
Grawunder sand [1] (subsurface)
Gutoskey sand [1] (subsurface)
Jacob sand [1] (subsurface)
McElroy member (of Fayette sandstone) [1] (see p. 621)
Mirando sand [1] (subsurface)
Mirando City sand [1] (subsurface)
Mitchells Ferry beds [1]
Nichols sand [1] (subsurface)
Olmos sand [1]
Petters sand [1] (subsurface)
Resendez shale member (of Fayette formation) [2]
Rock Prairie sandstone [2]
Salineno sandstone member (of Fayette formation) [1]
Simms sand [1] (subsurface)
Stones Switch sand [1] (see p. 621)
Wellborn sandstone [1]
Whitsett formation (as beds [1]) (see p. 621)
Wooleys Bluff clays [1]
Yuma sandstone member [1] (of Manning formation)
Eocene, middle
Arp sand member (of Reklaw formation) [2]
Bigford member (of Mount Selman formation) [2]
Byran sandstone [2]
Carrizo sand [1]
Cook Mountain formation [1]
Easterwood shales [2]
Eaton green sand lentil (in Claiborne group) [1]
Falcon sandstone member (of Cook Mountain formation) [1]
Garceno sandstone member (of Cook Mountain formation) [2]
Hurricane marine lentil (in Landrum member of Cook Mountain formation) [2]
Jennings sand [1] (subsurface)
José shale member (of Yegua formation) [2]
Landrum shale member (of Crockett formation) [2]
La Perla shale member (of Yegua formation) [2]
Laredo formation [2]
Little Brazos limestone lentil (in Claiborne group) [1]
Loma Blanca tongue (of Yegua formation) [2]

United States—Continued
Texas—Continued
Eocene, middle—Continued
Los Arrieros shale member (of Yegua formation) [2]
Marquez shale member (of Reklaw formation) [2]
Mills bed [1]
Moseley limestone lentil [1] (in Crockett member of Cook Mountain formation)
Mount Selman formation [1]
Mount Tabor shale member (of Crockett formation) [2]
Nacogdoches beds [1]
Newby glauconitic sand member (of Reklaw formation) [2]
Noonday greensand [1]
Omen member (of Mount Selman formation) [1]
Palafox sandstone member (of Mount Selman formation) [1]
Queen City sand member (of Mount Selman formation) [1]
Reklaw member (of Mount Selman formation) [1]
San Augustine group [1]
Schott sand [1] (subsurface)
Serbin sand lentil (in Mount Tabor member of Yegua formation) [2]
Smetana sandstone [2]
Spiller sand member (of Crockett formation) [2]
Stone City beds [1]
Tabor member (of Crockett formation) [2]
Therrill clay member (of Weches formation) [2]
Tuleta sand [1] (subsurface)
Two Mile member (of Crockett formation) [2]
Tyler greensand member (of Sparta sand) [1]
Tyus member (of Weches formation) [2]
Veleno member (of Cook Mountain formation) [2]
Viesca member (of Weches formation) [2]
Webster sand [1] (subsurface)
Weches greensand member (of Mount Selman formation) [1]
Weiss sand [1] (subsurface)
Wheelock marl member (of Crockett formation) [2]
Yegua formation [1]
Eocene, lower
Butler clay member (of Rockdale formation) [1]
Caldwell Knob member (of Seguin formation) [1]
Calvert Bluff clay beds (of Rockdale formation) [1]
Hilbig zone [1] (in Rockdale formation)
Hooper formation [2]
Indio formation [1]

United States—Continued
Texas—Continued
Upper Cretaceous—Continued
Morrow pay sand [1] (subsurface)
Navarro group [1] or **formation**
Neylandville marl [1]
Olmos formation [1]
Pecan Gap chalk member) of Taylor marl) [1]
Pepper shale member (of Woodbine formation); (as formation [1])
Pilot Knob tuff [2]
Powell sand [1] (subsurface)
†Pinto limestone [1]
†Pulliam formation [1]
†Rattlesnake beds [1]
Red Branch member (of Woodbine formation) [2]
†Red River group [1]
Rogers chalk lens (in Taylor marl) [1]
†Roxton beds [1]
St. Edwards tuff [2]
San Carlos formation [1]
San Miguel formation [1]
South Bosque marl [1]
†sub-Clarksville sand [1] (subsurface)
Tarrant formation [1] or **member** (of Lewisville formation)
Taylor marl [1]
Templeton member (of Woodbine formation) [2]
Terlingua clay [1]
Thrall sand [1] (subsurface)
†Timber Creek beds [1]
†Timber Creek group [1]
Tornillo clay [1]
Upson clay [1]
Valverde flags [1]
Vieja series [1]
Webberville beds [1]
Wolfe City sand member (of Taylor marl) [1]
Woodbine sand, clay, [1] or **formation**
Lower and Upper Cretaceous
Comanche series [1]
Lower Cretaceous
†Austin marble [1]
Bacon limestone member (of Ferry Lake formation) [2] (subsurface)
†Barton Creek limestone [1]
Bluff bed [1]
Bluff Dale sand (in Travis Peak formation) [1]
Bluff Mesa formation [2]
Bonnellian series [1]
Boracho sandstone [2]
†Bosque division [1]
Burnt limestone [2]
Caddo Levee Board horizon [1] (subsurface)
Campagrande formation [1]

United States—Continued
Texas—Continued
Lower Cretaceous—Continued
Carr sand [1] (subsurface)
Cedar Park member [1] (of Walnut clay)
†Choctaw limestone [1]
†Comanche Peak group [1]
Comanche Peak limestone [1]
Cow Creek limestone member (of Travis Peak formation or Pearsall formation); (as beds [1])
Cox sandstone [1]
Cuchillo formation [1]
Dees horizon or sand [1] (subsurface)
†Denison formation [1]
Denton clay (as member of Denison formation [1])
Devils River limestone [1]
Duck Creek limestone (as formation [1])
Edwards limestone [1]
Espy formation [2]
Etholen conglomerate [1]
Finlay limestone [1]
Fort Worth limestone [1]
Fredericksburg group [1]
Gatesville formation [1]
†Gainesville [1] [group]
Galt sand [1] (subsurface)
Georgetown limestone [1]
Glen Rose limestone [1] or **formation**
†Grand Prairie formation [1]
Hensell sand member (of Travis Peak formation) [1] or **shale member** (of Pearsall formation) in subsurface
Hill sand horizon [1]
†Leander beds [1]
Main Street limestone (as member of Denison formation [1])
Maness shale member (of Tyler formation) [2] (subsurface)
†Marietta beds [1]
Maxon sandstone [1]
Mountain bed [1]
Muleros sandstone [1]
†North Denison sand [1]
Paluxy sand [1] **or formation**
Pawpaw formation (as sandy member of Denison formation [1])
Pearsall formation [2] (subsurface)
†Pottsboro subgroup [1]
Presidio formation [1]
†Preston formation [1]
Quitman bed [1]
Shafter limestone [1]
Shingle Hills formation [2]
†Shoal Creek limestone [1]
South Tyler formation [2] (subsurface)
Sycamore sand (in Travis Peak formation) [1]

United States—Continued
Texas—Continued
Lower Cretaceous—Continued
Thorp Springs limestone [1]
Torcer formation [1]
Travis Peak formation [1]
Travis Peak limestone (in Travis Peak formation) [1]
Trinity group or **sand** [1]
Trinityan series [1]
University Mesa marl [1]
Walnut clay [1]; **shaly member** (of Goodland limestone) [1] in NE Texas
†Washita limestone [1]
Weatherford lime rock [1] (subsurface)
Weno limestone or **clay** (as clay member of Denison formation [1])
†Weno subgroup [1]
Yucca formation (as bed [1])
Upper Jurassic
Malone formation [1]
Triassic
Bissett conglomerate [1]
Camp Springs conglomerate [1]
Dockum group [1]
Dockuman series [1]
Tecovas formation [1]
Trujillo formation [1]
Permian and Triassic
†Brazos series [1]
Permian
Abilene formation [1]
Acme dolomite (in Blaine formation) [1]
Albanian series [1]
†Albany formation [1]
Alta formation [1]
Apache limestone [1]
Aspermont dolomite [1]
Bayloran series [1]
Beaverburk limestone [1]
Big Lake lime [1] (subsurface)
†Blowout Mountain sandstone [1]
Bluff bone bed [1]
†Bone Canyon limestone [1]
Briggs formation [2]
Buffalo Hill sandstone [1]
Childress dolomite member (of Marlow formation); (as member of Dog Creek shale [1])
Chinati series [1]
Cibolo formation [1]
Cieneguita beds [1]
Claytonville dolomite [1]
Claytonville gypsum [1]
†Coleman division [1]
Coleman bed, clay, or limestone (in Admiral formation) [1]
Croton gypsum [1]
Culberson series [1]
Delaware Mountain sandstone [1]

United States—Continued
Texas—Continued
Permian—Continued
†Dos Alamos gypsum member (of Delaware Mountain formation) [1]
†Dothan limestone (in Moran formation) [1]
†Double Mountain formation [1]
Doublian series [1]
Dozier sandstone member (of Rush Springs formation); (as member of Peacock formation [1])
Eskota beds [1]
Eskota dolomite or gypsum [1]
†Frijole limestone member (of Delaware Mountain formation) [1]
Frijole shale [1]
Fulda sandstone [1]
Glass Mountains formation [1]
Groesbeck dolomite [1]
Guthrie dolomite [1]
Hardin School limestone [1]
Hartgrove limestone member (of Talpa formation) [1]
Hart School bed (in Moran formation) [1]
Hueconian [1] (series)
Indian Creek shale member (of Admiral formation) [1]
Lake Kemp limestone (in Lueders formation) [1]
Lake Lytle limestone [1]
Lake Trammel sandstone [1]
Limpia [1] (limestone)
Lytle limestone [1]
McCaulley dolomite [1]
Maravilla dolomite [1]
Maybelle limestone [1]
†Memphis sandstone (in Peacock formation) [1]
Millersview limestone member (of Grape Creek formation) [1]
Mina Grande formation [2]
†Moran limestone member (of Moran formation) [1]
Morrison sand [1] (subsurface)
Oriana gypsum member (of Peacock formation) [1]
Otero limestone [1]
Paint Rock bed [1]
†Peacock formation [1]
Putnam limestone (in Putnam formation) [1]
Putnam sandstone (in Putnam formation) [1]
Quanah gypsum [1]
Royston formation [1]
†Rustler Springs formation [1]
Shultz limestone member (of Talpa formation) [1]
Sweetwater dolomite [1]
Swenson gypsum member [1] (of Peacock formation)

United States—Continued
Texas—Continued
Permian—Continued
Texon sand [1] (subsurface)
Tye formation [1]
Wagon Yard gypsum [1]
Wahs Creek shale (in Moran formation)[1]
Ward gypsum [1]
†Wichita conglomerate (in Clear Fork formation)[1]
Winkler Ford limestone member (of Grape Creek formation)[1]
Yates sandstone [2] (subsurface); **formation** [2] (subsurface and surface in New Mexico)
Yoakum dolomite member (of Queen formation) [2] (subsurface)
Permian (*Ochoa*)
Castile gypsum [1] or **formation**
Cowden anhydrite member (of Salado formation)[2]
Dewey Lake redbeds [2] (subsurface)
Rustler formation [1] or **limestone** [1]
Salado formation (as halite [1]); (subsurface and surface)
Tessey limestone [1]
Permian (*Guadalupe*)
Alibates dolomite lentil (of Quartermaster formation)[1]
Altuda formation (as shaly member of Capitan limestone [1])
Bell Canyon formation [2]
Brushy Canyon formation [2]
Capitan limestone [1]
Cherry Canyon formation [2]
Delaware Mountain group (as formation [1])
Getaway limestone member (of Cherry Canyon formation)[2]
Gilliam thin-bedded member (of Capitan limestone)[1]
Goat Seep limestone [2]
Guadalupe series (as group [1])
Hegler limestone member (of Cherry Canyon formation)[2]
Lamar limestone member (of Bell Canyon formation); (as member of Delaware Mountain formation [1])
McCombs limestone member (of Bell Canyon formation)[2]
Manzanita limestone member (of Cherry Canyon formation)[2]
Pinery limestone member (of Cherry Canyon formation)[2]
Rader limestone member (of Cherry Canyon formation)[2]
Ross Mine formation [2]
Saddlehorse gypsum lentil (of Quartermaster formation)[1]
South Wells limestone member (of Cherry Canyon formation)[2]

United States—Continued
Texas—Continued
Permian (*Guadalupe*)—Continued
Vidrio limestone member (of Word formation); (as member of Capitan limestone [1])
Word formation [1]
Permian (*Leonard-Guadalupe*)
Pipeline shale [2]
Permian (*Leonard*)
Arroyo formation [1]
Bone Spring limestone [1]
Bullwagon dolomite [1] **member** (of Vale formation)
Choza formation [1]
Clear Fork group (as formation or group [1])
Collingsworth gypsum member (of Blaine formation)[1]
Cutoff shaly member (of Bone Spring limestone)[2]
Hess limestone member (of Leonard formation)[1]
Kirby Lake dolomite [2]
Leonard formation [1] or **series**
Merkel dolomite member (of Choza formation); (as member of Clear Fork formation [1])
Pease River group [2]
Rainy limestone member (of Arroyo formation); (as member of Clear Fork formation [1])
San Angelo sandstone [1]
Sprayberry sandstone [2] (subsurface)
Standpipe limestone member (of Arroyo formation); (as member of Clear Fork formation [1])
Vale formation [1]
Victorio Peak gray member (of Bone Spring limestone)[1]
Permian (*Leonard?*)
Bead Mountain limestone member (of Belle Plains formation) [1]
Belle Plains formation [1]
Clyde formation [1]
Elm Creek limestone member (of Belle Plains formation); (as member of Admiral formation [1])
Grape Creek limestone member (of Clyde formation) [1]
Jagger Bend limestone [1] **member** (of Belle Plains formation)
Jim Ned shale member (of Belle Plains formation) [2]
Lueders limestone [1]
Talpa limestone [1] **member** (of Clyde formation)
Valera shale [1] **member** (of Belle Plains formation)
Voss shale member (of Belle Plains formation) [2]

United States—Continued
Texas—Continued
Permian (Leonard? and Wolfcamp)
Wichita formation or group [1]
Permian (Wolfcamp)
Admiral formation [1]
Camp Colorado limestone member (of Pueblo formation) [1]
Camp Creek shale member (of Pueblo formation) [1]
Coleman Junction limestone member (of Putnam formation) [1]
Coon Mountain sandstone member (of Pueblo formation) [1]
Dean sandstone [2] (subsurface)
Deer Mountain red shale member (of Hueco formation) [1]
Fisk formation [2]
Gouldbusk limestone member (of Moran formation) [2]
Hordes Creek limestone member (of Admiral formation) [1]
Horse Creek limestone member (of Moran formation) [1]
Hueco limestone [1]
Ibex limestone [2]
Kriz lens (in Hueco formation) [2]
Lost Creek shale member (of Admiral formation) [1]
Moran formation [1]
Overall limestone member (of Admiral formation) [2]
Powwow conglomerate member (of Hueco limestone) [1]
Pueblo formation [1]
Putnam formation [1]
Saddle Creek limestone member (of Pueblo formation); (as member of Harpersville formation [1])
Salt Creek Bend shale [1] **member** (of Pueblo formation)
Santa Anna shale member (of Moran formation) [1]
Santa Anna Branch shale member (of Putnam formation) [1]
Sedwick limestone member (of Moran formation) [1]
Stockwether limestone member (of Pueblo formation) [1]
Waldrip member (of Pueblo formation); (as member of Harpersville formation [1])
Watts Creek shale member (of Moran formation) [1]
Wildcat Creek shale member (of Admiral formation) [2]
Wolfcamp formation [1] **or series**
Carboniferous
Cimarronian series [1]
Wichitan series [1]
Wiley dolomite [1]
Pennsylvanian
Antelope Creek bed (in Strawn formation) [1]

United States—Continued
Texas—Continued
Pennsylvanian—Continued
Archer County sand [1] (subsurface)
Balsora limestone (in Palo Pinto formation) [2]
Barton Creek limestone (in Millsap Lake formation) [1]
Bend sand [1] (subsurface)
Berino member (of Magdalena formation) [2]
Big Valley bed [1]
Binney sand [1] (subsurface)
Bishops Cap member (of Magdalena formation) [2]
Bond sand [1] (subsurface)
Boone Creek limestone member (of Palo Pinto limestone) [1]
Brannon limestone member (of Millsap Lake formation) [1]
Brannon Bridge limestone (in Millsap Lake formation) [1]
†Breckenridge formation [1]
Breckenridge lime [1] (subsurface)
Brelsford sand [1] (subsurface)
Brick Yard limestone [1]
Bridgeport limestone (in Palo Pinto formation) [1]
Brown Creek bed (in Strawn formation) [1]
†Brownwood division [1]
Bryson sand [1] (subsurface)
Buck Creek sandstone [1]
Buffalo Creek bed (in Strawn formation) [1]
Bull Creek sandstone (in Strawn formation) [1]
†Bunger formation [1]
Burkburnet sands [1] (subsurface)
Burkett sand [1] (subsurface)
Burnt Branch bed (in Strawn formation) [1]
Buttram sand [1] (subsurface)
Caddo limes [1] (subsurface)
Chico Ridge limestone (in Graford formation) [1]
Childers sand [1] (subsurface)
Cisco Lake sandstone [2]
†Clear Creek limestone member (of Graford formation) [1]
Comanche Creek bed (in Strawn formation) [1]
Cook sand [1] (subsurface)
Cottonwood Creek beds (in Strawn formation) [1]
Cross Cut sand [1] (subsurface)
Cross Plains sand [1] (subsurface)
Cundiff limestone (in Caddo Creek formation) [1]
Dalmar sand [1] (subsurface)
Dennis Bridge limestone (in Millsap Lake formation) [1]
Desdemona sand [1] (subsurface)
Devils Den limestone (in Graford formation) [1]

United States—Continued
Texas—Continued
Pennsylvanian—Continued
Dickerson member (of Millsap Lake formation)[1]
Dimple limestone [1]
Dobbs Valley sandstone (in Millsap Lake formation)[1]
Dog Bend limestone (in Mineral Wells formation)[1]
Dugout beds [1]
Earnest sand [1] (subsurface)
†Eastland formation [1]
†Eastland limestone member (of Caddo Creek formation)[1]
Eastland sandstone (in Graham formation)[1]
Elliott Creek bed (in Strawn formation)[1]
Elm Creek limestone [1]
Eolian limestone member (of Pueblo formation)[1]
Finis shale member (of Graham formation)[1]
Fox Ford bed (in Strawn formation)[1]
Fry sand [1] (subsurface)
Gaptank formation [1]
Goen limestone (in Millsap Lake formation)[1]
Gonzales Creek shale member (of Graham formation) [1]
†Gonzales shale [1]
Gordon sandstone (in Strawn formation)[1]
Gose sand [1] (subsurface)
†Graford limestone member (of Graford formation)[1]
Grindstone Creek member (of Millsap Lake formation)[1]
†Gunsight formation [1]
Gwinnup sand [1] (subsurface)
Hanna Valley bed (in Strawn formation)[1]
Harris sand [1] (subsurface)
Haymond formation [1]
Hill Creek beds member (of Millsap Lake formation)[1]
Hodges sand [1] (subsurface)
Hog Mountain sandstone (in Mineral Wells formation)[1]
Horse Creek clay and shale (in Strawn formation)[1]
Hudson Bridge limestone (in Palo Pinto formation)[1]
Indian Creek bed (in Strawn formation)[1]
†Jacksboro formation [1]
Jasper Creek shale (in Graford formation)[1]
Keechi Creek shale and sandstone (in Mineral Wells formation)[1]
Kickapoo Falls limestone (in Millsap Lake formation)[1]
Kissinger sand [1] (subsurface)
Lake sandstone [1] (subsurface)

United States—Continued
Texas—Continued
Pennsylvanian—Continued
Lake Bridgeport shale [1]
La Tuna member (of Magdalena formation) [2]
Lazy Bend member (of Millsap Lake formation)[1]
Lone Camp limestone (in Mineral Wells formation)[1]
Lower Freeman-Hampton sand [1] (subsurface)
Lynch Creek bed (in Strawn formation)[1]
McClesky sand [1] (subsurface)
McMillan sand [1] (subsurface)
Martin Lake limestone (in Palo Pinto formation)[1]
Meek Bend limestone (in Millsap Lake formation)[1]
Milburn shale [1]
†Millsap division (in Strawn group)[1]
Moutray sand [1] (subsurface)
Necessity shale member (of Graham formation)[1]
Noodle Creek lime [1] (subsurface)
Nimrod limestone [1]
Nimrod shale (in Pueblo formation)[1]
Olden sand [1] (subsurface)
Oran sand lentil (in Graford formation) [1]
Posideon shale member (of Graford formation)[1]
†Ranger formation [1]
Ranger oil sand [1] (subsurface)
†Ranger series [1]
Ray sand [1] (subsurface)
†Richland sandstone [1]
Ricker Station limestone member (of Grindstone Creek formation)[2]
Rochelle conglomerate (in Graford formation)[1]
Rockhill limestone (in Graford formation)[1]
Rough Creek bed (in Strawn formation)[1]
†Rough Creek shale member (of Tesnus formation)[1]
Salesville shale member (of Mineral Wells formation)[1]
Sanders Bridge limestone (in Palo Pinto formation)[1]
Santo limestone (in Millsap Lake formation)[1]
Seaman Ranch shale member (of Brad formation)[1]
Shadrick Mill sandstone (in Strawn formation)[1]
South Bend sandstone and shale (in Graham formation)[1]
†Speck Mountain clay (in Thrifty formation) [1]

United States—Continued
Texas—Continued
Middle Pennsylvanian—Continued
Colony School conglomerate [2]
East Mountain shale member (of Mineral Wells formation)[1]
Garner formation [1]
Gibson limestone member (of Grindstone Creek formation)[2]
Lake Pinto sandstone member (of Mineral Wells formation)[1]
Millsap Lake formation [1]
Mineral Wells formation [1]
Mingus shale member (of Garner formation)[1]
Ricker sandstone member (of Mineral Wells formation)[1]
Strawn group [1]
Turkey Creek sandstone member (of Mineral Wells formation)[1]
Lower and Middle Pennsylvanian
Bend group [1]
Marble Falls limestone [1]
Smithwick shale [1]
Lower Pennsylvanian
Aylor member (of Big Saline formation)[2]
Big Saline group [2]
Brister member (in Big Saline formation)[2]
Brook lentil (of Big Saline formation)[2]
Caddo Pool formation [2] (subsurface)
Comyn formation [2] (subsurface)
De Leon formation [2] (subsurface)
Eastland Lake formation [2] (subsurface)
Gibbons conglomerate lentil (in Marble Falls formation)[2]
Kickapoo Creek group [2]
Lampasas series [2]
Lemons Bluff member (of Marble Falls formation)[2]
Parks formation [2] (subsurface)
Rayville formation [2]
Sipe Springs formation [2] (subsurface)
Sloan member (of Marble Falls formation)[2]
Soldiers Hole member (of Big Saline formation)[2]
Mississippian
Barnett shale [1] **or formation**
Chappel formation [1]
Espey Creek limestone member (of Chappel formation)[2]
Helms formation [1]
King Creek marl member (of Chappel formation)[2]
Whites Crossing coquina member (of Chappel formation)[2]
Upper Mississippian
Las Cruces formation [2]
Rancheria formation [2]

United States—Continued
Texas—Continued
Devonian
Canutillo formation [2]
Devonian(?)
Caballos novaculite [1]
†Santiago chert [1]
Upper(?) Devonian
†Zesch formation [2]
Middle(?) and Upper Devonian
Ives breccia member (of Houy formation); (as breccia [2]) (see p. 621)
Middle Devonian
Bear Spring formation [2]
Lower or Middle Devonian
Stribling formation [2]
Lower Devonian
Pillar Bluff limestone [2]
Silurian
Fusselman limestone [1]
Ordovician
El Pasan series [1]
Upper Ordovician
Burnam limestone [2]
Maravillas chert [1]
Montoya limestone [1]
Montoyan series [1]
Persimmon Gap shale or formation [2]
Upper Ordovician(?)
Solitario formation [1]
Middle Ordovician
†Brewster formation [1]
Connell sandstone member (of Oil Creek formation)[2] (subsurface)
Fort Peña formation [1]
McKee sandstone [2] (subsurface)
Waddell sandstone [2] (subsurface)
Woods Hollow shale [1]
Lower Ordovician
Alsate shale [1]
Deep Creek division [1]
Ellenburger group (as limestone [1])
El Paso limestone [1] **or formation**
Gorman formation [2]
Honeycut formation [2]
Marathon limestone [1]
Monument Spring dolomite member (of Marathon limestone)[1]
Staendebach member (of Tanyard formation)[2]
Tanyard formation [2]
Threadgill member (of Tanyard formation)[2]
Cambrian and Ordovician
Bliss sandstone [1]
Burnet marble [1]
†Marathon series [1]
Cambrian
Erna member (of Wilberns formation)[2]

United States—Continued
Texas—Continued
Upper Cambrian or Lower Ordovician
Beaver division [1]
Hinton division [1]
Hoover division [1]
Wyo division [1]
Upper Cambrian and Lower Ordovician(?)
Leon series [1]
Upper Cambrian
Buttrill Ranch member (of Dagger Flat formation)[2]
Cap Mountain limestone member (of Riley formation); (as formation [1])
Dagger Flat sandstone [1]
Hickory sandstone [1] **member** (of Riley formation)
Katemcy series [1]
Lion Mountain sandstone member (of Riley formation); (as member of Cap Mountain formation [1])
Morgan Creek limestone member (of Wilberns formation)[2]
†Pedernales dolomite member (of Wilberns formation)[2]
Point Peak shale member (of Wilberns formation)[2]
Point Rock shale member (of Wilberns formation)[2]
Riley formation [2]
†Riley series [1]
Roberts Ranch member (of Dagger Flat formation)[2]
San Saba limestone member (of Wilberns formation); (as series [1])
Welge sandstone member (of Wilberns formation)[2]
Wilberns formation [1]
Precambrian
Allamoore limestone or formation [2]
Bear Mountain granite [2]
Big Branch gneiss [2]
†Bodeville series [1]
†Burnetan system [1]
Carrizo Mountain schist [1]
†Click series [1]
Coal Creek serpentine [2]
†Diabolo sandstone [1]
†Fernandan system [1]
Hazel sandstone [1] **or formation**
Hye granite [2]
†Iron Mountain series [1]
Lanoria quartzite [1]
Legion Creek granite [2]
Llano series [1]
†Lone Grove series [1]
†Long Mountain series [1]
†Mason series [1]
†Millicam formation [1]
Oatman Creek granite [1]

United States—Continued
Texas—Continued
Precambrian—Continued
Packsaddle schist [1]
Red Bluff granite [2]
Red Mountain gneiss [2]
Sixmile granite [1]
†Texan system [1]
Town Mountain granite [1]
Valley Spring gneiss [1]
Precambrian(?)
Van Horn sandstone [1]
Age(?)
†Altuda granite [1]
Utah
Recent
Ice Springs Craters flow [2]
Pleistocene
Alpine formation [2]
Bonneville formation [2]
Lake Bonneville group (as beds[1])
Provo formation [2]
Pleistocene(?)
Salt Creek fanglomerate [1]
Pleistocene, upper
Tabernacle flow [1]
Tertiary
Bullion Canyon volcanics [2]
Crab Creek formation [2]
Crazy Hollow formation [2]
Delano Peak latite member (of Bullion Canyon volcanics) [2]
Dry Hollow latite [2]
Gray Gulch formation [2]
Joe Lott tuff [2]
Moroni formation [2]
Mount Belknap rhyolite [2]
Orient granite porphyry [2]
Oro Plata granite porphyry [2]
Roger Park basaltic breccia [2]
†Tintic andesite [1]
Tertiary, upper(?)
Axtell formation [2]
Swansea quartz monzonite (as rhyolite [1])
Pliocene
Harkers fanglomerate [2]
Huntsville fanglomerate [2]
Pliocene(?)
Cache Valley group [1]
Malade Valley group [1]
Parunuweap formation [2]
Probably Pliocene
Salt Lake formation [1]
Pliocene, upper, or Pleistocene, lower
Pavant flow [2]
Sevier River formation [2]
Pliocene, lower to middle
West Spring formation [2]
Miocene to Pliocene
Collinston conglomerate [2]
Miocene(?)
Brian Head formation [2]
Miocene, middle to Oligocene(?)
Jordan Narrows unit [2]

United States—Continued
Utah—Continued
Oligocene
Duchesne formation [1]
Halfway horizon (in Duchesne River formation) [1]
Lapoint horizon (in Duchesne River formation) [1]
Norwood tuff [2]
Randlett horizon (in Duchesne River formation) [1]
Oligocene(?)
Fool Creek conglomerate [2]
Oligocene(?) to Pliocene(?)
Camp Williams unit [2]
Oligocene, lower
Park City volcanics [2]
Post-Eocene
†Sunbeam monzonite [1]
Post-Eocene(?)
Fernow rhyolite [1]
Eocene or Oligocene
Duchesne River formation [1]
Eocene
Godiva limestone [1]; *see also* Goldiva limestone [1]
Goldens Ranch formation [2]
†Manti beds [1]
Packard quartz latite (as rhyolite [1])
†Pink Cliff series [1]
†Raddatz porphyry [1]
†Vermilion Creek group [1]
Eocene(?)
Eagle Hill rhyolite [1]
Shaggy Peak rhyolite [1]
Tickville rhyolite [1]
White Sage formation [1]
Eocene, upper, or Oligocene
Bald Knoll formation [2]
Eocene, upper
Myton member [1] (of Uinta formation)
Uinta formation [1]
Eocene, middle or upper
Sage Valley limestone member (of Goldens Ranch formation) [2]
Eocene, middle
Evacuation Creek member (of Green River formation) [1]
Horse Bench sandstone bed (in Evacuation Creek member of Green River formation) [1]
Eocene, lower
Colton formation [2]
Wasatch group [1] or **formation** [1]
Wasatchan series [1]
Paleocene or Eocene, lower
Cowly Canyon limestone member (of Wasatch group) [2]
Paleocene
Fayette facies (of Flagstaff formation) [2]
Joes Valley member (of North Horn formation) [2]
Pulpit conglomerate division (of Almy conglomerate) [2]

United States—Continued
Utah—Continued
Paleocene—Continued
Saw Mill conglomerate division (of Almy conglomerate) [2]
Valley Mountain facies (of Flagstaff formation) [2]
Willow Creek facies (of Flagstaff formation) [2]
Paleocene, upper and lower Eocene(?)
Flagstaff limestone [1]
Cretaceous and (or) Eocene
Claron limestone [1]
Cretaceous
Foxian series [1]
†Pinto sandstone [1]
Upper Cretaceous or Tertiary, lower
†Alta granodiorite [1]
†Clayton Peak quartz diorite [1]
†Little Cottonwood granite [1]
Upper Cretaceous and Paleocene
North Horn formation [2]
Upper Cretaceous
Aberdeen sandstone member (of Blackhawk formation) [1]
Allen Valley shale [2]
Asphalt Ridge sandstone [2]
Bearian series [1]
Blackhawk formation [1]
Bluecastle sandstone member (of Price River formation) west of Green River; **member** (of Neslen formation) east of Green River; (as bed [1])
Blue Gate sandstone member (of Mancos shale) [1]; sometimes **shale member**
Bob Wright coal group [1]
Brownian series [1]
Buck tongue (of Mancos shale) [1]
†Castlegate coal group (in Blackhawk formation) [1]
Castlegate sandstone member (of Price River formation) [1]
Cedar Mountain formation [2]
Cedar Mountain group [2]
Desert member (of Blackhawk formation) [2]
Emery sandstone member (of Mancos shale) [1]
Farrer formation (as non-coal-bearing member of Price River formation [1])
Ferron sandstone member (of Mancos shale) [1]
Funk Valley formation [2]
Garley Canyon sandstone member (of Mancos shale) [1]
Grassy member (of Blackhawk formation) [2]
Henefer formation [2]
Hinshaw sandstone [1]
Indianola formation [2] or **group** [2]
Kaiparowits formation [1]

United States—Continued
Utah—Continued
Upper Triassic
Duffin sandstone and shale (in Chinle formation)[2]
Fire Clay Hill bentonitic shale (in Chinle formation)[2]
Gartra grit member (of Stanaker formation)[2]
Hartley shale and sandstone (in Chinle formation)[2]
Leeds sandstone (in Silver Reef sandstone member of Chinle formation)[2]
Moss Back member (of Chinle formation)[2]
Petrified Forest member (of Chinle formation)[2]
Shinarump member (of Chinle formation); (as conglomerate[1])
†Silver Reef sandstone [1]
Stanaker formation [2]
Suicide grit [2]
Tecumseh sandstone (in Silver Reef sandstone member of Chinle formation)[2]
Trail Hill sandstone (in Chinle formation)[2]
†Vermilion Cliff group [1]
Upper Triassic(?)
Springdale sandstone member (of Moenave formation)[2]
Lower Triassic
Emigration formation [1]
Harrington formation [1]
Pinecrest formation [1]
Red Wash formation [2]
Shnabkaib shale member (of Moenkopi formation)[1] or **member** (of Moenkopi formation)
Sinbad limestone member (of Moenkopi formation)[1]
Thaynes limestone [1], **formation,** or **group**
Timpoweap member (of Moenkopi formation)[2]
Virgin limestone member (of Moenkopi formation)[1]
†Verkin shales [1]
Woodside formation (as shale [1])
Paleozoic
Allah quartzite [2]
Orient formation [2]
Permian and Triassic
†Oljeto sandstone member [1] (of Moenkopi formation)
Permian
Baby sand [1] (subsurface)
†Bogus tongue (of Cutler formation)[1]
Cedar Mesa sandstone member (of Cutler formation)[1]
Diamond Creek sandstone [1]
Gerster formation [1] or **limestone**
Goodridge sand [1] (subsurface)

United States,—Continued
Utah—Continued
Permian—Continued
Halgaito tongue or **member** (of Cutler formation)[1]
Harrisburg gypsiferous member (of Kaibab limestone) [1]
Kirkman limestone [2]
Little Loop oil sand [1] (subsurface)
Mackentire "red-beds" tongue (of Phosphoria formation) [2]
Mendenhall sand [1] (subsurface)
†Monument Valley shale [1]
Organ Rock tongue or **member** (of Cutler formation)[1]
Park City formation [1] or **group**
†Shafer limestone [1]
White Rim sandstone member (of Cutler formation)[1]
Post-Pennsylvanian
Last Chance quartz monzonite [2]
Carboniferous
Heber limestone [1]
Oquirrh quartzite [1]
Park sandstone [1]
†Weberan series [1]
Carboniferous(?)
Phelan limestone [2]
Vipont limestone [2]
Wardlaw shale [2]
Pennsylvanian or Permian
Arcola sand [1] (subsurface)
Pennsylvanian and Permian
†Goodridge formation [1]
Oquirrh formation [1]
Pennsylvanian
Amber sand [1] (subsurface)
Argenta limestone [1]
Bingham quartzite [1]
Bullard limestone [1]
Butterfield limestone member (of Bingham quartzite)[1]
Columbus quartzite [1]
Commercial limestone member (of Bingham quartzite)[1]
Elephant limestone [1]
Galena King limestone [1]
Goose Neck sand [1] (subsurface)
Hercules limestone [1]
Highland Boy limestone member (of Bingham quartzite)[1]
Hobble formation [2]
Honaker sand [1] (subsurface)
Honerine limestone [1]
Jordan limestone member (of Bingham quartzite)[1]
Kelly formation [2]
Lenox limestone member (of Bingham quartzite)[1]
Maverick limestone [1]
Morgan formation [1]
North Ada limestone [1]
†Ontario quartzite [1]
Parnell limestone [1]
†Petro limestone lentil (of Bingham quartzite)[1]

United States—Continued
Utah—Continued
Pennsylvanian—Continued
Phoenix limestone lentil (of Bingham quartzite)[1]
†Rambler formation [1]
Round Valley limestone [2]
Tilden limestone lentil (of Bingham quartzite)[1]
Utah Metals limestone [1]
Weber conglomerate [1]
Weber quartzite [1], **sandstone, formation, or shale**
Yampa limestone lentil (of Bingham quartzite)[1]
†Yampa sandstone [1]
Pennsylvanian(?)
Talisman quartzite [1]
Mississippian
†Humbug limestone [1]
Mississippian and Devonian(?)
Topache limestone [1]
Upper Mississippian and Pennsylvanian
Manning Canyon shale [1]
Upper Mississippian
Brazer limestone [1], **dolomite, or group**
Deseret limestone [1]
Doughnut formation [2]
†Garber limestone [1]
†Gold Ledge porphyry [1]
Great Blue limestone [1] **or formation**
Herat shale member (of Ochre Mountain limestone)[1]
Humbug formation [1]
Humbug sandstone [1]
Lion Hill formation [1]
Long Trail shale member (of Great Blue formation)[1]
Ochre Mountain limestone [1]
Mono limestone [1]
†Pine Canyon limestone [1]
Reed formation [1]
†Silver Ledge porphyry [1]
Tetro member (of Deseret limestone); (as limestone [1])
Utah Queen formation [1]
Woodman formation [1]
Lower and Upper(?) Mississippian
Benson limestone [1]
Lower Mississippian
†Buckhorn limestone [1]
Hidden Treasure limestone [1]
Leatham formation [2]
Midridge limestone [2]
Devonian
Becks limestone [2]
Beirdneau sandstone member (of Jefferson formation)[2]
Hyrum dolomite member (of Jefferson formation)[2]
Upper Devonian and Mississippian
†Gardner dolomite [1]
Pinyon Peak limestone [1]

United States—Continued
Utah—Continued
Upper Devonian
Aneth formation [2] (subsurface)
City Creek limestone [2]
Hades quartzite [1]
McCracken member (of Elbert formation)[2] (subsurface)
Mowitza shale [1]
Victoria formation (as quartzite [1])
Middle Devonian
Guilmette formation [1]
Sevy dolomite [1]
Simonson dolomite [1]
Lower Devonian
Water Canyon formation [2]
Silurian
Dora member (of Bluebell formation)[2]
Laketown dolomite [1]
Noah member (of Bluebell formation)[2]
†Paradise limestone [1]
Silurian(?) and Devonian(?)
Red Warrior limestone [1]
Middle Silurian
Bell Hill dolomite [2]
Harrisite dolomite [2]
Lost Sheep dolomite [2]
Thursday dolomite [2]
Ordovician to Mississippian
†Godiva limestone [1]
†Wasatch limestone [1]
Ordovician
Chief Consolidated limestone [1]
Gemini limestone [1]
Ordovician and Cambrian(?)
Grampian limestone [1]
Upper Ordovician, Silurian, and Devonian
Bluebell dolomite [1]
Upper Ordovician and Silurian
Beecher member (of Bluebell formation)[2]
Upper Ordovician and (or) Silurian
Floride dolomite [2]
Upper Ordovician
Eagle member (of Bluebell formation)[2]
Middle Ordovician
Swan Peak formation (as quartzite [1])
Lower Ordovician
Box Elder limestone [1]
Fillmore limestone [2]
Garden City formation (as limestone [1])
†Geneva quartzite [1]
House limestone [2]
Juab limestone [2]
Kanosh shale [2]
Opohonga limestone[1]
Wahwah limestone [2]

United States—Continued
Utah—Continued
Cambrian and Lower Ordovician
†Eureka limestone [1]
†Mammoth limestone [1]
Cambrian
Busby quartzite member (of Langston formation) [2]
Butlerville quartzite [1]
Dagmar limestone member (of Ute formation) [2]
Holliday shale [1]
†Milliard limestone [1]
Naomi Peak limestone member (of Langston formation) [2]
Opex formation (as dolomite [1])
Pine Valley quartzite [2]
Timpanogos shales [1]
Cambrian(?)
Morehouse quartzite [1]
Sentinell limestone [2]
Sentinell quartzite [2]
Upper Cambrian and Ordovician(?)
Chokecherry dolomite [1]
Upper Cambrian
Ajax dolomite (as limestone [1])
Emerald member (of Ajax dolomite) [1]
Hicks formation [1]
Lamb dolomite [1]
Notch Peak limestone [1]
Orr formation [1]
Weeks limestone [1]
Upper and Middle(?) Cambrian
Lynch dolomite [1]
Middle Cambrian to Lower Ordovician
Centennial limestone [1]
Middle and Upper(?) Cambrian
Maxfield limestone [1]
Middle Cambrian
Abercrombie formation [1]
Blacksmith limestone [1]
Bluebird dolomite [1]
Bowman limestone [1]
Cole Canyon dolomite [1]
Dagmar limestone [1]
Dome Canyon limestone [1]
Golden Ray limestone [1]
Hartmann limestone [1]
Herkimer limestone [1]
Hodges shale member (of Bloomington formation) [1]
Howell formation [1]
Landston formation [1]
Marjum limestone [1]
Millard limestone [2]
Swasey formation [1]
Teutonic limestone [1]
Trippe limestone [1]
Ute limestone [1]
Wheeler formation [1]
Young Peak dolomite [1]
Middle and Lower(?) Cambrian
Brigham quartzite [1]

United States—Continued
Utah—Continued
Lower and Middle Cambrian
†Alta shale [1]
†Ogden quartzite [1]
Ophir formation [1] **or shale**
†Tintic slate [1]
Lower Cambrian
Barkley quartzite [1]
Busby quartzite [1]
Cabin shale [1]
Dale quartzites [1]
†Robinson quartzite [1]
Tatow limestone [2]
Uintan series [1]
Lower Cambrian and Precambrian(?)
Tintic quartzite [1]
Precambrian
Bald Mountain formation [2]
Big Cottonwood formation (as quartzite series [1])
Box Canyon member (of Mutual quartzite) [2]
Cottonwood schists and gneisses [1]
Emmons Peak quartzite [1]
Farmington Canyon complex [2]
Little Willow series [2]
Mineral Fork tillite [2]
Mutual formation [2]
Red Creek quartzite [1]
Red Pine shale [2]
†Uinta quartzite and sandstone [1]
Uinta Mountain group [1]
Vermont
Eocene
Brandon lignite [1]
Paleozoic
Belvidere Mountain amphibolite [1]
Lowell Mountain formation [1]
Upper Paleozoic
Plymouth granite [1]
Carboniferous
Mount Ascutney granite [1]
Devonian
Barre granite [1]
Bethel granite [1]
Calais granite [1]
Craftsbury granite [1]
Groton granite [1]
Hardwick granite [1]
Irasburg granite [1]
Newark granite [1]
Newport granite [1]
Orange granite [1]
Pomfret granite [1]
Randolph granite [1]
Ryegate granite [1]
Tunbridge granite [1]
Vernon limestone [1]
West Dummerston granite [1]
Williamstown granite [1]
Woodbury granite [1]
Devonian and Silurian(?)
Gile Mountain formation [2]

United States—Continued
Vermont—Continued
Upper Cambrian—Continued
Cavendish schist [1]
Clarendon Springs dolomite [1]
Gorge formation [1]
Hungerford formation [2]
Lunenburg schist [1]
Milton dolomite [1]
†Missisquoi formation [1]
Reading gneiss [1]
Rockledge limestone breccia [2]
Russell slate [2]
Saxe Brook formation [2]
Williston limestone [1]
Upper Cambrian(?)
Gassetts schist [1]
Halifax chlorite schist [1]
Heartwellville schist [1]
Highgate slate [1]
Missisquoi schist [1]
Readsboro schist [1]
Whittingham schist [1]
Middle or Upper Cambrian
Skeels Corners formation [2]
Middle Cambrian
Boucher formation [2]
Mill River conglomerate [1]
St. Albans slate [1]
Middle(?) Cambrian
Rugg Brook dolomite conglomerate [1]
Lower Cambrian to Lower Ordovician
†Swanton conglomerate [1]
Lower Cambrian
Barker quartzite [1]
Battell member (of Monastery formation) [2]
Beebe limestone [1]
Bennington quartzite [1]
Bomoseen grit [1]
Brezee phyllite [1]
Brigham Hill graywacke [2]
Bull slate [1]
†Colchester formation [1]
Connor facies (of Dunham dolomite) [2]
Danby formation [1]
†Georgian epoch or series [1]
Granville formation [2]
Hancock member (of Pinney Hollow formation) [2]
Hooker slate [1]
Hubbardton slate [1]
Mallet dolomite [1]
Monastery formation [2]
Monkton quartzite [1]
Noah Parker horizon [1]
Parker slate [1]
Pine Hill quartzite [1]
Pinney Hollow schist [1]
Plymouth conglomerate [1]
Plymouth marble [1]
Rutland dolomite [1]
Sherburne conglomerate [1]

United States—Continued
Vermont—Continued
Lower Cambrian—Continued
Stiles phyllite [1]
†Swanton marble [1]
†Swanton slate [1]
Tyson member (of Monastery formation) [2]
†Vermont formation [1] or quartzite [1]
Wallace Ledge formation [2]
Wallingford dolomite [1]
Winooski marble [1]
Zion Hill quartzite [1]
Lower Cambrian(?)
Brackett member (of Stowe formation) [2]
Sherman marble [1]
Precambrian
Forestdale marble [1]
Green Mountain gneiss [1]
Harmon Hill gneiss [1]
Lana conglomerate [1]
Lana shale [1]
Mendon dolomite [1]
Mendon schist [1]
Moosalamoo phyllite [1]
Mount Holly gneiss [1]
Nickwaket graywacke [1]
Ripton conglomerate [1]
Rochester quartzite [1]
Romance arkose [1]
Saltash formation [2]
Stamford granite gneiss [1]
Westford schist [2]
Wilcox formation [2]
†Woodford gneiss [1]
Precambrian(?)
East Mountain schist [1]
Fairfax schist [2]
Age(?)
Averill granite [1]
Beadle Green granite [1]
Black Mountain granite [1]
Bull Hill gneiss [1]
Kirby granite [1]
Knox Mountain granite [1]
Roll Quarry limestone [1]
Virginia
Pleistocene
†Dismal Swamp formation [1]
†Franconia gravel [1]
Princess Anne formation [1]
Pleistocene or Pliocene(?)
†Appomattox formation [1]
†Norfolk formation [1]
Miocene
Bermuda earth [2]
†Richmond earth [1]
†Virginian [1] [deposits]
Miocene, upper
Yorktown formation [1]
Eocene, upper
Chickahominy formation [2] (subsurface)

United States—Continued
Virginia—Continued
Eocene, lower and middle
Pamunkey group [1]
Woodstock greensand marl member (of Nanjemoy formation) [1]
Eocene, lower
Aquia formation [1] or **greensand**
Paspotansa greensand marl member (of Aquia formation) [1]
Lower Cretaceous
†Aquia Creek series [1]
†Brooke formation [1]
†Fredericksburg sandstone [1]
†James River series [1]
†Mount Vernon series [1]
†Rappahannock series [1]
Upper Triassic
†Border conglomerate [1]
Boscabel boulder beds [1]
Bull Run shales [1]
Chesterfield group [1]
Otterdale sandstones [1]
Tuckahoe group [1]
Vinita beds [1]
Paleozoic(?)
Arch marble [2]
Archer Creek formation [2]
Candler formation [2]
Evington group [2]
Joshua schist [2]
Max Meadows fault breccia [2]
Mount Athos formation [1]
Pelier schist [2]
Slippery Creek greenstone [2]
Upper Paleozoic
Petersburg granite [1]
Pennsylvanian
Dismal conglomerate lentil (in Dismal formation) [1]
Dismal formation [1]
Panther conglomerate [1]
†Pocahontas group [1]
Pocahontas sandstone [1]
Middle Pennsylvanian
Addington sandstone member (of Wise formation) [1]
Gladeville sandstone [1]
McClure sandstone member (of Norton formation) [1]
Norton formation [1]
Wise formation [1]
Lower and *Middle Pennsylvanian*
Lee formation [1] or **group**
Lower Pennsylvanian
Bald Rock conglomerate member (of Lee formation) [1]
Pocahontas formation [1]
Sequoyah formation [1]
Tellowa formation [1]
Mississippian
Bent limestone (in Bluestone formation) [1]
Broad Ford sandstone (in Pocono sandstone) [1]

United States—Continued
Virginia—Continued
Mississippian—Continued
Cloyd conglomerate member (of Price formation) [2]
Falls Mills limestone (in Hinton formation) [1]
Falls Mills sandstone (in Hinton formation) [1]
Falls Mills shale (in Hinton formation) [1]
Graham limestone (in Bluefield formation) [1]
Graham sandstone (in Bluefield formation) [1]
Graham shale (in Bluefield formation) [1]
†Montgomery buhr, grits, or sandstone [1]
Mud sandstone (in Bluestone formation) [1]
Mud shale (in Bluestone formation) [1]
†Pulaski shale [1]
Upper Mississippian
Bluestone formation [1]
†Cove Creek limestone [1]
†Fido sandstone [1]
Hinton formation [1]
Little Valley limestone [2]
Maccrady shale [1]
Pennington shale,[1] **formation, or group**
Lower Mississippian
Price sandstone [1], **formation, or siltstone**
Upper Devonian and Lower Mississippian
Big Stone Gap shale [1]
Upper Devonian
Hilton shale member (of Portage formation) [1]
Jennings formation [1]
Kimberling shale [1]
Walker shale [1]
Middle and Upper Devonian
Millboro shale [2]
Lower Devonian
Clifton Forge sandstone member (of Keyser limestone) [1]
Craigsville limestone [1]
Healing Springs sandstone member (of New Scotland limestone) [1]
Longdale limestone [1]
†Monterey sandstone [1]
Rocky Gap sandstone [1]
Saltville chert [1]
Silurian or younger
Bremo quartzite [2]
Silurian and Lower Devonian
Giles formation [1]
Silurian
Crabbottom sandstone (in Wills Creek formation) [2]

United States—Continued
Virginia—Continued
Silurian—Continued
†Ingles conglomerate member [1] (of Price formation)
Middle Silurian
Cacapon sandstone member (of Clinton formation) [1]
Iron Gate facies (of Clinton formation) [2]
Lower Silurian
Hagen shale member (of Clinch sandstone) [2]
Poor Valley Ridge member (of Clinch sandstone) [2]
Post-Ordovician
Stafford Store quartz monzonite [1]
Upper Ordovician and Silurian
†Massanutten sandstone [1]
Upper Ordovician
Arvonia slate [1]
House Mountain shales [1]
Quantico slate [1]
Middle Ordovician
Benbolt limestone [2]
Ben Hur limestone [2]
Blackford formation [2]
Bolarian series [2]
Botetourt limestone member (of Edinburg formation) [2]
Bowen formation [2]
Burkes Garden limestone member (of Benbolt limestone) [2]
Cliffield formation [2]
Collierstown limestone [2]
Dot limestone [2]
Edinburg formation [2]
Effna limestone [2]
Eggleston limestone [1]
Elway limestone [2]
Five Oaks limestone member (of Cliffield formation) [2]
Gratton limestone [2]
Hardy Creek limestone [2]
Hurricane Bridge limestone [2]
Lantz Mills facies (of Edinburg formation) [2]
Lexington limestone [1]
Lincolnshire limestone [2]
Martin Creek limestone [2]
Moccasin limestone [1] or **formation**
New Market limestone [2]
Oranda formation [2]
Peery limestone member (of Cliffield formation) [2]
Poteet limestone [2]
Rob Camp limestone [2]
Rockdell limestone [2]
St. Clair facies (of Murfreesboro formation) [2]
St. Luke limestone member (of Edinburg formation) [2]
Shannondale limestone member (of Benbolt limestone) [2]
Thompson Valley limestone [2]

United States—Continued
Virginia—Continued
Middle Ordovician—Continued
Tumbez limestone [2]
Walker Mountain sandstone (of Moccasin formation) (Charles Butts and R. S. Edmundson, 1943, Geol. Soc. America Bull., v. 54, no. 11, p. 1678)
Ward Cove limestone member (of Cliffield formation) [2]
Wardell formation [2]
Whistle Creek limestone [2]
Witten limestone [2]
Woodway limestone [2]
Lower and Middle(?) Ordovician
Pearisburg limestone [1]
Lower Ordovician
Draper dolomite member (of Nittany formation) [2]
Everona limestone [1]
†Liberty Hall limestone [1]
†Murat limestone [1]
Narrows chert (in Beekmantown limestone) [1]
Oglesby marble member (of Nittany formation) [2]
Cambrian
Mechunck limestone [1]
Oronoco formation [2]
Upper Cambrian
Chances Branch dolomite member (of Maynardville limestone) [2]
Low Hollow limestone member (of Maynardville limestone) [2]
Middle and Upper Cambrian
†Natural Bridge limestone [1]
Middle Cambrian
Honaker limestone or dolomite [1]
Lower and Middle Cambrian
†Buena Vista shale [1]
Graysonton formation [1]
†Russell formation [1]
Lower Cambrian
Austinville dolomite member (of Shady dolomite) [2]
Ivanhoe limestone member (of Rome formation); (as member of Shady dolomite [1])
Loudoun formation [1]
Patterson limestone member (of Shady dolomite) [1]
†Sherwood limestone [1]
Snowden member (of Harpers formation) [2]
Precambrian
Abbyville gabbro [1]
Air Point granite [1]
Amelia-Goochland quartz monzonite gneiss [1]
Buffalo granite [1]
Carsonville granite [2]
Cartersville granite [1]
†Columbia granite [1]

United States—Continued
Virginia—Continued
Precambrian—Continued
Crest Hill granite [2]
Elk Hill complex [1]
Fauquier formation [2]
Fredericksburg gneiss [1]
Fredericksburg granite [1]
Goshen schist [1]
Grayson granodiorite gneiss (as granite gneiss [1])
Hyco quartz porphyry [1]
Leatherwood granite [1]
Locust Grove diorite [1]
Locust Grove granite [1]
Lovingston granite gneiss [1]
Lynchburg gneiss [1]
Marshall granite [1]
Melrose granite facies (of Columbia granite)[1]
Moneta biotite - hornblende gneiss [1]
Monticello rhyolites [1]
Monticello schist [1]
Mount Athos greenstone [1]
Occoquan granite [1]
Old Rag granite [1]
Pedlar formation [2]
Redoak granite [1]
Rockfish conglomerate [1]
Roseland anorthosite [2]
Schuyler soapstone [1]
Shelton granite gneiss [1]
Somerville granite [1]
State Farm gneiss [2]
Striped Rock granite [2]
Swift Run formation [2]
Virgilina group, volcanic group, or greenstone [1]
Warrenton agglomerate member (of Catoctin series) [2]
Precambrian(?)
Neabsco Run diorite [1]
Point Lookout granite [1]
Age(?)
Charlottesville formation [2]
East Waynesboro formation [2]
Esmont slate facies (of Candler formation) [2]
Flat Rock Creek granite [2]
Johnson Mill graphite schist [2]
Lydia granodiorite [2]
Mount Jefferson sandstone member (of Rockfish conglomerate) [2]
†Sheep Rock conglomerate [1]
Swannanoa formation [2]
Washington
Quaternary
Dogs Head andesites [2]
Drumheller silts [2]
Glacier Peak volcanics [1]
Goat Rock pyroclastic deposits [2]
Mount Baker lava [1]
Mount Rainier lavas [1]
Mount St. Helens lavas [2]

United States—Continued
Washington—Continued
Recent
Colwood formation [1]
Pleistocene
Admiralty dirft [1] or clay
Arlington gravel member (of Vashon drift) [2]
Cowiche gravel [1]
†Douty gravel [1]
Esperance sand member (of Vashon drift) [2]
Gale sand [1]
Logan Hill formation [2]
Marysville sand member (of Vashon drift) [2]
Midland sand [1]
Nespelem silt [1]
Okanogan [1] (till)
Orting drift (as gravel [1])
Osceola clay [1]
†Osceola glacial drift [1]
Palouse formation [1]
Pilchuck clay member (of Vashon drift) [2]
Puyallup formation (as sand [1])
Queets beds [2]
Ringold formation [1]
Satsop formation [1]
Steilacoom gravel [1]
Stillaquamish sand member (of Vashon drift) [2]
Taholah formation [2]
Tieton andesite [1]
Tiflis member (of Wahluke formation) [2]
Touchet beds [2]
Vashon drift [1]
Wahluke formation [2]
Willapa clays [2]
Tertiary
Camas basalt [1]
Cathedral granite [1]
Cloudy Pass diorite [2]
Tiger formation [2]
Tertiary(?)
Palmer volcanics [1]
Phalen Lake volcanics [1]
Underwood lava [1]
Tertiary, upper(?)
Pend Oreille Valley andesite [2]
Pre-Tertiary
Mount Stuart granodiorite [1]
Peshastin formation [1]
Pre-Tertiary(?)
Newaukum series [1]
Pliocene
Quinalt formation [1]
Soleduck formation [1]
Pliocene(?)
Hoko formation [1]
Howson andesite [1]
Raft River formation [1]
Miocene or Pliocene
Snipes conglomerates [2]
Sugarloaf andesite [2]

United States—Continued
Washington—Continued
Miocene or Pliocene—Continued
Summit conglomerate [2]
Miocene and Pliocene
Elephant Mountain flow [2]
Selah Butte flow [2]
Skamania andesite series [2]
Miocene
Browns Point formation [2]
Clallam formation [1]
Eagle Creek formation [1]
Fifes Peak andesite [2]
Hammer Bluff formation [1]
Selah tuff member (of Ellensburg formation)[2]
Silver Star granodiorite [2]
Squaw Creek diatomite member (of Yakima basalt)[2]
Taneum andesite [1]
Miocene and Oligocene(?)
Hoh formation [1]
Miocene(?)
Howard arkose [1]
Quillayute formation [1]
Miocene, upper, and Pliocene, lower
Ellensburg formation [1]
Miocene, upper
Enumclaw volcanic series [1]
Douglas Canyon formation [1]
Lake Vantage lavas [2]
Montesano formation [1]
Miocene, middle or upper
Latah formation [1]
Miocene, lower and middle
Yakima basalt [1] **member** (of Columbia River basalt)
Miocene, lower
Chehalis formation [1]
Wahkiakim formation [1]
Wenas basalt [1]
Oligocene
Blakeley formation [1]
Gerome andesite [1]
Lincoln formation [1]
Marrowstone shale [2]
Porter shale [1]
Restoration Point horizon [1]
Seattle formation [1]
Oligocene(?)
Snoqualmie granodiorite [1]
Oligocene, middle
Orchard Point conglomerate member (of Blakeley formation)[2]
Oligocene, lower
Gries Ranch formation (as horizon [1]); *see also* Greece Ranch horizon [1]
Quimper sandstone [2]
Townsend shale [2]
Eocene or Miocene
West Index andesitic series [1]

United States—Continued
Washington—Continued
Eocene to Miocene
Keechelus andesite series [1]
Twin River formation [1]
Eocene
Bayne series [1]
Bellingham beds [1]
Burnett formation [1]
Carbonado formation [1]
Carbon River (coal) series [1]
Chehalis sandstone [1]
Evans Creek coal series [1]
Fairfax [1] (coal bearing rocks)
Franklin sandstone [1]
Franklin series [1]
Guye formation [1]
Kachess rhyolite [1]
Knob Hill andesite [2]
†Kittitas system [1]
Kummer sandstone [1]
Kummer series [1]
Lyre formation [2]
Manastash formation [1]
Melmont [1] (coal bearing rocks)
Naches formation [1]
Natapoc formation [1]
Olequa formation [1]
†Pittsburg formation [1]
Puget group [1]
Puyer formation [1]
Roslyn formation [1]
South Prairie formation [1]
Sumas shales (in Chuckanut formation)[2]
Swauk formation [1]
Teanaway basalt [1]
Wilkeson [coal] series [1]
Wilkeson formation [1]
Eocene(?)
Pipestone Canyon formation [2]
Eocene, upper
Cowlitz formation [1]
Northcraft formation [2]
Olequa Creek member (of Cowlitz formation) [2]
Pe Ell volcanics member (of Cowlitz formation) [2]
Skookumchuck formation [2]
Stillwater Creek member (of Cowlitz formation) [2]
Eocene, middle to upper
McIntosh formation [2]
Eocene, middle and lower(?)
Crescent formation [1]
Eocene, lower
Chuckanut formation [1]
Mesozoic
Kruger Mountain malignite [2]
Whiskey Mountain granodiorite [2]
Cretaceous
Cle Elum formation [2]
Winthrop sandstone [1]

United States—Continued
Washington—Continued
Cretaceous(?)
Bogachiel formation [1]
Loon Lake granite [1]
Soleduck formation [1]
Probably Cretaceous
†Colville granite [1] or granodiorite [1]
Upper Cretaceous
Midnight Peak formation [2]
Lower and Middle Cretaceous
Virginian Ridge formation [2]
Lower Cretaceous
Pasayten formation [1]
†Similkameen formation [1]
Spieden formation [1]
Jurassic
Tye granite [1]
Jurassic(?)
Eagle Cliff porphyrite [1]
Index granodiorite [1]
Meteor granodiorite [1]
Osoyoos granodiorite [1]
Remmel granodiorite [1]
Upper Jurassic
Shuksan formation [2]
Turtleback complex [1]
Upper Jurassic(?)
Chelan granodiorite [1]
Pre-Jurassic
Hawkins formation [1]
Triassic(?)
Fidalgo formation [1]
Newby formation [2]
Ventura formation [1]
Upper Triassic
Haro formation [1]
Paleozoic
Chewalah argillite [1]
Colville quartzite [1]
Deer Lake argillite [1]
Eagle Mountain quartzite [1]
Old Dominion limestone [1]
Paleozoic(?)
Boundary argillites [1]
Cedar Creek argillite [1]
Clugston limestone [1]
Deep Lake argillite [1]
Fish Creek argillite [1]
Lead Point argillite [1]
Mission argillite [1]
Red Top limestone [1]
Republican Creek limestone [1]
Stevens series [1]
Upper Paleozoic or Mesozoic
Jumbo volcanics [1]
Sheep Creek conglomerate [1]
Carboniferous
Hozomeen series [1]
Leech River group [1]
Carboniferous(?)
Chopaka basic intrusives [1]
Chopaka schist [1]
Gunn Peak formation [1]

United States—Continued
Washington—Continued
Pennsylvanian and (or) Permian
Granite Falls limestone [2]
Devonian and Carboniferous
San Juan series [1]
Probably Devonian, Carboniferous, and Mesozoic
Covada group [1]
Upper and Middle(?) Devonian and Mississippian
Orcas group [1]
Ordovician
Ledbetter slate [2]
Maloney metamorphic series [1]
Pre-Ordovician(?) or Carboniferous(?)
Easton schist [1]
Pre-Ordovician
Chiwaukim schist [2]
Swakane gneiss [1]
Pre-Ordovician(?)
Buckskin schist [2]
Fernow gneiss [2]
Martin Ridge schist [2]
Cambrian
Gypsy quartzite [2]
Middle Cambrian
Metaline limestone or **formation**[2]
Northport limestone [1]
Lower or Middle Cambrian
Maitlen phyllite [2]
Lower Cambrian
Addy quartzite [1]
Precambrian
Bead Lake formation [2]
Buffalo Hump formation [2]
Deer Trail group (as argillite [1])
Edna dolomite [2]
Huckleberry formation (*based on* Huckleberry conglomerate[2] *and* Huckleberry greenstone[2])
Leola volcanics [2]
McHale slate [2]
Moon Hill quartzite member (of Skookum formation)[2]
Newport group [2]
No Name argillite [2]
Shedroof conglomerate [2]
Skookum formation [2]
Stensgar dolomite (as dolomite member [1])
Togo formation [2]
Precambrian(?)
Marshall diorite [2]
Orient gneiss [1]
Ribbon gneiss [1]
Age(?)
Carson lava [1]
Leecher metamorphics [2]
Methow gneiss [2]
West Virginia
Pleistocene
Barboursville silts [2]
Teay formation [1]
Pliocene(?)
Shepherdstown gravel [1]

United States—Continued
West Virginia—Continued
Permian
Bellton coal group (in Greene and Washington formations)[1]
Bristol limestone (in Washington formation)[1]
Burton sandstone (in Greene formation)[1]
Cassville shale member (of Washington formation)[1]
Creston shale (in Washington formation)[1]
Dolls Run sandstone (in Washington formation)[1]
Elm Grove limestone member (of Washington formation)[1]
Fish Creek shale (in Greene formation)[1]
Gilmore limestone (in Greene formation)[1]
Hundred sandstone (in Washington formation)[1]
Mannington sandstone (in Washington formation)[1]
Proctor sandstone (in Greene formation)[1]
Rockport limestone (in Greene formation)[1]
Rush Run sandstone (in Greene formation)[1]
St. Cloud sandstone (in Greene formation)[1]
Shannon Run limestone (in Washington formation)[1]
Washington fire clay shale (in Washington formation)[1]
Pennsylvanian
Albright limestone (in Conemaugh formation)[1]
Ames shale (in Conemaugh formation)[1]
Annabelle shale (in Monongahela formation)[1]
Arnoldsburg limestone (in Monongahela formation)[1]
Arnoldsburg sandstone (in Monongahela formation)[1]
Bald Knob shale (in Kanawha formation)[1]
Bens Creek sandstone (in Kanawha formation)[1]
Blackwater shale and limestone [1]
Braxton formation [1]
Breedon sand [1] (subsurface)
Brownstown sandstone (in Kanawha formation)[1]
Brush Creek fire clay shale (in Conemaugh formation)[1]
Brush Creek shale (in Conemaugh formation)[1]
Buffalo Creek limestone (in Kanawha formation)[1]
Burning Springs sand [1] (subsurface)

United States—Continued
West Virginia—Continued
Pennsylvanian—Continued
Cairo gas, silt, or oil sand [1] (subsurface)
Cambridge red bed (in Conemaugh formation)[1]
Campbell Creek limestone (in Kanawha formation)[1]
Campbell Creek (Lower) sandstone (in Kanawha formation)[1]
Canaan Mountain fire clay [1]
Cannelton limestone (in Kanawha formation)[1]
Cannelton shale (in Kanawha formation)[1]
Carroll sand [1] (subsurface)
Cedar Grove sandstone (in Kanawha formation)[1]
Cedarville sandstone (in Monongahela formation)[1]
Charleston sandstone [1]
Chilton sandstone (in Kanawha formation)[1]
Clark formation [1]
Clarksburg fire clay shale (in Conemaugh formation)[1]
Clarksburg red shale (in Conemaugh formation)[1]
Cleveland sandstone (in Kanawha formation)[1]
Coalburg sandstones (in Kanawha formation)[1]
Coalburg shale (in Kanawha formation)[1]
Corinth sandstone (in Conemaugh formation)[1]
Decota sandstone (in Kanawha formation)[1]
Dingess limestone (in Kanawha formation)[1]
Dingess sandstone (in Kanawha formation)[1]
Dingess shale (in Kanawha formation)[1]
Dorothy limestone and shale (in Kanawha formation)[1]
Dotson sandstone [1]
Dotson (Lower) sandstone [1]
Douglas shale (in Kanawha formation)[1]
Eagle limestone (in Kanawha formation)[1]
Eagle sandstone (in Kanawha formation)[1]
Eagle shale (in Kanawha formation)[1]
East Lynn sandstones (in Allegheny formation)[1]
Eckman sandstone (in Pottsville group)[1]
Elk fire clay (in Conemaugh formation)[1]
†Elkgarden formation [1]
†Elk River series [1]
Fairfax formation [1]

United States—Continued
West Virginia—Continued
Pennsylvanian—Continued
Wharncliffe sandstone [1]
Wheeling group [1]
Williamson sandstone (in Kanawha formation)[1]
Winifrede limestone (in Kanawha formation)[1]
Winifrede sandstone (in Kanawha formation)[1]
Upper Pennsylvanian
Benwood limestone member (of Monongahela formation)[1]
Clarksburg limestone member (of Conemaugh formation)[1]
Fulton shale member (of Monongahela formation)[1]
Gilboy sandstone member (of Monongahela formation)[1]
Morgantown sandstone member (of Conemaugh formation)[1]
Uffington shale member (of Conemaugh formation)[1]
Middle Pennsylvanian
Kanawha formation [1]
Pugh formation [1]
Quinnimont shale [1]
Thurmond formation [1]
Upshur sandstone [1]
Lower Pennsylvanian
Bayard formation [1]
Bearwallow conglomerate[1]
Blackwater formation [1]
New River formation (as group [1] or series [1])
Nuttall sandstone member (of Sewell formation)[1]
Raleigh sandstone [1]
Sequoyah formation [1]
Sewell formation [1]
Tellowa formation [1]
Welch formation [1]
Mississippian
Ada shale (in Bluefield formation)[1]
Alderson limestone (in Greenbrier limestone) [1]
Anawalt sandstone [1]
Avis limestone (in Hinton formation)[1]
Avis sandstone (in Hinton formation)[1]
Avis shale (in Hinton formation)[1]
Ballard Harmon sandstone [1]
Beckett sand [1] (subsurface)
Belcher sandstone (in Bluestone formation)[1]
Belcher shale (in Bluestone formation)[1]
Bellepoint limestone (in Hinton formation)[1]
Bellepoint sandstone (in Hinton formation)[1]

United States—Continued
West Virginia—Continued
Mississippian—Continued
Bellepoint shale (in Hinton formation)[1]
Bent sandstone (in Bluestone formation)[1]
Bent shale (in Bluestone formation)[1]
Bertha sandstone (in Bluefield formation)[1]
Bertha shale (in Bluefield formation)[1]
Bickett shale (in Bluefield formation)[1]
Big Spruce Knob sandstone [1]
Big Spruce Knob shale [1]
Bradshaw limestone (in Bluefield formation)[1]
Bradshaw sandstone (in Bluefield formation)[1]
Bradshaw shale (in Bluefield formation)[1]
Bratton sandstone (in Bluestone formation)[1]
Bratton shale (in Bluestone formation)[1]
†Canaan formation[1]
Clayton sandstone (in Bluefield formation)[1]
Clayton shale (in Bluefield formation)[1]
Coney limestone (in Bluefield formation)[1]
Coney shale (in Bluefield formation)[1]
Dawson sand [1] (subsurface)
Denmar formation [2]
Droop sandstone (in Bluefield formation)[1]
Edray sandstone (in Bluefield formation)[1]
Fivemile shale (in Hinton formation)[1]
Glady Fork sandstone (in Bluestone formation)[1]
Glenray limestone (in Bluefield formation)[1]
Goodwyn sandstone (in Hinton formation)[1]
Goodwyn shale (in Hinton formation)[1]
†Greenbrier series [1]
†Greenbrier shales [1]
Greenville shale (in Greenbrier limestone)[1]
Hackett sandstone (in Hinton formation)[1]
Hackett shale (in Hinton formation)[1]
Hartwell sandstone [1]
†Hinton limestone (in Hinton formation)[1]
Hinton sandstone [1]
Hunt sandstone (in Bluestone formation)[1]

United States—Continued
West Virginia—Continued
Mississippian—Continued
Hunt shale (in Bluestone formation)[1]
Indian Mills sandstone (in Bluefield formation)[1]
Indian Mills shale (in Bluefield formation)[1]
Keener sand [1] (subsurface)
†Lewisburg limestone [1]
Lillydale shale (in Bluefield formation)[1]
Lindside sandstone (in Pocono sandstone)[1]
Low Gap limestone (in Hinton formation)[1]
Low Gap sandstone (in Hinton formation)[1]
Low Gap shale (in Hinton formation)[1]
Maxton sand [1] (subsurface)
Pageton sandstone [1]
Patton limestone (in Greenbrier limestone)[1]
Patton shale (in Greenbrier limestone)[1]
Payne Branch sandstone (in Hinton formation)[1]
Payne Branch shale (in Hinton formation)[1]
Pickaway limestone (in Greenbrier limestone)[1]
Pipestem shale (in Bluestone formation)[1]
Pluto limestone (in Hinton formation)[1]
Pluto shale (in Hinton formation)[1]
Possumtrot shale (in Bluefield formation)[1]
Pride shale (in Bluestone formation)[1]
Raines Corner limestone (in Bluefield formation)[1]
Raines Corner shale (in Bluefield formation)[1]
Reynolds limestone (in Bluefield formation)[1]
Rouzer sand [1] (subsurface)
Sinks Grove limestone (in Greenbrier limestone)[1]
Taggard limestone (in Greenbrier limestone)[1]
Talcott shale (in Bluefield formation)[1]
Tallery limestone (in Hinton formation)[1]
Tallery sandstone (in Hinton formation)[1]
Tallery shale (in Hinton formation)[1]
Terry limestone (in Hinton formation)[1]
Terry shale (in Hinton formation)[1]

United States—Continued
West Virginia—Continued
Mississippian—Continued
Tophet sandstone (in Hinton formation)[1]
Tophet shale (in Hinton formation)[1]
Union limestone (in Greenbrier limestone)[1]
Webster Springs sandstone (in Bluefield formation)[1]
Upper Mississippian
Bent Mountain member (of Bluestone formation)[2]
Bluefield shale [1] **or formation**
Greenbrier limestone [1]
Hillsdale member (of Greenbrier limestone)[1]
Mud Fork member (of Bluestone formation)[2]
Taggard red member (of Greenbrier limestone) (as shales [1])
Stony Gap sandstone member (of Hinton formation)[1]
Princeton sandstone [1]
Lower Mississippian
Hedges shale [1]
Myers shale [1]
Pinkerton sandstone [1]
Purslane sandstone [1]
Rockwell formation [1]
Upper Devonian
Benson sand [1] (subsurface)
Burnside sand [1] (subsurface)
Childress sand [1] (subsurface)
Elkins sandstone [1]
Hampshire formation [1]
Hendricks sandstone [1]
Riley sand [1] (subsurface)
Rowlesburg sandstone (in Chemung formation)[1]
Valley Head sandstone [1]
Whetstone Run sand [1] (subsurface)
Woodmont shale member (of Jennings formation)[1]
Middle Devonian
Landes limestone [1]
Romney shale [1]
Lower Devonian
Big Mountain shale member (of Keyser limestone)[1]
Huntersville chert [1]
Keyser limestone (as member of Helderberg limestone [1])
†Lewistown chert lentil [1] (in Lewistown limestone)
Morgan series [1]
Ridgeley sandstone [1]
Silurian
Williamsport sandstone [1]
Middle and Upper Ordovician
Martinsburg shale [1]
Lower Cambrian
Antietam sandstone [1] **or quartzite**
Harpers formation (as shale [1])

United States—Continued
West Virginia—Continued
Lower Cambrian to Middle Ordovician
Shenandoah limestone [1]
Wisconsin
Pleistocene (Wisconsin)
†East Wisconsin formation [1]
Two Creeks forest bed [2]
Wisconsin drift or **till** [1]
Cretaceous or Tertiary
Windrow formation [1]
Devonian
Belgium member [1] (of Lake Church formation)
Lake Church formation [1]
Middle Devonian
Berthelet member [1] (of Milwaukee formation)
Lindwurm member [1] (of Milwaukee formation)
Milwaukee formation [1]
North Point member [1] (of Milwaukee formation)
Ozaukee member [1] (of Lake Church formation)
Thiensville formation [1]
Silurian
Byron beds [1]
Iron Ridge ore bed [1]
Mayville limestone [1]
†Mound limestone [1]
Wauwatosa formation [2]
Upper Silurian
Waubaukie dolomite [1]
Middle Silurian
Racine dolomite [1]
Waukesha limestone [1]
Lower Silurian
Burroughs dolomite [1]
Upper Ordovician
Neda formation [1] or **member** (of Maquoketa shale)
Middle Ordovician
Beloit dolomite [1]
Magnolia member (of Platteville limestone) [1]
Mifflin member (of Platteville limestone) [2]
Platteville limestone [1] or **formation**
Quimbys Mill member (of Platteville formation) [2]
Lower Ordovician
Genoa member (of Oneota formation) [2]
Hickory Ridge member (of Oneota formation) [2]
Mound Ridge member (of Oneota formation) [2]
New Richmond sandstone [1]
Prairie du Chien group [1]
Stoddard member (of Oneota formation) [2]
†Willow River limestone [1]

United States—Continued
Wisconsin—Continued
Cambrian
Port Wing brownstone member (of Orienta formation) [2]
Upper Cambrian
Arcadia member (of Trempealeau formation) [2]
Birkmose member (of Franconia formation) [2]
†Black Earth dolomite member (of St. Lawrence formation) [1]
Eau Claire grit [1]
Eau Claire sandstone [1]
Devils Lake sandstone [1]
Goodenough member (of Franconia sandstone) [1]
Hudson member (of Franconia sandstone) [1]
Ironton sandstone member (of Franconia sandstone) [1]
Lodi member (of Trempealeau formation); (as member of St. Lawrence formation [1])
Madison sandstone [1]
Mazomanie sandstone [1]
Mendota dolomite member (of St. Lawrence formation) [1]
Mount Simon sandstone [1]
Myers Hill sandstone [1]
Norwalk sandstone member (of Jordan sandstone) [1]
Sparta shale [1]
Sunset Point formation [2]
Tomah member (of Franconia formation) [2]
Trempealeau formation [1]
Woodhill member (of Franconia formation) [2]
Precambrian to Upper Cambrian
Sauk sequence [2]
Precambrian
Alloa rhyolite [1]
Amnicon formation [1]
Arpin conglomerate and quartzite [1]
Athelstane granite [1]
Bad River dolomite [1]
†Bad River gabbro [1]
†Bad River sandstone [1]
Baraboo quartzite [1]
Baraboo series [1]
Barron quartzite [1]
Bayfield group [1]
Berlin rhyolite gneiss [1]
†Black River iron-bearing series [1]
Breakwater quartzite [1]
Chequamegon sandstone [1]
Chippewa quartzite [1]
Conover slate [1]
Copper Creek beds [1]
Dake quartzite [1]
Denzer diorite [1]
Denzer tuff [1]
Devils Island sandstone [1]
Douglas County traps [1]

United States—Continued
Wisconsin—Continued
Precambrian—Continued
Eileen sandstone [1]
Endeavor granite [1]
Flambeau quartzite [1]
Freedom dolomite [1]
†Hamburg slate [1]
Junction City quartzite [1]
Lohrville granite [1]
Lower Narrows rhyolite [1]
Marathon conglomerate [1]
Marcellon quartz porphyry [1]
Marion granite [1]
Marquette quartz prophyry [1]
Marquette rhyolite [1]
Marshall Hill conglomerate [1]
Mellen or High Bridge granite [1]
Merrimac rhyolite [1]
Montello granite [1]
Mosinee conglomerate [1]
Moundville quartz porphyry [1]
Mukwa granite [1]
Necedah quartzite [1]
North Mound conglomerate and quartzite [1]
Observatory Hill quartz porphyry [1]
Orienta sandstone [1]
Oronto group [1]
Otter Creek granite [1]
Pence ferruginous slate member (of Ironwood-iron formation) [1]
†Penokee series [1]
Pike River granite [1]
Plymouth ferruginous chert member (of Ironwood-iron formation) [1]
†Portland quartzite [1]
Powers Bluff quartzite [1]
Rib Hill quartzite [1]
Rowley Creek slate [1]
Rudolph quartzite [1]
St. Cloud granite [1]
Seneca quartz porphyry [1]
Sunday quartzite [1]
Utley metarhyolite [1]
Washburn beds [1]
Waterloo quartzite [1]
Wausau granite [1]
Wausau graywacke [1]
Waushara granite [1]
†Western sandstone [1]
Wisconsin Valley slates [1]
Age(?)
Baxter Hollow granite [2]
Wyoming
Quaternary
Hot Springs formation [1]
Quaternary(?)
Salt Lake conglomerate [1]
Recent
Kaycee formation [2]
Lightning formation [2]
Recent(?)
Ucross formation [2]

United States—Continued
Wyoming—Continued
Pleistocene
Arvada formation [2]
Buffalo drift [1]
Bull Lake drift [1]
Pinedale drift [1]
Tertiary
†Carbon group [1]
Castle rhyolite [2]
Cataract basalt [2]
Clear Creek gravels [2]
Elkhorn basalt [2]
Lodgepole rhyolite and obsidian [2]
Meadow rhyolitic tuff [2]
Ramshorn volcanic series [1]
Sheepeaters basalt [2]
Tertiary, upper
Sylvan intrusives [1]
Pliocene
†Canyon conglomerate [1]
†South Pass group [1]
Tower Creek conglomerate [1]
†Yellowstone Lake group [1]
Pliocene, lower
Camp Davis formation [2]
Miocene and (or) Pliocene
Canyon basalt [2]
Crescent Hill basalt [2]
Elk Creek basalt [2]
Geode Creek basalt [2]
Lost Creek trachyte [1]
Oxbow Creek basalt [2]
Miocene or Pliocene
Burnt Gulch conglomerate [2]
Miocene
Electric Peak intrusives [1]
Ishawooa intrusives [1]
Sherman diorite [1]
Sunlight intrusives [1]
Miocene(?)
Bishop conglomerate [1]
†Wyoming conglomerate [1]
Miocene, upper, and Pliocene, lower
Spoon Butte beds [1]
Post-Oligocene(?)
Caldwell Canyon volcanics [2]
Oligocene
Hat Creek beds [1]
Sweetwater group [1]
Sweetwater member [1] (of White River group)
Wiggins formation [2]
Oligocene(?)
Tatman Mountain gravels [1]
Oligocene, lower
Beaver Divide conglomerate member (of Chadron formation) [2]
Yoder formation [1]
Eocene and Oligocene
Sand Draw sandstone lentil (of White River formation) [2]
Eocene
Bates Hole formation [1]
†Bitter Creek group [1]

United States—Continued
Wyoming—Continued
Eocene—Continued
Black Rock coal group [1]
Blacks Fork member (of Bridger formation)[1]
Burnt Fork white layer [1]
Green Cove beds [1]
Greenian series [1]
Hanna formation [1]
Knight formation [1]
†Pinyon Peak conglomerate [1]
Twin Buttes member (of Bridger formation)[1]
Ulm coal group (in Wasatch formation)[1]
Ulm formation [1]
Wagonhound member [1] (of Uinta formation)
Eocene, upper
Fowkes formation [1]
Tepee Trail formation [2]
Eocene, upper(?)
Continental Peak formation [2]
Eocene, middle and upper(?)
Bridger formation [1]
†Bridgerian series [1]
Lone Tree white layer [1]
†Washakie formation [1]
Eocene, middle
Aycross formation [2]
Cottonwood white layer [1]
Fontenelle member (of Green River formation)[2]
Laney shale member (of Green River formation)[1]
Pass Peak conglomerate [2]
Sage Creek white layer [1]
Tower sandstone lentil (of Green River formation)[1]
Eocene, lower and middle
Battle Spring formation [2]
Green River formation [1]
Eocene, lower
Alkali Creek [1] (red stratum in Wind River formation)
Cathedral Bluffs tongue (of Wasatch formation)[1]
†Clark Fork beds [1]
Cottonwood Draw banded layers [1] (in Wind River formation)
†Gray Bull beds [1]
Hoback formation [2]
Indian Meadows formation [2]
Kingsbury conglomerate member (of Wasatch formation)[1]
Lost Cabin member (of Wind River formation); (as formation [1])
Luman tongue (of Green River formation)[2]
Lysite member (of Wind River formation); (as formation [1])
Moncrief member (of Wasatch formation)[2]

United States—Continued
Wyoming—Continued
Eocene, lower—Continued
Newberger sand [1] (subsurface)
New Fork tongue (of Wasatch formation)[2]
†Morrow Creek member (of Green River formation)[1]
Niland tongue (of Wasatch formation)[2]
†Ralston formation [1]
Red Desert tongue (of Wasatch formation)[2]
†Sand Coulee beds [1]
Tatman formation [1]
Tipton shale member or **tongue** (of Green River formation)[1]
Wilson sand [1] (subsurface)
Wind River formation [1]
Paleocene to Eocene
Willwood formation [2]
Paleocene
Almy formation [1] or **conglomerate**
†Evanstonian series [1]
Mantua lentil (of Polecat Bench formation)[2]
Pinyon conglomerate [1]
Polecat Bench formation [2]
Rock Bench quarry beds (of Polecat Bench formation)[2]
Silver Coulee beds (of Polecat Bench formation)[2]
Tongue River member (of Fort Union formation)[1]
Cretaceous
Custerian series [1]
Upper Cretaceous and Paleocene
†De Smet formation [1]
Evanston formation [1]
Ferris formation [1]
†Shoshone group [1]
Upper Cretaceous
Adaville formation [1]
Almond formation [1]
Bacon Ridge sandstone [2]
Basin shale [1]
Baxter shale [1]
†Beaver Creek chalky member (of Niobrara formation)[1]
Belle Fourche shale member (of Graneros shale)[1]
Black Buttes coal group [1]
†Black Butte quartzite [1]
Blair formation [1]
Bow formation or group [1]
Chimney Rock tongue (of Blair formation)[2]
Cody shale [1]
Elk Basin sandstone member (of Telegraph Creek formation)[1]
Ericson sandstone [1] or **formation**
Fitzhugh sands [1] (subsurface)
Frontier formation;[1] **sandstone member** (of Mancos shale) in NW Colorado and NE Utah

United States—Continued
Wyoming—Continued
Upper Triassic—Continued
Popo Agie member (of Chugwater formation); (as beds [1])
Lower Triassic
Dinwoody formation [1]
Upper Paleozoic
Pope Springs sandstone [2]
Permian and Triassic
Chugwater formation [1]
†Embar formation [1] or group [1]
†Teton formation [1]
Permian
Cassa group [2]
Ervay carbonate member (of Park City formation); (as tongue of Phosphoria formation [1])
Forelle limestone [1]
Freezeout tongue (of Chugwater formation)[1]
Glendo shale [2]
Satanka shale [1]
Sybille tongue (of Phosphoria formation)[1]
Pennsylvanian, Permian, and Mississippian(?)
Hartville formation [1]
Pennsylvanian or Permian
Broom Creek group [2]
Pennsylvanian
Amsden formation [1]
Darwin sandstone member (of Amsden formation); (as Dorwin [1])
Fairbank formation [2]
Hayden group [2]
Meek group [2]
Quadrant formation [1] **or quartzite** [1]
Reclamation group [2]
Roundtop group [2]
Tensleep sandstone [1]
Wendover group [2]
Upper Pennsylvanian and Permian
Casper formation [1]
Mississippian
Sacajawea formation [1]
Lower Mississippian
†Littlehorn limestone [1]
Muddy Mountain chert member (of Madison limestone) (J. D. Love, 1939, Geol. Soc. America Special Paper 20, p. 25)
Devonian and Mississippian
Guernsey formation [1]
Middle and Upper Devonian
Darby formation [1]
Lower Devonian
Beartooth Butte formation [1]
Upper Ordovician
Bighorn dolomite [1]
Lander sandstone member (of Bighorn dolomite)[1]
Leigh dolomite member (of Bighorn dolomite)[1]

United States—Continued
Wyoming—Continued
Middle Ordovician
Aladdin sandstone [2]
Cambrian
Buck Spring formation [2]
Bull Lake Creek shales [1]
Open Door limestone [2]
Shoshoni limestone [1]
Upper Cambrian
Boysen formation [2]
Du Noir member (of Gallatin formation)[1]
Middle Cambrian
Death Canyon member (of Gros Ventre formation)[1]
Depass formation [1]
Gros Ventre formation [1]
Precambrian
Anderson phyllite [1]
Deep Lake metaquartzite [1]
French slate [1]
Headquarters schist [1]
Heart metagraywacke [1]
Lookout schist [1]
Medicine Bow Peak quartzite [2]
Medicine Peak metaquartzite [1]
Nash marble series[1]
Ranger marble[1]
Seeley slate [1]
Seminoe formation [1]
†Sheridan quartzite [1]
Sherman granite [1]
Sugarloaf metaquartzite [1]
Towner greenstone [1]
Whalen group [1]
Age(?)
Jardine "basalt" [2]
Canada
Alberta
Pleistocene
Drywood soil [2]
Lenzie silt [2]
Strathcona sand and silt [2]
Tofield sand [2]
Tertiary(?)
Foothills series [1]
Eocene (see *Upper Cretaceous or Eocene*)
Palocene
Coalspur beds [2]
Post-Cretaceous
Ice River intrusive complex [1]
Cretaceous
Allison Creek sandstone [1]
Bad Heart sandstone member [1] (of Smoky River formation)
Bellyan series [1]
Berland River shales [1]
Bighorn formation [1]
Blood Reserve sandstone [1]
Bulwark sandstone [1]
Cardium sandstone [1]
Clearwater shale [1]
Crowsnest volcanics [1]
Dalhousie sand [1] (subsurface)

Canada—Continued
Alberta—Continued
Lower Cretaceous—Continued
Moose Mountain member (of Kootenay formation)[2]
Mountain Park formation [1]
Nikanassin formation [1]
Notikewin member (of Spirit River formation)[2]
O'Sullivan member (of Mannville formation)[2] (subsurface)
Paddy member (of Peace River formation)[2]
Pocaterra Creek member (of Blairmore formation)[2]
St. Edouard member (of Grand Rapids formation)[2] (subsurface)
St. Paul member (of Grand Rapids formation)[2] (subsurface)
Spirit River formation [2] (subsurface)
Sunset sandstone [1]
Tovell member (of Mannville formation)[2] (subsurface)
Vanalta sand [1] (subsurface)
Wabiskaw member (of Clearwater formation)[2] (subsurface)
Wilrich member (of Spirit River formation)[2] (subsurface)
Jurassic
Conrad sandstone member (of Sawtooth formation)[2] (subsurface)
Crow Indian Lake member (of Sawtooth formation)[2] (subsurface)
Lille member (of Fernie formation)[2]
Nordegg member (of Fernie formation)[2]
Pigeon Creek member (of Fernie formation)[2]
Triassic
Spray River formation [1]
Sprayan series [1]
Lower Triassic
Sulphur Mountain member (of Spray River formation)[2]
Permian (see *Pennsylvanian to Permian*)
Permian and Pennsylvanian(?)
Norquay Mountain member (of Rocky Mountain formation)[2]
Tunnel Mountain member (of Rocky Mountain formation)[2]
Carboniferous
Banner silt (in Turner Valley member of Livingstone formation)[2]
Baril member (of Mount Head formation)[2]
Carnarvon member (of Mount Head formation)[2]

Canada—Continued
Alberta—Continued
Carboniferous—Continued
Cummings member (of Mount Head formation)[2]
Etherington member (of Rocky Mountain formation)[2]
Greenock formation [2]
Livingstone formation [2]
Marston member (of Mount Head formation)[2]
Mount Head formation [2]
Pekisko member (of Livingstone formation)[2]
Rocky Mountain quartzite [1]
Salter member (of Mount Head formation)[2]
Wileman member (of Mount Head formation)[2]
Carboniferous and Devonian(?)
Banff series [1]
Pennsylvanian to Permian
Storm Creek formation [2]
Mississippian and Pennsylvanian(?)
Tunnel Mountain member (of Rundle formation)[2]
Mississippian
Bedson limestone [1]
Debolt formation [2] (subsurface)
Dyson Creek member (of Rundle formation)[2]
Loomis member (of Mount Head formation)[2]
Moosehorn limestone [1]
Shunda member (of Rundle formation)[2]
Turner Valley member (of Tunnel Mountain formation)[2] (subsurface)
Devonian and Carboniferous
Turtle Mountain group [1]
Devonian
Beaverhill Lake formation [2] (subsurface)
Blackface Mountain shale [1]
Blue Ridge member (of Graminia formation)[2] (subsurface)
Cairn formation [2]
Calmar member (of Winterburn formation)[2] (subsurface)
Cheviot formation [2]
Chinchaga formation [2] (subsurface)
Cooking Lake member (of Woodbend formation)[2] (subsurface)
Duvernay member (of Woodbend formation)[2] (subsurface)
Fairholme formation [2]
Graminia member (of Winterburn formation)[2] (subsurface)
Ireton member (of Woodbend formation)[2] (subsurface)
Keg River formation [2] (subsurface)
Leduc member (of Woodbend formation)[2] (subsurface)

Canada—Continued
Alberta—Continued
Devonian—Continued
Miette member (of Minnewanka formation)[2]
Minnewanka formation [1]
Mount Wilson quartzite [1]
Muskeg formation [2] (subsurface)
Nisku member (of Winterburn formation)[2] (subsurface)
Palliser formation [2]
Roche Miette limestone [1]
Southesk formation [2]
Wabamun formation [2] (subsurface)
Watt Mountain formation [2] (subsurface)
Winterburn formation [2] (subsurface)
Woodbend formation [2] (subsurface)
Devonian(?)
Ghost River formation [1]
Upper Devonian
Alexo formation [2]
Banffian series [1]
Big Valley member (of Wabamun formation)[2] (subsurface)
Boule limestone [1]
Cinquefoil limestone [1]
Coronach shale [1]
Costigan member (of Palliser formation)[2]
Delburne formation [2]
Delia member (of Woodbend group)[2]
Donalda formation [2]
Exshaw shale [2]
Fenn formation [2]
Fiddle limestone [1]
Grosmont member (of Woodbend formation)[2] (subsurface)
Hondo member (of Woodbend formation)[2] (subsurface)
Kiln shale [1]
Leahurst formation [2]
Morro member (of Palliser formation)[2]
Mount Hawk formation [2]
Perdrix shale [1]
Spence River shale [2] (subsurface)
Stettler member (of Wabamun formation)[2] (subsurface)
Territories formation [2] (subsurface)
Waterways formation [2]
Middle Devonian
Fort Vermilion member (of Slave Point formation)[2]
Flume dolomite [1]
Steen River formation [1] (subsurface)
Silurian
Elk Point formation [2] (subsurface)

Canada—Continued
Alberta—Continued
Ordovician
Sarceen series [1]
Skoki formation [1]
Lower Ordovician
Mons formation [1]
Sarbach formation [1]
Cambrian and Lower Ordovician(?)
Sawback formation [1]
Cambrian
Barker shale [1]
Bosche formation [1]
Chetang limestone [1]
Mahto sandstones [1]
Sullivanian series [1]
Tatei formation [1] (*see also* Tatay limestone [1])
Thompson dolomite [1]
Titkana limestone [1]
Upper Cambrian
Arctomys formation [1]
†Bosworthian series [1]
Chetamon limestone [1]
Lyell formation [1]
Pika formation [2]
Sawbackian series [1]
Snaring formation [1]
Sullivan formation [1]
Tangle Ridge formation [2]
Middle Cambrian
Eldon limestone [1]
Eldonian series [1]
Murchison formation [1]
Naiset formation [2]
Ptarmigan limestone [1]
Sunwapta Peak formation [2]
Lower Cambrian
Cavell formation [1]
Fairview formation [1]
Gog formation [2]
Lake Louise shale [1]
Louise formation [1]
Mount Whyte formation [1]
Piran series [1]
St. Piran sandstone [1]
Whyte formation [1]
Precambrian and (?)Lower Cambrian
Jonas Creek formation [2]
Precambrian
Albertian series [1]
Athabasca sandstone [1]
Blackfoot Canyon facies (of Belt series)[2]
Carthew member (of Altyn formation)[2]
Corral formation [1]
Corral Creek formation [1]
Cour d'Alene facies (of Belt series) [2]
Glacier Park facies (of Belt series)[2]
Goat River horizon of McBride group)[2]
Hector formation [1]

Canada—Continued
Alberta—Continued
Precambrian—Continued
Hell Roaring member (of Altyn formation) [2]
Jasper series [1]
McBride group [2]
Meagher facies (of Belt series) [2]
Miette formation [1]
Mount Rowe member (of Miller Peak formation) [2]
Tete Jaune horizon (of McBride group) [2]
Waterton dolomite [1] (*see also* Watertown formation [1])
British Columbia
Quaternary
Cordilleran formation [1]
Hoodoo lavas [2]
Iskut River lava [2]
Stikine lavas [2]
Recent
Alouette gravel [2]
Capilano group [2]
Salish group [2]
Tseax River lava flow [1]
Pleistocene to Recent
Bose gravel [2]
Cloverdale sediments [2]
Sunnyside sand [2]
Post-Pleistocene(?)
Bellabella formation [1]
Pleistocene
Abbotsford gravel [2]
Colebrook gravel [2]
Colwood sands and gravels [1]
Cordova sands and gravels [1]
Garibaldi volcanic formation [1]
Lynn outwash [2]
Marysville sands [1]
Maywood clay [1]
Newton stony clay [2]
Nicomekl silt (*see also* Nikomeki sand and silt[1])
Point Grey formation [1]
Quadra group [2]
Saanich formation [1]
St. Eugene silts [1]
Sapperton sediments [2]
Semiamu group [2]
Semiamu till [2]
Seymour group [2]
Seymour till [2]
Sisters varved clay [2]
Surrey till [2]
Thompson River silts [1]
Wreck Bay formation [1]
Wycliffe glacial epoch and drift [1]
Tertiary (see also *Mesozoic or Tertiary*; and *Cretaceous or Tertiary*)
Boundary Bay formation [1]
Coquihalla series [1]
Etheline volcanics [1]
Kitsilano formation [1]

Canada—Continued
British Columbia—Continued
Tertiary—Continued
Kruger alkaline body [1]
Mann Creek formation [1]
Masset volcanics [1]
Park granite [1]
Rapid formation [2]
Rexmont porphyry [1]
Rossland alkali granite [1]
Sheppard granite [1]
Similkameen beds [1]
Skonun formation [1]
Sophie Mountain conglomerate [1]
Spence Bridge series [1]
Sunloch metagabbro [1]
Tranquille beds [1]
Tuya lavas [1]
Valhalla granite [1]
White Lake formation [2]
Tertiary(?)
Similkameen granite [1]
Miocene (see also *Oligocene or Miocene*)
Carmanah Point beds [1]
Nipple Mountain series [2]
Otter granite [1]
Skull Hill formation [1]
Miocene(?)
Chilliwack granodiorite [1]
Lightning Creek diorite [1]
Salmon River monzonite [1]
Slesse diorite [1]
Oligocene and (or) Miocene
Sooke formation [1]
Oligocene or Miocene
Kamloops volcanic group [1]
Midway volcanic group [1]
Oligocene
Allenby formation [2]
Cedar volcanic series [1]
Coldwater group [1]
Curry Creek series [1]
Escalante formation [2]
Franklin monzonite [1]
Sooke gabbro group or intrusives [1]
Oligocene(?)
Ashcroft rhyolite porphyry [1]
French Bar formation [1]
Kettle River formation [1]
Taseko formation [1]
Oligocene or younger
Endako group [2]
Eocene or Oligocene
Princeton group [2]
Post-Eocene
Prospect Point eruptives [1]
Eocene
Burrard formation [1]
Chu Chua formation [1]
Huntingdon formation [1]
Marron formation [2]
Metchosin volcanics [1]
Springbrook formation [2]

Canada—Continued
British Columbia—Continued
Lower Cretaceous—Continued
Skajit River beds [1]
Skeena sandstone,[1] series,[1] or formation [1]
Uslika formation [2]
Lower Cretaceous(?)
Brian Boru formation [2]
Inklin group [2]
Pre-upper Lower Cretaceous
Hedley diorite-gabbro [2]
Jurassic or Cretaceous
Open Bay group [1]
Spearing group [2]
Spence Bridge volcanic group [1]
Jurassic or Cretaceous(?)
Bonnington complex (R. Mulligan, 1952, Canada Geol. Survey Paper 52-13, p. 10-13).
Tachek group [2]
Jurassic (see also *Triassic or Jurassic;* and *Triassic and Jurassic*)
Agassiz series [1]
Ashcroft series [2]
Basque formation [1]
Black Canyon formation [1]
Boulder granite [1]
Colquitz gneiss [1]
Cornwall formation [1]
Coryell syenite [2]
Dewdney Creek series [1]
Dolly Varden formation [1]
Eagle granodiorite [1]
Fernian series [1]
Fernie formation [1]
Franklin granodiorite [1]
Harbledown formation [1]
Hurley formation [2]
Image member (in Queen Charlotte group) [1]
Kaslo schists [1]
Kitzault River formation [1]
Ladner series [1]
Langara quartz diorite [1]
Maude argillites [1]
Minabariet formation [1]
Mount Sicker formation [1]
Nelson granodiorite [1]
Ntlakapamux formation [1]
Opuntia formation [2]
Rock Creek granodiorite,[1] or gabbro and diorite [1]
Rock Creek member (of Fernie formation)[2]
Saanich granodiorite [1]
Salmon River conglomerate [1]
Sicker series [1]
Smelter granite [1]
Taylor group [2]
Thompson series [2]
Trail granodiorite [2]
Tyee porphyrite [1]
Wark gneiss [1]
Yakoun volcanics [1]

Canada—Continued
British Columbia—Continued
Jurassic(?)
Baldie granite [1]
Beale diorite [1]
Bralorne intrusives [2]
Camp Cove series [1]
Custer granite gneiss [1]
Darlington granodiorite [1]
Denain formation [1]
Fairview granodiorite [2]
Gillies intrusives [1]
Goose Bay formation [1]
Hazelton group [1]
Kano quartz diorite [1]
Kootenay granite [1]
Mount Murray diabase [1]
Olalla pyroxenite [2]
Oliver granite [1]
Osoyoos granodiorite [1]
Peterson Creek syenite [1]
Pine River formation [1]
Rykert granite [1]
Sinwa group [2]
Sumas diorite [1]
Sumner gabbro [2]
Westkettle quartz diorite [1]
Yonakina group [2]
Upper Jurassic and Lower Cretaceous
Armagosa member (of Red Rose formation) [2]
Blind Boy member (of Red Rose formation) [2]
Dawn member (of Red Rose formation) [2]
Mill member (of Red Rose formation) [2]
Red Rose formation [2]
Upper Jurassic or Lower Cretaceous
Beattie Peak formation [2]
Chuchi Lake syenite [2]
Duckling Creek syenite [2]
Monach formation [2]
Monteith formation [2]
Upper Jurassic
Agassiz Prairie formation [1]
Billhook formation [1]
Kent formation [1]
Mysterious Creek formation [1]
Middle or Upper Jurassic
John Brown formation [2]
Middle Jurassic
Echo Island formation [1]
Harrison Lake formation [1]
Lower to Middle Jurassic
Nazcha formation [2]
Lower Jurassic
Takwahoni group [2]
Jurassic and Triassic(?)
Nitinat formation [1]
Sutton formation [1]
Jurassic and (or) younger
Olalla syenite [2]
Oliver syenite [2]

Canada—Continued
British Columbia—Continued
Carboniferous—Continued
Redtop formation [1]
Ruth argillite [1]
Silver Hoard formation [1]
Siwash series [1]
Skyline formation [1]
Star limestone [1]
Stevenson limestone [2]
Carboniferous and older(?)
Chilliwack series [1]
Carboniferous(?), Triassic(?), Jurassic(?)
Rossland volcanic group [1]
Carboniferous(?)
Anarchist series [1]
Ashnola gabbro [1]
Attwood series [1]
Brittania formation [1]
Cascade series [1]
Kobau group [2]
Kruger schist [1]
Lemieux Creek formation [1]
Malahat volcanics [1]
Nickel Plate formation [1]
Sutherland schistose complex [1]
Vaseaux formation [2]
Vedder greenstone [1]
Carboniferous(?) and older(?)
Pend Oreille group [1]
Carboniferous and younger
Leach River (formation) [2]
Thompson group [2]
Carboniferous or pre-Carboniferous
Early Bird formation [1]
Point Woodbury formation [1]
Princess formation [1]
Pre-Carboniferous
Knob Hill group [1]
Pennsylvanian or Permian(?)
Bridge River series [1]
Pennsylvanian
Rundle limestone [1]
Rundlian series [1]
Mississippian
Antler formation [1]
Dessa Dawn formation [2]
Greenbury formation [1]
Guyet formation [1]
Kindle formation [2]
Slide Mountain series [1]
Wardner limestone [1]
Waverly formation [1]
Devonian(?), Mississippian, and Pennsylvanian(?)
Wadin group [2]
Upper Mississippian and Pennsylvanian(?)
Nizi formation [2]
Proserpine intrusives [1]
Devonian or Carboniferous
Victoria series [1]
Whitecap schist series [1]

Canada—Continued
British Columbia—Continued
Devonian
Harrogate limestone [1]
McConnell formation [2]
Messines formation [1]
Muncho formation [2]
Pipestem formation [1]
Starbird formation [1]
Devonian(?)
Mount Foster formation [1]
Perkins group [1]
Taku group [1]
Post-Middle Devonian, pre-Upper Mississippian
Sylvester group [2]
Middle Devonian
Harrogate formation [1]
Nahanni formation [2]
Pre-Middle Devonian
Mountain Creek formation [1]
Silurian and Devonian
Hidden Valley group [2]
Silurian and (or) Middle Devonian
Burnais formation [2]
Silurian
Brisco formation [1]
Ordovician (see also *Cambrian or Ordovician;* and *Cambrian and Ordovician*)
Active formation [2]
Glenogle shale [1]
Gloucester formation [1]
Robson limestone [2]
Sinclair formation [1]
Wapta formation [1]
Wonah quartzite [1]
Ordovician(?) and younger
Seeman group [2]
Upper Ordovician and Lower Silurian
Sandpile group [2]
Upper Ordovician
Beaverfoot formation [1]
Lower and Middle Ordovician
Walker group [2]
Lower Ordovician
Chushina formation [1]
Cambrian or Ordovician
Bluebell limestone [2]
Cambrian and Ordovician
Goodsir formation [1]
Cambrian and Ordovician(?)
Fieldian series [1]
Cambrian (see also *Precambrian or Cambrian; Precambrian and (or) Cambrian; Precambrian and Cambrian*)
Adolphus formation [1]
Chancellor formation [1]
Chancellorian series [1]
Cranbrook formation [1]
Eager formation [1]
Elko formation [1]

Canada—Continued
British Columbia—Continued
Precambrian—Continued
Lourian series [1]
Lowhee member (of Richfield formation) [1]
McDonald formation [1]
Misinchinka schists [1]
Monk formation [1]
Moose meta-argillite [1]
Motherlode series [2]
Mount Nelson formation [1]
Moyie argillite [1] (*see also* Mooyie argillite or formation [1])
Moyie sill (gabbro) [1]
Nakimu limestone [1]
Nakimuan series [1]
Nisconlithian series [1]
Nugget series [2]
Phillips formation [1]
Pleasant Valley formation [1]
Priest River group (as terrane) [1]
Purcell basalt [1]
Purcell series [1]
Quartzite Range formation [1]
Quesnal Lake crystalline series [1]
Rainbow member (of Richfield formation) [1]
Reno formation [1]
Richfield formation [1]
Ripple quartzite [1]
Roosville formation [1]
Ross quartzite [1]
Rossian series [1]
Ruby group [2]
Saddleback series [1]
Salmon series [1]
Salmon Arm schist [1]
Selkirk series [1]
Shuswap granite [1]
Sicamous limestone [1]
Sicamous series [1]
Sujeh formation [1]
Tenakihi group [2]
Three Sisters formation [1]
Toby conglomerate [1]
Tonkawatla formation [1]
Tshinakin formation [1]
Wigwam formation [1]
Windermere series [2]
Wolf formation [1]
Yahk quartzite [1] (*see also* Yaak quartzite [1])
Precambrian(?) and younger
Wolverine complex [2]
Precambrian(?)
Azure River series [1]
Hobson Lake series [1]
Irene conglomerate [1]
Irene volcanic formation [1]
Navada member (or Quartzite Range formation) [2]
Age(?)
Anderson River group [1]
Bear River greenstones [1]
Big Sheep volcanics [1]

Canada—Continued
British Columbia—Continued
Age(?)—Continued
Goose Bay argillite [1]
Grand Forks schist [1]
Ice River formation [1]
Krao limestone [1]
Lost Creek granite body [1]
Lost Horse intrusives [1]
Oblique Creek formation [2]
Port Renfrew series [1]
Proserpine quartz porphyry [1]
Providence Cove beds [1]
Richter Mountain hornblendite [1]
Tagish series [1]
Texado group [1]
Trent River shales [1]
Tutshi series [1]
Verde Creek granite [1]
Wark diorite [1]
Manitoba
Pleistocene
Keewatin till [1] or drift [1]
Tertiary
Boissevain sandstone [1]
Paleocene
Turtle Mountain formation [2]
Cretaceous
Ashville beds [1]
Assiniboine series [1]
Boyne beds [1]
Keld beds [1]
Morden beds [1]
Pembina beds [1]
Pembina Mountain [1] (group)
Riding Mountain beds [1]
Vermilion River beds [1]
Upper Cretaceous
Cheval beds [2]
Favel formation [2]
Millwood formation [1]
Odanah series [1]
Souris lignitic [1]
Swan River beds [1]
Jurassic or older
Amaranth formation [2]
Upper Jurassic
Melita formation [2]
Waskada formation [2]
Middle Jurassic
Reston formation [2]
Devonian
Elm Point limestone [1]
Hudson Bay formation [2] (subsurface)
Lyleton shale [2] (subsurface)
Manitoba formation [1]
Moose Jaw Group [2] (subsurface)
Qu'Appelle group [2] (subsurface)
Stony Mountain shales [1]
Upper Devonian(?)
Manitoban [1] (series)
Middle or Upper Devonian
Point Wilkins member (of Manitoban formation) [2]

Canada—Continued
New Brunswick—Continued
Pennsylvanian—Continued
Hurley Creek formation [2]
Macdonald Glen formation [2]
Minto formation [2]
Newcastle Creek formation [1]
Petitocodiac series [1]
Richibucto formation [2]
Salisbury formation [2]
Scoudouc formation [2]
Shepody formation [2]
Sunbury Creek formation [2]
Tormentine formation [2]
Pennsylvanian or older
Hardwood Ridge flow [2]
Mississippian and (or) Pennsylvanian
Balls Lake formation [2]
Maringouin formation [2]
West Beach formation [2]
Mississippian
Albert formation [2]
Demoiselle formation [1]
Gautreau formation [1]
Memramcook formation [2]
Moncton group [2]
Upham formation [2]
Weldon formation [1]
Devonian or Carboniferous
Bloomsbury formation [1]
Lancaster formation [1]
Devonian (see also *Silurian or Devonian;* and *Ordovician to Devonian*)
Barberie andesite [1]
Bon Ami andesite [1]
Campbellton formation [1]
Inch Arran latites [1]
Maple Green andesite [1]
Mispec group [1]
Restigouche volcanic series [1]
Saint George granite or plutonics [2]
Scauminac formation [2]
Stewart andesites [1]
Sugar Loaf dacites [1]
Devonian(?)
Nipisiguit granite [1]
Middle Devonian(?)
Lepreau diorite [2]
Musquash granite [2]
Lower Devonian
Dalhousie shales [1]
Silurian to Mississippian
Coal Creek formation [1]
Silurian or Devonian
Little River group [1]
Silurian and Devonian(?)
Mascarene series [1]
Silurian
Belledune group [1]
Dalhousie limestones [1]
Elmtree slates [1]
Oak Bay formation [2]
Turgeon formation [1]

Canada—Continued
New Brunswick—Continued
Upper Silurian
Jones Creek formation [2]
Long Reach formation [2]
Post-Ordovician
Austin Brook quartz porphyry [1]
Ordovician to Devonian
Fournier group [1]
Ordovician
Beccaguimic formation [1]
Millstream series [1]
Tetagouche series [1]
Ordovician(?)
Charlotte group [2]
Lower Ordovician
Navy Island formation [2]
Suspension Bridge formation [2]
Cambrian (see also *Precambrian or Cambrian*)
Narrows formation [2]
Upper Cambrian
Agnostus Cove formation [2]
Black Shale Brook formation[2]
Middle Cambrian
Fossil Brook formation [2]
Hastings Cove formation [2]
Loch Lomond series [2]
Porter Road formation [2]
St. Jean group [1]
St. John group [1]
St. Johns shales [1]
Lower Cambrian
Etcheminian series [1] or group [1]
Glenn Falls formation [2]
Hanford formation [1]
Hanford Brook formation [2]
Hanfordian series [1]
Ratcliffe Brook formation [2]
Precambrian or Cambrian
Coldbrook group [1]
Precambrian
Coastal group [1]
Green Head formation [2]
Kingston group [1]
Portland group [1]
Robin Hood formation [2]
Saint John volcanics [2]
St. Martins intrusives and extrusives [2]
Age(?)
Gauvin andesite [1]
Newfoundland (proper)
Carboniferous
Humber grit series [1]
Upper Carboniferous
Barachois series [2]
Mississippian
Anguille series [2]
Aquathuna limestone [2]
Black Point formation or limestone [2]
Boswarlis beds [2]
Cape Anguille sandstone [2]
Cape Rouge series [2]

Canada—Continued
Newfoundland (proper)—Continued
Ordovician(?)—Continued
Mooring Cove volcanics [2]
Mount Margaret volcanics [2]
Pilleys series [2]
Red Cliff volcanics [2]
Wellmans Cove diorite [2]
Upper Ordovician or Devonian
Blow-me-down complex [2]
Middle and Upper Ordovician
Canada Head formation [2]
Humber Arm series [1]
Post-Middle Ordovician
Bay of Islands complex [2]
Bluff Head volcanics [2]
Mount Barren metamorphic complex [2]
Middle Ordovician
Cooks limestone tongue (of Humber Arm series) [2]
Cow Head limestone breccia [1]
Hare Island limestone [2]
Long Point series [1]
Portland Head group [2]
Table Head series [1]
Middle Ordovician(?)
Badger Bay series [2]
Beaver Bight formation [2]
Burtons Head group [2]
Crescent Lake formation [2]
Gull Island formation [2]
Julies Harbour group [2]
Roberts Arm volcanics [2]
Shoal Arm formation [2]
Wild Bight volcanics [2]
Lower Ordovician
Apsey formation [1]
Beach formation [1]
Bell Island series [1]
Brown Mead formation [1]
Chimney Arm formation [2]
Clarenville series [1]
Dominion ore bed [1]
Eastern Head formation [1]
Green Point series [1]
Kelly Island formation [1]
Lance Cove formation [1]
Little Bay Head lavas [2]
Little Bell Island formation [1]
McGraw bed [1]
Maidment formation [1]
Redmond formation [1]
Riders Brook formation [1]
St. George series [1]
Scotia ore bed [1]
Southern Arm limestone [2]
Wabana series [1]
Western Arm basalts or group [2]
Western Brook Pond group [2]
Cambrian or Ordovician
Buchans series [1]
Waban formation [1]

Canada—Continued
Newfoundland (proper)—Continued
Cambrian (see also *Precambrian and Cambrian*)
Beaver Brook shale [2]
Belle Isle shale [1]
Chamberlins Brook formation [1]
Doucers marble and limestone [2]
Grand Lake Brook series [2]
Kippens formation [2]
Long Pond formation [1]
Newfoundland series [1]
Random Sound series [1]
St. Johns slate [1]
Youngs Cove group [2]
Upper Cambrian
East Arm formation [2]
Elliot Cove formation [1]
March Point formation [1]
Middle Cambrian
Cloud Rapids formation [2]
Killigrews Brook formation [1] (*see also* Kelligrews Brook formation [1])
Manuels formation [1]
Petit Jardin formation [2]
Treytown Pond formation [2]
Middle(?) Cambrian
Sound Island formation [2]
Lower and Middle Cambrian
Fortune Brook formation [2]
Lower Cambrian
Bonavista formation [1]
Brigus formation [1]
Devils Cove formation [2]
Doten Cove formation [2]
Goose Cove formation [2]
Hawke Bay formation [1] or quartzite [1]
Placentia [1] (terrane)
Pools Cove formation [2]
Smith Point formation [1]
Terra Nova [1] (series)
Lower Cambrian and Precambrian(?)
Dantzic group [2]
Precambrian and later
Terranovan [1] (series)
Precambrian and Cambrian
Bay d'Est formation [2]
Bull Arm felsite member (of Musgravetown group) [2]
Cloud Mountain series [1]
Salt Water Fund series [1]
Spoon Cove formation [2]
Spyglass Cove formation [2]
Tilt Point formation [2]
Precambrian
Avalon group [1]
Avalonian formation [1]
Avondale volcanics [1]
Barrys zone (in Headland gneiss) [2]
Birchy schist [2]
Blackhead formation [2]
Cabot group [2]

Canada—Continued
- Northwest Territories (Franklin)—Continued
  - *Upper Ordovician*
    - Cornwallis formation [2]
    - Silliman Mount formation [2]
  - *Middle or Upper Ordovician*
    - Croker Bay limestone [2]
  - *Lower Ordovician*
    - Mingo River formation [2]
    - Nadlo Point limestone [2]
  - *Middle Cambrian*
    - Bear Point limestone [2]
    - Ooyahgah formation [2]
  - *Lower Cambrian*
    - Police Post limestone [2]
    - Rabbit Point sandstone [2]
  - *Precambrian or Paleozoic*
    - Cape Columbia group [2]
    - Mount Disraeli group [2]
- Northwest Territories (Keewatin)
  - *Precambrian*
    - Belcher series [1]
    - Belcher Island series [2]
    - Dubawnt group [2]
    - Hurwitz group [2]
    - Keepalloo iron formation [1]
    - Marble Island quartzite [2]
    - Tookcarak diabase [1]
- Northwest Territories (Mackenzie)
  - *Cretaceous*
    - Meander shales [1]
    - Mountain shales [1]
    - Rabbitskin sandstone [1]
  - *Upper Cretaceous*
    - East Fork formation or series [2]
    - Little Bear formation [2]
    - Slater River formation [2]
  - *Lower Cretaceous*
    - San Sault group [2]
  - *Devonian*
    - Beavertail limestone [1]
    - Bosworth sandstone and shale [1]
    - Camp Creek series [1]
    - Carcajou Mountain beds [1]
    - Fort Creek shale [1]
    - Hare Indian River shale [1]
    - Hare River shales [1]
    - Horn River shales [1]
    - Mount Charles formation [1]
    - Pine Point limestone [1]
    - Presqu'ile dolomite [1]
    - Rampart limestone [1]
    - Simpson shale [1]
    - Slave Point limestone [1]
  - *Upper Devonian*
    - Alexandra formation [2]
    - Canyon sandstone (in Fort Creek formation) [2]
    - Carcajou series [2]
    - Grumbler formation [2]
    - Hay River series [2]
    - Imperial formation [2]
    - Jungle Ridge limestone member (of Fort Creek formation) [2]

Canada—Continued
- Northwest Territories (Mackenzie)—Continued
  - *Upper Devonian*—Continued
    - Kee Scarp limestone member (of Fort Creek formation) [2]
    - Trout River formation [2]
  - *Middle Devonian*
    - Amco horizon (of Slave Point formation) [2]
  - *Silurian or Devonian*
    - Bear Rock formation [2]
  - *Silurian*
    - Bear Mountain formation [1]
    - Franklin Mountain formation [1]
    - Fitzgerald limestones [1]
    - Lone Mountain dolomite [1]
    - Mount Kindle formation [1]
    - North Nahanna River dolomite [1]
    - Ronning group [2]
  - *Ordovician*
    - Sunblood formation [2]
  - *Cambrian*
    - Macdougal group [2]
    - Saline River formation [1]
  - *Middle Cambrian*
    - Mount Cap formation [1]
  - *Cambrian and (or) older*
    - Katherine group [2]
  - *Precambrian*
    - Akaitcho flow (in Yellowknife group) [2]
    - Baker Creek member (in Yellowknife group) [2]
    - Bode conglomerate [2]
    - Bow Lake flow (in Yellowknife group) [2]
    - Brock group [2]
    - Cameron Bay series [1]
    - Charlton group [1]
    - Coppermine River series [1]
    - Drill Camp flow (in Yellowknife group) [2]
    - Echo Bay series [1]
    - Epworth dolomite [1]
    - Et-Then series [2]
    - Fox flows [2]
    - Goulburn quartzite [1]
    - Great Slave group [1]
    - Hornby Bay series [2]
    - Kahochella formation [2]
    - Kanuyak formation [1]
    - Lindsley Bay granite porphyry [1]
    - Lone Land formation [1]
    - Marian group [2]
    - Millsite flow (in Yellowknife group) [2]
    - Murky conglomerate [1]
    - Negus flow [2]
    - Nob Hill flow (in Yellowknife group) [2]
    - Nonacho series [2]
    - Pearson formation [2]
    - Pekanatui series [1]
    - Pethei formation [2]

Canada—Continued
Nova Scotia—Continued
Mississipian—Continued
McAras Brook formation [1]
Macumber formation [2]
Maxner limestone [1]
Miller limestone [1]
Pembroke formation [2]
River John series [1]
Tennycape formation [2]
Windsor group [1]
Mississippian(?)
Dunbar series [1]
Kewstoke conglomerate [1]
Lower Mississippian
Pilier conglomerate and sandstone [2]
Devonian or Carboniferous
Union formation [1]
Devonian
Bear River formation [2]
Knoydart formation [1]
Lower or Middle Devonian
McAdam Lake formation [2]
Silurian or Lower Devonian
Middle River group [2]
Silurian
Arisaig series [1]
Beechhill formation [1]
Beechhill Cove formation [1]
Cobequid series [1]
Kentville formation [1]
McAdam formation [1]
Moydart formation [1]
Nictaux beds [2]
Ross Brook formation [1]
Stonehouse formation [1]
Torbrook sandstone [1]
Silurian(?)
New Canaan formation [2]
Ordovician
Baxters Brook formation [1]
Browns Mountain group [1]
James River formation [1]
Malignant Cove formation [1]
Stewart Brook formation [2]
Lower Ordovician(?)
James River granite [2]
Lower Ordovician and Upper Cambrian(?)
McLeod Brook formation [2]
Cambrian (see also *Precambrian or Cambrian*)
Atlantic Coast series [1]
Barachois slate [1]
Bears Brook formation [1]
Guysborough formation [1]
Mira series or formation [1]
Cambrian and older(?)
Morrison formation [2]
Upper Cambrian
Bretonian [1] (series)
MacNeil formation [2]
Middle Cambrian
Bourinot group [2]
Coldbrookian series [2]

Canada—Continued
Nova Scotia—Continued
Middle Cambrian—Continued
Dugald formation [2]
Dugald Brook series [2]
Dugaldian series [2]
Eskasoni formation [2]
Gregwa formation [2]
Kelvin Glen group [2]
MacLean Brook formation [2]
MacMullin formation [2]
Trout Brook formation [2]
Middle Cambrian(?)
Myrabayan series [2]
Lower Cambrian
Canoe Brook formation [2]
MacCodrum formation [2]
Morrison River formation [2]
Precambrian or Cambrian
Goldenville formation [1]
Halifax formation [1]
Whiterock quartzite [1]
Precambrian
Fourchu group [2]
George River series [1]
Meguma series [1]
Precambrian(?)
Clyburn formation [1]
Ingonish gneiss [1]
Age(?)
Chegoggin Point formation [1]
Franey granite [1]
George River limestone [1]
South Mountain granite [2]
Ontario
Pleistocene
Algoma sand [1]
Artemisia gravel [1]
Clarke interglacial [1] (sands and clays)
Don beds (in Toronto formation) [1]
Erie clay [1]
Iroquois clay [1]
Nipissing clay [1]
Patrician drift [1]
Saugeen clay [1]
Scarboro beds [1]
Toronto formation [1]
Warren gravel [1]
Upper Jurassic or Lower Cretaceous
Mattagami series [1]
Devonian
Abitibi River formation [1]
Arkona beds [1]
Ipperwash limestone [1]
Ipperwash limestone member [1] (of Hamilton formation)
Long Rapids shale [1]
Norfolk formation [2]
Petrolia shale [1]
Petrolia shale member (of Hamilton formation) [1]
Port Lambton beds [1]
Sextant formation [1]

Canada—Continued
Ontario—Continued
Devonian—Continued
Thunder Bay shales [1]
Widder beds [1]
Williams Island limestone [1]
Upper Devonian
Kettle Point black shale [2]
William Island formation [2]
Middle Devonian
Anderdon limestone member (of Lucas formation); (as member of Detroit River dolomite [1])
Decewsville formation [1]
Hungry Hollow formation [2]
Springvale sandstone [1]
Lower and Middle Devonian
Moose River formation [2]
Silurian
Attawapiskat coral reef [1]
Attawapiskat limestone [1]
Barton beds [1]
DeCew limestone [1]
Ekwan limestone [1]
Ekwan River limestone [1]
Eramosa member [1] (of Lockport formation)
Galt limestone [1]
Kenogami River formation [1]
Pagwa River formation [1]
Severn limestone [1]
Severn River limestone [1]
Wabin formation [1]
Wingfield formation [2]
Middle Silurian
Albemarle group [2]
Amabel formation [2]
Ancaster member (of Eramosa formation)[2]
Assignack member (of Burnt Bluff formation)[2]
Billings member (of Burnt Bluff formation)[2]
Colpoy Bay member (of Amabel formation)[2]
Fossil Hill formation [2]
Guelph dolomite [1]
Lion Head member (of Manistique formation)[2]
Speedwell member (of Eramosa formation)[2]
Suspension Bridge member (of Lockport dolomite)[2]
Wiarton member (of Gasport formation)[2]
Lower Silurian
Bidwell member (of Cataract formation)[2]
Cabot Head shale member (of Cataract formation)[1]
Cataract formation [1]
Dyer Bay dolomite lentil (of Cabot Head shale member)[1]
Grimsby sandstone [1]
Kagawong member (of Cataract formation)[1]

Canada—Continued
Ontario—Continued
Lower Silurian—Continued
Keppel dolomite [1]
Manitoulin dolomite member (of Cataract formation)[1]
Power Glen formation [2]
St. Edmund dolomite lentil (of Cabot Head shale member)[1]
Thorold sandstone member (of Albion sandstone)[1]
Ordovician (see also *Cambrian and Ordovician*)
Billings formation [2]
Blue Mountain formation [1]
Christie member (of Dundas formation)[1]
Coboconk limestone [1]
Cobourg limestone [1]
Cragleith formation [2]
Danforth member (of Dundas formation)[1]
Eastview formation [2]
Haileybury formation [1]
Kirkfield limestone group [1]
Liskeard formation [1]
Nottawasaga group [2] (subsurface)
Ottawa beds [1]
Picton formation [1]
Rideau sandstone [1]
Rouge River formation [2]
St. Marys sands [1]
Simcoe group [2] (subsurface)
Verulam formation [2]
Vincent member (of Meaford formation) [1]
Whitby group [2] (subsurface)
Winnipeg limestone [1]
Upper Ordovician
Carlsbad formation [2]
Collingwood formation [1]
Credit member [1] (of Dundas formation)
Davenport member [1] (of Dundas formation)
Don River member [1]
Dundas formation [1]
Erindale member [1]
Humber member [1] (of Dundas formation)
Humber River [1] (member)
Kagawong beds [1]
Meadowvale member [1]
Meaford member [1]
Queenston shale [1]
Rosedale member [1] (of Dundas formation)
Russell formation [2]
Sheguindah beds [1]
Streetsville member [1]
Wekwemikongsing beds [1]
Middle Ordovician
Cloche Island beds [1]
Glenburnie member (of Chaumont formation) [1]
Gull River formation [2]

Canada—Continued
Ontario—Continued
Middle Ordovician—Continued
Hallowell member (of Cobourg formation) [2]
Hillier member (of Cobourg formation) [2]
Moore Hill formation [2]
Napanee member (of Rockland formation) [2]
Rockcliffe formation [2]
Rockland formation [1]
Selby member (of Rockland formation) [2]
Shadow Lake formation [2]
Swift Current beds [1]
Lower Ordovician
March formation [2]
Oxford formation [2]
Lower Ordovician and Upper Cambrian(?)
Nepean sandstone [2]
Cambrian and Ordovician
Battlemill beds [2]
Brockville beds [2]
Maitland beds [2]
Prescott series [2]
Upper Cambrian
Sault St. Mary sandstones [1]
Precambrian
Abram conglomerate [1]
Abram series [1]
Acme porphyry [2]
†Agawa iron-formation member (of Knife Lake slate) [1]
Ament Bay arkosites [1]
Animikie group[1]**; group** in Minnesota, **series** in Michigan
Anstruther granite gneiss [2]
Atic Oban series [1]
Atikokan series [1]
Attewell Lake gabbro [2]
Aweres formation [1]
Bad Vermilion Lake granite [1]
Batchawana series [1]
Belmont amygdaloidal basalt and tuff [1]
Birch Lake series [1]
Blessington gabbroic anorthosite [2]
Boulter gabbro [2]
Boulter granite [2]
Brockville granite [1]
Brownridge sediments [2]
Brownridge volcanics [2]
Bruce conglomerate [1]
Bruce series [1]
Burleigh granite gneiss [2]
Caribou complex [2]
Carpenter sediments [2]
Carpenter volcanics [2]
Central series [2]
Centre Hill complex [2]
Centre Lake leuco-granite gneiss [2]
Chelmsford sandstone [1]
Clarabell granite [2]
Clearwater volcanics [2]

Canada—Continued
Ontario—Continued
Precambrian—Continued
Cobalt series [1]
Cobalt tillite or conglomerate (in Gowganda formation) [2]
Confederation granophyre [2]
Coniston series [2]
Copper Cliff arkose [1]
Cosmo series [2]
Creighton granite [2]
Crowduck Lake conglomerate [1]
Daredevil formation [1]
Deer Lake syenite [2]
Deloro group [2]
Dobie volcanics [2]
Dome conglomerate [1]
Dome dacite (in Vipond formation) [2]
Doré conglomerate [1]
Doré series [1]
Driving Creek formation [1]
Duncan greenstone [1]
Dysart granite gneiss [2]
East Bay formation [2]
East Bull Lake gabbro [2]
Eleanor slate [1]
Elsie Mountain greenstones [2]
Espanola granite [1]
Espanola graywacke [1]
Espanola limestone [1]
Frood series [2]
Ghost Range complex [2]
Gillies Lake porphyry [2]
Glamorgan gabbro [1]
Glamorgan granite gneiss [2]
Goldale formation [2]
Gold Centre series [2]
Gowganda formation [1]
Grassy Island granite gneiss [1]
Green Lake limestone [1]
Grenville series [1]
Gros Cap greenstone [1]
Gullwing Lake conglomerate [2]
Gullwing Lake volcanics [2]
Hallnor conglomerate [2]
Handy Lake volcanics [1]
Hardrock "porphyry" [2]
Hastings series [1]
Helen iron-formation [1]
Hill group [2]
Hinchinbrooke granite [2]
Howey diorite [2]
Hoyle sedimentary series [2]
Huronian series [1]
Island Lakes gabbroic anorthosite [2]
Jackfish Lake conglomerate [1]
Juttan volcanics [1]
Kakabeka formation [1]
Kaministikwia group [1] (*see also* Kaministiquia formation [1])
Kashabowie series [2]
Kennebec volcanics [2]
Kenoran volcanics [2]
Kiask series [1]

Canada—Continued
Quebec
Quaternary
Beauport sand and gravels [1]
Montreal formation [1]
Rupert formation [1]
St. Maurice sand [1]
Sorel sand [1]
Pleistocene
Hochelagan formation [1]
Lawrencian clay [1]
St. Lawrencian terrane [1]
Pennsylvanian
Cannes de Roche formation [1]
Mississippian or Pennsylvanian
Bonaventure formation [1]
Devonian and Mississippian
Gaspé series [1]
Post-Devonian(?)
Stanstead granite [1]
Devonian or younger
Breeches Lake granite [2]
Mount Aylmer granite [2]
Waterloo lava [2]
Winslow granite [2]
Devonian
Barré limestone [1]
Big Megantic nordmarkite or granite [2]
Bon Ami beds [1]
Cape Barré beds [1]
Cape Bon Ami limestone [1]
Causapscal formation [1]
Cranbourne series [2]
Famine series [1]
Fortin series [2]
Gaspé limestone [1]
Gaspé sandstone [1]
Griffon Cove River beds [2]
Lake Aylmer series [1]
Lake Branch formation [2]
Lambton formation [1]
Levis shale [1]
Malbaie conglomerate [1]
Pic d'Aurore series [1]
Price conglomerate [2]
St. Alban formation [1]
St. Gerrard member (of Lake Alymer formation) [2]
St. Lawrence shale [2]
Scotstown granite [2]
Seventeen-Mile Brook beds [2]
Sonneau Brook member (of Gaspé sandstone) [2]
York River sandstone [1]
Devonian(?)
Mount Wissick group [1]
St. Helens Island breccia [2]
Talon formation [1]
Weedon granite and aplite [2]
Upper Devonian or post-Devonian
Bolton igneous series [1]
Upper Devonian
Escuminac beds [1]
Fleurant conglomerate [1]
Four Mile Brook member (of Heppel sandstone) [2]

Canada—Continued
Quebec—Continued
Upper Devonian—Continued
Pirate Cove formation [1]
Middle or Upper Devonian
Ladystep intrusives [1]
Middle Devonian
Battery Point formation [2]
Heppel formation [1]
Lower Devonian
Copper Mountain group [2]
Federal sediments [2]
Grande Greve limestones [1]
Mount Joli formation [1]
Murailles formation [1]
Needle chert [2]
Needle Mountain group [2]
Needle Mountain limestone [2]
Percé formation [1]
Percé Rock beds [2]
Porphyry Mountain group [2]
St. Albans limestones [1]
Lower(?) Devonian
York Lake series [2]
Silurian or Devonian
Eustis porphyry [2]
Silurian(?) or Devonian(?)
St. Juste group [2]
Silurian and Devonian
Dartmouth River series [2]
Grande River-Portage River formation [2]
St. Jean River series [2]
Silurian
Anticosti group [1]
Becsie formation [1]
Becsie River formation [1]
Bouleaux formation (in Chaleur series) [1]
Cabano River limestone [1]
Chaleur series [1]
Chatte River limestones [1]
Chicotte formation [1]
Clemville formation (in Chaleur series) [1]
Gascons formation (in Chaleur series) [1]
George Pond breccia [2]
Glenbrooke shale [2]
Gun River formation [2]
Indian Point formation [1]
Jupiter formation [1]
Jupiter River formation [1]
La Vielle formation (in Chaleur series) [1]
Marsouin series [1]
Peasley Pond conglomerate and sandstone [2]
St. Leon formation [1]
Sargent Bay limestone [2]
Sayabec formation [1]
Sherbrooke group [2]
Temiscouata group [1]
Val Brilliant formation [1]
West Point formation (in Chaleur series) [1]

Canada—Continued
Quebec—Continued
Cambrian and Ordovician
Cape Rosier beds [2]
Carillon limestone [2]
Chatham limestone [2]
Lachute beds [2]
Levis formation [1]
Missisquoibay series [2]
Rigaud passage beds [2]
St. Flavien basic eruptives [2]
Cambrian
L'Islet formation [1]
Manitounuck group [1]
Mistassini formation [1]
Pinnacle graywacke [1]
Pointe Levis group [1]
Redoute limestone [1]
Sutton schists [1]
Cambrian(?)
Armagh group [2]
Caldwell series [1]
Kamouraska formation [1]
Rosaire group [2]
Upper Cambrian
Mansonville slates [1]
Murphys Creek formation [1]
Oak Hill slate [1]
Rock River formation [1]
Strites Pond formation [1]
Lower Cambrian
Bunker slate [1]
Call Mill slate [1]
Charny formation [2]
Dunham dolomite [1]
Dunmore quartzite [2]
Gilman quartzite [1]
Melbourne limestone [2]
Scottsmore quartzite [1]
Sweetsburg slate [1]
Vail slate [1]
West Sutton slate [1]
White Brook dolomite [1]
Lower(?) Cambrian
Corner-of-the-Beach formation [2]
Precambrian, Cambrian, and Ordovician
Quebec group [1]
Precambrian
Abitibi group [1]
Albanel group [2]
Aldermac syenite porphyry [2]
Alison quartzite [2]
Ashuanipi complex or series [2]
Attikamagen formation [2]
Auger Lake conglomerate [2]
Bachelor Lake granite [2]
Barraute gabbro [2]
Barry Lake gneiss [2]
Beattie syenite porphyry [2]
Bell River anorthosite [2]
Bennett quartzite [1]
Bernetz gneiss [2]
Billy Lake quartz porphyry [2]
Black River group [2]
Blake River group [2]

Canada—Continued
Quebec—Continued
Precambrian—Continued
Bourlamaque granodiorite [2]
Brassier-Dollard biotite granite [2]
Bristol series [1]
Broadback series [1]
Brock series [1]
Broughton series [1]
Buckingham gneiss [1]
Buit Lake granite [2]
Cache Lake gabbro [2]
Cadillac group [2]
Capisisit Lake granite [2]
Cedar Rapids granite [2]
Céloron granite [2]
Chadbourne series [1]
Chertsey facies (of Morin anorthosite) [2]
Chibougamau complex [1]
Chioack conglomerate-sandstone [2]
Claverny albite granodiorite [2]
Cléricy granodiorite [2]
Cléricy sediments [2]
Cléricy porphyritic syenites [2]
Coom Lake diorite-gabbro [2]
Dalquier granite [2]
Dastur metagabbro [2]
Dauversière granite [2]
David Lake group [2]
Davy Lake breccia [2]
Denault dolomite [2]
Doré Lake group [2]
Doublet group [2]
Dufault diorite and quartz diorite [2]
Dufault granodiorite [2]
Duparquet sediments [2]
Duverny granite [2]
Fabre series [1]
Fiedmont granodiorite [2]
Figuery granodiorite [2]
Fenimore iron formation [2]
Flavrian granite [2]
Fleming chert breccia [2]
Fort Chimo group [2]
Fournière sediments [2]
Glenwood series [2]
Grenville limestone [1]
Goeland granite [2]
Goldvue quartz diorite [2]
Granada conglomerate [2]
Granada greywacke [2]
Guenette granite aplite [1]
Gull Lake anorthosite [2]
Harricanaw series [1]
High Falls granite [2]
Holmes gneiss [2]
Horne rhyolites [2]
Howse group [2]
Hub Lake syenite [2]
Josselin gneiss [2]
Kastasakau complex [2]
Kayrand quartz gabbro [2]
Kensington syenite [2]
Kewagama group [2]

Canada—Continued
Saskatchewan—Continued
Upper Cretaceous or Tertiary
Ravenscrag beds [1]
Upper Cretaceous
Battle formation [2]
Belanger member (of Bearpaw formation)[2]
Frenchman formation [2]
Oxarart member (of Bearpaw formation)[2]
Thelma member (of Bearpaw formation)[2]
Whitemud formation [1]
Jurassic
Davidson formation [2] (subsurface)
Gravelbourg formation [2] (subsurface)
Shaunavon formation [2] (subsurface)
Vanguard formation [2] (subsurface)
Watrous formation [2] (subsurface)
Devonian
Davidson evaporite [2] (subsurface)
Saskatchewan group [2] (subsurface)
Upper Devonian
Duperow formation [2] (subsurface)
Ordovician
Black Island member (of Winnipeg formation)[2]
Deer Island member (of Winnipeg formation)[2]
Grindstone Point unit (in Winnipeg formation)[2]
Precambrian
Athona granite [2]
Beaverlodge series [2]
Brindson Lake granite [2]
Cameron Island granite [2]
Churchillian group [1]
Elliot Bay conglomerate [2]
Frontier Lake conglomerate [2]
Kenwood River granite [2]
Kisseynew gneisses [1]
La Ronge group [2]; Lac La Rouge series [1]
Lodge Bay granite [2]
Mackintosh Bay granite [2]
Missi formation [1]
Morin limestone [1]
Nistoassini-Nayelles Lakes granite [2]
Pebble Island conglomerate [2]
Waddy-Contact Lakes granite [2]
White Lake granite [2]
Yukon
Recent
Kluane silt [2]
Slims Valley silt [2]
Pleistocene and Recent
Selkirk volcanics [1]

Canada—Continued
Yukon—Continued
Tertiary or Pleistocene
Carmack basalt [1]
Klusha intrusives [1]
Tertiary (see also *Triassic and Tertiary*)
Flat Creek beds [1]
Horsefly gravels [1]
Hutshi group [1]
Klondike drift [1]
Miles Canyon basalts [2]
Skukum volcanic rocks [2]
Wheaton River volcanics [1]
Tertiary(?)
Chieftain Hill volcanics [1]
Schwatka andesites [1]
Cretaceous
Perkins volcanics [1]
Tutshi series [1]
Lower Cretaceous
Dezadeash group [2]
Jurassic or Cretaceous
Laberge series [1]
Nordenskiöld dacite [1]
Upper Jurassic or Cretaceous
Quiet Lake intrusives [1]
Tantalus conglomerate [1]
Upper Jurassic or Lower Cretaceous
Mount Nansen group [2]
Upper Jurassic or Cretaceous(?)
Glenlyon granodiorite [2]
Jurassic and Triassic(?)
Mush Lake group [2]
Triassic to Tertiary
Huishi-Schwatka group [1]
Triassic
Lewes River series [1]
Paleozoic(?)
Moose Hide group [1]
Carboniferous or Permian
Kaskawulsh group [2]
Carboniferous
Raquet series [1]
Carboniferous(?)
Braeburn limestone [1]
Pennsylvanian to Lower Cretaceous
Orange group [1]
Pre-Carboniferous
Harvey group [2]
Devonian or Carboniferous(?)
Montague group [1]
Ordovician
Tatonduk shales [1]
Cambrian
Hunker Creek series [1]
Indian River series [1]
Cambrian(?)
Kluane schists [2]
Precambrian
Pelly gneiss [1]
Razor Mountain group [1]
Yukon group [1]
Precambrian(?)
Klondike series [1]
Mount Stevens group or series [1]

Mexico—Continued
- Coahuila—Continued
  - *Cretaceous*
    - Las Cortinas formation [2]
    - Las Esperanzas formation [1]
    - Indidura formation [1]
    - Monclova shale [1]
    - Papagayos formation[1]; Papagallos formation [1]
    - Peyotes division [1]
    - Rubio shale [1]
  - *Upper Cretaceous*
    - Caracol formation [2]
    - Difunta formation [2]
    - Parras shale [2]
  - *Lower Cretaceous*
    - Barril Viejo shale [2]
    - Coahuila group [2]
    - Cuesta del Cura limestone [2]
    - Cupido limestone [2]
    - La Mula shales [2]
    - La Peña formation [2]
    - Menchacha limestone [2]
    - Padilla limestone [2]
    - Parritas formation [2]
    - Patula arkose [2]
    - San Marcos arkose [2]
    - Taraises formation [2]
  - *Pre-Cretaceous*
    - Boquilla slate [1]
  - *Upper Jurassic*
    - La Caja formation [2]
    - La Casita formation [2]
    - La Gloria formation [2]
  - *Paleozoic*
    - Delicias beds [1]
  - *Permian*
    - Pichagua limestone [2]
- Colina
  - No geologic formations with type localities in the state of Colina have been recorded in the Lexicon files.
- Distrito Federal
  - *Pleistocene*
    - Armenta horizon (of Becerra formation) [2]
    - Morales caliche [2]
    - Tacubaya formation [2]
  - *Pleistocene(?)*
    - Tarango formation [2]
- Durango
  - *Cretaceous*
    - Los Muertos formation [1]
  - *Lower Cretaceous*
    - Carbonera formation [2]
    - Durango group [2]
  - *Age(?)*
    - Copper Queen intrusion [1]
    - Guardarraya intrusion [1]
- Guanajuato
  - *Tertiary*
    - Guanajuato conglomerate [1]
  - *Cretaceous or Tertiary*
    - Bufa sandstone [1]

Mexico—Continued
- Guanajuato—Continued
  - *Triassic*
    - La Luz basalts [1]
  - *Age(?)*
    - La Luz schists [1]
    - Pinguico rhyolites [1]
- Guerrero
  - *Upper Cretaceous*
    - Escamela limestone [1]
  - *Middle Jurassic*
    - Tecocoyunca beds [2]
  - *Triassic(?)*
    - Cualac quartzite [2]
- Hidalgo
  - *Tertiary, middle or upper*
    - Las Espinas volcanics [2]
  - *Tertiary, lower or middle*
    - El Morro fanglomerate [2]
  - *Oligocene*
    - Huatla basalt [1]
  - *Cretaceous*
    - Bofay formation [2]
    - El Monte limestone [2]
    - Maltrata division [1]
    - Necoxtla formation [1]
- Jalisco
  - *Quaternary*
    - Estancia basalt [1]
  - *Pleistocene(?)*
    - Chapala beds [1]
  - *Tertiary*
    - Tizapan basalt [1]
- Mexico (Estado)
  - *Recent*
    - Barrilaco caliche [2]
    - Noche Buena formation [2]
  - *Pleistocene, upper*
    - Becerra formation [2]
    - Totolzingo formation [2]
  - *Miocene*
    - Ajusco formation [2]
  - *Oligocene(?)*
    - Sierra Nevada formation [2]
  - *Upper Cretaceous(?)*
    - Jasso formation [2]
- Michoacan
  - *Tertiary*
    - Zumpimito formation [2]
  - *Lower Cretaceous*
    - Cochixtla beds [2]
    - Mezcal beds [2]
  - *Middle Cretaceous*
    - Chile limestone [2]
- Morelos
- Nayarit
  - No geologic formations with type localities in the States of Morelos and Nayarit have been recorded in the Lexicon files.
- Nuevo León
  - *Miocene, lower*
    - Norma gravel [2]
  - *Eocene*
    - Arenal formation [1]

Mexico—Continued
Sonora—Continued
Mississippian
Represo beds [2]
Venada beds [2]
Devonian or Carboniferous
Santa Rosa beds [1]
Cambrian
Bolza quartzite [1]
Esperanza limestone [2]
Upper Cambrian(?)
Puertecitos limestone [1]
Middle Cambrian
Arrojos formation [2]
Tren formation [2]
Lower Cambrian
Buelna formation [2]
Cerro Prieto formation [2]
Proveedora formation [2]
Puerto Blanco formation [2]
Precambrian or Lower Paleozoic
Atil sandstone [2]
Precambrian
Altar schists [2]
Capote quartzite [1]
Jajoba formation [2]
Age(?)
Bella Union granite [2]
Caliche Mountain rhyolite [1]
Cananea granite [1]
Capote limestone [1]
Caridad conglomerate [2]
Caridad quartz monzonite [2]
Cuitaca granodiorite [1]
Durazno formation [1]
Elenita syenite porphyry [1]
Elisa quartz monzonite porphyry [1]
El Torre syenite [1]
Encinas quartz porphyry [1]
Golden Bar andesite rocks [1]
Huacalote rhyolite [1]
La Brisca formation [1]
Magallanes rhyolite [1]
Mariquita diabase [1]
Nacozari granite [2]
Pilares monzonite [2]
San Pedro andesite [1]
Santo Domingo rhyolite [1]
Saracachi formation [1]
Tinaja granite porphyry [1]
Tabasco
Pleistocene
Tierra Colorada formation [2]
Miocene
Amate (Lower and Upper) formation [2]
Encajonado formation [2]
Gonzalez sands [2]
Miocene, upper
Belem formation [2]
Tres Puentes formation [2]
Miocene, middle
Zargazal formation [2]
Miocene, lower
Prudencia sandstone [2]

Mexico—Continued
Tabasco—Continued
Oligocene
Encarnación shale [2]
Macuspana limestone [2]
Macuspana shale [2]
Misopá shales [2]
Eocene or Oligocene
Pichucalco beds [2]
Eocene, middle and upper
Chinal limestone [2]
Chinal shales [2]
Puente de Piedra conglomerate [2]
Upper Cretaceous
Ocozocualta (formation) [2]
Paso Mono limestone [2]
Lower Cretaceous
Chival (formation) [2]
Guayal limestone [2]
San Ricardo (formation) [2]
Tamaulipas
Tertiary, upper
Cerro Topila beds [2]
Quintero limestone [2]
Pliocene and Pleistocene or Recent
Reynosa formation [1] and limestone [1]
Miocene
Pamoranes beds (in San Fernando formation) [2]
Miocene, lower
Guajalote formation [2]
Oligocene
Palo Alto formation [2]
Pinole formation [2]
Saladito formation [2]
San Fernando formation [1]
San Rafael formation [1]
Eocene
Los Esteros formation [1]
Eocene, upper
Los Guerros sandstone member (of Fayette formation) [1]
Roma sandstone member (of Fayette formation) [1]
Sanchez sandstone member (of Fayette formation) [1]
Villa Nueva sandstone member (of Fayette formation) [1]
Eocene, middle
Alamo sandstone member (of Yegua formation) [1]
Alberca sandstone member (of Yegua formation) [1]
Mier sandstone member (of Yegua formation) [1]
Once Lomas sandstone member (of Carrizo formation) [1]
Saucito sandstone member (of Cook Mountain formation) [1]
Eocene, lower
Chalma shale (in Chicontepec formation) [2]
Jaco sandstone (in Chicontepec formation) [2]

Central America—Continued
- Costa Rica
  - *Pliocene*
    - Limon clays [1]
    - Penitas formation [2]
    - Suretka conglomerate [1]
  - *Miocene*
    - Bonilla formation [1]
    - Nicoyan series [1]
    - Sheroli formation [1]
  - *Miocene, lower*
    - Uscari shale [1]
  - *Oligocene or lower Miocene*
    - Amoura shale [2]
  - *Oligocene*
    - Guallava sandstone [1]
    - Manzanilla beds [1]
  - *Eocene(?)*
    - Cartago formation [1]
    - Puerto Carballo arenaceous limestone series [2]
  - *Cretaceous or Lower Tertiary*
    - Desamparados formation [1]
    - San Miguel limestone [1]
  - *Age(?)*
    - Aguacate series [1]
    - Colorado limestone [2]
    - Rio Seco diabase [2]
    - Sabana Grande siliceous limestone [2]
- El Salvador
  - *Pliocene(?)*
    - Rio Torola limestone [2]
- Guatemala
  - *Tertiary*
    - Sepur beds [2]
  - *Miocene(?)*
    - Santo Toribio beds [2]
  - *Mesozoic*
    - Ixcoy limestone [2]
  - *Cretaceous*
    - Coban limestone [2]
  - *Upper Cretaceous(?), Eocene(?), or Oligocene(?)*
    - Petén marls and limestone [2]
  - *Lower Cretaceous*
    - Metapan formation [1]
- Honduras
  - *Pliocene(?)*
    - Escobales granodiorite [2]
    - Guacamayas dacite tuffs and flows [2]
    - Jutiapa rhyolitic tuffs and sediments [2]
    - Ranco Quemado dacite [2]
  - *Pliocene, lower*
    - Gracias formation [2]
  - *Miocene*
    - Toledo series [2]
  - *Cretaceous*
    - Cantarranas formation [2]
    - Colonia andesitic tuffs and breccias [2]
    - Crucero tuffaceous dacite flows [2]
    - Plancitos formation [2]

Central America—Continued
- Honduras—Continued
  - *Cretaceous(?)*
    - Aquacatal porphyritic andesite [2]
    - Reforma hypersthene andesite [2]
  - *Upper Cretaceous or lower Tertiary*
    - Valle de Angeles formation [2]
  - *Upper Cretaceous*
    - Esquias formation [1]
  - *Upper Triassic*
    - El Plan formation [2]
    - Tegucigalpa [1] (formation)
  - *Pre-Upper Triassic*
    - Peten formation [2]
- Nicaragua
  - *Quaternary*
    - Saclin formation [1]
    - Soulala formation [1]
  - *Tertiary*
    - Brito formation [1]
  - *Oligocene(?)*
    - Machuca formation [1]
- Panamá and the Canal Zone
  - *Pleistocene and Recent*
    - Atlantic muck [2]
    - Chargres alluvium [2]
    - Pacific muck [2]
  - *Pleistocene*
    - Aguadulce formation [1]
    - Armuelles formation [2]
    - Mariato formation [1]
    - Mount Hope formation [1]
    - San Carlos formation [1]
  - *Pre-Pleistocene*
    - Azuero formation [1]
  - *Pliocene*
    - Caribbean limestone [1]
    - Charco Azul formation [2]
    - Piliguilla conglomerate [2]
  - *Pliocene, lower*
    - **Chagres sandstone** [1]
    - **Toro limestone** [1] **member** (of Chagres sandstone)
  - *Pre-Pliocene*
    - Ancon rhyolite [2]
    - Chiva Chiva andesite [2]
    - Point Farfan diorite [2]
  - *Miocene, upper*
    - Chucunaque formation [2]
    - Limones shale [2]
  - *Miocene, upper, or Pliocene, lower*
    - Burica sandstone [2]
  - *Miocene, middle and upper*
    - **Gatun formation** [1]
  - *Miocene, middle*
    - Cativa marl (in Gatun formation) [2]
    - Pucro sandstone [2]
    - Tuira formation [2]
  - *Miocene, middle(?)*
    - Sabanitas formation [2]
  - *Miocene, lower*
    - **Alhajuela sandstone member** (of Caimito formation) [2]
    - Bruja Island dolerite [2]

Greenland—Continued
Lower Cretaceous—Continued
Home Foreland beds [2]
Kome beds; [2] *see also* Kome beds [1]
Kuhnpas facies [2]
Lindemansbugt facies [2]
Niesen beds [2]
Rødryggen beds [2]
Young Sound facies [2]
Jurassic
Cape Leslie sandstone [2]
Chatton Bay sandstone [2]
Upper Jurassic
Cape Maurer formation [2]
Charcotbucht sandstone [2]
Fossil Mountain formation [2]
Kløft I formation [2]
Koch Fjaeld formation [2]
Kuhn beds [2]
Rigi series [2]
Traekpas formation [2]
Vardekløft formation [2]
Lower Jurassic
Neills Cliff formation [2]
Triassic (see also *Permo-Triassic*)
Fleming Inlet series [2]
Upper Triassic
Cape Biot formation [2]
Cape Stewart formation [2]
Lower Triassic (see *Permian or Lower Triassic*)
Eotriassic
Wordie Creek formation [2]
Paleozoic
Cape Fletcher series [2]
Lower Paleozoic
Angmagsalik granite [2]
Cape Greg gneisses [2]
Emilia group [2]
Franz Josef beds [2]
Grejsdalen granite [2]
Hagar group [2]
Hurry Inlet gneisses [2]
Isfjord zone [2]
Milneland granite [2]
Store Fjord gneisses [2]
Store Fjord granite [2]
Svejstrips injection complex [2]
Sylva-Maria group [2]
Permian or Lower Triassic
Cape Brown and Hurry Inlet series [2]
Permo-Triassic
Mount Nordenskiold formation [2]
Permo-Triassic(?)
Klitdal formation [2]
Permian
Cape Stosh formation [2]
Depot Island formation [2]
Lower Permian
Domkirken series [2]
Upper Carboniferous
Halle Mountains formation [2]
Mallemuk Mountain formation [2]
Lower Carboniferous
Mount Pictet formation [2]

Greenland—Continued
Lower Carboniferous(?)
Foldvik Creek formation [2]
Middle Pennsylvanian
Blyklippen series [2]
Devonian or younger
Randbøl conglomerate [2]
Devonian
Cape Graah formation [2]
Kap Bull series [2]
Kap Franklin conglomerate [2]
Kap Kolthoff series [2]
Mont Celsius series [2]
Devonian(?)
Hurry Inlet granite [2]
Igaliko sandstone [2]
Ilimausak complex [2]
Ilimausak porphyries [2]
Kakarsuak porphyrite [2]
Tasek porphyrite [2]
Upper Devonian
Mount Hogbom series [2]
Middle Devonian
Kap Franklin-Vildtal granite [2]
Margrethetal series [2]
Mount Werner series [2]
Ravnefjeld formation [2]
Rodetal conglomerate (in Magrethetal series) [2]
Vildtal series [2]
Pre-Devonian
Cape Wardlaw complex [2]
Silurian (see also *Ordovician and Silurian*)
Polaris Harbour formation [2]; *see also* Polaris Harbour formation [1]
Silurian(?)
Profilfjeldet shales [2]
Middle Silurian
Cape Schuchert formation [2]
Cape Tyson formation [2]
Drømmebjerg limestone [2]
Offley Island formation [2]; *see also* Offley Island formation [1]
Ordovician and Silurian
Centrum limestone [2]
Ordovician
Narwhale Sound formation [2]
Middle or Upper Ordovician
Børglum River limestone [2]
Cape Weber formation [2]
Middle and Upper Ordovician
Cape Calhoun series [2]
Middle Ordovician
Cape Webster formation [2]
Gonioceras Bay formation [2]
Troedsson Cliff formation [2]; *see also* Troedson Cliff formation [1]
Wright Bay formation [2]
Middle Ordovician(?)
Painted formation [2]
Lower Ordovician
Cape Clay formation [2]
Cass Fjord formation [2]
Danmarks Fjord dolomite [2]

Bermuda—Continued
Pleistocene—Continued
Southampton eolianite [2]
Warwick eolianite [2]
Pliocene
Walsingham formation [1]
Age(?)
Paget formation [1]
West Indies
Small islands of the West Indies from which no geologic formations have been named are not listed here. Detailed information on these and the larger islands except Cuba can be found in the Lexique Stratigraphique International, v. 5, Amerique Latine, fascicule 2 b, Antilles.
Anguilla, British West Indies
Miocene, lower
Anguilla formation [1]
Antigua, British West Indies
Pleistocene
Friars Hill gravel and marls [1]
Oligocene
Cassada-Garden gravels [1]
Central Plain tuff formation [2]
Hodges Hill sandstone [1]
Seaforth limestone [1]
Oligocene, upper
Antigua formation [1]
Age(?)
Friars Hill series [1]
Aruba, Netherlands West Indies
Upper Cretaceous
Aruba formation [2]
Bahama Islands
No geologic formations in the Bahama Islands have received names.
Barbados, British West Indies
Quaternary
Bath-Reef series [1]
Tertiary
Ragged Point series [1]
Oligocene, upper
Bissex Hill marl [2]
Oligocene, lower
Codrington College marl [2]
Eocene
Mount Hillaby beds [2]
Mount Poyer sandstone (in Scotland beds) [2]
Eocene, upper
Bath beds (in Oceanic formation) [2]
Joes River beds [2]
Eocene, upper, to Oligocene
Oceanic formation [2]
Eocene, middle
Chalky Mount group [1]
Mount All beds (in Scotland formation) [2]
Murphys beds (in Scotland formation) [2]
West Indies—Continued
Barbados, British West Indies—Con.
Eocene, lower and middle
Scotland beds [1]
Eocene, lower
Morgan Lewis beds (in Scotland formation) [2]
St. Andrews beds [2]
Walkers beds (in Scotland formation) [2]
Barbuda, British West Indies
Pleistocene
Barbuda limestone [2]
Bonaire, Netherlands West Indies
Pleistocene
Seroe Largo limestone [2]
Eocene, upper
Seroe Montagne limestone [2]
Cretaceous or Tertiary
Rincon formation [2]
Soebi Blanco conglomerate [2]
Cretaceous
Washikemba formation [2]
Cayman Islands, British West Indies
Pleistocene or Recent
Bluff limestone [1]
Ironshore limestone [1]
Cuba
Quaternary
Coastal limestone [1]
Recent
Surgidero formation [2]
Pleistocene
Jaimanitas formation [2]
Zapata formation [1]
Pleistocene(?)
Las Puercas marl [1]
Pliocene
Matanzas series [1]
Miocene
La Cruz marl [1]
Manzanillo formation [2]
Punta Maisi limestone [1]
Miocene, upper
El Abra formation [2]
Miocene, middle
Canímar formation [2]
Miocene, lower
Limonar formation [2]
Oligocene or Miocene
Cojimar formation [1]
Guantanamo shale [1]
Guines limestone [1]
Maquay formation [1]
Yumuri limestone [1]
Oligocene and Miocene
Nipe series [2]
Paso Real formation [2]
Oligocene
Adelina marl [2]
Farallon Grande breccia [1]
Oligocene, upper
Tarará formation [2]
Oligocene, middle
Colón formation [2]
Jaruco formation [2]

West Indies—Continued
Dominican Republic—Continued
Miocene, lower—Continued
Higuerito member (of Arroyo Blanco formation)[2]
Oligocene, upper
Bao group [2]
Florentino formation [2]
Lemba formation [2]
Quita Coraza formation [2]
Tabera formation [1]
Trinchera formation [2]
Oligocene, middle
Las Colorados conglomerates [2]
Oligocene, lower and middle
Sombrerito formation [2]
Eocene
Ocoa formation [2]
Eocene, upper
Neiba formation [2]
Eocene, middle
Hidalgos formation [2]
Eocene, lower
Abuillot formation [2]
The Grenadines, British West Indies
Miocene, lower
Carriacou limestone [2]
Grand Bay beds [2]
Guadaloupe, French West Indies
Pleistocene
Usine limestone [2]
Miocene
Abymes tuffs [2]
Gensole tuffs [2]
Grande Terre limestone [2]
Age(?)
Lafonde gravel and marl [1]
Petit Bourg series [1]
Haiti
Pliocene
Hinche formation [1]
Rivière Gauche formation [2]
Miocene
Morne Delmas formation [2]
Miocene, middle
Las Cahobas formation [1]
Plaisance limestone [1]
Port-au-Prince beds [2]
Miocene, lower and middle
Artibonite group [1]
Miocene, lower
Madame Joie formation [1]
Thomonde beds [1]
Maissade tongue (of Thomonde formation) [1]
Oligocene and Miocene
Rivière Grise formation [2]
Oligocene, middle
Crête formation [2]
Oligocene, lower
Arc formation [2]
Bassin Zim formation [2]
Eocene, upper
Ennery formation [2]

West Indies—Continued
Haiti—Continued
Eocene, middle
Pérodin formation (Jaques Butterlin, 1954, Inst. Français d'Háiti Mem. 1, p. 433)
Paleocene
Marigot formation [2]
Upper Cretaceous
Macaya formation [2]
Trois-Rivières formation [2]
Jamaica
Pleistocene
Barbican formation [1]
Bogue Island formation [1]
Falmouth formation [1]
Hopewell formation [1]
Kingston formation [1]
Liguanea formation [2]
Montego formation [1]
Tertiary
Cobre [1] (beds)
Moneague [1] (beds)
Montpelier [1] (beds)
Pliocene or Pleistocene
Porus formation [1]
Pliocene
Layton formation [2]
Manchioneal formation [1]
Miocene and Pliocene
Low Layton pillow lavas [2]
Miocene or younger
Hayes conglomerate [2]
Miocene
Bengal limestone [2]
Miocene, upper
August Town series [2]
Buff Bay beds [1]
Round Hill series [2]
Miocene, middle or upper
Hope Gate limestone or series [2]
Miocene, middle
Bowden formation [1]
Miocene, lower (see also *Eocene, middle, to Miocene, lower*)
May Pen beds [1]
St. Thomas-in-the-Vale marls [2]
Oligocene, upper, and Miocene, lower
Newport limestone member (of White Limestone formation) [2]
Oligocene (see also *Eocene, middle, to Miocene, lower*)
Cockpit limestone group [1]
Oligocene, upper
Walderston limestone member (of White Limestone formation) [2]
Eocene
Ben Bow limestone [2]
Cambridge formation [1]
Catadupa [1] (formation)
Port Maria conglomerate [2]

West Indies—Continued
Puerto Rico—Continued
Cretaceous—Continued
Rio conglomerate [1]
Rio Blanco series [1]
Rio Culebrinas series [1]
Rio Yauco series [1]
San Diego formation [1]
San German limestone [1]
Sierra de Cayey tuffs [1]
Cretaceous(?)
Aguas Buenas limestone [1]
Corozal limestone [1]
Juan Asencio chert beds [1]
Muda limestone [1]
Unibon shale [1]
Upper Cretaceous
Atalaya limestone [2]
Cape San Juan limestone [2]
Cialitos limestone [2]
Frailes formation (see p. 622.)
Guilarte limestone [2]
La Muda limestone [1] member (of Frailes formation)
Las Marías limestone [2]
Orcovis limestone [2]
Trujillo Alto limestone (as Trujillo formation [1])
Upper Cretaceous(?)
Guaynábo formation [1]
Hato Puerco tuffs [1]
Lower Cretaceous
Rio de la Plata series [1]
Lower Cretaceous(?)
Barranquitas shaly limestone [1]
Comerio beds [1]
Age(?)
Coqui limestone [1]
Collores limestone [1]
Juncor gabbro [1]
Patillas quartz monzonite [1]
San Lorenzo quartz diorite [1]
Yabucoa granite [1]
St. Bartholomew, French West Indies
Eocene, middle
Cayes limestone member (of Saint Bartholomew formation) [2]
Flamand limestone member (of Saint Bartholomew formation) [2]
Lezard limestone member (of Saint Bartholomew formation) [2]
Mongeant limestone member (of Saint Bartholomew formation) [2]
St. Bartholomew limestone [1]
St. Eustatius, Netherlands West Indies
Pleistocene, upper(?)
White Wall formation [2]
St. Kitts, British West Indies
Pleistocene, lower
Brimstone Hill limestone [2]
Brimstone Hill tuffs [2]
Age(?)
St. Kitts gravels [1]

West Indies—Continued
St. Martin, French and Netherlands West Indies
Tertiary, lower
Simson Bay formation [2]
Miocene
Low Lands formation [2]
Oligocene, upper
Tintamarre formation [2]
Upper Cretaceous(?)
Pointe Blanche formation [2]
Miocene, upper, and Pliocene
Rockly Bay formation [2]
Cretaceous(?)
Bacolet formation [2]
Hawks Bill formation [2]
Goldsborough formation [2]
Main Ridge formation [2]
Merchiston formation [2]
Mount Dillon formation [2]
North Coast schist group [2]
Parlatuvier formation [2]
Tobago volcanic group [2]
Trinidad, British West Indies
Pleistocene
Godineau beds [2]
Melajo clay [2]
Oropouche formation [2]
Pierreville clay [2]
Siparia beds [2]
Pleistocene(?)
Llanos formation [1]
Tertiary
Caroni series [1]
Morne l'Enfer formation [1]
Tamana series [1]
Williamsville clay [1]
Pliocene and Pleistocene
Cedros beds [2]
Pliocene
Camparo formation [2]
Matura formation [1]
Palmiste clays [2]
Miocene and Pliocene
Talparo formation [2]
Miocene
Concord member (of Brasso formation) [2]
Cruse oil zone [1] (subsurface)
Forest clay and sands [1] (subsurface)
Freemans Bay limestone [2]
Guaracara limestone [1]
Lengua beds [2]
Machapoorie formation [1]
Montserrat sand member (of Upper Brasso formation) [2]
Moruga series [1]
Mount Pleasant greensand horizon (of Manzanilla formation) [2]
Naparima marl [1]
Palo Seco formation [2]
Pointe Noir beds [2]
Poonah sands [1]
Princes Town marl [1]
Stollmeyer oil zone [1] (subsurface)

West Indies—Continued
Trinidad, British West Indies—Con.
Upper Cretaceous—Continued
Gautier formation [2]
Guayaguayare beds [2] (subsurface)
Hobsons clay [2]
Lantern marl (in Chaudiere shale) [2]
Naparima Hill formation [2]
Railway Cut marl (in Chaudiere shale) [2]
San Fernando argiline [2]
Stack Rock limestone [2]
Toco Bay beds [2]
Turure formation [2]
Lower Cretaceous
Bon Accord formation [2]
Cuche formation [2]
Cuche River beds [2]
Cumana formation [2]
Galera formation [2]
Galera Grit member (of Galera formation) [2]
Grande Riviere formation [2]
Grande Riviere Road limestone [2]
Maridale formation [2]
Plum Road formation [2]
San Souci volcanic formation [2]
Toco formation [2]
Zagaya limestone member (of Toco formation) [2]
Lower Cretaceous(?)
Caribbean group [1]
Pre-Cretaceous(?)
Laventille limestone [1]
Jurassic
Cuare limestone [2]
Maracas beds [2]
Maraval beds [2]
Picton limestone member (of Laventille formation) [2]
Rio Seco formation [2]
Upper Jurassic
Hollis Reservoir formation [2]
Quaré limestone (in Hollis Reservoir formation) [2]
Jurassic or older
Dragon formation (type locality in Venezuela) [2]
Virgin Islands
Oligocene and Miocene
Kingshill marl [2]
Oligocene
Jealousy formation [2]
Upper Cretaceous
Mount Eagle volcanics (as series [1])
Pacific Islands
Detailed information on the geologic formations of all of the smaller islands in the Mid-Pacific area can be found in the Lexique Stratigraphique International, v. 1, Oceanie fascicule 2, Oceanie Proprement Dite.

Pacific Islands—Continued
Caroline Islands (Angaur)
Pleistocene and *Recent*
Angaur (Older and Younger) limestone [2]
Caroline Islands (Babelthaup)
Pleistocene
Palau limestone [2]
Pliocene
Airai lignite bearing beds [2]
Oligocene
Arumonogui (Almongui) agglomerate [2]
Eocene
Aimiriiki (Aimiliiki) agglomerate [2]
Babelthaup agglomerate [2]
Kameset (Gamusetsu) agglomerate [2]
Ngardok (Galdog) beds [2]
Caroline Islands (Eastern)
Miocene
East Caroline beds [2]
Caroline Islands (Fais)
Pleistocene
Caroline limestone [2]
Fais limestone [2]
Caroline Islands (Garim, island off Yap)
Pleistocene
Garim limestone [2]
Caroline Islands (Kusaie)
Pliocene
Iisa beds [2]
Miocene
Malam (Maremu) beds [2]
Caroline Islands (Map)
Miocene
Map formation [2]
Caroline Islands (Peleliu)
Recent
Ngarekeukl (Galkyoku) limestone [2]
Pleistocene
Peleliu limestone [2]
Caroline Islands (Ponape)
Miocene
Metalanim (Matalanim) beds [2]
Caroline Islands (Truk)
Miocene
Getuyoto beds [2]
Caroline Islands (Yap)
Oligocene
Tomil agglomerate [2]
Pre-Tertiary(?)
Yap formation [2]
Hawaii (Island of Hawaii)
Quaternary (see also *Tertiary, upper, to Quaternary*)
Glenwood tuff [2]
Kapukapu tuff [2]
Olaa agglomerate [2]
Waiau formation [2]
Waimea formation [2]

Pacific Islands—Continued
Hawaii (Island of Hawaii)—Con.
Recent
Huehue flow [2]
Keanakakoi formation [2]
Recent and Pleistocene, upper(?)
Kamehame basalt [1]
Kau volcanic series [2]
Kona tuff formation [2]
Puna volcanic series [2]
Pleistocene or Recent
Uwekahuna ash [2]
Pleistocene and Recent
Hualalai volcanic series [2]
Honolulu volcanic series [1]
Pleistocene and Recent(?)
Laupahoehoe volcanic series [2]
Pleistocene
Hawi volcanic series [2]
Kahuku volcanic series [2]
Makanaka drift and stage [2]
Pahala ash (as basalt [1])
Pohakuloa drift and stage [2]
Waihu fanglomerate [2]
Pleistocene(?)
Hilina volcanic series [2]
Waawaa volcanics [2]
Tertiary, upper, to Quaternary
Hamakua volcanic series [2]
Pliocene(?)
Ninole volcanic series (as basalt[1])
Pololu volcanic series [2]
Hawaii (Island of Kahoolawe)
Pliocene(?)
Kanapou volcanic series [2]
Hawaii (Island of Kauai)
Pleistocene and Recent
Koloa volcanic series [2]
Pleistocene
Palikea formation [2]
Pliocene(?)
Haupu formation [2]
Makaweli formation [2]
Mokuone member (of Makaweli formation) [2]
Napali formation [2]
Olokele formation [2]
Waimea Canyon volcanic series [2]
Age(?)
Kauai lavas [2]
Waimea conglomerate [2]
Hawaii (Island of Lanai)
Pliocene and Pleistocene(?)
Lanai volcanic series (as basalt[1])
Age(?)
Manele basalt [1]
Hawaii (Island of Maui)
Pleistocene or Recent(?)
Lahaina volcanic series [2]
Laina volcanics [2]
Pleistocene and Recent
Hana volcanic series [2]
Pleistocene
Kaupo mud flow [2]

Pacific Islands—Continued
Hawaii (Island of Maui)—Continued
Pleistocene(?)
Big Falls picritic basalt [2]
Hanawi basaltic andesite [2]
Kapaula basaltic andesite [2]
Keanae basalt [2]
Kilea volcanics [2]
Kipahula formation [2]
Kuhiwa basaltic andesite [2]
Makaino basaltic andesite [2]
Makapipi basalt [2]
Mossman picritic basalt [2]
Ohia basalt [2]
Paakea basalt [2]
Pauwalu basalt [2]
Piinaau basalt [2]
Waiaaka basaltic andesite [2]
Wailuanui basalt [2]
Waiokamilo basalt [2]
Pleistocene, lower, or Pliocene, upper(?)
Honolua volcanic series [2]
Pliocene(?)
Wailuku volcanic series [2]
Tertiary, upper(?)
Honomanu volcanic series [2]
Kula volcanic series [2]
Hawaii (Island of Molokai)
Pleistocene(?)
Kalaupapa basalt [2]
Pliocene
West Molokai volcanic series [2]
Pliocene(?)
East Molokai volcanic series [2]
Hawaii (Island of Niihau)
Pleistocene
Kiekie volcanic series [2]
Pliocene(?)
Paniau volcanic series [2]
Hawaii (Island of Oahu)
Quaternary
Aliamanu basalt [2] (subsurface)
Kaau mud flow [2]
Kii Point limestone [2]
Pyramid Rock basalt [2]
Recent
Black Point ash [2]
Diamond Head talus breccia [1]
Kalama volcanics [1]
Pleistocene(?)
Kolekole volcanics [2]
Pleistocene, upper, or Recent
Kaupo basalt [1]
Koko volcanics [1]
Manana tuff [1]
Sugar Loaf basalt [1]
Tantalus basalt [1]
Pleistocene, upper, and Recent
Kaohikaipu volcanics [1]
Pleistocene, upper
Ainoni volcanics [1]
Aliamanu tuff [1]

Pacific Islands—Continued
- Hawaii (Island of Oahu)—Continued
  - *Pleistocene, upper*—Continued
    - **Black Point basalt** [1]
    - **Castle volcanics** [1]
    - **Diamond Head tuff** [1]
    - Fort Shafter gravel [1]
    - **Haiku volcanics** [1]
    - **Hawaiiloa volcanics** [1]
    - **Kaau volcanics** [1]
    - **Kaimuki volcanics** [1]
    - **Kalihi volcanics** [1]
    - **Kamanaiki basalt** [1]
    - **Kaneohe volcanics** [1]
    - Kupikipikio basalt [1] or black ash [1]
    - **Makalapa tuff** [1]
    - **Makawao breccia** [1]
    - **Maunawili volcanics** [1]
    - **Mauumae volcanics** [1]
    - **Mokapu basalt** [1]
    - **Mokolea basalt** (as Mokulea basalt [1])
    - **Moku Manu volcanics** [1]
    - **Nuuanu volcanics** [1]
    - **Pali volcanics** [1]
    - **Punchbowl volcanics** [1]
    - **Rocky Hill volcanics** [1]
    - **Salt Lake tuff** [1]
    - **Training School volcanics** [1]
    - **Ulupau tuff** [1]
  - *Pliocene*
    - Pearl Harbor series [1]
    - Pearl River series [1]
  - *Pliocene(?)*
    - **Kailu volcanic series** [1]
    - **Koolau volcanic series** [1]
    - **Waianae volcanic series** [1]
  - *Age(?)*
    - Black Point limestone [2]
- Mariana Islands (Aguijan)
  - *Pliocene*
    - Aguijan limestone [2]
- Mariana Islands (Farallon de Medinilla)
  - *Oligocene (Aquitanian)*
    - Medinilla (Lower and Upper) limestone [2]
- Mariana Islands (Guam)
  - *Recent*
    - Merizo limestone [2]
  - *Pleistocene*
    - Barrigada limestone [2]
  - *Pliocene*
    - Sumay limestone [2]
    - Talofofo peat-bearing beds [2]
  - *Oligocene (Aquitanian)*
    - Asan limestone [2]
  - *Eocene*
    - Balanos andesite [2]
    - Fena beds [2]
    - Nagas beds [2]
    - Santa Rosa beds [2]
    - Umatac andesite [2]

Pacific Islands—Continued
- Mariana Islands (Pagan)
  - *Recent*
    - Pagan limestone [2]
- Mariana Islands (Rota)
  - *Recent*
    - Mirikattan limestone [2]
  - *Pleistocene*
    - Rota limestone [2]
  - *Pliocene(?)*
    - Poniya limestone [2]
  - *Miocene, lower*
    - Hirippo limestone [2]
  - *Oligocene (Aquitanian)*
    - Taihamu (Taihanom) limestone [2]
  - *Eocene*
    - Manila agglomerate [2]
    - Mariiru beds [2]
- Mariana Islands (Saipan)
  - *Pleistocene or Recent*
    - **Tanapag limestone** [2]
  - *Pleistocene*
    - Chacha limestone [2]
  - *Pliocene and Pleistocene*
    - **Naftan limestone** [2]
  - *Miocene, lower*
    - **Donni sandstone member** (of Tagpochau limestone) [2]
    - **Laulau limestone** [2]
    - **Machegit conglomerate member** (of Tagpochau limestone) [2]
    - **Tagpochau limestone** [2]
  - *Eocene*
    - As Perdido (Asuberudedo) beds [2]
  - *Eocene(?)*
    - **Sankakuyama formation** [2]
  - *Eocene, upper*
    - **Densinyama formation** [2]
    - **Hagman formation** [2]
    - **Matansa limestone** [2]
- Mariana Islands (Tinian)
  - *Recent*
    - Dankuro limestone [2]
  - *Pleistocene*
    - **Mariana limestone** [2]
    - Sonson limestone [2]
  - *Pliocene or Pleistocene*
    - Carolinas limestone [2]
  - *Oligocene (Aquitanian)*
    - Kasutesyo limestone [2]
    - Lasso limestone [2]
    - Tinian beds [2]
  - *Eocene*
    - Marino agglomerate [2]
    - Marino beds [2]
- Samoa Islands
  - *Recent*
    - Aunuu tuff [2]
  - *Recent(?)*
    - **Leone volcanics** [2]
  - *Pliocene(?)*
    - **Alofau volcanics** [2]
    - Masefau volcanics [2]
    - **Olomoana volcanics** [2]

Pacific Islands—Continued
Samoa Islands—Continued
Pliocene(?)—Continued
Taputapu volcanics [2]
Pliocene and Pleistocene(?)
Pago volcanic series [2]
Pliocene or Pleistocene, lower
Afono trachyte [2]
Matafao breccia [2]
Matafao trachyte [2]
Papatele trachyte [2]

Pacific Islands—Continued
Samoa Islands—Continued
Pliocene or Pleistocene, lower—Con.
Pioa breccia [2]
Pioa rhyolite [2]
Vatia trachyte [2]
Pliocene and lower Pleistocene(?)
Fagasa gabbro [2]
Lefulufulua trachyte [2]
Leila trachyte [2]
Tau trachyte [2]

ADDITIONS AND CORRECTIONS TO "ROCK UNITS"

Additions:

The following new units are being used by the U.S. Geological Survey as formations containing earlier named units as members:

Frailes formation (C. A. Kaye, 1959, U.S. Geol. Survey Prof. Paper 317–A, p. 16), Upper Cretaceous of Puerto Rico (p. 616)

Houy formation (P. E. Cloud, V. E. Barnes, and W. H. Hass, 1957, Geol. Soc. America Bull., v. 68, no. 7, p. 810–816), Devonian and Lower Mississippian of Texas (p. 554)

Owens Valley formation (C. W. Merriam and W. E. Hall, 1957, U.S. Geol. Survey Bull. 1061–A, p. 7–12), Permian of California (p. 450)

Recent additions to and revisions of Survey usage made too late to be included in the text:

Genesee formation (as group [1]), Upper Devonian of New York (p. 512), containing the following members:

Geneseo shale [1] **member** (p. 512)

Genundewa limestone member (as lentil of Geneseo shale [1]) (p. 512)

Ithaca member (as shale member of Portage formation [1]) (p. 512)

Penn Yan shale member (as Tongue of West River shale [2]) (p. 512)

Renwick shale member [1] (p. 512)

Sherburne flagstone member (as member of Portage formation [1]) (p. 512)

West River shale [1] **member** (p. 512)

Keyser limestone (as member of Helderberg limestone [1]), Upper Silurian and Lower Devonian (?) of West Virginia (p. 571)

McElroy formation (as member of Fayette sandstone [1]), upper Eocene of Texas (p. 546), containing the following members:

Dilworth sandstone member (as sand [1]) (p. 545)

Manning clay member (as beds [1]) (p. 545)

Shublik formation,[1] Middle and Upper Triassic of Alaska (p. 433)

Wells formation,[1] Pennsylvanian and Permian of Idaho (p. 460)

Additions:

Whitsett formation (as beds[1]), upper Eocene of Texas (p. 546), containing the following members:
Calliham sandstone member (as sand[1]) (p. 545)
Dubose member (as sands and clays[1]) (p. 546)
Fashing clay member (as clay[1]) (p.546)
Stones Switch sandstone member (as sand[1]) (p. 546)

Corrections:

†Sharon coal group,[1] Lower Pennsylvanian of Maryland, omitted from text

Sugarloaf quartz latite (p. 435), Cretaceous or Tertiary of Arizona (James Gilluly, 1956, U.S. Geol. Survey Prof. Paper 281, p. 90–93), erroneously entered in part A (p. 354) with reference belonging to Sugarloaf series (see below)

Sugarloaf series, Cenozoic of Arizona (H. E. Enlows, 1951, Tulsa Geol. Soc. Digest, v. 19, p. 105–107)

The names listed below are cited under erroneous localities in the text:

Bromley shale (in Cynthiana formation),[1] Middle Ordovician of Kentucky (p. 522)

Floyd shale,[1] Upper Mississippian of Georgia (p. 430)

Drywood formation or coal group,[1] Pennsylvanian (Des Moines) of Missouri (p. 526)

Geologic Names of North America

By DRUID WILSON *and others*

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CONTENTS